

Arizona Influenza Pandemic Response Plan





Table of Contents

1.0	Executive Summary	4
2.0	Introduction and Background	5
2.1	Organization of the Plan	5
3.0	Situation and Assumptions	6
4.0	Concept of Operations	7
4.1	Federal Guidance and Direction	8
4.2	Local Support	8
4.3	Public Health Incident Management System (PHIMS)	8
4.4	Statewide Emergency Response	8
4.5	Liability	9
4.6	Tribal Activities	9
4.7	Border Activities	10
4.8	Special Populations	10
4.9	Executive and Arizona Regional Coordinating Committees	10
4.10	Response Activity Supplements	10-15
4.11	Ethical Considerations	16
5.0	Organizational Roles and Responsibilities	16
5.1	State Government	16
5.2	Local Government	16
5.3	Federal Government	17
5.4	Private Organizations/Volunteer Organizations	17
6.0	Appendices	18
7.0	Response Activity Supplements	18



PRIMARY AGENCIES

State: Arizona Department of Health Services (ADHS)
Federal: Centers for Disease Control and Prevention (CDC)
International: World Health Organization (WHO)

SUPPORT AGENCIES

State: Arizona Division of Emergency Management (ADEM)
Office of Attorney General
Governor's Office
State Board of Funeral Directors and Embalmers
Department of Agriculture
Department of Corrections
Department of Economic Security
Department of Administration

County: Health Departments
County Hospitals
Emergency Management Departments
Medical Examiners

Local: Metropolitan Medical Response Systems
Incorporated Community Governments
City Emergency Managers

Federal: Federal Emergency Management Agency (FEMA)
U.S. Public Health Service (USPHS)
Office of Emergency Preparedness (OEP)
Centers for Disease Control and Prevention (CDC)
Indian Health Service (IHS)
Veterans Administration (VA) Medical Centers
U.S. Department of Agriculture (USDA)



Private:

Local Medical Facilities
Arizona Chapter of the American Academy of Pediatrics
Arizona Health Care and Hospital Association
Arizona Funeral Directors Association
Arizona Chapter of American College of Emergency Physicians
Arizona Medical Association
Arizona Infectious Disease Society
Arizona Osteopathic Medical Association
Arizona Chapter of the Emergency Department Nurses Association
Arizona Nurses Association
Association of Practitioners of Infection Control

Volunteer:

American Red Cross
Critical Incident Stress Debriefing – Arizona Chapter
Arizona Voluntary Organizations Active in Disasters (AzVOAD)
Salvation Army
University of Arizona (medical/nursing/pharmacist/public health students)



1.0 Executive Summary

It is likely that another influenza pandemic will occur sometime in the future. Arizona needs to be prepared for such an event. To lessen the impact of an influenza pandemic, the State of Arizona has created this Influenza Pandemic Response Plan to promote an effective response throughout the pandemic. The plan was originally crafted in 2000, through a coordinated effort of the Arizona Department of Health Services (ADHS), Arizona Division of Emergency Management (ADEM), local health departments and other partners and stakeholders. It is also an annex to the Arizona State Emergency Response and Recovery Plan (SERRP).

The United States Department of Health and Human Services (HHS) has incorporated the World Health Organization (WHO) Pandemic Planning Periods and Phases into its influenza pandemic response plan. These periods represent different levels of impact on society, based on the progression of a novel influenza virus and its potential to cause a pandemic; therefore, pandemic preparedness requires determining the appropriate capabilities, roles, and responsibilities needed to respond to the different periods. In keeping with the national model, the Arizona Influenza Pandemic Response Plan identifies responsible parties and prescribes necessary actions, based on the WHO/HHS pandemic periods.



While a pandemic response is primarily a public health response, many agencies, organizations, and private institutions will need to work in a coordinated and collaborative manner to ensure an effective overall response in Arizona:

- ADHS is the lead agency for preparedness and response to an influenza pandemic in Arizona.
- Local health departments (including county and tribal health departments) are the critical local response entities and should be the center of gravity for community level planning.
- Emergency management and homeland security agencies will be important for ensuring overall coordination of government resources.
- First responder agencies have important manpower and logistical resources that will be necessary for ensuring the safety of individuals and communities.
- Hospitals and health care institutions will be the frontline of a pandemic and are essential planning partners at the local and state level.
- Volunteer agencies are always important partners in emergency response activities.

These entities are addressed in this plan, and are encouraged to develop their own influenza pandemic response plans that coordinate with the Arizona Influenza Pandemic Response Plan.

The heart of the Arizona Influenza Pandemic Response Plan is the Response Activity Supplements. The Response Activity Supplements address the concepts listed below. These Supplements are subject-area specific and provide very detailed planning and response activities. The Response Activity Supplements are subject to change and will be updated with changes in planning assumptions, response capacities, or information on potential pandemic strains and subsequent disease.

Surveillance and Epidemiology - Arizona's influenza surveillance system, which monitors influenza activity in the state, will provide the surveillance data needed to guide response efforts during a pandemic.

Laboratory Diagnostics - The capability of identifying pandemic influenza viruses depends not only on rapid detection and characterization but also on strong partnerships between clinical and public health laboratories.

Health Care Coordination and Surge Capacity - The health care system in Arizona will experience significant strains on its resources during a pandemic; preparedness for which includes surge capacity and mortuary issues.



Infection Control - The ability to limit transmission of the influenza virus already exists in the health care settings – the appropriate and thorough application of infection control measures.

Clinical Guidelines - Early identification and appropriate medical intervention are essential for patients who present with suspect pandemic influenza symptoms.

Vaccine and Antiviral Distribution and Use - During a pandemic, vaccines and antivirals may or not be effective or available, will likely be in short supply and will have to be allocated on a priority basis.

Community and Travel-Related Disease Control - Public health interventions, such as quarantine and social distancing, will be necessary during a pandemic to slow the transmission of disease in the community.

Public Health Communications - Response officials will need to provide accurate and timely coordinated messages to the public leading up to, and during, a pandemic; an informed public is an asset to the overall response.

Workforce Support - Response agencies and organizations need to ensure the safety and well being of response personnel to ensure and sustained and effective response

Influenza Pandemic Information Management - Information management is the central nervous system of a complex response system, and a pandemic presents many needs for capturing, analyzing and sharing information.

Guidance for County and Tribal Health Departments - This guidance is designed to help spotlight important planning and response activities that are necessary at the local health department level.



Arizona has many facets: an international border, numerous Indian Nations, diverse and rich cultures, a rural vs. urban health care divide, a collaborative emergency response structure, and both a strong sense of community and rugged individualism. Understanding and appropriately addressing these facets will allow Arizona to be as prepared as possible for the unthinkable.

2.0 Introduction and Background

Influenza pandemics struck three times in the 20th century causing varying degrees of increased illness and death over annual influenza outbreaks. Of particular note is the 1918 Pandemic, oft referred to as the Spanish Flu, where upwards of 50 million people died around the world and untold number of illnesses along with catastrophic disruption to society as a whole. It is likely that another influenza pandemic will occur sometime in the future. The State of Arizona needs to be prepared for such an event.

According to the World Health Organization (WHO), “An influenza pandemic (or global pandemic) occurs when a new influenza virus subtype appears, against which no one is immune.” In past pandemics, influenza viruses have spread worldwide within months, and are expected to spread even more quickly given modern travel patterns. There may be as little as one to six months warning before outbreaks begin in the United States. Outbreaks are expected to occur simultaneously, preventing shifts in resources that commonly occur in other natural disasters. An influenza pandemic is considered to be a high-probability event, and some experts consider it to be inevitable.

In Arizona, an influenza pandemic would result in numerous persons ill with influenza. The number of persons hospitalized would exceed the capacity of these institutions. Additionally, the number of deaths due to influenza like illness (ILI) would rise above regular influenza season rates. The Arizona Influenza Pandemic Response Plan was developed to promote an effective and coordinated response, from the interpandemic period through the end of the pandemic period.



To prepare for the next pandemic, public health officials from around the world have initiated the planning process. The development of Arizona's plan is a coordinated effort and is based on the U.S. Department of Health and Human Services' *Pandemic Influenza Plan*, November 2005 <http://www.hhs.gov/pandemicflu/plan/> and the *Pandemic Influenza Incident Annex* to the *State Emergency Response and Recovery Plan (SERRP)*.

2.1 Organization of the Plan

This plan is an Annex to the Arizona Department of Health Services Emergency Response Plan. The response activities will be carried out in collaboration with the Arizona Division of Emergency Management and local health departments and other local, state and federal agencies and organizations.

International and national pandemic planning is divided into four periods and a total of six phases that range from the absence of a new virus subtype to resolution of the pandemic. The periods are:

- **Interpandemic (Phases 1 and 2)**
- **Pandemic Alert (Phase 3, 4 and 5)**
- **Pandemic (Phase 6)**
- **Postpandemic**

See Appendix B for definitions of the phases within the periods listed.

The Arizona plan follows the WHO phase guidelines and the national HHS model of prescribing necessary activities and identifying responsible parties by the first three periods containing six phases. The main plan provides a general overview of the ADHS response followed by 13 subject specific supplements.

3.0 Situation and Assumptions

The development of the Arizona Influenza Pandemic Response Plan is based on the following assumptions:

- An influenza pandemic is likely to occur sometime in the future.
- A new virus subtype will likely emerge in a country other than the United States, although a novel strain could first emerge in the United States.
- Although there may be isolated pockets, the pandemic could affect all geographic areas of the state.
- When the pandemic occurs, vaccines and medicines will be in short supply and will have to be allocated on a priority basis.
- The federal government has assumed responsibility for devising a liability program for vaccine manufacturers and persons administering the vaccine.
- Arizona's temporary residents, winter visitors, migrant workers and tourists will create a potential vaccination target population of nearly double that of the permanent resident population.
- The emergency response element will require the substantial interaction of state and local agencies in addition to the local health departments.



- Response to the demand for services will require non-standard approaches, including:
 - Discharge of all but critically ill hospital patients
 - Expansion of hospital capacity by using all available space and equipment on the hospital campus
 - Adjust patient-to-hospital staff ratio
 - Recruitment of volunteers who can provide custodial services under the general supervision of health and medical workers
 - Relaxation of practitioner licensure requirements as deemed appropriate
 - Utilization of general purpose and special needs shelters as temporary health facilities.
 - Expansion of mortuary services capacity
- The federal government has assumed responsibility for developing “generic” guidelines and information templates, including fact sheets, triage and treatment of influenza patient protocols, and guidelines for the distribution and use of antiviral agents that can be modified at the state and local level. Until these are developed and available, the state has the responsibility to develop such guidelines for its citizens.
- Secondary bacterial infections following influenza illness may stress antibiotic supplies.

4.0. Concept of Operations

The Pandemic Flu response strategy involves the following elements:

- Federal guidance and direction
- Local support
- Public Health Incident Management System (PHIMS)
- Statewide Emergency Response
- Liability
- Tribal Activities
- Border Activities
- Special Populations
- Executive and Regional Planning Committees
- Response Activity Supplements
 1. Surveillance and Epidemiology
 2. Laboratory Diagnostics
 3. Health Care Coordination and Surge Capacity
 4. Infection Control
 5. Clinical Guidelines
 6. Vaccine Distribution and Use
 7. Antiviral Drug Distribution and Use
 8. Community Disease Control and Prevention
 9. Managing Travel-Related Risk of Disease Transmission
 10. Public Health Communications
 11. Workforce Support: Psychosocial Considerations and Information Needs
 12. Influenza Pandemic Information Management
 13. Guidance for County and Tribal Health Departments





4.1 Federal Guidance and Direction

As the pandemic develops, the World Health Organization (WHO) will notify the Centers for Disease Control and Prevention (CDC) and other national health agencies on the progress of the pandemic. CDC will communicate with ADHS and other state and territorial health departments about pandemic stages, information about the virus (laboratory findings), vaccine availability, recommendations for prioritizing vaccine and antivirals/antibiotics, national response coordination and other recommended strategies for pandemic detection, control and response. ADHS serves as the main conduit for communications with the CDC for all statewide parties.

4.2 Local Support

There is integration between local and state emergency management structure. The primary response is at the local level with coordination and support from ADHS. Local health departments (LHDs) (including county and tribal health departments) will carry out the components of the pandemic flu response in their communities. Each county is expected to have its own pandemic flu plan that is consistent with the Department's plan. Necessary local health department actions are detailed in the Response Activity Supplements. Examples of local health departments' activities include: conducting flu surveillance in their jurisdictions; distributing and administering flu vaccine, if available; and responding to all crises in their jurisdiction, such as health care facility surge capacity, public inquiry and media requests, etc.

ADHS will provide support to the local health departments if their resources are exceeded. Additionally, ADHS will provide regular updates on pandemic status and response activities to the local health departments, through conference calls, Secure Integrated Response Electronic Notification (SIREN) (see Supplement 12) postings, health alerts and other avenues.

4.3 Public Health Incident Management System (PHIMS)

The ADHS incident management structure used in the Department is the "Public Health Incident Management System," or PHIMS, as described in the ADHS Public Health Emergency Response Plan. Please refer to Appendix C – PHIMS Description. This structure is compliant with the National Incident Management System (NIMS) and is in place but inactivated during normal day-to-day operations. In the event of an emergency or when activities become overwhelming, the Director, will assign an Incident Commander within Public Health Services to coordinate the Department's activities and report to the command staff. The command staff and the Incident Commander work together to keep the Agency Administrator (Director) well informed. It is also essential to coordinate with the local health departments and other agencies.

The PHIMS command staff will devise the overall structure and responsibilities of "command and control" operations. The command staff will oversee planning, response, recovery, and mitigation efforts.

4.4 Statewide Emergency Response

If the Governor declares a State of Emergency, the State's emergency management structure is put into place (refer to the State Emergency Response and Recovery Plan (SERRP)) www.dem.state.az.us/preparedness/SERRP/SERRP_Layout_Index.html. According to the *Pandemic Influenza Incident Annex* of the SERRP, the ADHS is listed as the primary agency and will provide the Incident Commander to oversee all of the statewide activities. ADEM will operate the State Emergency Operations Center (SEOC) and provide other logistical support. ADHS and ADEM will work together, in conjunction with local health departments, local emergency management, and other partners and stakeholders. The responsibilities of agencies will increase with each successive stage of the pandemic.



In addition to the SERRP, which is designed to provide support to the State's counties and cities, each State agency has written a Business Continuity Plan (BCP). The goal of the BCP is to assist each state agency to prepare for, mitigate, respond to and recover from an emergency event capable of either causing significant injuries to employees or the public or disrupting normal business operations and damaging the environment. The BCP strategic planning process began several years ago and as of 2006 has entered into a third phase of planning. This level emphasizes that each agency identify its critical business functions and identify or establish interdependency among agencies to support the resumption of these functions. The highly infectious characteristics of an influenza pandemic represent an incident that could limit the available workforce and have a substantial effect on these services.

4.5 Liability

There are several state references to the liability of volunteers in the event of a state of war emergency or a state of emergency. (for Federal, see Authorities in Appendix D)

Under ARS § 26-310 Use of Professional Skills, during a state of war emergency or state of emergency, any person holding any license, certificate, or other permit issued by any state evidencing the meeting of qualifications of such state for professional skills may render aid involving such skill to meet the emergency as fully as if such license had been issued in this state.

Under ARS § 23-901.06 Volunteer Workers, In addition to persons defined as employees under section 23-901, volunteer workers of a county, city, town, or other political subdivision of the state may be deemed to be employees and entitled to the benefits provided by this chapter upon the passage of a resolution or ordinance by the political subdivision defining the nature and type of volunteer work and workers to be entitled to such benefits. The basis for computing compensation benefits and premium payments shall be four hundred dollars per month.

Under ARS § 26-314, Immunity of state, political subdivisions and officers, agents and emergency workers; limitation rules, The Department, (ADHS) or any other state agency, will not be liable for any claim based upon the exercise or performance, or the failure to exercise or perform, a discretionary function or duty by an emergency worker, engaging in emergency management activities or performing emergency functions. This state and its departments, agencies, boards and commissions and all other political subdivisions that supervise or control emergency workers engaging in emergency activities or emergency functions are responsible for providing for liability coverage, including legal defense, of an emergency worker if necessary. Coverage provided if the emergency worker is acting within the course and scope of assigned duties and is engaged in an authorized activity, except for actions of willful misconduct, gross negligence or bad faith.

4.6 Tribal Activities

For several years, preparedness activities and coordination have taken place among ADHS, the Arizona tribes, Indian Health Service, county health departments and the Intertribal Council of Arizona (ITCA). This includes writing response plans, attending training opportunities and furthering the development of mass vaccination strategies and resources. Due to the varied nature of public health services for the 21 different Indian Nations in Arizona (e.g., tribal health agency-only, IHS-only, tribal agency-IHS combination), this plan does not provide specific response actions at the tribal level. ADHS is completing an additional supplement (Supplement 13) which provides general guidance for both county and tribal health agencies to assist these entities in the creation of their respective plans.

The Indian Health Service (IHS) Area Offices are in the process of completing their influenza pandemic response plans. In turn, each Service Area will develop a plan for their respective facility.



4.7 Border Activities

In the event of a Binational public health emergency, the ADHS Office of Border Health (OBH) serves as the conduit for communication and coordination with the Sonoran state health department. The OBH shares disease surveillance information with the Secretaria de Salud de Sonora (Sonoran State Health Department), specifically with the State Epidemiologists, as well as with local border health authorities via secure email, telephone, and/or fax.

The OBH is instrumental in coordinating Binational emergency preparedness and response planning with the Arizona border county Health Departments, the Tohono O'odham Nation, Indian Health Services, and the Sonora State and municipal health departments in the Arizona-Sonora border region. The OBH is currently conducting SIREN training with the State and local health department personnel in Sonora to improve Bi-national disease surveillance, communication and emergency preparedness and planning coordinating efforts through increased utilization of SIREN. OBH is also coordinating planning with U.S. Border Patrol.

4.8 Special Populations

In April of 2005, ADHS completed a study that covered demographics and effective risk communication needs of special populations in Arizona (<http://www.azdhs.gov/phs/edc/edrp/es/pdf/adhsspecialpopstudy.pdf>). Special populations include those persons who are physically disabled, mentally impaired, the elderly, those that live in rural communities or whose primary language is not English. Commonly used methods of risk communication may not reach or have little impact among these persons and therefore more creative measures are needed. Accurate translation of risk communication materials and use of community agencies and spokespersons to provide key messages were among those approaches identified that would be effective to communicate to various special needs populations.



4.9 Executive and Arizona Regional Coordinating Committees

The State Epidemiologist and the Chief of Public Health Preparedness are the ADHS co-chairs of the ADHS Executive Pandemic Planning Committee. This committee is comprised of members from the following Bureaus: Epidemiology and Disease Control, State Laboratory, Emergency Preparedness and Response (BEPR), and Public Information. BEPR will ensure that the Arizona Influenza Pandemic Response Plan is maintained, reviewed, and revised annually.

The Arizona Regional Coordinating Committee planning meetings are coordinated with the Public Health Region meetings. There are four regions and the meetings are held quarterly. Participants in the region meetings include public health, emergency medical services (EMS), emergency management and local hospitals.

4.10 Response Activity Supplements

The heart of the Arizona Influenza Pandemic Response Plan is the Response Activity Supplements. The following gives general information about concepts and activities in the Response Activity Supplements, which are attached to this plan following the Appendices. These Supplements are subject-area specific and provide very detailed planning and response activities. The activities listed are subject to change and will be updated with changes in planning assumptions, response capacities, or information on potential pandemic strains and subsequent disease.



4.10a Supplement 1: Surveillance and Epidemiology

Arizona's influenza surveillance system, which monitors influenza activity in the state, will provide the surveillance data needed to guide response efforts during a pandemic. Supplement 1 provides a summary of influenza surveillance activities conducted during normal influenza seasons as well as proposed enhancements to surveillance that would be implemented in the event of a pandemic.

Period	Primary Actions
<i>Interpandemic/Pandemic Alert</i>	Virologic surveillance during interpandemic influenza season
	Disease surveillance during interpandemic influenza season
	Surveillance for novel strains of influenza during the Pandemic Alert Period
	Veterinary Surveillance
	Preparedness planning for virologic and disease surveillance during a pandemic
<i>Pandemic</i>	Management of patients infected with novel strains of influenza and their contacts
	Enhanced surveillance
	Scaled-back surveillance

4.10b Supplement 2: Laboratory Diagnostics

The public health laboratory is a critical component of the overall public health response to an influenza pandemic. The capability of differentiating common influenza from pandemic influenza depends upon the rapid detection and characterization that is available only at public health laboratories. Supplement 2 identifies the role of clinical and hospital laboratories and the State Public Health Laboratory as well as recommended activities.

Period	Primary Actions
<i>Interpandemic/Pandemic Alert</i>	Laboratory support for seasonal influenza surveillance
	Laboratory testing for novel influenza subtypes
	Laboratory planning to support the response to an influenza pandemic
<i>Pandemic</i>	Laboratory support for disease surveillance
	Laboratory support for clinicians
	Biocontainment procedures
	Occupational health issues for laboratory workers

4.10c Supplement 3: Health Care Coordination and Surge Capacity

The health care system in Arizona will experience significant strains on its resources during a pandemic. Supplement 3 describes the planning and actions necessary for the provision of care in hospitals and other health care settings including surge capacity and mortuary issues.

Period	Primary Actions
<i>Interpandemic/Pandemic Alert</i>	Provision of care in hospitals
	Provision of care in non-hospital settings
<i>Pandemic</i>	Activating the facility's influenza pandemic response plan



4.10d Supplement 4: Infection Control

The ability to limit transmission of the influenza virus in health care settings will rely heavily on the appropriate and thorough application of infection control measures. Supplement 4 provides guidance to health care and public health partners on the basic principles of infection control including personal protective equipment for limiting the spread of pandemic influenza.

Primary Information and Recommendations:

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

Management of infectious patients

Infection control practices for health care personnel

Occupational health issues

Reducing exposure of persons at risk for complications of pandemic influenza

Health Care setting specific guidance

Care of pandemic influenza patients in the home

Care of pandemic influenza patients at alternative sites

Infection control in schools and workplaces

Infection control in community settings

4.10e Supplement 5: Clinical Guidelines

The role of clinical guidelines magnifies itself during a pandemic from its use during a normal influenza season but involves the same components. Early identification and appropriate medical intervention are essential. Supplement 5 focuses on the initial screening, assessment and management of patients who present from the community with fever and/or respiratory symptoms during the pandemic periods.

Period	Primary Actions
<i>Interpandemic/Pandemic Alert</i>	Criteria for evaluation of patients with possible novel influenza
	Initial management of patients who meet the criteria for novel influenza
	Management of patients who test positive for novel influenza
	Management of patients who test positive for seasonal influenza
	Management of patients who test negative for novel influenza
<i>Pandemic</i>	Criteria for patients with possible pandemic influenza
	Initial management of patients who meet the criteria for pandemic influenza
	Clinical management of pandemic influenza patients



4.10f Supplement 6: Vaccine Distribution and Use

Before an influenza vaccine that is effective against the circulating pandemic virus strain is made available, criteria for its use must be established based upon scientific information as well as projections of available supply. Supplement 6 provides actions and recommendations to state and local partners and other stakeholders on planning for the different elements of a pandemic vaccination program.

Period	Primary Actions
<i>Interpandemic/Pandemic Alert</i>	Vaccination against seasonal influenza virus strains
	Preparedness planning for vaccination against a pandemic influenza virus
<i>Pandemic</i>	Before vaccine is available
	When vaccine becomes available

4.10g Supplement 7: Antiviral Drug Distribution and Use

Appropriate use of antivirals during an influenza pandemic may reduce morbidity and mortality and diminish the overwhelming demands that will be placed on the health care system. Supplement 7 provides recommendations to state and local partners and to health care providers in Arizona on the distribution and use of antiviral drugs for treatment and prophylaxis during an influenza pandemic.

Period	Primary Actions
<i>Interpandemic/Pandemic Alert</i>	Use of antivirals in management of cases of novel influenza
	Preparedness planning for use of antivirals during a pandemic
<i>Pandemic</i>	When pandemic influenza cases are reported abroad, or sporadic pandemic influenza cases are reported in the United States without evidence of spread
	When there is limited transmission of pandemic influenza in the United States
	When there is widespread transmission of pandemic influenza in the United States

4.10h Supplement 8: Community Disease Control and Prevention

For the purposes of this response plan, “Isolation” refers to the separation of an individual with influenza from non-infected individuals. “Quarantine” refers to the separation of an individual or individuals exposed to influenza from non-infected and non-exposed individuals. As the phases of an influenza pandemic progress, use of quarantine to suspend transmission may have limited success and broader community containment measures may be utilized. Supplement 8 defines and lists strategies and activities for implementation of community containment measures to be used during a pandemic. Supplement 8 also contains legal preparedness templates.

Period	Primary Actions
<i>Interpandemic/Pandemic Alert</i>	Community preparedness for implementation of pandemic influenza containment measures
	Containment of small clusters of infection with novel strains of influenza
<i>Pandemic</i>	Containment measures for individuals
	Community-based containment measures



4.10i Supplement 9: Managing Travel-Related Risk of Disease Transmission

In a world of modern air travel and a relatively short incubation period of the influenza virus disease spread will likely be rapid during an influenza pandemic. Supplement 9 details travel-related containment strategies and activities to be used during different phases of an influenza pandemic.

Period	Primary Actions
<i>Interpandemic/Pandemic Alert</i>	Preparedness for implementation of travel-related containment measures
	Health information for travelers
	Evaluation of travel-related cases of infection with novel strains of influenza
	Preventing the importation of infected birds and animals
<i>Pandemic</i>	Travel-related containment measures
	De-escalation of travel-related control measures

4.10j Supplement 10: Public Health Communications

Solid tools and approaches of proven risk communication methods are an essential component to education and action by all affected during an influenza pandemic. The overarching goal of the Communications Strategy is to provide timely, accurate and pertinent information to the public and other stakeholders. Supplement 10 covers education and information dissemination to the general public, health care providers, response agencies and organizations, community leaders, and other groups of individuals.

Period	Primary Actions
<i>Interpandemic/Pandemic Alert</i>	Assessing communication capacity and needs
	Conducting collaborative planning
	Developing and testing standard state and local procedures for disseminating information
	Developing, testing and disseminating locally tailored Interpandemic messages and materials
<i>Pandemic</i>	Activating emergency communications plans
	Refining and delivering messages
	Providing timely, accurate information
	Providing coordinated communications leadership across jurisdictional tiers (e.g. local, regional, state, national)
	Promptly addressing rumors, misperceptions, stigmatization and unrealistic expectations about the capacity of public and private health providers



4.10k Supplement 11: Workforce Support: Psychosocial Considerations and Information Needs

The response to an influenza pandemic will pose substantial physical, personal, social and emotional challenges to health care providers, public health officials and other essential service workers. Supplement 11 addresses the psychological and social (“psychosocial”) needs of the occupational groups that will participate in the Arizona response to an influenza pandemic.

Period	Primary Actions
<i>Interpandemic/Pandemic Alert</i>	Institutionalizing psychosocial support systems
	Preparing workforce support materials
	Developing workforce resilience programs
<i>Pandemic</i>	Delivering psychosocial support services
	Providing information to responders
	Implementing workforce resilience programs

4.10l Supplement 12: Influenza Pandemic Information Management

Public Health Informatics is the systemic study of information in the public health system. Specifically, how it is captured, retrieved and used in making decisions as well as the tools and methods used to manage this information and support decisions. Supplement 12 describes the role and activities for informatics systems that support surveillance, vaccine and pharmaceutical delivery, emergency response and communications needs during an influenza pandemic.

Period	Primary Actions
<i>Interpandemic/Pandemic Alert</i>	Enhance and continue use of electronic surveillance systems
	Maintain public information on AZ 211
	Conduct inventory of all equipment and information gathering/tracking systems
	Test alerting and communications systems
<i>Pandemic</i>	Prepare for Health Emergency Operations Center operations
	Use of event-specific collaborative communication portals
	Activate identified volunteers
	Maintain communication of Health Emergency Operations Center with State Emergency Operations Center
	Continue use of Health Alert Network notifications and communications

4.10m Supplement 13: Guidance for County and Tribal Health Departments

Supplement 13 is a guidance document designed to assist county and tribal health departments in detailing the local health responsibilities during an influenza pandemic in accordance with the Arizona Influenza Pandemic Response Plan.



4.11 Ethical Considerations



In a situation such as an influenza pandemic, there will likely be a shortage of medical personnel and resources such as vaccines, antivirals and hospital bed space. Under these conditions, ethical considerations become apparent as decisions regarding which persons receive the scarce resources must be made. In addition, enforcing isolation and quarantine measures and anticipating the amount of risk medical personnel are willing to take, are issues that also involve ethical components such as civil liberties and professional codes of conduct.

Processes and policies for these and other areas should be carefully considered and fairly implemented. Close collaboration with community leaders and the Department's legal council in developing these approaches is essential. Public education programs covering the rationale for such decisions can improve their effectiveness.

5.0 Organizational Roles and Responsibilities

5.1 State Government

State Board of Pharmacy

- Provide guidance regarding proper certification and utilization of pharmacists in an emergency response (ex. mass vaccination clinics)

Arizona Department of Economic Security

- CPS program-assist with the placement of orphans in foster care

5.2 Local Government

County Emergency Management

- Operate the County Emergency Operations Center (CEOC)
- Maintain contact with the State Emergency Operations Center (SEOC)

County Health Departments

- Recruit sentinel sites and other reporting sources as appropriate to the pandemic phase/level
- Ensure timely and consistent reporting from sentinel sites and other reporting sources
- Provide county surveillance information to state surveillance personnel; maintain regular communications with state surveillance personnel
- Conduct additional primary surveillance as needed
- Set-up and administer mass vaccination sites
- Implement Isolation and Quarantine as needed

Metropolitan Medical Response System (MMRS)

- Administer vaccine to first responder and law enforcement communities
- Assist in providing PPE to first responder and law enforcement personnel



5.3 Federal Government

Centers for Disease Control and Prevention

- Provide on-going surveillance updates and guidance
- Provide criteria for influenza vaccine and antiviral use
- Provide local assistance as requested
- Consult with vaccine and antiviral manufacturers on availability
- Investigate alternative resources (manufacturers) of vaccine and antivirals

Indian Health Service (IHS)

IHS Area Offices

- Work with ADHS, tribes and counties in influenza pandemic response planning
- Supply framework and oversight for Service Units in developing their influenza pandemic response plans
- Provide behavioral health support to service unit patients and hospital staff as needed
- Translation of patient and visitor information (if needed) for service units
- Provide training to service units to enable them to develop their own programs
- Consult with tribes to provide guidance, oversight, and implementation of quarantine on tribal lands

IHS Service Units

- Prepare their individual influenza pandemic response plans that address the following criteria:
 - Hospital Surveillance
 - Communications
 - Triage, clinical evaluation and admission procedures
 - Triggers for surge capacity
 - Prioritization of vaccine administration
 - Education and training for hospital personnel
 - How the facility will participate in the community plan for distribution of vaccine or antiviral drugs
 - Security
 - Mortuary Issues
 - Occupational Health Issues

Food and Drug Administration

- Oversee the safety and viability of vaccines and pharmaceuticals

5.4 Private Organizations/Volunteer Organizations

- Supply resources and volunteers for mass dispensing sites



6.0 Appendices

- A. List of Acronyms
- B. World Health Organization (WHO) Pandemic Phases 2005
- C. PHIMS Description & Organizational Chart
- D. Legal Authorities

7.0 Response Activity Supplements

- 1. Surveillance and Epidemiology
- 2. Laboratory Diagnostics
- 3. Health Care Coordination and Surge Capacity
- 4. Infection Control
- 5. Clinical Guidelines
- 6. Vaccine Distribution and Use
- 7. Antiviral Drug Distribution and Use
- 8. Community Disease Control and Prevention
- 9. Managing Travel-Related Risk of Disease Transmission
- 10. Public Health Communications
- 11. Workforce Support: Psychosocial Considerations and Information Needs
- 12. Influenza Pandemic Information Management
- 13. Guidance for County and Tribal Health Departments



APPENDIX A

List Of Acronyms

AAC – Arizona Administrative Code
ADEM – Arizona Division of Emergency Management
ADES – Arizona Department of Economic Security
ADHS – Arizona Department of Health Services
AEFI – Adverse Events Following Immunization
AH1, AH3, AH5, AH7 – Types of Influenza A Virus (H=Hemagglutinin)
AIPO – Arizona Immunization Program Office
AOMA – Arizona Osteopathic Medical Association
APHIS – Animal and Plant Health Inspection Service
ARMA – Arizona Medical Association
ARC – American Red Cross
ARS – Arizona Revised Statutes
ASIS – Arizona State Immunization Information System
ASL – Arizona State Public Health Laboratory
AZ211 – Arizona 2-1-1 Online
AzVOAD – Arizona Voluntary Organizations Active in Disasters
AzVOL – Arizona Veterinary Diagnostic Laboratory
BCP – Business Continuity Plan
BEPR – Bureau of Emergency Preparedness and Response
BSL – Laboratory Biosafety Level
CBER – Center for Biologics Evaluation and Research
CBRNE – Chemical Biological Radiological Nuclear Explosive
CDC – Centers for Disease Control and Prevention
CEOC – County Emergency Operations Center
CHC – Community Health Center
CHD – County Health Department
CIR – Community Information and Referral
CISA – Clinical Immunization Safety Assessment
CISM – Critical Incident Stress Management
CSTE – Council of State and Territorial Epidemiologists
DBHS – Division of Behavioral Health Services
DMAT – Disaster Medical Assistance Teams
DMORT – Disaster Mortuary Operational Response Teams
DOD – Department of Defense
EAP - Employee Assistance Program
EDC - Epidemiology and Disease Control
EDR – Electronic Death Registration



EIP – Emerging Infections Program
ELR – Electronic Laboratory Reporting
EMSCOM – Emergency Medical Systems Communications
EPA – Environmental Protection Agency
EPI-X – Epidemic Information Exchange
ESAR-VHP – Emergency System for the Advanced Reporting of Volunteer Health Professionals
EMS – Emergency Medical Services
EWIDS – Early Warning Infectious Disease Surveillance
FEMA – Federal Emergency Management Agency
FDA – Food and Drug Administration
H5-N1 – Avian Influenza A
HAN – Health Alert Network
HAZMAT – Hazardous Materials
HEICS – Hospital Emergency Incident Command System
HHS – U.S. Department of Health and Human Services
HPAI – Highly Pathogenic Avian Influenza
IDES – Infectious Disease Epidemiology Section
HEOC – Health Emergency Operations Center
HI – Hemagglutination Inhibition
ICS – Incident Command System
IDES – Infectious Disease Epidemiology Section
ILI – Influenza Like Illness
IHS – Indian Health Service
IND – Investigational New Drug
IRB – Institutional Review Board
ITCA – Intertribal Council of Arizona
ITS – Information Technology Services
JENC – Joint Emergency News Center
JIC – Joint Information Center
JTF-CS – Joint Task Force Civil Support
KAB – Knowledge, Attitude and Beliefs
LHD – Local Health Department
LIMS – Laboratory Information Management System
LITS – Laboratory Information Tracking System
MAM – MEDSIS Arbovirus Module
MEDSIS – Medical Electronic Disease Surveillance Intelligence System
MMRS – Metropolitan Medical Response System
NCHS – National Center for Health Statistics
NDMS – National Disaster Medical System
NIMS – National Incident Management System
NMRT – National Medical Response Team



NNDSS – National Notifiable Disease Surveillance System
NRDMS – National Retail Data Monitoring System
NREVSS – National Respiratory and Enteric Virus Surveillance
NRP – National Response Plan
NVPO – National Vaccine Program Office
NVSN – New Vaccine Surveillance Network
OEP – Office of Emergency Preparedness
OIDS – Office of Infectious Disease Services
OTC – Over the Counter
PHILS – Public Health Information System
PHIMS – Public Health Incident Management System
PIO - Public Information Officer
PPE – Personal Protective Equipment
Q & A – Question and Answer(s)
RACES – Radio Amateur Civil Emergency Service
RBHA – Regional Behavioral Health Authority
RRT – Rapid Response Team
RT - PCR – Real Time - Polymerase Chain Reaction
SARS – Severe Acute Respiratory Syndrome
SEOC – State Emergency Operations Center
SERRP – State Emergency Response and Recovery Plan
SIREN – Secure Integrated Response Electronic Notification
SNS – Strategic National Stockpile
UA – University of Arizona
USDA – United States Department of Agriculture
USNORTHCOM – United States Northern Command
USPS – United States Public Health Service
VA – Veterans Administration
VACMAN – Vaccine Management System
VAERS – Vaccine Adverse Event Reporting System
VAPPC – Vaccine and Antiviral Prioritization Policy Committee
VFC – Vaccines For Children Program
VS – Veterinary Services
WHO – World Health Organization
WMD - Weapons of Mass Destruction



APPENDIX B

New World Health Organization (WHO) Pandemic Phases – May 2005

Interpandemic Period –

Phase 1

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

Phase 2

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

Pandemic Alert Period –

Phase 3

Human infections with a new subtype, but no human-to-human spread or at most rare instances of spread to a close contact.

Phase 4

Small cluster(s) with human-to-human transmission but spread is highly localized, suggesting that the virus is not well adapted to humans.

Phase 5

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

Pandemic period -

Phase 6

Pandemic phase increased and sustained transmission in general population.

Postpandemic period –

Return to interpandemic period



APPENDIX C

PHIMS Organization

The **Public Health Incident Management System (PHIMS)** is the Department's Incident Management System. It is an organizational framework within which the Department responds to an emergency that is consistent with the National Incident Management System (NIMS). During an emergency, Department resources such as personnel and supplies as well as activities, may need to be mobilized across programs. The PHIMS response utilizes a structure that fosters communications between the tactical (front line responders) and through a chain-of-command. This structure is NIMS compliant.

PHIMS Staff

(See the Influenza Pandemic PHIMS Response Organizational Chart located after this introduction as a visual example)

The **Agency Administrator** consists of the Department Director or their designee who oversees the response. A **Public Policy Advisory Group** may be assembled as needed and is comprised of selected Department Response Sector Leaders (Division Directors, Bureau and Office Chiefs) to assist the Agency Administrator in developing public policy recommendations. The Agency Administrator then assigns an **Incident Commander** who is responsible for managing the Department's response activities by coordinating the Operations, Planning, Logistics and Finance/Administration sections. In addition, this individual develops the Public Health Incident Action Plan (IAP) in conjunction with the Planning Section

The Incident Commander is supported by a command staff that is represented by the State Epidemiologist, Information Officer, Liaison Officer, Safety Officer and a Chief for each of the Operations, Planning, Logistics and Finance/Administration sections.

The PHIMS **Command Staff** is comprised of an **Information Officer**, **Liaison Officer** and a **Safety Officer**. The Information Officer develops material, has it reviewed internally and releases it to the media. The Liaison Officer maintains relations between the Department and outside agencies and the Safety Officer oversees the safety of the response.

The **PHIMS General Staff** includes Operations, Planning, Logistics, and Finance/Administrative responsibilities. These responsibilities remain with the Incident Commander (IC) until they are assigned to other individuals. When the Operations, Planning, Logistics or Finance/Administrative responsibilities are established as separate functions under the IC, they are managed by a section chief and can be supported by other functional units (Group Supervisors and Unit Leads)

- The **Operations Staff** is responsible for carrying out the response activities described in the Incident Action Plan (IAP). The Operations Section Chief coordinates Operation Section activities and has primary responsibility for receiving and implementing the IAP. The Operations Section Chief reports to the Incident Commander and determines the required resources and organizational structure within the Operations Section. Here are some examples of activities that the Operations Section might be involved in:
 - Conduct human case surveillance and characterize an outbreak
 - Conduct human case follow-up
 - Disseminate data (cases, geographical distribution)
 - Handle public, media and health care provider inquiries
 - Develop messages covering clinical information and prevention
 - Oversee funding to counties for activities
 - Make regular updates to local health departments
 - Identify need and broker vaccine/antivirals
 - Provide Behavioral Health Services to ADHS staff
 - Determine needs of Arizona hospitals

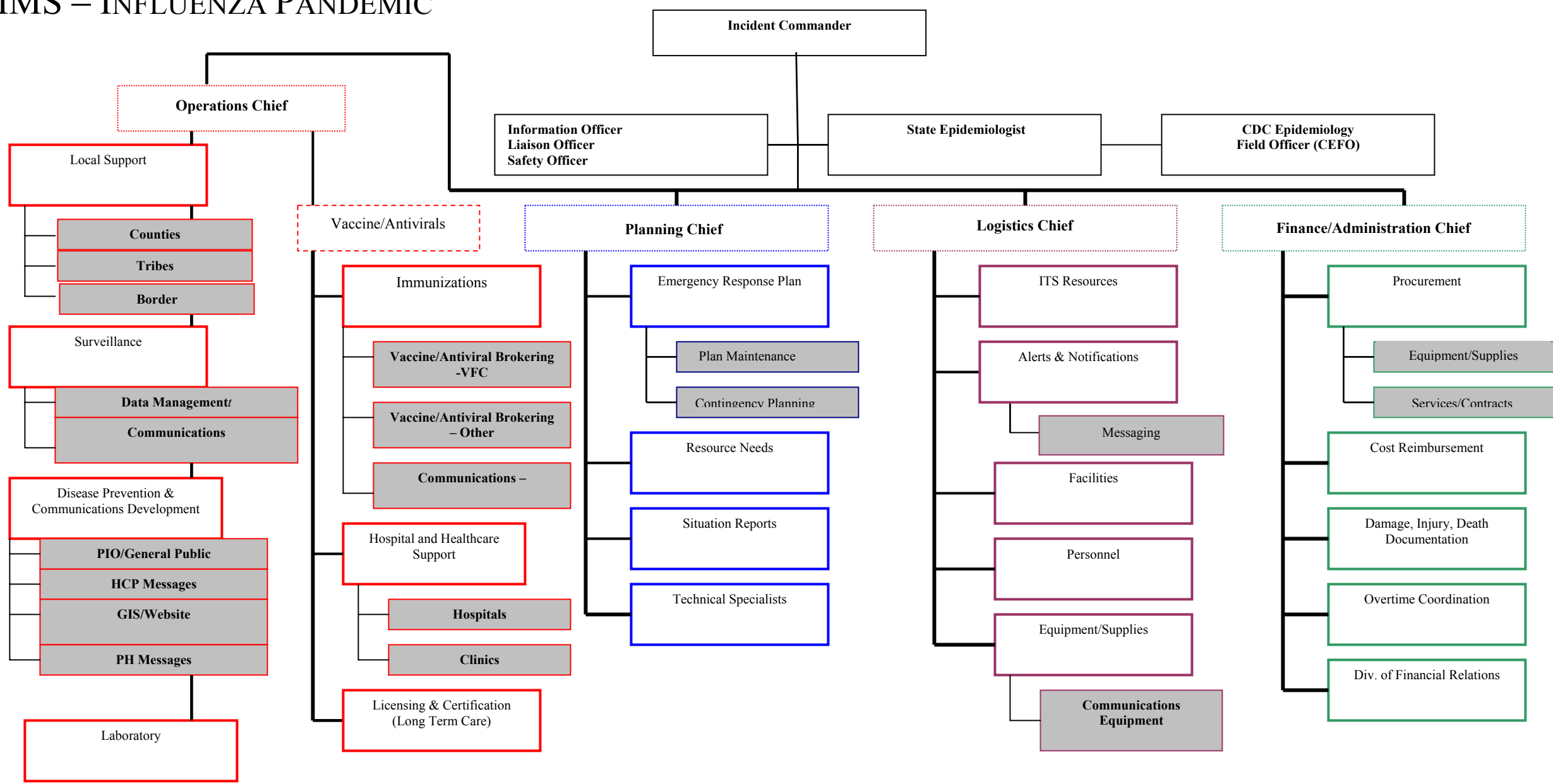


- The **Planning** Staff is responsible for the collection, evaluation, dissemination and use of information about the development of the incident and status of resources. This section's responsibilities also include creation of the Incident Action Plan (IAP) which defines the response activities and resource utilizations for a specified time period.
 - Development of IAP
 - Compilation of PHIMS Updates/Briefs into the weekly/daily Situation Report
 - Reports to the Governor's Office
- The **Logistics** Staff is responsible for providing additional facilities, services, and materials for the incident response.
 - Additional equipment for HEOC, Communications, Call Center, etc.
 - Facilities
 - Personnel (above and beyond routine need)
- The **Finance and Administration** Staff is responsible for all financial, administrative, and cost analysis aspects of the incident.
 - Procurement of items/services
 - Maintenance of contracts

The modular organization of PHIMS allows responders to scale their efforts and apply the parts of the PHIMS structure that best meet the demands of the incident. For example, many incidents will never require the activation of Planning, Logistics, or Finance/Administration Sections, while others, such as influenza pandemic, will require some or all of them to be established.

