2006
Oklahoma Pandemic Influenza Management Plan

May 18, 2006

Prepared by
Oklahoma State Department of Health
Pandemic Influenza Management Plan Committee

Oklahoma State Department of Health

PUBLIC HEALTH RESPONSE TEAM

Oklahoma State Department of Health
Creating a State of Health

May 5, 2006

To Our Public Health Workforce and Partners:

Public health workers are being called on to address a seemingly increasing array of public health threats. Some are relatively contemporary concerns such as bioterrorism, whereas the impact of others is well documented in history. With influenza, we are beginning to see a merging of the two ends of the spectrum.

An epidemic of influenza predictably occurs every winter in the United States. Some influenza seasons are a little more challenging than others, but even when ample supplies of influenza vaccine are available, 25,000 – 50,000 persons die in our country each year as a result of influenza infection. Influenza is not a new problem, but the emergence of the H5N1 "bird flu" has captured many recent headlines. History has demonstrated that pandemic influenza has a cyclical occurrence, so the persisting and escalating threat of H5N1 influenza in Southeast Asia is placing new urgency on preparing for a possible influenza pandemic.

Most, if not all, of our public health infrastructure that has been bolstered through our terrorism preparedness and response efforts would be applied and tested should we need to respond to an influenza pandemic. We would institute our emergency operations procedures, enhance our epidemiologic and laboratory surveillance methods, activate plans for large-scale prophylaxis and care, and quickly and reliably provide risk communication to Oklahomans. A committee representing several program areas from the Oklahoma State Department of Health has worked to synthesize these elements and developed the *Oklahoma Pandemic Influenza Management Plan.* The Plan is intended to be a dynamic and "living" document that will be reviewed and revised on an annual basis. Please acquaint yourself and your staff with this plan as it would be "all hands on deck" should pandemic influenza become a reality.

Sincerely,

James M. Crutcher

James M. Crutcher, M.D., M.P.H.
Commissioner of Health and
State Health Officer

2006 Pandemic Influenza Management Plan

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Background

Executive Summary

The *Oklahoma Pandemic Influenza Management Plan* is intended to be a dynamic and interactive document. Following the release of the HHS Pandemic Influenza Plan by the U.S. Department of Health and Human Services in November 2005, the Pandemic Influenza Committee undertook the challenge to review and augment the *Oklahoma Pandemic Influenza Management Plan* to address areas that needed to be enhanced. The *Oklahoma Pandemic Influenza Management Plan* has been expanded from six to nine essential elements of preparedness and response which would be integral in the management of a potential influenza pandemic. The nine essential elements address Command, Control and Management; Surveillance and Laboratory Diagnostics; Delivery of Vaccine; Acquisition and Delivery of Antiviral Medications; Health Systems and Emergency Response; Community Disease Control and Prevention; Infection Control; Clinical Guidelines and Risk Communication.

The *Oklahoma Pandemic Influenza Management Plan* and its appendices were developed as a guidance for a coordinated statewide, multi-sector response to pandemic influenza. Prevention and preparedness activities to facilitate the public health response and recovery components after a pandemic are also part of the plan guidance.

The *Oklahoma Pandemic Influenza Management Plan* is public health-focused with the overall goal to minimize serious illness and deaths that may occur with a severe influenza pandemic. However, preparedness planning is also essential for businesses, schools, and communities to address other impacts such as economic and social well-being. The Oklahoma State Department of Health (OSDH) in collaboration with numerous state, local and tribal partners will facilitate regional exercises to catalyze other planning activities and enhance partnerships between state, regional, local and tribal partners.

Introduction

Influenza viruses have threatened the health of animal and human populations for centuries. Influenza viruses have the ability to mutate, which can lead to genetic sequence realignment or reassortment. There are two main types of influenza virus mutation: antigenic drift and antigenic shift. Antigenic drift is a minor change that occurs frequently and causes the emergence of a new strain within a subtype. Antigenic drifts occur in both type A and B influenza viruses. The composition of the annual influenza vaccine changes from year to year due to antigenic drift. Antigenic shift is a major change caused by genetic recombination that results in the emergence of a novel virus strain that has not previously infected humans. Often, antigenic shift occurs in an animal influenza virus, which then allows the virus to be transmitted between animals and people. Antigenic shift occurs only in influenza type A viruses. Their diversity and propensity

for mutation have thwarted human efforts to develop both a universal vaccine and highly effective antiviral drugs. A pandemic occurs when a novel strain of Influenza type A virus emerges that has the ability to infect and be passed between humans. If that happens, a worldwide epidemic, or pandemic, could ensue because humans have little immunity to the new novel virus.

The animal population serves as a reservoir for new influenza viruses. A real world threat for the next potential pandemic may be the avian influenza H5N1 strain. Scientists believe that avian (or bird) viruses played a role in the last three pandemics. The influenza virus has shown the ability to infect multiple species, including long-range migratory birds, pigs, cats, and humans. This highly pathogenic avian influenza virus was first recognized in Hong Kong in 1997. Although aggressive measures were used in an attempt to eradicate bird reservoirs of the virus, there have been an increasing number and severity of recurrent poultry outbreaks in Asia, Africa, and the Middle East. More troubling is the occurrence of bird-to-human transmission of the virus observed in eight countries with a sobering case fatality rate of 55%. The New England Journal of Medicine recently published strong clinical and epidemiologic evidence of H5N1 being transmitted from human-to-human in a limited familial case cluster[1]. This finding is especially alarming and fuels the global concern that the next influenza pandemic is imminent. While it is impossible to predict whether the H5N1 virus will lead to a pandemic, history suggests that if it does not, another novel influenza virus will emerge at some point in the future and threaten an unprotected human population.

In the past 300 years, there have been 10 documented pandemics of influenza A. The infamous "Spanish flu" of 1918-1919 resulted in 20 to 50 million deaths worldwide in a much less mobile society. The mortality rate during the more recent pandemics (in 1957 and 1968) was relatively low despite the high morbidity. Although supportive medical care and the availability of antibiotic therapy for secondary bacterial infections are factors to explain the "milder blow" of later pandemics, the causative influenza virus strains were less virulent. If a novel influenza strain emerges that is highly virulent, the rate of illness and death could rival previous pandemics despite modern healthcare technology. Beyond the human toll, an influenza pandemic will create significant social disruption and economic impact. Absenteeism across multiple sectors related to personal illness, illness in family members, fear of contagion, or public health measures to limit contact with others could threaten the functioning of critical infrastructure, the movement of goods and services, and operation of institutions such as schools and universities. A pandemic would thus have significant implications for the economy, national security, and the basic functioning of society. The Centers for Disease Control and Prevention (CDC) estimate that the economic losses associated with future pandemics could total billions of dollars.

If the next pandemic influenza strain mimics the virulence of the 1918 pandemic strain, the World Health Organization estimates that there could be 2 - 7.4 million deaths globally. These statistics seem overwhelming, but there are measures that can be taken now to mitigate the

[1] *N Engl J Med* 2005 Jan 27; 352(4): 333-340.

impact of the event. Public health officials at all levels of government have begun to develop strategies based on the following assumptions:

a. Require substantial response interactions of agencies beyond health departments;
b. Allocate and distribute vaccines and antiviral medications (in very short supply) on a priority basis;
c. Prepare to allocate and distribute an initial vaccine supply that will be under the control of the federal government with states receiving a formula-based allotment;
d. Affect many geographic areas simultaneously;
e. Adapt temporarily to an overwhelmed healthcare system and convey altered standards of care as needed;
f. Recommend appropriate antibiotic usage in case antibiotic supplies are decreased due to the number of secondary bacterial infections; and
g. Maintain medical services and community infrastructure, which may lead to fear, fatigue, psychological stress and caring for family members thereby preventing people from going to work.

Developing this document is an important step in Oklahoma's preparation for pandemic influenza. The *Oklahoma Pandemic Influenza Management Plan* is intended to be a resource document for public health preparedness at the state, regional and local level. It is imperative that public health and all partners, including tribal entities, work together to define critical roles in the implementation of the state plan before a pandemic strikes. Areas addressed in this plan include command, control and management, disease surveillance and laboratory diagnostics, health systems and emergency management, vaccines and antiviral medications delivery, communication activities, and response coordination among multiple agencies. To the extent possible, the respective roles of the local county health departments and the Oklahoma State Department of Health, Central Office, will be outlined and revised as the plan evolves.

Periods and Phases of Pandemic Influenza

National pandemic planning is categorized into four designated periods and several phases, from early identification of a novel virus threat to resolution and recovery from a pandemic cycle. These pandemic phases are determined and announced by the Centers for Disease Control and Prevention in collaboration with the World Health Organization. The *Oklahoma Pandemic Influenza Management Plan* is structured according to the four periods, which are listed below:

Interpandemic Period
World Health Organization Pandemic Phases 1-2

- No novel influenza strain of public health concern in global circulation in humans.

Pandemic Alert Period
World Health Organization Pandemic Phases 3-4

- Limited novel influenza virus transmission abroad: all local cases (e.g., in Oklahoma or the United States) are either imported or have clear epidemiologic links to other cases.

World Health Organization Pandemic Phase 5

- Limited novel influenza virus transmission in the area (e.g., within Oklahoma or the United States), either with a small number of cases without clear epidemiology links to other cases or with increased occurrence of influenza among their close contacts.

Pandemic Period

World Health Organization Pandemic Phase 6

- Sustained novel influenza virus transmission in Oklahoma, with a large number of cases without clear epidemiologic links to other cases. Disease control measures will be aimed at individuals and groups, which appear to be affective.

Postpandemic Period

World Health Organization Postpandemic Period

- Transmission has been controlled or eliminated, no new cases.

Purpose and Goals of the Plan

1. Reduce morbidity and mortality among Oklahomans during a serious influenza season;
2. Minimize infrastructure disruption and subsequent economic impact caused by an influenza pandemic;
3. Assist and facilitate preparedness in the healthcare systems within Oklahoma;
4. Provide a comprehensive and dynamic plan that undergoes at least annual review and update; and
5. Assist and facilitate appropriate planning and response at the local, regional and state level.

Potential Impact of an Influenza Pandemic on Oklahoma

Many factors must be considered when estimating the potential impact of the next influenza pandemic. Some of these include the virulence of the circulating virus, how rapidly the virus spreads, primary age group affected, and the effectiveness of public health intervention and response. Nonetheless, estimates of the health impact can help direct medical response plans and guide public health policy decisions.

During a normal influenza season, 5-20% of the population becomes ill and the highest rates of influenza-related complications occur in very young children and the elderly. During severe epidemics, the attack rate may be as high as 30-50% with a higher proportion of serious illness and deaths occurring in adults less than 65 years old. During the 1918 pandemic, young adults had the highest mortality rates, with nearly one-half the influenza-related deaths occurring in those 20-40 years old.

An estimate of the number of deaths and hospitalizations that may occur in Oklahoma during the next influenza pandemic is provided in the following tables. The estimates were performed using the FluAid 2.0 modeling software available online through the National Vaccine Program office, http://www2a.cdc.gov/od/fluaid/default.htm. The numbers were generated using the US Bureau of Census data (state population of 3,317,091). Based on the model, using a proportion representing 15% to 35% of the state's population clinically affected by influenza, it is projected that between 5,875 and 13,709 Oklahomans would require hospitalization and between 1,367 and 3,188 Oklahomans would die during an influenza pandemic. Local county health departments are encouraged to enter their respective county census data to provide estimates to assist with local planning efforts. It is important to note that the model does not allow for the mitigating effects of an effective vaccine or antiviral medications.

Estimated Number of Deaths from Pandemic Influenza in Oklahoma by Attack Rate

		Attack rates	
	15%	25%	35%
0-18 years of age Likely number of deaths.	14	23	32
Minimum	8	13	19
Maximum	190	317	444
19-64 years of age Likely number of deaths.	624	1,040	1,456
Minimum	89	149	208
Maximum	1,172	1,953	2,734
65+ years of age Likely number of deaths.	729	1,215	1,700
Minimum	707	1,178	1,649
Maximum	904	1,506	2,109
Total: Likely number of deaths.	1,367	2,278	3,188
Range:	804 –2,266	1,340 – 3,776	1,876 – 5,287

Estimated Hospitalizations in Oklahoma from Pandemic Influenza by Attack Rate

		Attack rates	
	15%	25%	35%
0-18 years of age Likely number of hospitalizations	246	410	574
Minimum	121	202	282
Maximum	1,032	1,720	2,408
19-64 years of age Likely number of hospitalizations	3,686	6,144	8,601
Minimum	540	1,137	1,591
Maximum	4,024	6,707	9,390
65+ years of age Likely number of hospitalizations	1,943	3,238	4,534
Minimum	1,389	2,315	3,241
Maximum	2,456	4,094	5,731
Total: Likely number of hospitalizations	5,875	9,792	13,709
Range:	2,050 – 7,512	3,654 – 12,521	5,114 – 17,529

Concept of Operations

In the event of an influenza pandemic, the OSDH will be the lead state agency in the response. State, regional and local organizations will initiate actions as outlined in the *Oklahoma Pandemic Influenza Management Plan* and the *Catastrophic Health Emergency Plan*.

The *Oklahoma Pandemic Influenza Management Plan* contains nine essential components:

1. Command, Control, and Management
2. Surveillance and Laboratory Diagnostics
3. Delivery of Vaccine
4. Acquisition and Delivery of Antiviral Medications
5. Health Systems and Emergency Response
6. Community Disease Control and Prevention
7. Infection Control (adopted from HHS Pandemic Influenza Plan)
8. Clinical Guidelines (adopted from HHS Pandemic Influenza Plan)
9. Risk Communication

Role of the Oklahoma State Department of Health

1. The OSDH is responsible for the development, regular review, and implementation of the *Oklahoma Pandemic Influenza Management Plan* by an internal workgroup with established timelines.

2. The OSDH Laboratory is integral in surveillance activities by providing viral isolation, antigen detection, and strain identification of influenza viruses.

3. The Commissioner of Health and State Health Officer has the primary authority for direction and supervision of the implementation of the Plan components, namely vaccine delivery and antiviral medication dispensing.

4. The OSDH Terrorism Preparedness and Response Service along with OSDH Community Health Services will collaborate with partners and stakeholders to develop, gain approval of, and distribute a guidance of local and state responsibilities.

5. The OSDH Terrorism Preparedness and Response Service along with Community Health Services will ensure that the Plan includes a grid of operational responsibilities of state, local, tribal and regional jurisdictions.

Role of Local County Health Departments

Local county health departments are responsible for planning and orchestrating the local response to an influenza pandemic with direction from the OSDH Central Office. This includes local and community integration with response partners, including but not limited to tribal facilities, law enforcement, emergency management, educational institutions, healthcare facilities and government officials. Local county health departments, through existing or enhanced surveillance, may be the first to detect influenza activity in their community. Local county health department responsibilities include:

1. Promote routine influenza and pneumococcal vaccination to designated high-risk groups.

2. Meet with local key partners, including tribal entities, and familiarize them with the *Oklahoma Pandemic Influenza Management Plan*.

3. Liaison with local and tribal responders (e.g., emergency services, hospitals, and community response, and mortuary services) in advance of a pandemic to facilitate a coordinated response.

4. Promote routine influenza and pneumococcal vaccination to designated high-risk groups.

5. Develop a plan, in collaboration with key partners, that addresses community disease prevention and control including possible closing and re-opening of schools, businesses, and public events during a pandemic influenza event.

6. Facilitate the development of local contingency/continuity plans for those confined at home, medical care of sick people at home, maintenance of essential services, economic stability and employee well-being and safety within the community.

7. Assure that local, tribal and hospital emergency plans are implemented during an influenza pandemic.

8. Assist with disseminating educational materials targeted toward the public regarding an influenza pandemic response.

Role of the Federal Government

1. Coordinate national and international surveillance.
2. Conduct epidemiological investigations in the U.S. and globally.
3. Develop and direct use of diagnostic laboratory tests and reagents.
4. Develop reference strains and reagents for vaccines.
5. Evaluate and license vaccines.
6. Determine population at highest risk and strategies for vaccination and antiviral medication use.
7. Assess and advise on measures to decrease transmission (such as travel restrictions, isolation and quarantine).
8. Deploy federally purchased vaccine.
9. Deploy antiviral medications in the Strategic National Stockpile.
10. Evaluate the efficacy of response measures.
11. Deploy federal personnel, if requested (i.e., Commissioned Corps Readiness Force, Epidemic Intelligence Service Officers, Indian Health Services).
12. Develop and distribute medical and public health communications.

2006 Oklahoma Pandemic Influenza Management Plan

Nine Essential Elements of the Plan

Pandemic Influenza Management Plan
Essential Element #1
Command, Control and Management

This element details the command, control and management of the emergency response infrastructure that is required throughout the delineated phases of an influenza pandemic. The Oklahoma State Department of Health (OSDH) will lead the state response to an influenza pandemic through the existing response infrastructure that is coordinated through Oklahoma's proven State Emergency Operations Plan, Emergency Support Function #8: Health and Medical. The State Emergency Operations Plan are parallel and integrated with the National Response Plan's Emergency Support Function #8: Public Health and Medical Services. The local county health departments similarly develop and implement a structured parallel system of pandemic influenza preparedness for their local jurisdictions. The Commissioner of Health will have primary authority for the implementation of the pandemic management plan. Also in this plan, OSDH will outline procedures for response to environmental, health and medical needs of the State of Oklahoma in the event of a pandemic influenza as addressed in the National Response Plan Emergency Support Function (ESF) #8: Public Health and Medical Services. The Pandemic Influenza Management Plan serves as a procedural document to outline responses to environmental, health and medical needs of the State of Oklahoma in the event of pandemic influenza.

A. INTERPANDEMIC PERIOD

1. The OSDH will ensure that the *Oklahoma Pandemic Influenza Management Plan* is developed and is integrated into the *Oklahoma Catastrophic Health Emergency Plan* and the State Emergency Operations Plan.

2. The OSDH Terrorism Preparedness and Response Service will collaborate with partners to establish a committee charged to develop an OSDH continuity of operations plan and ensure continuity with other response plans (i.e., *Oklahoma Catastrophic Emergency Health Plan*, Oklahoma State Emergency Operations Plan, Strategic National Stockpile Plan, and local emergency operations plans).

3. The OSDH Terrorism Preparedness and Response Service will ensure collaboration with key state, federal, local and tribal partners to identify crucial gaps in the response infrastructure and will seek legislative actions necessary to correct the obstacles that could hinder an effective response. Key partners include, but are not limited to:

    a. Local County Health Departments,
    b. Medical Emergency Response Centers,
    c. Metropolitan Medical Response Systems,
    d. Oklahoma Attorney General's Office,
    e. Oklahoma Department of Agriculture, Food and Forestry,
    f. Oklahoma Department of Mental Health and Substance Abuse Services,
    g. Oklahoma Military Department,

h. Oklahoma Department of Public Safety,
i. Oklahoma Department of Transportation,
j. Oklahoma Medical Reserve Corps,
k. Oklahoma Office of Homeland Security,
l. Oklahoma State Bureau of Investigation,
m. Oklahoma City Area Inter-Tribal Health Board,
n. Hospitals, and
o. Emergency Medical Service Providers.

4. The OSDH Terrorism Preparedness and Response Service will coordinate planning activities with state, local, tribal and federal agencies and non-governmental organizations.

5. The OSDH Terrorism Preparedness and Response Service will collaborate with law enforcement to ensure maintenance of a key contact list, which includes contact information for essential personnel.

6. The State Public Health Veterinarian will collaborate with agriculture partners to ensure public health concerns are integrated into animal health plans including surveillance and disease outbreak response.

7. The OSDH Terrorism and Preparedness and Response Service will investigate the necessity of agreements with neighboring jurisdictions (i.e., cities and counties) and will develop and distribute templates, if necessary.

8. The OSDH Terrorism Preparedness and Response Service will collaborate with OSDH Office of General Counsel to ensure that legal authorities that may need to be exercised in a pandemic response (case identification, isolation, quarantine, movement restriction, healthcare services, emergency care and mutual aid) are clear to all stakeholders.

9. The OSDH will maintain standard operations (including but not limited to monitoring hospital capacity data, testing communications systems to ensure interoperability and testing call-up mechanisms for public health responders) of the OSDH Situation Room (emergency operations center).

10. The OSDH Terrorism Preparedness and Response Service will continue to train OSDH staff and key partners in the Incident Command System according to the National Incident Management System.

11. The OSDH Terrorism Preparedness and Response Service will maintain updated Incident Command System charts that pre-identify command and general staff positions (see Appendix A).

12. The OSDH will conduct and participate in drills and tabletop exercises to test jurisdiction-specific pandemic influenza plans. These exercises will include OSDH

state agency, region-specific and discipline-specific personnel to ensure integration and interoperability during actual incident operations.

13. The OSDH Terrorism Preparedness and Response Service will collaborate with the OSDH Behavioral Health Services Division and the Oklahoma Department of Mental Health and Substance Abuse Services to ensure that mass medication exercises include and test the mental health services component.

14. The OSDH Terrorism Preparedness and Response Service will review Oklahoma's Strategic National Stockpile plan to ensure that procedures for requesting and distributing medical assets are clearly delineated. Changes will be made if necessary. The OSDH Terrorism Preparedness and Response Service will reinforce the procedures in the monthly newsletter that is distributed to local county health department administrators.

15. The OSDH will convene a committee to review and modify the *Oklahoma Pandemic Influenza Management Plan* on an annual basis and will ensure that the plan is flexible, scalable, and can address various levels and magnitudes of outbreak severity.

16. The OSDH will ensure its Situation Room maintains readiness (i.e., pre-identified command and general staff, call down systems, communications interoperability) to respond to the potential threat of a novel virus.

17. The OSDH will work with partners (i.e., public safety, public works, healthcare systems, private organizations and stakeholder groups) to pre-determine and prioritize essential employees to receive antiviral medication and/or vaccine in a pandemic event.

18. The OSDH will collaborate with law enforcement to determine training needs and ensure that first responder medication plans are clearly delineated.

B. PANDEMIC ALERT PERIOD

1. The OSDH will activate its Situation Room. The Commissioner of Health will formally declare and designate in writing a Public Health Incident Commander. The Public Health Incident Commander will ensure the Situation Room is fully and functionally activated.

2. The OSDH command and general staff will meet at least weekly to develop and review contingency plans for pandemic influenza. The Public Health Incident Commander will appoint staff according to the scope and severity of the event. The staff will determine the operational period, which will drive the time and frequency of meetings.

3. The OSDH will notify the Oklahoma Department of Emergency Management, through the OSDH Liaison Officer, of the potential pandemic threat, and organize regularly scheduled planning meetings to address the threat.

4. The Oklahoma Department of Emergency Management will notify all necessary state government officials of the potential need for additional monetary resources to adequately respond to the pandemic influenza crisis.

5. The OSDH will request and review priority lists of identified individuals from key agencies and organizations to receive antiviral medications and vaccine.

6. The OSDH will review and consider addressing issues surrounding early school closures, social distancing and travel restrictions to reduce the spread of disease in a pandemic influenza event.

C. PANDEMIC PERIOD

1. The OSDH will assign an Emergency Support Function #8 Liaison Officer to the State Emergency Operation Center who will coordinate resources and requests in concert with the OSDH Situation Room.

2. The OSDH Trauma Division and the Hospital and Public Health Preparedness Division will gather data and other pertinent information from hospital capacity reports every 12 hours and report status to key organizations or persons within local, regional and state governments.

3. The OSDH will coordinate activities such as plan development, health system and emergency response plan augmentation, and issuance of recommendations with other state, local, tribal and federal agencies.

4. The OSDH will activate and implement the Oklahoma Strategic National Stockpile Plan and Mass Immunization Prophylaxis Strategy plans for distribution of antiviral drugs and vaccine when available.

5. The OSDH will collaborate with partners to activate emergency operations centers (Metropolitan Medical Response System, Regional Medical Response Systems, local county health departments, and hospitals) as appropriate. The Oklahoma Department of Emergency Management will coordinate activation of local emergency management agencies, as necessary.

6. The OSDH will advise the Office of the Chief Medical Examiner and the Oklahoma Funeral Directors Association to prepare for increases in the number of deceased by activating Mass Fatality Plans as directed by Oklahoma's Catastrophic Health Emergency Plan and the State Emergency Operations Plan, Emergency Support Function #8.

7. The OSDH Terrorism Preparedness and Response Service will collaborate with the Oklahoma Department of Mental Health and Substance Abuse Services and the OSDH Behavioral Health Services Division to develop and issue guidance to ensure that psychosocial support is available for those affected and those responding.

8. The OSDH Terrorism Preparedness and Response Service will assess, evaluate and modify the *Oklahoma Pandemic Influenza Management Plan* as indicated by epidemiologic findings and other projections of future influenza transmission.

D. POST PANDEMIC PERIOD

1. The Oklahoma Department of Emergency Management will assess the ability of state, tribal and local partners to resume normal service and recommend appropriate actions.

2. The OSDH Situation Room will cease emergency operations upon written declaration by the Public Health Incident Commander.

3. The OSDH will prepare After Action Reports and analyze all activated elements of the *Oklahoma Pandemic Influenza Management Plan* within 60 days.

4. The *Oklahoma Pandemic Influenza Management Plan* will be reviewed and updated by the Incident Command System staff to address gaps in the public health infrastructure pursuant to recommendations of the After Action Reports.

5. The OSDH will continue to coordinate planning activities with state, local, tribal and federal agencies and non-governmental organizations.

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Pandemic Influenza Management Plan
Essential Element #2
Surveillance and Laboratory Diagnostics

This element describes surveillance and laboratory diagnostic infrastructure and actions that are required throughout the delineated phases of an influenza pandemic.

The Oklahoma State Department of Health (OSDH) Communicable Disease Division in cooperation with the Public Health Laboratory assumes primary responsibility for conducting influenza surveillance. The Oklahoma influenza surveillance system routinely receives information and specimens from sentinel physicians and laboratories. The Public Health Laboratory, a member of the Laboratory Response Network, provides viral diagnostic testing and augments with new capabilities as available. The Communicable Disease Division epidemiologists provide weekly analysis and reports of surveillance data, and investigate case clusters of respiratory disease. The Communicable Disease Division and the Public Health Laboratory will continue ongoing efforts to integrate reporting efforts between animal and public health surveillance systems by advancing efforts to receive avian influenza test result data from the Oklahoma Animal Disease Diagnostic Laboratory.

A. INTERPANDEMIC PERIOD

1. The OSDH Public Health Laboratory will continue to conduct virologic surveillance to include the following capabilities:

    a. Maintain membership in the Laboratory Response Network to ensure availability and competence to perform influenza reference laboratory testing;

    b. Receive specimens from sentinel physicians, sentinel laboratories, the Office of the Chief Medical Examiner and various sources during a respiratory disease outbreak investigation for virus identification, typing and sub-typing;

    c. Maintain capabilities to perform Reverse Transcriptase Polymerase Chain Reaction (RT-PCR) testing on submitted clinical specimens before they are set up for viral culture, and maintain appropriate reagents for year-round testing. The Public Health Laboratory as a member of the Laboratory Response Network has reagents to identify H5N1 Asian lineage 1 and 2 avian influenza viruses by RT-PCR testing;

    d. Ensure surge capacity and maintain 5 cell lines and 25 cultures of each cell line weekly for viral isolation and identification. The OSDH Public Health Laboratory will maintain the capability to test 200 specimens by RT-PCR. If more specimens are received, the OSDH Public Health Laboratory can have more culture or testing supplies available the following day;

e. Provide supplies for specimen collection, transport, shipping and testing (free of charge) based on clinical and epidemiologic needs throughout the state;

f. Purchase additional equipment and testing supplies to support year-round influenza surveillance as described further in this plan;

g. Ensure compliance with annual proficiency testing according to operational procedures;

h. Ensure adherence to biosafety containment and biomonitoring protocols. Any illness that may occur in laboratory personnel will be promptly reported and investigated for the potential of laboratory-acquired transmission; and

i. Participate in the World Health Organization and U.S. National Respiratory and Enteric Virus Surveillance System by submitting viral isolates to the Centers for Disease Control and Prevention (CDC) for comparative antigenic and genetic analysis.

2. The OSDH Communicable Disease Division will continue to include a network of geographically distributed sentinel laboratories, which voluntarily report the proportions and types of positive influenza tests performed at their laboratory each week, to the Oklahoma influenza surveillance system.

3. The OSDH Communicable Disease Division will conduct disease-based surveillance to include the following:

a. Receive reports from sentinel physicians regarding the proportion of patients presenting with influenza-like illness by age group each week. The ratio of sentinel physicians to total Oklahoma population (currently 1:192,000) will continue to surpass the CDC recommended ratio of 1:250,000 total population. Influenza-like illness data will be electronically submitted to the data repository at the CDC, as part of the U.S. Sentinel Physicians Surveillance Network. Sentinel physicians will also obtain and submit a representative sample of respiratory specimens to the Public Health Laboratory for virologic testing;

b. Increase the number of sentinel physicians in the Oklahoma Influenza Surveillance Network to include members of the Oklahoma Physicians Research Network (OKPRN), who are healthcare providers geographically distributed across the state. The OSDH Communicable Disease Division will provide viral transport media and rapid influenza tests to these sentinel physicians to facilitate and expedite submission of respiratory specimens to the OSDH Public Health Laboratory for RT-PCR, culture and identification;

c. Monitor respiratory disease outbreaks in collaboration with local county health departments, local healthcare providers, tribal facilities and the OSDH Public Health Laboratory. Personnel in each local county health department are trained to detect and investigate respiratory illness outbreaks in a variety of settings;

d. Compile and analyze virologic and disease-based surveillance data weekly. The data are utilized to quantitatively and qualitatively assess the influenza activity in Oklahoma. The influenza activity level is provided weekly to the CDC electronically;

e. Collaborate with public health partners to collect and evaluate data from volume-based systems including Tulsa Area Syndromic Surveillance System (TASSS), Oklahoma County Health Alert System (OCHAS), First Watch, EMSystem® and Medusa to monitor the seasonal impact of influenza;

f. Analyze and prepare weekly reports of influenza surveillance data and distribute the reports to laboratories, local county health departments, tribal facilities, healthcare providers, hospital infection control practitioners (ICP) and the general public. These weekly data reports are accessible on the Oklahoma Influenza Surveillance website. Notifications of especially high influenza activity or unusual situations are reported to physicians, ICPs, tribal facilities and local county health department personnel through the Oklahoma health alert network titled "The Reportable Health Information & Notification in Oklahoma" (RHINO); and

g. Share information with epidemiologists and laboratorians in other states regarding the detection and circulation of influenza viruses in Oklahoma using the CDC Epi-X Exchange and other communications methods.

4. The State Public Health Veterinarian will perform the following activities:

a. Monitor occurrences of outbreaks of highly pathogenic avian influenza in the state and region. The progression of these outbreaks and concurrent monitoring for potential zoonotic transmission to poultry workers will be coordinated with the State Veterinarian at the Oklahoma Department of Agriculture, Food, and Forestry and with the Regional Veterinarian in Charge at the United States Department of Agriculture/Animal Plant Health Inspection Service; and

b. Report any mortality clusters in wild birds, particularly waterfowl, to the Oklahoma Department of Wildlife Conservation for potential investigation. The State Public Health Veterinarian will work with the federal and state agencies that will be implementing wild bird testing for highly pathogenic avian influenza viruses during the fall of 2006 to develop an integrated communication and response plan.

B. PANDEMIC ALERT PERIOD

1. The OSDH Communicable Disease Division and Public Health Laboratory will conduct the following activities as the threat for sustained human-to-human transmission of a novel influenza virus is raised:

    a. Continue to conduct year-round influenza surveillance activities in Oklahoma;

    b. Increase communications with the CDC and monitor bulletins regarding virologic, epidemiologic and clinical findings associated with the novel strain;

    c. Notify healthcare providers in the region(s) where the threat of novel influenza virus incursion is heightened and provide situation updates as needed through the RHINO system;

    d. Enhance disease-based surveillance by requesting that healthcare providers and laboratories submit respiratory specimens to the OSDH Public Health Laboratory from suspect patients. Suspect patients include those presenting with influenza-like illness and had recent travel to a country or region where the novel strain of influenza has been identified or presented with unusually severe symptoms of influenza-like illness regardless of their travel history;

    e. Enhance laboratory surveillance by obtaining the appropriate reagents from the CDC to detect and identify the novel strain. If an atypical influenza virus is isolated or typed at the Public Health Laboratory, the results will be rapidly reported to key OSDH personnel via phone (through updated call trees) and posting on the Laboratory Information Tracking System. The State Epidemiologist and State Public Health Laboratory Director will coordinate laboratory confirmation and any necessary epidemiologic investigations with the CDC;

    f. Conduct routine influenza-like illness surveillance among laboratory personnel;

    g. Ensure diagnostic testing proficiency and adherence to biosafety containment and biomonitoring protocols as part of the standard Public Health Laboratory procedures;

    h. Develop protocols to inform frontline clinicians and referral laboratories on safe specimen collection and testing. Development of a febrile respiratory illness in any laboratory personnel will be reported to the Communicable Disease Division for epidemiologic investigation;

i. Collaborate with the Tulsa City County Health Department (TCCHD) and the Oklahoma City County Health Department (OCCHD) to develop new methods to track influenza-related hospitalizations through existing syndromic surveillance system networks;

j. Review existing outbreak protocols and modify as appropriate to include the applicability and use of a Public Health Information Network-compliant outbreak management system; and

k. Review updated guidelines from the CDC on applicability of quarantine and isolation methods used historically in respiratory disease outbreaks (such as SARS) to restrict spread of pandemic influenza within the state and collaborate with the OSDH Office of General Counsel about developing specific plans that restrict movement.

C. PANDEMIC PERIOD

1. The OSDH will assess current needs and modify routine activities to address response priorities. It is expected that some routine activities will need to be suspended to accommodate priority needs for information sharing due to the diminished resources previously available at hospitals and laboratories for reporting. It is also anticipated that the OSDH may need to recruit epidemiologic and clerical support from other programmatic areas for the pandemic response.

2. The OSDH Communicable Disease Division will investigate the initial case(s) of disease due to a novel influenza virus in collaboration with local county health department personnel if and when the following are met:

    a. Notification of a suspect case of novel influenza illness meeting the appropriate travel, clinical and/or epidemiology criteria; or

    b. Identification of a novel influenza virus by the OSDH Public Health Laboratory.

3. The OSDH Public Health Laboratory will provide swabs and viral transport media for specimen collection and facilitate courier transport of specimens.

4. The OSDH Public Health Laboratory will perform screening PCR testing and the specimen will also be set up for viral culture and isolation. If the screening PCR test is positive for a novel influenza hemagglutinin type, the OSDH Communicable Disease Division will notify the CDC at the CDC Emergency Response Hotline by calling (770) 448-7100 and will complete a CDC case screening and reporting form. The OSDH Communicable Disease Division will fax the completed form to the CDC at (888) 232-1322.

5. The OSDH Communicable Disease Division will work in conjunction with other public health partners to assist in identifying new cases, to test contacts if necessary, and to make recommendations for treatment or prophylaxis. The Communicable Disease Division epidemiologists will conduct contact tracing (when numbers of cases are relatively small), and under further guidance from the CDC may recommend 10-day home confinement and daily self-monitoring for fever for all close contacts to the suspect case. Public health nurses will assist with monitoring contacts by phone to determine if there is a change in their health status. Providing the suspect case does not require hospitalization, orders for home isolation for 10 days after symptom onset will be implemented by local county health department personnel under the direction of the OSDH Office of the State Epidemiologist and Commissioner of Health.

6. The OSDH Communicable Disease Division will work with local county health department personnel and the CDC to make appropriate recommendations for antiviral treatment or prophylaxis to prevent infection in public health and healthcare workers, reduce severity of illness and attempt to contain transmission from the first identified case(s).

7. The State Public Health Veterinarian will rapidly notify the Oklahoma Department of Agriculture, Food and Forestry and/or the Oklahoma Department of Wildlife Conservation if the initial case(s) involved contact with poultry or flocks of other avian species, regarding the location of birds suspected to be the source of exposure. The State Public Health Veterinarian, Communicable Disease Division epidemiologists, and local county health department Communicable Disease Nurses will assist with protecting workers involved with poultry depopulation by advising on use of antiviral prophylaxis and appropriate personal protective equipment, assisting in training employers to fit test respirators, and educating workers on signs and symptoms of influenza illness.

8. The OSDH Communicable Disease Division will expand surveillance of hospitalized and fatal cases, and assess other sequelae or conditions through increased communications with hospital infection control practitioners and the Office of the Chief Medical Examiner.

9. The Commissioner of Health, under existing state laws, may make influenza a reportable condition in Oklahoma by emergency declaration. This type of declaration could be used to require healthcare providers to report influenza-associated deaths and hospitalizations in the event of a serious pandemic thereby allowing the OSDH Communicable Disease Division to conduct active surveillance.

10. The OSDH Communicable Disease Division will work closely with the Office of the Chief Medical Examiner to augment the existing infectious disease mortality surveillance system to monitor influenza-related deaths. Contingent on caseload and resource prioritization, the Office of the Chief Medical Examiner will continue to

collect specimens for viral culture, isolation and identification at the OSDH Public Health Laboratory.

11. The OSDH Communicable Disease Division will obtain death certificate information on persons who died of suspected influenza-related causes.

12. The OSDH will explore the use of syndromic surveillance systems such as the Tulsa Area Syndromic Surveillance System (TASSS) and Oklahoma County Health Alert System (OCHAS) to collect timely data on hospitalizations and serious complications attributable to the pandemic and help guide the allocation of community resources.

13. The OSDH Public Health Laboratory will prioritize specimens for testing according to the epidemiologic and medical information provided because the demand for viral culture, isolation and identification will greatly increase and likely overwhelm Public Health Laboratory laboratorians during the pandemic.

14. The OSDH Communicable Disease Division will facilitate rapid reporting of surveillance data relevant for use in determining prioritization for vaccine and/or antiviral medication distribution to include at least the following:

    a. Intensify surveillance to characterize age groups most affected by the pandemic strain;

    b. Collect drug resistance data to characterize efficacy of various antiviral medications;

    c. Devise sentinel surveillance program to estimate vaccine efficacy/failure rates;

    d. Focus laboratory surveillance on detection of possible antigenic changes in the original pandemic strain;

    e. Monitor surveillance reports from the World Health Organization and the CDC on national as well as international morbidity and mortality;

    f. Disseminate frequent updates through the RHINO system to enhance communication and notification of collaborating partners about surveillance, diagnostics and infection control procedures; and

    g. Facilitate collaboration between the OSDH and the CDC regarding the need for any special studies that could be conducted without further compromise of existing limited resources.

D. POST PANDEMIC PERIOD

1. The OSDH Communicable Disease Division will evaluate the strengths and weaknesses of disease-based and virologic surveillance efforts implemented during each phase of the pandemic.

2. The OSDH Communicable Disease Division will perform a detailed retrospective characterization of the pandemic in Oklahoma evaluating the overall morbidity and mortality.

3. The OSDH Communicable Disease Division will resume influenza surveillance activities as described in the Interpandemic Period implementing any necessary modifications.

4. The OSDH will prepare After Action Reports and analyze all activated elements of the *Oklahoma Pandemic Influenza Management Plan* within 60 days.

5. The *Oklahoma Pandemic Influenza Management Plan* will be reviewed and updated by the Incident Command System staff to address gaps in the public health infrastructure pursuant to recommendations of the After Action Reports.

Pandemic Influenza Management Plan
Essential Element #3
Delivery of Vaccine

This element details the mechanisms for delivery of vaccine, which is a critical component of the required emergency response infrastructure throughout the delineated phases of an influenza pandemic. The vaccine to be used for a pandemic influenza response will be available only after several months from the onset of the pandemic. Once vaccine is available, deliveries of the vaccine will be made directly to county health departments or to Mass Immunization Prophylaxis Strategy sites, as appropriate, to support local jurisdictions.

A. INTERPANDEMIC PERIOD

1. The OSDH, in collaboration with local county health departments and private providers, will maximize influenza vaccination rates in all high-risk populations including those for whom the rate of vaccination is low, i.e., minorities, healthcare workers and persons with chronic disease.

2. The OSDH, in collaboration with local county health departments and private providers, will maximize pneumococcal vaccination among the high-risk populations.

3. The OSDH Terrorism Preparedness and Response Service will assure that the Strategic National Stockpile Plan and Mass Immunization Prophylaxis Strategy guidelines and plans will be reviewed and revised to ensure consistency with existing response measures. Local county health departments are responsible for maintaining Mass Immunization Prophylaxis Strategy plans that integrate with local emergency operations plans (where applicable).

4. The OSDH will continue to improve Strategic National Stockpile plans related to vaccine distribution and ensure that exercises test this component.

5. The OSDH Immunization Service will assure that vaccine storage and handling, equipment and supplies are available for mass vaccination.