Communications occurs across groups, but also comes directly to one's supervisor and subsequently to the Section Chiefs and Command Staff. The Section Chiefs and Command Staff meet as needed to use information to make decisions. Information from these meetings and regular updates are incorporated into Situation Reports that are disseminated by e-mail to the entire response network to keep everyone up to date and anticipate future issues.

PHIMS – INFLUENZA PANDEMIC



APPENDIX D
Legal Authorities

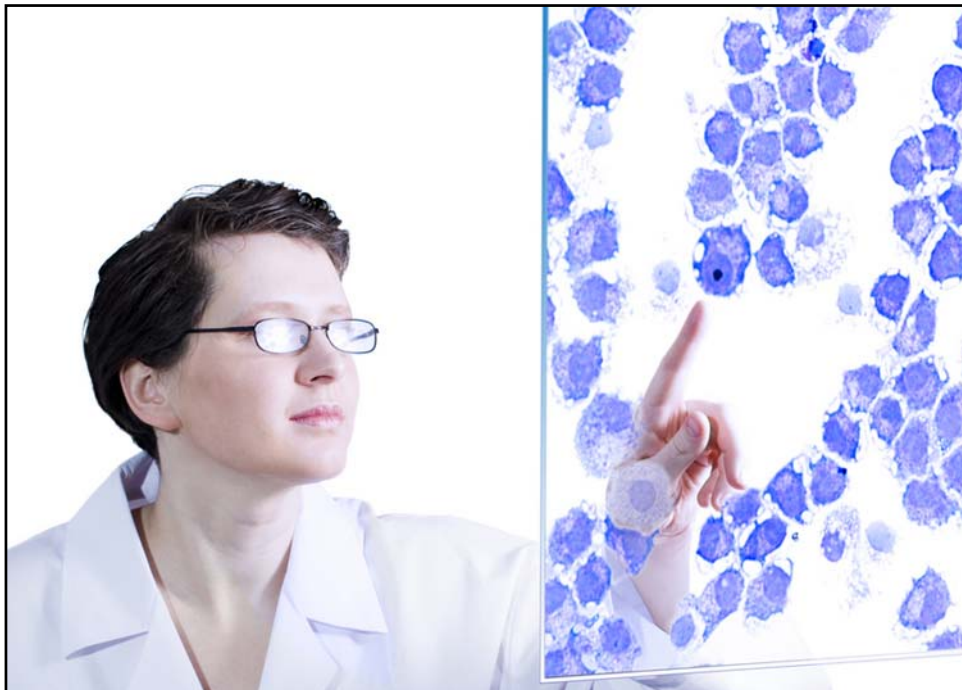
STATUTORY AUTHORITY		
STATUTE	AGENCY	AUTHORITY
U.S. Public Law 93-288	Federal Government	Provides authority to respond to emergencies and provide assistance to protect public health; implemented by Federal Emergency Management Act
USC Title 42-264	Federal Government	- Provides the U.S. Surgeon General the authority to apprehend and examine any individual(s) reasonably believed to be infected with a communicable disease for purposes of preventing the introduction, transmission, or spread of such communicable disease only: - if the person(s) is moving or about to move from state to state. - if the person, upon examination, is found to be infected, he may be detained for such time and in such manner as may be reasonably necessary.
USC Title 42-139 Sec. 14503	Federal Government	Liability protection for volunteers – No volunteer of a non-profit organization or governmental entity shall be liable for harm caused by an act of omission of the volunteer on behalf of the organization or entity.
ARS § 36-782	Governor	In consultation with the Director of ADHS, may issue an enhanced surveillance advisory.
ARS § 35-192	Governor	Allows Governor to declare a state of emergency.
ARS § 26-303	Governor	- Gives Governor authority over state agencies and the right to exercise police power. - Allows Governor to delegate authority to adjutant general.
ARS § 26-310	Division of Emergency Management	Allows any person holding any license, certificate, or other permit issued by any other state to render aid to meet the emergency as fully as if such license had been issued in this state.
ARS § 26-311	Division of Emergency Management	Protects state employees, volunteers, and employees from other states against liability claims while performing duty's during a state of emergency.



STATUTE	AGENCY	AUTHORITY
ARS § 36-136	Arizona Department of Health Services	• Powers and duties of the Director
ARS § 782	Arizona Department of Health Services	• Defines an Enhanced Surveillance Advisory
ARS § 36-787(A)(6)	Arizona Department of Health Services	• Establishes in conjunction with applicable licensing boards a process for temporary waiver of the professional licensure requirements to address the state of emergency or state of war emergency.
ARS § 787(A) (7)	Arizona Department of Health Services	• Grants temporary waivers of health care institution licensure requirements to address the state of emergency or state of war emergency.
ARS § 788	Arizona Department of Health Services/County Health Departments	• Describes the authorities for isolation and quarantine during a state of emergency or state of war emergency.
ARS § 789	Arizona Department of Health Services/County Health Departments	• Due process for isolation and quarantine.
AAC R9-6-204	Arizona Department of Health Services	• Allows for collection of patient specific information for positive laboratory reports of influenza
ARS § 36-624	County Health Departments	• Allows county health departments to adopt quarantine and sanitary measures to prevent the spread of the disease.
ARS § 36-627	County Health Departments	• Allows county health departments to assume control of hospitals and other places where infectious or contagious disease exists. • Allows county health department to provide temporary hospitals or places of reception for persons with infectious or contagious diseases.
ARS § 36-628	County Health Departments	• Allows county health departments to employ physicians and others they deem necessary to provide care for persons afflicted with contagious or infectious diseases.
ARS § 26-311	Local Governments	• Allows mayors or chairmen of the board of supervisors to declare a local emergency

Arizona Influenza Pandemic Response Plan

Supplement 1: Surveillance and Epidemiology



Supplement 1: Table of Contents

I.	Rationale	S1-2
II.	Overview	S1-2
III.	World Health Organization (WHO) Pandemic Phases	S1-2
IV.	Routine (Interpandemic) Influenza Surveillance (WHO Phases 1 & 2)	S1-3
	A. Laboratory Surveillance for Influenza	S1-3
	B. Disease Surveillance for Influenza	S1-4
V.	Pandemic Preparedness Planning	S1-6
	A. Outpatient (ILI) Surveillance	S1-6
	B. Laboratory Surveillance	S1-7
	C. Hospitalization Surveillance	S1-7
	D. Mortality Surveillance	S1-8
	E. Syndromic Surveillance	S1-9
	F. Surveillance Communications	S1-9
VI	Pandemic Surveillance (WHO Phases 3-6)	S1-9
	A. Pandemic Alert Surveillance for Novel Strains of Influenza (WHO Phases 3- 5)	S1-9
	B. Pandemic Influenza Surveillance (WHO Phase 6)	S1-12
V.	Appendices	S1-12
	Appendix 1: Components of the Arizona Influenza Surveillance System	S1-13
	Appendix 2: Components of the National Influenza Surveillance System	S1-14
	Appendix 3: Types of Influenza Surveillance	S1-16
	Appendix 4: Interim Recommendations: Enhanced U.S. Surveillance and Diagnostic Evaluation Identify Cases of Human Infection with Avian Influenza A (H5N1)	S1-18
	Appendix 5: CDC Human Influenza A (H5) Case Screening and Report Form	S1-19
	Appendix 6: Arizona Draft Emergency Measure for Pandemic Influenza	S1-24
	Appendix 7: Declaration of Enhanced Surveillance Advisory	S1-26
	Appendix 8: Arizona Avian Influenza Surveillance Information	S1-27

I. Rationale

Pandemic influenza surveillance includes surveillance for influenza viruses (laboratory surveillance) and surveillance for influenza-associated illness and deaths (disease surveillance).

The goals of laboratory surveillance for pandemic influenza are to:

- Rapidly detect the introduction and early cases of a pandemic influenza virus in the United States, and the specific introduction into Arizona.
- Track the virus' introduction into local areas.
- Monitor changes in the pandemic virus, including development of antiviral resistance.

The goals of disease surveillance are to:

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

Surveillance data can help decision-makers identify effective control strategies and re-evaluate recommended priority groups for vaccination and antiviral therapy. Data from surveillance can also facilitate efforts to mathematically model disease spread during a pandemic. The existing methods of influenza surveillance provide a framework to detect and monitor pandemic influenza.

II. Overview

This supplement provides a summary of influenza surveillance activities conducted during normal influenza seasons as well as proposed enhancements to surveillance that would be implemented in the event of a pandemic. While primary investigations of influenza are conducted by local health departments, the Arizona Department of Health Services' Infectious Disease Epidemiology Section coordinates human influenza surveillance throughout the state.

Veterinary surveillance is conducted through the Arizona Veterinary Diagnostic Laboratory (AzVDL) in coordination with the Arizona Department of Agriculture and the U.S. Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Veterinary Services (VS) Program. These agencies work together to conduct influenza surveillance in domestic animals. USDA also monitors wild avian populations for highly pathogenic avian influenza (HPAI) and other diseases of concern through the APHIS Wildlife Services program. Veterinary surveillance is discussed in greater detail in Appendix 8: Avian Influenza Surveillance.

III. World health organization (who) pandemic phases

The World Health Organization (WHO) has developed a global influenza preparedness plan, which defines phases of a pandemic, outlines the role of WHO, and makes recommendations for national measures before and during a pandemic. The WHO phases are used in this document to divide response actions by phases of pandemic activity. WHO pandemic phases are:

1. Interpandemic period (routine influenza surveillance)
Phase 1: No new influenza virus subtypes have been detected in humans. An influenza virus subtype that has caused human infection may be present in animals. If present in animals, the risk of human infection or disease is considered to be low.
Phase 2: No new influenza virus subtypes have been detected in humans. However, a circulating animal influenza virus subtype poses a substantial risk of human disease.

2. Pandemic alert period

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

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

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

3. Pandemic period

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

IV. Routine (interpandemic) influenza surveillance (WHO phases 1 and 2)

ADHS maintains and coordinates a statewide influenza surveillance system that identifies circulating influenza viruses and monitors influenza activity. While the majority of influenza surveillance is conducted October through May each year, recent enhancements to influenza surveillance include performing virologic testing and gathering influenza-like illness reporting from selected sites year round. The state surveillance system is comprised of the following components:

- Influenza-like illness sentinel provider network
- Positive laboratory reports for influenza from laboratories throughout the state
- Subtyping data for selected influenza isolates
- Influenza-associated mortality data from county/state vital records offices
- Influenza-associated pediatric mortality
- Data from county health department influenza surveillance activities, including school and selected worksite absenteeism rates

These components provide data that results in an overall state-level assessment of influenza activity. Components are described in greater detail in Appendix 1: Components of the Arizona Influenza Surveillance System.

A. Laboratory Surveillance for Influenza

Public health goals for surveillance of influenza viruses are twofold: to identify and characterize circulating strains to inform annual vaccine formulation, and to identify and characterize strains with pandemic potential.



The Arizona State Public Health Laboratory (ASL) provides testing of influenza specimens submitted by providers throughout the state year-round. The ASL performs preliminary typing, forwards isolates with unusual results to CDC for identification of novel viruses, and provides specimens routinely to CDC for antigenic characterization. The ASL has the capacity for polymerase chain reaction (PCR) testing for identification of influenza A H1, H3, H5, and H7, and will expand testing capacity as information, protocols, and reagents are provided by the CDC.

In preparation for a pandemic, the ASL will be responsible for coordinating the detection of the pandemic strain by testing and forwarding specimens to the CDC laboratory, as appropriate. Recommendations for testing patients during a pandemic will likely come from the CDC, and patients for whom testing is recommended would likely be a subset of all patients with suspected influenza.

The ASL provides influenza specimen collection kits to county health departments and tests specimens that are submitted. Upon request, the county health department may provide collection kits to health care providers and facilitate transport of the specimens to the State Laboratory for testing and subtyping. Clinical and reference laboratories may also send a select number of isolates for subtyping.

IDES receives ASL information through the state laboratory's electronic laboratory database (LITS). The information sharing procedures between IDES, ASL and clinical laboratories will change with implementation of the Department's Medical Electronic Disease Surveillance Intelligence System (MEDSIS) <http://www.azdhs.gov/phs/edc/edrp/es/electronicdiseasesurveillanceprogram.htm>, Electronic Laboratory Reporting (ELR), and Laboratory Information Management System (LIMS). The implementation of the new systems will facilitate rapid, accurate, electronic sharing of information and improved data management. During 2006, the largest commercial laboratories in Arizona and the ASL will be transmitting laboratory information electronically to MEDSIS. State and county health departments will be able to monitor positive tests and cultures in near realtime.

The ASL is part of a national system of U.S.-based collaborating laboratories of the World Health Organization (WHO) Global Influenza Surveillance Network and the National Respiratory and Enteric Virus Surveillance System (NREVSS) (see Supplement 2 – Laboratory trends and compare seasonal differences, rather than to record all influenza tests performed in the United States. These laboratories provide information to describe influenza surveillance on a national level. The ASL and one other Arizona clinical laboratory report regularly to the NREVSS.

All positive influenza tests have been reportable to ADHS by laboratories since October 2004, including influenza cultures, DFA/IFAs, PCR, and rapid tests. This component of the state surveillance system provides useful information on the burden of confirmed influenza each week (disease surveillance) and also helps to determine the type of influenza circulating. This system is discussed in more detail in the Disease Surveillance section below.

B. Disease Surveillance for Influenza

Disease surveillance provides valuable information on the burden of disease in a community and seasonal trends. Data on outpatient visits for ILI, hospitalizations, and deaths allow public health to monitor regional disease trends. As mentioned previously, influenza surveillance has traditionally been conducted from October through May, though in recent years various components of influenza surveillance have been expanded to year-round. This enhancement is an important part of surveillance for novel strains of influenza.

Nationally, four different types of disease surveillance are used to describe influenza activity: outpatient surveillance (Sentinel Provider Network), hospital surveillance [Emerging Infections Program (EIP) influenza project and New Vaccine Surveillance Network (NVSN)], mortality surveillance [122 Cities Mortality Reporting System and National Notifiable Disease Surveillance System (NNDSS)], and weekly state-level assessments of influenza activity. These components are described in greater detail in Appendix 2: Components of the National Influenza Surveillance System.

The statewide influenza disease surveillance system is coordinated and maintained through the ADHS Infectious Disease Epidemiology Section. The Arizona surveillance system is similar to the national surveillance system and reports data to the national system. The system's components are:

- Influenza-like illness sentinel provider network
- Positive laboratory reports for influenza from laboratories throughout the state
- Subtyping data for selected influenza isolates
- Influenza-associated mortality data from county/state vital records offices
- Influenza-associated pediatric mortality
- Data from county health department influenza surveillance activities, including school and selected worksite absenteeism rates

These components are described in further detail in Appendix 1: Components of the Arizona Influenza Surveillance System. Each week, these components are all considered when assessing the statewide influenza activity, which is submitted to CDC and communicated to local partners. Activity is characterized as “widespread”, “regional”, “local”, “sporadic” or “no activity”.

Disease surveillance activities can be divided into the following six categories: Outpatient (ILI) Surveillance, Hospitalization Surveillance, Mortality Surveillance, Laboratory Surveillance, Syndromic Surveillance, and Surveillance Communications. Below are influenza activities, by category, conducted during a normal influenza season:

Outpatient (ILI) Surveillance

- Recruiting influenza-like illness (ILI) sentinel reporting sites (county health departments or the providers report to the U.S. Influenza Sentinel Provider Surveillance System via internet or fax; ADHS accesses this information online)
 - At least one regularly reporting surveillance site per 250,000 persons population is recommended, or at least one site for smaller counties.
 - 61 sites were enrolled for the 2005-2006 season, from 12 counties.
- Ensuring ILI sentinel reporting sites are reporting to the state surveillance system on a regular basis
- Collecting county health department-level influenza surveillance information (cases and/or ILI outbreaks) from schools, long-term care facilities, or other institutions. Some counties also monitor school absenteeism regularly throughout the influenza season.
- Collaborating with local health departments to respond to special situations and follow CDC requests (e.g. investigation of pediatric influenza-associated deaths).

Hospitalization Surveillance

- Conducting informal calls to major hospitals and hospital laboratories throughout the state, as needed, or in conjunction with the local health departments
- Working with local health departments to monitor activity levels or unusual events from infection control practitioners, infectious disease doctors, medical examiners or other relevant groups, as warranted by the influenza season.

Mortality Surveillance

- Ensuring receipt of data regarding influenza-associated mortality from county and ADHS vital records offices, analyzing data
- Ensuring that IDHS is receiving reports of influenza-associated pediatric morbidity from local health departments

Laboratory Surveillance

- Promoting testing of suspect influenza patients at ILI sentinel reporting sites
 - Sentinel providers may send selected specimens for testing at no charge for shipping or testing.
 - Additional kits are sent to providers upon specimen receipt.
- Contacting local health departments on a monthly basis to assess influenza specimen collection kit needs; ensuring that kits are sent in a timely manner.
- Ensuring that ASL is producing adequate influenza testing media and preparing sufficient influenza testing kits for the influenza season.
- Ensuring reporting of positive influenza results by laboratories.
- Entering and analyzing laboratory data.



Syndromic Surveillance

Currently, the syndromic surveillance systems are not fully validated as reliable sources of information regarding the identification and tracking of an outbreak. The sources listed below are monitored and will continue to be assessed in the context of other information available during interpandemic influenza seasons.

- BioSense: A CDC system that includes ICD-9-coded outpatient visits at DOD ambulatory-care centers and Department of Veterans Affairs outpatient clinics and private clinical laboratory test requests.
<http://www.cdc.gov/phn/component-initiatives/biosense/index.html>

- Realtime Outbreak Detection System's National Retail Data Monitor (NRDM): A system coordinated by the University of Pittsburgh used to monitor sales of over-the-counter (OTC) health care products of enrolled pharmacies in order to identify disease outbreaks as early as possible. <http://rods.health.pitt.edu/NRDM.htm>
- Some county health departments also work with their local hospitals to conduct syndromic surveillance within the emergency departments.

Surveillance Communications

- Monitoring of national and/or global influenza activity through CDC reports or conference calls.
- Conducting weekly conference calls with all local health departments to discuss influenza activity and associated issues in their jurisdictions.
- Posting weekly influenza activity reports on the departmental website throughout the influenza season, at <http://www.azdhs.gov/phs/oids/epi/flu/index.htm>.
- Distributing communications from ADHS, CDC and WHO to partners via HAN and EpiAZ (weekly outbreak newsletter) to public health and health care practitioners across the state.
- Distributing other information to internal and external partners as needed.

As mentioned above, the development of the Department's Medical Electronic Disease Surveillance Intelligence System (MEDSIS) and the integration of the Electronic Laboratory Reporting (ELR) component will enhance surveillance practices and capacity in several ways. Laboratories using the ELR will be able to provide more timely data, including certain clinical laboratories that are able to transmit laboratory data automatically from their systems. More information about MEDSIS and ELR can be found in Supplement 12 – Informatics.

V. Pandemic preparedness surveillance planning

CDC recommends that pandemic surveillance enhancements be developed during the Interpandemic and Pandemic Alert Periods (WHO Phases 1-5) so that baseline data for interpreting information gathered during the pandemic will be available and staff will have experience and familiarity with new methodologies. ADHS is currently working on improvements to existing influenza surveillance infrastructure.

A. Outpatient (ILI) Surveillance

As mentioned previously, ADHS provides weekly assessments of the overall level of influenza activity during the influenza season (categories are: no activity, sporadic, local, regional, widespread) in the state. These assessments are used to compare the extent of influenza activity from state to state, and are the only state-level influenza surveillance data that CDC makes publicly available during the regular (interpandemic) influenza season. The state influenza activity assessments are used to generate the influenza activity map (see www.cdc.gov/flu/weekly/usmap.htm). During a pandemic, CDC will recommend that these assessments be made year-round, rather than only October through May.

CDC is exploring options for enhancing or supplementing ILI outpatient surveillance at the national, regional, and state levels, given that health care providers might not be able to report ILI in a timely manner when overwhelmed with patients during an emergency. Existing electronic data sources that might increase the geographic completeness, frequency of reporting, and sustainability of ILI data are being considered and include: 1) the BioSense <http://www.cdc.gov/phn/component-initiatives/biosense/index.html>, and 2) existing emergency department "chief complaint" monitoring systems used by several states. CDC is also working with state and local partners to evaluate expanding and enhancing the Sentinel Provider Network.

As development of MEDSIS continues, additional components will be added that may be relevant for influenza surveillance. Future enhancements may incorporate outpatient, hospitalization, or syndromic surveillance components such as reporting of hospitalized influenza cases, hospital emergency department data such as chief complaint or discharge summary, or hospital admissions for influenza. MEDSIS or its platform (the Secure Integrated Response Electronic Notification (SIREN) system) may also contain the flexibility to quickly accommodate other electronic surveillance needs at various pandemic phases. See Supplement 12 – Informatics for more details on these systems.

ADHS is working to implement the following enhancements to influenza surveillance in preparation for a pandemic:

- Recruiting additional regularly-reporting sentinel sites for year-round ILI surveillance
- Ensuring adequate representation and consistent reporting of ILI from sentinel sites. (County health departments are responsible for helping to recruit sites and follow-up with non-reporting sites)
- Developing a protocol for investigating institutional outbreaks and working with local health departments to implement this protocol. Investigations would include information on epidemiology, vaccination history of cases and staff, and specimen collection

B. Laboratory Surveillance

Please refer to Supplement 2 – Laboratory Diagnostics, for state plans to enhance laboratory-testing capacity in the event of a pandemic.

Nationally, CDC is currently working with state and local partners to evaluate the utility and feasibility of reporting patient-level data (including zip code and/or county of residence) through an electronic mechanism other than the Public Health Laboratory Information System (PHLIS). Such a system would allow daily (rather than weekly) reporting during a pandemic and analysis of virus spread at the county or health district level. During a pandemic—as the burden of disease increases and state and local health departments face multiple, competing demands—it might be necessary to adjust surveillance strategies and reassess the need for frequent (or daily) reporting.

ADHS is working to implement the following enhancements related to influenza virologic surveillance in preparation for a pandemic:

- Exploring options for increasing specimen collection from sentinel sites, outbreaks, unusual cases, and geographical areas not currently represented in specimens received.
- Developing sampling scheme for laboratory surveillance during pandemic.
- Assessing ability to transport specimens to the state laboratory quickly; exploring the feasibility and need for courier service or other transport options.
- ADHS is implementing electronic laboratory reporting integrated within MEDSIS (Arizona's NEDSS) from the two largest commercial clinical laboratories in the state. These two commercial laboratories contribute over 80% of positive laboratory reports in Arizona. Other large volume hospital laboratories will also be targeted for electronic transmission of laboratory result data. A web entry form will be available for low volume laboratories to report to ELR/MEDSIS.
- The State Public Health Laboratory is implementing a new laboratory information system (StarLIMS) that will transmit result data to MEDSIS automatically.



C. Hospitalization Surveillance

In Arizona, current hospitalization surveillance is limited to data provided by the Hospital Discharge Database, which is not timely enough for early detection of pandemic flu but may help with longer term monitoring of the impact of a pandemic in Arizona. Active hospital surveillance may be implemented in conjunction with county health departments for hospitalizations or emergency department visits. At the national level, surveillance for hospitalizations associated with influenza is limited to the collection of data on pediatric hospitalizations in 12 large metropolitan areas (Emerging Infections Program (EIP) influenza project). In January 2006, the EIP influenza project will be expanded to include laboratory-confirmed influenza-associated hospitalizations of adults as well as children. The ADHS Office of Border Health is working with CDC to implement this pediatric hospitalization surveillance protocol in Tucson hospitals, but Arizona is otherwise not included in this program.

CDC is exploring options for expanding hospitalization surveillance to obtain data from all age groups in all parts of the country and obtaining more detailed information from a small number of sites. Options under review include working with the Council of State and Territorial Epidemiologists (CSTE) to make laboratory-confirmed influenza-associated hospitalizations nationally notifiable; obtaining timely hospital discharge data to estimate the number of influenza-associated hospitalizations across the country; adding a hospitalization surveillance component to BioSense (<http://www.cdc.gov/phinf/component-initiatives/biosense/index.html>); developing protocols for active population-based hospitalization surveillance, and developing protocols for reporting the number of influenza-associated hospitalizations. Please refer to the national plan at www.pandemicflu.gov for further detail on national enhancements to influenza surveillance.



ADHS is working to implement the following enhancements to influenza hospitalization surveillance in preparation for a pandemic:

- Incorporating regular analysis of the ADHS Hospital Discharge Database into existing influenza surveillance

In addition, ADHS is exploring the following additional hospital-related surveillance activities:

- Drafting emergency measures to initiate reporting of hospitalized cases of influenza in the event of a pandemic.
- Creating case definitions and reporting forms for reporting hospitalized influenza cases.
- Identifying sites for active surveillance and guidelines for when to initiate active surveillance.
- Working with CDC to facilitate data provisioning to BioSense from large hospital systems to enhance influenza surveillance (such as hospital admissions data, etc.) and provide situational awareness.

<http://www.cdc.gov/phinf/component-initiatives/biosense/index.html>

D. Mortality Surveillance

The collection of mortality data can also help health departments monitor the severity of a pandemic and determine the population and areas most affected. In Arizona, mortality surveillance is accomplished through data collected by state and county vital records offices, as well as reports of pediatric deaths due to laboratory-confirmed influenza.

At a national level, timely data on influenza deaths is provided by two sources: reports of pediatric deaths due to laboratory-confirmed influenza (nationally notifiable as of October 2004), and the 122 Cities Mortality Reporting System, which provides weekly reports of the total number of death certificates that list P&I as a cause of death and the total number of death certificates filed (Table 1). Although the National Center for Health Statistics (NCHS) also collects mortality data, these data are not available until 2-3 years after each influenza season.

During a pandemic, state and local policy-makers and public health officials will likely ask health departments to provide mortality data to guide decision-making on control and response measures. To help ensure uniform data collection across jurisdictions, CDC will provide case definitions and reporting procedures. CDC is also investigating the feasibility of obtaining mortality data through the Electronic Death Registration (EDR) Project (<http://www.naphsis.org/projects/index.asp?bid=374>) and the validity of estimating national mortality based on data from the 122 Cities Mortality Reporting System. State-specific mortality cannot be estimated from data provided by the 122 Cities system.

ADHS is working to implement the following enhancements to influenza mortality surveillance in preparation for a pandemic:

- Investigating methods to obtain timely influenza mortality data from county and/or state vital statistics; establish routine surveillance to identify influenza-associated deaths
- Establishing forms and algorithms to monitor influenza in the event of a pandemic.
- Incorporating regular analysis of the ADHS Vital Statistics' Death Database into existing influenza surveillance
- Estimating Arizona morbidity and mortality resulting from potential flu pandemics using Flu-Surge.

<http://www.cdc.gov/flu/flusurge.htm>

E. Syndromic Surveillance

Because syndromic surveillance is a relatively new area, these systems are still under development and validation of these methods is needed to reduce false signals and increase sensitivity.

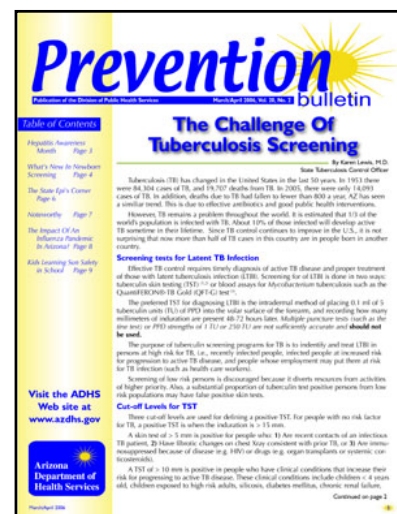
ADHS is working to implement the following enhancements to surveillance for influenza-like illness in preparation for a pandemic:

- Incorporate the use of nontraditional surveillance sources (e.g. over-the-counter pharmaceutical sales, BioSense) into routine surveillance. <http://www.cdc.gov/phn/component-initiatives/biosense/index.html>
- As the capacity for electronic transfer of data improves at both public health and hospitals, additional capabilities for receiving hospital data may be incorporated into MEDSIS.
- ADHS is working with the Real-time Outbreak Detection System's National Retail Drug Monitoring System in recruitment of additional retailers of OTC medication to increase coverage of rural areas in the State. <http://rods.health.pitt.edu/NRDM.htm>.
- ADHS is working with the Arizona School Nurse Consortium and the Department's Child Health Indicator Program to develop weekly reports of school nurse visits including ILI that will be uploaded from 300 schools in Arizona.

F. Surveillance Communications

ADHS is working to implement the following enhancements to influenza surveillance communications in preparation for a pandemic:

- Establishing and maintaining contacts with influenza and immunization coordinators in neighboring states
- Increasing the reach of the Arizona Health Alert Network into the health care provider community
- Providing regular updates of influenza activity in *Immunizations*, *Prevention Bulletin*, The Arizona Partnership for Immunizations (TAPI) Newsletter, and other regular communication venues



VI. Pandemic Surveillance (WHO PHASES 3-6)

A. Pandemic Alert Surveillance for Novel Strains of Influenza (WHO Phases 3-5)

1. Monitoring for novel strains of influenza

During the Pandemic Alert Period, ADHS will provide CDC's enhanced surveillance recommendations for identification of patients at increased risk for infection with a novel virus to providers, laboratories, county health departments, and other partners. Novel influenza strains include avian influenza viruses that can infect humans, other animal influenza viruses (such as swine influenza viruses) that can infect humans, or new or re-emergent human influenza strains that cause cases or clusters of human disease. The specific recommendations will depend on the epidemiology of the virus and the clinical characteristics of the human cases as they are known at the time, and will most likely focus on severely ill, hospitalized, or ambulatory patients who meet certain epidemiologic and clinical criteria. (For example, since February 2004, CDC has recommended enhanced surveillance to identify patients potentially infected with avian influenza A (H5N1). The current recommendations are summarized in Appendix 4: Interim Recommendations: Enhanced US Surveillance and Diagnostic Evaluation to Identify Cases of Human Infection with Avian Influenza A (H5N1).

Local Health Departments, in conjunction with ADHS, are responsible for investigating initial reports of potential human influenza infections due to a novel influenza strain in the state. Once a novel strain detected abroad exhibits sustained human-to-human transmission (WHO Phase 6), recommendations for further intensified laboratory and disease surveillance will likely be issued.

2. Reporting novel strains of influenza

County health departments should immediately inform ADHS of any suspected human infection with an avian/animal/novel human strain of influenza. Clinical algorithms for managing patients with possible novel influenza infection are provided in Appendix 4: Interim Recommendations: Enhanced US Surveillance and Diagnostic Evaluation to Identify Cases of Human Infection with Avian Influenza A (H5N1).

ADHS would immediately report to CDC any influenza cases that:

- Test positive for a novel influenza subtype, *or*
- Meet the enhanced surveillance case definition in effect at that time, *and*
- Cannot be subtyped in the state public health laboratory because appropriate reagents or biocontainment equipment is not available (see Supplement 2 – Laboratory Diagnostics).

ADHS would call the CDC 24- hour Emergency Response Hotline (770-488-7100) to report a suspected case of infection with avian influenza A (H5N1) or any other novel influenza virus. Following the initial telephone report, ADHS Epidemiology staff and/or county health department staff should conduct case interviews using a CDC case screening and report form and monitor contacts of all suspected cases. Per CDC, the completed form should be faxed to CDC at 888-232-1322 with a cover sheet that says: “ATTN: Influenza case reporting.” (The case screening and report form used to report suspected cases of human infection with influenza A (H5N1) is provided in Appendix 5: CDC Human Influenza A (H5) Case Screening and Report Form .) If infection with a novel influenza virus is confirmed, ADHS may request CDC assistance with a case investigation to identify the source of infection and determine the course of illness.

Specific surveillance activities during the Pandemic Alert phase include the following:

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

Activities:

Interpandemic surveillance operations will continue, and the following will be implemented (if not already occurring):



Outpatient (ILI) Surveillance

- Request that providers screen patients with influenza or ILI for specific epidemiological factors related to the new subtype (e.g. travel to affected areas)
- Work with local health departments to ensure timely and comprehensive reporting of ILI from sentinel sites.
- Monitor surveillance reports and communications from CDC and WHO and enact recommendations.
- Notify ILI surveillance partners to be prepared to send reports

Laboratory Surveillance

- Ensure that representative and unusual viral isolates are sent to CDC for appropriate testing
- Ensure that any influenza A viruses that cannot be subtyped are reported to CDC immediately and isolates are sent as appropriate.
- Ensure timely reporting of influenza from laboratories.
- Ensure data entry and analysis of reports of influenza cases

Syndromic Surveillance

- Monitor syndromic surveillance data sources, including local health department data, Biosense, and RODS, to detect unusual patterns of ILI activity.
- Increased syndromic surveillance activity will be monitored and evaluated by local health departments.

Surveillance Communications

- Maintain regular internal communication between State Laboratory and IDES regarding epidemiological and laboratory surveillance.
- Distribute epidemiologic reports of influenza activity updates to surveillance partners and stakeholders and hold regular conference calls with county health department partners.
- Obtain CDC guidelines/statements and distribute to partners.

The local health departments' rapid response teams (RRT) will investigate suspected cases of influenza with a novel subtype, including completing investigations forms, obtaining specimens for testing, and monitoring close contacts for influenza-like illness. Upon request, the ADHS RRTs may also assist in this process.

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

Activities:

Surveillance operations listed above will continue, and the following will be implemented:

Outpatient (ILI) Surveillance

- Request that sentinel providers activate ILI surveillance system, if not already operating.
- Screen travelers arriving from influenza-affected areas for ILI.
- Enhance surveillance, including obtaining demographic data on clusters, ill travelers, or unusual cases.
- Investigate any influenza cases, outbreaks, or increases in ILI.
- Consider instituting active surveillance including evaluating school and workforce absenteeism at selected sites.
- Analyze data from laboratory reporting, outbreaks, clusters, travelers, hospitals and other health care facilities to identify population groups at greatest risk and inform possible prioritization of vaccine or antivirals (see Supplement 6 – Vaccine Distribution and Supplement 7 – Antiviral Distribution)

Hospitalization Surveillance

- Consider instituting active surveillance. Work with county health departments to contact hospitals, emergency departments, clinics, and labs that test for influenza.
- Depending upon frequency and location of influenza activity, ADHS may consider enacting an emergency measure to make influenza-associated hospitalizations reportable to the county health departments (Appendix 6: Arizona Draft Emergency Measure for Pandemic Influenza)

Mortality Surveillance

- Consider instituting active surveillance (e.g. number of deaths due to respiratory illness among hospitalized patients; influenza-like illnesses seen by the medical examiners).

Laboratory Surveillance

- Request that surveillance partners (local health departments, sentinel providers, clinical laboratories) increase specimen collection; alert state laboratory to expect an increased number of specimens. Increase influenza laboratory testing for persons with compatible clinical syndromes at emergency departments or among hospitalized cases.
- Assess need to change types of laboratory testing performed to adhere to CDC guidance regarding safety concerns in working with the novel virus.

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

Activities:

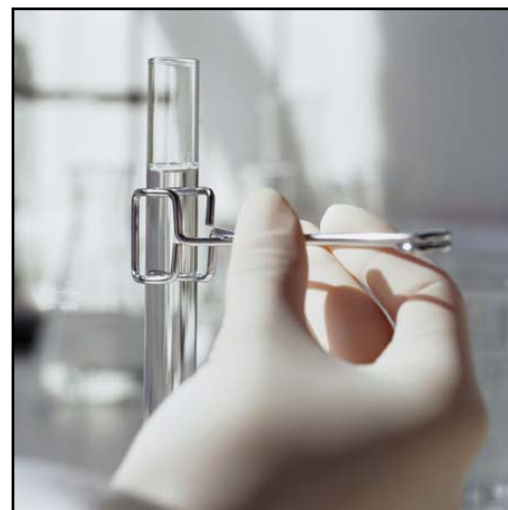
Surveillance operations listed above will continue, but will likely be coordinated under the Surveillance Group in the ADHS PHIMS structure (as PHIMS will be activated). Communications and analysis of surveillance data will likely occur with greater frequency.

B. Pandemic Influenza Surveillance (WHO Phase 6)

If a pandemic is suspected, ADHS will closely monitor data from CDC regarding the first cases of a pandemic influenza virus in the United States as well as tracking disease spread. To be able to detect the first cases of the virus in Arizona, ADHS will notify local health departments and providers in addition to increasing laboratory surveillance. More intense testing will be necessary during the early stages of a pandemic, when detecting the introduction of the virus into a state or community is the primary goal. Once the virus has been identified throughout the state, testing levels may be decreased depending on resource availability. Specific surveillance activities for this pandemic phase follow:

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

Activities for the early part of Phase 6: Surveillance activities described above will continue to the extent possible, in addition to the following activities:

Outpatient (ILI) Surveillance

- Continue to monitor data received, and use data to establish or reassess vaccine and anti-viral priority groups.
- Analyze morbidity and mortality data to establish population- and geographic area-specific rates.

Laboratory Surveillance

- Focus laboratory surveillance on detecting antigenic drift variants or re-assortment viruses.

Mortality Surveillance

- Medical examiner reporting of influenza-related deaths will be requested during the pandemic period under A.R.S. § 36-782 to 786 (Appendix 7: Declaration of Enhanced Surveillance Advisory).
- Mortality data will be monitored in conjunction with existing surveillance data to evaluate the range and severity of the pandemic.

Additional sources of surveillance data may be evaluated to determine the effectiveness of pandemic influenza interventions and resource allocation needs. These may include partnering with emergency preparedness staff to identify health care resource demands (e.g. number of patients on ventilators, EMT runs, etc.). In addition, surveillance programs may be asked to monitor vaccine and anti-viral effectiveness.

Activities for later in Phase 6: Scaled-back surveillance

Surveillance will likely be overwhelmed during a pandemic, and personnel will need to be diverted to higher-priority activities. While enhanced surveillance will be conducted during the introduction, initial spread, and first waves of a pandemic, over time, as more persons are exposed, the pandemic strain is likely to become a routinely circulating influenza A subtype. When that happens, the activities of both the ADHS and national influenza surveillance systems will revert to the frequency and intensity typically seen during interpandemic influenza seasons. The return to interpandemic surveillance will occur as soon as feasible, and the change will be communicated to all surveillance partners.

Appendices:

Appendix 1

Components of the Arizona Influenza Surveillance System

TABLE 1. COMPONENTS OF THE ARIZONA INFLUENZA SURVEILLANCE SYSTEM

Source	Surveillance type	Description
ADHS State Laboratory	Virologic surveillance	The ADHS State Laboratory performs influenza culture and polymerase chain reaction (PCR) on respiratory submissions. Subtyping is performed on isolates and PCR performed at ADHS can identify influenza A H1, H3, H5 and H7 subtypes, and influenza B. Unusual or untypable specimens are forwarded to CDC for further testing.
ADHS State Laboratory Phoenix Childrens Hospital	Virologic surveillance	The State Laboratory and one other Arizona clinical laboratory are part of the National Respiratory and Enteric Virus Surveillance System (NREVSS) and report weekly to CDC the number of influenza tests performed and the number of positive results by type.
All laboratories	Virologic surveillance	All positive laboratory tests for influenza are reportable to the state health department by law. Selected specimens are forwarded from clinical labs to the State Lab for typing.
Influenza-like Illness (ILI) Sentinel Provider Network	Outpatient surveillance	Health Care providers around the state monitor outpatient visits for ILI (fever >100°F AND sore throat and/or cough). Specimens from a small subset of patients are submitted to the State Laboratory for influenza virus testing. Approximately 60 sites are enrolled each year.
122 Cities Mortality Reporting System	Mortality surveillance	Phoenix and Tucson vital records offices transmit weekly data to CDC on the total number of death certificates filed and the number with pneumonia and/or influenza listed as a cause of death.
Influenza-associated pediatric mortality	Mortality surveillance	Reported laboratory-confirmed influenza-related deaths among children <18 years are investigated and reported to CDC.
Statewide summary report	State-level assessments	ADHS reports to CDC on a weekly basis the overall level of influenza activity as none, sporadic, local, regional, or widespread.

Appendix 2

Components of the National Influenza Surveillance System

TABLE 1. COMPONENTS OF THE NATIONAL INFLUENZA SURVEILLANCE SYSTEM

Activity	Surveillance type	Description
U.S. collaborating laboratories of the: • WHO Global Influenza Surveillance Network • National Respiratory and Enteric Virus Surveillance System (NREVSS)	Virologic surveillance	Collaborating laboratories report weekly to CDC the number of influenza tests performed and the number of positive results by type, and in some cases, subtype and age group. If non-subtypable viruses or unusual subtypes are detected, the specimens are sent to the state public health laboratory or to CDC for further testing.
Sentinel Provider Network (SPN)	Outpatient surveillance	Approximately 2,300 healthcare providers monitor outpatient visits for ILI (fever >100°F or 37.8°C AND sore throat and/or cough in the absence of a known cause other than influenza). Specimens from a small subset of patients are submitted to state public health laboratories for influenza virus testing.
Emerging Infections Program (EIP) influenza project	Hospital surveillance	Eleven EIP sites report to CDC cases of laboratory-confirmed influenza-related hospitalizations in children aged <18 years on a bi-weekly basis.
New Vaccine Surveillance Network (NVSN) pediatric hospitalizations	Hospital surveillance	NVSN enrolls a subset of patients aged <5 years who are hospitalized with fever or respiratory symptoms. Nose and throat swabs are obtained and tested for influenza by viral culture and RT-PCR. The rate of laboratory-confirmed influenza-related hospitalizations is reported to CDC on a bi-weekly basis.
122 Cities Mortality Reporting System	Mortality surveillance	Municipal vital records offices transmit weekly data to CDC on the total number of death certificates filed and the number with pneumonia and/or influenza listed as a cause of death.
National Notifiable Disease Surveillance System (NNDSS) influenza-associated pediatric mortality	Mortality surveillance	Participating state health departments report to CDC all laboratory-confirmed influenza-related deaths among children <18 years.
State and territorial epidemiologists' reports	State-level assessments	Health departments report on a weekly basis the overall level of influenza activity as none, sporadic, local, regional, or widespread.

TABLE 2. COMPONENTS OF THE NATIONAL INFLUENZA SURVEILLANCE SYSTEM

Activity level	ILI activity*/outbreaks		Laboratory data
No activity	Low	and	No lab-confirmed cases [†]
Sporadic	Not increased	and	Isolated lab-confirmed cases
	or		Lab-confirmed outbreak in one institution [‡]
Local	Not increased		Recent (within the past 3 weeks) lab evidence of influenza in region with increased ILI
	Increased IU in 1 region**; ILI activity in other regions is not increased	and	Recent (within the past 3 weeks) lab evidence of influenza in region with the outbreaks; virus activity is no greater than sporadic in other regions
	or		Recent (within the past 3 weeks) lab-confirmed influenza in the affected regions
Regional (doesn't apply to states with ≤4 regions)	Increased IU in ≥2 but less than half of the regions	and	Recent (within the past 3 weeks) lab-confirmed influenza in the affected regions
Widespread	or		Recent (within the past 3 weeks) lab-confirmed influenza in the state.
	Institutional outbreaks (ILI or lab confirmed) in ≥2 and less than half of the regions	and	
	Increased IU and/or institutional outbreaks (ILI or lab confirmed) in at least half of the regions		

* ILI activity can be assessed using a variety of data sources, including Sentinel providers, school/workplace absenteeism, and other syndromic surveillance systems that monitor influenza-like illness.

[†] Lab-confirmed case = case confirmed by rapid diagnostic test, antigen detection, culture, or PCR. Care should be given when relying on results of point-of-care rapid diagnostic test kits during times when influenza is not circulating widely. The sensitivity and specificity of these tests vary, and the predictive value positive may be low outside of peak influenza activity. Therefore, a state may wish to obtain laboratory confirmation of influenza by testing methods other than point-of-care rapid tests for reporting the first laboratory-confirmed case of influenza of the season.

[‡] Institution = nursing home, hospital, prison, school, etc.

** Region = population under surveillance in a defined geographical subdivision of a state. A region could be comprised of one or more counties and would be based on each state's specific circumstances. Depending on the size of the state, the number of regions could range from 2 to approximately 12. The definition of regions would be left to the state, but existing state health districts could be used in many states. Allowing states to define regions would avoid somewhat arbitrary county lines and allow states to establish divisions that make sense based on geographic population clusters. Focusing on regions larger than counties would also improve the likelihood that data needed for estimating activity would be available.

Appendix 3

Types of Influenza Surveillance

A. Virologic surveillance

- A network of ~75 WHO collaborating laboratories and ~90 NREVSS collaborating laboratories report the total number of respiratory specimens tested and the number positive for influenza by type, subtype, and age group to CDC each week. (Because ~40 of the NREVSS laboratories are also WHO laboratories, the total number in the WHO/NREVSS network is ~125.) Data from the two networks are combined and analyzed together.
- WHO collaborating laboratory network
 - All 50 state health department laboratories, 4 large county public health laboratories, a DOD reference laboratory, and ~25 tertiary-care hospital and academic center laboratories participate.
 - State and county public health laboratories subtype (i.e., A/H1 vs. A/H3) ~80% of their influenza A isolates.
 - Laboratories report the number of tests performed and results by age group to CDC's Influenza Branch.
 - Approximately 30% of laboratories report specimen-level data electronically using PHLIS, ~40% report aggregate weekly data via the Internet, and ~30% report aggregate weekly data via fax.
- NREVSS collaborating laboratory network
 - Primarily hospital laboratories
 - Most do not subtype influenza viruses, and none report age-group data
 - Laboratories report aggregate weekly numbers of tests performed and results to CDC's Respiratory and Enteric Viruses Branch (REVB) by phone or Internet.
- Laboratories test for influenza viruses by viral culture, PCR, or antigen detection.
- Most laboratories maintain the ability to test for influenza year-round.
- Data are available to state health department influenza surveillance coordinators on a password-protected website that is updated once a week during October through May and periodically throughout the summer. National and regional data are made available to all states, and state-specific data (including a laboratory-specific line list) are available to the states from which the data were reported.

B. Outpatient ILI surveillance (Sentinel Provider Network)

- Network of ~2,300 primary-care providers in all 50 states record the number of outpatients seen for any reason and the number with ILI by age group and report directly to CDC each week.
- ILI is defined as fever ($>100^{\circ}\text{F}$ or 37.8°C) AND sore throat and/or cough in the absence of a known cause other than influenza.
- All providers report from October through May, and approximately one third of the regular reporters report year-round.
- The network is a collaborative effort between CDC and state health departments.
 - State health department influenza surveillance coordinators recruit and maintain a network of providers and arrange for testing, free of charge, for a subset of specimens from providers.
 - CDC develops and maintains reporting materials and systems, serves as a data repository, and provides data feedback to the states.
- Providers collect two or three specimens from patients with ILI at the beginning, middle, and end of the season and from any unusual clinical cases, severe cases, outbreak-related cases, and patients with ILI during the summer.
- Providers report to CDC via a password-protected Internet site (75%), fax (13%), or phone (12%).

- Data are available to state health department influenza surveillance coordinators on a password-protected website. Data reported by providers on the Internet are available in real time, and data reported to CDC by fax are updated once each weekday. Regional data are available to all states, whereas state-specific data are available to the states from which the data were reported.

C. Hospitalization surveillance

- Hospitalizations associated with laboratory-confirmed influenza in children are monitored in 12 metropolitan areas through two surveillance networks that report patient-level data to CDC every 2 weeks.
- Emerging Infections Program (EIP) influenza project. Children aged <18 years are monitored in 11 metropolitan areas from October 1 through April 30; laboratory testing is part of routine patient care. The EIP influenza project will expand to include all age groups in January 2006.
- New Vaccine Surveillance Network (NVSN). A sample of children aged <5 years is monitored in three metropolitan areas (two are EIP influenza project sites) from October 1 through March/April; all sampled children with fever and respiratory symptoms are tested on admission.

D. Mortality surveillance

- Vital statistics offices in 122 cities covering between one-fourth and one-third of the U.S. population report weekly throughout the year the total number of death certificates filed and the number with pneumonia and/or influenza listed anywhere on the death certificate, by age group. No additional information (e.g., underlying medical condition, demographics) is available. On average, there is a 15-day lag from death to report to CDC.
- Weekly mortality data from the 122 cities are compared to a seasonal baseline calculated using a robust regression procedure run on the previous 5 years of data. If the proportion of P&I deaths for a given week exceeds the baseline value for that week by a statistically significant amount, P&I deaths are said to be above the epidemic threshold, and the proportion of deaths above threshold are considered attributable to influenza.
 - Data from all 122 cities are combined, and the percentage of all P&I deaths are calculated and compared to the expected percentage for that week.
 - Data can be analyzed by age group and geographic region, but interpretation of the data requires the development of a separate baseline for each data subset. It is not valid to compare data from a particular city or region to the national baseline.
- Detailed data (e.g., person-level data including multiple causes of death, underlying medical conditions, demographics) on ~99% of deaths in the United States are available from NCHS, but these data have a time lag of ~2-3 years.
- Pediatric deaths associated with laboratory-confirmed influenza were made nationally notifiable in October 2004. During the 2004-2005 season, the condition was reportable in 13 states; many others instituted voluntary reporting until the legal requirement was passed. CDC receives electronic, patient-level data on these deaths. The timeliness of these data cannot yet be assessed.

E. State-level influenza activity assessments

State health departments report a weekly assessment of the overall level of influenza activity (none, sporadic, local, regional, or widespread) in the state (see box below). These assessments are used to compare the extent of influenza activity from state to state and represent the only state-level influenza surveillance data that CDC makes publicly available during the interpandemic influenza season.

Appendix 4

Interim Recommendations: Enhanced US Surveillance and Diagnostic Evaluation to Identify Cases of Human Infection with Avian Influenza A (H5N1)

NOTE: This guidance pertains to the avian influenza A (H5N1) circulating as of October 2005. CDC will provide updated guidance for avian influenza A (H5N1) or for new situations, as needed, through the Health Alert Network.

Enhanced surveillance efforts by state and local health departments, hospitals, and clinicians are needed to identify patients at increased risk for influenza A (H5N1). Interim recommendations are as follows:

- Testing for avian influenza A (H5N1) is indicated for hospitalized patients with:
 - Radiographically confirmed pneumonia, acute respiratory distress syndrome (ARDS), or other severe respiratory illness for which an alternative diagnosis has not been established, and
 - History of travel within 10 days of symptom onset to a country with documented avian influenza A (H5N1) infections in poultry and/or humans. (For a regularly updated listing of H5N1-affected countries, see the World Organization for Animal Health [OIE] website at http://www.oie.int/eng/en_index.htm and the WHO website at <http://www.who.int/en/>).

OR

- Testing for avian influenza A (H5N1) should be considered on a case-by-case basis in consultation with state and local health departments for hospitalized or ambulatory patients with:
 - Documented temperature of $>100.4^{\circ}\text{F}$ ($>38^{\circ}\text{C}$); and
 - One or more of the following: cough, sore throat, or shortness of breath; and
 - History of contact with poultry (e.g., visited a poultry farm, a household raising poultry, or a bird market) or a known or suspected human case of influenza A (H5N1) in an H5N1-affected country within 10 days prior to onset of symptoms.

Epidemiologic Risk Factors

CDC Case ID:

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

February 19, 2004

Page 2 of 5

CDC ID:

6. Exposure for Non Travelers

For patients whom did not travel outside the U.S.,
in the 10 days prior to illness onset, did the patient visit or stay
in the same household with a traveler returning from one of
the countries listed above who developed pneumonia or severe
flu-like illness?

☐ Yes* ☐ No ☐ Unknown

If yes*, was the contact a confirmed or suspected H5 case
patient?

☐ Yes* ☐ No ☐ Unknown

If yes*: CDC ID: _____ STATE ID: _____

Laboratory Evaluation

7. State and local level influenza test results

Specimen 1

☐ NP swab ☐ Bronchoalveolar lavage specimen (BAL)
☐ NP aspirate ☐ OP swab ☐ Other _____

Date Collected:
____/____/____
m m d d y y y y

Test Type:
☐ RT-PCR ☐ Direct fluorescent antibody (DFA)
☐ Viral Culture ☐ Rapid Antigen Test*

Result:
☐ Influenza A ☐ Influenza B
☐ Influenza (type unk)
☐ Negative ☐ Pending

*Name of Rapid Test:

Specimen 2

☐ NP swab ☐ Bronchoalveolar lavage specimen (BAL)
☐ NP aspirate ☐ OP swab ☐ Other _____

Date Collected:
____/____/____
m m d d y y y y

Test Type:
☐ RT-PCR ☐ Direct fluorescent antibody (DFA)
☐ Viral Culture ☐ Rapid Antigen Test*

Result:
☐ Influenza A ☐ Influenza B
☐ Influenza (type unk)
☐ Negative ☐ Pending

*Name of Rapid Test:

Specimen 3

☐ NP swab ☐ Bronchoalveolar lavage specimen (BAL)
☐ NP aspirate ☐ OP swab ☐ Other _____

Date Collected:
____/____/____
m m d d y y y y

Test Type:
☐ RT-PCR ☐ Direct fluorescent antibody (DFA)
☐ Viral Culture ☐ Rapid Antigen Test*

Result:
☐ Influenza A ☐ Influenza B
☐ Influenza (type unk)
☐ Negative ☐ Pending

*Name of Rapid Test:

CDC ID:

8. List specimens sent to the CDC		
Select a SOURCE* from the following list for each specimen: Serum (acute), serum (convalescent), NP swab, NP aspirate, bronchoalveolar lavage specimen (BAL), OP swab, tracheal aspirate, or tissue		
Specimen 1: ☐ Clinical Material ☐ Extracted RNA ☐ Virus Isolate	Source*: _____	Collected : ____ / ____ / ____ m m d d y y y y Date Sent: ____ / ____ / ____ m m d d y y y y
Specimen 2: ☐ Clinical Material ☐ Extracted RNA ☐ Virus Isolate	Source*: _____	Collected : ____ / ____ / ____ m m d d y y y y Date Sent: ____ / ____ / ____ m m d d y y y y
Specimen 3: ☐ Clinical Material ☐ Extracted RNA ☐ Virus Isolate	Source*: _____	Collected : ____ / ____ / ____ m m d d y y y y Date Sent: ____ / ____ / ____ m m d d y y y y
Specimen 4: ☐ Clinical Material ☐ Extracted RNA ☐ Virus Isolate	Source*: _____	Collected : ____ / ____ / ____ m m d d y y y y Date Sent: ____ / ____ / ____ m m d d y y y y
Specimen 5: ☐ Clinical Material ☐ Extracted RNA ☐ Virus Isolate	Source*: _____	Collected : ____ / ____ / ____ m m d d y y y y Date Sent: ____ / ____ / ____ m m d d y y y y
Carrier: _____		Tracking #: _____
9. Case Notes:		

CDC ID: _____

CDC Contact Information (FOR CDC USE ONLY)	
Case status and date status applied: ☐ Clinical Case (lab results pending) _____ / _____ / _____ m m d d y y y y ☐ Influenza A pos. Case (subtype pending) _____ / _____ / _____ m m d d y y y y ☐ Confirmed Case _____ / _____ / _____ m m d d y y y y	☐ Ruled Out/Non-Case: _____ / _____ / _____ m m d d y y y y Reason: ☐ Influenza A neg. (by PCR, viral culture, or influenza A serology) ☐ Non-H5 Influenza Strain ☐ Other etiology^a ☐ Did not meet case definition
Date Entered by CDC: _____ / _____ / _____ m m d d y y y y	Contact Date: _____ / _____ / _____ m m d d y y y y
Name of CDC Contact: _____	
*Alternative Diagnosis	
A. Was an alternative non-Influenza respiratory pathogen detected? ☐ Yes* ☐ No ☐ Unknown If yes* specify: _____	
B. Was there a diagnosis other than respiratory infection? ☐ Yes* ☐ No ☐ Unknown If yes* specify: _____	

Appendix 6
Arizona Draft Pandemic Emergency Measure

ARIZONA DEPARTMENT OF HEALTH SERVICES

ADMINISTRATIVE ORDER 200X-XX
(Emergency Measures for Pandemic Influenza)

WHEREAS, the Director of the Department of Health Services, pursuant to A.R.S. § 36-136 (G) may define and prescribe emergency measures for detecting, reporting, preventing, and controlling communicable or infectious diseases or conditions if the Director has reasonable cause to believe that a serious threat to public health and welfare exists; and

WHEREAS, there is a need to adopt control measures for pandemic influenza as an emergency measure under the authority of A.R.S. § 36-136(G), as established by the following:

1. Pandemic Influenza represents a serious threat to public health. Pandemic influenza is a recently recognized, contagious febrile respiratory illness associated with infection by a novel influenza virus known as Influenza A (H5N1). Pandemic influenza manifestations are often severe, including death, and severe illnesses often occur in previously healthy persons, including health care workers.
2. While Pandemic influenza can be highly contagious, its overall rate of spread is slow enough that it can often be contained with early recognition and aggressive implantation of control measures. The key to controlling pandemic influenza is prompt detection of cases and their contacts, followed by rapid implementation of control measures.
3. Effective surveillance for pandemic influenza is challenging because the early signs and symptoms of Influenza A (H5N1) are not specific enough to reliably distinguish pandemic influenza from other common respiratory illnesses. Thus, risk of exposure is key to considering the likelihood of a pandemic influenza diagnosis, and pandemic influenza surveillance efforts need to be determined by the presence of known Influenza A (H5N1) transmission in the world.
4. In February 2004, the World Health Organization adopted guidelines for the global surveillance of influenza A (H5/N1). These emergency measures are needed to implement the WHO guidelines for the detection and control of pandemic influenza.
5. The current rules for communicable diseases, in 9 A.A.C. 6 do not include provisions related to suspect cases of pandemic influenza. These emergency measures are needed to ensure the sharing of patient confidential information related to this non-reportable disease by health care providers, and health care institutions and to ensure that health care providers and health care institutions implement appropriate control measures for pandemic influenza.

NOW, THEREFORE, I Susan Gerard, by virtue of the authority vested in me as the Director of the Arizona Department of Health Services, do hereby Order the following emergency measures to be adopted for detecting, reporting, preventing, and controlling pandemic influenza in Arizona:

- A. Reporting Requirements and Control Measures in the Absence of Known Person-to-Person Transmission of Pandemic Influenza Worldwide**
1. A health care provider¹ or administrator of a health care institution² shall:
 - a. Ensure that each patient hospitalized for influenza like illness is screened for the following that might indicate a higher index of suspicion of Influenza a (H5N1) infection:
 - i. In the 10 days before illness onset, travel to or close contact³ with another ill individual who recently traveled to a geographical area with known Influenza A (H5N1) activity.
 - b. Immediately report to the local health agency by telephone or equally expeditious means each positive Influenza A (H5N1) test result; and
 - c. Include the following information in each report made under subsection (A)(1)(b):

- i. The patient's name, address, telephone number, date of birth, race or ethnicity, gender, and occupation;
- ii. The disease, date of onset, date of diagnosis, date of laboratory confirmation (if applicable) and test results; and
- iii. The name, address, and telephone number of the person or agency making the report.

¹ "Health Care provider" means a physician, physician assistant, registered nurse practitioner, or dentist.

² "Health Care institution" has the same meaning as in A.R.S. § 36-401.

2. A local health agency shall:

- a. Conduct an epidemiologic investigation of each patient reported under subsection (A)(1)(b); and
- b. Forward each report received under subsection (A)(1)(b) to the Department along with the communicable disease reports forwarded each week under R9-6-203 (B), including for each report a description of what action was initiated by the local health agency.

B. Reporting Requirements and Control Measures in the Presence of Person to Person Transmission of Pandemic Influenza

- 1. In addition to complying with the reporting requirements and control measures described in subsection (A), a health care provider or administrator of a health care institution shall:
 - a. Ensure that each patient presenting to an outpatient clinic with influenza like illness is screened for the following pandemic influenza risk factors:
 - i. Travel within 10 days of illness onset to a foreign or domestic location with documented or suspected recent local transmission of Influenza A (H5N1) infection, or
 - ii. Close contact with 10 days of illness onset with an individual with known or suspected pandemic influenza;

I have executed this Order on this day

_____, 200X
having authority to do so under Arizona Law

DIRECTOR

ON this _____ day of _____, 200X,
Susan Gerard, Director of the Arizona Department of
Health Services, signed and acknowledged this document
in my presence.

Appendix 7
Declaration of Enhanced Surveillance Advisory

In Development.

Appendix 8

Arizona Avian Influenza Surveillance Information

A. USDA and Arizona Department of Agriculture (ADA) preparedness for Avian Influenza in Poultry.

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS) has established an interagency working group to address highly pathogenic avian influenza (HPAI) preparedness and response issues. The group includes representatives from several federal agencies and international animal- and public-health organizations.

1. Surveillance

Currently, the Arizona Veterinary Diagnostic Laboratory (AzVDL) has the capability to conduct testing for both avian influenza (AI) and exotic Newcastle disease (END). The Arizona Department of Agriculture provides funding for necropsies on poultry at the AzVDL, when the owner cannot pay. This funding is through a cooperative agreement between ADA and USDA for surveillance for AI and END¹. All fighting and exhibition birds that are confiscated are tested for AI and END.

If specimens from a chicken tested positive for either of these agents at the AzVDL, specimens are required to be forwarded to the National Veterinary Services Laboratory (NVSL) for confirmation.

2. Response

If an HPAI outbreak should occur in the United States, APHIS has the Foreign Animal Disease (FAD) management infrastructure required to conduct an emergency response program. The response would take place at the local level in accordance with the National Animal Health Emergency Management System's guidelines for highly contagious disease². The Arizona Department of Agriculture (ADA) assisted in the development of the Foreign Animal Disease Incident Annex to the State Emergency Response and Recovery Plan³. ADA has the primary role of responsibility in the annex.

3. Protection of Outbreak Response Workers

APHIS has collaborated with CDC to draft recommendations to help prevent the transmission of HPAI to animal-disease outbreak-response workers⁴. APHIS' Veterinary Services (VS) program is developing a policy to ensure the protection of personnel involved in HPAI control and eradication activities. Upon detection of HPAI (such as H5N1) in poultry, APHIS would quickly notify the CDC to initiate their involvement, in coordination with State and local health departments, in efforts to minimize disease transmission from birds to humans. Upon detections of a low pathogenic AI outbreak in poultry in Arizona, the ADHS may have to contact USDA and the Arizona Department of Agriculture (AzDA) to initiate public health involvement in the same efforts to minimize disease transmission from birds to humans, in consultation with the CDC.

4. Food Safety

An outbreak in the United States could raise public health concerns about food safety. Without following proper food handling, hygiene, and normal cooking practices, HPAI (H5N1) virus can survive on contaminated raw poultry meat, on contaminated surfaces of eggs, and within the albumen and yolk of eggs. However, it is important to note that there is no evidence that people have been infected by HPAI (H5N1) through the consumption of eggs, egg products, or well-cooked poultry meat. The World Health Organization has developed a guidance document for concerns related to food safety and avian influenza⁵.

B. Surveillance for HPAI in Wild Birds

At this time, there is no enhanced surveillance for detection of avian influenza in wild birds in Arizona. Only poultry submitted to the AzVDL with symptoms and/or lesions associated with avian influenza are being tested for the disease. Examples of enhanced surveillance ongoing in Alaska include sampling of live-captured, apparently healthy wild birds to detect the presence of HPAI or antibodies to the virus. In July 2005, President Bush's Homeland Security Council's Policy and Coordination Committee (PCC) requested the USDA and DOI to organize an interagency working group with the objective of developing a plan for early detection of highly pathogenic avian influenza (HPAI) introduction into North American wild birds.

The interagency effort to detect HPAI in wild birds is being divided into two phases. The initial phase will address early detection activities in Alaska, and in particular, coastal areas that have the most potential for contact among Asian and North American birds. The second phase will address subsequent HPAI detection activities in the four major North American flyways.

The working group is currently evaluating five potential strategies for the detection of HPAI in wild birds. The working group is currently developing each of these strategies and comparing their respective advantages and disadvantages before providing their recommendation to the PCC.

References:

- 1) Per conversation with Dr. John Hunt, Director of Animal Services Division, Arizona Department of Agriculture: cooperative agreement with USDA for surveillance for avian influenza and exotic Newcastle disease in poultry
- 2) Safeguarding the United States From Highly-Pathogenic Avian Influenza (HPAI): USDA Actions, Plans, and Capabilities for Addressing the Bird Flu Threat www.aphis.usda.gov/lpa/pubs/fsheet_faq_notice/fs_ahhpaipplan.html
- 3) Foreign Animal Disease Incident Annex, State Emergency Response and Recovery Plan www.dem.state.az.us/preparedness/SERRP/Plan_Start_Index.html
Also available on SIREN, Public Health Preparedness Portal, Response Plans, ADEM plans
- 4) OSHA-NIOSH Issues Exchange Group document, Avian Influenza, Protecting Poultry Workers at Risk, posted on the OSHA Web site as a Safety and Health Information Bulletin on December 13, 2004.
www.osha.gov/dts/shib/shib121304.pdf
- 5) Highly pathogenic H5N1 avian influenza outbreaks in poultry and in humans: Food safety implications, Department of Food Safety, Zoonoses, and Foodborne Diseases, World Health Organization
www.who.int/foodsafety/micro/avian/en/index.html

Other guidelines:

The U.S. Geological Survey also has provided “Interim Guidelines for the Protection of Persons Handling Wild Birds with Reference to Highly Pathogenic Avian Influenza” at:
www.nwhc.usgs.gov/publications/wildlife_health_bulletins/WHB_05_03.jsp

Arizona Influenza Pandemic Response Plan

Supplement 10: Public Health Communications



Supplement 10: Table of Contents

I.	SUMMARY OF STATE RESPONSIBILITIES	S10-2
II	RATIONALE	S10-3
III.	OVERVIEW	S10-3
IV.	ACTIONS FOR THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS	S10-4
	A. Assessing communications capacity and needs	S10-4
	1. Capacity	S10-4
	2. Needs	S10-4
	B. Conducting collaborative planning	S10-5
	C. Developing and testing standard state and local procedures for disseminating information	S10-5
	D. Developing, testing, and disseminating locally tailored Interpandemic messages and materials	S10-6
V.	ACTIONS FOR THE PANDEMIC PERIOD	S10-7
	A. Activating emergency communications plans	S10-8
	B. Refining and delivering messages	S10-8
	C. Providing timely, accurate information	S10-8
	D. Providing coordinated communications leadership across jurisdictional tiers (e.g., local, regional, state, and national)	S10-8
	E. Promptly addressing rumors, misperceptions, stigmatization, and unrealistic expectations about the capacity of public and private health providers	S10-8
VI.	APPENDICES	
	Appendix 1. Background Information for Developing Communications Messages about Pandemic Influenza	S10-9
	Appendix 2. Sample Materials	S10-10
	Appendix 3. Additional Resources	S10-11
	Appendix 4. ADHS Crisis Communication Plan	S10-13

Summary of State Responsibilities

Interpandemic and Pandemic Periods

- Assess and monitor readiness to meet communications needs in preparation for an influenza pandemic, including regular review and update of communications plans.
- Plan and coordinate emergency communication activities with private industry, education, and nonprofit partners (e.g., American Red Cross chapters).
- Identify and train lead subject-specific spokespersons.
- Provide public health communications staff with training on risk communications for use during an influenza pandemic.
- Develop and maintain up-to-date communications contacts.
- Participate in tabletop exercises and other collaborative preparations to assess readiness.
- Address rumors and false reports regarding pandemic influenza threats.
- Confirm any contingency contracts needed for communications resources during a pandemic.

Pandemic Period

- Contact key community partners and implement frequent update briefings.
- As appropriate, implement and maintain community resources, such as hotlines and websites to respond to local questions from the public and professional groups.
- Tailor communications services and key messages to specific local audiences; utilize statewide special populations study information to target specific hard to reach populations.
- In coordination with epidemiologic and medical personnel, obtain and track information daily on the numbers and location of newly hospitalized cases, newly quarantined persons, and hospitals with pandemic influenza cases. Use these reports to determine priorities among community outreach and education efforts, and to prepare for updates to media organizations in coordination with federal partners.
- Coordinate pandemic influenza media messages to ensure consistency with Federal government messages and local/county messages
- Coordinate communications activities with federal and local communications staff, including regional or local communications centers as appropriate.
- Promptly respond to rumors and inaccurate information to minimize concern, social disruption, and stigmatization.
- Coordinate state information with federal agencies for inclusion in communications for international information exchange and communication strategies



I. Rationale

Strategic communications activities based on scientifically derived risk communications principles are an integral part of a comprehensive public health response before, during, and after an influenza pandemic. Effective communication guides the public, the news media, health care providers, and other groups in responding appropriately to outbreak situations and complying with public health measures.

The goals of this plan are to:

- Describe the integral role of communications in preparing for, implementing, and evaluating public health actions to protect health and prevent pandemic influenza-associated morbidity and mortality.
- Provide state health officials, community health care professionals and communications specialists with guidance to assist them in developing and implementing communication plans that support an effective public health response and help minimize anxiety, fear, and stigmatization.
- Provide the basis for a well-coordinated and consistent communications strategy across jurisdictions, based on a common adherence to established risk communication principles.

This plan emphasizes the following strategies to help state and local communications professionals collaborate with each other, CDC, and other organizations to accomplish these goals:

- Provide timely, accurate, consistent, and appropriate information about pandemic influenza public health interventions.
- Emphasize the rationale and importance of adherence to public health measures that some people may consider intrusive (e.g., quarantine).
- Help set realistic expectations of public health and health care systems.
- Promptly address rumors, inaccuracies, and misperceptions.
- Minimize stigmatization that may occur during a pandemic.
- Adapt materials, utilizing information for the Arizona Special Populations Study, for special needs populations (e.g., non-English speaking populations, difficult-to-reach communities, and persons living in institutional settings) receive appropriate information.
- Acknowledge the anxiety, distress, and grief that people experience during long-term, major public health events such as pandemics.

II. Overview

Communications preparedness for an influenza pandemic, as outlined in this plan, follows seven key risk communications concepts.

- When health risks are uncertain, as likely will be the case during an influenza pandemic, people need information about what is known and unknown, as well as interim guidance to formulate decisions to help protect their health and the health of others.
- Coordination of message development and release of information among federal, state, and local health officials is critical to help avoid confusion that can undermine public trust, raise fear and anxiety, and impede response measures.
- Guidance to community members about how to protect themselves and their family members and colleagues is an essential component of crisis management.
- Information provided to the public should be technically correct and succinct without seeming patronizing.
- Information presented during an influenza pandemic should minimize speculation and avoid over-interpretation of data, overly confident assessments of investigations and control measures.
- An influenza pandemic will generate immediate, intense, and sustained demand for information from the public, health care providers, policy makers, and news media. Health care workers and public health staff are likely to be involved in media relations and public health communications.
- Timely and transparent dissemination of accurate, science-based information about pandemic influenza and the progress of the response can build public trust and confidence.

During the Interpandemic Period, national, state, and local health communications professionals will focus on preparedness planning and on building flexible, sustainable communications networks and media relationships. During the Pandemic Period, they will focus on coordinated health communications to support public health interventions designed to help limit influenza-associated morbidity and mortality.

III. Actions for the InterPandemic and Pandemic Alert Periods

During the Interpandemic and Pandemic Alert Periods, health communications professionals will work together to develop and maintain communications preparedness and to keep the public and other target groups updated about risks as the threat of a pandemic evolves. Actions fall into four major categories:

- Assessing communications capacity and needs statewide
- Conducting collaborative planning
- Developing and testing standard procedures for disseminating information
- Developing, testing, and disseminating messages and materials tailored to Arizona audiences.

A. Assessing communications capacity and needs

A first step in effective risk communications preparedness is to conduct an assessment of communications strengths and challenges.



1. Capacity

- As part of overall pandemic influenza preparedness planning, ADHS has developed a risk communications plan (see Appendix 4).
- Ensure adequate human and fiscal resources will be available for all phases of a pandemic.
- Prepare for resource contingencies (e.g., surge capacity) by developing and regularly updating backup plans and procedures, identifying community resources, and training extra staff for emergency communications responsibilities.
- Ensure ongoing communications proficiency among all staff engaged in pandemic influenza response, especially given personnel changes, reorganization, or other variables.

2. Needs

- Review and update risk communications plans at least annually to ensure that they remain practical and evidence-based. Plans have been shared in advance with stakeholders.
- ADHS has identified communications professionals and media spokespersons. ADHS will, as needed, provide media training and instruction in crisis and risk communication. Encourage familiarity with professional counterparts from local/regional jurisdictions or communities to facilitate collaboration.
- Familiarize key officials with available communications resources and gaps; apprise policy and key decision-makers of plans to deploy staff and resources during an influenza pandemic.
- ADHS is preparing basic communications resources in advance, and is planning to update them during a pandemic, utilizing sample templates in Appendices 2 and 3, fact sheets, and other communications tools and those available through the www.pandemicflu.gov and www.cdc.gov websites, as well other resources.
- ADHS will identify common communications opportunities and challenges with neighboring states, particularly with regard to reaching people in high-priority risk groups; this plan will consider novel opportunities to pool communications resources.
- ADHS will continuously monitor the effectiveness of risk communication activities, adjusting as necessary to achieve public health communications objectives.
- ADHS will continuously maintain communications with Governor's office and all state agencies and update www.az211.gov with preparedness information.

B. Conducting collaborative planning

Communications professionals in the public and private sectors need to ensure strong and well-integrated working relationships that will help sustain communications resources as a pandemic evolves. Interaction with all partners is vital to surveillance and other essential information exchange and to building collaborative and consistent messaging strategy. The following are critical elements of Arizona's response:

- Where and when appropriate, ADHS will coordinate training and other preparedness activities that include options for backing up key communications personnel in the event of their personal illness or emergency.
- ADHS will coordinate with partner agencies to prepare for appropriate public, health care provider, policy, and media responses to outbreaks of pandemic influenza. ADHS is prepared to address the following topics as a pandemic alert draws near:
 - Basic health protection information the public and other target audiences will need
 - Responsiveness, capabilities, and limitations of the public health system
 - Roles and responsibilities of diverse pandemic response stakeholders
 - Resources to help people cope with escalating fear, anxiety, grief, and other emotions (see Supplement 11).
 - How public health procedures and actions may change during different pandemic phases and why unusual steps may be needed to protect public health.
- ADHS and other response agencies will consider when and how to use federal assistance when available. For instance, background information and frequent updates for communications and other health care professionals will be available on the www.pandemicflu.gov website and through other official mechanisms.
- Response agencies need to identify and engage credible local resources as partners. For example, local chapters of nonprofit health organizations may assist with urgent communications to community groups.
- Affirm mechanisms with news media representatives to optimize effective working relationships during pandemic phases.
- ADHS will ensure that communications professionals have opportunities to participate with other public health and emergency staff in tabletop exercises and drills to help identify and resolve potential problems in the Interpandemic and Pandemic Alert periods.



C. Developing and testing standard state and local procedures for disseminating information

Although there will be much that is unpredictable about an influenza pandemic, communication processes can and should be formalized. Standard, yet flexible procedures for disseminating information support consistency, efficiency, and coordination, and improve prospects for effective feedback in both internal and external communications.

State and local communication plans will identify dissemination procedures and channels for forwarding communications from partner agencies to ensure that partners and stakeholders at all levels remain informed but protected from unnecessary messaging. As an influenza pandemic unfolds, ADHS will then relate essential information to response agencies and partners through SIREN and the Health Alert Network (see supplement 12) and to the public through www.az211.gov and www.azdhs.gov, as well as through county/local agencies and media communications. The following activities will be used to ensure effective state and local information dissemination during an influenza pandemic:

- Establishing expedited procedures for reviewing and approving pandemic influenza-related messages and materials.
- Establishing protocols for frequently updated information, including daily disease activity reports. These may include morbidity and mortality figures, geographic location of cases, demographics of infected populations, and the number of persons hospitalized. This is done on a weekly basis every influenza season in Arizona, as well as during declared outbreaks (e.g., West Nile and pertussis).

- Establish and maintain a website with current information through www.azdhs.gov and www.az211.gov.
- Arizona will utilize established local, state and federal hotlines, such as the CDC-INFO telephone line (1-800-CDC-INFO; 1-800-232-4636), dissemination of public information. However, during an influenza pandemic, state will also tailor additional information for Arizona through www.azdhs.gov and www.az211.gov.
- Prepare contingency plans to manage increased media demands. Arizona's media relations specialists from all state agencies will form a Joint Emergency News Center (JENC) or Joint Information Center (JIC), through the Arizona Division of Emergency Management (ADEM); this will ensure the coordination of messages with the Governor's office to prepare for media requests and facilitate media needs. A schedule for regularly scheduled press briefings will be determined by the Governor's office and the ADEM JIC.
- Develop ongoing coordination procedures with state agencies and organizations to conserve resources and avoid duplication in such areas as developing and pre-testing messages, and in training media spokespersons.

D. Developing, testing, and disseminating locally tailored Interpandemic messages and materials

The Interpandemic period is the ideal time to identify and learn about target audiences and raise awareness and knowledge of pandemic influenza. Doing so, however, may prove challenging. For instance, in the absence of pandemic influenza, it may be difficult to generate media and public interest in pandemic influenza. In addition, the need to inform and educate the public, health care professionals, policy-makers, and others about the threat of a pandemic must be balanced against the possibility that a pandemic may not occur for many years and may or may not be severe. Risk communication strategies such as dilemma-sharing and acknowledging uncertainty can help establish appropriate and balanced messages.

It is also appropriate during the Interpandemic Period to prepare communications materials for use during the Pandemic Alert and Pandemic Periods. Advance message development helps to ensure that the target audience's questions and concerns are addressed and that messages are credible and understandable. Answers to the most likely questions can be provided by way of press releases and fact sheets, using "place-holders" for specific details to be inserted later. Reviewing and clearing these



materials with the Governor's office, ADEM and state agency PIOs that will participate in the JIC, in advance can help identify potential areas of disagreement and allow time to work through controversies outside the stressful environment of an emergency response. Formative research can help inform development of appropriately tailored messages. (See Appendices 1 and 2 for additional information about message development.)

Communications efforts should also take into account knowledge, attitudes, and beliefs (KABs) that suggest how audiences understand and react to certain messages.

Concerns will vary by group or subgroup but will likely include personal safety, family and pet safety, and interruption of routine life activities. State and local communications professionals will identify methods to assess the unique KABs of target audiences in their populations and communities. Such activities can help identify potential barriers to compliance with response measures, and inform message development to build support and trust.

Stigmatization and discrimination (e.g., being shunned as a perceived source of contagion) can be especially difficult and potentially dangerous during an infectious disease outbreak. Identify possible scenarios when stigmatization may occur. Plan steps to address and resolve such problems quickly and repeatedly if needed. Consider messages for general audiences, high-risk groups, and difficult-to-reach populations. (For additional information, see Supplement 11, which includes information on psychosocial factors and issues.)

Basic human needs for self-protection and protection of loved ones can have both positive and negative impacts on public health efforts. Stress, worry, and fear will be present to varying degrees throughout a pandemic. Communications professionals will work ahead of time with others—including mental health experts from Arizona's Behavioral Health community—to assess the effect of message content on public anxiety, anticipate other possible stressful situations, and plan appropriate countermeasures.

Additional considerations for developing and disseminating messages and materials about pandemic influenza include the following:

- Assess existing organizational resources for communications, including materials and messages to meet concerns and information needs of target audiences and identify current and potential information gaps.
- Maintain current, accessible, and secure communications contact lists and databases. Maintain lists electronically and updated hard copy monthly in case of electricity interruption.
- Develop a portfolio of communications information sources, including material on topics such as clinical and laboratory diagnostics, infection control practices, isolation and quarantine procedures, stigmatization management, travel control authority, and legal issues related to the pandemic. The state will utilize information at www.pandemicflu.gov and other resources during a pandemic and adapt these materials for Arizona use.
- Work with local subject-matter experts to adapt key national messages about topics such as basic medical treatments, prioritization recommendations for high-risk groups, use of antiviral medications, and access to care. HHS will provide communications materials (e.g., fact sheets, question-and-answer documents, and message maps) for states and localities to use and adapt.
- Work with local subject-matter experts to adapt communications components of education courses and materials in multiple formats for professional audiences. Consult the www.pandemicflu.gov and www.cdc.gov/flu/ websites for information about specific materials and training opportunities.
- Develop a specific, consistent plan to identify and address rumors and misinformation promptly. Test the plan before a pandemic occurs and modify as needed to ensure it works.
- Utilize the Arizona Special Populations Study and other resources to identify preferred channels for target audiences.
- Ensure the availability of communications products in multiple languages, based on the demographics of the jurisdiction. State will provide all materials in Spanish via its Spanish version of its website and for other languages will adapt materials available via the www.pandemicflu.gov and www.cdc.gov/flu/ websites.
- Begin disseminating messages and materials to increase the knowledge and understanding of the public, health care professionals, policy-makers, media, and others about unique aspects of pandemic influenza that distinguish it from seasonal influenza, and generally what to expect during different phases of an influenza pandemic.
- Provide coordinated information on ways to access help (e.g., www.az211.gov, local/county hotlines, helplines) and self-help (e.g., psychological resources, and stress and anxiety management).

V. Actions for the Pandemic Period

Communications professionals from response agencies in Arizona will focus on providing timely, accurate information in especially challenging conditions, coordinating communications leadership across all tiers of jurisdiction (e.g., local, state, regional, and national), and promptly addressing rumors, misperceptions, stigmatization, and any unrealistic expectations about public and private health provider response capacity.

A. Activating emergency communications plans

According to A.R.S. 36-787, ADHS is the lead agencies for crafting public information strategies and messages during a declared public health emergency. Once a public health emergency is declared and state PHIMS (see Primary Plan - Appendix A) is activated, communications demands will increase. This will raise the need to communicate health risk to local populations (for example, if a human case of avian influenza is reported in Arizona). As communications demands escalate, state and local health departments will activate emergency communications plans and system, including local and state hotlines and www.az211.gov.



B. Refining and delivering messages

Arizona will follow these steps ensuring the delivery of proper messages:

- Provide regular updates and offer opportunities to address questions (e.g., in partnership with news media, in public forums, and in printed or electronic messages).

- Distribute practical information, such as travelers' advisories, infection control measures, and information about potential priority distribution of antiviral medications and first-generation vaccines. Be prepared to immediately address questions related to initial case(s) and to provide guidance to the public about disease susceptibility, diagnosis, and management, as well as other topics.
- Reinforce and verify ways to help people protect themselves, their families, and others, including self-care information for psychological well-being.
- Address rumors and misinformation promptly and persistently.
- Take steps to minimize stigmatization.

C. Providing timely, accurate information

Depending on health, economic, and overall societal effects, such as the extent of influenza-related illness and death, communications professionals will reassess and adjust as necessary to emerging needs and expectations of public and professional audiences. Areas meriting particular attention include:

- Community subject-matter experts and spokespersons. It may be important to consider additional recruitment and training.
- Effectiveness of procedures for keeping communications lists, materials, and databases current and accurate. Plans for having these lists available in alternate formats if electricity fails.
- Open and accessible channels for advice to the public, including ongoing functioning of hotlines in collaboration with the CDC-INFO telephone line. In addition to providing ready access to inquiries and concerns, state and local hotlines can help communications professionals assess community awareness and behaviors and adapt communications strategies.



D. Providing coordinated communications leadership across jurisdictional tiers (e.g., local, regional, state, and national)

Communications officials at ADHS will work with communications officials from state agencies, county, tribal, city, and federal agencies as well as from other response partners, including health care and volunteer organizations, as necessary. This coordination will occur through the ADEM Joint Information Center.

E. Promptly addressing rumors, misperceptions, stigmatization, and unrealistic expectations about the capacity of public and private health providers

After the initial stages of a pandemic, news media coverage may become more mixed, with both positive and critical coverage. Hero stories may emerge, while “what ifs” and negative images may start to compete for the public attention. As the media proceeds into in-depth analysis of what happened and why, these elements become important to an effective response:

- Monitor news media reports and public inquiries to identify emerging issues, rumors, and misperceptions and respond accordingly.
- Conduct “desk-side briefings” and editorial roundtables with news media decision-makers.
- Proactively address groups that voice overly critical, unrealistic expectations.
- Establish trust with marginalized groups subject to or experiencing stigmatization and cite specific media outlets for inaccurate, misleading, or misguided reporting that may serve to encourage stigmatization.
- Maintain scheduled access to pandemic subject-matter experts to balance the media’s needs with other subject-matter expert priorities.

Appendix 1

Background Information for Developing Communications Messages about Pandemic Influenza

The language, timing, and detail of key messages will depend on a number of factors, including demographics and group psychological profiles of intended audiences, available or preferred media, and urgency. However, the following points may help communications professionals adapt appropriate health messages related to an influenza pandemic:

By definition, pandemic influenza will result from a new influenza A subtype against which humans have limited or no natural immunity. Pandemic influenza virus infection therefore is likely to cause serious, possibly life-threatening disease in greater numbers, even among previously healthy persons, than occurs during seasonal inter-pandemic influenza outbreaks.

- Global influenza pandemics are unpredictable events, presenting challenges for communication.
- Global and domestic surveillance, coupled with laboratory testing, are vital to identifying new influenza A subtypes virus strains with pandemic potential.
- The threat of a pandemic may be heightened when a highly pathogenic avian influenza A virus spreads widely among birds and infects other animals, including humans. The strains can mutate or adapt and give rise to a strain that spreads easily from person to person in a sustained manner, causing a pandemic.
- Illness and death may be much higher during a pandemic than during annual seasonal community influenza outbreaks; pandemics can also occur in waves over several months.
- It could take many months to develop an effective pandemic influenza vaccine and immunize substantial numbers of people. Antiviral medications for treatment or prevention of pandemic influenza could have an important interim role, but may also be in short supply. Consequently, practical and common sense measures, such as frequent hand washing, covering your mouth and nose while sneezing or coughing, and staying home from work or school if you are ill with influenza-like illness, may be important to help prevent the spread of pandemic influenza.
- Although travel restrictions and isolation and quarantine procedures may limit or slow the spread of pandemic influenza in its earliest stages, these measures are likely to be much less effective once the pandemic is widespread. Alternative population containment measures (e.g., cancellation of public events) may be necessary.
- Arizona is preparing for pandemic influenza by:
 - Developing a coordinated state strategy to prepare for and respond to an influenza pandemic in conjunction with federal and local partners
 - Participating in a pandemic influenza table-top exercise within the first six months of 2006
 - Already embarking on a campaign to immunize elderly adults for pneumonia, often a secondary infection to influenza that can cause fatalities in the high risk elderly population
 - Educating health care workers about pandemic influenza diagnosis, case management, and infection control practices
 - Refining pandemic influenza surveillance systems
 - Developing guidelines for minimizing transmission opportunities in different settings
 - Working with federal agencies as they are expanding supplies of antiviral medications in the Strategic National Stockpile and establishing guidelines for their use
 - Developing candidate vaccines and establishing plans for the rapid development, testing, production, and distribution of vaccines that may target specific pandemic influenza strains
 - Developing materials that county and local agencies can adapt as guidance for use during an influenza pandemic.