6. The OSDH Terrorism Preparedness and Response Service will investigate the need for additional agreements, however mass medication plans exist for the entire state.

7. The OSDH Office of Communications will modify as needed and share pre-developed communication materials contained in the pandemic influenza shelf kit.

8. The OSDH Immunization Service will assure that the Oklahoma State Immunization Information System is configured to collect relevant demographic, vaccine and clinical data for inventory control and tracking. The system should also be able to collect information on possible adverse events.

9. The OSDH will continue to collaborate with community partners in exercising Mass Immunization and Prophylaxis Strategy (MIPS) sites.

B. PANDEMIC ALERT PERIOD

1. The OSDH and local communities will identify essential personnel who serve the public in occupations that are critical to maintaining community services and infrastructure, but are not traditionally considered a target population for influenza immunization (see Appendix B, Table 1).

2. The OSDH will assemble a Pandemic Influenza Team (Chief of Operations for Disease and Prevention Services, State Epidemiologist, OSDH Pharmacist, Terrorism Preparedness and Response Service Chief, Terrorism Preparedness and Response Service Strategic National Stockpile Coordinator, Terrorism Preparedness and Response Service Hospital and Public Health Preparedness Division Director, Oklahoma Hospital Association Director, Oklahoma Pharmacy Association Director, an Oklahoma physician specializing in the practice of infectious diseases, a medical ethicist, a Metropolitan Medical Response Service representative, an Oklahoma City Intertribal Health Board member, an Indian Health Service representative, and the OSDH Chief of Nursing Services). The Pandemic Influenza Team will submit their findings and written recommendations to the State Commissioner of Health for consideration and final approval.

3. The OSDH, in collaboration with CDC, will identify the timing of state vaccine supply potential and communicate this information to the Pandemic Influenza Team.

4. The Pandemic Influenza Team will modify vaccination target population (see Appendix B, Table 1) according to national guidance and state surveillance information.

5. The OSDH Office of Communications will provide updated information to the general public regarding the State's anticipated vaccine supply.

C. PANDEMIC PERIOD

1. The OSDH will institute an appropriate Incident Command System to review existing recommendations for vaccine use and distribution (see Appendix B, Table 1). As the pandemic progresses, the Incident Command System will be expanded accordingly.

2. The OSDH will conduct the following actions when vaccine becomes available:

    a. Activate Mass Immunization Prophylaxis Strategy (MIPS) plans. Notify clinics of expected vaccine distribution timetable;

b. Review, update, and implement (through local county health departments) plans according to vaccine availability and timetable;

c. Provide updated copies of Vaccine Information Statements and Influenza Vaccine Administration form;

d. Assure that vaccine storage sites have 24-hour security as described in the Local Emergency Operations Plan as coordinated through the Department of Emergency Management as needed. The vaccine will be stored in locked rooms in refrigerators with temperature alarms that activate local and remote alarms;

e. Assure that vaccine transport includes available security as described in local MIPS plans;

f. Use existing vaccine transport services if security is not a concern; and

g. Assure communication of the availability of vaccine to target groups and the general population (see Element #9: Risk Communication).

3. The OSDH Immunization Service will perform the following activities:

a. Conduct recalls of individuals who need second immunizations, as may be recommended by the Advisory Committee on Immunization Practices or vaccine manufacturer;

b. Ensure availability of staff or trained volunteers at local county health departments to enter influenza data into the Oklahoma State Immunization Information System (OSIIS) within 24 hours to facilitate vaccine inventory control;

c. Ensure sites that are administering influenza vaccine report a daily hand count inventory of vaccine and supplies;

d. Provide follow-up and investigate pandemic influenza vaccine adverse events; and

e. Provide local partners and Mass Immunization Prophylaxis Strategy sites with guidance on meeting Investigational New Drug and Emergency Use Authorization requirements (as applicable).

D. POST PANDEMIC PERIOD

1. The OSDH, in collaboration with local county health departments, will assess coverage of different populations to determine who has received the vaccine and which groups still need to be targeted for receipt of vaccinations.

2. The OSDH will prepare After Action Reports and analyze all activated elements of the *Oklahoma Pandemic Influenza Management Plan* within 60 days.

3. The *Oklahoma Pandemic Influenza Management Plan* will be reviewed and updated by the Incident Command System staff to address gaps in the public health infrastructure for vaccine delivery pursuant to recommendations of the After Action Reports.

Pandemic Influenza Management Plan
Essential Element #4
Delivery of Antiviral Medications

This element details the mechanisms for delivery of antiviral drugs which is one of the most critical components of the required emergency response infrastructure throughout the delineated phases of an influenza pandemic.

Four antiviral agents are FDA-approved for prophylaxis or treatment of influenza A. Amantadine and rimantadine are related medications that interfere with the replication of influenza viruses. Oseltamivir (Tamiflu®) and zanamivir (Relenza®) are neuraminidase inhibitors that interfere with the release of viral particles from infected cells. These medications have been shown to have an efficacy rate of 70-90% in preventing illnesses caused by naturally occurring type A influenza virus strains. To be effective for prophylaxis, the drug must be given throughout the potential period of exposure, which may be several weeks. For treatment purposes, the selected antiviral medication must be initiated within 48 hours of onset of symptoms. Treatment with an antiviral may shorten the course of illness, decrease communicability, and reduce the risk of influenza-related complications such as secondary bacterial pneumonia or sepsis. It is unknown whether these available antiviral drugs would achieve the same level of efficacy for prophylaxis or treatment of novel influenza strains. For example, amantadine and rimantadine have not been effective against the H5N1 avian influenza strain when persons are infected by direct transmission from infected poultry in Asia. A recent report detailing treatment failure of two of eight Vietnamese patients who received oseltamivir early in the course of their illness also raises the spectre of concern about rapidly evolving neuraminidase-resistant viral strains[1].

One of the listed federal and state responsibilities in the U.S. Department of Health and Human Services (HHS) Pandemic Influenza Plan released November 2005 is the acquisition of antiviral medications to treat 25% of the U.S. population. HHS is in the process of acquiring 20 million antiviral treatment courses for placement in the Strategic National Stockpile. Most of this will be oseltamivir (~80%); a smaller fraction (~ 20%) will be zanamivir. HHS intends to hold these antiviral medications in the Strategic National Stockpile for release to the States and other eligible entities in accord with their respective populations. Oklahoma's current allotment in the Strategic National Stockpile is 237,519 5-day treatment courses.

In the federal plan, state and local health departments are also directed to procure and maintain state, tribal and local stockpiles of antiviral drugs. Through the HHS Public Health Preparedness Cooperative Agreement, States have the opportunity to purchase Tamiflu® and Relenza® at federally negotiated contract prices with a 25% federal subsidy. State monies must be used to fund 75% of the total cost of the shares. Oklahoma's FY2006 allocated share of subsidized antiviral medications is 368,155 courses. According to the requirements within the Cooperative Agreement, the OSDH will report the number of subsidized treatment courses that Oklahoma

[1] De Jong MD, Thanh TT, Khanh TH, et al. Oseltamivir resistance during treatment of influenza A (H5N1) infection. N Engl J Med 2005;353:2667-72.

desires to purchase by July 1, 2006. However, at the present time, antiviral drug stockpiling is controversial and limited by manufacturers' supplies and legislated appropriations decisions.

A. INTERPANDEMIC PERIOD

1. The OSDH will seek funding for a state stockpile of antivirals (restricted or unrestricted use) and will convene a Pandemic Influenza Team to determine type and quantity of antivirals to stockpile, strategic locations for medication caches, and antivirals distribution and use patterns within the state. In this assessment and plan development process, the plan will consider the following:

    a. Anticipate that the expected supply of these medications will be well below the demand during a severe influenza pandemic;

    b. Anticipate that the availability of antiviral drugs through usual channels will not be possible during a pandemic;

    c. Anticipate that the adverse effects from the antivirals may be relatively common ranging from mild gastrointestinal upset to significant neurological symptoms;

    d. Anticipate that the advantages of using the antiviral medications for prophylaxis will likely be outweighed by the needs for treatment use;

    e. Anticipate that the delivery mechanisms may need to be redesigned to effectively and safely distribute medications to targeted priority groups;

    f. Developing more detailed priority groups may be advantageous because the interim HHS recommendations on priority groups for antiviral treatment and prophylaxis (see Appendix B, Table 2) are so broad. Further, definitions for certain priority groups such as public safety workers, essential service providers, and key decision makers will need to be more clearly defined prior to a pandemic;

    g. Protocols for receipt of antiviral drugs from the Strategic National Stockpile that have Investigational New Drug (IND) or Emergency Use Authorization (EUA) provisions will need to be developed;

    h. Review and possible revision of Mass Immunization Prophylaxis Strategy plans (as a subset of Oklahoma's Strategic National Stockpile plan) will be required to ensure consistency with countermeasure administrative systems;

    i. Maintenance of a state stockpile of antivirals can include an inventory rotation plan with a large pharmaceutical wholesaler or distributor to reduce overall costs; and

j. Having a comprehensive communication plan to explain the rationale for distribution to certain groups will be vital to achieve adoption and compliance with the antiviral medications distribution plan.

2. The OSDH will convene a Pandemic Influenza Team that will be responsible for developing a distribution plan to ensure the antiviral drugs will be received by appropriate healthcare facilities and institutions to achieve prioritized usage. The Team's summary recommendations must detail types of antiviral medications selected to stockpile, estimated number of doses by treatment or prophylaxis course requested for the stockpile, and a priority group algorithm for distribution. Locations and responsible parties will need to be pre-identified for storage, maintenance and distribution of antiviral medications.

3. The Office of the State Epidemiologist shall conduct the following pre-event planning activities:

   a. Determine the feasibility and logistics of creating antiviral stockpiles for front line healthcare workers at key hospitals statewide. The OSDH Terrorism Preparedness and Response Service will collaborate with partners and seek funding for caches;

   b. Estimate the amount of antiviral drugs needed to maintain essential services in Oklahoma;

   c. Develop a surveillance plan for monitoring drug resistance among circulating influenza viral strains;

   d. Develop educational materials for healthcare workers regarding the use of antiviral medications for treatment and prophylaxis of influenza (see Appendix C);

   e. Produce and revise drug information sheets to meet anticipated needs, including translation into other languages; and

   f. Monitor future federal decisions and guidance regarding influenza antiviral drugs to modify state plan as appropriate.

B. PANDEMIC ALERT PERIOD

1. The OSDH will reconvene the Pandemic Influenza Team to assess options for additional purchase of antiviral medications to augment the state stockpile and modify the distribution algorithm based on available epidemiologic data. Current federal, state, and local supplies of antiviral medications will also be assessed and an

antiviral medication inventory system will be created to track supplies and distribution from:

a. Strategic National Stockpile allocation,
b. Oklahoma State Department of Health stockpile,
c. Hospital stockpiles,
d. Local pharmacies or pharmaceutical distributors, and
e. Metropolitan Medical Response System stockpiles.

2. The Pandemic Influenza Team will forward recommendations to the State Health Officer regarding the distribution of antiviral drugs to contain initial cases of identified disease and to provide prophylaxis for individuals in essential services. Upon approval by the State Health Officer, the following priority groups will be prophylaxed:

   a. Public health workers who will investigate suspected cases of pandemic influenza;

   b. Healthcare workers who provide direct patient care; and

   c. Key community infrastructure (fire, police, EMSA, public utilities, government leaders, etc.) in the affected community(ies).

3. The OSDH will finalize plans for drug distribution and administration and will communicate the plan to key personnel at local county health departments, hospitals, Metropolitan Medical Response System, Oklahoma Department of Emergency Management, and other strategic partners.

4. The OSDH will develop guidelines that encourage drug-use practices that help minimize the development of drug resistance. These guidelines will be disseminated to healthcare providers through the RHINO system and other communications mechanisms.

5. The OSDH Communicable Disease Division will create a surveillance system to track antiviral drug-related adverse events.

C. PANDEMIC PERIOD

1. The OSDH will activate a full Incident Command Structure that will implement the antiviral drug distribution program from the OSDH Situation Room. Any available assets from the Strategic National Stockpile will be requested according to the State's Strategic National Stockpile Plan.

2. The Oklahoma State Department of Health will coordinate acquisition and delivery activities with adjoining states and public health jurisdictions such as:

a. Oklahoma City-County Health Department,
b. Tulsa City-County Health Department,
c. Texas,
d. Kansas,
e. Arkansas,
f. Louisiana, and
g. Missouri.

3. The OSDH will review and modify the priority group recommendations for antiviral treatment and prophylaxis based on the most updated guidelines from the CDC, findings from state surveillance activities, and available inventory.

4. The OSDH will disseminate public health information to educate the public, medical community, and other stakeholders about the need to prioritize the use of antiviral supplies for treatment and prophylaxis, the rationale for the identified priority groups, and the need for appropriate use.

5. The OSDH will make any necessary modifications to the surveillance system to monitor the efficacy of antiviral drugs for treatment and prophylaxis and for the development of antiviral drug resistance.

D. POSTPANDEMIC PERIOD

1. The OSDH Pharmacist will inventory any remaining antivirals and reconcile records as part of the OSDH demobilization efforts.

2. The Office of the State Epidemiologist will determine the urgency for restocking the depleted antiviral medication stockpile contingent on available resources.

3. The OSDH will prepare After Action Reports and analyze all activated elements of the *Oklahoma Pandemic Influenza Management Plan* within 60 days. As part of this analysis, the OSDH will assess strengths and weaknesses of the implemented antiviral drug distribution schema. Antiviral medication effectiveness and adverse event data will be analyzed and summarized as part of the final After Action Report.

4. The *Oklahoma Pandemic Influenza Management Plan* will be reviewed and updated by the Incident Command System staff and the Office of the State Epidemiologist to address gaps in the public health infrastructure for antiviral medication delivery pursuant to recommendations of the After Action Reports.

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Pandemic Influenza Management Plan
Essential Element #5
Health Systems and Emergency Response

This element details the mechanisms ensuring coordination between health systems as a critical capability in the emergency response infrastructure that is required throughout the delineated phases of an influenza pandemic.

Emergency operation plans are required by all state, tribal and local governments to address "all hazards". However, if an influenza pandemic occurs, it is likely to pose unique challenges that will overwhelm the healthcare system. Each county should incorporate a pandemic influenza management plan that is congruent to *Oklahoma's Pandemic Influenza Management Plan* into its local emergency operations plans.

Key personnel most likely to be exposed to the novel influenza virus while performing their duties include public health workers, healthcare personnel, police, firefighters, emergency medical technicians, public works employees and other first responders. The effect of the pandemic influenza on these personnel will influence the infrastructure for critical community services through widespread absenteeism in the workforce.

A. INTERPANDEMIC PERIOD

1. The OSDH will work with the Oklahoma Medical Reserve Corps to maintain a registry of volunteer healthcare personnel which include the following:

    a. Physicians,
    b. Physician Assistants,
    c. Advanced Registered Nurse Practitioners,
    d. Pharmacists,
    e. Registered Nurses,
    f. Licensed Practical Nurses,
    g. Medical Assistants, and
    h. Other medical and non-medical staff that may be trained in the event of an emergency.

2. The OSDH will maintain an inventory or appropriate listing of the following items:

    a. Estimated hospital bed capacity;
    b. Intensive Care Unit/Critical Care Unit capability;
    c. Emergency room status;
    d. Negative pressure isolation rooms;
    e. Estimated amounts of available personal protective equipment; and
    f. Potential alternate care sites.

3. The OSDH will ensure Mass Immunization Prophylaxis Strategy Plans are exercised at the local, regional and state level.

4. The OSDH will develop contingency plans to address any of the following items if deemed inadequate:

    a. Available supplies of antibiotics to treat secondary bacterial pneumonia;
    b. Available supplies of antiviral medications for treatment and prophylaxis according to distribution algorithms outlined in Element #4;
    c. Adequacy of alternate care centers;
    d. Adequacy of social and psychological services for families of victims; and
    e. Communication and support for special populations.

5. The OSDH will develop and conduct appropriate training/exercises for the public health workforce and response partners. Such exercises will test the response to a pandemic influenza event and document strengths, weaknesses, and lessons learned in an After Action Report. To the extent possible, exercises will encompass multiple response levels (local, county, regional and state) and will include participation of all health and medical services response partners at the local, tribal and state level.

6. The OSDH Terrorism Preparedness and Response Service will develop a list of essential community services (i.e., public safety, public works, and healthcare and emergency response systems) that will be needed during a pandemic.

7. The OSDH Hospital and Public Health Preparedness Division will collaborate with healthcare partners to determine the best method by which updated staff rosters can be maintained and shared.

8. The OSDH Hospital and Public Health Preparedness Division will collaborate with the OSDH Immunization Service to develop strategies for identifying and prioritizing groups for distribution of antiviral medications and vaccines (see Appendix B, Tables 1 and 2).

9. The OSDH will conduct testing of the RHINO system to ensure that 80% of healthcare personnel can be reached.

10. The OSDH Terrorism Preparedness and Response Service will meet with hospital partners (Metropolitan Medical Response System, Regional Medical Response System, Regional Medical Planning Groups) and tribal entities to develop operational plans that address essential elements of response plans.

11. The OSDH Hospital and Public Health Preparedness Division will continue to work with healthcare partners and local county health departments to include the special needs populations in planning efforts.

12. The OSDH Hospital and Public Health Preparedness Division and the Trauma Division will continue monitoring the existing web-based reporting system related to hospital bed capacity.

13. The OSDH will consult with healthcare partners (through the existing Joint Advisory Committee) to share needs, expectations, and identify gaps gleaned from local assessment data.

14. The OSDH Terrorism Preparedness and Response Service will consult with the OSDH Office of General Counsel to determine the need for additional Memoranda of Agreement between public health and healthcare systems. If determined to be appropriate, the OSDH will collaborate with the Regional Medical Planning Groups and the Joint Advisory Committee to draft such Memoranda of Agreement.

15. The OSDH Hospital and Public Health Preparedness Division will collaborate with healthcare facilities to ensure that isolation/quarantine plans are developed and exercised.

16. The OSDH Hospital and Public Health Preparedness Division will collaborate with healthcare facilities to ensure that isolation plans address the elements needed for response and that those plans are exercised/tested.

17. The OSDH Hospital and Public Health Preparedness Division will assess contingency plans for obtaining critical equipment such as ventilators and other necessary medical supplies to respond to an influenza pandemic.

18. The OSDH Hospital and Public Health Preparedness Division in collaboration with the Communicable Disease Division will develop messages directed toward healthcare providers regarding infection control and clinical guidelines pertaining to pandemic influenza.

19. The OSDH Hospital and Public Health Preparedness Division in collaboration with the Communicable Disease Division will regularly provide updates to healthcare providers and facilities through the RHINO system.

20. The OSDH Hospital and Public Health Preparedness Division in collaboration with the Communicable Disease Division will develop a specific test message regarding infection control and clinical guidance as an element of regular RHINO testing.

B. PANDEMIC ALERT PERIOD

1. The OSDH will ensure that resources and logistics are in place to coordinate a public health and medical response to a pandemic influenza event.

2. The OSDH Hospital and Public Health Preparedness Division will assess the needs of healthcare systems in areas without a Medical Emergency Response Center.

3. The OSDH Hospital and Public Health Preparedness Division will ensure coordination with Medical Emergency Response Centers to assess the needs of the healthcare systems within their jurisdictions.

4. The OSDH Hospital and Public Health Preparedness Division will collaborate with the OSDH Communicable Disease Division to ensure surveillance activities as outlined in Element #2 Surveillance and Laboratory Diagnostics are coordinated with health systems and emergency response partners.

C. PANDEMIC PERIOD

1. The Commissioner of Health will seek gubernatorial declaration and activate *Oklahoma's Catastrophic Health Emergency Plan*.

2. The OSDH will implement an Incident Command System to coordinate the health and medical response at both the local and state level.

3. The OSDH will integrate key response partners (i.e. Metropolitan Medical Response System, Medical Emergency Response Center, Medical Reserve Corps) into the Incident Command System at both the local and state level where appropriate.

4. The OSDH will encourage "in-home" patient care for individuals who do not require hospitalization. The following steps may be taken to maximize the ability of family members to care for sick at home as outlined in Element #6: Community Disease Control and Prevention:

    a. Distribute home care information packets previously developed;
    b. Maximize use of home health agency personnel;
    c. Activate the OSDH phone bank to answer questions from home-based caregivers;
    d. Examine possible use of OSDH staff and activation of medical volunteer programs as needs increase;
    e. Work with state medical associations to identify community-based physicians available and willing to perform "house calls"; and
    f. Work with pharmacies and grocery stores to promote delivery of medications and food stocks;

5. The OSDH Hospital and Public Health Preparedness Division will continuously monitor the status of emergency facilities, hospital beds, emergency medical services, other treatment facilities and medical equipment including ventilators through established OSDH systems.