Appendix 2

Sample Materials

ADHS will utilize materials provided and adapted from HHS which will provide communications materials for states and localities throughout all pandemic phases. Many of these resources will be made available at appropriate times on the [www.azdhs.gov/pandemic flu](http://www.azdhs.gov/pandemicflu) and www.pandemicflu.gov websites. Others will be disseminated by using the Health Alert Network (HAN), Epidemic Information Exchange (Epi-X), and other resources for health professionals. Current links to available materials:

Avian Influenza Fact Sheet

<http://www.cdc.gov/flu/avian/gen-info/facts.htm>

Guidance to Travelers

http://www.cdc.gov/travel/other/avian_flu_ah5n1_031605.htm

Interim Guidance for U.S. Citizens Living Abroad

http://www.cdc.gov/travel/other/avian_flu_ig_americans_abroad_032405.htm

Sample CDC News Conference Transcript

<http://www.cdc.gov/od/oc/media/transcripts/t040127.htm>

Managing Anxiety in Times of Crisis

<http://mentalhealth.samhsa.gov/cmhs/managinganxiety/default.asp>

Appendix 3

Additional Resources

HHS and its agencies will make resources available to state and local health professionals to assist with their communications responsibilities during Interpandemic, Pandemic Alert, and Pandemic Periods. Because information may change frequently, check the www.pandemicflu.gov and www.cdc.gov/flu/ websites for up-to-date materials. Communications professionals in states and local areas will be able to localize and download most resources, including posters, brochures, fact sheets, media kits, webcasts, and archived satellite broadcasts. Much of the material will also be available through e-mail or mail orders. Material will include color and black and white versions for health care and public health professionals and for public audiences, as well as specific versions for low-literacy populations. As appropriate and feasible, materials will be provided in a variety of languages.

Other resources

National Vaccine Program Office Pandemic Influenza Website
<http://www.HHS.gov/nvpo/pandemics/>

WHO Pandemic Influenza Website
<http://www.who.int/csr/disease/influenza/pandemic/en/>

MMWR Guide for Influenza
http://www.cdc.gov/mmwr/mguide_flu.html

Epidemic Information Exchange (Epi-X)
<http://www.cdc.gov/mmwr/epix/epix.html>

Health Alert Network (HAN)
<http://www.bt.cdc.gov/documentsapp/HAN/han.asp>; <http://www.phppo.cdc.gov/han>

Centers for Public Health Preparedness
www.asph.org/acphp

This website provides locating information and links to the 40 centers involved in this network. The centers form a unique partnership that includes accredited schools of public health, dentistry schools, medical schools, veterinary schools, and state and local health departments. Together, the partners provide a countrywide defense system through the preparation of front-line public health workers and first responders.

Vaccine-Specific Sites and Resources

[Vaccine Adverse Events Reporting System \(VAERS\)](http://www.vaers.hhs.gov/) website at <http://vaers.hhs.gov/> or call 1-800-822-7967

Surveillance Sites

[CDC Influenza Surveillance Data](#)
[EISS: European Influenza Surveillance Scheme](#)
[EuroGROG: International Influenza Surveillance](#)
[World Health Organization \(WHO\): Flunet](#)

Outbreak Sites

[Animal and Plant Health Inspection Service \(APHIS\), Veterinary Services, U.S. Department of Agriculture \(USDA\)](#)

APHIS coordinates efforts to prepare for and respond to outbreaks of exotic animal diseases, including highly pathogenic avian influenza. Results of surveillance for influenza A viruses in avian species in the United States are reported each year by the National Veterinary Services Laboratories in the Proceedings of the U.S. Animal Health Association Annual Meeting.

World Health Organization Disease Outbreak Site [The World Health Organization \(WHO\): disease outbreaks](#)

Research Sites

National Institute of Allergy and Infectious Diseases (NIAID)

<http://www.niaid.nih.gov/dmid/influenza/pandemic.htm>

USDA Agricultural Research Service

[Agricultural Research Service \(ARS\), USDA](#)

The ARS' Southeast Poultry Research Laboratory publishes information on avian influenza research and contacts for further information.

Manufacture and Licensing of Influenza Vaccine

[Center for Biologics Evaluation and Research \(CBER\), FDA](#)

CBER plays a critical role in the manufacture and licensing of influenza vaccine.

WHO Global Influenza Preparedness Plan

http://www.who.int/csr/resources/publications/influenza/WHO_CDS_CSR_GIP_2005_5/en/index.html

Appendix 4
ADHS Crisis Communication Plan

Arizona Department of Health Services

Public Information Office
Crisis Communication Plan*



December 2003

(Updated January 2006)

**Adapted from Centers for Disease Control and Prevention
Media Relations Crisis Plan April 2001*

Introduction

About Crises

Crises can occur at any time. They can quickly result in widespread public confusion or anxiety, shut down a laboratory or office, harm a relationship with a partner or damage the agency's reputation. Crises can diminish public confidence in the Arizona Department of Health Service's (the Department) advice and disrupt the Department's ability to perform its public health mission.

Fortunately, with effective decision-making and communications – especially media communications – crises can be managed and resolved. Key personnel can be notified and crisis teams activated effectively. Rumors can be detected and dealt with. And the public can be given useful information in a timely manner. Sometimes crises can be anticipated and avoided altogether.

Purpose of Plan

This crisis communication plan describes the crisis policies and procedures carried out by the Public Information Office (PIO) from pre-crisis monitoring to crisis occurrence and resolution.

The PIO goal during crises is to support the Department's public health mission and to protect its reputation. The PIO plays an essential role in resolving crises by serving as a source of credible and useful information to the media, by influencing the content and flow of information, and by directing the media's attention to what the Department and other agencies are doing, and what the public should be doing to resolve the problem.

The PIO's specific objectives are to:

- Lead the state wide Health PIO/risk communications task force for crisis communications.
- Follow events and trends in order to anticipate crises and prevent them when possible.
- Respond to crises effectively (e.g., accurate verification, timely notifications, rapid assembly of crisis teams, effective response to rumors, etc.).
- Convene a joint information center (JIC) with public information representation from the governor's office, agency personnel, federal, state, local, tribal and county public health officials including Arizona Division of Emergency Management and the Governor's Office of Homeland Security.
- Provide timely, accurate and helpful information to the public, the media, the governor's office, agency personnel, federal, state, local, tribal and county public health officials, first responders, media and other audiences during crises.

What is a Crisis?

For purposes of this plan, a crisis is any event that triggers a level of public interest and media inquiry that requires the Department's PIO to significantly increase its efforts or resources in order to accomplish a reasonable media response. Crises include, but are not limited to, bioterrorism, disease outbreaks or epidemics, natural disasters, fires, issues of water, power, and computer outages, breakdowns in communications, vaccination shortages, or other emergencies in which a public health threat is either real or perceived.

Types of Crises

Potential crises include the following:

- Bioterrorism event
 - Suspected
 - Declared
- Chemical terrorist event
- Radiological event
- National/multi-state disease outbreak, epidemic, investigation or environmental crisis
 - Food-borne
 - Airborne
 - Water-borne
 - Vector-borne
 - Potential to spread internationally
 - Unknown infectious agent
 - Chemical
 - Natural disasters
 - Toxic materials
 - International disease outbreak or epidemic investigation or large scale environmental disaster
 - Unknown infectious agent with potential to spread to the United States
 - Known infectious agent with potential to spread to the United States
 - Large scale environmental crises
 - War related
- Department disaster (Phoenix, Tucson or Flagstaff offices)
 - Laboratory incident with laboratory worker
 - Laboratory incident with release of material in community
 - Death of employee/contractor/visitor while on premises
 - Hostage event with/by employee/contractor on premises
 - Bomb threat
 - Explosion/fire—destruction of property
 - Violent death of an employee/contractor or visitor on premises
- Department Leadership/Management/Employee Relations Crisis Issues
 - Unexpected resignation of Director or other hi-profile employee
 - Accusation of misconduct involving conflict of interest, human subjects, or research animals
 - Accusation of personal misconduct
 - Lawsuit filed against Department/leadership
 - Sexual misconduct charges

Crisis Lifecycle

Understanding the patterns of crisis can help Department teams anticipate problems and respond effectively. These considerations are offered for background purposes.

Initial Phase

The initial phase of a crisis is characterized by confusion and intense media interest. Information is usually incomplete and the facts dispersed. It's important to recognize that information from media, other health offices or other agencies might not be accurate. The Department's role is to learn the facts about what happened, to determine what local and/or national health agencies are doing about the problem and to verify the true magnitude of the event as quickly as possible.

When a crisis is verified, the initial Department media contact notifies key executives of the event and the Director of Communications or Public Information Officer activates the Crisis Communication Plan.

One of the best ways to limit public anxiety in a crisis is to provide useful information about the nature of the problem and what the public can do about it. During the initial phase of an event, the Department seeks to establish itself as a credible source of information. Even when there is little information to offer, the Department can communicate how the agency is investigating the event and when more information will be available. At the very least, messages should demonstrate that the Department is addressing the issues head on – that its approach is reasonable and empathetic.

While pressure to release information prematurely may be intense, appropriate leaders in the incident chain of command must approve the release of any information.

Crisis Maintenance

As the crisis evolves, the Department should anticipate sustained media interest. Unexpected developments, rumors or misinformation, and media scrutiny may place further demands on the Department. Health care professionals and others not associated with the Department may comment publicly on the issue, and possibly contradict or misinterpret the Department's messages. The Department may be criticized over its handling of the situation.

Maintaining coordination with the Department's Incident Commander within the PHIMS structure and other agencies is essential. Processes for tracking media inquiries and Department activities become increasingly important as the workload increases. Department personnel will keep a log of people they talk with, responses to media request, issues raised and actions taken during crises. This stage may involve ADHS conducting activities from the Health Emergency Operations Center and coordinating with the State Emergency Operations Center (SEOC), local Joint Information Centers (JICs) and the State JIC.

The crisis maintenance phase includes an ongoing assessment of the media requests and information needs and the allocation of resources to be sustainable throughout the duration of the event.

Resolution

Once the crisis is resolved, the Department may need to respond to media inquiry or scrutiny about how the event was handled. The Department may have an opportunity to reinforce public health messages while the issue is still current. A public education campaign or updates to existing information may be necessary. When the crisis is over, the Department evaluates its performance, documents lessons learned and determines specific actions to improve crisis systems, communications, and the overall crisis plan.

Recovery

Once the crisis is resolved, the public, and specifically the affected public will be in a phase of recovery. During this period it will remain necessary to respond to information and media requests, especially about the Department's work to help the public recover from the crisis.

Public Health Incident Management System (PHIMS)

Depending on the circumstances, a public health incident management system (PHIMS) will be activated. PHIMS is an operational system is an operational structure based common terminology, modular organization, integrated communications, unified command structure, action planning, manageable span-of-control, pre-designated facilities, and comprehensive resource management. It may become necessary for the public health agency to become the Incident Commander.

In consultation with the Division of Emergency Management, the Department may request activation of the State Emergency Response and Recovery Plan (SERRP), which will lead immediately to the involvement of multiple agencies in emergency response operations under a Unified Command system operating out of the State Emergency Operations Center (SEOC).

Outbreak Scenario With Multiple-Agency Involvement

In the case of an outbreak or epidemic situation that taxes local public health resources, other state and/or federal agencies may contribute to the emergency response. As soon as multiple agencies are involved, two entities are established, the Joint Information Center (JIC) and the Unified Command (UC).

Joint Information Center (JIC)

The JIC¹ is a physical location, usually at a local level, where public affairs officers from participating agencies come together to ensure the coordination and release of accurate and consistent information that is disseminated quickly to the media and the public. The JIC may be established at the headquarters of the local Emergency Operations Center or at an offsite location near the incident. The local health officer appoints one or more public health representatives to the JIC. Representatives may include the public affairs officer, a health educator, and/or a mental health representative. If operating at the JIC is not feasible, all organizations are encouraged to conduct their information activities in cooperation with the JIC. Or if the physical establishment of a JIC is not feasible, a “virtual” JIC may be formed via teleconference and electronic mail operations.

The primary functions of the on-scene JIC are to:

- Provide response information to individuals, families, and business and industry directly or indirectly affected by the emergency.
- Establish phone lines for public and press inquiries.
- Monitor news coverage to ensure that accurate information is being disseminated.
- Take action to correct misunderstandings, misinformation, and incorrect information concerning emergency response and mitigation operations that appear in the news media.
- Ensure that non-English-speaking, hard to reach, and differently-abled populations receive accurate and timely information about emergency response and mitigation operations through appropriate news media and through established community resources.
- Use a broad range of resources to disseminate information to those affected by the disaster and the general public, including the utilization of the emergency alert system, www.az211.gov, broadcast fax, the Internet, print, radio, and broadcast news media.
- Maintain contact with and gather information from federal, state, local, and voluntary organizations taking part in emergency response operations.
- Manage news conferences and press operations for disaster area tours by state and FEMA officials and others.
- Provide public affairs support and advice to the State Coordinating Officer, if one is involved in the emergency response.
- Credential press personnel when necessary to control access to sensitive areas.
- Coordinate with logistics staff to provide basic facilities to assist the news media in disseminating information to the public and to credential media representatives.

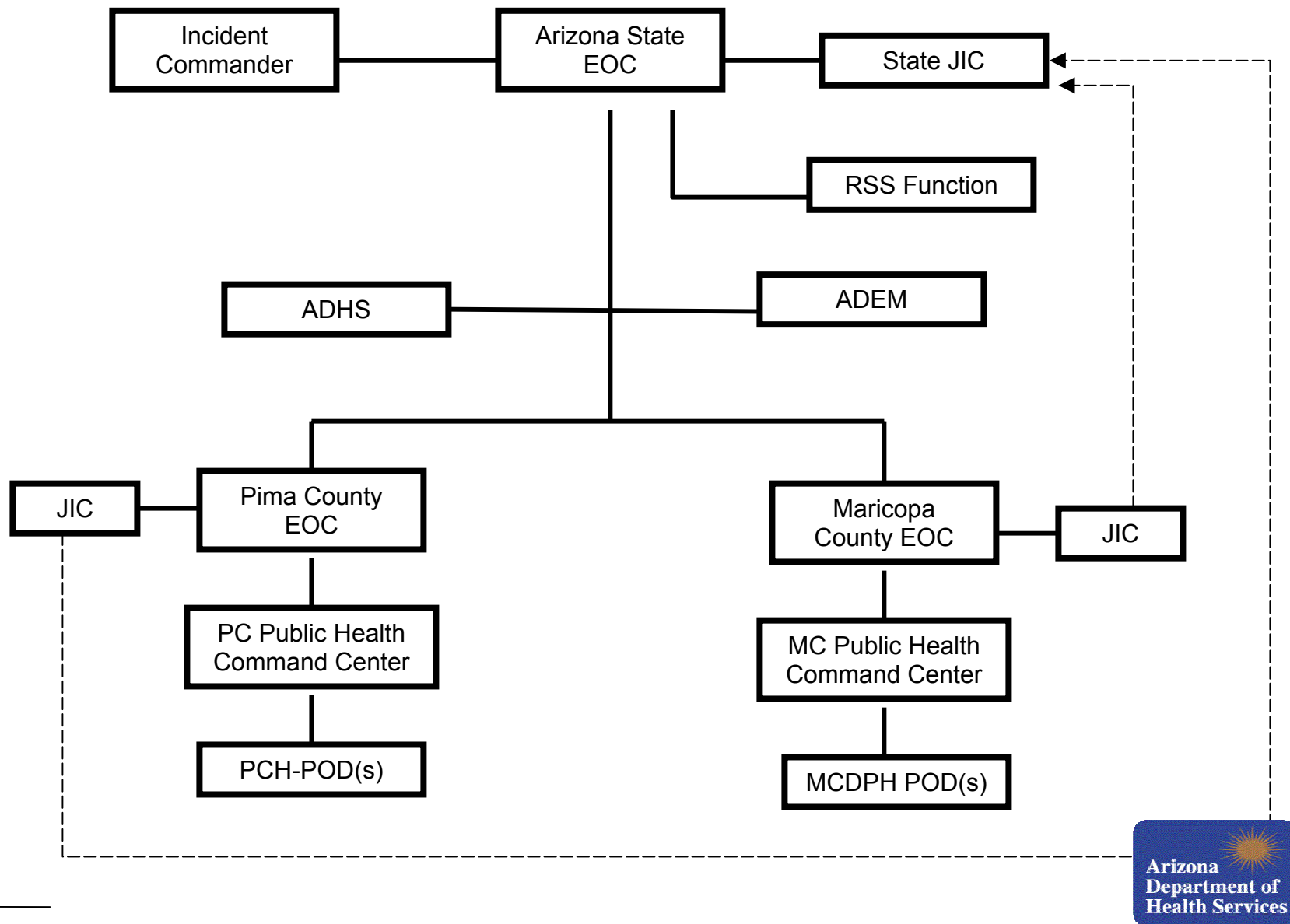
¹ The term JIC normally refers to the local Joint Information Center. JENC, or Joint Emergency News Center, is the state version of the same concept, providing a state-based center of operations for media oversight. The term JIC is generally the more preferred use of acronym and may sometimes be used at the state level as well.

Unified Command (UC)

Unified Command is a concept of operations used when there are multiple agencies and multiple jurisdictions such as local, county, state and possibly federal. Command is accomplished by consensus. The state may establish a physical UC center (the State Emergency Operations Center, for example) and/or may periodically convene key decision makers to accomplish unified command. A state-level Joint Information Center (JIC) is usually formed to support the local JICs and to ensure a unified state response, and is operated out of the State EOC. In an event, the ADHS Communications Director or PIO should report, as assigned, to the State EOC but be continue to operate within the Health PHIMS structure as well. The state health officer and/or a designee participate(s) in unified command activities and may consult with core working group members, such as the PIO, as necessary.

According to A.R.S. 36-787, ADHS is the lead agencies for crafting public information strategies and messages during a declared public health emergency. ADHS will work within the existing system to coordinate public health messages. The ADHS PIO is the lead PIO within the Health EOC but reports to the Arizona Division of Emergency Management SEOC lead PIO or Governor appointed lead PIO within the State EOC and State JIC and acts as the primary jurisdiction spokesperson for the Department, in accordance with ADHS communication plans and protocols. All state agencies must coordinate the release of information through ADEM and the State and local JICs prior to release.

EXAMPLE OF AN EMERGENCY MANAGEMENT CHART



Bureau of Emergency Preparedness and Response

Crisis Team Organization

PHIMS Response Structure

The **Public Health Incident Management System (PHIMS)** is the Department's Incident Management System. In other words, it is an organizational framework within which the Department responds to an emergency. During an emergency, Department resources such as personnel and supplies as well as activities, may need to be mobilized across programs. The PHIMS response utilizes a structure that fosters communications between the tactical (front line responders) and through a chain-of-command.

PHIMS Staff

(See the PHIMS Response Organizational Chart located after this introduction as a visual example)

The **Agency Administrator** consists of the Department Director or their designee who oversees the response. A **Public Policy Advisory Group** may be assembled as needed and is comprised of selected Department Response Sector Leaders (Division Directors, Bureau and Office Chiefs) to assist the Agency Administrator in developing public policy recommendations. The Agency Administrator then assigns an **Incident Commander** who is responsible for managing the Department's response activities by coordinating the Operations, Planning, Logistics and Finance/Administration sections. In addition, this individual develops the Public Health Incident Action Plan (IAP) in conjunction with the Planning Section

The Incident Commander is supported by a command staff that is represented by the State Epidemiologist, Information Officer, Liaison Officer, Safety Officer and a Chief for each of the Operations, Planning, Logistics and Finance/Administration sections.

The PHIMS **Command Staff** is comprised of an **Information Officer**, **Liaison Officer** and a **Safety Officer**. The Information Officer develops material, has it reviewed internally and releases it to the media. The Liaison Officer maintains relations between the Department and outside agencies and the Safety Officer oversees the safety of the response.

The **PHIMS General Staff** includes Operations, Planning, Logistics, and Finance/Administrative responsibilities. These responsibilities remain with the Incident Manager (IM) until they are assigned to other individuals. When the Operations, Planning, Logistics or Finance/Administrative responsibilities are established as separate functions under the IM, they are managed by a section chief and can be supported by other functional units (Group Supervisors and Unit Leads)

- The **Operations Staff** is responsible for carrying out the response activities described in the Incident Action Plan (IAP). The Operations Section Chief coordinates Operation Section activities and has primary responsibility for receiving and implementing the IAP. The Operations Section Chief reports to the Incident Manager and determines the required resources and organizational structure within the Operations Section. Here are some examples of activities that the Operations Section might be involved in:
 - Conduct human case surveillance and characterize an outbreak
 - Conduct human case follow-up
 - Conduct animal surveillance and characterize an outbreak
 - Disseminate data (cases, geographical distribution)
 - Handle public, media and health care provider inquiries
 - Develop messages covering clinical information and prevention
 - Oversee funding to counties for activities
 - Make regular updates to local health departments
 - Identify need and broker vaccine
 - Provide Behavioral Health Services to ADHS staff
 - Determine needs and research resources of Arizona hospitals

- The **Planning** Staff is responsible for the collection, evaluation, dissemination and use of information about the development of the incident and status of resources. This section's responsibilities also include creation of the Incident Action Plan (IAP – See attached example), which defines the response activities and resource utilizations for a specified time period.
 - Development of IAP
 - Compilation of PHIMS Updates/Briefs into the weekly/daily Situation Report
- The **Logistics** Staff is responsible for providing additional facilities, services, and materials for the incident response.
 - Additional equipment for HEOC, Communications, Call Center, etc.
 - Facilities
 - Personnel (above and beyond routine need)
- The **Finance and Administrative** Staff is responsible for all financial, administrative, and cost analysis aspects of the incident.
 - Procurement of items
 - Maintenance of contracts

The modular organization of PHIMS allows responders to scale their efforts and apply the parts of the PHIMS structure that best meet the demands of the incident. In other words, there are no hard and fast rules for when or how to expand the PHIMS organization. Many incidents will never require the activation of Planning, Logistics, or Finance/Administration Sections, while others will require some or all of them to be established.

Communications occurs across groups, but also comes directly to one's supervisor and subsequently to the Section Chiefs and Command Staff. The Section Chiefs and Command Staff meet as needed to use information to make decisions. Information from these meetings and regular updates are incorporated into Situation Reports (see attached example) that are disseminated by e-mail to the entire response network to keep everyone up to date and anticipate future issues.

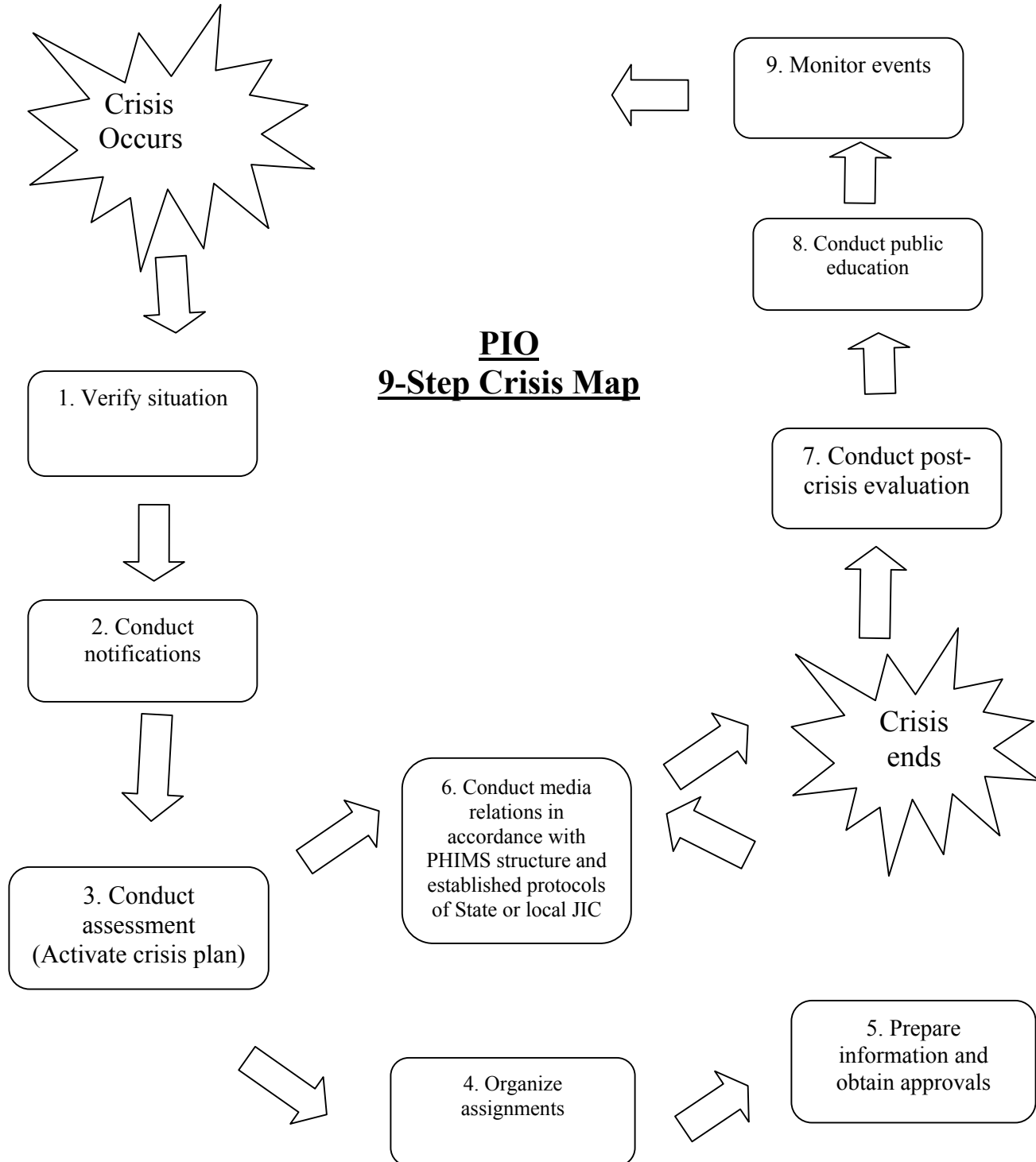
Crisis Team Assignments

Media Response PIO Activities

- Manages all media relations related to crisis.
- Assists with all aspects of procedures involved with a State or local Joint Information Center, if established. Follows PIO guidelines as outlined by State Emergency Management Division.
- Appoints spokespersons for Department.
- Identifies Subject Matter Experts (SMEs) for the Department.
- Attends SME meetings/conference calls.
- Develops messages and supporting materials for SMEs.
- Manages SME interface with media.
- Utilizes key messages, message templates and develops and disseminates messages.
- Manages development of all materials for internal and external audiences.
- Utilizing PHIMS approval process for dissemination of information and protocol established by State or local JIC, manages approvals of messages and materials.
- Provides media with approved information/materials.
- Coordinates personnel to handle media logistics, (e.g., logistics/facilities set-up, logging media requests).
- Provides strategic direction for timing and content of media releases and media conferences or briefings.
- Trains and prepares spokespersons for media interfaces.
- Anticipates media's questions and tests spokespersons media responses.
- Determines need for off-site referrals to other agency experts.
- Gathers ongoing data about the crisis.
- Monitors media.

Crisis Response Checklists

9-Step Crisis Overview



Step #1. Verify situation

The initial PIO contacted is responsible for verifying the situation. Recognize that information from Department offices, health care professionals or media may not be complete or accurate, and what may seem like a crisis to one source may not be to others.

- ☐ Get the facts.
- ☐ Obtain information from additional sources to put the event in perspective.
- ☐ Ascertain where the information originated and determine its credibility.
 - Did the information come from a federal source such as FBI, CDC, HHS or Epi-Aid?
 - Did the information come from a local channel such as DEM, DPS, the Governor's Office, a hospital, or a county health official?
 - Is this a rumor such as an email chain?
- ☐ Review and critically judge all information.
- ☐ Determine whether the information is consistent with other sources.
- ☐ Determine whether the characterization of the event is plausible.
- ☐ Clarify information through public health staff and managers.
- ☐ Attempt to verify the magnitude of the event.
- ☐ Begin to identify staffing and resource needs to meet the expected media interest.
- ☐ Determine who should be notified of this potential crisis.

Step #2. Conduct notifications

Mandatory Notification and Coordination

- ☐ Department Director
- ☐ Deputy Directors
- ☐ Assistant Directors
- ☐ PHIMS Incident Commander
- ☐ Governor's Office
- ☐ Office of Legal Counsel
- ☐ County PIOs
- ☐ Local Health Liaison (notify ALHOA and counties)
- ☐ Border Health Liaison (notify Border communities)
- ☐ Tribal Health Liaison (notify ITCA, IHS and tribes)

Secondary Notification and Coordination (depending on the event)

- ☐ Arizona Division of Emergency Management PIO
- ☐ Arizona Department of Public Safety PIO
- ☐ FBI
- ☐ CDC
- ☐ Arizona Dept. of Environmental Quality PIO
- ☐ Arizona Radiation Regulatory Agency
- ☐ Local fire department
- ☐ Arizona Medical Association
- ☐ Arizona Hospital and Health care Association
- ☐ American Red Cross
- ☐ Others as needed

Step #3. Conduct assessment (activate crisis plan)

Throughout the event, the PIO will continue to gather information and try to determine the severity of the situation and the potential impact on PIO operations, resources and staffing. Based on the initial assessment, and with approval of the Department Director, the Director of Communications activates the Department Crisis Communication Plan.

Results

- ☐ Determine the agency/office/individual in charge of managing the crisis. Ensure direct and frequent contact with the office in charge.
- ☐ Continue to gather and check the facts. What happened? What was done to prevent this situation from happening? What can be done to prevent it from getting worse?
- ☐ Determine what Department is doing to end this crisis. Is there an investigation? Who's involved in the investigation?
- ☐ Determine what other agencies/organizations are doing to solve this crisis.
- ☐ Determine who is being affected by this crisis. What are their perceptions? What do they want and need to know?
- ☐ Determine what the public should be doing.
- ☐ Activate media monitoring.
- ☐ Activate Internet monitoring.
- ☐ Determine what's being said about the event. Is the information accurate?
- ☐ Determine consistency of information across sources.

Crisis Assessment Tool (developed by CDC)

Use the questions below to assess the "crisis level." The assessment helps Department determine the staffing and resources needed to respond to the situation. It also helps differentiate events when there is more than one crisis going on at a time.

Level A Crisis – A true public health emergency with expected casualties. A 24-hour operation may be necessary. (First three boxes checked.)

Level B Crisis – An intense crisis, but not a public health emergency for public information. PIO may need to extend its hours of operation. (First box not checked, second or third boxes checked and the majority of the others checked.)

Level C Crisis – A media frenzy. (Boxes 1 and 3 not checked, second box checked and a majority of the others checked.)

Level D Crisis – A limited crisis. (Less than 50 percent of the boxes checked and the first four boxes not checked.)

- ☐ Is this a legitimate public health emergency requiring widespread public education to prevent further illnesses or deaths (e.g., multi-state e-coli outbreak or BT-event)?
- ☐ Is this the "first," "worst" or "biggest" of its kind?
- ☐ Are deaths expected above endemic levels?
- ☐ Is the event occurring in a metropolitan area (with likelihood of high media interest)?
- ☐ Is the event national or international?
- ☐ Does the event involve children or special populations?
- ☐ Does the event involve a consumer product, service or industry?
- ☐ Does the event involve any sensitive international trade or political relations?
- ☐ Is this event within the scope of the Department's responsibility?
- ☐ Was the Department's responsible for this event occurring?
- ☐ Is the event possibly man-made, deliberate or intentional?
- ☐ Is the situation getting worse?
- ☐ Could the event become more serious (e.g., a novel influenza virus)?
- ☐ Is media interest significant?
- ☐ Is this a legitimate public health concern?
- ☐ Are there potential long-term health effects related to this event? Does the event involve a criminal investigation?
- ☐ Is the state or city health department at the epicenter of the event not well equipped or trained to manage a media response of this magnitude?

Step #4. Organize assignments

The Incident Manager, in consultation with the Department Director, coordinates the PHIMS Response Structure.

Ongoing organizational issues

- ☐ What do investigators say about the potential for the crisis getting worse?
- ☐ Could events result in more intense public/media interest?
- ☐ What rumors or points of conflict have been identified?
- ☐ How should the Department respond to these issues? Is our response working?
- ☐ Should the Department continue to be a source of information for the media about this crisis or should some issues be more appropriately addressed by other government entities?
- ☐ Are the teams operating with more or less equal intensity? How could we improve efficiency? Would reassignments help?
- ☐ Should the IM and PIO determine a time for daily updates to media (e.g., set a time for a media update via web and broadcast fax) or cancel the regular updates?
- ☐ Are hourly/daily/weekly SME briefings appropriate to reduce the demand for one-on-one interviews with SMEs?
- ☐ What is the PHIMS Response Group learning from the public and media that could be useful to Department outbreak investigators and policy managers?
- ☐ Are partner organizations concerned about their own reputations?
- ☐ Which partners are or should be involved in this crisis?
- ☐ How do partners want to get involved in the Department's response?
- ☐ Have mandatory and secondary notifications been made?
- ☐ Have the key partners been updated? When?

Step #5. Prepare information and obtain approvals

This function includes all message development and materials development activities, the approval process and coordination of information bureaus, offices and programs of the Department. General public and health care provider information must be made immediately available via fact sheets, FAQs, Vaccine Information Sheets, and other relevant materials. Information should be updated on at least a daily basis to the ADHS Web site.

Message development

- ☐ Who are our audiences? Who's been affected by this event? Who's upset or concerned?
- ☐ Who needs to be alerted to this situation?
- ☐ What hard to reach populations will be affected by this event?
- ☐ What are audiences' perceptions and information needs?
- ☐ What do media want to know?
- ☐ How should the Department show empathy?
- ☐ What are the facts? What happened?
- ☐ What is our policy on this issue?
- ☐ What is the Department doing about this issue? How are we solving the problem?
- ☐ What did the Department do to prevent this from happening?
- ☐ What other agencies or third parties are involved? What are they saying?
- ☐ What should the public be doing?
- ☐ What public information is available?
- ☐ When will more information be available?

Information should be presented in an audience appropriate format (i.e., general public, health care providers, legislators, senior citizens). Scientific and technical jargon should be avoided.

Public Health Information Line (PHIL)

The Public Information Office and The Office of Public Health Emergency Preparedness and Response are responsible for coordinating the scripting and activation of the State Public Health hotline. The bi-lingual, 24/7 menu-driven State Public Health Hotline is administered through the Dept. of Administration. Metro Phoenix 602.364.4500, statewide 800.314.9243. For detailed procedures on how to change the information on the recorded line, see Appendix G.

Information approval process

At all times, the Department Director, Deputy Director and Assistant Director of Public Health or their designees will approve all information for public use. Or, in a crisis approval will happen as per the PHIMS Command Structure. It is critical that all parties involved in the approval process understand the need for timeliness and responsiveness in disseminating information to the public. For specific approval process and confidentiality guidelines for press releases, Web updates or other communication materials, contact your Office Chief or Bureau Chief. See The Crisis Communication Action Plan (Appendix A) for additional information. All information posted on the ADHS Web site must be approved by the Incident Manager and the ADHS Director of Communications.

Step #6. Conduct media relations

General media relations guidelines remain in effect during crisis events. Please see Appendix B. Below are additional considerations.

Identified Spokespersons

Following is a list of Department approved spokesperson positions, in addition to the Public Information Office. The Incident Commander, the Director, or their designee may identify other spokespersons during the course of the event.

- ☐ Director Susan Gerard
- ☐ Deputy Director Rose Conner
- ☐ Communications Director Michael Murphy
- ☐ Assistant Director, Public Health, Niki O’Keeffe
- ☐ Public Information Officer for Public Health, Mary Ehlert
- ☐ Deputy Assistant Director, Public Health, Jeanette Shea-Ramirez
- ☐ Deputy Assistant Director, Public Health, Will Humble
- ☐ State Epidemiologist David Engelthaler
- ☐ Chief Medical Officer Dr. Karen Lewis
- ☐ Chief, Office of Bioterrorism and Epidemic Preparedness and Response, Jane Wixted
- ☐ Chief, State Lab, Victor Waddell
- ☐ Bureau Chief, Epidemiology and Disease Control, Ashraff Lasee
- ☐ Infectious disease specialist physician, Dr. Peter Kelly
- ☐ Spanish language spokespersons, Dr. Karen Lewis, Michael Murphy

Media questions to anticipate

- ☐ What happened?
- ☐ Who’s in charge?
- ☐ What are you doing for the people who got hurt?
- ☐ Is the situation under control?
- ☐ What can we expect?
- ☐ How did this happen?
- ☐ Why wasn’t this prevented from happening?
- ☐ What else can go wrong?
- ☐ When did you begin working on this (were notified of this, determined this)?
- ☐ What does this data/information/results mean?
- ☐ What bad things aren’t you telling us?

When talking to the media ...

- ☐ Express empathy; acknowledge victims and/or their concerns
- ☐ Provide only approved information, do not speculate or interject personal opinion.
- ☐ State the facts about the event.
- ☐ Describe the data collection and investigation process.
- ☐ Describe what the Department is doing about the crisis.
- ☐ Explain what the public should be doing.
- ☐ Describe how to obtain more information about the situation.

Alternatives to “no comment”

When the Department is not able to talk about an event, rather than saying “no comment” try to establish an open line of communications in response to media inquires. Possible responses:

- ☐ "We've just learned about the situation and are trying to get more complete information now."
- ☐ "All our efforts are directed at bringing the situation under control, so I cannot speculate about the cause of the incident."
- ☐ _____ is the agency with jurisdiction on that topic/the expert on that topic... I will have them call you. What is your deadline? We're preparing a statement on that now it will be released time/in two hours and available via email/at a briefing to be held at time/in two hours, etc.

Step #7. Conduct post-crisis evaluation

As soon as feasible following a crisis, the PHIMS Response Team will conduct a “hot wash” or after action evaluation of its response. The PIO's role in the hot wash is to:

- ☐ Compile and analyze comments and criticisms from Department employees, the public, health care providers, emergency response personnel, local health offices and other stakeholders.
- ☐ Analyze and discuss media interviews done by Department personnel, SMEs, etc. and analyze media coverage.
- ☐ Report results of comments and analysis to Department leadership.
- ☐ Determine need for changes to the Department Crisis Communication Plan and need for
- ☐ Determine need to improve policies and processes.
- ☐ Institutionalize changes with appropriate training.
- ☐ Revise crisis plan policies and procedures based on lessons learned.

Step #8. Conduct public education

Once the crisis has subsided, PHIMS Response Team and the ADHS Public Information Office may need to carry out additional public education activities.

- ☐ Should the Department be educating the public about public health issues related to this crisis?
- ☐ What are the public's perceptions and information needs related to this crisis?
- ☐ Does the public understand the Department's health messages on this issue? Are they taking appropriate actions?
- ☐ Should we also consider audiences that were not involved in the crisis for public education?
- ☐ Should a public health message related to this crisis event be incorporated into other health communication activities (e.g., Public Health Week or National Infant Immunization Week)?
- ☐ Should we use this event to highlight any related public health messages?

Step #9. Monitor events

The PIO and the ERG should monitor events and exchange information on an ongoing basis during an emergency. Checklist to include:

- ☐ Media monitoring
- ☐ Internet monitoring
- ☐ Ongoing exchanges of information with county health departments, other agencies, state health departments
- ☐ Ongoing communications with SMEs and Department partners
- ☐ Monitoring of public opinion data and other Department research

Logistics

In the event of a serious infectious disease outbreak or epidemic, logistical response systems must be put in place quickly. County public health agencies need to identify sites that can serve as a joint information center (JIC) or a media center. Such sites must be able to accommodate multiple phone lines and have ample electrical outlets for other communication equipment, including fax machines, computer modems, televisions (to monitor broadcast news reports), etc. In addition, a system for immediate communication across agencies within the state should be established well in advance of an emergency.

A standard PIO mobilization package (Tak Pack) is available with the following suggested contents:

State owned equipment

- State (or rental) vehicle
- Cell phone with extra battery, charger and dc cable with cigarette lighter adapter
- Laptop computer w/modem & portable printer
- Digital camera with spare battery, memory card, card reader
- Telephone credit card (optional)
- State credit card for general expenses up to \$1000 (film development, printing, etc.)
- Media contact list

Personally Owned Equipment

- Clothes for the climate of the affected area
- Medications
- Cash/credit card for emergencies
- Name and phone number of next of kin

Local Communications and Response Networks

Health agencies should determine in advance with whom they may need to communicate during a small- or large-scale infectious disease outbreak. Contact lists (including cell phone, batch faxes, email lists, etc.) should be reviewed and updated *at least* monthly and should include the following:

Need to include updated contact lists for all listed partners.

- Media organizations
- Local health agencies
- Laboratories (state, county, environmental health, Department of Agriculture, university-based, and clinical labs in physician offices/hospitals)
- Health care organizations (hospitals, health clinics, professional associations, etc.)
- Mental health services
- Schools and universities
- Sources of antidotes, vaccines and other therapeutic agents
- First responders (including local emergency medical response agencies) and public safety officials
- State and local emergency management agencies
- State emergency response commissions, local emergency planning commissions, and, if existing, National Guard Weapons of Mass Destruction (WMD) Civilian Response teams
- State-based contacts to federal agencies that may provide additional support during emergency situations (e.g., National Domestic Preparedness Office, FBI Weapons of Mass Destruction program)

In general, it is best to establish working relationships with community partners before an emergency situation arises. Therefore, development of community education and response networks will necessitate the active involvement of local health agencies. Community partners, such as schools and hospitals must first be identified. Beyond simple contact lists, health agencies may wish to develop and maintain a partnership manual mapping community resources that are available during a crisis. State and local health agencies can build ongoing relationships with partners through a series of periodic health education and other activities:

- Involving partners in health department projects, when appropriate
- Participating in partner activities, when appropriate
- Distributing periodic educational alerts
- Including partners in training programs. Such programs might include laboratory workshops, seminars/workshops for teachers and other school staff (food service providers, nurses, etc.), risk communication training for select partners, invitations to participate in ongoing educational programs for health agency staff, etc.
- Engaging in multi-agency simulation exercises

Continuing Risk Communication Training for Health Department Staff

Health department officials designated as spokespersons should take advantage of risk communication and emergency response training programs, and should assure that they have support personnel trained to work with the public and with the media during a crisis. Among the organizations which periodically offer these kinds of training programs are the National Public Health Information Coalition, the National Laboratory Training Network (hosted by the Association of Public Health Laboratories and the CDC), the Public Health Training Network (hosted by the CDC), the Federal Emergency Management Agency, state emergency management agencies, state emergency medical services agencies, and the Centers for Disease Control and Prevention. The Department is also providing media training to designated spokespersons herein.

Event-Specific Guidelines

National and multi-state disease outbreak investigation or environmental crisis (information provided by CDC)

- ☐ CDC is a non-regulatory Federal agency that must be invited by a state health department or foreign ministry of health to participate in the disease investigation.
- ☐ The state or local health department, unless otherwise designated, has the lead on the public health investigation.
- ☐ When the investigation involves one state, the lead state health department “owns” the information and is the releasing authority to the media. All media information provided by CDC is coordinated through the lead agency.
- ☐ When multiple states or a nationwide disease outbreak is detected, lead media responsibility converts to CDC.
- ☐ When the Federal Response Plan is activated following a significant natural disaster or man-made event, HHS/Public Health Service directs the public health and medical care services.
- ☐ All information released by CDC should be coordinated with the states prior to release.

Bioterrorism event

If an infectious disease outbreak is threatened or initiated as part of announced terrorist activities, law enforcement agencies, e.g., the Federal Bureau of Investigation (FBI) would immediately assume command of federal criminal investigations. A core-working group would be established at the level of the state health agency to coordinate surveillance and other public health support activities. A JIC would be immediately established with public health representation as described above. The state health officer or designee would take part in unified command activities as described above.

During all disease outbreak investigations, do not speculate on the possibility of an outbreak being a bioterrorism event. A suspected bioterrorism event could be any disease outbreak in which one or more elements of the outbreak mirror aspects expected in a bioterrorism event. Some of these elements include: a novel virus, an outbreak out of season, persons becoming ill who are normally not at high risk of being ill.

- ☐ Do not speculate on the CDC or FBI's participation in an investigation. Inform media that disease outbreak investigations routinely include questions about the possibility of an intentional act and that it is the Department's policy not to speculate on this possibility during a disease outbreak investigation.

Chemical/Radiological terrorism event

- ☐ Department and PHIMS Response Team personnel who become aware of a possible chemical/radiological terrorism event should notify the Office Public Health Emergency Preparedness and Response (after hours through on-call emergency list or answering service).
- ☐ Ensure contact with appropriate agencies (i.e., Division of Emergency Mgmt., Arizona Radiation Regulatory Agency, DPS, FBI, etc.) is made to determine chain of command in response.

Continuity of Operations Checklists

Emergencies that prevent access to ADHS main building at 150 N. 18th Ave., but leave mainframe intact

- ☐ Operations plan for notifying PHIMS personnel about alternate work site, schedules and operations. (Re-locate to other ADHS building sites at TBD).
- ☐ Temporary site for press operations (ADEM or Homeland Security).
- ☐ Portable workstations and computers with Internet and e-mail access.
- ☐ Media monitoring capability.
- ☐ Ability to forward media calls to temporary site.
- ☐ Credit cards for emergency purchases.
- ☐ Support for travel approvals.