6. The OSDH Hospital and Public Health Preparedness Division will monitor the healthcare system to determine the need for alternate care centers. These centers could include but are not limited to the following:

a. Nursing homes,
b. Specialty hospitals,
c. Ambulatory surgery centers,
d. Urgent care facilities,
e. School gymnasiums,
f. Auditoriums, and
g. Community centers.

7. The OSDH will deploy available medical and volunteer personnel, equipment, and supplies to augment local healthcare capacity in affected areas as appropriate.

D. POST PANDEMIC PERIOD

1. The OSDH will conduct demobilization that provides systematic, timely and orderly release of resources, personnel and agencies that have responded to the pandemic events.

2. The OSDH will prepare After Action Reports and analyze all activated elements of the *Oklahoma Pandemic Influenza Management Plan* within 60 days.

3. The *Oklahoma Pandemic Influenza Management Plan* will be reviewed and updated by the Incident Command System staff to address gaps in the public health infrastructure for health systems and emergency response pursuant to recommendations of the After Action Reports.

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Pandemic Influenza Management Plan
Essential Element #6
Community Disease Control and Prevention

This element addresses the containment of pandemic influenza in the community setting using non-medical strategies such as isolation, quarantine, and social distancing. Hospital-based infection control is addressed in Elements #7 and #8 of this plan.

Non-medical containment measures (see Appendix D) will be critical in the early phases of a pandemic and will be imperative actions if supplies of vaccine and/or antiviral drugs are inadequate. These containment measures will reduce the risk of transmission by decreasing the probability of contact between infected and uninfected persons. Measures can be applied at the individual or community level and can be directed toward both the ill and the well. Individual measures include isolation of symptomatic patients, quarantine and monitoring of those having contact with ill persons, hand and respiratory hygiene, and use of personal protective equipment such as masks and gloves. Community measures include social distancing (such as restricting mass gatherings and closing schools) and limiting domestic and international travel. The applicability of specific non-medical containment measures will vary depending on the characteristics of the novel influenza virus, the assessment of risk, available resources, and the public acceptance. Guided by the latest evaluation of surveillance, laboratory, epidemiologic, and clinical data, the OSDH and local county health departments will identify, recommend and implement the appropriate measures at each phase of the pandemic to minimize disease transmission and minimize impact on individuals.

The objectives of the non-medical containment measures are to:

1. Prevent human disease caused by a novel virus that has not established efficient human-to-human transmission;

2. Slow spread of disease while strengthening preparedness measures, including augmenting vaccine and antiviral medication supplies; and,

3. Reduce the potential morbidity, mortality, economic impact and social disruption.

Several important assumptions and principles must be considered when planning for pandemic influenza:

1. The non-medical strategies will be the primary means of mitigating the impact of a pandemic in the absence of adequate or effective supplies of antiviral medications and vaccine.

2. The effectiveness of most non-medical containment strategies depends on characteristics of the evolving virus including its ability to cause disease, principal mode of transmission (droplet or aerosol), disease cycle infectivity in different risk

groups (especially age), proportion of asymptomatic infections, and clinical presentation. Therefore, the utility of classic containment measures may be limited.

3. The selection of non-medical containment strategies will depend upon effectiveness, feasibility (e.g., cost and availability of resources and supplies), ease of implementation and acceptance by the public. For example, quarantine requires specific accommodations, support, and resources to ensure the well-being of all persons in quarantine.

4. The public may desire to adopt measures with limited effectiveness. For example, the benefit of wearing masks in community settings has not been established and may prove ineffective in preventing disease transmission. As long as this practice does not affect mask supplies needed for use in proven settings, is not used in a discriminatory manner, and is not used as a substitute for other recommended measures, it will likely do no harm.

5. The content and methods of providing communications are critical to any emergency plan and response. Each program and entity involved in planning for and responding to pandemic influenza must develop and test methods of communication (including redundancies) and must ensure the delivery of timely, accurate and coordinated messages.

A. INTERPANDEMIC PERIOD

1. The OSDH Communicable Disease Division will regularly assess and disseminate available surveillance, laboratory, epidemiologic and clinical data to describe the current influenza season.

2. The OSDH Communicable Disease Division will regularly update and distribute Oklahoma-specific guidelines for control of influenza.

3. The OSDH will promote respiratory and hand hygiene to the public.

4. The OSDH will develop and distribute model protocols and best practices for isolation and quarantine for both individual and community applications. This information will be incorporated into the local pandemic influenza preparedness plans (which are integrated with local emergency operations plans). Sample protocols may include voluntary agreements, model isolation and quarantine orders, criteria for voluntary versus mandatory compliance, model procedures for medical evaluation, procedures for enforcing orders and alternative arrangements for non-compliant persons.

5. The OSDH will ensure all needed legal authorities exist and will ensure the ability to invoke local and state legal authority on isolation, quarantine and social distancing strategies in a timely fashion.

6. The OSDH Office of the State Epidemiologist, Office of General Counsel and local county health departments will coordinate with partners and stakeholders who may be involved in enforcing mandatory isolation or quarantine orders in future pandemic phases.

7. The State Public Health Veterinarian will coordinate with other appropriate agencies such as the Oklahoma Department of Agriculture, Food and Forestry to develop recommendations for control in animals and animal settings, including safety measures for persons who may have contact with potentially infected animals during culling and other at-risk activities.

8. The OSDH will collaborate with local partners to identify facilities that may be used for isolation and quarantine of those persons who do not require hospitalization but whose residences do not accommodate isolation or quarantine.

9. The OSDH will collaborate with the Oklahoma Department of Emergency Management and local county health departments to estimate current and surge supplies to support isolation, quarantine, and other containment measures.

B. PANDEMIC ALERT PERIOD

1. The OSDH will activate an appropriate Incident Command System to coordinate activities.

2. The OSDH Communicable Disease Division will review existing clinical, laboratory, surveillance and epidemiologic data and recommend non-medical containment strategies and will make technical recommendations on implementation of isolation, quarantine and social distancing measures. In preparation for responding to probable or confirmed cases in Oklahoma, the OSDH will consider the following expected actions:

    a. Issuing directions for obtaining specimens for viral culture;

    b. Issuing isolation orders (whether strict or modified) to persons with suspected novel influenza virus infection pending results of appropriate laboratory testing;

    c. Issuing infection control recommendations specific to patient location (see Essential Element #7);

    d. Issuing directions for contact tracing and possible home confinement for all close contacts of confirmed cases;

e. Recommending individual measures that promote increased social distancing (see Appendix D); and

f. Recommending measures that may be useful when there is limited disease transmission and cases can be traced to a common setting (a specific school or workplace).

3. The OSDH and local county health departments will evaluate and manage ill travelers from affected regions and will provide information to travelers about the symptoms and risk factors associated with the novel influenza virus, instructions for self-monitoring, instructions for isolation should symptoms develop, and mechanism for notifying public health officials in the event of illness.

4. The State Public Health Veterinarian will collaborate with partners regarding animal control measures and animal-worker exposure control measures if animal sources are identified in Oklahoma.

5. The OSDH will invoke local and state legal authority on isolation and quarantine, as needed, including those addressing the use of designated non-residential facilities for household cases and contacts that cannot or choose not to stay in their residences during isolation or quarantine.

6. The OSDH will continue to promote respiratory and hand hygiene to the public.

7. The OSDH will monitor caches of supplies to support isolation, quarantine, and other containment measures in cooperation with local county health departments and emergency management partners.

8. The OSDH and/or local health officers (where appropriate) will review local and state statutes on isolation and quarantine as needed.

C. PANDEMIC PERIOD

1. The OSDH will augment its Incident Command System as necessitated by the progression of the outbreak and corresponding response requirements. **All** OSDH activities related to pandemic influenza response will be coordinated through the Incident Command System.

2. The OSDH will recommend containment measures in the context of available vaccine and antiviral medications, the level of public cooperation, resources available to implement and monitor compliance and the severity of illness to include the following:

a. Require isolation of cases. Different levels of isolation will be applied depending on the scope and severity of the pandemic as well as the availability of countermeasures;

b. Recommend contact tracing and management on a case-by-case basis;

c. Conduct voluntary quarantine of case contacts to include self-monitoring of temperatures daily (for up to 10 days). The local county health department's Communicable Disease Nurse will work with the OSDH Communicable Disease Division to monitor contacts by phone to see if there is a change in their health status. When indicated, the Commissioner of Health will issue appropriate orders for isolation and quarantine within the appropriate legal authorities;

d. Recommend antiviral drugs for treatment or prophylaxis in order to contain the spread of the virus; and

e. Recommend mechanisms to manage small clusters of human infection with novel influenza virus

3. The Public Health Incident Commander will assess compliance with and the effectiveness of containment measures on an ongoing basis and will recommend changes to the Commissioner of Health and OSDH senior leaders based on available epidemiologic and compliance information.

4. The Public Health Incident Commander will provide technical support and make updated technical recommendations to the Commissioner of Health and OSDH senior leaders. The recommendations will be distributed to local county health departments as appropriate and may include the following:

   a. Require continued isolation of those affected from those who are well to the extent feasible;

   b. Conduct limited management of close contacts because contact tracing and quarantine may not be practical due to overwhelmed resources and shifting disease control priorities; and

   c. Implement community-based containment measures in conjunction with local county health departments on an as-needed basis. Options include quarantine of groups of exposed persons or measures that effect either subsets or the entire community.

5. The OSDH and Local Health Officers, where appropriate, will invoke local and state statutes on isolation and quarantine, as needed.

IV. POSTPANDEMIC PERIOD

1. The OSDH will decrease the Incident Command System to its essential components and conduct demobilization efforts.

2. The OSDH will recommend appropriate measures after the incidence of disease has either decreased to a manageable level or has ceased.

3. The OSDH will prepare After Action Reports and analyze all activated elements of the *Oklahoma Pandemic Influenza Management Plan* within 60 days.

4. The *Oklahoma Pandemic Influenza Management Plan* will be reviewed and updated by the Incident Command System staff to address gaps in the public health infrastructure for community disease control and prevention pursuant to recommendations of the After Action Reports.

Pandemic Influenza Management Plan
Essential Element #7
Infection Control
Adopted from HHS Pandemic Influenza Plan Supplement 4 S-1

Upon review of available resources, the Oklahoma State Department of Health has chosen to incorporate the HHS Supplement on infection control and modified to match the *Oklahoma Pandemic Influenza Management Plan*.

I. RATIONALE

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

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

II. INFLUENZA TRANSMISSION

A. Modes of transmission

Despite the prevalence of influenza year after year, most information on the modes of influenza transmission from person to person is indirect and largely obtained through observations during outbreaks in healthcare facilities and other settings (e.g., cruise ships, airplanes, schools, and colleges); the amount of direct scientific information is very limited. However, the epidemiologic pattern observed is generally consistent with spread through close contact (i.e., exposure to large respiratory droplets, direct contact, or near-range exposure to aerosols). While some observational and animal studies support airborne transmission through small particle aerosols,

there is little evidence of airborne transmission over long distances or prolonged periods of time (as is seen with *M. tuberculosis*). The relative contributions and clinical importance of the different modes of influenza transmission are currently unknown.

1. Droplet transmission (www.cdc.gov/ncidod/hip/ISOLAT/std_prec_excerpt.htm

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

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

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

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

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

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

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

airborne route requires the use of special air handling and ventilation systems (e.g., negative pressure rooms).

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

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

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

B. Pathogenesis of influenza and implications for infection control

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

C. Control of transmission in healthcare facilities

Outbreaks of influenza have been prevented or controlled through a set of well established strategies that include vaccination of patients and healthcare personnel; early detection of influenza cases in a facility; use of antivirals to treat ill persons and, if recommended, as prophylaxis; isolation of infectious patients in private rooms or cohort units; use of appropriate barrier precautions during patient care, as recommended for Standard and Droplet Precautions (Box 1); and administrative measures, such as restricting visitors, educating patients and staff, and cohorting healthcare workers assigned to an outbreak unit.

These are the primary infection control measures recommended in this plan. They will be updated, as necessary, based on the observed characteristics of the pandemic influenza virus.

III. OVERVIEW

This element provides guidance to healthcare and public health partners on basic principles of infection control for limiting the spread of pandemic influenza. These principles (Appendix E) are common to the prevention of other infectious agents spread by respiratory droplets.

This element also includes guidance on the selection and use of personal protective equipment (PPE); hand hygiene and safe work practices; cleaning and disinfection of environmental surfaces; handling of laboratory specimens; and post-mortem care. The guidance also covers infection control practices related to the management of infectious patients, the protection of persons at high-risk for severe influenza or its complications, and issues concerning occupational health.

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

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

This element does not address the use of vaccines and antivirals in the control of influenza transmission in healthcare settings and the community. These issues are addressed in elements #3 and #4, respectively.

IV. RECOMMENDATIONS FOR INFECTION CONTROL IN HEALTHCARE SETTINGS

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

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

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

1. Limit contact between infected and non-infected persons.

    i. Isolate infected persons (i.e., confine patients to a defined area as appropriate for the healthcare setting).

    ii. Limit contact between nonessential personnel and other persons (e.g., social visitors) and patients who are ill with pandemic influenza.

    iii. Promote spatial separation in common areas (i.e., sit or stand as far away as possible—at least 3 feet—from potentially infectious persons) to limit contact between symptomatic and non-symptomatic persons.

2. Protect persons caring for influenza patients in healthcare settings from contact with the pandemic influenza virus. Persons who must be in contact should:

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

    ii. Use contact and airborne precautions, including the use of N95 respirators, when appropriate.

    iii. Wear gloves (gown if necessary) for contact with respiratory secretions.

    iv. Perform hand hygiene after contact with infectious patients.

3. Contain infectious respiratory secretions:

    i. Instruct persons who have “flu-like” symptoms to use respiratory hygiene/cough etiquette.

ii. Promote use of masks4 by symptomatic persons in common areas (e.g., waiting rooms in physician offices or emergency departments) or when being transported (e.g., in emergency vehicles).

B. Management of infectious patients

1. Respiratory hygiene/cough etiquette

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

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

The elements of respiratory hygiene/cough etiquette include:

a. Education of healthcare facility staff, patients, and visitors on the importance of containing respiratory secretions to help prevent the transmission of influenza and other respiratory viruses

b. Posted signs in languages appropriate to the populations served with instructions to patients and accompanying family members or friends to immediately report symptoms of a respiratory infection as directed

c. Source control measures (e.g., covering the mouth/nose with a tissue when coughing and disposing of used tissues; using masks on the coughing person when they can be tolerated and are appropriate)

d. Hand hygiene after contact with respiratory secretions, and

e. Spatial separation, ideally >3 feet, of persons with respiratory infections in common waiting areas when possible.

2. Droplet precautions and patient placement

Patients with known or suspected pandemic influenza should be placed on droplet precautions for a minimum of 5 days from the onset of symptoms. Because immunocompromised patients may shed virus for longer periods, they may be placed on droplet precautions for the duration of their illness. Healthcare personnel should wear appropriate PPE. The placement of patients will vary depending on the healthcare setting (see setting-specific guidance). If the pandemic virus is

associated with diarrhea, contact precautions (i.e., gowns and gloves for all patient contact) should be added.

Centers for Disease Control and Prevention will update these recommendations if changes occur in the anticipated pattern of transmission (www.cdc.gov/flu).

C. Infection control practices for healthcare personnel

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

1. Personal protective equipment

a. PPE for standard and droplet precautions. PPE is used to prevent direct contact with the pandemic influenza virus. PPE that may be used to provide care includes surgical or procedure masks, as recommended for droplet precautions, and gloves and gowns, as recommended for standard precautions (Box 1). Additional precautions may be indicated during the performance of aerosol-generating procedures (see below). Information on the selection and use of PPE is provided a www.cdc.gov/ncidod/hip/isolat/isolat.htm.

   i. Masks (surgical or procedure)

      1. Wear a mask when entering a patient's room. A mask should be worn once and then discarded. If pandemic influenza patients are cohorted in a common area or in several rooms on a nursing unit, and multiple patients must be visited over a short time, it may be practical to wear one mask for the duration of the activity; however, other PPE (e.g., gloves, gown) must be removed between patients and hand hygiene performed.

      2. Change masks when they become moist.

      3. Do not leave masks dangling around the neck.

      4. Upon touching or discarding a used mask, perform hand hygiene.

ii. Gloves

1. A single pair of patient care gloves should be worn for contact with blood and body fluids, including during hand contact with respiratory secretions (e.g., providing oral care, handling soiled tissues). Gloves made of latex, vinyl, nitrile, or other synthetic materials are appropriate for this purpose; if possible, latex-free gloves should be available for healthcare workers who have latex allergy.

2. Gloves should fit comfortably on the wearer's hands.

3. Remove and dispose of gloves after use on a patient; do not wash gloves for subsequent reuse.

4. Perform hand hygiene after glove removal.

5. If gloves are in short supply (i.e., the demand during a pandemic could exceed the supply), priorities for glove use might need to be established. In this circumstance, reserve gloves for situations where there is a likelihood of extensive patient or environmental contact with blood or body fluids, including during suctioning.

6. Use other barriers (e.g., disposable paper towels, paper napkins) when there is only limited contact with a patient's respiratory secretions (e.g., to handle used tissues). Hand hygiene should be strongly reinforced in this situation.

iii. Gowns

1. Wear an isolation gown, if soiling of personal clothes or uniform with a patient's blood or body fluids, including respiratory secretions, is anticipated. Most patient interactions do not necessitate the use of gowns. However, procedures such as intubation and activities that involve holding the patient close (e.g., in pediatric settings) are examples of when a gown may be needed when caring for pandemic influenza patients.

2. A disposable gown made of synthetic fiber or a washable cloth gown may be used.

3. Ensure that gowns are of the appropriate size to fully cover the area to be protected.

4. Gowns should be worn only once and then placed in a waste or laundry receptacle, as appropriate, and hand hygiene performed.

5. If gowns are in short supply (i.e., the demand during a pandemic could exceed the supply) priorities for their use may need to be established. In this circumstance, reinforcing the situations in which they are needed can reduce the volume used. Alternatively, other coverings (e.g., patient gowns) could be used. It is doubtful that disposable aprons would provide the desired protection in the circumstances where gowns are needed to prevent contact with influenza virus, and therefore should be

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

iv. Goggles or face shield

In general, wearing goggles or a face shield for routine contact with patients with pandemic influenza is not necessary. If sprays or splatter of infectious material is likely, goggles or a face shield should be worn as recommended for standard precautions. Additional information related to the use of eye protection for infection control can be found at http://www.cdc.gov/niosh/topics/eye/eye-infectious.html.

b. PPE for special circumstances

i. PPE for aerosol-generating procedures

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

ii. PPE for managing pandemic influenza with increased transmissibility

The addition of airborne precautions, including respiratory protection (an N95 filtering face piece respirator or other appropriate particulate respirator), may be considered for strains of influenza exhibiting increased transmissibility, during initial stages of an outbreak of an emerging or novel strain of influenza, and as determined by other factors such as vaccination/immune status of personnel and availability of antivirals. As the epidemiologic characteristics of the pandemic virus are more clearly defined, Centers for Disease Control and Prevention will provide updated infection control guidance, as needed.

iii. Precautions for early stages of a pandemic

Early in a pandemic, it may not be clear that a patient with severe respiratory illness has pandemic influenza. Therefore precautions consistent with all possible etiologies, including a newly emerging infectious agent, should be implemented. This may involve the combined use of airborne and contact precautions, in addition to standard precautions, until a diagnosis is established.

c. Caring for patients with pandemic influenza

Healthcare personnel should be particularly vigilant to avoid:

i. Touching their eyes, nose or mouth with contaminated hands (gloved or ungloved). Careful placement of PPE before patient contact will help avoid the need to make PPE adjustments and risk self-contamination during use. Careful removal of PPE is also important. (See also: http://www.cdc.gov/ncidod/hip/ppe/default.htm.)