Emergencies that prevent access to 150 N. 18th Ave and break mainframe access

- ☐ Plan for maintaining communications with CDC, Counties, Hospitals, etc.
- ☐ Satellite in physical proximity of Department command center operations.
- ☐ Plan for secure phone lines, Internet and email access, cell phones, pagers, and workstations.
- ☐ Agreements with other Department communication offices to use space at alternate campus for temporary PHIMS operations.
- ☐ Media and Internet monitoring capabilities.
- ☐ Credit cards for emergency purchases.
- ☐ Support for travel approvals.
- ☐ Press conference logistics capability.

Plan Development and Maintenance

All emergency response plans, including this one, should be reviewed and updated at least annually. It may be helpful to assign the responsibility for coordinating this effort to one individual. The revision process should include developing or updating any documents necessary to implement the plan (e.g., lists of local health department and media contacts).

Arizona Influenza Pandemic Response Plan

Supplement 11: Workforce Support – Psychosocial Considerations and Information Needs



SUPPLEMENT 11: TABLE OF CONTENTS

I.	RATIONALE	S11-2
II.	OVERVIEW	S11-2
III.	CONCEPT OF OPERATIONS	S11-2
IV.	THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS	S11-3
	A. Institutionalizing Statewide Psychosocial Support Systems	S11-3
	B. Preparing Workforce Support Materials	S11-3
	C. Developing Workforce Resilience Programs	S11-4
V.	THE PANDEMIC PERIOD	S11-4
	A. Delivering Psychosocial Support Services	S11-4
	B. Providing Information to Responders	S11-5
	C. Implementing Workforce Resilience Programs	S11-5
	1. Pre-deployment/assignment	S11-6
	2. During deployment/assignment	S11-6
	3. Post-deployment/assignment	S11-6

I. Rationale

The response to an influenza pandemic will pose substantial physical, personal, social, and emotional challenges to health care providers, public health officials, and other emergency responders and essential service workers. Critical stress levels may reach varying degrees of severity among health care providers and emergency responders through the duration of the response as well as the recovery phases of a pandemic. These critical stress levels may persist for more than a year. Experience with disaster relief efforts suggests that enhanced workforce support activities can help responders remain effective and proactive during emergencies.

Medical and public health responders and their families will be at personal risk for as long as the pandemic continues in their community. Special planning is therefore needed to ensure that hospitals, public health agencies, first-responder organizations, and employers of essential service workers are prepared to help employees maximize personal resilience and professional performance. An essential part of this planning effort involves the creation of alliances with governmental, community-based organizations and nongovernmental organizations with expertise in and resources for psychosocial support services or training.

II. Overview

The objective of supplement 11 is to ensure health care providers, public health officials, and other emergency responders and essential service workers reside in the safest and healthiest environment possible by addressing the psychological and social (“psychosocial”) needs of the occupational groups that will participate in the response to an influenza pandemic in Arizona.

III. Concept of Operations

During regular business operations, the Arizona Department of Health Services, Division of Behavioral Health Services (ADHS/DBHS) is a publicly funded behavioral health system that serves children, families and adults who are at or below the federal poverty level.

However, as stated in the Arizona State Emergency Response and Recovery Plan (SERRP), during natural or human caused incidents that require state assistance, guidance and/or recovery funding ADHS/DBHS is the lead agency for the development and coordination of state behavioral health emergency/disaster response plans and services. In addition, ADHS/DBHS will ensure coordination with other state, county, private and volunteer response agencies to prepare intra-agency emergency response plans that include checklists as well as procedural guides.

ADHS/DBHS will assist the Arizona Division of Emergency Management (ADEM) in preparing a Presidential Major Disaster Declaration request to ensure that behavioral health services support is requested.

The ADHS/DBHS will also manage and perform the following operational support functions during an emergency such as an influenza pandemic:

- Assist in the preparation of an application for and attainment of federal grants (Federal Emergency Management Agency (FEMA), etc.) to fund immediate crisis counseling needs of the population and work force suffering from the pandemic emergency as well as grants to fund ongoing behavioral health and substance abuse service needs during the response and recovery phases.
- Managing contracts with behavioral health service providers including reporting emergency behavioral health service provision, funding expenditure and reimbursement, and the outcome of service provision.
- Managing emergency pandemic grants and funds including reporting emergency behavioral health service provision, funding acquisition and expenditure, and the outcome of service provision.
- Overseeing the quality of care provided by behavioral health service providers directly, or through contracted regional behavioral health authorities.
- Maintaining surveillance of behavioral health needs and efforts undertaken in order to adjust behavioral health service provision to meet the workforces demand
- Provide guidance on development of appropriate behavioral health information messages to the ADHS communications team (see Supplement 10).

IV. The Interpandemic and Pandemic Alert Period

Planning activities for the Interpandemic and Pandemic Alert Periods focus on the establishment of statewide psychosocial support services that will help workers manage emotional stress during the response to an influenza pandemic and resolve related personal, professional, and family issues.

A. Institutionalizing Statewide Psychosocial Support Systems

ADHS will assist local health departments, hospitals and health care organizations in planning for the provision of psychosocial support services that include the following activities:

- Sharing of information and available tools and systems.
- Encouraging the use of tools and techniques for supporting staff and their families during times of crisis.
- As grant funding is available, offering Basic and Advanced Critical Incident Stress Management (CISM) training for State and local public health and behavioral health staff. This training focuses on behavioral interventions to help employees cope with grief, stress, exhaustion, anger, and fear during an emergency.
- Encouraging the local health departments to establish partnerships and participate in any RBHA outreach activities to the emergency responder community. This purpose of this outreach is to inform these individuals on how to use as well as receive suggestions on how to improve the crisis response system.



B. Preparing Workforce Support Materials

ADHS/DBHS is in the process of developing communication materials to assist Department employees and serve as a resource for the local health departments and other employers of health care providers, response workers and providers of essential services. These materials will be prepared utilizing in-house knowledge as well as resources developed by other agencies and entities such as the Centers for Disease Control and Prevention, American Psychological Association, Substance Abuse and Mental Health Services Administration and other behavioral health organizations for distribution during a pandemic. These materials shall be designed to do the following:

- Educate and inform employees about emotional responses they might experience or observe in their colleagues and families (including children) during an influenza pandemic and techniques for coping with these emotions.
- Educate employees about the importance of developing “family communication plans” so that family members can maintain contact during an emergency.
- Describe workforce support services that will be available during an emergency, including confidential behavioral health services and employee assistance programs.
- Answer questions about infection control practices to prevent the spread of influenza in the workplace (see Supplement 4)

C. Developing Workforce Resilience Programs

ADHS and local health departments need to establish their own workforce resilience programs that will help deployed workers to prepare for, cope with, and recover from the social and psychological challenges of emergency work. To prepare for implementation of workforce resilience programs to cope with the special challenges posed by an influenza pandemic, state and local response agencies should include the following components:

- Plan for a long response (i.e., more than 1 year).
- Identify pre-deployment briefing materials.
- Augment employee assistance programs (EAP) with social support services for the families of deployed workers.
- Provide program administrators and counselors with information on:
 - Cognitive, physiological, behavioral, and emotional symptoms that might be exhibited by patients and their families (especially children), including symptoms that might indicate severe mental disturbance.
 - Self-care in the field (i.e., actions to safeguard physical and emotional health and maintain a sense of control and self efficacy).
 - Cultural (e.g., professional, educational, geographic, ethnic) differences that can affect communication.
 - Potential impact of a pandemic on special populations (e.g., children, ethnic or cultural groups, the elderly).



V. The Pandemic Period

Actions for the Pandemic Period focus on the delivery of statewide psychosocial support services to response workers, provision of occupational health information to health care providers, and implementation of workforce resilience programs.

A. Delivering Psychosocial Support Services

Health care facilities, ADHS and local health departments - as well as companies and local governments that employ essential service providers need to make full use of self-care and behavioral health interventions that can help response workers manage emotional stress, family issues and build coping skills and resilience. These approaches and tools can include:

- Stress control/resilience teams in hospitals should observe recommended infection control precautions as well as assist and support employees and foster cohesion and morale by:
 - Monitoring employee health and well-being (in collaboration with occupational health clinics, if possible).
 - Staffing “rest and recuperation sites”.
 - Distributing informational materials.
- Rest and recuperation sites. Sites can be stocked with healthy snacks and relaxation materials (e.g., music, relaxation tapes, movies), as well as pamphlets or notices about workforce support services.
- Confidential telephone support lines staffed by behavioral health professionals.
- Services for families. Services to families of employees who work in the field, work long hours, and/or remain in hospitals or other workplaces overnight might include:
 - Assistance with elder care and child care.
 - Help with other issues related to the care or well-being of children.

- Provision of cell phone or wireless communication devices to allow regular communication among family members.
- Provision of information via websites or hotlines.
- Access to expert advice and answers to questions about disease control measures and self care.
- Information for commuters. Workers might need alternative transportation and scheduling (e.g., carpooling, employer provided private transportation, alternate work schedules during off-peak hours) to avoid exposure to large groups of potentially infected persons.
- Services provided by community- and faith-based organizations. Activities of these organizations can provide relaxation and comfort during trying and stressful times.

B. Providing Information to Responders

Health care providers, especially those who work in hospitals, are likely to be under extreme stress during a pandemic and will have special needs for open lines of communication with employers and access to up-to-date information. Health care facilities should ensure that employees have ongoing access to information on the following:

- International, national, and local progress of the pandemic.
- Work policies related to illness, sick pay, staff rotation, shift coverage, overtime pay, use of benefit time, transportation, and use of cell phones.
- Family issues, especially the availability of child care.
- Health care issues such as the availability of vaccines, antiviral drugs, and personal protective equipment (PPE); actions to address understaffing or depletion of PPE and medical supplies; infection control practices as conditions change; approaches to ensure patients' adherence to medical and public health measures without causing undue anxiety or alarm; management of agitated or desperate persons; guidance on distinguishing between psychiatric disorders and common reactions to stress and trauma; management of those who fear they may be infected, but are not (so-called "worried well"); and guidance and psychosocial support for persons exposed to large numbers of influenza cases and deaths and to persons with unusual or disturbing disease symptoms.
- Because health care workers might be called upon to fill in for sick colleagues and perform unfamiliar tasks, health care facilities and state and local public health agencies shall provide written instructions for "just-in-time" cross training on essential tasks.

Other occupational groups that might participate in the response to pandemic influenza (including police, firefighters, and community outreach workers) shall have access to information and written materials available on the Department's website and other appropriate Health Alerts that will help them anticipate behavioral reactions to public health measures such as movement restrictions (e.g., quarantine, isolation, closure of public events), especially if such actions are compounded by an economic crisis or abrupt loss of essential supplies and services.

Stigmatization issues - Health care workers and other emergency responders shall be provided with information on what to do if they or their children or other family members experience stigmatization or discrimination because of their role in the pandemic influenza response. Hospital public affairs offices should be prepared to address these issues as well.

C. Implementing Workforce Resilience Programs

During an influenza pandemic, state and local response agencies need to implement workforce resilience programs that meet the special needs of emergency workers - including those who continue to report to the same job location but whose assignments shift to respond to the pandemic. Other personnel maintaining essential operations will also need attention. First-responder or nongovernmental organizations that send employees or volunteers to assist patients in hospitals, non-hospital settings and at home should also establish similar programs.

State and local workforce resilience programs need to provide the following services:

1. Predeployment/assignment

- Conduct briefings and training on behavioral health, resilience, stress management issues, and coping skills.
- Train supervisors in strategies for recognizing signs of stress and maintaining a supportive work environment.

2. During deployment/assignment

- To support responders in the field:
 - Deploy several persons as a team and/or assign “buddies” to maintain frequent contact and provide mutual help in coping with daily stresses.
 - Frequently monitor the occupational safety, health, and psychological well-being of deployed staff.
 - Provide access to activities that help reduce stress (e.g., rest, hot showers, nutritious snacks, light exercise).
 - Provide behavioral health services, as requested.
- For essential operations personnel:
 - Enlist stress control or resilience teams to monitor employees’ occupational safety, health, and psychological well being.
 - Establish rest and recuperation sites and encourage their use.
 - Provide behavioral health services, as requested.
- For families of responders:
 - Provide a checklist of necessary personal affairs documents that need to be assembled prior to departure. (e.g. benefits information, personal will, power of attorney)
 - Enlist employee assistance programs to provide family members with psychosocial support (e.g., family support groups, bereavement counseling, and courses on resilience, coping skills, and stress management).
 - Provide a suggestion box for input via e-mail or anonymous voice-mail with a toll-free number.
 - Continue to provide outreach to employees’ families to address ongoing psychological and social issues.
- Throughout the response, policies on personnel health and safety should be reviewed and revised, as needed.

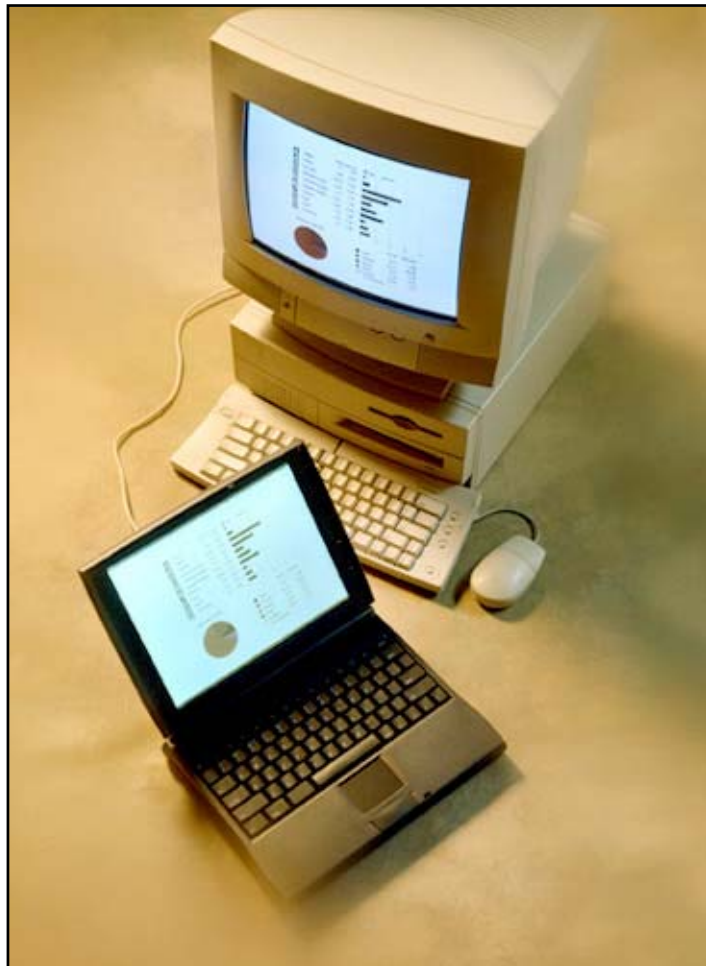
3. Post-deployment/assignment

- Interview employees and family members (including children) to assess lessons learned that might be applied to future emergency response efforts.
- Provide ongoing access to post-emergency psychosocial support services for employees and their families (on-site or through partner organizations).
- Conduct an ongoing evaluation of the after-effects of the pandemic on employees’ health, morale, and productivity.



Arizona Influenza Pandemic Response Plan

Supplement 12: Influenza Pandemic Information Management



Supplement 12: Table of Contents

I.	RATIONALE/PURPOSE	S12-2
II.	OVERVIEW/EXECUTIVE SUMMARY	S12-3
III.	ACTIONS	S12-5
	A. Interpandemic	S12-5
	B. Pandemic Alert	S12-6
	C. Pandemic	S12-7
	D. Post Pandemic Period	S12-8
	Appendix A – Information Management Systems: Access Information	S12-9

I. Rationale/Purpose

Public Health Informatics refers the use of technology for improving access to and utilization of public health information. Public Health Informatics is the management of information in the public health system—how it is captured, retrieved, and used in making decisions. In the area of public health emergency response, information management takes on new characteristics associated with real-time analysis instead of research driven analysis. Similarly, public health emergency response informatics focuses on systems that support response related interventions and resource tracking.

As part of the pandemic influenza response activities, information will be needed to address decision support for all phases of the event. To this end, the need for near real-time communication flow will grow as the event progresses from Inter-Pandemic phases to the Pandemic phase.

Areas of Information Need during all phases

- Status of the Disease Event – this includes the ability to collect, compile, and analyze information from varied sources to determine the extent of the outbreak within geographic regions and the variance based on time. This effort begins with monitoring to support early identification, and includes support for patient follow-up, and analysis of outbreak mitigation efforts including vaccine efficacy and adverse event reporting.
- Status of Vaccination Progress – this includes the availability of pre-event vaccine and pre-event vaccination progress (dependent upon vaccine availability), and continued vaccine availability and vaccination progress on-going throughout the event. These efforts include the need to identify the status, location, and resources of vaccination facilities; the amount, location, and delivery status of vaccine inventories; and the number of vaccinations having been given by risk or response group.
- Status of Isolation and Quarantine Systems – this includes the collection and tracking of individuals and locations that have been established for isolation and quarantine. Similarly, the tracking will include information on medical conditions and treatment associated with the outbreak. Aggregate numbers will be needed to understand outbreak mitigation, while detail information will support individual patient treatment.
- Status of Equipment and Resources – this includes identification and tracking of existing and recently acquired resources. Resources include durable equipment, vaccine, prophylaxis, supplies (medical and other), and human resources (volunteers and staff at a variety of locations).
- Status of Community Resources – this includes the tracking of health care and community resources. This includes availability of hospital beds and ambulances, as well as the operational status and location of the Medical Reserve Corp, the Red Cross, and other community response agencies.

Areas of Communications Needs

- Direct Communications
This type of communications involved direct person to person communication that can be performed through synchronous and asynchronous methods. The need for redundancy of direct communications is imperative for maintenance of communications of response partners.
- Collaborative Communications
Collaborative communications are systems that support the group interchange of information. These types of communications can be handled through synchronous and asynchronous methods.
- Mass Distribution Communications
This type of communications is usually associated with communications to the media, the public or special populations. The mechanisms can vary, and are utilized to take strain off of response groups and systems.
- Stakeholder and Responder Distribution Communications
This type of communications is the utilization of direct communications for one-way distribution of information. This communication need is usually associated with directed response or emergency information that is associated with activation or emergency updates. This communication need is usually directed to specific public health and emergency response roles.
- Data Collaboration Messaging
This communication need is associated with establishing data or systems integration and interoperability. This communication mechanism is usually established as part of planning efforts, but flexible implementation can allow for tailoring for specific emergency response efforts.

II. Overview/Executive Summary

Addressing the needs of Inter-Pandemic and Pandemic response will require the use of all Departmental systems. Each of these systems will meet a critical information need, while together the information from many systems can be synthesized to provide stronger decision support. Specifically, systems will be in place to support surveillance, vaccine and pharmaceutical delivery, emergency response, and communications needs. Systems that will be utilized in these efforts are listed below:

Surveillance (see also Supplement 1)

- MEDSIS (Medical Electronic Disease Surveillance Intelligence System) – MEDSIS is a web-based application to electronically capture and analyze disease information from Arizona hospitals and clinical laboratories. MEDSIS is a statewide system hosted and supported by the ADHS for use by local health departments, and individuals and institutions responsible for reporting communicable diseases. Participating institutions will electronically transmit disease information to MEDSIS. When completed, MEDSIS will be linked to numerous other data sources including other surveillance data sources.
- ELR (Electronic Laboratory Reporting) – ELR is a component of MEDSIS that is solely for the collection of reportable Laboratory orders and results used for disease surveillance. This web-based system utilizes data messaging standards, and allows for web-based data entry if electronic data transfer is unavailable.
- EWIDS (Early Warning Infectious Disease Surveillance) – This is additional functionality being developed in MEDSIS and SIREN to address surveillance needs along the Arizona Mexico border. Some of the EWIDS Functions include cross border notification, sharing of surveillance data, and collaboration on binational investigations.
- LIMS (Laboratory Information Management System) – This is the State Laboratory Information Management System. The system that is currently under development will replace an existing system and allow for integration with other State Laboratories, and transmission of laboratory data via ELR to MEDSIS.
- MAM (MEDSIS Arbovirus Module) – The Arbovirus Module was developed to collect both human and animal Arbovirus data to address the needs for tracking West Nile Virus. While human data will move to the new MEDSIS system, animal data will remain in the Arbovirus module. This module could be adapted to address sentinel animal testing.
- CDC BioSense – BioSense provides visualization of syndromic surveillance data using in and out patients seen at Veterans Administration and Department of Defense facilities as well as laboratory orders from Laboratory Corporation of America. County health department are able to access this system to identify sentinel alerts and unexpected data aberrations for follow up investigations. CDC in conjunction with ADHS and Maricopa County Department of Public Health are working with large hospital systems to transmit additional patient specific emergency department and inpatient data to BioSense and MEDSIS.
- NRDMS (National Retail Data Monitoring System) – The University of Pittsburgh's RODS Laboratory provides visualization of daily aggregate sales of over-the-counter medication from large national retailers in Arizona. Several states have used this system to identify early influenza activity based upon increasing sales of OTC cold and cough remedies. County health departments may access to this system.



Kendall Reeves

Emergency Response

- ASIIS (Arizona State Immunization Information System) – ASIIS is a web-based application that represents the ADHS immunization registry. The focus on the system is childhood vaccinations, based on reporting requirements. However, the system can collect and manage immunization information for all ages.
- Volunteer Management/ESAR-VHP (Emergency System for the Advanced Registration of Volunteer Health Professionals) – Many county health departments currently have systems in place for volunteer management. In addition, the Department of Health Services is pursuing a system to enroll health care provider volunteers. This type of system will be important in managing availability, activation and deployment of volunteers in an emergency.
- Outbreak Management – While there is currently no established system at the Department of Health Services, a module to MEDSIS has been discussed to address outbreak management and tracking needs. The Centers for Disease Control and Prevention have a personal computer based application, OMS, which can be used for outbreak management.
- Isolation and Quarantine Tracking – While there is currently no system in place to track patients, and their locations, related to isolation and quarantine needs, basic tracking can be performed using elements of the SIREN Portal Environment. This feature will need to be developed, and collection of the system needs may require the development of another web-application.
- EmSystem – The EmSystem is a web-based application for Hospitals, Urgent Care Centers, Emergency Medical Services, and Public Health to share information about hospital diversion status, public health events, and mass causality incidents. The system is also used as a mechanism to query the hospitals about bed availability, surge capacity, and response needs.

Vaccine and Pharmaceutical delivery (see also Supplements 6 & 7)

- Inventory Management and Tracking – While there is currently no system in place to perform this level of tracking, the Department of Health Services is currently pursuing this type of application. This application will allow for tracking of equipment, office supplies, medical supplies, prophylaxis, and vaccine. The purpose is to have a system to inventory existing items, enable emergency receipt of items, and manage distribution of items in an emergency. The Vaccine Management System (VACMAN) is a CDC application that is currently available for vaccine tracking, but will not meet all inventory management needs.
- Flu-shot module – This web-based application is a proof-of-concept system for rapid collection of flu vaccination information. This system would integrate with ASIIS, but be streamlined to meet emergency needs. While the system was created for testing and exercising, it can be adapted to address a full-scale emergency.



James Gatheney

Communication

- HAN Messaging (Health Alert Network Messaging) – HAN messaging is a web-based system to initiate the distribution of alerts. The system can distribute information by email, phone, text-pager, or fax. In addition, the system utilizes text-to-speech to read typed information over the phone. This system is utilized for information dissemination to public health responders and stakeholders. In addition, this system supports teleconference-bridging capability for conference call meetings.
- SIREN (Secure Integrated Response Electronic Notification System) – SIREN is both a system's architecture to support web-based applications (like MEDSIS, HAN messaging, etc.) it also supports the Public Health Preparedness Portal. This portal supports secure areas for response tracking. These secure portal spaces represent a virtual emergency operations center. Similarly, the system supports an secure online collaborative portal for sharing of information between local health jurisdictions and across the Mexico border.
- Az211 (Arizona 2-1-1 Online) – Az211 is a web-based data repository that includes information for the public about public services and other health and human services. In addition, the system has an emergency response area that is utilized to post public emergency bulletins. (See also Supplement 10)

(Additional information on these systems and their contacts is located in Appendix A)

Inter-pandemic activities will focus on surveillance activities other areas supported with exercise and training of the systems. The primary electronic surveillance system is called MEDSIS, which provides access to representatives from all public health jurisdictions. Similarly, this system integrated with an electronic laboratory reporting component for collection of clinical laboratory observations and the State Laboratory Information Management System (LIMS) utilizing data messaging standards. These data messaging mechanisms are also being utilized for connection of surveillance data sources.

Other inter-pandemic activities will include the refinement of system protocols and system exercises/training. This includes improvements on protocols for initiating Health Alert Network (HAN) Alerts and for the use of az211.com. Similarly, equipment and material caches will be managed and enhanced to support deployment and distribution needs.

Pandemic Alert activities will still focus on surveillance efforts, but other systems will be activated and outfitted (configured) for the nature of the event. Surveillance efforts may require the connection of additional data sources, and event specific collaboration portals are established. Communications system for distribution of information to stakeholders and public will be activated, and direct communication systems including radio systems will be tested.

Similarly, immunization registries will begin collecting information depending on the availability of vaccine, and vaccine distribution management will begin. As the Pandemic Alert period escalates from phase 4 to phase 5, communications, emergency response, and vaccine/pharmaceutical tracking will expand, while surveillance efforts will be maintained.

In the Pandemic period, activities will shift from the surveillance efforts to response efforts. Emergency response efforts will be scaled up, and will include event specific collaborative portals, tracking of deployed resources and materials, and the tracking of volunteer resources. Emphasis will change to the maintenance of surveillance efforts. In addition, a strong emphasis will be placed on communication and the maintenance of communication channels, whether to the public or to responders/stakeholders.

III. Actions

A. Interpandemic

Surveillance

- Respiratory specimens submitted to the state laboratory are tested and isolates subtyped; a sample of reference isolates are also sent by clinical laboratories for subtyping (see Supplement 1). The ADHS Infectious Disease Epidemiology Section (IDES) receives information through the state laboratory's electronic laboratory database (LITS) or by communication with the laboratory. The information sharing procedures between IDES, the state laboratory and clinical laboratories will change with the addition of MEDSIS, Electronic Laboratory Reporting (ELR), and Laboratory Information Management System (LIMS).
- Schools, long-term care facilities, or other institutions report influenza or ILI outbreaks to state or local health departments (passive reporting). Investigate electronic ways to receive this information more easily.
- Enhancing influenza surveillance (works in progress):
 - Increase electronic submission of laboratory results from clinical and hospital laboratories.
 - Develop a protocol for investigating institutional outbreaks; work with local health departments to implement the protocol, and identify the necessary data collection tools.
 - Incorporate use of other alternative surveillance sources (e.g. over-the-counter pharmaceutical sales, BioSense) into routine surveillance.
 - Recruit additional Arizona pharmaceutical retailers for NRDMS to increase coverage in rural areas of the state. Collaborate with CDC in providing additional hospital data for BioSense and MEDSIS.
 - Provide additional training on CDC BioSense and suggest system enhancements
 - Continue development of Early Warning Infectious Disease Surveillance (EWIDS) functions in MEDSIS to address needs along the Arizona-Mexico border

Vaccine and Pharmaceutical Delivery

- No activities

Emergency Response

- Management of equipment and materials caches that are owned by the Department of Health Services
- Enhancing state-wide response and tracking (work in progress):
 - Improved systems for inventory and tracking of equipment and materials. This will include inventory, receiving and distributing of materials.
 - Develop a system for tracking of patients in isolation & quarantine
 - Evaluate existing systems for outbreak management and evaluate a system module for MEDSIS
 - Purchase fixed and portable radio units for communication redundancy and clinic/warehousing coordination.



Communications

- HAN messaging sends information from the Office of Infectious Disease Services via SIREN or blast fax to key partners and stakeholders

B. Pandemic Alert

Surveillance

- Investigate additional data sources including pharmaceutical data, hospital emergency department and community health center capacity (bed availability).
- Explore animal surveillance using though adaptation of the MEDSIS Arbovirus Module (MAM).
- Explore other feeds of surveillance data including hospital admissions data or discharge data.
- Utilize data messaging standards to receive other syndromic surveillance data.
- Consider instituting active surveillance (e.g. school absenteeism; number of patients on ventilators; number of deaths due to respiratory illness; contacting hospitals, emergency departments, clinics, labs that test for influenza; use of SARS self-screening tools).

Vaccine and Pharmaceutical Delivery

- Conduct inventory of critical equipment, including, but not limited to, statewide availability of antiviral and antibiotic pharmaceuticals, refrigerated depots for vaccines, and transport for delivery of vaccines. This can utilize developed systems or paper inventory.
- Provide systems training update to ensure available trained staff on inventory and alerting systems.
- Configure inventory tracking systems to the established protocols for distribution of vaccine, antibiotics, and antivirals.

Emergency Response

- Establish a plan for information sharing utilizing the Public Health Preparedness Portal. Establish the secure portal space with activation of PHIMS.
- Establish activation groups and alerting protocols specific for the event.
- Prepare for EOC Activation
- Prepare volunteer job posting and review available volunteers for necessary skill-sets.

Communications

- Disseminate surveillance data to local health departments and providers using the public health preparedness portal.
- Establish and maintain contacts with influenza and immunization coordinators in neighboring states.
- Maintain information on AZ211 with accurate information on status of the event and State-wide readiness (see Supplement 10).
- Review message templates and ensure that audiences for messages have been established.
- Test alerting systems and communications equipment. Include testing of radio equipment.
- Place Information Technology Response Staff on 24-hour stand-by.
- Evaluate system maintenance and upgrade schedules to minimize planned downtime of systems.
- ADHS will continue use of HAN messaging for distribution of information via SIREN and/or blast faxing.

C. Pandemic

Surveillance

- Surveillance systems will likely be overwhelmed. Surveillance activities described above will continue to the extent possible while diverting personnel to the highest-priority activities (see Supplement 1).
- Analyze morbidity and mortality data to establish age- and geographic area-specific rates.

Vaccine and Pharmaceutical Delivery

- Provide tracking information on the number and types of individuals receiving vaccinations.
- Monitor VAERS data for evidence of adverse reactions to the influenza vaccine (see Supplement 6). Report findings routinely to the PHIMS Planning Section and to the CDC.

Emergency Response

- Monitor availability of antivirals
- Distribute vaccine and/or antiviral agents as they become available; use Vaccine Management System (VACMAN) for inventory tracking or other developed systems (see Supplement 6).
- Assess antiviral/antibiotic/vaccine needs, conduct necessary activities as prescribed in SNS protocol.
- Activate identified volunteers. Deploy volunteers as necessary and maintain their deployment status.
- Request health care workers from other institutions.

Communications

- HEOC to be in contact with SEOC
- Notify the Department Director, general counsel, legislative liaison, tribal liaison, local health liaison, border health liaison, Governor's Press Secretary, ADEM Public Affairs Director, Arizona Office of Homeland Security, county health department PIOs, and other stakeholders of Pandemic Period.
- Continue information flow to local health departments and other stakeholders. Utilize the Joint Information Center (JIC) at the State Emergency Operations Center (SEOC) to organize all public and media messages.
- Maintain information on AZ211 with accurate information on status of the event and State-wide readiness (see Supplement 10).
- Convey local information back to the CDC and other States through EPI-X.



- Change system maintenance and upgrade schedules to minimize planned downtime of systems. Move to a limited maintenance schedule, with notification of all planned downtime.
- Increase system monitoring to 6 hour intervals.
- ADHS will continue use of HAN messaging for distribution of information via SIREN and/or blast faxing.

D. Post Pandemic Period

Surveillance

- Surveillance will return to inter-pandemic activities to the extent possible.
 - Vaccine and Pharmaceutical Delivery
- Provide finalized tracking information and inventory all equipment and remaining materials.
- Initiate recovery of distributed equipment. Perform equipment inventory with testing.

Emergency Response

- De-activate the Emergency Operation Center, and related information management systems.

Communications

- Communicate to the media and public that the pandemic is over
- Notify the Department Director, general counsel, legislative liaison, tribal liaison, local health liaison, border health liaison, Governor's Press Secretary, ADEM Public Affairs Director, Arizona Office of Homeland Security, county health department PIOs, and other stakeholders that the pandemic is over.
- Maintain information on AZ211 with accurate information on status of the event and State-wide readiness.
- Convey local information back to the CDC and other States through EPI-X.
- Return to normal system maintenance routines, and schedule any outstanding system upgrades.
- Return system monitoring to regular intervals.



Appendix A

Information Management Systems: Access Information

Surveillance Systems

- MEDSIS (Medical Electronic Disease Surveillance Intelligence System)
Status: Operational, being rolled out to County Public Health
Access: Secure Web-based System
Users: State and Local Public Health, and reporting by health care providers
System Contact: Ken Komatsu, MEDSIS Project Manager
- ELR (Electronic Laboratory Reporting)
Status: Operational, clinical laboratories being connected
Access: Secure Web-based System
Users: State and Local Public Health, and reporting by clinical laboratories
System Contact: Ken Komatsu, MEDSIS Project Manager
- EWIDS (Early Warning Infectious Disease Surveillance)
Status: Proposed
Access: Secure Web-based System
Users: State and Local Public Health, and Border Partners
System Contact: Ken Komatsu, MEDSIS Project Manager
- LIMS (Laboratory Information Management System)
Status: Operational, new system being developed.
Access: Secure Intranet Application
Users: Arizona Department of Health Services' employees
System Contact: William Slanta, Assistant Bureau Chief
- MAM (MEDSIS Arbovirus Module)
Status: Operational
Access: Secure Web-based System
Users: State and Local Public Health
System Contact: Ken Komatsu, MEDSIS Project Manager
- CDC BioSense
Status: Operational
Access: Secure Web-based System
Users: State and Local Public Health
System Contact: Ken Komatsu, MEDSIS Project Manager
- NRDMS (National Retail Data Monitoring System)
Status: Operational
Access: Secure Web-based System
Users: State and Local Public Health
System Contact: Ken Komatsu, MEDSIS Project Manager

Emergency Response

- ASIIS (Arizona State Immunization Information System)
Status: Operational
Access: Secure Web-based System
Users: State and Local Public Health and health care providers
System Contact: Kimiko Gosney, ASIIS Project Lead
- Volunteer Management/ESAR-VHP (Emergency System for the Advanced Registration of Volunteer Health Professionals)
Status: Proposed
Access: Secure Web-based System
Users: State Public Health
System Contact: John Nelson, Health Alert Network Section Chief
- Outbreak Management
Status: Deployable
Access: Desktop Application
Users: State and Local Public Health
System Contact: Ken Komatsu, MEDSIS Project Manager
- Isolation and Quarantine Tracking
Status: Proposed
Access: Secure Web-Based System
Users: State and Local Public Health
System Contact: John Nelson, Health Alert Network Section Chief
- EmSystem
Status: Operational
Access: Secure Web-Based System
Users: State and Local Public Health and pre-hospital and hospital emergency departments
System Contact: Paul Barbeau, Logistics Section Chief

Vaccine and Pharmaceutical delivery (see also Supplements 6 & 7)

- Inventory Management and Tracking
Status: Proposed
Access: Secure Web-Based System
Users: State and Local Public Health
System Contact: John Nelson, Health Alert Network Section Chief
- Vaccine Management System (VACMAN)
Status: Deployable
Access: Desktop Application with web-synchronization
Users: Arizona Department of Health Services' employees
System Contact: Kathy Frederickson, Office Chief for Arizona Immunization Program Office
- Flu-shot module
Status: Proof-of-Concept
Access: Secure Web-Based System
Users: State and Local Public Health
System Contact: John Nelson, Health Alert Network Section Chief

Communication

- HAN Messaging (Health Alert Network Messaging)
Status: Operational, being rolled out to County Public Health
Access: Secure Web-based System
Users: State and Local Public Health
System Contact: John Nelson, Health Alert Network Section Chief
- SIREN (Secure Integrated Response Electronic Notification System)
Status: Operational
Access: Secure Web-based System
Users: State and Local Public Health
System Contact: Paul Barbeau, Logistics Section Chief
- Az211 (Arizona 2-1-1 Online)
Status: Operational
Access: Public Web-based System <http://www.az211.gov>
Users: Public

Arizona Influenza Pandemic Response Plan

Supplement 13: Guidance for County and Tribal Health Departments



Supplement 13: Table of Contents

I.	GENERAL PREPAREDNESS GUIDANCE	S13-2
	Incident Command	S13-2
	Community Preparedness	S13-2
II.	SPECIFIC ACTIVITY PREPAREDNESS	S13-3
	A. Surveillance and Epidemiology	S13-3
	B. Health Care Response Coordination	S13-4
	C. Vaccine and Antiviral Delivery and Administration	S13-5
	D. Community Disease Control	S13-6
	E. Addressing Travel-Related Risk	S13-7
	F. Public Information	S13-8
	G. Workforce Support – Psychosocial Needs	S13-9
	H. Information Management	S13-9

I. General Preparedness Guidance

County and tribal health departments will be highly effected prior to and during an influenza pandemic. This guidance is designed to help spotlight important planning and response activities that are necessary at the local health department level. In January 2006, HHS released a state and local planning checklist (www.pandemicflu.gov). While the HHS checklist is not reproduced here, it lists broad concepts that are important and may help counties and tribes in the development of their respective plans.

All counties should have a jurisdiction-specific Influenza Pandemic Response Plan that is an extension of both their jurisdiction's overall Emergency Response Plan and the Arizona Influenza Pandemic Response plan. It is necessary for each county, and each tribe, as appropriate, to fit into the existing state plan to more effectively coordinate overall resources in the state. Therefore, ADHS has made it a requirement for each county to have a jurisdiction-level response plan that fits in with the state plan, as a condition of continuing to receive public health preparedness grant funds.

Tribes in Arizona, and elsewhere in the Nation, have sovereign authority. In order to achieve optimal state-wide coordination during a pandemic response, tribal health departments and other tribal-related entities (e.g., U.S. Indian Health Services), will need to work closely with neighboring county health departments and ADHS. For purposes of this planning guide tribal and county health departments are both considered local health departments, as these entities are responsible for providing public health services at the local level. There is no inference in this guide or elsewhere in the plan that equates counties with tribes.

Under a declared public health emergency (A.R.S. 36-787), the Arizona Department of Health Services (ADHS) becomes the primary coordinating agency in the state for all public health activities. This declaration will likely occur in Arizona during the late stages of a Pandemic Alert Period or at the outset of a federally declared pandemic. Under such a declaration the counties will be responsible for carrying out the local public health duties necessary to respond to the pandemic. The goal and direction of these activities will be coordinated by ADHS; however, the operational plans to conduct these activities may vary from county to county, depending on the availability of local resources. This guidance should help both counties and tribes in Arizona identify the key local public health activities that will likely be necessary during the different phases of pandemic activity.

Incident Command

As with other disasters and emergency plans, the response systems developed need to incorporate a NIMS compliant incident command system (ICS). This requires training of management and staff in ICS. As ADHS will likely be playing a coordination role throughout the pandemic response, all partner agencies should be familiar with the ADHS ICS system – Public Health Incident Management System (PHIMS). PHIMS is described in detail in Appendix C to the Arizona Influenza Pandemic Response Plan. Local health agencies that have not adopted an ICS should consider using PHIMS as a structure, therefore, better ensuring the ability of the local health agency and ADHS to appropriately coordinate during a pandemic response.

Community Preparedness

Local health agencies should ensure community level planning and preparedness occurs within their jurisdictions. As with any disaster, a pandemic response will require the community and the government sectors working together. Community sectors include:

- businesses	- health care
- schools, day care	- emergency responders
- long term care facilities	- community leaders
- churches	- private citizens and families
- volunteer organizations	- local media outlets

Community preparedness activities include information sessions, training and education, resource assessments, community and individual planning (school, businesses, families, etc.), and community level exercises. Community level preparedness requires knowledge of the demographic, geographic and cultural make-up of the community, in order to ensure all populations in a community are involved, or are, at a minimum, accounted for in the response plan. See Supplement 8 for actual community preparedness planning guides (see also www.pandemicflu.gov for updated guides).

II. Specific Activity Preparedness

The following portion of the guidance details specific local health agency activities extracted from Supplements 1-12 of the Arizona Influenza Pandemic Response Plan. These activities are listed here, by category, as an outline of specific local actions that will need to be undertaken during the different phases of pandemic response, as part of an overall statewide response. Some actions will not pertain to all counties and tribes, and it is likely that each county and tribe will have additional activities that are not listed here. This model is typical of all public health emergency responses, where certain actions need to be coordinated at a state level, but the necessities of local implementation require innovative and, sometimes, alternative approaches.

A. Surveillance and Epidemiology

Disease surveillance and epidemiological analysis are the key science-based components for all public health response activities. While ADHS will coordinate state-wide surveillance activities, the success of these actions will rely heavily upon the participation and implementation at the local level. County and tribal health departments are the primary agencies for conducting surveillance. The current surveillance systems during non-pandemic, seasonal influenza will be the basis for any surveillance activities during a pandemic (see Supplement 1)

Interpandemic (Phase 1-2) Activities

1. Ensure participation in ongoing influenza surveillance systems
2. Continue to increase participation in sentinel surveillance for influenza-like illness
3. Explore opportunities to conduct syndrome surveillance with local reporting sources (i.e., clinics, ambulance companies, schools, etc.)
4. Maintain participation in the Arizona Health Alert Network, by receiving and re-distributing health alerts to appropriate community members
5. Ensure the full implementation of MEDSIS in respective jurisdiction, both at the health department and health care system level
6. Work with ADHS to develop and implement protocols for investigating institutional outbreaks
7. Ensure the ability to collect death certificates related to infectious causes, especially influenza, in a timely manner

Pandemic Alert (Phase 3) Activities

8. Investigate initial reports of potential human influenza infections due to a novel influenza strain in respective jurisdiction utilizing local rapid response teams (RRT). These response activities include completing investigations forms, obtaining specimens for testing, and monitoring close contacts for influenza-like illness
9. Immediately inform ADHS of any suspected human infection with an avian/animal/novel human strain of influenza
10. Ensure timely and comprehensive reporting of ILI from sentinel sites



11. Monitor syndromic surveillance data sources and evaluate increased activity, as appropriate
12. Assist ADHS with distribution of epidemiologic reports of influenza activity updates to surveillance partners and stakeholders and participate in regular pandemic alert surveillance conference calls with ADHS

Pandemic Alert (Phase 4) Activities

13. Request health care providers to screen travelers arriving from influenza-affected areas for ILI
14. Collect and analyze demographic data on clusters, ill travelers, or unusual cases
15. In accordance with ADHS recommendations, initiate active surveillance for hospitalized cases.
16. In accordance with ADHS recommendations, initiate active surveillance for influenza deaths

Pandemic Alert (Phase 5) Activities

17. Continue with previous phase activities, likely at increased levels
18. Consider activating Public Health Incident Command System, to better coordinate activities within jurisdiction and with ADHS

Pandemic (Phase 6) Activities

19. Coordinate with ADHS to increase surveillance with health care providers at the early stages of a declared Pandemic, to detect introduction of virus into jurisdiction.
20. Analyze morbidity and mortality data to establish population- and geographic area-specific rates
21. Assist ADHS in ensuring medical examiner reporting of influenza-related deaths (see Supplement 1)
22. Additional sources of surveillance data may be evaluated to determine the effectiveness of pandemic influenza interventions and resource allocation needs.
23. Once the virus has been identified throughout the state, surveillance and testing levels may be decreased depending on resource availability
24. The pandemic strain is likely to become a routinely circulating influenza A subtype. When that happens, the activities of both the counties, tribes, ADHS and national influenza surveillance systems will revert to the frequency and intensity typically seen during interpandemic influenza seasons

B. Health Care Response Coordination

Inter-Pandemic Activities

While health care response during an emergency is primarily an partnership between private sector health care institutions, ADHS and county and tribal health departments need to work with these entities to ensure overall coordination.

During the Interpandemic and Pandemic Alert Periods, ADHS and county and tribal health departments, along with emergency management and first responder agencies work together with these health care entities through Arizona Emergency Preparedness and Response Public Health Region Committees, to develop preparedness plans including infectious disease referral systems and patient surge capacity plans (see Supplement 3).



Interpandemic and Pandemic Alert Activities

1. County and tribal health departments need to maintain active participation in their respective Arizona Emergency Preparedness and Response Public Health Region Committees
2. Build close relationships with the hospital administrators in respective jurisdiction, to ensure closer coordination during emergencies.
3. Identify multiple lines of redundancy for communication between local health department on health care institutions
4. Ensure facilities have an influenza pandemic response plan as part of their overall facility emergency response plan

Pandemic Response Activities

5. Ensure health care partners receive latest guidance from ADHS or HHS during emergency
6. Work to identify needed health care resources, depending on impact of pandemic on health care system

C. Vaccine and Antiviral Delivery and Administration

Vaccines and antivirals are public health and medical tools to prevent and respond to influenza outbreaks. Their effectiveness during any given outbreak is not certain, especially during a pandemic due to a novel strain. While it is important for local plans to include the use of these tools as potential interventions, they should not be the focus of an influenza pandemic response plan. Vaccines are to be used as a preventative measure, while antivirals will primarily be used as a treatment by health care providers, but may also be used as a prophylactic measure for response officials with the highest risks of exposure (see Supplements 6 and 7)

Inter-Pandemic and Pandemic Alert Activities

1. Develop and implement plans, systems and capacities to receive, distribute, and administer vaccine to population of jurisdiction
2. Identify and train public health volunteer workforce to staff and administer mass vaccination clinics
3. Identify strategies to deliver vaccine doses to health care and immunization providers within jurisdiction, as part of the overall vaccine response plan
4. Develop a system to rapidly vaccinate staff within respective agencies, and their families.
5. Identify strategies to effectively distribute antiviral medications to potential priority groups, including hospitals and clinics for patient treatment, and frontline health care providers, first responders and other priority workers for potential prophylactic measures.



Pandemic (Pre-Vaccine Availability) Activities

6. Mobilize response partners, and prepare to activate plans for distributing and administering vaccines and antivirals, as necessary
7. Activate plans and systems to receive, distribute and administer pre-pandemic stockpiled vaccines and antivirals, to designated groups, upon delivery by ADHS
8. Review modifications, if any, to recommendations on vaccinating priority groups.
9. Accelerate training in vaccination and vaccine monitoring for public health staff and for partners responsible for vaccinating priority groups.
10. Work with other governmental agencies and non-governmental organizations to ensure effective public health communications.

Pandemic (Post-Vaccine Availability) Activities

11. Activate plans and systems to distribute and administer vaccines to designated groups, upon delivery from ADHS.
12. Phase in vaccination of the rest of the population after priority groups have been vaccinated.

D. Community Disease Control

Community Disease Control measures are those measures that are taken to limit or slow the spread of illness in a community. These can be enacted on an individual basis (i.e., quarantine of a contact of a case), on a large group of individuals (e.g., the quarantine of plane passengers that arrive with an case), or at the community level (e.g., declaration of “Stay Home Days” to keep citizens at home and creating social distance between all members of the community. These measures will be best enacted at the local level as they may only be necessary or effective in certain communities. County and tribal health departments should consult with ADHS prior to taking such actions.

Inter-Pandemic and Pandemic Alert Activities

1. Identify and engage traditional partners (e.g., public health and health care workers) and non-traditional community partners (e.g., transportation workers) and invite them to participate in preparedness planning and in pandemic influenza containment exercises and drills
2. Provide information to the public on the definitions of and the potential need for individual, small group, and community containment measures, to improve a wider understanding and acceptance during a pandemic
3. Identify potential isolation and quarantine facilities
4. Establish procedures, in conjunction with ADHS, for medical evaluation and isolation of quarantined persons who exhibit signs of influenza-like illness (ILI)
5. Develop tools and mechanisms to prevent stigmatization and provide mental health services to persons in isolation or quarantine, as well as to family members of affected persons and other community members
6. Establish procedures for delivering medical care, food, and services to persons in isolation or quarantine. These efforts should take into account the special needs of children and persons with disabilities.
7. Develop protocols for monitoring and enforcing quarantine measures
8. Ensure legal authorities and procedures exist for various levels of movement restrictions

Pandemic Alert Period Activities

9. When a case with a novel strain that has been identified that matches a strain with potential to cause a pandemic, use quarantine authority to separate known exposed contacts of cases, to help limit spread within community. Quarantine of contacts should be implemented only when there is a high probability that the ill patient is infected with a novel influenza strain that may be transmitted to others
10. Monitor contacts who are quarantined at least once a day—by phone or in person—to assess symptoms and address any needs



Pandemic Period Activities

11. Early in Pandemic period use quarantine authority to separate known exposed contacts of cases, to help limit spread within community. Quarantine of contacts should be implemented only when there is a high probability that the ill patient is infected with a novel influenza strain that may be transmitted to others
12. Monitor contacts who are quarantined at least once a day—by phone or in person—to assess symptoms and address any needs

As disease progresses within the community, use of quarantine will likely have little value, except in closed settings. Local health authority should be ready to enact community-wide containment measures (as detailed in Supplement 8)

13. Promote community containment strategies, as appropriate, and in consultation with ADHS. These measures may include:
 - a. Promotion of community-wide infection control measures (e.g., respiratory hygiene/cough etiquette)
 - b. Declare “Stay Home Days”
 - c. Don’t discourage “self-isolation”
 - d. Closure of office buildings, shopping malls, schools, and public transportation
14. Identify strategies to determine impact of containment measures on both disease and society. Use this information to better focus containment measures.
15. Stand down measures as quickly as possible without risk of prolonging pandemic

E. Addressing Travel-Related Risk

Travel-related risk in regards to pandemic planning primarily refers to health affects associated with air travel, or any international travel (e.g., border crossings). Measures used to address travel-related risks include many of the community disease control measures found in Supplement 8. As with community containment, travel-related containment is often best addressed at the local level, although many situations will naturally involve ADHS and the federal government, due to federal quarantine authority and international travel laws. Affected county and tribal health departments are encouraged to work with ADHS while preparing for and enacting containment measure that address travel-related risk.

Inter-Pandemic Period Activities

1. Ensure readiness to implement travel-related disease containment measures
2. Engage appropriate community partners and develop and exercise appropriate plans

Pandemic Alert Period Activities

3. Assist ADHS in providing public health information to travelers who visit countries where avian or animal influenza strains that can infect humans (e.g., avian influenza A [H5N1]) or human strains with pandemic potential have been reported.
4. Evaluate and manage arriving ill passengers who might be infected with avian or animal influenza strains or human strains with pandemic potential.



Pandemic Period Activities

5. Continue to provide public health information to travelers, in coordination with ADHS
6. In coordination with ADHS and CDC, initiate enhanced disease surveillance at ports of entry
7. Evaluate and implement quarantine, as necessary, on exposed passengers or other individuals related to travel
8. Evaluate the need to implement or terminate travel-related containment measures as the pandemic evolves.

F. Public Information

During the Interpandemic Period, communications professionals from local health departments will need to work closely with ADHS communications team and other response agencies to focus on preparedness planning and on building flexible, sustainable communications networks and media relationships. During the Pandemic Period, they will focus on coordinated health communications to support public health interventions designed to help limit influenza-associated morbidity and mortality. According to A.R.S. 36-787, ADHS is the lead agency for crafting public information strategies and messages during a declared public health emergency. While ADHS will take the coordination role, local health departments may be best placed to ensure the unified messages reach Arizona residents at the community level (see Supplement 10).

Inter-Pandemic Period Activities

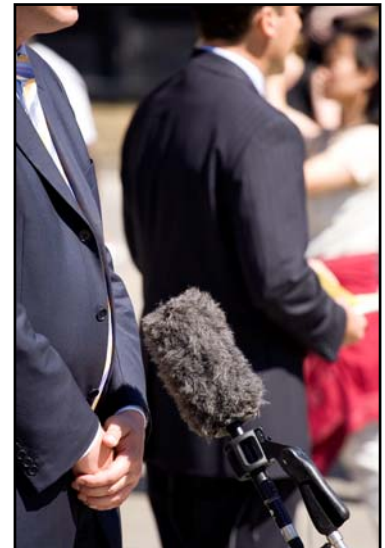
1. Assess and monitor readiness to meet communications needs in preparation for an influenza pandemic, including regular review and update of communications plans.
2. Participate in regional and state-wide emergency communication activities with ADHS, other response agencies, private industry, education, and nonprofit partners (e.g., American Red Cross chapters).
3. Identify and train lead subject-specific spokespersons.
4. Provide public health communications staff with training on risk communications for use during an influenza pandemic.
5. Develop and maintain up-to-date communications contacts.
6. Participate in tabletop exercises and other collaborative preparations to assess readiness.
7. Confirm any contingency contracts needed for communications resources during a pandemic.

Pandemic Alert Period Activities

8. Begin disseminating messages and materials to increase the knowledge and understanding of the public, health care professionals, policy-makers, media, and others about unique aspects of pandemic influenza that distinguish it from seasonal influenza, and generally what to expect during different phases of an influenza pandemic.
9. Address rumors and false reports regarding pandemic influenza threats.

Pandemic Period Activities

10. Contact key community partners and implement frequent update briefings.
11. As appropriate, implement and maintain community resources, such as hotlines and websites to respond to local questions from the public and professional groups.
12. Tailor communications services and key messages to specific local audiences; utilize statewide special populations study information to target specific hard to reach populations.
13. In coordination with epidemiologic and medical personnel, obtain and track information daily on the numbers and location of newly hospitalized cases, newly quarantined persons, and hospitals with pandemic influenza cases. Use these reports to determine priorities among community outreach and education efforts, and to prepare for updates to media organizations in coordination with federal partners.
14. Coordinate all pandemic influenza media messages with ADHS to ensure consistency with statewide and national messages
15. Promptly respond to rumors and inaccurate information to minimize concern, social disruption, and stigmatization.



G. Workforce Support – Psychosocial Needs

All response agencies, including county and tribal health departments need to ensure that their response personnel reside in the safest and healthiest environment possible by addressing the psychological and social (“psychosocial”) needs of these employees (see Supplement 11).

Interpandemic and Pandemic Alert Activities

1. Encouraging the use of tools and techniques for supporting staff and their families during times of crisis
2. Establish partnerships and participate in any Regional Behavioral Health Agency (RBHA) outreach activities to the pandemic responder community. This purpose of this outreach is to inform these individuals on how to use as well as receive suggestions on how to improve the crisis response system
3. Provide psychosocial communication information developed by ADHS to employees. Such information will:
 - Educate and inform employees about emotional responses they might experience or observe in their colleagues and families (including children) during an influenza pandemic and techniques for coping with these emotions.
 - Educate employees about the importance of developing “family communication plans” so that family members can maintain contact during an emergency.
 - Describe workforce support services that will be available during an emergency, including confidential behavioral health services and employee assistance programs.
4. Establish workforce resilience programs that will help deployed workers to prepare for, cope with, and recover from the social and psychological challenges of emergency work

Pandemic Activities

5. Make full use of self-care and behavioral health interventions that can help response workers manage emotional stress, family issues and build coping skills and resilience (including providing child and family care, use of stress-control teams, establishing rest and recuperation sites – see Supplement 11 for more information)
6. Ensure that employees have ongoing access to information, including the progression of the pandemic, business and personnel issues (e.g., overtime pay, work hours, etc.), and health care issues
7. Implement workforce resilience programs that meet the special needs of emergency workers - including those who continue to report to the same job location but whose assignments shift to respond to the pandemic (see Supplement 11 for more information).



H. Information Management

For pandemic planning and response public health information management (informatics) focuses on technology systems that support response related interventions and resource tracking. Like ADHS, county and tribal health departments have been developing and improving information management systems for emergency response for the past several years. Supplement 12 lists and describes all the statewide information management systems that will be used during a pandemic. County and tribal health departments should continue to participate in the development, testing, deployment, and use of these systems to ensure their overall effectiveness.

Arizona Influenza Pandemic Response Plan

Supplement 2: Laboratory Diagnostics



Supplement 2: Table of Contents

I.	RATIONALE	S2-2
II.	OVERVIEW	S2-2
III.	THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS	S2-3
	A. Roles and responsibilities	S2-3
	B. Laboratory Testing	S2-3
	C. Laboratory Safety - Biocontainment	S2-4
	D. Surge Capacity Planning	S2-4
	E. Partnerships	S2-4
IV.	THE PANDEMIC PERIOD	S2-4
	A. Roles and responsibilities	S2-4
	B. Laboratory support for health care providers	S2-5
	C. Laboratory Safety - Biocontainment	S2-5
	D. Occupational Health Issues for Laboratory Workers	S2-5
	E. Use of diagnostic assays during an influenza pandemic	S2-5
	1. Rapid Diagnostic Tests	S2-5
	2. RT-PCR Subtyping	S2-5
	3. Virus Isolation	S2-6
	4. Immunofluorescence Antibody Staining	S2-6
	5. Serologic Tests	S2-6
V.	APPENDICES	S2-6
	Appendix 1. Influenza diagnostic assays	S2-10
	Appendix 2. Interim recommendations: Enhanced U.S. surveillance and diagnostic evaluation: H5N1	S2-15
	Appendix 3. Reference testing guidelines for potential pandemic strains of influenza	S2-16
	Appendix 4. Laboratory biosafety guidelines for handling and processing novel influenza strains	S2-17
	Appendix 5. 1/4/2006 Guidelines for collecting and shipping specimens for influenza diagnostics	S2-18
	Appendix 6. Rapid diagnostic testing for influenza	S2-22
	Appendix 7. Guidelines for medical surveillance of laboratory research personnel working with novel strains of influenza, including avian strains and other strains with pandemic potential	S2-26
	Appendix 8. Contact Information and Resources	S2-28

I. Rationale

The goals of diagnostic testing during a pandemic are to:

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

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

Diagnostic testing for pandemic influenza virus may involve a range of laboratory assays (see Box 1. and Appendix 1.)

II. Overview

The public health laboratory is a critical component of the overall public health response to pandemic influenza. The capability of differentiating common influenza from pandemic influenza depends upon the rapid detection and characterization that is available at the Arizona State Public Health Laboratory (ASL) and the Centers for Disease Control and Prevention (CDC).

- The ASL contributes to national laboratory-based surveillance efforts.
- Only through laboratory testing can the signs and symptoms of influenza-like illness be attributed to a definitive pathogen.
- Only by identifying the pathogen can appropriate treatment and control measures be taken to limit/prevent the spread of the disease.
- Once the ASL detects and characterizes a newly emerging influenza strain, for example, the highly pathogenic avian influenza (H5) in the U.S., a sound epidemiologic approach to monitor and respond to the infectious agent can begin.



The ASL plays a key role in laboratory preparedness and response efforts. Federal funding has been used by the ASL not only to enhance biological /chemical terrorism preparedness and response activities but also to improve diagnostic capabilities and capacities for responding to all hazards including pandemic influenza. Specifically the ASL:

- Provides accurate and rapid state-of-the-art testing for detection and identification of newly emergent subtypes of influenza such as H5N1.
- Leads laboratory-based surveillance efforts within each state and contribute to national surveillance efforts as members of a network of World Health Organization collaborating laboratories.
- Provides viral samples to the CDC for further characterization throughout the pandemic period and contribute to the selection of future vaccine strains.

The ASL not only contributes to the detection and identification of influenza, but must also work closely with a network of clinical and physicians office laboratories to support and coordinate diagnostic testing for influenza by:

- Providing education, training, and guidance on use and interpretation of rapid hand-held influenza tests.
- Maintaining a close working relationship with veterinary diagnostic labs to monitor influenza activity within animal populations that may impact human populations.
- Assisting in the development of pandemic preparedness and response plans within states.

III. The interpandemic and pandemic alert periods

Global and US surveillance

The World Health Organization (WHO) has a worldwide network of surveillance laboratories providing information on Influenza. In the United States they work in cooperation with the CDC. The ASL is a participant in the WHO surveillance network (see Box 2.)

Routine Surveillance Activities

- Once a weekly basis of information about the number of influenza isolates is detected, their sub-types, patient ages, and geographical location are sent to the CDC.
- A random sample of influenza isolates are selected and submitted to the CDC three times during each influenza season. These samples are selected to represent early, middle, and late season isolates.

A. Roles and Responsibilities

Clinical and Hospital Laboratories

- Work with the ASL to address laboratory surge capacity issues.
- Train personnel in the management of respiratory specimens during an influenza pandemic.
- Refer specimens from patients with suspected novel influenza to the ASL.
- Institute surveillance for influenza-like illness among laboratory personnel working with influenza virus.

Arizona State Public Health Laboratory

- Performs diagnostic testing.
- Supports surveillance activities
 - Seasonal influenza.
 - Detect novel influenza subtypes.
- Participates in pandemic influenza planning and exercises.
- Institutes surveillance for influenza-like illness among laboratory personnel.
- Develops/reviews pandemic response plans and checklists.
- Educates clinical laboratorians on the safety and handling of specimens suspected to contain novel influenza viruses (see Appendices 3 and 4).

B. Laboratory testing

Clinical Laboratories

- Test clinical samples by rapid identification methods or viral culture.
- Forward specimens containing suspect novel viruses to the ASL (see page S2-8 for contact information).

Arizona State Public Health Laboratory (ASL)

- All Influenza specimens received by the ASL are tested by Real Time RT-PCR with primer/probe sets for Influenza A (group), Influenza A subtypes H1, H3, H5, and H7, and Influenza B (group).
- PCR positive specimens are inoculated into cell culture for virus isolation
- Hemagglutination Inhibition (HI) testing is done to determine influenza A subtype or influenza B subtype.
- Refers specimens to the CDC if a patient meets the requirements for infection with a novel influenza virus and tests positive for Influenza A Virus.

C. Laboratory safety - Biocontainment

During the Pandemic Alert Period, specimens from suspected cases of human infection with novel influenza viruses should be sent to the ASL for testing. The following guidelines should be used for handling and testing of samples suspected to contain a novel influenza virus.

- Commercial antigen detection testing – conduct all assays in a Bio-Safety cabinet under BSL-II conditions.
- RT-PCR – conduct all assays in a Bio-Safety cabinet under BSL-II conditions.
- Virus Isolation - all assays must be conducted under BSL-III with enhancements.
(see Appendix 4 for additional laboratory BioSafety Guidelines).

D. Surge capacity planning

1. Staffing and Training

- Cross-train personnel in the use of testing protocols and reporting through existing surveillance systems.
- Establish back-up plans for hiring temporary laboratory staff.

2. Supplies and Equipment

- Establish inventory system to determine current level of diagnostic supplies, including personal protective equipment.
- Determine mechanism to monitor consumption of supplies during the pandemic.
- Assess anticipated equipment and supply needs.

E. Partnerships

The ASL should build partnerships with the private clinical laboratories and provide them with updated information and training in influenza diagnostics.

IV. The pandemic period

A. Roles and Responsibilities

Public health, hospital and clinical laboratories will continue to support surveillance for pandemic influenza through the same mechanisms that support laboratory-based surveillance for seasonal influenza.

Clinical Laboratories

- Perform diagnostic testing for influenza.
- Scale up to manage increased numbers of requests for influenza testing.
- Support surveillance activities – refer selected specimens from possible pandemic influenza patients to the ASL.
- Maintain other diagnostic services.

Arizona State Public Health Laboratory (ASL)

- Maintain surveillance activities.
- Scale up to manage increased numbers of requests for influenza testing.
- Work with federal partners to supply health care providers and clinical laboratories with guidelines on all aspects of specimen management and diagnostic testing.
- Work with federal partners to monitor the pandemic virus and conduct special studies with CDC related to vaccine development or other aspects of emergency response.



- Maintain reference testing for influenza.
- Continue education of clinicians & laboratorians.
- Share data/information in “real-time”.
- Maintain other diagnostic services.

B. Laboratory support for health care providers

Arizona State Public Health Laboratory (ASL)

- Provide clinical laboratories with guidelines for safe handling, processing, and rapid diagnostic testing of clinical specimens from patients who meet the case definition for pandemic influenza (see Appendices 4 and 5).
- Provide rapid communication of test results.
- Provide guidance on the use of commercially available rapid diagnostic tests for the detection of Influenza A (see Appendix 6).
- Provide guidance on the specimens to refer to the State Public Health Laboratory.

C. Laboratory safety - biocontainment

- Commercial antigen detection testing – conduct all assays in a Bio-Safety cabinet under BSL-II conditions.
- RT-PCR – conduct all assays in a Bio-Safety cabinet under BSL-II conditions.
- Virus Isolation - all assays must be conducted under Bio-Safety Level III with enhancements. (see Appendix 4).

D. Occupational health issues for laboratory workers

To protect the health of laboratory workers during a pandemic, laboratories should maintain the safety practices used during the Interpandemic and Pandemic Alert Periods.

- Conduct laboratory procedures under appropriate biocontainment conditions.
- Encourage routine vaccination of laboratory employees exposed to specimens with respiratory infections. (see Appendix 7).

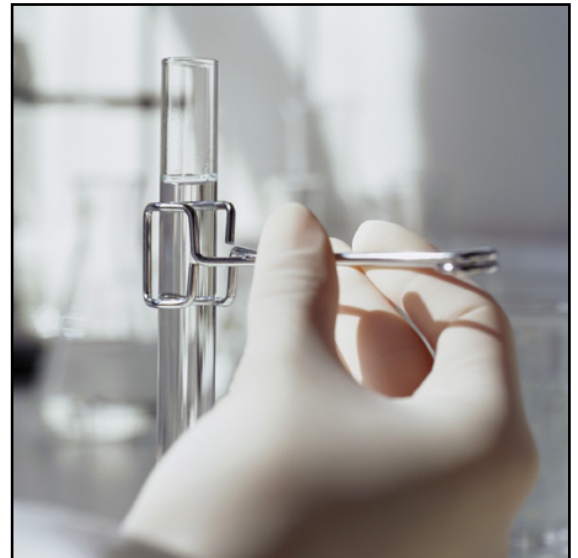
E. Use of diagnostic assays during an influenza pandemic

1. Rapid Diagnostic Tests

Rapid diagnostic tests based on antigen detection are commercially available for influenza. Laboratories in outpatient settings and hospitals can use these tests to detect viruses in 30 minutes. Some tests can detect Influenza A viruses, including avian strains. Testing is not capable of distinguishing between the subtypes of influenza. (see Appendix 6).

2. RT-PCR Subtyping

Influenza specimens may be typed and subtyped using RT-PCR. This method does not require the growth or isolation of virus.



3. Virus Isolation

This method requires growth of virus in cell culture. Identification of the virus is usually confirmed through the use of IFA staining or hemagglutination inhibition (HAI), or RT-PCR to monitor circulating seasonal strains. If clinical or epidemiological data suggests that the human case of influenza might be due to infection with avian influenza, the virus should not be cultured except under BSL-3 conditions with enhancements. Laboratories that lack BSL-3 enhanced facilities should contact their State Public Health Laboratory and arrange to forward the specimen to the CDC for isolation and characterization.

Immunofluorescence Antibody Staining

IFA staining following virus isolation may be used by some laboratories to identify influenza types (A & B) and Influenza A subtypes using a panel of specific antisera.

4. Serologic Tests

Tests based on the detection of antibodies in the patient's sera can be used retrospectively to confirm influenza detection. Acute and convalescent (paired) sera are used to detect rising antibody titers in patient's sera. The testing cannot be used to subtype species of Influenza A Virus. This method is of limited value in the monitoring of an ongoing influenza pandemic.



V. Appendices

Reference Testing Guidelines

The ASL and other local laboratories may conduct initial testing on patient specimens for influenza A or potential highly pathogenic strains, if laboratory capacity is available. Due to the spread of avian influenza A (H5N1) in poultry in Asia, laboratories should be on the alert for avian and human H5 viruses. Procedures for diagnosis of human cases of influenza A (H5N1) are provided in Appendix 2. Influenza A viruses other than currently circulating H1 and H3 subtypes should also be considered as potentially pandemic if detected in humans. (See Appendix 3).

Box 1. Use of diagnostic assays during an influenza pandemic

Public health and clinical laboratories will use different types of diagnostic tests for influenza at different stages of a pandemic. Each of the tests discussed below is described in detail in Appendix 1.

Virus Isolation

Virus isolation—growing the viral strain in cell culture—is the “gold standard” for influenza diagnostics because it confirms that the virus is infectious. During a pandemic, virus isolation followed by antigenic and genetic (sequencing) analysis will be used to characterize the earliest pandemic isolates, as well as to monitor their evolution during the pandemic. Laboratories that participate in the WHO Global Influenza Surveillance Network, such as ASL, typically use virus isolation followed by hemagglutination inhibition (HAI), IFA staining, or RT-PCR to monitor circulating seasonal strains of influenza. If clinical and epidemiologic data suggest that a human case of influenza might be due to infection with avian influenza A (H5N1) or another highly pathogenic avian influenza strain (see Box 3), the virus should not be cultured except under BSL-3 conditions with enhancements. Laboratories that lack BSL-3 enhanced facilities may either perform RT-PCR subtyping using BSL-2 containment procedures or send the specimen to CDC for isolation and characterization.

Immunofluorescence Antibody Staining

IFA staining following virus isolation can be used to identify influenza types (A, B) and influenza A HA subtypes using a panel of specific antisera. In some cases, IFA can be used for direct testing of cells pelleted from original clinical samples. CDC’s Influenza Branch produces and distributes a reagent kit to WHO collaborating laboratories that includes monoclonal antibodies for typing and subtyping currently circulating influenza viruses by IFA. Many laboratories use commercially available reagents to type influenza viruses by direct immunofluorescence tests (DFA).

Box 1. Use of diagnostic assays during an influenza pandemic – cont.

RT-PCR Subtyping

Influenza specimens may also be typed and subtyped using RT-PCR, which does not require *in vitro* growth or isolation of virus. ASL scientists have received training from CDC on using RT-PCR subtyping to identify human and avian HA subtypes of public health concern. APhL members can access protocols and sequences of primers and probes that can be used for typing and subtyping on the APhL website.

Serologic Tests

Tests based on detection of antibodies in patient sera—e.g., enzyme-linked immunosorbent assay (ELISA), HAI, and microneutralization assay—can be used to retrospectively confirm influenza infection. Although microneutralization assay is the most comprehensive test for detection in humans of antibodies to avian influenza viruses, it is currently not available at ASL.

Rapid Diagnostic Tests

Several rapid diagnostic test kits based on antigen detection are commercially available for influenza. Laboratories in outpatient settings and hospitals can use these tests to detect influenza viruses within 30 minutes. Some tests can detect influenza A viruses (including avian strains); others can detect influenza A and B viruses without distinguishing between them, and some can distinguish between influenza A and B viruses. The type of specimens used in these tests (i.e., nasal wash/aspirate, nasopharyngeal swabs, or nasal swab or throat swab) may also vary. Like RT-PCR, rapid diagnostic tests do not require *in vitro* growth or isolation of virus. During a pandemic, rapid diagnostic tests will be widely used to distinguish influenza A from other respiratory illnesses. See Appendix 6 for additional information.

Box 2. Laboratory support for seasonal influenza surveillance

U.S. Collaborating Laboratories of the WHO Global Influenza Surveillance Network

All state public health laboratories, including ASL, as well as about 25 tertiary-care hospital and academic center laboratories, participate as U.S. collaborating laboratories in the WHO Global Influenza Surveillance Network, which collects worldwide data on circulating strains of influenza viruses. These data are used to develop recommendations for the formulation of each year's influenza vaccines, as well as to detect new human influenza viruses that might have pandemic potential. CDC's Influenza Laboratory serves as the WHO Collaborating Center for Surveillance, Epidemiology, and Control of Influenza, along with the WHO Collaborating Centers for Reference and Research on Influenza in Australia, Japan, and the United Kingdom. The U.S.-based WHO collaborating laboratories provide CDC with weekly reports of laboratory-confirmed cases of influenza A and B viruses, by age group. These laboratories typically use virus isolation followed by antigenic testing with IFA staining or HAI—or by molecular testing with RT-PCR—to identify known subtypes of human influenza viruses. If unusual subtypes are detected, or if the specimens cannot be subtyped using available techniques, the specimens are sent to CDC for further testing.

NREVSS Collaborating Laboratories

The National Respiratory and Enteric Virus Surveillance System (NREVSS; <http://www.cdc.gov/ncidod/dvrd/revb/nrevss/>) includes more than 90 laboratories throughout the country, including many hospital laboratories, some state public health laboratories, and a few private commercial laboratories. About 40 of the NERVSS laboratories are also WHO collaborating laboratories. Like the WHO collaborating laboratories, NREVSS laboratories provide CDC with weekly reports of laboratory confirmed cases of influenza A and B viruses. These laboratories typically test respiratory specimens with commercially available rapid diagnostic tests. Several NREVSS laboratories also perform virus isolation followed by rapid diagnostic tests or antigenic typing by IFA. If untypable viruses or unusual subtypes are detected, the specimens are sent to the state public health laboratory or to CDC for further testing.

Box 3. Avian influenza strains with high and low pathogenicity

The U.S. Department of Agriculture (USDA) classifies avian influenza viruses as low pathogenic avian influenza (LPAI) viruses or highly pathogenic avian influenza (HPAI) viruses, based on characteristics of a virus' hemagglutinin cleavagesite or its virulence in birds, as determined by laboratory testing. LPAI strains are endemic in wild birds worldwide and are responsible for most avian influenza outbreaks in poultry. LPAI strains with H5 and H7 subtypes sometimes evolve into highly pathogenic forms. HPAI strains are extremely contagious and cause severe illness and high mortality rates in poultry.

LPAI strains include:

- H5N2, the cause of poultry outbreaks in New York, Maine, and California in 2002
- H7N2, the cause of poultry outbreaks in Delaware, Maryland, and New Jersey in 2004

HPAI strains include:

- H5N1, the cause of major poultry outbreaks in Southeast Asia
- H7N7, the cause of a 2003 outbreak in the Netherlands
- H7N3, the cause of a 2004 outbreak in British Columbia
- H5N2, the cause of a 2004 outbreak in poultry in Texas

The 2004 outbreak in Texas was the first HPAI outbreak in the United States since a previous outbreak of H5N2 in 1983-84 in the northeastern United States. The 1983-84 disease control effort involved the destruction of approximately 17 million birds and cost more than \$70 million.

Although avian influenza A viruses do not usually infect humans, several instances of human infections of avian influenza have been reported since 1997. Cases of avian influenza infection in humans are apparently caused by contact with infected poultry or with surfaces contaminated with avian influenza viruses.

LPAI strains associated with human infection include:

- H9N2, which caused three cases of influenza-like illness in Hong Kong between 1999 and 2003, and other cases in China in 1998 and 1999
- H7N2, which was detected by serology in one person involved in the culling of sick chickens during the response to a poultry outbreak in Virginia in 2002, and was isolated from a New York resident in 2003 (unknown source of the infection)

HPAI viruses associated with human infection include:

- H5N1, which caused 51 deaths in Southeast Asia between January 2004 and April 2005
- H7N7, which caused the death of a veterinarian as well as 83 cases of mild human disease (including conjunctivitis) during the 2003 poultry outbreak in the Netherlands.
- H7N3, which caused 2 cases of very mild human disease (conjunctivitis, headache) in persons culling sick poultry in British Columbia in 2004

Appendix 1

Influenza diagnostic assays

Among the several types of assays used to detect influenza, rapid antigen tests, reverse-transcription polymerase chain reaction (RT-PCR), viral isolation, immunofluorescence assays (IFA), and serology are the most commonly used. The sensitivity and specificity of any test for influenza will vary by the laboratory that performs the test, the type of test used, and the type of specimen tested. A chart that lists influenza diagnostic procedures and commercially available rapid diagnostic tests follows more detailed descriptions provided below.

Virus Isolation

Biocontainment level: Interpandemic and Pandemic Alert Periods – BSL-3 with enhancements; Pandemic Period –BSL-2

Virus isolation is a highly sensitive and very useful technique when the clinical specimens are of good quality and have been collected in a timely manner (optimally within 3 days of the start of illness). Isolation of a virus in cell culture along with the subsequent identification of the virus by immunologic or genetic techniques are standard methods for virus diagnosis. Virus isolation amplifies the amount of virus from the original specimen, making a sufficient quantity of virus available for further antigenic and genetic characterization and for drug-susceptibility testing if required. Virus isolation is considered the “goldstandard” for diagnosis of influenza virus infections.

Highly pathogenic avian influenza (HPAI) viruses are BSL-3 agents. During the Interpandemic and Pandemic Alert Periods, laboratories should attempt to culture HPAI viruses—as well as other influenza viruses with pandemic potential—only under BSL-3 conditions with enhancements in order to optimally reduce the risk of a novel influenza virus subtype spreading to persons or animals. During the Pandemic Period, biocontainment of BSL-2 is appropriate to prevent laboratory-acquired infection and the virus will already be widespread.

In recent years, the use of cell lines has surpassed the use of embryonated eggs for culturing of influenza viruses, although only viruses grown in embryonated eggs are used as seed viruses for vaccine production. Because standard isolation procedures require several days to yield results, they should be used in combination with the spin-amplification shell-vial method. The results of these assays can be obtained in 24–72 hours, compared to an average of 4.5 days using standard culture techniques. Spin-amplification should not be performed using 24-well plates because of increased risk of cross-contamination. The most effective combination of cell lines recommended for public health laboratories is primary rhesus monkey for standard culture, along with Madin Darby Canine Kidney (MDCK) in shell vial.¹ The use of these two cell lines in combination has demonstrated maximum sensitivity over time for recovery of evolving influenza strains. Some clinical laboratories have recently reported good isolation rates using commercially available cell-line mixed-cell combinations; however, data are lacking on the performance of these mixed cells with new subtypes of Influenza A viruses.

¹The shell-vial technique is described in: *Manual of Clinical Virology*, 3rd edition. Steven Specter, Richard Hodinka, and Stephen Young, eds. ASM Press, 2000.

Appropriate clinical specimens for virus isolation include nasal washes, nasopharyngeal aspirates, nasopharyngeal and throat swabs, tracheal aspirates, and bronchoalveolar lavage. Ideally, specimens should be collected within 72 hours of the onset of illness. Viral culture isolates are used to provide specific information regarding circulating influenza subtypes and strains. This information is needed to compare current circulating influenza strains with vaccine strains, to guide decisions on influenza treatment and chemoprophylaxis, and to select vaccine strains for the coming year. Virus isolates also are needed to monitor the emergence of antiviral resistance and of novel influenza A subtypes that might pose a pandemic threat. During outbreaks of influenza-like illness, viral culture may help identify other causes of illness when influenza is not the etiology (except when using MDCK cells or the MDCK shell-vial technique).

Immunofluorescence Assays

Biocontainment level: BSL-2 when performed directly on clinical specimens; if used on cultures for earlier detection of virus, biocontainment recommendations for viral culture apply

Direct (DFA) or indirect (IFA) immunofluorescence antibody staining of virus-infected cells is a rapid and sensitive method for diagnosis of influenza and other viral infections. DFA and IFA can also be used to type and subtype influenza viruses using commercially available monoclonal antibodies specific for the influenza virus HA. The sensitivity of these methods is greatly influenced by the quality of the isolate, the specificity of the reagents used, and the experience of the person(s) performing, reading, and interpreting the test.

Although IFA can be used to stain smears of clinical specimens directly, when rapid diagnosis is needed it is preferable to first increase the amount of virus through growth in cell culture. For HPAI isolates, attempts to culture the virus should be made only under BSL-3 conditions with enhancements.

Reverse-Transcription Polymerase Chain Reaction (RT-PCR)

Biocontainment level: BSL-2

PCR can be used for rapid detection and subtyping of influenza viruses in respiratory specimens. Because the influenza genome consists of single-stranded RNA, a complementary DNA (cDNA) copy of the viral RNA must be synthesized using the reverse-transcriptase (RT) enzyme prior to the PCR reaction.

APHL member laboratories can obtain CDC protocols and sequences of primers and probes for rapid RT-PCR detection of human and avian HA subtypes of current concern at the APHL website (ASL is an APHL member laboratory and has these capabilities). These protocols use real-time RT-PCR methods with fluorescent-labeled primers that allow automatic, semi-quantitative estimation of the input template. The RT-PCR results are analyzed and archived electronically, without the need for gel electrophoresis and photographic recording. A large number of samples may be analyzed at the same time, reducing the risk of carry-over contamination. As with all PCR assays, interpretation of real-time RT-PCR tests must account for the possibility of false-negative and false-positive results. False-negative results can arise from poor sample collection or degradation of the viral RNA during shipping or storage. Application of appropriate assay controls that identify poor-quality samples (e.g., an extraction control and, if possible, an inhibition control) can help avoid most false-negative results.²

The most common cause of false-positive results is contamination with previously amplified DNA. The use of real-time RT-PCR helps mitigate this problem by operating as a contained system. A more difficult problem is the cross-contamination that can occur between specimens during collection, shipping, and aliquoting in the laboratory. Use of multiple negative control samples in each assay and a well-designed plan for confirmatory testing can help ensure that laboratory contamination is detected and that negative specimens are not inappropriately identified as influenza-positive.

Specimens that test positive for a novel subtype of influenza virus should be forwarded to CDC for confirmatory testing. (Due to the possibility of contamination, it is important to provide original clinical material.) All laboratory results should be interpreted in the context of the clinical and epidemiologic information available on the patient.

Rapid Diagnostic Tests

Biocontainment level: BSL-2

Commercial rapid diagnostic tests can be used in outpatient settings to detect influenza viruses within 30 minutes. These rapid tests differ in the types of influenza viruses they can detect and in their ability to distinguish among influenza types. Different tests can 1) detect influenza A viruses only (including avian strains); 2) detect both influenza A and B viruses, without distinguishing between them; or 3) detect both influenza A and B viruses and distinguish between them.

The types of specimens acceptable for use (i.e., nasal wash/aspirate, nasopharyngeal swab, or nasal swab and throat swab) also vary by test. The specificity and, in particular, the sensitivity of rapid tests are lower than for viral culture and vary by test and specimen tested. The majority of rapid tests are >70% sensitive and >90% specific. Thus, as many as 30% of samples that would be positive for influenza by viral culture may give a negative rapid test result with these assays.

When interpreting results of a rapid influenza test, physicians should consider the level of influenza activity in the community. When influenza prevalence is low, positive rapid test results should be independently confirmed by culture or RT-PCR. When influenza is known to be circulating, clinicians should consider confirming negative tests with viral culture or other means because of the lower sensitivity of the rapid tests. Package inserts and the laboratory performing the test should be consulted for more details regarding use of rapid diagnostic tests. Additional information on diagnostic testing is provided at: <http://www.cdc.gov/flu/professionals/labdiagnosis.htm>. Detailed information on the use of rapid diagnostics tests is provided in Appendix 6.

² CDC is working with the private sector to provide inactivated RNA virus for use as RT-PCR controls for influenza A (H5) testing in LRN laboratories. CDC is working with USDA to resolve any permit issues that might affect the ability of LRN members to use these controls.

Serologic Tests³

Hemagglutination Inhibition (HAI)

Biocontainment level: BSL-2

Serologic testing can be used to identify recent infections with influenza viruses. It can be used when the direct identification of influenza viruses is not feasible or possible (e.g., because clinical specimens for virus isolation cannot be obtained, cases are identified after shedding of virus has stopped, or the laboratory does not have the resources or staff to perform virus isolation).

Since most human sera contain antibodies to influenza viruses, serologic diagnosis requires demonstration of a four-fold or greater rise in antibody titer using paired acute and convalescent serum samples. HAI is the preferred diagnostic test for determining antibody rises. In general, acute-phase sera should be collected within one week of illness onset, and convalescent sera should be collected 2–3 weeks later.

There are two exceptions in which the collection of single serum samples can be helpful in the diagnosis of influenza. In investigations of outbreaks due to novel viruses, testing of single serum samples has been used to identify antibody to the novel virus. In other outbreak investigations, antibody test results from single specimens collected from persons in the convalescent phase of illness have been compared with results either from age-matched persons in the acute phase of illness or from non-ill controls. In such situations, the geometric mean titers between the two groups to a single influenza virus type or subtype can be compared. In general, these approaches are not optimal, and paired sera should be collected whenever possible.

Because HAI titers of antibodies in humans infected with avian influenza viruses are usually very low or even undetectable, more sensitive serologic tests, such as microneutralization, may be needed.

Microneutralization Assay

Biocontainment level: Interpandemic and Pandemic Alert Periods – BSL-3 with enhancements; Pandemic Period –BSL-2

The virus neutralization test is a highly sensitive and specific assay for detecting virus-specific antibody in animals and humans. The neutralization test is performed in two steps: 1) a virus-antibody reaction step, in which the virus is mixed with antibody reagents, and 2) an inoculation step, in which the mixture is inoculated into a host system (e.g. cell cultures, embryonated eggs, or animals). The absence of infectivity constitutes a positive neutralization reaction and indicates the presence of virus-specific antibodies in human or animal sera. The virus neutralization test gives the most precise answer to the question of whether or not a person has antibodies that can neutralize the infectivity of a given virus strain. The neutralization test has several additional advantages for detecting antibody to influenza virus. First, the assay primarily detects antibodies to the influenza virus HA and thus can identify functional, strain-specific antibodies in animal and human serum. Second, since infectious virus is used, the assay can be developed quickly upon recognition of a novel virus and before suitable purified viral proteins become available for use in other assays.

³Enzyme-linked immunoassay (EIA) is not included on this list because of non-specificity issues. Complement fixation is not included because it is currently out of use.

The microneutralization test is a sensitive and specific assay for detecting virus-specific antibody to avian influenza A (H5N1) in human serum and potentially for detecting antibody to other avian subtypes. Microneutralization can detect H5-specific antibody in human serum at titers that cannot be detected by HAI. Because antibody to avian influenza subtypes is presumably low or absent in most human populations, single serum samples can be used to screen for the prevalence of antibody to avian viruses. However, if infection of humans with avian viruses is suspected, the testing of paired acute and convalescent sera in the microneutralization test would provide a more definitive answer regarding the occurrence of infection. Conventional neutralization tests for influenza viruses based on the inhibition of cytopathogenic effect (CPE)-formation in MDCK cell cultures are laborious and rather slow, but in combination with rapid culture assay principles the neutralization test can yield results within 2 days. For HPAI viruses, neutralization tests should be performed at BSL-3 enhanced conditions.

QUICK REFERENCE CHART OF INFLUENZA DIAGNOSTIC TESTS¹

(From: *Prevention and Control of Influenza: Recommendations of the Advisory Committee on Immunization Practices (ACIP)*. MMWR 2004;53(RR-8):1–40.

Procedure	Influenza Types Detected	Acceptable Specimens	Time for Results	Rapid result available
Viral culture	A and B	nasal wash/aspirate, NP swab ² , nasal aspirate, nasal swab and throat swab, sputum	5–10 days ³	No
Immunofluorescence Antibody Staining	A and B	nasal wash/aspirate, NP swab ² , nasal aspirate, nasal swab and throat swab, sputum	2–4 hours	No
RT-PCR ⁴	A and B	nasal wash/aspirate, NP swab ² , nasal aspirate, throat swab, bronchial wash, nasal aspirate, sputum	Hours	No
Serology	A and B	paired acute/convalescent serum samples ⁵	>2 weeks	No
Rapid Diagnostic Tests				
Directigen Flu A ⁷ (Becton-Dickinson)	A	NP swab, ² throat swab, nasal wash, nasal aspirate	See insert	Yes
Directigen Flu A+B ^{7,8} (Becton-Dickinson)	A and B	NP swab, ² throat swab, nasal wash, nasal aspirate	See insert	Yes
FLU QIA ⁹ (Thermo Electron)	A and B ⁴	NP swab, ² throat swab, nasal aspirate, sputum	See insert	Yes
FLU QIA A/B ^{7,10} (Thermo Electron)	A and B	NP swab, ² throat swab, nasal aspirate, sputum	See insert	Yes
XPECT Flu A/B ^{7,11} (Remel)	A and B	Nasal wash, NP swab ² , throat swab	See insert	Yes
NOW Flu A Test ^{8,12}	A	Nasal wash, NP swab ²	See insert	Yes
NOW Flu B Test ^{8,12} (Binax)	B	Nasal wash, NP swab ²	See insert	Yes
QuickVue Influenza Test ⁸ (Quidel)	A and B ⁴	NP swab, ² nasal wash, nasal aspirate	See insert	Yes
QuickVue Influenza A+B Test ⁸ (Quidel)	A and B ⁴	NP swab, ² nasal wash, nasal aspirate	See insert	Yes
SAS Influenza A ^{7,13}	B	NP wash, ² NP aspirate ²	See insert	Yes
SAS Influenza B ^{7,13}	A	NP wash, ² NP aspirate ²	See insert	Yes
ZstatFlu ⁸ (Zymed)	A and B ⁴	throat swab	See insert	Yes

¹ The list might not include all FDA-approved test kits.