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

2. Hand hygiene

Hand hygiene has frequently been cited as the single most important practice to reduce the transmission of infectious agents in healthcare settings and is an essential element of standard precautions (see http://www.cdc.gov/handhygiene/pressrelease.htm). The term "hand hygiene" includes both handwashing with either plain or antimicrobial soap and water and use of alcohol-based products (gels, rinses, foams) containing an emollient that do not require the use of water.

a. If hands are visibly soiled or contaminated with respiratory secretions, wash hands with soap (either non-antimicrobial or antimicrobial) and water.

b. In the absence of visible soiling of hands, approved alcohol-based products for handdisinfection are preferred over antimicrobial or plain soap and water because of their superior microbiocidal activity, reduced drying of the skin, and convenience.

c. Always perform hand hygiene between patient contacts and after removing PPE.

d. Ensure that resources to facilitate handwashing (i.e., sinks with warm and cold running water, plain or antimicrobial soap, disposable paper towels) and hand disinfection (i.e., alcohol-based products) are readily accessible in areas in which patient care is provided. For additional guidance on hand hygiene see http://www.cdc.gov/handhygiene/.

3. Disposal of solid waste

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

a. Contain and dispose of contaminated medical waste in accordance with facility-specific procedures and/or local or state regulations for handling and disposal of medical waste, including used needles and other sharps, and non-medical waste.

b. Discard as routine waste used patient-care supplies that are not likely to be contaminated (e.g., paper wrappers).

c. Wear disposable gloves when handling waste. Perform hand hygiene after removal of gloves.

4. Linen and laundry

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

a. Place soiled linen directly into a laundry bag in the patient's room. Contain linen in a manner that prevents the linen bag from opening or bursting during transport and while in the soiled linen holding area.

b. Wear gloves and gown when directly handling soiled linen and laundry (e.g., bedding, towels, personal clothing) as per standard precautions. Do not shake or otherwise handle soiled linen and laundry in a manner that might create an opportunity for disease transmission or contamination of the environment.

c. Wear gloves for transporting bagged linen and laundry.

d. Perform hand hygiene after removing gloves that have been in contact with soiled linen and laundry.

e. Wash and dry linen according to routine standards and procedures (www.cdc.gov/ncidod/hip/enviro/guide.htm).

5. Dishes and eating utensils

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

a. Wash reusable dishes and utensils in a dishwasher with recommended water temperature: (www.cdc.gov/ncidod/hip/enviro/guide.htm).

b. Disposable dishes and utensils (e.g., used in an alternative care site set-up for large numbers of patients) should be discarded with other general waste.

c. Wear gloves when handling patient trays, dishes, and utensils.

6. Patient-care equipment

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

a. Wear gloves when handling and transporting used patient-care equipment.

b. Wipe heavily soiled equipment with an EPA-approved hospital disinfectant before removing it from the patient's room. Follow current recommendations for cleaning and disinfection or sterilization of reusable patient-care equipment.

c. Wipe external surfaces of portable equipment for performing x-rays and other procedures in the patient's room with an EPA-approved hospital disinfectant upon removal from the patient's room.

7. Environmental cleaning and disinfection

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

a. Cleaning and disinfection of patient-occupied rooms

(See www.cdc.gov/ncidod/hip/enviro/Enviro_guide_03.pdf)
Wear gloves in accordance with facility policies for environmental cleaning and wear a surgical or procedure mask in accordance with droplet precautions. Gowns are not necessary for routine cleaning of an influenza patient's room.

i. Keep areas around the patient free of unnecessary supplies and equipment to facilitate daily cleaning.

ii. Use any EPA-registered hospital detergent-disinfectant. Follow manufacturer's recommendations for use-dilution (i.e., concentration), contact time, and care in handling.

iii. Follow facility procedures for regular cleaning of patient-occupied rooms. Give special attention to frequently touched surfaces (e.g., bedrails, bedside and over-bed tables, TV controls, call buttons, telephones, lavatory surfaces including safety/pull-up bars, doorknobs, commodes, ventilator surfaces) in addition to floors and other horizontal surfaces.

iv. Clean and disinfect spills of blood and body fluids in accordance with current recommendations for Isolation Precautions:
(www.cdc.gov/ncidod/hip/ISOLAT/Isolat.htm)

b. Cleaning and disinfection after patient discharge or transfer

i. Follow standard facility procedures for post-discharge cleaning of an isolation room.

ii. Clean and disinfect all surfaces that were in contact with the patient or might have become contaminated during patient care. No special treatment is necessary for window curtains, ceilings, and walls unless there is evidence of visible soiling.

iii. Do not spray (i.e., fog) occupied or unoccupied rooms with disinfectant. This is a potentially dangerous practice that has no proven disease control benefit.

8. Postmortem care

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

9. Laboratory specimens and practices

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

D. Occupational health issues

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

1. Implement a system to educate personnel about occupational health issues related to pandemic influenza.

2. Screen all personnel for influenza-like symptoms before they come on duty. Symptomatic personnel should be sent home until they are physically ready to return to duty.

3. Healthcare personnel who have recovered from pandemic influenza, and should develop antibody against future infection with the same virus, and therefore should be prioritized for the care of patients with active pandemic influenza and its complications. These workers would also be well suited to care for patients who are at risk for serious complications from influenza (e.g., transplant patients and neonates).

4. Personnel who are at high risk for complications of pandemic influenza (e.g., pregnant women, immunocompromised persons) should be informed about their medical risk and offered an alternate work assignment, away from influenza patient care, or considered for administrative leave until pandemic influenza has abated in the community.

E. Reducing exposure of persons at high risk for complications of influenza

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

F. Healthcare setting-specific guidance

All healthcare facilities should follow the infection control guidance in S4-IV.A-E above. The following guidance is intended to address setting-specific infection control issues that should also be considered.

1. Hospitals

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

i. Post visual alerts (in appropriate languages) at the entrance to hospital outpatient facilities (e.g., emergency departments, outpatient clinics) instructing persons with respiratory symptoms (e.g., patients, persons who accompany them) to:

- Inform reception and healthcare personnel when they first register for care, and
- Practice respiratory hygiene/cough etiquette: (see www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm). Sample visual alerts are available on Centers for Disease Control and Prevention's SARS website: http://www.cdc.gov/ncidod/hip/INFECT/RespiratoryPoster.pdf

ii. Triage patients calling for medical appointments for influenza symptoms:

- Discourage unnecessary visits to medical facilities.
- Instruct symptomatic patients on infection control measures to limit transmission in the home and when traveling to necessary medical appointments.

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

i. During the peak of a pandemic, emergency departments and outpatient offices may be overwhelmed with patients seeking care. A "triage officer" may be useful for managing patient flow, including deferral of patients who do not require emergency care.

ii. Designate separate waiting areas for patients with influenza-like symptoms. If this is not feasible, the waiting area should be set up to enable patients with respiratory symptoms to sit as far away as possible (at least 3 feet) from other patients.

b. "Source control" measures to limit dissemination of influenza virus from respiratory secretions

i. Post signs that promote respiratory hygiene/cough etiquette in common areas (e.g., elevators, waiting areas, cafeterias, lavatories) where they can serve as reminders to all persons in the healthcare facility. Signs should instruct persons to:

- Cover the nose/mouth when coughing or sneezing.
- Use tissues to contain respiratory secretions.
- Dispose of tissues in the nearest waste receptacle after use.
- Perform hand hygiene after contact with respiratory secretions.
  Samples of visual alerts are available on Centers for Disease Control and Prevention's SARS website:
  http://www.cdc.gov/ncidod/hip/INFECT/RespiratoryPoster.pdf

ii. Facilitate adherence to respiratory hygiene/cough etiquette by ensuring the availability of materials in waiting areas for patients and visitors.

- Provide tissues and no-touch receptacles (e.g., waste containers with pedal-operated lid or uncovered waste container) for used tissue disposal.
- Provide conveniently located dispensers of alcohol-based hand rub.
- Provide soap and disposable towels for handwashing where sinks are available.

iii. Promote the use of masks and spatial separation by persons with symptoms of influenza.

- Offer and encourage the use of either procedure masks (i.e., with ear loops) or surgical masks (i.e., with ties or elastic)by symptomatic persons to limit dispersal of respiratory droplets.
- Encourage coughing persons to sit as far away as possible (at least 3 feet) from other persons in common waiting areas.

c. Hospitalization of pandemic influenza patients

i. Patient placement

- Limit admission of influenza patients to those with severe complications of influenza who cannot be cared for outside the hospital setting.
- Admit patients to either a single-patient room or an area designated for cohorting of patients with influenza.

ii. Cohorting

- Designated units or areas of a facility should be used for cohorting patients with pandemic influenza.6 During a pandemic, other respiratory viruses (e.g., non-pandemic influenza, respiratory syncytial virus, parainfluenza virus) may be circulating concurrently in a community. Therefore, to prevent cross-transmission of respiratory viruses, whenever possible assign only patients with confirmed pandemic influenza to the same room. At the height of a pandemic, laboratory testing to confirm pandemic influenza is likely to be limited, in which case cohorting should be based on having symptoms consistent with pandemic influenza.

- Personnel (clinical and non-clinical) assigned to cohorted patient care units for pandemic influenza patients should not "float" or otherwise be assigned to other patient care areas. The number of personnel entering the cohorted area should be limited to those necessary for patient care and support.

- Personnel assigned to cohorted patient care units should be aware that patients with pandemic influenza may be concurrently infected or colonized with other pathogenic organisms (e.g., *Staphylococcus aureus, Clostridium difficile*) and should adhere to infection control practices (e.g., hand hygiene, changing gloves between patient contact) used routinely, and as part of standard precautions, to prevent nosocomial transmission.

- Because of the high patient volume anticipated during a pandemic, cohorting should be implemented early in the course of a local outbreak.

iii. Patient transport

- Limit patient movement and transport outside the isolation area to medically necessary purposes.

- Consider having portable x-ray equipment available in areas designated for cohorting influenza patients.

- If transport or movement is necessary, ensure that the patient wears a surgical or procedure mask. If a mask cannot be tolerated (e.g., due to the patient's age or deteriorating respiratory status), apply the most practical measures to contain respiratory secretions. Patients should perform hand hygiene before leaving the room.

iv. Visitors

- Screen visitors for signs and symptoms of influenza before entry into the facility and exclude persons who are symptomatic.

- Family members who accompany patients with influenza-like illness to the hospital are assumed to have been exposed to influenza and should wear masks.

- Limit visitors to persons who are necessary for the patient's emotional well-being and care.

- Instruct visitors to wear surgical or procedure masks while in the patient's room.

- Instruct visitors on hand-hygiene practices.

d. Control of nosocomial pandemic influenza transmission

i. Once patients with pandemic influenza are admitted to the hospital, nosocomial surveillance should be heightened for evidence of transmission to other patients and healthcare personnel. (Once pandemic influenza is firmly established in a community this may not be feasible or necessary.)

ii. If limited nosocomial transmission is detected (e.g., has occurred on one or two patient care units), appropriate control measures should be implemented. These may include:

- Cohorting of patients and staff on affected units

- Restriction of new admissions (except for other pandemic influenza patients) to the affected unit(s)

- Restriction of visitors to the affected unit(s) to those who are essential for patient care and support

iii. If widespread nosocomial transmission occurs, controls may need to be implemented hospital wide and might include:

- Restricting all nonessential persons

- Stopping admissions not related to pandemic influenza and stopping elective surgeries

2. Nursing homes and other residential facilities

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

a. Prevention or delay of pandemic influenza virus entry into the facility

i. Control of visitors

- Post visual alerts (in appropriate languages) at the entrance to the facility restricting entry by persons who have been exposed to or have symptoms of pandemic influenza.

- Enforce visitor restrictions by assigning personnel to verbally and visually screen visitors for respiratory symptoms at points of entry to the facility.

- Provide a telephone number where persons can call for information on measures used to prevent the introduction of pandemic influenza.

ii. Control of personnel

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

b. Monitoring patients for pandemic influenza and instituting appropriate control measures

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

i. Early in the progress of a pandemic in the region, increase resident surveillance for influenza-like symptoms. Notify state or local health department officials if a case(s) is suspected.

ii. If symptoms of pandemic influenza are apparent , implement droplet precautions for the resident and roommates, pending confirmation of pandemic influenza virus infection. Patients and roommates should not be separated or moved out of their rooms unless medically necessary. Once a patient has been diagnosed with pandemic influenza, roommates should be treated as exposed cohorts.

iii. Cohort residents and staff *on units with known or suspected cases of pandemic influenza*.

iv. Limit movement within the facility (e.g., temporarily close the dining room and serve meals on nursing units, cancel social and recreational activities).

3. Prehospital care (emergency medical services)

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

a. Screen patients requiring emergency transport for symptoms of influenza.

b. Follow standard and droplet precautions when transporting symptomatic patients.

c. Consider routine use of surgical or procedure masks for all patient transport when pandemic influenza is in the community.

d. If possible, place a procedure or surgical mask on the patient to contain droplets expelled during coughing. If this is not possible (i.e., would further compromise respiratory status, difficult for the patient to wear), have the patient cover the mouth/nose with tissue when coughing, or use the most practical alternative to contain respiratory secretions.

e. Oxygen delivery with a non-rebreather face mask can be used to provide oxygen support during transport. If needed, positive-pressure ventilation should be performed using a resuscitation bag-valve mask.

f. Unless medically necessary to support life, aerosol-generating procedures (e.g., mechanical ventilation) should be avoided during prehospital care.

g. Optimize the vehicle's ventilation to increase the volume of air exchange during transport. When possible, use vehicles that have separate driver and patient compartments that can provide separate ventilation to each area.

h. Notify the receiving facility that a patient with possible pandemic influenza is being transported.

i. Follow standard operating procedures for routine cleaning of the emergency vehicle and reusable patient care equipment.

4. Home healthcare services

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

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

a. If patients with pandemic influenza are in the home, consider:

i. Postponing nonessential services

ii. Assigning providers who are not at increased risk for complications of pandemic influenza to care for these patients

b. Home healthcare providers who enter homes where there is a person with an influenza-like illness should follow the recommendations for standard and droplet precautions described above. Professional judgment should be used in determining whether to don a surgical or procedure mask upon entry into the home or only for patient interactions. Factors to consider include the possibility that others in the household may be infectious and the extent to which the patient is ambulating within the home.

5. Outpatient medical offices

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

a. Detection of patients with possible pandemic influenza

i. Post visual alerts (in appropriate languages) at the entrance to outpatient offices instructing persons with respiratory symptoms (e.g., patients, persons who accompany them) to:

- Inform reception and healthcare personnel when they first register for care

- Practice respiratory hygiene/cough etiquette (see:www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm) Sample visual alerts may be found on Centers for Disease Control and Prevention's SARS website: http://www.cdc.gov/ncidod/hip/INFECT/RespiratoryPoster.pdf

ii. Triage patients calling for medical appointments for influenza symptoms:

- Discourage unnecessary visits to medical facilities.

- Instruct symptomatic patients on infection control measures to limit transmission in the home and when traveling to necessary medical appointments.

b. "Source control" measures

i. Post signs that promote cough etiquette in common areas (e.g., elevators, waiting areas, cafeterias, lavatories) where they can serve as reminders to all persons in the healthcare facility. Signs should instruct persons to:

- Cover the nose/mouth when coughing or sneezing.
- Use tissues to contain respiratory secretions.
- Dispose of tissues in the nearest waste receptacle after use.
- Perform hand hygiene after contact with respiratory secretions.

ii. Facilitate adherence to respiratory hygiene/cough etiquette. Ensure the availability of materials in waiting areas for patients and visitors.

- Provide tissues and no-touch receptacles (e.g., waste containers with pedal-operated lid or uncovered waste container) for used tissue disposal.
- Provide conveniently located dispensers of alcohol-based hand rub.
- Provide soap and disposable towels for hand washing where sinks are available.

iii. Promote the use of procedure or surgical masks and spatial separation by persons with symptoms of influenza.

- Offer and encourage the use of either procedure masks (i.e., with ear loops) or surgical masks (i.e., with ties or elastic) by symptomatic persons to limit dispersal of respiratory droplets.
- Encourage coughing persons to sit at least 3 feet away from other persons in common waiting areas.

c. Patient placement

i. Where possible, designate separate waiting areas for patients with symptoms of pandemic influenza. Place signs indicating the separate waiting areas.

ii. Place symptomatic patients in an evaluation room as soon as possible to limit their time in common waiting areas.

6. Other ambulatory settings

A wide variety of ambulatory settings provide chronic (e.g., hemodialysis units) and episodic (e.g., freestanding surgery centers, dental offices) healthcare services. When pandemic influenza is in the region, these facilities should implement control measures similar to those recommended for outpatient physician offices. Other infection control strategies that may be utilized include:

a. Screening patients for influenza-like illness by phone or before coming into the facility and rescheduling appointments for those whose care is nonemergency

b. Canceling all nonemergency services when there is pandemic influenza in the community

G. Care of pandemic influenza patients in the home

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

1. Management of influenza patients

a. Physically separate the patient with influenza from non-ill persons living in the home as much as possible.

b. Patients should not leave the home during the period when they are most likely to be infectious to others (i.e., 5 days after onset of symptoms). When movement outside the home is necessary (e.g., for medical care), the patient should follow cough etiquette (i.e., cover the mouth and nose when coughing and sneezing) and wear procedure or surgical masks if available.

2. Management of other persons in the home

a. Persons who have not been exposed to pandemic influenza and who are not essential for patient care or support should not enter the home while persons are actively ill with pandemic influenza.

b. If unexposed persons must enter the home, they should avoid close contact with the patient.

c. Persons living in the home with the pandemic influenza patient should limit contact with the patient to the extent possible; consider designating one person as the primary care provider.

d. Household members should monitor closely for the development of influenza symptoms and contact a telephone hotline or medical care provider if symptoms occur.

3. Infection control measures in the home

a. All persons in the household should carefully follow recommendations for hand hygiene (i.e., handwashing with soap and water or use of an alcohol-based hand rub) after contact with an influenza patient or the environment in which care is provided.

b. Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit. The wearing of gloves and gowns is not recommended for household members providing care in the home.

c. Soiled dishes and eating utensils should be washed either in a dishwasher or by hand with warm water and soap. Separation of eating utensils for use by a patient with influenza is not necessary.

d. Laundry can be washed in a standard washing machine with warm or cold water and detergent. It is not necessary to separate soiled linen and laundry used by a patient with influenza from other household laundry. Care should be used when handling soiled laundry (i.e., avoid "hugging" the laundry) to avoid contamination. Hand hygiene should be performed after handling soiled laundry.

e. Tissues used by the ill patient should be placed in a bag and disposed with other household waste. Consider placing a bag for this purpose at the bedside.

f.

g. Normal cleaning of environmental surfaces in the home should be followed.

H. Care of pandemic influenza patients at alternative sites

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

V. RECOMMENDATIONS FOR INFECTION CONTROL IN SCHOOLS AND WORKPLACES

a. In schools and workplaces, infection control for pandemic influenza should focus on:

   i. Keeping sick students, faculty, and workers away while they are infectious.

   ii. Promoting respiratory hygiene/cough etiquette and hand hygiene as for any respiratory infection. The benefit of wearing masks in these settings has not been established.

   iii. School administrators and employers should ensure that materials for respiratory hygiene/cough etiquette (i.e.,tissues and receptacles for their disposal) and hand hygiene are available. Educational messages and infection control guidance for pandemic influenza are available for distribution. (Centers for Disease Control and Prevention will develop educational materials appropriate to various audiences.)

VI. RECOMMENDATIONS FOR INFECTION CONTROL IN COMMUNITY SETTINGS

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

Pandemic Influenza Management Plan
Essential Element #8
Clinical Guidelines
Adopted from HHS Pandemic Influenza Plan Supplement 5 S-1

Upon review of available resources, the Oklahoma State Department of Health has chosen to incorporate the HHS Supplement on Clinical Guidelines and modified to match the *Oklahoma Pandemic Influenza Management Plan*.

HHS SUPPLEMENT 5

I. RATIONALE

Healthcare providers play an essential role in the detection of an initial case of novel or pandemic influenza in a community. If implemented early, identification and isolation of cases may help slow the spread of influenza within a community. Clinical awareness of novel or pandemic influenza disease can also benefit the individual patient, as rapid diagnosis and initiation of treatment can avert potentially severe complications. Detection is complicated, however, by the lack of specific clinical findings and commercially available laboratory tests that can rapidly distinguish novel or pandemic influenza from seasonal influenza. In addition, neither the clinical characteristics of a novel or pandemic influenza virus strain nor the groups at highest risk for complications can necessarily be defined beforehand. Therefore, clinicians face significant challenges in: 1) quickly identifying and triaging cases, 2) containing the spread of infection, 3) beginning an efficient and comprehensive workup, 4) initiating antiviral and other supportive therapy, and 5) anticipating clinical complications.

II. OVERVIEW

This element provides clinical procedures for the initial screening, assessment, and management of patients with suspected novel influenza during the Interpandemic and Pandemic Alert Periods, and for patients with suspected pandemic influenza during the Pandemic Period. The guidance is current as of October 2005, and is subject to change as experience is gained. Updates will be provided, as needed, on the Centers for Disease Control and Prevention website (www.cdc.gov/flu/).