² NP = nasopharyngeal.

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

⁴ Does not distinguish between Influenza A and B virus infections.

⁵ RT-PCR = reverse-transcription polymerase chain reaction.

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

⁷ Moderately complex test that requires specific laboratory certification.

⁸ CLIA-waived test. Can be used in a nv office setting. Requires a certificate of waiver or higher laboratory certification.

⁹ Distinguishes between Influenza A and B virus infections.

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

Appendix 2

Interim CDC recommendations: enhanced U.S. surveillance and diagnostic evaluation to identify cases of human infection with avian influenza a (H5N1)

NOTE: This guidance pertains to the avian influenza A (H5N1) situation in October 2005. CDC will provide updated guidance for avian influenza A (H5N1) and for new situations, as needed, through the Health Alert Network (HAN).

Enhanced surveillance efforts by state and local health departments, hospitals, and clinicians are needed to identify patients at increased risk for influenza A (H5N1). Interim recommendations include the following:

Testing for avian influenza A (H5N1) is indicated for hospitalized patients with:

- Radiographically confirmed pneumonia, acute respiratory distress syndrome (ARDS), or other severe respiratory illness for which an alternative diagnosis has not been established, *and*
- History of travel within 10 days of symptom onset to a country with documented avian influenza A (H5N1) infections in poultry and/or humans. (For a regularly updated listing of H5N1-affected countries, see the OIE website at http://www.oie.int/eng/en_index.htm and the WHO website at <http://www.who.int/en/>).

or

Testing for avian influenza A (H5N1) should be considered on a case-by-case basis in consultation with state and local health departments for hospitalized or ambulatory patients with:

- Documented temperature of $>100.4^{\circ}\text{F}$ ($>38^{\circ}\text{C}$), *and*
- One or more of the following: cough, sore throat, or shortness of breath, *and*
- History of close contact either with poultry (e.g., visited a poultry farm, a household raising poultry, or a bird market) in an H5N1-affected country, or with a known or suspected human case of influenza A (H5N1) within 10 days prior to onset of symptoms.

Appendix 3

Reference testing guidelines for potential pandemic strains of influenza

State and local laboratories may conduct initial testing on patient specimens for influenza A or potential highly pathogenic strains, if laboratory capacity is available. Due to the spread of avian influenza A (H5N1) in poultry in Asia, laboratories should be on the alert for avian and human H5 viruses. Procedures for diagnosis of human cases of influenza A (H5N1) are provided in Appendix 2. Influenza A viruses other than currently circulating H1 and H3 subtypes should also be considered as potentially pandemic if detected in humans.

- ASL should send specimens to CDC if:
- A sample tested by ASL is positive for H5 or another novel subtype;

Note: A laboratory should test for influenza A (H5) only if it is able to do so by PCR or has a BSL-3-enhanced facility for influenza A(H5) viral culture.

or

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

or

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

Shipping procedures for potential pandemic strains of influenza are provided in Appendix 5.

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

Appendix 4

Laboratory biosafety guidelines for handling and processing specimens or isolates of novel influenza strains

Key Messages

- Commercial antigen detection testing for influenza may be conducted under BSL-2 containment conditions if a Class II biological safety cabinet is used.
- Clinical specimens from suspected novel influenza cases may be tested by RT-PCR using standard BSL-2 work practices in a Class II biological safety cabinet for initial processing of patient specimens.
- If a specimen is confirmed positive for influenza A (H5N1) by RT-PCR, additional testing should be performed only under BSL-3 conditions with enhancements. CDC's Influenza Branch should be informed immediately by contacting the CDC Director's Emergency Operations Center (DEOC) at 770-488-7100.
- A detailed description of recommended facilities, practices, and protective equipment for the various laboratory biosafety levels can be found in the CDC/NIH Biosafety in Microbiological and Biomedical Laboratories (BMBL) manual at www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm
- BSL-3 with enhancements and Animal Biosafety Level 3 include: all BSL-3 practices, procedures, and facilities, plus the use of negative-pressure, HEPA-filtered respirators or positive air-purifying respirators, and clothing change and personal showering protocols. Additional practices and/or restrictions may be added as conditions of USDA-APHIS permits. Registration of personnel and facilities with the Select Agent Program is required for work with highly pathogenic avian influenza (HPAI) viruses, which are classified as agricultural select agents.
- ASL will test clinical specimens from suspected novel influenza cases by RT-PCR using standard BSL-2 work practices in a Class II biological safety cabinet. Commercial rapid antigen detection testing may also be conducted under BSL-2 biocontainment conditions.
- Highly pathogenic avian influenza A (H5) and A (H7) viruses are classified as select agents. USDA regulations require that these viruses (as well as exotic low pathogenic avian influenza viruses) be handled under BSL-3 laboratory containment conditions, with enhancements (i.e., controlled-access double-door entry with change room and shower, use of respirators, decontamination of all wastes, and showering of all personnel). Laboratories that work with these viruses must be certified by USDA.
- Laboratories should not perform virus isolation on respiratory specimens from patients who may be infected with an avian influenza virus unless stringent BSL-3 enhanced containment conditions can be met and diagnostic work can be kept separate from studies with other human influenza A viruses (i.e., H1 or H3). Therefore, respiratory virus cultures should not be performed in most clinical laboratories. Cultures for patients suspected of having influenza A (H5N1) infection should be sent only to state laboratories with appropriate BSL-3 with enhancement containment facilities or to CDC.

Appendix 5

1/4/06 Guidelines for collecting and shipping specimens for influenza diagnostics

Key Messages

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

I. Respiratory specimens ⁴

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

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

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

A. Collecting specimens from the upper respiratory tract

1. Nasopharyngeal wash/aspirate

- Have the patient sit with head tilted slightly backward.
- Instill 1 ml–1.5 ml of nonbacteriostatic saline (pH 7.0) into one nostril. Flush a plastic catheter or tubing with 2 ml–3 ml of saline. Insert the tubing into the nostril parallel to the palate. Aspirate nasopharyngeal secretions. Repeat this procedure for the other nostril. •Collect the specimens in sterile vials. Label each specimen container with the patient's ID number and the date collected.
- If shipping domestically, use cold packs to keep the sample at 4°C. If shipping internationally, pack in dry ice (see shipping instructions below).
- 2. Nasopharyngeal or oropharyngeal swabs
- Use only sterile dacron or rayon swabs with plastic shafts. Do not use calcium alginate swabs or swabs with wooden sticks, as they may contain substances that inactivate some viruses and inhibit PCR testing.
- To obtain a nasopharyngeal swab, insert a swab into the nostril parallel to the palate. Leave the swab in place for a few seconds to absorb secretions. Swab both nostrils.
- To obtain an oropharyngeal swab, swab the posterior pharynx and tonsillar areas, avoiding the tongue.
- Place the swabs immediately into sterile vials containing 2 ml of viral transport media. Break the applicator sticks off near the tip to permit tightening of the cap. Label each specimen container with the patient's ID number and the date the sample was collected.
- If shipping domestically, use cold packs to keep the sample at 4°C. If shipping internationally, pack in dry ice (see shipping instructions below).

⁴All types of respiratory specimens may be used in RT-PCR tests. Fresh-frozen unfixed tissue specimens may also be submitted for RT-PCR.

B. Collecting specimens from the lower respiratory tract

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

- During bronchoalveolar lavage or tracheal aspirate, use a double-tube system to maximum shielding from oropharyngeal secretions.
- Centrifuge half of the specimen, and fix the cell pellet in formalin. Place the remaining unspun fluid in sterile vials with external caps and internal O-ring seals. If there is no internal O-ring seal, then seal tightly with the available cap and secure with Parafilm®. Label each specimen container with the patient's ID number and the date the sample was collected.

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

2.Sputum

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

II. Blood components

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

- Collect 5 ml–10 ml of whole blood in a serum separator tube. Allow the blood to clot, centrifuge briefly, and collect all resulting sera in vials with external caps and internal O-ring seals. If there is no internal O-ring seal, then seal tightly with the available cap and secure with Parafilm®.
- The minimum amount of serum preferred for each test is 200 microliters, which can easily be obtained from 5 ml of whole blood. A minimum of 1 cc of whole blood is needed for testing of pediatric patients. If possible, collect 1 cc in an EDTA tube and in a clotting tube. If only 1cc can be obtained, use a clotting tube.
- Label each specimen container with the patient's ID number and the date the specimen was collected.
- If unfrozen and transported domestically, ship with cold packs to keep the sample at 4°C. If frozen or transported internationally, ship on dry ice.

III. Autopsy specimens

CDC can perform immunohistochemical (IHC) staining for influenza A (H5) viruses on autopsy specimens. Viral antigens maybe focal and sparsely distributed in patients with influenza, and are most frequently detected in respiratory epithelium of large airways. Larger airways (particularly primary and segmental bronchi) have the highest yield for detection of influenza viruses by IHC staining. Collection of the appropriate tissues ensures the best chance of detecting the virus by (IHC) stains.

- If influenza is suspected, a minimum total of 8 blocks or fixed-tissue specimens representing samples from each of the following sites should be obtained and submitted for evaluation:
- Central (hilar) lung with segmental bronchi
- Right and left primary bronchi
- Trachea (proximal and distal)•Representative pulmonary parenchyma from right and left lung

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

- Fixed, unprocessed tissue in 10% neutral buffered formalin, or
- Tissue blocks containing formalin-fixed, paraffin-embedded specimens, or
- Unstained sections cut at 3 microns placed on charged glass slides (10 slides per specimen)
- Specimens should be sent at room temperature (NOT FROZEN).
- Fresh-frozen unfixed tissue specimens may be submitted for RT-PCR.
- Include a copy of the autopsy report (preliminary, or final if available), and a cover letter outlining a brief clinical history and the submitter's full name, title, complete mailing address, phone, and fax numbers, in the event that CDC pathologists require further information. Referring pathologists may direct specific questions to CDC pathologists. The contact number for the Infectious Disease Pathology Activity is 404-639-3133, or the pathologists can be contacted 24hours a day, 7 days a week through the CDC Emergency Response Hotline at 770-488-7100.

IV. Shipping instructions

- Local health departments, pathologists, or medical examiners should call ASL, who will coordinate with CDC before sending specimens for influenza A reference testing. CDC Hotline staff will notify a member of the Influenza Branch who will contact ADHS to answer questions and provide guidance. In some cases, the ASL may arrange for a clinical laboratory to send samples directly to CDC.
- Specimens should be sent by Priority Overnight Shipping for receipt within 24 hours. Samples (such as fresh-frozen autopsy samples for RT-PCR or other clinical materials) may be frozen at –70 if the package cannot be shipped within a specified time (e.g., if the specimen is collected on a Friday but cannot be shipped until Monday).
- When sending clinical specimens, include the specimen inventory sheet (see below), include the assigned CDC case ID number, and note “Influenza surveillance” on all materials and specimens sent.
- Include the CDC case ID number on all materials forwarded to CDC. Protocols for standard interstate shipment of etiologic agents should be followed, and are available at <http://www.cdc.gov/od/ohs/biosfty/shipregs.htm> . All shipments must comply with current DOT/IATA shipping regulations.

V. INFLUENZA SPECIMEN INVENTORY SHEET

CDC CASE ID:

List specimens sent to the CDC

Select a SOURCE* from the following list for each specimen: Serum (acute), serum (convalescent), NP swab, NP aspirate/wash, bronchoalveolar lavage specimen (BAL), OP swab, tracheal aspirate, or tissue.

Specimen Type #1:

☐ Clinical Material

☐ Extracted RNA

☐ Virus Isolate

Source*: _____

Collected : / /

Date Sent / /

Specimen Type #2:

☐ Clinical Material

☐ Extracted RNA

☐ Virus Isolate

Source*: _____

Collected : / /

Date Sent / /

Specimen Type #3:

☐ Clinical Material

☐ Extracted RNA

☐ Virus Isolate

Source*: _____

Collected : / /

Date Sent / /

Specimen Type #4:

☐ Clinical Material

☐ Extracted RNA

☐ Virus Isolate

Source*: _____

Collected : / /

Date Sent / /

Specimen Type #5:

☐ Clinical Material

☐ Extracted RNA

☐ Virus Isolate

Source*: _____

Collected : / /

Date Sent / /

Carrier: _____ Tracking _____

Appendix 6

Rapid diagnostic testing for influenza

The following information in this appendix is designed to assist clinicians and clinical laboratory directors in the use of rapid diagnostic tests during interpandemic influenza seasons. During an influenza pandemic, one or more of these tests may be sensitive and specific enough to be used by clinicians to supplement clinical diagnoses of pandemic influenza. However, clinicians should be reminded that a negative test result might not rule out pandemic influenza and should not affect patient management or infection control decisions.

I. Information for clinicians

A. Background

Rapid diagnostic tests for influenza can help in the diagnosis and management of patients who present with signs and symptoms compatible with influenza. They also are useful for helping to determine whether institutional outbreaks of respiratory disease might be due to influenza. In general, rapid diagnostic testing for influenza should be done when the results will affect a clinical decision.

Rapid diagnostic testing can provide results within 30 minutes.

B. Reliability and interpretation of rapid test results

The reliability of rapid diagnostic tests depends largely on the conditions under which they are used. Understanding some basic considerations can minimize being misled by false-positive or false-negative results.

Median sensitivities of rapid diagnostic tests are generally ~70%–75% when compared with viral culture, but median specificities of rapid diagnostic tests for influenza are approximately 90%–95%. False-positive (and true negative) results are more likely to occur when disease prevalence in the community is low, which is generally at the beginning and end of the influenza season. False-negative (and true positive) results are more likely to occur when disease prevalence is high in the community, which is typically at the height of the influenza season.

C. Minimizing the occurrence of false results

- Use rapid diagnostic tests that have high sensitivity and specificity.
- Collect specimens as early in the illness as possible (within 4–5 days of symptom onset).
- Follow the manufacturer's instructions, including those for handling of specimens.
- Consider sending specimens for viral culture when:
 - Community prevalence of influenza is low and the rapid diagnostic test result is positive, *or*
 - Disease prevalence is high but the rapid diagnostic test result is negative.
- (Contact your ADHS or your county health department for information about influenza activity.)

D. For further information

Information about influenza is available at www.azdhs.gov/flu or the CDC influenza website (www.cdc.gov/flu) or from the CDC FluInformation Line (800-CDC-INFO [English and Spanish]; 800-243-7889 [TTY]).

For more information about influenza diagnostics, contact:

Arizona State Public Health Laboratory:
250 North 17th Avenue
Phoenix, AZ 85007
Attn: Virology
(602) 542-6134

Additional resources:

- Association of Public Health Laboratories: http://www.aphl.org/Public_Health_Labs/index.cfm
- Weekly U.S. influenza activity reports: <http://www.cdc.gov/flu/weekly/fluactivity.htm>
- CDC Clinician Outreach and Communication Activity: <http://www.bt.cdc.gov/coca/index.asp>
- CDC website: <http://www.cdc.gov/flu/professionals/labdiagnosis.htm>

II. Information for clinical laboratory directors

A. Background

Rapid diagnostic tests for influenza are screening tests for influenza virus infection; they can provide results within 30 minutes. The use of commercial influenza rapid diagnostic tests by laboratories and clinics has increased substantially in recent years. At least ten rapid influenza tests have been approved by the U.S. Food and Drug Administration (FDA) (see Appendix 1).

Rapid tests differ in some important respects. Some can identify influenza A and B viruses and distinguish between them; some can identify influenza A and B viruses but cannot distinguish between them. Some tests are waived from requirements under the Clinical Laboratory Improvement Amendments of 1988 (CLIA). Most tests can be used with a variety of specimen types, but sensitivity and specificity can vary with specimen type. FDA approval is based upon specific specimen types. Rapid tests vary in terms of sensitivity and specificity when compared with viral culture. Product insert information and research publications indicate that median sensitivities are approximately 70%–75% and median specificities are approximately 90%–95%.

Specimens to be used with rapid tests generally should be collected as close as possible to the start of symptoms and usually no more than 4–5 days later in adults. In very young children, influenza viruses can be shed for longer periods; therefore, in some instances, testing for a few days after this period may still be useful. Test sensitivity will be greatest in children, who generally have higher viral titers, if the specimen is obtained during the first 2 days of illness, and if the clinician or laboratory has more experience performing the test. The quality of the specimen tested also is critical for test sensitivity.

B. Accuracy depends on disease prevalence

The positive and negative predictive values of rapid tests vary considerably depending on the prevalence of influenza in the community. False-positive (and true negative) influenza test results are more likely to occur when disease prevalence is low, which is generally at the beginning and end of the influenza season. False-negative (and true positive) influenza test results are more likely to occur when disease prevalence is high, which is typically at the height of the influenza season.

1. Clinical considerations when influenza prevalence is low

When disease prevalence is low, the positive-predictive value (PPV) is low and false-positive test results are more likely. By contrast, the negative-predictive value (NPV) is high when disease prevalence is low, and negative results are more likely to be truly negative (see Graphs 1 and 2).

If flu prevalence is...	and specificity is...	then PPV is...	false-positive rate is...
VERY LOW (2.5%)	POOR (80%)	VERY POOR (6%–12%)	VERY HIGH (88%–94%)
VERY LOW (2.5%)	GOOD (98%)	POOR (39%–56%)	HIGH (44%–61%)
MODERATE (20%)	POOR (80%)	POOR (38%–56%)	HIGH (44%–62%)
MODERATE (20%)	GOOD (98%)	GOOD (86%–93%)	LOW (7%–14%)

Interpretation of positive results should take into account the clinical characteristics of the case-patient. If an important clinical decision is affected by the test result, the rapid test result should be confirmed by another test, such as viral culture or PCR.

2. Clinical considerations when influenza prevalence is high

When disease prevalence is relatively high, the NPV is low and false-negative test results are more likely. By contrast, when disease prevalence is high, the PPV is high and positive results are more likely to be true (see Graph 2).

If flu prevalence is...	and sensitivity is...	then NPV is...	false-negative rate is.
MODERATE (20%)	POOR (50%)	MODERATE (86%–89%)	MODERATE (11%–14%)
MODERATE (20%)	HIGH (90%)	V. GOOD (97%–99%)	V. LOW (2%–3%)
HIGH (40%)	POOR (50%)	MODERATE (70%–75%)	MODERATE (25%–30%)
HIGH (40%)	HIGH (90%)	V. GOOD (93%–94%)	LOW (6%–7%)

Interpretation of negative results should take into account the clinical characteristics of the case-patient. If an important clinical decision is affected by the test result, the rapid test result should be confirmed by another test, such as viral culture or PCR.

C. Selecting tests

Selection of a test should take into consideration several factors, such as the types of specimens that are considered optimal for that test. Also, tests with high sensitivity and specificity will provide better positive and negative predictive values. Information about test characteristics is provided in product inserts and scientific articles and by the manufacturer.

D. Changes in recommended procedures can affect test results

Modification by the user can affect test performances and increase false-positive and/or false-negative rates. Such modifications include using specimens for which the test is not optimized or using swabs that did not come with the rapid test kit (unless recommended).

E. When are rapid diagnostic tests beneficial?

Use of rapid diagnostic tests are beneficial in these situations:

- To test cases during an outbreak of acute respiratory disease to determine if influenza is the cause, *or*
- To test selected patients during the influenza season, *or*
- In the fall or winter, to test selected patients presenting with respiratory illnesses compatible with influenza to help establish whether influenza is present in a specific population and to guide health care providers in diagnosing and treating respiratory illnesses.

In general, the exclusive use of rapid tests does not address the public health need for obtaining viral isolates so that influenza virus strain subtyping and characterization can be conducted to monitor antigenic and genetic changes.

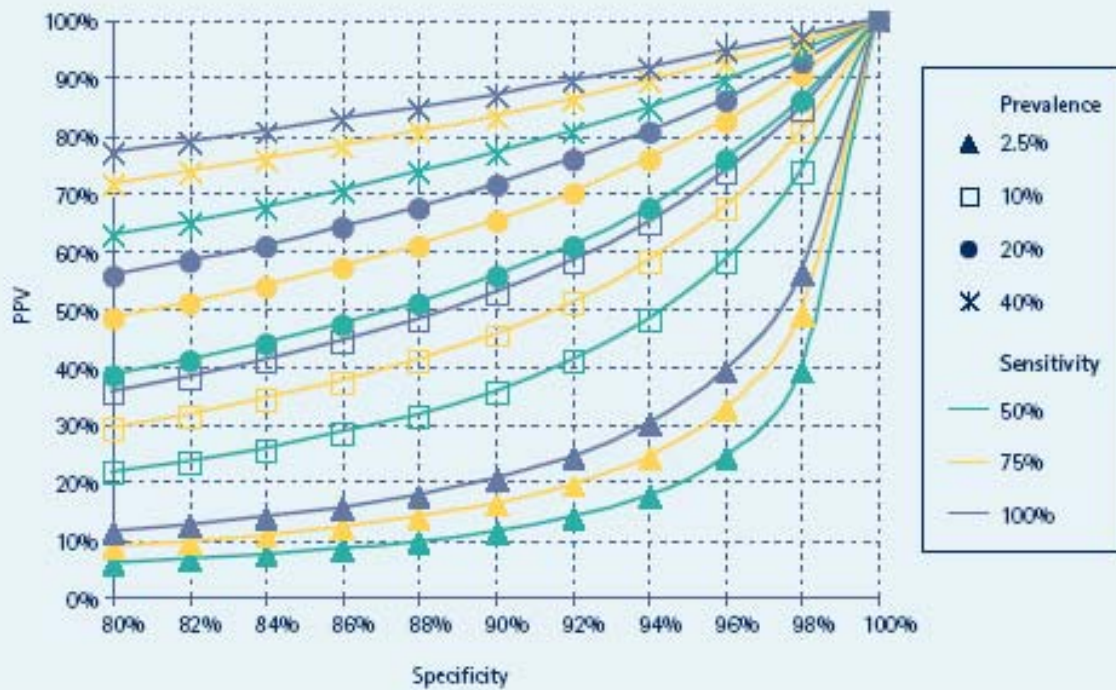
During an influenza pandemic, some rapid diagnostic tests may be able to detect the pandemic strain with adequate sensitivity and specificity. Rapid tests can be used by physicians to supplement clinical diagnoses of pandemic influenza.

Physicians should be reminded that a negative test result might not rule out influenza and should not affect patient management or infection control decisions.

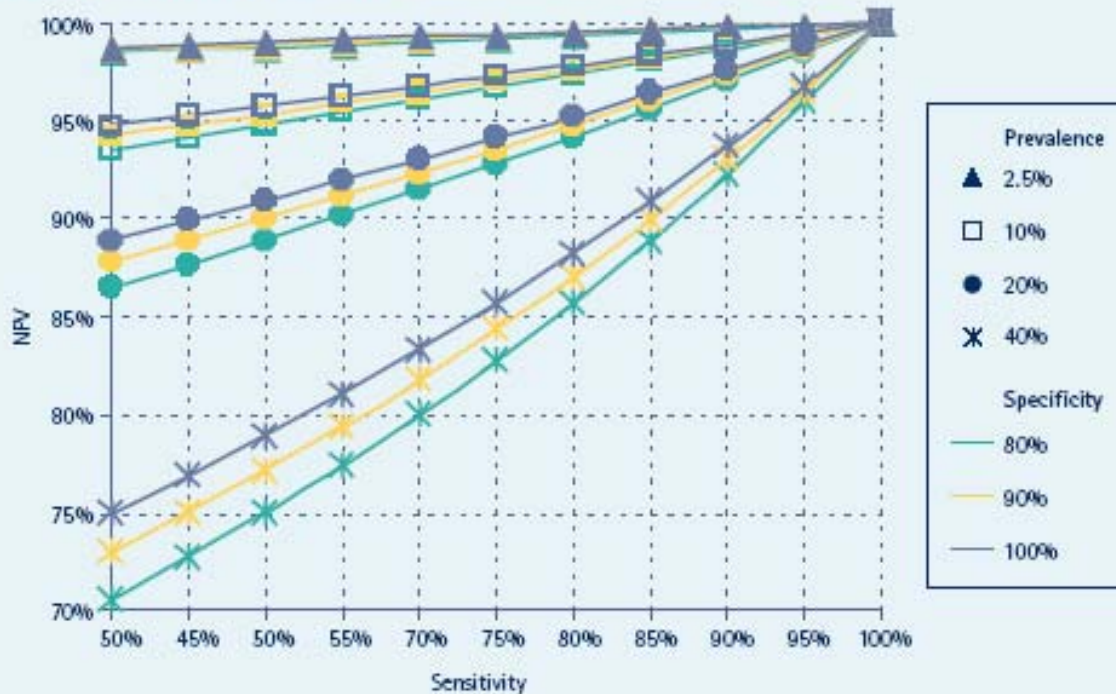
F. For further information

Information on influenza diagnostics is provided on the CDC website at:
<http://www.cdc.gov/flu/professionals/labdiagnosis.htm> .

GRAPH 1: IMPACT OF PREVALENCE, SENSITIVITY AND SPECIFICITY ON POSITIVE PREDICTIVE VALUE



GRAPH 2: IMPACT OF PREVALENCE, SENSITIVITY AND SPECIFICITY ON NEGATIVE PREDICTIVE VALUE



Appendix 7

Guidelines for medical surveillance of laboratory research personnel working with novel strains of influenza, including avian strains and other strains with pandemic potential

Key Messages

- Laboratory workers should receive training on the appropriate biosafety level for the type of work being performed.
- Before working with avian influenza A viruses, including highly pathogenic strains, laboratory workers should have a baseline serum sample obtained and stored for future reference.
- Workers in laboratories that contain avian influenza A viruses should report any fever or lower respiratory symptoms to their supervisors. Workers should be evaluated for possible exposures, and the clinical features and course of the illness should be closely monitored.
- Laboratory workers who are believed to have had a laboratory exposure to an avian influenza A virus or other highly pathogenic strain should be evaluated, counseled about the risk of transmission to others, and monitored for fever or lower respiratory symptoms as well as for any of the following: sore throat, rhinorrhea, chills, rigors, myalgia, headache, diarrhea.
- ADHS and/or county health departments should be notified promptly of laboratory exposures and illnesses in exposed laboratory workers. Medical surveillance of laboratory personnel can help to ensure that workers who are at risk of occupational exposure to avian influenza viruses or other novel animal or human influenza strains and who develop symptoms of illness receive appropriate medical evaluation and treatment, both for the benefit of their health and to prevent further transmission.

I. Prerequisites for working with novel avian or human influenza viruses

A. Baseline serum samples

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

B. Influenza vaccine

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

C. Oseltamivir prophylaxis

- It is not necessary to require oseltamivir for laboratory research personnel working with highly pathogenic influenza strains, but encourage it for those doing animal experiments only for the time they are working with animals and especially while working with ferrets.
- When considering oseltamivir prophylaxis, be sure to evaluate appropriate candidates for contraindications, answer their questions, review adverse effects, and explain the benefits.
- Maintain a log of persons on oseltamivir, persons evaluated and not on oseltamivir, doses dispensed, and adverse effects.
- Periodically evaluate and update oseltamivir policies and procedures.

D. Post-exposure prophylaxis

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

II. Management of influenza-like illness in personnel with possible exposure to novel avian or human influenza viruses

A. General procedures

- Maintain a daily sign-in/out sheet to record name, date, time in/out, use of oseltamivir, and brief description of job tasks. This record will facilitate retrospective documentation if an illness occurs.
- Workers should report any influenza-like illness and any potential laboratory exposures to the supervisor (see also Supplement 4).

B. Evaluation and treatment

1. During regular working hours

- The affected employee should notify the supervisor. The supervisor should immediately contact the appropriate health care personnel and facility contacts (e.g., occupational health, infection control, or designee).
- Upon arrival at the designated clinic, the employee should be placed in a private room for isolation where a health care provider can provide consultation and evaluation.
- The health care provider should obtain a respiratory specimen (e.g. nasopharyngeal swab or aspirate) for viral culture. A rapid antigen test⁵ with the ability to differentiate between influenza A and B should be used for initial diagnosis, followed by virus isolation.

⁵If laboratory capacity is available; RT-PCR should be used to rule out the suspected pathogen.

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

2. During working hours when the employee calls from home

- The employee should notify the supervisor. The supervisor should discuss the situation with the appropriate health care personnel and determine where and by whom the employee will be evaluated and specimens for viral culture will be obtained.
- The employee may come to an on-site clinic for evaluation or may elect to see a personal physician. If the employee chooses to see a personal physician, the on-site clinician should discuss with the personal physician the likelihood of a laboratory-acquired infection. The personal physician should be asked to collect specimens for antigen detection and viral culture.
- An employee who is not sick enough to be admitted to a hospital should remain at home under the care of a personal physician, pending results from the viral culture. If influenza A (H3N2) or A (H1N1) is identified, the employee should be advised and can resume normal activities as soon as symptoms subside.
- If avian influenza A (e.g., H5, H7, H9) is identified, the family and other contacts should be monitored for illness.⁶
- Local public health officials should be notified about any confirmed avian influenza infections.

3. After working hours

- The employee should notify the supervisor. The supervisor should inform other persons as the situation dictates.
- If the employee is acutely ill with symptoms consistent with influenza, the employee and/or supervisor should contact the appropriate health care provider for instructions. The health care provider should conduct the initial evaluation and patient management.
- The supervisor should immediately ask the health care provider to collect specimens for rapid testing and viral culture.
- The employee should follow the advice of the health care provider with regard to further evaluation/treatment.

Appendix 8

Contact Information and Resources

Contact Information

Arizona State Public Health Laboratory
250 North 17th Avenue
Phoenix, AZ 85007
Attn: Virology
(602) 542-6134

After-hours emergency contact:
Laboratory Manager's cell – (602) 283-6277

Influenza: Resources

ADHS homepage for influenza
<http://www.azdhs.gov/flu>

ADHS homepage for influenza pandemic preparedness
<http://www.azdhs.gov/pandemicflu>

CDC home page for influenza
<http://www.cdc.gov/flu>
<http://www.cdc.gov/flu/weekly/fluactivity.htm>

U.S. web site for pandemic flu & U.S. Pandemic Flu Plan and Preparedness Planning
<http://pandemicflu.gov/>

W.H.O. home page for influenza (including avian influenza)
<http://www.who.int/csr/disease/influenza/en/>

Promed (Program for Monitoring Emerging Diseases, International Society for Infectious)
<http://www.promedmail.org>

U.S. Food & Drug Administration (FDA)
<http://www.fda.gov/cdrh/oivd/tips/rapidflu.html>

Biosafety in Microbiological and Biomedical Laboratories (BMBL), 4th ed
<http://www.cdc.gov/od/ohs/biosfty/bmbl4/bmbl4toc.htm>

Arizona Influenza Pandemic Response Plan

Supplement 3: Health Care Coordination and Surge Capacity



Supplement 3: Table of Contents

I.	RATIONALE	S3-2
II.	OVERVIEW	S3-2
III.	ACTIONS FOR THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS	S3-2
	A. Planning for the Provisional Care in Hospitals	S3-2
	1. Planning Process	S3-2
	2. Planning Elements	S3-3
	B. Planning for Provision of Care in Non-Hospital Settings	S3-5
	1. Non-hospital Healthcare Facilities	S3-6
	2. Alternative care sites	S3-6
IV.	ACTIONS FOR THE PANDEMIC PERIOD	S3-6
	A. Activating the facility's pandemic influenza response plan	S3-6
	1. Pandemic Influenza Reported Outside the United States	S3-6
	2. Pandemic influenza reported in the United States	S3-6
V.	APPENDICES	S3-10
	Appendix 1. Hospital Surge Capacity and Capability Planning Guide	S3-10

I. Rationale

Arizona Department of Health Services (ADHS), county and tribal health departments, hospitals, other healthcare facilities, healthcare providers, emergency responders, law enforcement and many others in the community must prepare and respond closely together if a local epidemic is to be detected and managed in a timely and effective manner. Planning is a key factor in preparation for the State's response to a pandemic. Lessons learned from past influenza pandemics demonstrate that planning must take into account staffing, hospital surge capacities and capabilities, mass prophylaxis and/or vaccination, and disposition of remains.

During a pandemic, there will be an increased burden affecting the entire healthcare system. Facilities must be able to respond to day-to-day emergencies and care of their patients. Additional planning is therefore needed to increase the ability of healthcare professionals and first responders to function during a greater demand of their services related to a pandemic when there is fewer staff to continue essential services.

II. Overview

Two key strategies compose the Arizona plan to respond to an influenza pandemic. The aim of these strategies is to minimize the morbidity and mortality associated with the event. One strategy is containment which refers to preventing transmission and spread of the disease by implementing border control measures, isolation of the sick, quarantine of contacts (see Supplement 8), judicious use of antiviral medications (see Supplement 7) and maintenance of essential public health services. If there is an explosive spread within the general population, containment may not be possible. The strategy will then shift to an emphasis on the maintenance of essential public health and healthcare services.

The objectives of this supplement are to:

1. Ensure adequate surveillance is in place to detect a novel influenza virus
2. Limit the spread of influenza through early containment measures to increase the amount of time available to implement preparedness measures.
3. Limit morbidity and mortality during an influenza pandemic.
4. Provide the public, health care workers, the media and other public health service providers with timely, factual and readily available information at all pandemic stages
5. Address the stress on the healthcare system through early identification and use of additional resources.

III. Actions for the Interpandemic and Pandemic Alert Periods

A. Planning for Provisional Care in Hospitals

1. Planning Process

The planning process for interpandemic and pandemic alert periods is a complicated process that involves all available public health and health care assets. Arizona healthcare facilities must be capable of rapidly expanding services (surge capacities and capabilities) to meet interpandemic and pandemic influenza patient and public health needs. ADHS/BEPR is charged with developing a state healthcare coordination plan and assisting in the development of regional and county plans. There are other response plans in place that contain relevant information and should be used whenever possible. Arizona Emergency Preparedness and Response Public Health Region Committees should assist in the development of pandemic response plans within their jurisdiction. The planning process should include:

1. Pre-existing plans and papers from technical experts, procedures from WHO, HHS, and CDC, other State and local guidance should all be included in healthcare pandemic response plans.
2. In accordance with the National Response Plan (NRP), all agencies should be using the National Incident Management System (NIMS) and should have plans to establish an Emergency Operations Center (EOC) using the Incident Command System (ICS) structure.
3. Hospital planning is vital to the success of combating an influenza pandemic. Surge capacity and capability should be planned for and should consider other hospital, region, county, state and other community based organizations.

2. Planning Elements

a. Hospital Surveillance

Expanding influenza surveillance and epidemiological capacity at the local level is an important component of pandemic preparedness. Local disease surveillance and on-site laboratory testing are an essential first step in preparedness and is important in helping ADHS to react quickly. Hospital surveillance procedures are outlined in Supplement 1. Laboratory procedures are located in Supplement 2.

b. Hospital Communications

The role of the news media will be critical during a pandemic, however, healthcare information releases by hospitals, regions, and counties must be carefully coordinated with the ADHS to ensure the most accurate and consistent messages are provided and to prevent conflicting information. The communication procedures for all levels of public health response during a pandemic are summarized in Supplement 10.

1. Communications must be coordinated during pandemic operations so all elements of the public health response network operate as a single entity.
2. Hospital, regional and county internal communications are an integral component to keep Administration and Public Information Officers informed as to the entity's ability to meet the demands of the pandemic and still provide critical health care services to the community.



c. Education and Training

Each hospital should develop an education and training plan that addresses the needs of staff, patients, family members and visitors.

Staff Education:

- Identify educational resources for clinicians, including federally sponsored teleconferences, state and local health department programs, web-based training materials, and locally prepared presentations.
- General topics for staff education should include:
 - Prevention and control of influenza
 - Implications of pandemic influenza
 - Benefits of annual influenza vaccination
 - Role of antivirals
 - Infection control strategies

Education of patients, family members, and visitors

- Identify language-specific and reading-level appropriate materials
- Develop a plan for distributing information to all persons who enter the hospital. Identify staff to answer questions about procedures for preventing influenza transmission.

d. Triage, Clinical Evaluation and admission procedures

During the peak of a pandemic, hospital emergency departments, outpatient clinics and healthcare provider offices might be overwhelmed with patients seeking care. Triage should be conducted to: 1) identify persons who might have pandemic influenza, 2) separate them from others to reduce the risk of disease transmission, and 3) identify the type of care they require (i.e., home care or hospitalization). These procedures are outlined in Supplement 5, Clinical Guidelines.

e. Facility Access

Uncertainty, anxiety and ongoing stress will affect all segments of the population, which will place additional burdens on the health care system as well as individual and community recovery. Service demand will be heavy as treatment facilities seek to triage and treat those affected, those who believe they are infected and "normal" non-influenza patient loads. Hospitals must therefore restrict access, and if needed implement a lockdown to prevent unwanted infected people from entering the facility.

1. Visitors should be limited to reduce the likelihood of pandemic influenza transmission among visitors, patients, and healthcare workers.
2. Visitors should receive infection control training from hospital infection control departments (e.g., brochures, video) and comply with infection control measures.
3. Symptomatic persons exposed to pandemic influenza patients should be excluded from visitation of patients that do not have the influenza.
4. Transportation of the patients within the facility does not need to be restricted. Patient transportation requirements are listed in Supplement 4, Infection Control. Disinfection of the transportation equipment as well as other potentially exposed surfaces and equipment must take place.
5. Transportation outside of the facility may also be considered. Additional precautions and disinfection will be necessary if the person is undergoing mechanical ventilation.

f. Occupational Health

Employee health programs should institute a strategy to monitor the health of staff and patients who are potentially exposed to the pandemic influenza strain. Employee health programs should:

1. Develop an active education of *all* staff in hygiene precautions. This includes proper hand washing procedures and techniques for donning gloves, P95 mask, gown and eyewear.
2. Develop a plan to identify staff that may have acquired immunity to the pandemic influenza virus and might be deployed to high exposure areas.
3. Prepare for dislocation of hospital workforce due to illness, death and absenteeism. The hospital will be affected at all levels from, key administrative positions to essential service providers, including clerical and support staff. Collateral organizational structures, backups and workarounds must be in place prior to the pandemic.
4. Educate staff regarding the impact of a pandemic on the hospital and how it could influence their decision to continue to work in a potentially high risk environment.
5. Ensure time off policies and procedures and consider staffing needs during periods of clinical crisis.
6. Have mental health and faith-based resources identified as part of the hospital team to assist caregivers in the high stress environment during a pandemic.
7. Implement procedures to screen staff for possible onset of symptoms.
8. Anticipate the potential need to isolate staff working in high exposure areas such as the emergency department between shifts.
9. Ensure hospital workers and their immediate families receive prophylaxis and/or vaccination as appropriate.



g. Use and Administration of Vaccines and Antiviral Drugs.

Vaccines and antiviral drugs will be in short supply early in a pandemic. Prudent use will include holding the vaccines and antiviral drugs to ensure availability when they are required. Information on vaccines is located in Supplement 6. Procedures for antiviral medications can be found in Supplement 7.

h. Surge Capacity

The purpose of ADHS and Regional Hospital Surge Capacity and Capability Plans are to provide a framework for utilizing regional resources and capabilities to deliver hospital based care to the victims during a bioterrorism attack or pandemic. The secondary purpose of this plan is to provide a framework that provides for the uninterrupted delivery of essential healthcare to the counties, tribal reservations and communities served by the hospitals in the region. These essential services include, but are not limited to trauma, surgical, critical care, cardiac, obstetric, pediatric and neonatal services.

Surge capacities and capabilities are developed at ADHS/BEPR and Region levels. Hospitals must develop their own surge capability and capacity plans. These plans should consider both on and off campus surge requirements. For additional information on surge capacity and capability hospitals should contact ADHS/BEPR.

i. Security

Healthcare facilities should plan for additional security. This may be required given the increased demand for services and the possibility of long wait times for care, and because triage or treatment decisions may lead to people not receiving the level of care they think they require.

j. Mortuary Issues

To prepare for the possibility of mass fatalities during an influenza pandemic, hospitals should do the following:

- Assess current capacity for refrigeration of deceased persons.
- Discuss mass fatality plans with local and state health officials and medical examiners.
- Work with local health officials and medical examiners to identify temporary morgue sites.
- Determine the scope and volume of supplies (e.g. body bags) needed to handle an increased number of deceased persons.

In-hospital post-mortem care is another issue that must be addressed and planned for during a pandemic.

- Health care workers must follow standard precautions when caring for a patient with pandemic influenza who is deceased.
- Full personal protective equipment (PPE) must be worn if the patient died during the infectious period (i.e. within 7 days after resolution of fever in adults and 21 days after the onset of symptoms in children).
- Transfer to the mortuary or funeral home should occur as soon as possible after death.
- If the family wishes to view the body, they may be allowed to do so. If the patient died during the infectious period, the family should wear gloves and a gown.

B. Planning for Provision of Care in Non-Hospital Settings

Staff attrition will most likely force the closure of primary healthcare practices, smaller practices first, then larger practices, shifting demand for services to hospital emergency departments. This process will disrupt normal patient services, leave most primary healthcare assets abandoned, and create great pressures on hospital emergency departments. Understaffed skilled nursing facilities will face in-house outbreaks of influenza among fragile patients. Home healthcare services will be critically challenged, leaving thousands of vulnerable clients stranded without services. Some of these clients will manage with the help of family, friends, or neighbors, but others who require skilled nursing services may succumb to chronic illnesses or infection. With the elimination of primary healthcare practices, and nursing home degradation it will be necessary to develop outpatient call in lines and websites to ease the burden on emergency departments. See also Supplement 8 and Supplement 10.

1. Non-hospital Healthcare Facilities

In a pandemic, those presenting with influenza-like-illness to hospital emergency departments should ideally be directed away from these facilities for diagnosis and triage wherever possible. The intent is to reduce the transmission of influenza within facilities, an important consideration because they are closed settings with high-risk populations. Also, hospitals will become overwhelmed with the additional demands brought on by a pandemic and patients should seek the appropriate level of care. Community health centers and urgent care centers will be a critical resource for many patients. In addition, separate sites for those presenting with symptoms or signs of influenza should be established away from primary care, emergency departments and hospitals. These alternative (“non-traditional”) sites could be schools, gymnasiums, or other sites identified by ADHS for use during the pandemic. See Appendix 1 - the Hospital Surge Capacity and Capability Planning Guide.



2. Alternative care sites

State, regional, and hospital plans include the ability to increase beds and services through surge capacity and capabilities. Alternate care sites may be located on campus (ideally) or off campus. See the Hospital Surge Capacity and Capability Planning Guide for more information.

IV. Actions for the Pandemic Period

A. Activating the facility's pandemic influenza response plan

Following the initial detection of pandemic influenza anywhere in the world, ADHS will communicate the level of pandemic influenza response plan activation. See Table 1 for hospital triggers based upon pandemic influenza periods.

1. Pandemic Influenza Reported Outside the United States

If cases of pandemic influenza have been reported outside the United States, the main steps will be to:

- Establish contact with key public health, healthcare, and community partners.
- Implement hospital surveillance for pandemic influenza, including detection of patients admitted for other reasons who might be infected with the pandemic strain of influenza virus.
- Implement a system for early detection and antiviral treatment of healthcare workers who might be infected with the pandemic strain of influenza virus.
- Reinforce infection control measures to prevent the spread of influenza (see Supplement 4).
- Accelerate the training of staff, in accordance with the facility's pandemic influenza education and training plan.

2. Pandemic influenza reported in the United States

If cases of pandemic influenza have been reported in the United States, additional steps for healthcare facilities will be to:

- Identify when pandemic influenza cases begin in the community. (See Supplement 1)
- Identify, isolate, and treat all patients with potential pandemic influenza. See also Supplements 4, 5, and 8.
- Implement activities to increase capacity, supplement staff shortages, and provide supplies and equipment.
- Maintain close communication within and among healthcare facilities and with ADHS and local health departments.