During the Interpandemic and Pandemic Alert Periods, early recognition of illness caused by a novel influenza A virus strain will rely on a combination of clinical and epidemiologic features. During the Pandemic Period (in a setting of high community prevalence), diagnosis will likely be more clinically oriented because the likelihood will be high that any severe febrile respiratory illness is pandemic influenza. During periods in which no human infections with a novel influenza A virus strain have occurred anywhere in the world (see Appendix F), or when sporadic cases of animal-to human transmission or rare instances of limited human-to-human transmission of a novel influenza A virus strain have occurred in the world (Pandemic Alert Period: Phases 3, 4), the likelihood of novel influenza A virus infection is very low in a returned

traveler from an affected area who has severe respiratory disease or influenza-like illness. Since human influenza A and B viruses circulate worldwide among humans year-round, the possibility of infection with human influenza viruses is much higher and should be considered. Once local person-to-person transmission of a novel influenza A virus strain has been confirmed (Pandemic Alert Period: Phase 5), the potential for novel influenza A virus infection will be higher in an ill person who has a strong epidemiologic link to the affected area (Appendix F).

This supplement is designed to serve as a guide for clinicians, with the understanding that the management of influenza is based primarily on sound clinical judgment regarding the individual patient as well as an assessment of locally available resources, such as rapid diagnostics, antiviral medications, and hospital beds. Early antiviral therapy shortens the duration of illness due to seasonal influenza and would be expected to have similar effects on illness due to novel or pandemic influenza viruses (see Element #4.1).

Clinical management must also address supportive care and management of influenza-related complications.

Other supplements that cover topics of potential interest to clinicians are found in the HHS Pandemic Influenza Plan Supplements:

Supplement 1. Pandemic Influenza Surveillance
Supplement 2. Laboratory Diagnostics
Supplement 3. Healthcare Planning
Supplement 4. Infection Control
Supplement 6. Vaccine Distribution and Use
Supplement 7. Antiviral Drug Distribution and Use

III. CLINICAL GUIDELINES FOR THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS

During the Interpandemic and Pandemic Alert Periods, the primary goal of rapid detection is to quickly identify and contain cases of novel influenza. To limit the need to evaluate an overwhelming number of patients, the screening criteria should be specific, relying on a combination of clinical and epidemiologic features. Although febrile respiratory illnesses are one of the most common indications for medical evaluation, particularly during the winter, during the interpandemic and pandemic alert period, human cases of novel influenza are expected to be quite rare; laboratory diagnosis will most likely be sought for those with severe respiratory illness, such as pneumonia..

A. Criteria for evaluation of patients with possible novel influenza

The following criteria are based on the features of recent avian influenza A (H5N1) cases but are intended for use in evaluating suspected cases of infection with any novel influenza A virus strain. During the Pandemic Alert Period, human infections with novel influenza A viruses will be an uncommon cause of influenza-like illness; therefore, both clinical and epidemiologic criteria should be met. The criteria will be updated when needed as more data are collected.

Information on HHS recommendations on the use of limited stocks of antiviral medications during a pandemic is provided in Element #4.

1. Clinical criteria

Any suspected cases of human infection with a novel influenza virus must first meet the criteria for influenza-like illness (ILI), defined as temperature of >38°C plus either sore throat or cough. Since lower respiratory tract involvement might result in dyspnea (shortness of breath), dyspnea should be considered as an additional criterion. Therefore, the full clinical criteria are: fever plus one of the following: sore throat, cough, or dyspnea.

Although recent infections with novel influenza viruses have resulted in severe respiratory illness, the next pandemic influenza virus strain might present with a different clinical syndrome. In such a situation, the clinical criteria will be modified accordingly and posted at www.cdc.gov/flu.

Given the large number of influenza-like illnesses that clinicians encounter during a typical flu season, laboratory evaluation for novel influenza A viruses during the Interpandemic and Pandemic Alert Periods is recommended only for:

a. Hospitalized patients with severe influenza-like illness, including pneumonia, who meet the epidemiologic criteria (see below), *or*

b. Non-hospitalized patients with influenza-like illness and with strong epidemiologic suspicion of novel influenza virus exposure (e.g., direct contact with ill poultry in an affected area, or close contact with a known or suspected human case of novel influenza).

c. Recommendations for the evaluation of patients with respiratory illnesses are provided in Appendix F. Exceptions to the current clinical criteria are provided in Appendix F

2. Epidemiologic criteria

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

Exposure risks fall into two categories: travel and occupational.

a. Travel risks

Persons have a travel risk if they have: 1) recently visited or lived in an area affected by highly pathogenic avian influenza A outbreaks in domestic poultry or where a human case of novel influenza has been confirmed, *and either* 2) had direct contact with poultry, or 3) had close contact with a person with confirmed or suspected novel influenza. Updated listings of areas affected by avian influenza A (H5N1) and other current/recent novel strains are provided on the websites of the OIE (http://www.oie.int/eng/en_index.htm), World Health Organization (WHO) (www.who.int/en/), and the Centers for Disease Control and Prevention (CDC) (www.cdc.gov/flu/).

Direct contact with poultry is defined as: 1) touching birds (well-appearing, sick, or dead), or 2) touching poultry feces or surfaces contaminated with feces, or 3) consuming uncooked poultry products (including blood) in an affected area. *Close contact* with a person from an infected area with confirmed or suspected novel influenza is defined as being within 3 feet (1 meter) of that person during their illness.

Because specific testing for human infection with avian influenza A (H5N1) might not be locally available in an affected area, persons reporting close contact in an affected area with a person suffering from a severe, yet unexplained, respiratory illness should also be evaluated.

Clinicians should recognize that human influenza viruses circulate worldwide and year-round, including in countries with outbreaks of avian influenza A (H5N1) among poultry. Therefore, during the Interpandemic and Pandemic Alert Periods, human influenza virus infection can be a cause of influenza-like illness among returned travelers at any time of the year, including during the summer in the United States. This includes travelers returning from areas affected by poultry outbreaks of highly pathogenic avian influenza A (H5N1) in Asia. As of October 2005, such persons are currently more likely to have infection with human influenza viruses than with avian influenza A (H5N1) viruses.

b. Occupational risks

Persons at occupational risk for infection with a novel strain of influenza include persons who work on farms or live poultry markets or who process or handle poultry infected with known or suspected avian influenza viruses, workers in laboratories that contain live animal or novel influenza viruses, and healthcare workers in direct contact with a suspected or confirmed novel influenza case.

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

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

or confirmed human novel influenza—for any reason—is required for further evaluation. During the Pandemic Alert Period, Phases 3 and 4, the majority of human cases of novel influenza will result from avian-to-human transmission (see Appendix F). Therefore, a history of direct contact with poultry (well-appearing, sick, or dead), consumption of uncooked poultry or poultry products, or direct exposure to environmental contamination with poultry feces in an affected area will be important to ascertain. During the Pandemic Alert Period, Phase 5, a history of close contact with an ill person suspected or confirmed to have novel influenza in an affected area will be even more important.

Other avian influenza A viruses — Although the epidemiologic criteria for novel influenza are based on recent human cases of avian influenza A (H5N1), they are intended for use in the evaluation of suspected cases of infection with any novel influenza A virus strain, including other avian influenza viruses. Other avian influenza A viruses that have caused human disease include the highly pathogenic viruses H7N7 and H7N3 and the low pathogenic viruses H9N2 and H7N2. Some of these human cases have occurred in Europe (Netherlands) and North America (Canada and the United States). Therefore, the same high-risk exposures defined above for avian influenza A (H5N1) also apply to other avian influenza A viruses. A strong epidemiologic link to an avian influenza outbreak in poultry—even in areas that have not experienced poultry outbreaks of avian influenza A (H5N1)—may raise the index of suspicion for human infection with avian influenza A viruses.

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

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

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

1. Implement infection control precautions for novel influenza, including Respiratory Hygiene/Cough Etiquette. Patients should be placed on Droplet Precautions for a minimum of 14 days, unless there is full resolution of illness or another etiology has been identified before that period has elapsed. Healthcare personnel should wear surgical or procedure masks on entering a patient's room, as per Droplet Precautions, as well as gloves and gowns, when indicated for Standard Precautions Patients, should be admitted to a single-patient room, and patient movement and transport within the hospital should be limited to medically necessary purposes (see also Element #7).

2. Notify the local and state health departments. Report each patient who meets the clinical and epidemiologic criteria for a suspected case of novel influenza to the state or local health department as quickly as possible to facilitate initiation of public

health measures. Designate one person as a point of contact to update public health authorities on the patient's clinical status.

3. Obtain clinical specimens for novel influenza A virus testing and notify the local and state health departments to arrange testing. Testing will likely be directed by public health authorities. Since the optimal specimens for detecting novel influenza A virus infections are currently unknown, if feasible, **all** of the following respiratory specimens should be collected for novel influenza A virus testing: nasopharyngeal swab; nasal swab, wash, or aspirate; throat swab; and tracheal aspirate (for intubated patients). Store specimens at 4°C in viral transport media until transported or shipped for testing. Acute (within 7 days of illness onset) and convalescent serum specimens (2–3 weeks after the acute specimen and at least 3 weeks after illness onset) should be obtained and refrigerated at 4°C or frozen at minus 20–80°C. Serological testing for novel influenza virus infection can be performed only at the Centers for Disease Control and Prevention (CDC).

   Clinicians should immediately notify their local health departments of their intention to ship clinical specimens from suspected cases of human infection with avian influenza, to ensure that the specimens are handled under proper biocontainment conditions.

   Novel influenza can be confirmed by RT-PCR or virus isolation from tissue cell culture with subtyping. RT-PCR for testing of novel influenza viruses cannot be performed by a hospital laboratory and is available only at state public health laboratories and the CDC. Viral culture of specimens from suspected novel influenza cases should be attempted only in laboratories that meet the biocontainment conditions for BSL-3 with enhancements or higher.

   Rapid influenza diagnostic tests and immunofluorescence (indirect fluorescent antibody staining [IFA] or direct fluorescent antibody staining [DFA]) may be used to detect seasonal influenza, but should not be used to confirm or exclude novel influenza during the Pandemic Alert Period. Rapid influenza tests have relatively low sensitivity for detecting seasonal influenza,2 and their ability to detect novel influenza subtypes is unknown. The sensitivity of rapid diagnostic tests will likely be higher in specimens collected within two days of illness onset, in children, and when tested in clinical laboratories that perform a high volume of testing. Such tests can identify influenza A viruses but cannot distinguish between human infection with seasonal and novel influenza A viruses. A negative rapid influenza test result does not necessarily exclude human infection with either seasonal or novel influenza A viruses. A positive rapid influenza test result could be a false positive or represent infection with either seasonal or novel influenza A viruses. Therefore, both negative and positive rapid influenza test and immunofluoresence results should be interpreted with caution, and RT-PCR testing for influenza viruses should be performed.

Acute and convalescent serum samples and other available clinical specimens (respiratory, blood, and stool) should be saved and refrigerated or frozen for additional testing until a specific diagnosis is made.

4. Evaluate alternative diagnoses. An alternative diagnosis should be based only on laboratory tests with high positivepredictive value (e.g., blood culture, viral culture, PCR, *Legionella* urinary antigen, pleural fluid culture, transthoracic aspirate culture). If an alternate etiology is identified, the possibility of co-infection with a novel influenza virus may still be considered if there is a strong epidemiologic link to exposure to novel influenza.

5. Decide on inpatient or outpatient management. The decision to hospitalize a suspected novel influenza case will be based on the physician's clinical assessment and assessment of risk and whether adequate precautions can be taken at home to prevent the potential spread of infection. Patients cared for at home should be separated from other household members as much as possible. All household members should carefully follow recommendations for hand hygiene, and tissues used by the ill patient should be placed in a bag and disposed with other household waste. Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit. Separation of eating utensils for use by a patient with influenza is not necessary, as long as they are washed with warm water and soap .

6. Initiate antiviral treatment as soon as possible, even if laboratory results are not yet available. Clinical trials have shown that these medications can decrease the illness due to seasonal influenza duration by several days when they are initiated within 48 hours of illness onset. The clinical effectiveness of antiviral medications for treatment of novel influenza is unknown, but it is likely that the earlier treatment is initiated, the greater the likelihood of benefit. During the 2 Uyeki TM. Influenza diagnosis and treatment in children: a review of studies on clinically useful tests and antiviral treatment for influenza. Pediatr Infect Dis J. 2003 Feb;22(2):164-77. Pandemic Alert Period, available virus isolates from any case of novel influenza will be tested for resistance to the currently licensed antiviral medications. See Element # 4 for current antiviral information and treatment strategies.

7. Assist public health officials with the identification of potentially exposed contacts. After consulting with state, tribal and local public health officials, clinicians might be asked to help identify persons exposed to the suspected novel influenza case-patient (particularly healthcare workers). In general, persons in close contact with the case-patient at any time beginning one day before the onset of illness are considered at risk. Close contacts might include household and social contacts, family members, workplace or school contacts, fellow travelers, and/or healthcare providers.

C. Management of patients who test positive for novel influenza

If a patient is confirmed to have an infection with a novel influenza virus, healthcare personnel should continue antiviral treatment and all isolation and infection control precautions, and isolate patients with novel influenza from seasonal influenza patients. In addition to prior vaccination against seasonal influenza, such measures may decrease the risk of co-infection and viral genetic reassortment.

D. Management of patients who test positive for seasonal influenza

Many suspected novel influenza cases may be found to have seasonal human influenza, particularly during the winter season. It should be recognized that human influenza viruses circulate among people worldwide, including in affected areas with poultry outbreaks of avian influenza A viruses during non-seasonal influenza activity in the United States. For patients with confirmed seasonal influenza, maintain Standard and Droplet Precautions, and continue antiviral treatment for a full treatment course (e.g., 5 days).

E. Management of patients who test negative for novel influenza

The sensitivity of the currently available tests for detecting novel influenza viruses in clinical specimens has not been thoroughly evaluated with a full range of specimen types. Consequently, false-negative test results may occur. Therefore, if test results are negative but the clinical and epidemiologic suspicion remains high, continuing antiviral treatment and isolation procedures should be considered. Test results might be negative for influenza viruses for several reasons. Some patients might have an alternate etiology to explain their illness. The general work-up for febrile respiratory illnesses described below should evaluate the most common alternate causes. A certain number of truly infected cases might also test falsely negative, due to specimen collection conditions, to viral shedding that is not detectable, or to sensitivity of the test. Interpretation of negative testing results should be tailored to the individual patient in consultation with hospital infection control and infectious disease specialists, as well as the state or local health department and Centers for Disease Control and Prevention. In hospitalized patients who test negative for novel influenza but have no alternate diagnosis established, novel-influenza-directed management should be continued if clinical suspicion is high and there is a strong epidemiologic link to exposure to novel influenza. When influenza tests are negative and an alternative diagnosis is established, isolation precautions and antiviral drug therapy for novel influenza may be discontinued based on clinician's assessment, particularly in the absence of a strong epidemiologic link, if the alternative diagnosis is made using a test with a high positive-predictive value, and if the clinical manifestations are explained by the alternative diagnosis.

IV. CLINICAL GUIDELINES FOR THE PANDEMIC PERIOD

During the Pandemic Period, the primary goal of rapid detection is to appropriately identify and triage cases of pandemic influenza. During this period, outpatient clinics and emergency departments might be overwhelmed with suspected cases, restricting the time and laboratory resources available for evaluation. In addition, if the pandemic influenza virus exhibits

transmission characteristics similar to those of seasonal influenza viruses, illnesses will likely spread throughout the community too rapidly to allow the identification of obvious exposures or contacts. Evaluation will therefore focus predominantly on clinical and basic laboratory findings, with less emphasis on laboratory diagnostic testing and epidemiologic criteria. Nevertheless, clinicians in communities without pandemic influenza activity might consider asking patients about recent travel from a community with pandemic influenza activity or close contact with a suspected or confirmed pandemic influenza case.

A. Criteria for evaluation of patients with possible pandemic influenza

1. Clinical criteria

Suspected cases of pandemic influenza virus infection should meet the criteria for influenza-like illness: temperature of >38°C plus either sore throat or cough. Since lower respiratory tract involvement might result in dyspnea (shortness of breath), dyspnea should be considered as an additional criterion. Therefore, the full clinical criteria are: fever plus one of the following: sore throat, cough, or dyspnea. Although past influenza pandemics have most frequently resulted in respiratory illness, the next pandemic influenza virus strain might present with a different clinical syndrome. During a pandemic, updates on other clinical presentations will be provided at: www.pandemicflu.gov and www.cdc.gov/flu/.

Recommendations for general evaluation of patients with influenza-like illness are provided in Appendix F. Exceptions to the clinical criteria are Appendix F.

2. Epidemiologic criteria

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

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

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

1. Follow local and state health department recommendations on reporting for patients who meet the criteria for pandemic influenza.

2. If the patient is hospitalized, implement infection control precautions for pandemic influenza, including Respiratory Hygiene/Cough Etiquette. Place the patient on Droplet Precautions for a minimum of 5 days from the onset of symptoms. Healthcare personnel should wear surgical or procedure masks on entering a patient's room, as per Droplet Precautions, as well as gloves and gowns when indicated, as per Standard Precautions (Table). Once a pandemic is underway, hospital admission of patients

should be limited to those with severe complications who cannot be cared for outside the hospital setting. Patients should be admitted to either a single-patient room or an area designated for cohorting of patients with influenza. Patient movement and transport outside the isolation area should be limited to medically necessary purposes.

3. Obtain clinical specimens for general evaluation, as clinically indicated. Once pandemic influenza has arrived in a community, influenza testing will likely not be needed for most patients. Laboratory testing in conjunction with health departments will likely be performed in a subset of pandemic influenza cases, however, as part of ongoing virologic surveillance to monitor the antigenic evolution of the strains for vaccine strain selection purposes. At the beginning or end of a pandemic outbreak in a community, diagnostic testing might aid cohorting decisions, but may be optional in the setting of high local prevalence. Influenza diagnostic testing should be considered before initiating treatment with antivirals (see Element #4).

   As with seasonal influenza, RT-PCR and virus isolation from tissue culture will be the most accurate methods for diagnosing pandemic influenza. Generally, specimens should include combined nasopharyngeal aspirates or nasal swabs, and throat swabs, stored at 4°C in viral transport media. During the Pandemic Period, BSL-2 conditions should be sufficient for viral culture of clinical specimens from suspected pandemic influenza patients.

   Rapid diagnostic tests for influenza and immunofluoresence may be helpful for initial clinical management, including cohorting and treatment (see above). However, rapid influenza tests have relatively low sensitivity for detecting seasonal influenza, and their ability to detect pandemic influenza viruses is unknown. The sensitivity of rapid diagnostic tests will likely be higher in specimens collected within two days of illness onset, in children, and when tested at clinical laboratories that perform a high volume of testing. Because during a pandemic a negative rapid test may be a false negative, test results need to be interpreted within the overall clinical context. For example, it may not be optimal to withhold antiviral treatment from a seriously ill high risk patient on the basis of a negative test; however, in a setting of limited antiviral drug availability, treatment decisions in less high risk situations could be based on test results. The risk of a false-negative test also must be taken into account in making cohorting decisions. Rapid diagnostic testing should not preclude more reliable testing, if available.

3. Decide on inpatient or outpatient management. The decision to hospitalize a suspected pandemic influenza case will be based on the physician's clinical assessment of the patient as well as the availability of hospital beds and personnel. Guidelines on cohorting and infection control for admitted patients can be found in HHS Supplement 3 and HHS Supplement 4.

   An unstable patient will be considered a high priority for admission, but patients with high-risk conditions might also warrant special attention, such as observation or close follow-up, even if disease is mild. On the other hand, home management with follow-

up might be appropriate for well-appearing young children with fever alone. See HHS Supplement 7 for inpatient and outpatient treatment strategies.

Patients cared for at home should be separated from other household members as much as possible. All household members should carefully follow recommendations for hand hygiene, and tissues used by the ill patient should be placed in a bag and disposed with other household waste . Infection within the household may be minimized if a primary caregiver is designated; ideally, someone who does not have an underlying condition that places them at increased risk of severe influenza disease. Although no studies have assessed the use of masks at home to decrease the spread of infection, using a surgical or procedure mask by the patient or caregiver during interactions may be of benefit. Separation of eating utensils for use by a patient with influenza is not necessary, as long as they are washed with warm water and soap .

C. Clinical management of pandemic influenza patients

See Element #4 for current antiviral information and treatment strategies. In addition to use of antivirals, clinical management of severe influenza should address supportive care and the rapid identification and treatment of secondary complications. During the Pandemic Period, Centers for Disease Control and Prevention may request virus isolates from persons who fail treatment or antiviral prophylaxis, as these strains may more likely be drug resistant. In addition, randomly collected isolates will be tested for resistance to establish nationwide rates .

Children aged <18 years with suspected or confirmed pandemic influenza should not be treated with aspirin or other salicylate-containing products because of an increased risk of Reye syndrome (characterized by acute encephalopathy and liver failure) in this age group. Ribavirin and immunomodulatory therapies, such as steroids, are not approved by the FDA for treatment of severe influenza of any type and are purely investigational at this time. These agents frequently have severe adverse effects, such as bone marrow and hepatic toxicity, while the benefits of these therapies are unknown.

The major clinical presentations and complications related to seasonal human influenza occur more commonly in persons with certain underlying medical conditions, such as chronic respiratory or cardiovascular disease and extremes of age/ Limited data are available on risk factors and complications related to infection with novel influenza viruses, and these may change as individual strains evolve. In particular, post-influenza community-acquired pneumonia will likely be a commonly encountered complication, and clinicians will need to be aware of recommended methods for diagnosis and treatment. Guidance on the management of influenza-related pneumonia is presented in Appendix F.

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Pandemic Influenza Management Plan
Essential Element #9
Risk Communication

This element details the mechanisms and partnerships required to ensure that critical messaging and risk communications are coordinated among all responding entities. Communications have proven to be the most critical component of an effective emergency response. Such a coordinated communications infrastructure is required throughout the delineated phases of an influenza pandemic.

The primary objective will be to provide a timely, accurate and persuasive flow of information to the public, health care providers and government leaders to keep them appropriately informed through each stage of the pandemic. The OSDH will utilize its *Crisis and Emergency Risk Communications Plan,* the RHINO system and all redundant communications systems as tools to achieve this goal.

A. INTERPANDEMIC PERIOD

1. The OSDH will develop pre-event messages that focus on preparing the public psychologically and emotionally for a pandemic. Such pre-event messages will focus on the following assumptions:

    a. Pandemic influenza may occur in the next few years. If and when it occurs, significant lifestyle changes will be required of all.

    b. Many people may die.

2. The OSDH will employ the following messages during this phase:

    a. Recommend that medically high-risk groups should obtain routine influenza vaccination;

    b. Recommend that medically high-risk groups should obtain pneumococcal vaccination to reduce risk of bacterial pneumonia;

    c. Communicate openly that in the event of an influenza pandemic, critical decisions regarding who will receive vaccine or antivirals will be made wisely, ethically, and based upon the best available scientific information. These decisions will not be based on fairness issues but rather on who must be protected to ensure essential services are maintained for society to function (vaccine to those in critical occupations vs. those most vulnerable). These decisions will likely be unpopular;

d. Recommend that preparations begin now. Local planning in all sectors (businesses, hospitals, schools and governments) should begin to consider how and if they would operate during a pandemic;

e. Communicate openly that in the event of an influenza pandemic, such uncommon activities as isolation, quarantine and travel advisories will become commonplace;

f. Recommend that families begin to practice hand and respiratory hygiene habits that can reduce the chance of catching germs and passing them on to others:

   i. frequent hand washing with soap and water or applying 60% alcohol-based hand sanitizer;

   ii. covering your cough; and

   iii. staying home from work or school when sick.

g. Communicate openly that in the event of an influenza pandemic, wearing masks may become necessary under certain circumstances; and

h. Support government efforts to acquire and stockpile vaccines and antiviral medications when possible.

3. The OSDH Office of Communications will assess communications needs, capacities and any obstacles to reach the general public, healthcare providers, key policy makers and government leaders during a pandemic, and adapt as necessary using its *Crisis and Emergency Risk Communications Plan*. This plan also addresses mechanisms to communicate with special populations.

4. The OSDH Office of Communications will continue routine use of tools that would be necessary during a pandemic to ensure continued readiness. Collaboration with local, state and federal partners is ongoing and regular communications ensure consistency of messaging.

5. The OSDH will distribute copies of its "flu/pandemic flu shelf kit" with templates covering all aspects of potential risk communication materials. The shelf kit includes Spanish translations.

6. The OSDH Office of Communications will maintain a website capable of quickly updating information for the public, healthcare providers, response partners and the media.

B. PANDEMIC ALERT

1. The OSDH Office of Communications will review the *Crisis and Emergency Risk Communication Plan* and revise as necessary to include additional partners.

2. The OSDH Office of Communications will maintain an appropriate representative in the established Incident Command System.

3. The OSDH Office of Communications will ensure that protocols established in the *Crisis and Emergency Risk Communication Plan* are maintained and updated if necessary.

4. The OSDH will continue to the RHINO system and other components of the *Crisis and Emergency Risk Communication Plan* through regularly scheduled exercises.

5. The OSDH Office of Communications will collaborate with the OSDH Communicable Disease Division to augment the RHINO system to accomplish a rapid means of inbound call triage.

6. The OSDH will continue to maintain primary and redundant communication systems (phone, Email, Health Alert Network, redundant phone switches/lines, satellite phones, and radio networks) and update as necessary.

C. PANDEMIC PERIOD

1. The OSDH will focus event messaging on the pandemic as a very real threat to the health and safety of Oklahomans. These messages will include the following:

    a. Recommend mechanisms to protect critical infrastructure workers including but not limited to the provision of vaccines or antiviral medications;

    b. Recommend mechanisms for all persons to take appropriate hygiene precautions;

    c. Recommend activation of local emergency response plans; and

    d. Recommend methods to encourage appropriate public involvement, including mobilization of volunteers. Such mobilization is essential to the collective, successful response.

2. The OSDH Office of Communications will employ its *Crisis and Emergency Risk Communication Plan*, including the establishment of a Joint Information Center (JIC), to handle the surge of media requests and public inquiries generated by the pandemic and provide guidance regarding disease susceptibility, diagnosis and management. A

hotline will be activated to provide information and provide feedback necessary for message modification and evolution.

3. The OSDH will communicate regularly with partners at all levels to ensure continuity of messaging.

4. The OSDH will use its RHINO system and other notification methods to alert healthcare providers of public health recommendations.

D. POSTPANDEMIC PERIOD

1. The OSDH will focus post-event messaging on the following:

    a. Directions to lift any community or individual public health restrictions that have been imposed;

    b. Provision of and recognition of the need for mental health counseling; and

    c. Vaccinating high priority groups that did not receive vaccination.

2. The OSDH Office of Communications will continue to employ its *Crisis and Emergency Risk Communication Plan*; however, the Joint Information Center may be allowed to stand down.

3. The OSDH will continue to use its RHINO system and other systems to alert healthcare providers of any updates to public health recommendations.

4. The OSDH Office of Communications will employ messages in this phase will include the following:

    a. Medically high-risk groups should obtain routine influenza vaccination; and

    b. Medically high-risk groups should obtain pneumococcal vaccination to reduce risk of bacterial pneumonia.

5. The OSDH will review "lessons learned" from communications strategies employed and adjust its *Crisis and Emergency Risk Communication Plan* accordingly.

6. The OSDH will prepare After Action Reports and analyze all activated elements of the *Oklahoma Pandemic Influenza Management Plan* within 60 days.

7. The *Oklahoma Pandemic Influenza Management Plan* will be reviewed and updated by the Incident Command System staff to address gaps in the public health infrastructure for crisis communications pursuant to recommendations of the After Action Reports.

APPENDIX A

OSDH SCALABLE ICS ORGANIZATIONAL CHART

OSDH SCALABLE ICS ORGANIZATIONAL CHART

- Emergency Support Function-8
- Incident Commander (IC)
  - Deputy IC
  - Public Information Officer
  - **Operations Chief**
    - Public Health Services Branch Director
      - Tulsa City-County Health Dept.
      - Oklahoma City-County Health Dept.
      - Central Office
    - Community Health Services Branch Director
      - Region 1
      - Region 2
      - Region 3
      - Region 4
      - Region 5
      - Region 6
    - Deployment Unit Leader
    - Social Services Unit Leader
    - Mental Health Unit Leader
    - Medical Systems Unit Leader
  - **Logistics Chief**
    - Service Branch Director
      - Communications Unit Leader
      - EMSystem Unit Leader
      - Health Alert Network Unit Leader
      - Resources Unit Leader
      - Situation Room Manager
    - Support Branch Director
      - Information Technology Unit Leader
      - Emergency Medical Services Unit Leader
  - **Planning Chief**
    - Documentation Unit Leader
    - Epidemiological Unit Leader
    - Forecasting Unit Leader
    - Medical Infrastructure Unit Leader
    - Public Health Services Unit Leader
  - **Finance Chief**
    - Procurement Unit Leader
    - Time Unit Leader

Oklahoma State Department of Health
Creating a State of Health

REVISION 2006.5.11

Available Subject Matter Experts:

Environmental Health
Immunizations
Intelligence Officer
Legal
Long Term Care
Medical Director
Medical Reserve Corps
Pharmacy
Public Health Lab
Public Health Veterinarian
Security
SNS Chief
State Epidemiologist

APPENDIX B

VACCINE AND ANTIVIRAL DRUG PRIORITY GROUP RECOMMENDATIONS

Table 1: Vaccine Priority Group Recommendations

Tier	Subtier	Population	Rational
1	A	Vaccine and antiviral manufacturers and other essential to manufacturing and critical support. Medical workers and public health workers who are involved in direct patient contact, other support services essential for direct patient care, and vaccinators (OK 117,000). Immediate family members of those involved in direct patient care or supply and distribution of vaccine.	Need to assure maximum production of vaccine and antiviral drugs. Healthcare workers are required for quality medical care (studies show outcome is associated with staff-to-patient ratios). There is little surge capacity among healthcare sector personnel to meet increased demand. A sick family member may increase workforce absenteeism thereby creating disruption in the provision of vaccines or care.
1	B	Persons $\geq$ 65 yrs with 1 or more influenza high-risk conditions, not including essential hypertension (OK 455,000). Persons 6 months to 65 years with 2 or more influenza high-risk conditions, not including essential hypertension (OK 89,700). Persons 6 months or older with history of hospitalization for pneumonia or influenza or other influenza high-risk conditions in the post year (OK 95,000).	Those groups are at high risk of hospitalization and death. Excludes elderly in nursing homes and those who are immunocompromised and would not likely be protected by vaccinations.

Tier	Subtier	Population	Rational
1	C	Pregnant women (OK 39,000).	In past pandemics and annual influenza, pregnant women have been at high risk; vaccination will also protect the infant who cannot receive vaccine.
		Household contacts of severely immunocompromised persons who would not be vaccinated due to likely poor response to vaccine (OK 25,000).	Vaccination of household contacts of immunocompromised and young infants will decrease risk of exposure and infection among those who cannot be directly protected by vaccination.
		Household contacts of children ≤ 6 months old (OK 65,000).	
1	D	Public health emergency response workers critical to pandemic response (OK 3,500).	Critical to implement pandemic response such as providing vaccinations and managing/monitoring response activities.
		Key government leaders.	Preserve decision-making capacity critical for managing and implementing a response.
2	A	Healthy persons 65 years and older (OK 230,000).	Groups that are also at increased risk, but not as high risk as population in Tier 1 B.
		Persons 6 months to 65 years with 1 high risk condition (OK 465,000)	
		Persons 6 –23 months old, healthy (OK 728,000)	

Tier	Subtier	Population	Rationale
2	B	Other public health emergency responders Public safety workers, including police, fire, 911 dispatchers, and corrections facility staff. Utility workers essential for maintenance of power, water and sewage system functioning. Transportation workers transporting fuel, water, food medical supplies as well as public ground transportation. Telecommunication/IT for essential network operations and maintenance.	Includes critical infrastructure groups that have impact on maintaining health (e.g., public safety, transportation of medical supplies and food); implementing a pandemic response; and on maintaining societal functions.
3	A	Other key government health decision-makers. Funeral directors/embalmers.	Other important societal groups for a pandemic response but of lower priority.
4	A	Healthy persons 2-64 years not included in above categories.	All persons not included in other groups based on objective to vaccinate all those who want protection.

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Table 2: Antiviral Drug Priority Group Recommendations*

Group	Estimated population in Oklahoma	Strategy**	Rationale
1. Patients admitted to hospital.***	130,000	T	Consistent with medical practice and ethics to treat those with serious illness and who are most likely to die.
2. Healthcare workers with direct patient contact and emergency medical service providers.	119,600	T	Healthcare workers are required for quality medical care. There is little surge capacity among healthcare sector personnel to meet increased demand.
3. Highest risk outpatient immunocompromised persons and pregnant women.	32,500	T	Groups at greatest risk of hospitalization and death; immunocompromised cannot be protected by vaccine.
4. Pandemic health responders (public health, vaccinators, vaccine and antiviral manufacturers), public safety (police, fire, corrections), and government decision-makers.	42,9000	T	Groups are critical for an effective public health response to a pandemic.
5. Increased risk outpatients- young children 12-23 months old, person $\geq$ 65 yrs old, and persons with underlying medical conditions.	1.1 million	T	Groups are at high risk for hospitalization and death.

Groups	Estimated population in Oklahoma	Strategy**	Rationale
6. Outbreak response in nursing homes and other residential settings	NA	PEP	Treatment of patients and prophylaxis of contacts is effective in stopping outbreaks; vaccination priorities do not include nursing home residents.
7. Healthcare workers in emergency departments, intensive care units, dialysis centers, and emergency medical service providers.	15,600	P	These groups are most critical to an effective healthcare response and have limited surge capacity. Prophylaxis will best prevent absenteeism.
8. Pandemic societal responders (e.g., critical infrastructure groups as defined in the vaccine priorities) and healthcare workers without direct patient contact.	132,600	T	Infrastructure groups that have impact on maintaining health, implementing a pandemic response, and maintaining societal functions.
9. Other outpatients.	2.3 million	T	Include others who develop influenza and do not fall within the above groups
10. Highest risk outpatients.	32,500	P	Prevents illness in the highest risk groups for hospitalization and death.
11. Other healthcare workers with direct patient contact.	104,000	P	Prevention would best reduce absenteeism and preserve optimal functions.

* The committee focused its deliberations on the domestic U.S. civilian population. NVAC recognizes that Department of Defense (DOD) needs should be highly prioritized. A separate DOD antiviral stockpile has been established to meet those needs. Other groups also were not explicitly considered in deliberations on prioritization. These include American citizens living overseas, non-citizens in the U.S., and other groups providing national security services such as the Border Patrol and U.S. Customs Service.

**Strategy: Treatment (T) requires a total of ten (10) capsules and is defined as one (1) course. Post-exposure prophylaxis (PEP) also requires a single course. Prophylaxis (P) is assumed to require forty (40) capsules (4 courses though more may be needed if community outbreaks last for a longer period).

***There is no data on the effectiveness of treatment at hospitalization. If stockpiled antiviral drug supplies are very limited, the priority of this group could be reconsidered based on the epidemiology of the pandemic and any additional data on effectiveness in this population.

(This document was adopted from the HHS Pandemic Influenza Plan and estimated population modified for Oklahoma.)

APPENDIX C

ANTIVIRAL MEDICATIONS FOR PLANNING AND RESPONSE

Antiviral Agents for Planning and Response

I. Introduction

There are currently four approved medications in the United States that have antiviral activity against influenza A viruses. They fall into two drug classes, namely adamantane derivatives (rimantadine and amantadine) and neuraminidase inhibitors (oseltamivir and zanamivir). Since a pandemic is expected to occur with the emergence of a novel human influenza A subtype virus from an animal reservoir or through reassortment of influenza A viruses, this appendix will focus upon antiviral treatment and chemoprophylaxis of influenza type A. Pandemic influenza planning focuses on the use of neuraminidase inhibitors as resistance to amantadine and rimantadine can quickly develop when they are used for treatment of influenza thereby limiting their usefulness for large scale distribution. Because the neuraminidase inhibitors have different binding sites for the enzyme, cross-resistance between zanamivir- and oseltamivir-resistant viruses is variable. The U.S. Department of Health and Human Services is purchasing antivirals for deposition in the Strategic National Stockpile. Currently the federal stockpile contains a mix of 80% oseltamivir and 20% zanamivir. A total of 81 million treatment courses are scheduled to be stockpiled in the Strategic National Stockpile by the end of 2008.

II. Neuraminidase inhibitors

The neuraminidase inhibitors, zanamivir and oseltamivir, are chemically related members of a new class of antiviral drugs for influenza that have activity against both influenza A and B viruses. When treatment is initiated within 48 hours of illness onset, both drugs are effective in decreasing shedding and reducing the duration of symptoms of influenza by approximately one day compared to placebo. Zanamivir is an orally inhaled powdered drug that is approved for treatment of influenza in persons aged 7 years and older. Oseltamivir is an orally administered capsule or oral suspension that is approved for treatment of influenza in persons older than 1 year. For both drugs, the recommended duration of treatment is five days. Oseltamivir is also approved for chemoprophylaxis of influenza in persons aged one year and older. Zanamivir was recently approved for chemoprophylaxis of influenza in persons aged 5 and older. Controlled studies have demonstrated the efficacy of both drugs for prevention of symptoms of illness resulting from influenza infection in adults and adolescents compared to placebo. Little is published regarding the efficacy and effectiveness of neuraminidase inhibitors to prevent complications of influenza. One study of healthy and high-risk adolescents and adults treated with oseltamivir compared to placebo showed a reduction in influenza-related lower respiratory tract complications combined with antibiotic therapy. Since zanamivir and oseltamivir were approved in 1999, there is limited clinical experience to assess adverse effects. Oseltamivir use has been associated with nausea and vomiting during controlled treatment studies compared to placebo. Nausea, diarrhea, dizziness, headache, and cough have been reported during zanamivir treatment, but the frequencies of adverse events were similar to inhaled powdered placebo drug. Few serious Central Nervous System adverse effects have been reported for the neuraminidase inhibitor drugs. Zanamivir is not generally recommended for use in persons with underlying respiratory disease because of the risk of precipitating bronchospasm.

Options for the recommended use of antiviral drugs during an influenza pandemic

A. Treatment only

This recommended use of antiviral drugs will be directed toward early treatment (within 24-48 hours of illness onset) of suspected or confirmed influenza cases. This strategy may also address the relative roles of all four

antiviral agents (e.g., use of only one class of antiviral drugs versus all four drugs for treatment of illness resulting from infection with a pandemic influenza A strain). Issues to be considered include specifying which patients should be treated (e.g., high-risk populations, core infrastructure, etc.), the definition of suspected and confirmed cases, when treatment should be initiated, duration of treatment, and guidelines for patient evaluation.

When administered within two (2) days of illness onset to otherwise healthy adults, antiviral drugs can reduce the duration of uncomplicated influenza illness. None of the available agents has been demonstrated to be effective in preventing serious influenza-related complications (e.g., bacterial or viral pneumonia or exacerbation of chronic diseases).

To reduce the emergence of antiviral drug-resistant viruses, treatment of persons who have influenza-like illness should be discontinued as soon as clinically warranted, generally after three (3) to five (5) days of treatment or within 24 to 48 hours after the disappearance of signs and symptoms, depending on the agent used.

AMANTADINE: For treatment of influenza A in adults and children. Start within 24 to 48 hours after symptom onset and continue for 48 hours after disappearance of symptoms (usually 5 to 7 days).

(1) 1 TO 9 YEARS: 5 milligrams/kilogram/day (up to 150 mg) orally in 2 divided doses.

(2) 10 TO 12 YEARS: 100 milligrams orally twice a day (children over 10 years who weigh less than 40 kilograms: 5 milligrams/kilogram/day).

(3) 13 TO 64 YEARS: 100 milligrams orally twice a day.

(4) OVER 64 YEARS: Up to 100 milligrams orally once daily.

RIMANTADINE: For treatment of influenza A in adults and adolescents. Start within 24 to 48 hours after symptom onset and continue for 48 hours after disappearance of symptoms (usually 5 to 7 days).

(1) 13 TO 64 YEARS: 100 milligrams orally twice a day.

(2) OVER 64 YEARS: 50 to 100 milligrams orally twice a day.

ZANAMIVIR: For treatment of influenza A or B in adults and children 7 years and older who have been symptomatic for no more than two (2) days.

(1) 7 YEARS AND OLDER: Two inhalations (one 5 mg. blister per inhalation for total dose of 10 mg.) twice a day for 5 days via a hand-held, breath-activated plastic inhaler device.

OSELTAMIVIR: For treatment of influenza in adults and children who have been symptomatic for no more than two (2) days.

(1) ADULTS & ADOLESCENTS 13 YEARS AND OLDER: 75 milligrams orally twice a day for 5 days.

(2) CHILDREN 1 YEAR AND OLDER: Under 15 kilograms, 30 milligrams orally twice a day for five days; 15-23 kilograms, 45 milligrams orally twice a day for 5 days; 24-40 kilograms, 60 milligrams orally twice daily for 5 days; over 40 kilograms, 75 milligrams orally twice a day for five days.

B. Chemoprophylaxis Only

The recommended use of antiviral drugs will be focused upon chemoprophylaxis to prevent symptoms of illness resulting from infection with a pandemic influenza A strain. This strategy will direct antiviral usage toward chemoprophylaxis of specific groups (e.g., persons at high- risk for complications from influenza and other groups such as health care workers). This strategy also addresses chemoprophylaxis of persons who are targeted to receive vaccination against the pandemic strain during the period between vaccination and the development of immunity. Recommendations for priority groups for antiviral chemoprophylaxis may be modified based upon the evolving epidemiology of the pandemic. Clinical care should be focused upon management of complications of influenza such as antibiotic treatment of patients with secondary bacterial pneumonia. Primary constraints on the use of antivirals for prophylaxis will be:

- Limited supplies
- Increasing risk of side effects with prolonged use
- Potential emergence of drug-resistant variants of the pandemic strain

TARGETED GROUPS: Factors such as cost, compliance, and potential side effects should be considered when determining the period of prophylaxis. For maximal effectiveness, the drug must be taken each day for the duration of influenza activity in the community; however, to be most cost effective, antiviral prophylaxis may be emphasized only during the period of peak influenza activity in a community.

INTERIM USE BETWEEN VACCINATION AND IMMUNITY: The development of antibodies in adults after vaccination usually takes two (2) weeks, during which time chemoprophylaxis should be considered. Children who receive influenza vaccine for the first time can require up to six (6) weeks of prophylaxis (i.e., for two (2) weeks after the second dose of vaccine has been received). Chemoprophylaxis does not interfere with the antibody response to the vaccine.

IMMUNODEFICIENCY: Chemoprophylaxis may be indicated for high-risk persons who are expected to have an inadequate antibody response to influenza vaccine, including persons with HIV infection, especially those with advanced disease. No data are available concerning possible interactions with other drugs used in the management of patients with HIV infection. Such patients must be monitored closely if chemoprophylaxis is used.

PREGNANCY: Because of the unknown effects of influenza antiviral drugs on pregnant women and their fetuses, these agents should be used during pregnancy only if the potential benefit justifies the potential risk to the embryo or fetus (Centers for Disease Control and Prevention, 2003).

POST-EXPOSURE PROPHYLAXIS: Providing antiviral medications for ten days following potential exposure may be considered as a strategy to control small, well-defined disease clusters, such as outbreaks in nursing homes or other institutions, to delay or reduce transmission within the community or region.

Antiviral Medications for Influenza Prophylaxis

RECOMMENDATIONS: To be effective as chemoprophylaxis, antiviral medication must be taken each day for the duration of influenza A activity in the community (generally 6 to 12 weeks). If a pandemic virus is susceptible to M2 ion channel inhibitors, amantadine and rimantadine should be reserved for prophylaxis, although drug resistance may emerge quickly. Rimantadine is preferred over amantadine, because it is associated with a lower incidence of serious side effects.

AMANTADINE:

(1) 1 TO 9 YEARS: 5 milligrams/kilogram/day (up to 150 mg) orally in two (2) divided doses (NOTE: 5 milligrams/kilogram/day of amantadine syrup = 1 tsp/22 lb).

(2) 10 TO 12 YEARS: 100 milligrams orally twice daily (children over 10 years who weigh less than 40 kilograms: 5 milligrams/kilogram/day).

(3) 13 TO 64 YEARS: 100 milligrams orally twice daily.

(4) OVER 64 YEARS: 100 milligrams orally once daily.

(5) Available Forms: Symmetrel® syrup; Symadine® capsules; Amantadine-HCl syrup, capsules

RIMANTADINE:

(1) 1 TO 9 YEARS: 5 milligrams/kilogram/day (up to 150 milligrams) orally in two (2) divided doses (NOTE: 5 milligrams per kilogram of rimantadine syrup = 1 teaspoon/22 pounds).

(2) 10 TO 12 YEARS: 100 milligrams orally twice daily (children over 10 yr who weigh less than 40 kilograms: 5 milligrams per day).

(3) 13 TO 64 YEARS: 100 milligrams twice daily.

(4) OVER 64 YEARS: 50 to 100 milligrams orally twice daily (NOTE: Elderly nursing home residents should be administered only 100 milligrams per day; a reduction in dose to 100 milligrams per day should be considered for all persons $\geq$65 years of age if they experience possible side effects when taking 200 milligrams per day).

(5) Available Forms: Flumadine® tablets, syrup

OSELTAMIVIR:

(1) ADULTS & ADOLESCENTS 13 YEARS AND OLDER: 75 milligrams orally once daily

(2) Available Forms: Tamiflu® capsules, oral suspension

ZANAMIVIR:

(1) ADULTS & CHILDREN 5 YEARS AND OLDER: Two inhalations (one 5 mg blister per inhalation for total dose of 10 milligrams) once daily

(2) Manufactured by Glaxo-SmithKline as Relenza® (inhaled powder)

Package label information for the four currently approved antiviral medications in the United States can be found at: www.fda.gov/cder/drug/antivirals/influenza/default.htm

C. Treatment and targeted chemoprophylaxis

Under this option, the recommended use of antiviral drugs would be for both treatment of ill patients and chemoprophylaxis against illness resulting from infection with the pandemic strain. ***Given the expected demand and need for antiviral drugs in this strategy, rationing or specific targeting of priority groups for chemoprophylaxis should be addressed.*** Chemoprophylaxis would not be recommended for widespread use and would only be recommended for specific categories of individuals (e.g., laboratory workers with direct contact with pandemic virus strains in a containment facility, health care workers in direct contact with confirmed cases, and for outbreak control in closed populations). This strategy would also address the relative roles of all four antiviral agents (e.g., which drugs should be used for treatment and which should be used for chemoprophylaxis). This strategy should address the issues listed above under options A and B.

D. Targeted vaccination, targeted chemoprophylaxis, treatment

This strategy would recommend use of antiviral drugs for the highest priority groups for influenza vaccination until a vaccine-induced immune response is expected (e.g., duration until fourteen days post-vaccination). Unvaccinated high-risk persons and others could receive chemoprophylaxis against the pandemic strain for an unknown period - to be specified. Confirmed and suspected influenza cases would receive treatment within 48 hours of illness onset. Given the expected demand and need for antiviral drugs in this strategy, rationing or specific targeting of priority groups for chemoprophylaxis would need to be employed.

APPENDIX D

CONTAINMENT MEASURES

CONTAINMENT MEASURES

Containment Measures for Individuals *

I. Patient Isolation

Isolation is the separation of infected persons from other persons for the period of communicability to prevent transmission. A patient with a suspected or confirmed case of pandemic influenza should be separated from persons who are well, using infection control measures. Strict isolation is confinement of the individual to a room with a separate bed, and direct contact only with person(s) providing care to the infected individual. Ideally, persons who meet the criteria for novel influenza and do not require hospitalization should be isolated in their homes. If home isolation is not feasible, alternative facilities may be needed for isolation of influenza patients.

II. Management of Contacts

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

Community–based Containment Measures

I. Quarantine of Groups of Exposed Persons

Quarantine is the limitation of freedom of movement by persons or animals that have been exposed to a communicable disease for a period of time equal to the longest usual incubation period of the disease in order to prevent contact with those individuals not exposed. The purpose of quarantine is to reduce influenza transmission by separating exposed persons from others, monitoring exposed persons for symptoms, providing medical care and infection control precautions as soon as symptoms are detected. Groups that might be quarantined include:

- Family members who have been exposed to influenza.
- Groups of individuals at public gatherings where an exposure has been identified.
- Persons on an airplane, cruise ship or enclosed conveyance.
- School students, teachers and school personnel who have been exposed.
- Healthcare providers who are treating influenza cases.

Workplace quarantine allows exposed employees to work, but employees must observe activity restrictions while off duty. Monitoring for signs and symptoms before reporting to work and the use of Personal Protective Equipment while at work are required. This strategy is applicable for persons who provide essential services while minimizing the adverse impact of essential services provision.

II. Focused Measures to Increase Social Distance

It may be necessary to cancel events, close buildings or restrict access to certain sites or buildings in order limit exposure to influenza cases. Depending on the situation, examples of cancellations or building closures might include:

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

III. Community-wide Infection Control Measures

Community-wide infection control measures may decrease the overall magnitude of the outbreak. Persons with signs and symptoms of a respiratory infection, regardless of presumed cause, will be encouraged to:

- Cover the nose/mouth when coughing or sneezing.
- Use tissues to contain respiratory secretions.
- Dispose of tissues in the nearest waste receptacle.
- Perform hand-washing hygiene after contact with respiratory secretions and contaminated objects.

Persons at high risk for complications of influenza will be advised to avoid public gatherings. Disposable surgical-type masks will be used to take care of ill patients to prevent potentially infectious material from reaching the mucous membranes of the healthcare worker's nose or mouth. Mask use may be most important for persons who are at high risk for complications of influenza, those who are unable to avoid contact with infected individuals and for those traveling to seek medical care. The general public should avoid close contact with ill individuals.

IV. Implementation of "Snow Days"

Implementation of "snow days" involves the community in a positive way, is acceptable to most people and is relatively easy to implement. Implementation involves:

- Asking non-essential personnel to stay home.
- Recommend the public acquire and store provisions.

V. Closure of Office Building, Shopping Malls, Schools and Public Transportation

Closure of buildings, schools and public transportation could have a significant impact on the community and workforce. School closings may be effective in decreasing the spread of influenza and may significantly decrease morbidity and mortality among children. These voluntary measures can effectively reduce transmission without explicitly restricting activities.

VI. Widespread of Community Quarantine

Community-wide quarantine is the most stringent and restrictive containment measure. It involves asking everyone to stay home and restricts travel into or out of an area, except by authorized persons such as public healthcare workers. The quarantine may be applicable to all members of a group of people or community to prevent the further spread of the influenza.

VII. Scaling Back Community Containment Measures

The decision to scale back or discontinue community containment measures will be based on:

- Consistent decrease in the number of confirmed cases.
- Reduction in the number of probable and known cases.
- Verifying effective protective countermeasures are in place.

*Adapted from the U.S. Department of Health and Human Services (HHS) Pandemic Influenza Plan, U.S. Department of Health and Human Services, November 2005.

Table 1: Possible community containment measures based on level of novel influenza activity and risk of human transmission*

Level of Influenza Activity	Response	Rationale
World Health Organization Pandemic Phases 1-2 No novel influenza strains of public health concern in global circulation in humans.	Preparedness planning.	Use recommended response actions for interpandemic influenza prevention and control.
World Health Organization Pandemic Phases 3-4 Limited novel influenza virus transmission abroad; all local cases (e.g., in Oklahoma or the United States) are either imported or have clear epidemiologic links to other cases.	Consider quarantine of close contacts.	Although individual containment measures may have limited impact in preventing the transmission of pandemic influenza (given the likely characteristics of a novel influenza virus), they may have great effectiveness with a less efficiently transmitted virus and may slow disease spread and buy time for vaccine development.
World Health Organization Pandemic Phase 5 Limited novel influenza virus transmission in the area (e.g., within Oklahoma or the United States) with either a small number of cases without clear epidemiologic links to other cases or with increased occurrence of influenza among their close contacts.	Quarantine of close contacts.	Same as above.
World Health Organization Pandemic Phase 6 Sustained novel influenza virus transmission in Oklahoma, with a large number of cases without clear epidemiologic links to other cases. Disease control measures aimed at individuals and groups appear effective.	Focused measures to increase social distance; consider community-based measures.	Selective use of group quarantine (focused measures) early in a pandemic when the cope of the outbreak is focal and limited; may slow the geographic spread and buy time for vaccine development.

World Health Organization Pandemic Phase 6 Sustained novel influenza activity in Oklahoma, with a large number of cases in persons without an identifiable epidemiologic link at the time of initial evaluation; individual control measures are believed to be ineffective.	Community-level measures to increase social distance; consider coordinated community and business closures, and community wide quarantine.	When disease transmission is occurring in communities around the United State, individual quarantine is much less likely to have an impact and likely would not be feasible to implement. Rather, community measures and emphasizing what individuals can do to reduce their risk of infection may be more effective disease control tools.
World Health Organization Pandemic Phase 6 Decreases in the number of new cases, unlinked (or "unexpected") cases, and generations of transmission.	Consider quarantine of contacts.	
World Health Organization Post Pandemic Period Transmission of pandemic influenza has been controlled or eliminated, no new cases.	Active monitoring in high risk populations; continue for 2-3 incubation periods after control or elimination of transmission.	

*Adapted from: HHS Pandemic Influenza Plan; U.S. Department of Health and Human Services, November 2005.

APPENDIX E

SUMMARY OF INFECTION CONTROL

BOX 1. SUMMARY OF INFECTION CONTROL RECOMMENDATIONS FOR CARE OF PATIENTS WITH PANDEMIC INFLUENZA

COMPONENT	RECOMMENDATIONS
Standard Precautions	**See www.cdc.gov/ncidod/hip/ISOLAT/std_prec_excerpt.htm**
Hand hygiene.	Perform hand hygiene after touching blood, body fluids, secretions, exertions, 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-antibimicrobial 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.
Personal protective equipment (PPE) Gloves Gowns Face/eye protection (e.g., surgical or procedure mask and goggles or a face shield).	 For touching blood, body fluids, secretions, excretions, and contaminated items; for touching mucous membranes and no intact skin. During procedures and patient-care activities when contact of clothing/exposed skin with blood/body fluids, secretions, and excretions are anticipated. During procedures and patient care activities likely to generate splash or spray of blood, body fluids, secretions, and excretions.
Safe work practices.	Avoid touching eyes, nose, mouth or exposed skin with contaminated hands (gloved or ungloved); avoid touching surfaces with contaminated gloves and other PPE that are not directly related to patient care (e.g., door knobs, keys, and light switches.
Patient resuscitation.	Avoid unnecessary mouth-to-mouth contact; use mouthpiece, resuscitation bag, or other ventilation devices to prevent contact with mouth and oral secretions.
Soiled patient care equipment.	Handle in a manner that prevents transfer of microorganisms to oneself, others, and to environmental surfaces. Wear gloves if visibly contaminated as well as perform hand hygiene after handling equipment.
Soiled linen and laundry.	Handle in a manner that prevents transfer of microorganisms to oneself, others, and to environmental surfaces; wear gloves (gown if necessary) when handling and transporting soiled linen and laundry as well as perform hand hygiene.

Needles and other sharps.	Use devices with safety features when available. Do not recap; bend, break or hand-manipulate used needles. If recapping is necessary, use a one-handed scoop technique then place used sharps in a puncture-resistant container.
Environmental and disinfections.	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 and 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 regulation; wear gloves when handling waste; wear gloves when handling waste containers; perform hand hygiene.
Respiratory hygiene/cough etiquette: Source control measurers 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**
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.
Personal protective equipment (PPE).	Wear a surgical or procedure mask for entry into patient room. Wear other PPE as recommend for standard precautions.
Patient transport.	Limit patient movement outside of room to medically necessary purposes; have patient wear a procedure or surgical mask when outside the room.
Other.	Follow standard precautions and facility procedures for handling linen, laundry, dishes, 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, bronchosocopy, nebulizer treatment, suctioning) healthcare personnel should wear gloves, gown, face/eye protection, and a fit-tested N95 respiratory or other appropriate particulate respirator.

BOX 2. RESPIRATORY HYGIENE/COUGH ETIQUETE

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

- Cover the nose/mouth when coughing or sneezing.
- Use tissues to contain respiratory secretions.
- Dispose of tissues in the nearest waste receptacle after use.
- Perform hand hygiene after contact with respiratory secretions and contaminated objects/materials.

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

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

Masking and separation of persons with symptoms of respiratory infection

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

APPENDIX F

SUMMARY OF CLINICAL GUIDELINES

APPENDIX F

SUMMARY OF CLINICAL GUIDELINES

APPENDIX G

GLOSSARY OF TERMS

GLOSSARY OF TERMS

EMERGENCY: While an emergency may have been devastating, it is a dangerous event that may not result in a request for State or Federal assistance.

EMERGENCY AS PROCLAIMED BY THE GOVERNOR: Whenever, in the opinion of the Governor, the safety of Oklahoma and its citizens requires the exercise of extreme measures due to an impending or actual disaster, he may declare an emergency to exist in the state, or any part of the state, in order to aid individuals and local government.

EMERGENCY OPERATIONS CENTER (EOC): A centralized facility utilized by governments for direction, control and coordination in an emergency or disaster.

EMERGENCY SUPPORT FUNCTION (ESF): A functional area of response activity established to facilitate the deliver of Federal and State assistance required during the immediate response phase of a disaster to save lives, protect property and public health, and to maintain public safety.

HEALTH ALERT NETWORK (HAN): A Health Alert Network (HAN) is used to provide emergent health information to health care professionals and public health partners. Through a national directive, every state must operate a Health Alert Network and follow guidelines and policies set by the Centers for Disease Control and Prevention (CDC). The need to distribute vital health information in a timely and secure manner grows as we attempt to fight terrorism and to protect the public from disease outbreaks.

LOCAL GOVERNMENT: Any county, city or incorporated town in the State of Oklahoma.

METROPOLITAN MEDICAL RESPONSE SYSTEM (MMRS): Program began in 1996 and currently is funded by the United States Department of Homeland Security (DHS). The primary focus of the MMRS program is to develop or enhance existing emergency preparedness systems to effectively respond to a public health crisis, especially a weapons of mass destruction (WMD) event. Through preparation and coordination, local law enforcement, fire, HAZMAT, EMS, hospital, public health, and other "first response" personnel plan to more effectively respond in the first 48 hours of a public health crisis.

MEDICAL EMERGENCY RESPONSE (MERC): Designated site with assigned individuals serving to coordinate healthcare systems during responses within an assigned region of the State of Oklahoma.

OKLAHOMA DEPARTMENT OF EMERGENCY MANAGEMENT (OEM): The agency responsible for preparation and execution of emergency functions to prevent, minimize and repair injury and damage resulting from hostile actions or natural disasters as stated in the Oklahoma Emergency Management Act of 2003.

OKLAHOMA STATE IMMUNIZATION INFORMATION SYSTEM (OSIIS): Statewide immunization documentation database shared between the OSDH and local partners to record vaccination administration.

PANDEMIC INFLUENZA TEAM: Pandemic Influenza Team consist of Chief of Operations for Disease Prevention Services, State Epidemiologist, OSDH Pharmacist, Terrorism Preparedness and Response Service Chief, Terrorism Preparedness and Response Service Strategic National Stockpile Coordinator, Terrorism Preparedness and Response Service Hospital and Public Health Preparedness Division Director, Oklahoma Hospital Association Director, Oklahoma Pharmacy Association Director, an Oklahoma physician specializing

in the practice of infectious diseases, a medical ethicist, a Metropolitan Medical Response Service representative and the OSDH Chief of Nursing Services. It will also have members from the Oklahoma City Area Inter-Tribal Health Board and Indian Health Service. They will make recommendations as deemed appropriate to the Commissioner of Health.

RECOVERY PERIOD: That period of time subsequent to an emergency when economic recovery from disaster damages takes place, including the use of any available local, state, federal government and private resources.

RESPONSE: Activities to address the immediate and short-term needs during an emergency or disaster.

RHINO: The Reportable Health Information and Notification in Oklahoma (RHINO) is Oklahoma's HAN. The RHINO system consists of a secure web site where users can view all alerts, advisories, updates and events distributed. Registered users can also view and share documents in a secure format through the document library. The RHINO system distributes health information in accordance to national HAN standards.

APPENDIX H

RESOURCE LINKS

RESOURCE LINKS

http://health.ok.gov

http://www.hhs.gov/pandemicflu/plan/

http://ok.gov/oem/resources.php

http://www.pandemicflu.gov/

http://www.who.int/csr/resources/publications/influenza/GIP_2005_5Eweb.pdf

http://www.cdc.gov/flu/protect/preventing.htm

http://www.cdc.gov/ncidod/dhqp/pdf/Infdis/RespiratoryPoster.pdf

http://www.cdc.gov/doc.do/id/0900f3ec80226c7a/states

APPENDIX I

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