Table 1. Hospital Pandemic Influenza Triggers

Pandemic Influenza Level	Suggested Actions
Inter-Pandemic Period	• Conduct planning • Conduct education/training • Conduct hospital surveillance for influenza • (Supplement 1)
Pandemic Alert Period	• Increase preparation; refine local plan • Conduct hospital surveillance for influenza • (Supplement 1)
Pandemic Period <i>Pandemic influenza outside the United States</i>	• Establish contact with key public health, healthcare, and community partners. • Implement hospital surveillance for pandemic influenza (Supplement 1) in incoming patients and previously admitted patients. • Implement a system for early detection and treatment of healthcare personnel who might be infected with the pandemic strain of influenza. • Reinforce infection control procedures to prevent the spread of influenza (Supplement 4). • Accelerate staff training in accordance with the facility's pandemic influenza education and training plan.
Pandemic Period <i>Pandemic influenza in the United States</i>	As above, plus: • Implement activities to increase capacity, supplement staff, and provide supplies and equipment. • Maintain close contact with and among healthcare facilities and with state and local health departments. • Post signs for respiratory hygiene/cough etiquette. • Maintain high index of suspicion that patients presenting with influenzalike illness could be infected with pandemic strain. • If pandemic strain is detected in local patient, community transmission can be assumed and hospital would move to next level of response.

Table 1. Hospital Pandemic Influenza Triggers – cont.

Pandemic Period <i>Pandemic influenza in the local area</i>	As above, plus; <u>Emergency department (ED)</u> • Establish segregated waiting areas for persons with symptoms of influenza. • Implement phone triage to discourage unnecessary ED/outpatient department visits. • Enforce respiratory hygiene/cough etiquette. Access controls • Limit number of visitors to those essential for patient support. • Screen all visitors at point of entry to facility for signs and symptoms of influenza. • Limit points of entry to facility; assign clinical staff to entry screening. <u>Hospital admissions</u> • Defer elective admissions and procedures until local epidemic wanes. • Discharge patients as soon as possible. • Cohort patients admitted with influenza. • Monitor for nosocomial transmission. <u>Staffing practices</u> • Consider furlough or reassignment of pregnant staff and other staff at high risk for complications of influenza. • Consider re-assigning non-essential staff to support critical hospital services or placing them on administrative leave; cohort staff caring for influenza patients. • Consider assigning staff recovering from influenza to care for influenza patients. • Implement system for detecting and reporting signs and symptoms of influenza in staff reporting for duty. • Provide staff with antiviral prophylaxis, according to HHS recommendations (See Supplement 7).

Table 1. Hospital Pandemic Influenza Triggers – cont.

Pandemic Period <i>Nosocomial transmission</i> <i>Widespread transmission in community and hospital; patient admissions at surge capacity</i>	• As above, plus, if nosocomial transmission is limited to only a small number of units in the facility: • Close units where there has been nosocomial transmission. • Cohort staff and patients. • Restrict new admissions (except for other pandemic influenza patients) to affected units. • Restrict visitors to the affected units to those who are essential for patient care and support. • See also Supplement 4. As above plus: • Redirect personnel resources to support patient care (e.g., administrative clinical staff, clinical staff working in departments that have been closed [e.g., physical/occupational therapy, cardiac catheterization]). • Recruit community volunteers (e.g., retired nurses and physicians, clinical staff working in outpatient settings). • Consider placing on administrative leave all non-essential personnel who cannot be reassigned to support critical hospital services.

Appendix 1

Hospital Surge Capacity and Capability Planning Guide

ARIZONA DEPARTMENT OF HEALTH SERVICES

HOSPITAL SURGE CAPACITY AND CAPABILITY PLANNING GUIDE

(Developed and maintained by the Bureau of Emergency Preparedness and Response)

I. GENERAL

A. Purpose: The purpose of the Hospital Surge Capacity and Capacity Plan is to provide a framework for applying federal, state, regional, and local resources and capabilities to deliver hospital based care during a large scale public health emergency. A public health emergency may consist of victims from a chemical, biological, radioactive, nuclear, high yield explosive (CBRNE) event as well as a man made, natural disaster, or pandemic event. The Arizona Department of Health Services (ADHS) will notify hospitals of any condition or situation requiring their potential or immediate response to a public health emergency.

- (1) *Medical surge* describes the ability to provide adequate medical evaluation and care during events that exceed the limits of the normal medical infrastructure of an effected community.
- (2) *Capacity* is the ability to evaluate and care for a markedly increased volume of patients that exceeds normal operating requirements.
- (3) *Capability* refers to the ability to manage patients requiring unusual or very specialized medical evaluation and care.

B. Scope: This document is intended to provide guidance for coordination of hospital response to public health emergencies that occur within the State of Arizona.

C. Direction and Control:

- (1) **Incident Command:** ADHS will use the Incident Command System (ICS) as outlined in the National Incident Management System (NIMS) and directed by the National Response Plan (NRP) to work with other agencies and organizations in a coordinated manner based on the size and scope of the public health emergency.
- (2) **Hospitals:** Hospitals in Arizona will use the Hospital Emergency Incident Command System (HEICS) during a public health emergency.
- (3) **Local Health Jurisdictions:** ADHS will support local jurisdictions and regions through the Health Emergency Operations Center (HEOC).
- (4) **Emergency Management:** ADHS will coordinate with the State Emergency Operations Center (EOC) and local jurisdiction EOCs.

D. Activation and System Response:

ADHS will alert hospital emergency departments, community health centers, tribal health centers, and ambulance companies of events according to the following 6 categories:

MCI (Burn, Explosion, Chemical, Radiation, Trauma or Biological)

- Law Enforcement
- Evacuation
- Natural Disaster
- NDMS
- Amber Alert

Information regarding activation and system response will be communicated via the EMSsystem. ADHS may refer hospital personnel on the EMSsystem to the Secure Integrated Response Electronic Notification (SIREN) for further detailed information.

In addition, event information will be sent through the Health Alert Network (HAN) to hospital administration and emergency departments, infection control practitioners, physicians, nurse practitioners, community and tribal health centers, local health departments and other agencies via fax, e-mail and conference calls.

II. SIX TIER SYSTEM

The Arizona plan for regional hospital surge capacity is shown in Table 1 and is consistent with the Department of Health and Human Services 6 tier plan.

- A. **Tier 1:** Hospital patient load has increased due to a local public health emergency or an influx of patients from another county, region, or state. A Tier 1 event may not overwhelm a hospital or hospital system. Hospital administration activates the hospital over-capacity plan.
- B. **Tier 2:** A public health emergency occurs within Arizona or one of the surrounding states that requires more emergency department or inpatient hospital beds, or both, than available through a Tier 1 response. The Governor of Arizona declares a state of emergency. Hospital administration expands the number of emergency department or inpatient beds, or both, through the opening of centers on the hospital campus. Hospitals activate mutual aid agreements. Intra-region and ADHS coordination may be required.
- C. **Tier 3:** A Tier 3 response to a major public health emergency event requires coordination and all available resources within the region as well as ADHS coordination of hospital and healthcare facility assets. The Governor of Arizona declares a state of emergency. A public health emergency that requires a Tier 3 response may instantaneously severely damage local infrastructure as the result of a natural disaster, or terrorist event. The public health emergency also may be slow building such as a bioterrorism event or a pandemic that may come in several waves. A public health emergency that requires a Tier 3 response may be comprised of several Tier 2 events that together stress the regional healthcare system requiring Tier 3 planning to be implemented. Healthcare facilities and systems must be prepared to implement drastic measures to save and preserve life. A public health emergency requiring a Tier 3 response may impact on all the counties in a region.
- D. **Tier 4:** A Tier 4 response is the consequence of a catastrophic event that totally overwhelms the local and region's ability to respond. ADHS provides intrastate coordination of hospital and healthcare facility assets. The Governor of Arizona declares a state of emergency. Additional federal aid or assistance from other states may or may not be available or required. In most cases hospitals should not rely on external assistance for a minimum of 72 hours. The victims of a public health emergency that requires a Tier 4 response, especially one of sudden onset, will fall into one of four categories in decreasing order of severity: (1) those immediately killed, (2) those destined to die regardless of any care received, (3) those whose survival depends on timely and appropriate medical care, (4) and those who will live even without medical attention. A community response network considers off campus center sufficiency of care compared to hospital standard of care for diagnosis, treatment, and transfer policy and procedures.
- E. **Tier 5:** A Tier 5 response is the process by which Arizona and other states assist one another and coordinate management and response activities during times of crisis. The Governor of Arizona declares a state of emergency. Response efforts include all state agencies that oversee emergency management, public health, and public safety emergency preparedness and response. Collaborative efforts between Arizona and other states promote system-wide consistency in response strategies and ensure optimal utilization of available health and medical resources. The basis for an effective regional response is an open exchange of information, incident management coordination, and mutual aid support. The community response network considers off campus center sufficiency of care compared to hospital standard of care for diagnosis, treatment, and transfer policy and procedures.
- F. **Tier 6:** A Tier 6 response is a federally declared emergency or an Incident of National Significance under Emergency Support Function #8 of the National Response Plan (NRP). The federal government may also authorize aid under the Robert T. Stafford Disaster Relief and Emergency Assistance Act. The federal response is coordinated with Arizona's response by the Department of Homeland Security (DHS) through the Federal Emergency Management Agency (FEMA) and the Department of Health and Human Services (HHS). The National Disaster Medical System (NDMS) may also be mobilized to provide increased medical support. During a pandemic the NDMS most likely will not be available because the teams consist of medical personnel from other states also involved in the pandemic. The community response network considers off campus center sufficiency of care compared to hospital standard of care for diagnosis, treatment, and transfer policy and procedures.

Table 1. Hospital Surge Capacity and Capability Plan (HSCCP) Tier system

Event Size	Increased	Large Scale	Mass Casualty/Fatality Incident			Catastrophic Incident
			Surge Capacity	Extreme Surge Capacity	Far above Surge Capacity	
Conditions	Localized incident resulting in patient load increase.	Arizona Governor Declaration of State of Emergency				Presidential Declaration of State of Emergency.
		Local hospitals activate mutual aid agreements. Intra-region and ADHS coordination may be required.	Intra-region coordination required as mutual aid provided by other resources within the region. ADHS coordination required to integrate hospital and healthcare assets with other response disciplines.	Intrastate coordination and mutual aid provided by other regions in Arizona with ADHS coordination of hospital and healthcare assets.	Interstate coordination and mutual aid provided by other states to support Arizona.	Overwhelmed situation with federal assistance required.
Surge Level	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5	Tier 6
Resources	Activation of hospital(s) over capacity plan(s).	Activation of litter use to establish on-campus centers.	Coordination of tactical mutual aid between jurisdictions within the region. All medical resources brought to areas of greatest need. State assets may be required by on-campus centers.	Full range of State health and medical resources are brought to bear. State assets required by off-campus centers.	Off campus center overflow. Assets from other states required by off-campus centers.	Off campus center overflow. DMAT, DMORT, NDMS support required.

G. Conditions for Implementation:

This plan will be implemented in response to a public health emergency resulting from terrorist action, natural disaster, or man-made catastrophe within the State of Arizona.

H. Agencies that may be Assisting:

- (1) The National Disaster Medical System (NDMS) is a section within the U.S. Department of Homeland Security, Federal Emergency Management Agency, Response Division, Operations Branch, and has the responsibility for managing and coordinating the Federal medical and mortuary affairs response to major emergencies and Federally declared disasters.
 - (a) Disaster Medical Assistance Teams (DMAT) a group of medical and support personnel designed to provide emergency medical care during a disaster or other unusual event. Up to 3 DMATS can be deployed within 24 hours to a disaster site. To supplement the standard DMATs, there are highly specialized DMATs that deal with specific medical conditions such as crush injury, burn, and mental health emergencies.
 - (b) The National Medical Response Team (NMRT) is a specialized response force designed to provide medical care following CBRNE incidents. This unit is capable of providing mass casualty decontamination, medical triage, primary and secondary care to stabilize victims for transport to tertiary care facilities in a HAZMAT environment. There are four NMRT's tasked to support the NDMS.
 - (c) Disaster Mortuary Operational Response Teams (DMORT) are composed of funeral directors, medical examiners, coroners, pathologists, forensic anthropologists, medical records technicians and transcribers, finger print specialists, forensic odontologists, dental assistants, x-ray technicians, mental health specialists, computer professionals, administrative support staff, and security and investigative personnel to provide victim identification and mortuary services. There is only one WMD DMORT that can process contaminated remains.
- (2) Centers for Disease Control and Prevention (CDC) may provide response teams and laboratory support to the affected region.
- (3) The American Red Cross (ARC) and/or the Salvation Army, while not providing for healthcare, does provide for mass care assistance and support, when a disaster event exceeds the resources and capacity of state and local responders.
- (4) Department of Defense (DOD) has several units that may assist civilian authorities under the National Response Plan (NRP). DOD medical assistance must be requested through the Principal Federal Agency charged with disaster relief subject to approval by the Secretary of Defense.
 - (a) Under the NRP, U. S. Army Corps of Engineers are required to provide disaster relief during a declared emergency or an incident of National Significance.
 - (b) As directed by the President or the Secretary of defense, the United States Northern Command (USNORTHCOM) provides military assistance to civil authorities, including consequence management operations.
 - i. Natural Disaster Relief
 - ii. Military assistance to civilian disaster organizations
 - iii. Oil and hazardous substances incident and emergencies
 - iv. Public health emergencies
 - v. Technological and manmade disaster relief
 - vi. CBRNE support including DOD's incident management assistance for CBRNE events.
 - (c) Joint Task Force Civil Support (JTF-CS) plans and integrates DOD support to the designated Lead Federal Agency for domestic CBRNE consequence management operations. When directed by the Commander of USNORTHCOM, JTF-CS will deploy to the incident site, establish command and control of designated DOD forces, and provide military assistance to civil authorities to save lives, prevent injury and provide temporary critical life support.
- (5) Other Agencies as directed by the Federal Government under the activation of the NRP.

I. Hospital Assumptions:

- (1) The combined expertise and capabilities of government at all levels, the private sector, and nongovernmental organizations may be required to prevent, prepare for, respond to, and recover from a public health emergency.
- (2) Adequate staff may or may not be available at the hospital and local levels for providing healthcare during public health emergency in the State of Arizona.
- (3) The Governor, the Arizona State Public Health Officer, and ADHS staff will manage public health and medical support requirements.
- (4) Surge capacity may require a temporary redirection of personnel and financial resources from other programs.
- (5) In most cases, outside federal support will not begin to arrive into the public health emergency zone to assist hospitals for a minimum 72 hours into the incident.
- (6) Casualties may or may not be contaminated by a CBRNE or hazardous material.
- (7) The incident could involve CBRNE or other hazardous materials.
- (8) Biological weapons of mass destruction (WMD) may or may not be infectious (transmitted from human-to-human). If the pathogen (such as *Bacillus anthracis*) is not transmitted from human-to-human then the event will not spread and become an epidemic. If the pathogenic event is an infectious biological agent such as smallpox (variola virus) then it may become an epidemic or even a pandemic.
 - (a) The infectious disease outbreak may or may not be a natural event.
 - (b) There may or may not be an outbreak even if the disease is spread person-to-person.
 - (c) The first set of cases will be in one place (the origin of the exposure), however the secondary infection will spread will be to family members, workers, other people of casual (unknown contact), etc. of those contacting the primary set of cases. The cases will become non-localized to place, however, time (incubation period) should be somewhat consistent (number of days after the initial exposure to the primary individuals).
 - (d) There is a chance of the outbreak becoming an epidemic even proceeding to pandemic level.
- (9) Hospitals normally request patient remains be retrieved by local funeral homes; however, the local funeral homes may or may not accept the remains. Hospitals may or may not have to store remains until the Arizona Mass Fatality Response Plan can be implemented or the local Medical Examiner can find cold storage.

III. MISSION:

A. Planning Factors:

- (1) Planning factors for support of the hospital efforts following an ADHS declared public health emergency must consider available commercial resources as well as local and state assets.
- (2) Availability of assets and facilities at, or close to hospitals during the public health emergency. These planning factors should include:
 - (a) Transportation, to include commercial, federal, state, county, city, and tribal systems may be needed for, evacuation, patient movement, and rapid transport of vital medical supplies from the Federal Emergency Management Agency (FEMA) airhead, or other logistics support centers.
 - (b) Security measures required to protect the hospital and to deliver medical supplies.
 - (c) Capabilities of the county or region and other privately owned agencies to expand response or increase in Tier response as the situation dictates.

IV. EXECUTION:

ADHS may receive a request for assistance from federal, state, county, and local agencies. The request may be for assistance within Arizona, to assist a neighboring state, or to augment federal support to another state, tribal government or U.S. Territory. ADHS will issue alerts, notices and bulletins to hospitals, local health departments, and other healthcare providers as required by the situation.

Key tasks that hospital administration will need to address through Tier 1 through Tier 6 depending on the public health emergency and impact on the hospital community are listed below.

A. Key Tasks: Planning and Coordination:

- (1) Activate HEICS and open the hospital command center.
- (2) Implement surveillance procedures as determined by the local health department and ADHS.
- (3) Use mutual aid agreements with other hospitals and health care agencies for additional medical supplies and equipment, pharmaceuticals, personnel, and transfer arrangements.
- (4) Arrange for delivery of essential goods and services, specifically, regular and disposable linen, hospital beds, additional food for patients and staff, portable negative air machines and HEPA filters, potable water and water purification equipment, and diesel fuel for the emergency generator.
- (5) Implement policy and procedures for patient registration and tracking, and routing and maintenance of medical record documentation when receiving a large influx of patients.
- (6) Coordinate with school nurses and school-based clinics, long term care facilities, home health agencies, mental health facilities, and urgent care centers.
- (7) Identify special patient population requirements and advise local health departments of available equipment and shortages. The special patient population includes elderly, pediatric, pregnant women, physically disabled, and behavioral health patients.
- (8) Manage safe disposal of increased volume of medical waste.
- (9) Manage unsolicited donated items.
- (10) Increase hospital morgue capacity with alternate storage locations; coordinate fatality management with the local Medical Examiner with legal jurisdiction
- (11) Coordinate communications between the hospital Public Information Officer (PIO) and the Joint Information Center (JIC).
- (12) Initiate recovery plan for financial and medical records, information systems, and restoration of supply inventory, including tracking of all expenditures caused by the event.
- (13) Initiate plan for clean up, salvage, garbage and waste disposal, equipment and physical plant restoration.

B. Key Tasks: Communication systems

- (1) Implement procedures for receiving and distributing notifications, alerts, and activations from state and local agencies.
 - (a) EMSsystem
 - (b) Health Alert Network (HAN) including the Secure Integrated Response Electronic Notification (SIREN)
- (2) Use redundant communication systems according to established procedures if landlines, fax machines, cellular phones, and paging systems are inoperable.
 - (a) Emergency Medical Systems Communications (EMSCOM)
 - (b) 800 MHz radio system
 - (c) RACES
 - (d) Satellite telephones
 - (e) Satellite intranet
 - (f) Telemedicine network
- (3) Use automated system for group notification of a potential disaster
- (4) Establish a long term waiting area for patients' families with access to information and counseling services.
- (5) Obtain translators and deaf interpreters.
- (6) Manage increased volume of telephone calls to hospital switchboard; confirm procedures for release of information and referral to external agencies.

C. Key Tasks: Security

- (1) Determine need for total lockdown of hospital and notification of local law enforcement.
- (2) Establish communication with individuals immediately outside established perimeter if hospital is in total lockdown.
- (3) Provide staff access to hospital during lockdown separate from emergency department and decontamination activity
- (4) Establish control of access and egress if lockdown not indicated by the event.
- (5) Confirm control of internal access to the emergency department, inpatient areas and support departments within hospital.
- (6) Confirm control of access to outdoor air intakes and mechanical rooms.
- (7) Provide onsite capability to produce photo identification for all staff including physicians and supplemental personnel.
- (8) Verify need to augment hospital security, especially if local law enforcement unavailable, and obtain additional security personnel if needed.
- (9) Establish crowd control on hospital campus.
- (10) Establish routing of traffic to triage and decontamination areas.

D. Key Tasks: Personnel

- (1) Determine current staffing capability and additional requirements for increased volume and acuity of patients. Additional staffing needs may be for a short duration for a CBRNE event and long term up to two months or more during a pandemic event.
- (2) Provide credentialing and supervision of clinicians not normally working in the hospital (physicians, registered nurses, pharmacists, respiratory therapists).
- (3) Use agreements with educational institutions to obtain personnel, both faculty and students.
- (4) Manage unsolicited offers of help from undocumented clinicians.
- (5) Implement the preparedness plan for families of staff.
- (6) Provide housing and feeding of staff unable to leave the hospital.
- (7) Develop a staffing plan to afford staff time off to allow a return to normal family routine if staff over worked for long periods.

E. Key Tasks: Decontamination and use of personal protective equipment

- (1) Decontamination
 - (a) Authorize implementation of decontamination procedures.
 - (b) Maintain patient privacy during decontamination process.
 - (c) Provide sufficient space for processing and triage of patients.
 - (d) Provide security for patients and staff during decontamination process.
 - (e) Monitor procedures according to the hospital decontamination plan.
 - (f) Monitor hot and cold water supply, especially for special population patients.
 - (g) Establish emergency power and lighting at the decontamination site if required.
 - (h) Provide radiation monitors at the decontamination site.
 - (i) Establish and monitor effluent (runoff) collection procedures.
 - (j) Track contaminated and decontaminated patients through the process.
 - (k) Establish procedures for collection of personal effects and clothing according to law enforcement requirements if the public health emergency is determined to be a crime scene.
 - (l) Establish procedures for managing law enforcement weapons during the decontamination process.
 - (m) Provide decontamination procedures for special population patients, specifically, pediatric, pregnant, elderly, chronically ill, and disabled patients.
 - (n) Provide decontamination procedures for animals and pets. Local Animal Control, Humane Society, and animal shelter assistance may be required for animal restraint and or decontamination assistance.

- (2) Determine PPE requirements:
 - (a) Initiate hospital policy and procedures for use of PPE (Level C, N95 and surgical masks), storage, and preventive maintenance.
 - (b) Obtain access to documentation of training and fit testing during an event.

F. Key Tasks: Pharmaceutical:

- (1) Conduct inventory of medications of choice and alternate medications to obtain a minimum supply for 3 days prophylaxis for designated employees and their families. Report inventory and shortages in medications and administration supplies to the local health department.
- (2) Implement dispensing of prophylaxis and vaccination procedures as indicated by the event to staff and their families.
- (3) Receive and distribute medications and administration supplies from other sources, including the Strategic National Stockpile.
- (4) Initiate protocols for dispensing of drugs to asymptomatic and symptomatic patients as well as prophylaxis to patient family members.

G. Key Tasks: Hospital laboratory:

- (1) Comply with special protocols and packaging for sampling CBRNE as directed by the State Laboratory.
- (2) Alert the Arizona State Laboratory if samples are being sent and method of transportation.
- (3) Manage clinical specimens if laboratory is contaminated or overwhelmed by a large influx of patients.

H. Key Tasks: Patient Transfer

- (1) Implement patient triage, transfer, and discharge procedures to create open beds.
- (2) Implement arrangements to transport patients to other healthcare facilities and initiate tracking procedures.
- (3) Distribute instructions for home care specific to the agent or event during a public health emergency in case large numbers of patients are unable to be admitted due to resource limitations.
- (4) Initiate plan for processing prescriptions for discharged patients.
- (5) Implement procedures to evacuate the hospital in a disaster.
- (6) Plan for medical evacuation of patients to out of state locations.
- (7) Plan for receiving patients that have been sent to hospitals out of region or out of Arizona.

I. Key Tasks: Alternate Care Site

- (1) Work with county, region, and state agencies to open an off campus center, obtaining: medical, nursing, and ancillary staff, security personnel, medical record and patient tracking systems, equipment and supplies, medical waste pickup, pharmaceuticals and facility maintenance.
- (2) Prepare to receive patients arriving at the center, possibly by alternate methods of transportation (busses, vans, etc.) Confirm location for ease of transferring patients.
- (3) Communicate with other hospitals and first responders regarding patient transfers once security is in place at each facility.
- (4) Implement plan to incorporate DMATs and DMORTS into system of hospital and off campus centers in coordination with county, region, and ADHS.

Arizona Influenza Pandemic Response Plan

Supplement 4: Infection Control



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

SUPPLEMENT 4: TABLE OF CONTENTS

I.	RATIONALE	S4-2
II.	OVERVIEW	S4-2
III.	RECOMMENDATIONS FOR INFECTION CONTROL IN HEALTH CARE SETTINGS	S4-2
	A. Basic infection control principles for preventing the spread of pandemic influenza in health care settings	S4-2
	B. Management of infectious patients	S4-3
	1. Respiratory hygiene/cough etiquette	S4-3
	2. Droplet precautions and patient placement	S4-4
	C. Infection control practices for health care personnel	S4-4
	1. Personal protective equipment	S4-4
	2. Hand hygiene	S4-6
	3. Disposal of solid waste	S4-6
	4. Linen and laundry	S4-7
	5. Dishes and eating utensils	S4-7
	6. Patient-care equipment	S4-7
	7. Environmental cleaning and disinfection	S4-7
	8. Postmortem care	S4-8
	9. Laboratory specimens and practices	S4-8
	D. Occupational health issues	S4-8
	E. Reducing exposure of persons at high risk for complications of influenza	S4-8
	F. Health care setting-specific guidance	S4-9
	1. Hospitals	S4-9
	2. Nursing homes and other residential facilities	S4-11
	3. Prehospital care (emergency medical services)	S4-12
	4. Home health care services	S4-12
	5. Outpatient medical offices	S4-12
	6. Other ambulatory settings	S4-13
	G. Care of pandemic influenza patients in the home	G4-14
	1. Management of influenza patients	G4-14
	2. Management of other persons in the home	G4-14
	3. Infection control measures in the home	G4-14
	H. Care of pandemic influenza patients at alternative sites	G4-14
IV.	RECOMMENDATIONS FOR INFECTION CONTROL IN SCHOOLS AND WORKPLACES	G4-15
V.	RECOMMENDATIONS FOR INFECTION CONTROL IN COMMUNITY SETTINGS	G4-15

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 health care 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.

II. Overview

Supplement 4 provides guidance to health care and public health partners on basic principles of infection control for limiting the spread of pandemic influenza. These principles (summarized in Box 1) are common to the prevention of other infectious agents spread by respiratory droplets. Supplement 4 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.



Supplement 4 also provides guidance on how to adapt infection control practices in specific health care 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 health care 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, Supplement 4 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.

Supplement 4 does not address the use of vaccines and antivirals in the control of influenza transmission in health care settings and the community. These issues are addressed in Supplements 6 and 7, respectively.

¹ Eye protection is recommended when working with conjunctivitis-inducing avian influenza viruses

III. Recommendations for Infection Control In Health care 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 health care settings

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

Limit contact between infected and non-infected persons²

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

Protect persons caring for influenza patients in health care settings from contact with the pandemic influenza virus.

Persons who must be in contact should:

- Wear a surgical or procedure mask³ for close contact with infectious patients.
- Use contact and airborne precautions, including the use of N95 respirators, when appropriate (e.g., during aerosol generating procedures).
- Wear gloves (gown if necessary) for contact with respiratory secretions.
- Perform hand hygiene after contact with infectious patients.

Contain infectious respiratory secretions:

- Instruct persons who have “flu-like” symptoms (see below) to use respiratory hygiene/cough etiquette (See Box 2).
- Promote use of 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).

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

² During the early stages of a pandemic, laboratory-confirmation of influenza infection is recommended when possible.

³ Surgical masks come in two basic types: one type is affixed to the head with two ties, conforms to the face with the aid of a flexible adjustment for the nose bridge, and may be flat/pleated or duck-billed in shape; the second type of surgical mask is pre-molded, adheres to the head with a single elastic and has a flexible adjustment for the nose bridge. Procedure masks are flat/pleated and affix to the head with ear loops. All masks have some degree of fluid resistance but those approved as surgical masks must meet specified standards for protection from penetration of blood and body fluids.

⁴ Coughing persons may wear either a surgical or procedure mask. However, only procedure masks come in both adult and pediatric sizes.

B. Management of infectious patients

1. Respiratory hygiene/cough etiquette

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

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



The elements of respiratory hygiene/cough etiquette include:

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

2. Droplet precautions and patient placement

Patients with known or suspected pandemic influenza should be placed on droplet precautions for a minimum of 5 days from the onset of symptoms. Because children and immunocompromised patients may shed virus for longer periods, they may be placed on droplet precautions for the duration of their illness. Health care personnel should wear appropriate PPE. The placement of patients will vary depending on the health care setting (see setting-specific guidance). If the pandemic virus is associated with diarrhea, contact precautions (i.e., gowns and gloves for all patient contact) should be added. CDC will update these recommendations if changes occur in the anticipated pattern of transmission (www.cdc.gov/flu).

C. Infection control practices for health care personnel

Infection control practices for pandemic influenza are the same as for other human influenza viruses and primarily involve the application of standard and droplet precautions (Box 1) during patient care in health care settings (e.g., hospitals, nursing homes, outpatient offices, emergency transport vehicles). This guidance also applies to health care personnel going into the homes of patients. During a pandemic, conditions that could affect infection control may include shortages of antiviral drugs, decreased efficacy of the vaccine, increased virulence of the influenza strain, shortages of single-patient rooms, and shortages of personal protective equipment. These issues may necessitate changes in the standard recommended infection control practices for influenza. CDC will provide updated infection control guidance as circumstances dictate. Additional guidance is provided for family members providing home care and for use in public settings (e.g., schools, workplace) where people with pandemic influenza may be encountered.

1. Personal protective equipment

a) PPE for standard and droplet precautions

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



Masks (surgical or procedure)

- Wear a mask when entering a patient's room. A mask should be worn once and then discarded. If pandemic influenza patients are cohorted in a common area or in several rooms on a nursing unit, and multiple patients must be visited over a short time, it may be practical to wear one mask for the duration of the activity; however, other PPE (e.g., gloves, gown) must be removed between patients and hand hygiene performed.
- Change masks when they become moist.
- Do not leave masks dangling around the neck.
- Upon touching or discarding a used mask, perform hand hygiene.

Gloves

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

Gowns

- Wear an isolation gown, if soiling of personal clothes or uniform with a patient's blood or body fluids, including respiratory secretions, is anticipated. **Most patient interactions do not necessitate the use of gowns.** However, procedures such as intubation and activities that involve holding the patient close (e.g., in pediatric settings) are examples of when a gown may be needed when caring for pandemic influenza patients.
- A disposable gown made of synthetic fiber or a washable cloth gown may be used.
- Ensure that gowns are of the appropriate size to fully cover the area to be protected.
- Gowns should be worn only once and then placed in a waste or laundry receptacle, as appropriate, and hand hygiene performed. If gowns are in short supply (i.e., the demand during a pandemic could exceed the supply) priorities for their use may need to be established. In this circumstance, reinforcing the situations in which they are needed can reduce the volume used. Alternatively, other coverings (e.g., patient gowns) could be used. It is doubtful that disposable aprons would provide the desired protection in the circumstances where gowns are needed to prevent contact with influenza virus, therefore should be avoided. There are no data upon which to base a recommendation for reusing an isolation gown on the same patient. To avoid possible contamination, it is prudent to limit this practice.

Goggles or face shield

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

b) PPE for special circumstances

- **PPE for aerosol-generating procedures**

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



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

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

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

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

c) Caring for patients with pandemic influenza

Health care personnel should be particularly vigilant to avoid:

- Touching their eyes, nose or mouth with contaminated hands (gloved or ungloved). Careful placement of PPE before patient contact will help avoid the need to make PPE adjustments and risk self-contamination during use. Careful removal of PPE is also important. (See also: <http://www.cdc.gov/ncidod/dhqp/ppe.html>.)
- Contaminating environmental surfaces that are not directly related to patient care (e.g., door knobs, light switches)

2. Hand hygiene

Hand hygiene is the single most important practice to reduce the transmission of infectious agents in health care settings and is an essential element of standard precautions. The term “hand hygiene” includes both hand washing with either plain or antimicrobial soap and water and use of alcohol-based products (gels, rinses, foams) containing an emollient that do not require the use of water.

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



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:

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

4. Linen and laundry

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

- Place soiled linen directly into a laundry bag in the patient's room. Contain linen in a manner that prevents the linen bag from opening or bursting during transport and while in the soiled linen holding area.
- Wear gloves and gown when directly handling soiled linen and laundry (e.g., bedding, towels, personal clothing) as per standard precautions. Do not shake or otherwise handle soiled linen and laundry in a manner that might create an opportunity for disease transmission or contamination of the environment.
- Wear gloves for transporting bagged linen and laundry.
- Perform hand hygiene after removing gloves that have been in contact with soiled linen and laundry.
- Wash and dry linen according to routine standards and procedures (http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Enviro_guide_03.pdf).

5. Dishes and eating utensils

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

- Wash reusable dishes and utensils in a dishwasher with recommended water temperature (http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Enviro_guide_03.pdf)
- Disposable dishes and utensils (e.g., used in an alternative care site set-up for large numbers of patients) should be discarded with other general waste.
- Wear gloves when handling patient trays, dishes, and utensils.

6. Patient-care equipment

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

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

7. Environmental cleaning and disinfection

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

a) Cleaning and disinfection of patient-occupied rooms

(See: http://www.cdc.gov/ncidod/dhqp/pdf/guidelines/Enviro_guide_03.pdf)

- Wear gloves in accordance with facility policies for environmental cleaning and wear a surgical or procedure mask in accordance with droplet precautions. Gowns are not necessary for routine cleaning of an influenza patient's room.
- Keep areas around the patient free of unnecessary supplies and equipment to facilitate daily cleaning.
- Use any EPA-registered hospital detergent-disinfectant. Follow manufacturer's recommendations for-use dilution (i.e., concentration), contact time, and care in handling.
- Follow facility procedures for regular cleaning of patient-occupied rooms. Give special attention to frequently touched surfaces (e.g., bedrails, bedside and over-bed tables, TV controls, call buttons, telephones, lavatory surfaces including safety/pull-up bars, doorknobs, commodes, ventilator surfaces) in addition to floors and other horizontal surfaces.
- Clean and disinfect spills of blood and body fluids in accordance with current recommendations for Isolation Precautions (http://www.cdc.gov/ncidod/dhqp/gl_isolation.html).

b) Cleaning and disinfection after patient discharge or transfer

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

8. Postmortem care

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

9. Laboratory specimens and practices

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

D. Occupational health issues

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

- Implement a system to educate personnel about occupational health issues related to pandemic influenza.
- Screen all personnel for influenza-like symptoms before they come on duty. Symptomatic personnel should be sent home until they are physically ready to return to duty.
- Health care personnel who have recovered from pandemic influenza, and should develop antibody against future infection with the same virus, and therefore should be prioritized for the care of patients with active pandemic influenza and its complications. These workers would also be well suited to care for patients who are at risk for serious complications from influenza (e.g., transplant patients and neonates).
- Personnel who are at high risk for complications of pandemic influenza (e.g., pregnant women, immunocompromised persons) should be informed about their medical risk and offered an alternate work assignment, away from influenza-patient care, or considered for administrative leave until pandemic influenza has abated in the community.



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 health care facilities caring for pandemic influenza patients (i.e., do not visit patients, postpone nonessential medical care).

F. Health care setting-specific guidance

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

1. Hospitals

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

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

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

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

b) “Source control” measures to limit dissemination of influenza virus from respiratory secretions

- 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 health care 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 at: <http://www.cdc.gov/flu/protect/covercough.htm>
- Facilitate adherence to respiratory hygiene/cough etiquette by ensuring the availability of materials in waiting areas for patients and visitors.
 - Provide tissues and no-touch receptacles (e.g., waste containers with pedal-operated lid or uncovered waste container) for used tissue disposal.
 - Provide conveniently located dispensers of alcohol-based hand rub.
 - Provide soap and disposable towels for hand washing where sinks are available.
- Promote the use of masks and spatial separation by persons with symptoms of influenza.
 - Offer and encourage the use of either procedure masks (i.e., with ear loops) or surgical masks (i.e., with ties or elastic) by symptomatic persons to limit dispersal of respiratory droplets.
 - Encourage coughing persons to sit as far away as possible (at least 3 feet) from other persons in common waiting areas.



c) Hospitalization of pandemic influenza patients

Patient placement

- Limit admission of influenza patients to those with severe complications of influenza who cannot be cared for outside the hospital setting.
 - Admit patients to either a single-patient room or an area designated for cohorting of patients with influenza.
- Cohorting
 - Designated units or areas of a facility should be used for cohorting patients with pandemic influenza.⁵ 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.



Patient transport

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

Visitors

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

Pediatrics

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

⁵ During the early stages of a pandemic, laboratory-confirmation of influenza infection is recommended when possible before cohorting patients.

d) Control of nosocomial pandemic influenza transmission

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

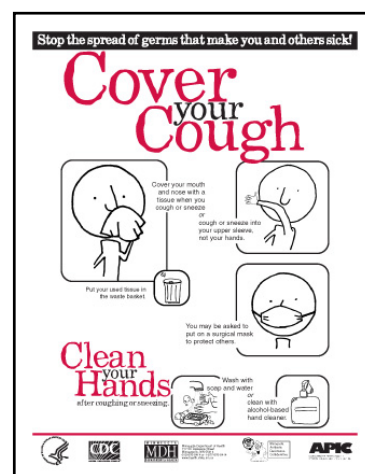
2. Nursing homes and other residential facilities

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

Control of visitors

- Post visual alerts (in appropriate languages) at the entrance to the facility restricting entry by persons who have been exposed to or have symptoms of pandemic influenza.
- Enforce visitor restrictions by assigning personnel to verbally and visually screen visitors for respiratory symptoms at points of entry to the facility.
- Provide a telephone number where persons can call for information on measures used to prevent the introduction of pandemic influenza.
- Control of personnel
- Implement a system to screen all personnel for influenza-like symptoms before they come on duty.
- Symptomatic personnel should be sent home until they are physically able to return to duty.



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

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

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

3. Pre-hospital care (emergency medical services)

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

- Screen patients requiring emergency transport for symptoms of influenza.
- Follow standard and droplet precautions when transporting symptomatic patients.
- Consider routine use of surgical or procedure masks for all patient transport when pandemic influenza is in the community.
- If possible, place a procedure or surgical mask on the patient to contain droplets expelled during coughing. If this is not possible (i.e., would further compromise respiratory status, difficult for the patient to wear), have the patient cover the mouth/nose with tissue when coughing, or use the most practical alternative to contain respiratory secretions.
- Oxygen delivery with a non-rebreather face mask can be used to provide oxygen support during transport. If needed, positive-pressure ventilation should be performed using a resuscitation bag-valve mask.
- Unless medically necessary to support life, aerosol-generating procedures (e.g., mechanical ventilation) should be avoided during prehospital care.
- Optimize the vehicle's ventilation to increase the volume of air exchange during transport. When possible, use vehicles that have separate driver and patient compartments that can provide separate ventilation to each area.
- Notify the receiving facility that a patient with possible pandemic influenza is being transported.
- Follow standard operating procedures for routine cleaning of the emergency vehicle and reusable patient care equipment.

4. Home health care services

Home health care 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 health care providers and patients or their family members is essential for ensuring that these personnel are appropriately protected.

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

- If patients with pandemic influenza are in the home, consider:
 - Postponing nonessential services
 - Assigning providers who are not at increased risk for complications of pandemic influenza to care for these patients
 - Home health care 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 non-clinical office staff.

a) Detection of patients with possible pandemic influenza

- Post visual alerts (in appropriate languages) at the entrance to outpatient offices instructing persons with respiratory symptoms (e.g., patients, persons who accompany them) to:
 - Inform reception and health care personnel when they first register for care
 - Practice respiratory hygiene/cough etiquette (see www.cdc.gov/flu/professionals/infectioncontrol/resphgiene.htm) Sample visual alerts may be found on CDC's SARS website: <http://www.cdc.gov/flu/protect/covercough.htm>

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

b) “Source control” measures

- 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 health care facility. Signs should instruct persons to:
 - Cover the nose/mouth when coughing or sneezing.
 - Use tissues to contain respiratory secretions.
 - Dispose of tissues in the nearest waste receptacle after use.
 - Perform hand hygiene after contact with respiratory secretions.
- Facilitate adherence to respiratory hygiene/cough etiquette. Ensure the availability of materials in waiting areas for patients and visitors.
 - Provide tissues and no-touch receptacles (e.g., waste containers with pedal-operated lid or uncovered waste container) for used tissue disposal.
 - Provide conveniently located dispensers of alcohol-based hand rub.
 - Provide soap and disposable towels for hand washing where sinks are available.
- Promote the use of procedure or surgical masks and spatial separation by persons with symptoms of influenza.
 - Offer and encourage the use of either procedure masks (i.e., with ear loops) or surgical masks (i.e., with ties or elastic) by symptomatic persons to limit dispersal of respiratory droplets.
 - Encourage coughing persons to sit at least 3 feet away from other persons in common waiting areas.

c) Patient placement

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



6. Other ambulatory settings

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

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

G. Care of pandemic influenza patients in the home

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

1. Management of influenza patients

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

2. Management of other persons in the home

- Persons who have not been exposed to pandemic influenza and who are not essential for patient care or support should not enter the home while persons are actively ill with pandemic influenza.
- If unexposed persons must enter the home, they should avoid close contact with the patient.
- Persons living in the home with the pandemic influenza patient should limit contact with the patient to the extent possible; consider designating one person as the primary care provider.
- Household members should monitor closely for the development of influenza symptoms and contact a telephone hotline or medical care provider if symptoms occur.

3. Infection control measures in the home

- All persons in the household should carefully follow recommendations for hand hygiene (i.e., handwashing with soap and water or use of an alcohol-based hand rub) after contact with an influenza patient or the environment in which care is provided.
- Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit. The wearing of gloves and gowns is not recommended for household members providing care in the home.
- Soiled dishes and eating utensils should be washed either in a dishwasher or by hand with warm water and soap. Separation of eating utensils for use by a patient with influenza is not necessary.
- Laundry can be washed in a standard washing machine with warm or cold water and detergent. It is not necessary to separate soiled linen and laundry used by a patient with influenza from other household laundry. Care should be used when handling soiled laundry (i.e., avoid “hugging” the laundry) to avoid contamination. Hand hygiene should be performed after handling soiled laundry.
- Tissues used by the ill patient should be placed in a bag and disposed with other household waste. Consider placing a bag for this purpose at the bedside.
- Normal cleaning of environmental surfaces in the home should be followed.

H. Care of pandemic influenza patients at alternative sites

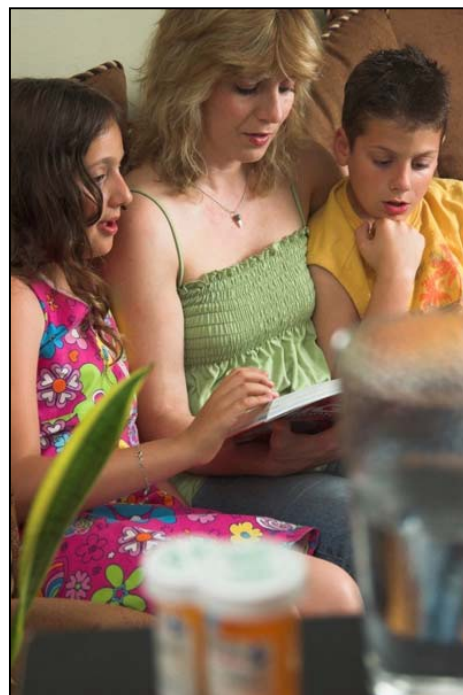
If an influenza pandemic results in severe illness that overwhelms the capacity of existing health care resources, it may become necessary to provide care at alternative sites (e.g., schools, auditoriums, conference centers, hotels). Existing “all-hazard” plans have likely identified designated sites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

IV. Recommendations for Infection Control in Schools and Workplaces

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

V. Recommendations for Infection Control in Community Settings

Infection control in the community should focus on “social distancing” 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.



Box 1. Summary of infection control recommendations for care of patients with pandemic influenza	
COMPONENT	RECOMMENDATIONS
Standard Precautions	See http://www.cdc.gov/ncidod/dhqp/gl_isolation_standard.html
Hand Hygiene	Perform hand hygiene after touching blood, body fluids, secretions, excretions, and contaminated items; after removing gloves; and between patient contacts. Hand hygiene includes both handwashing with either plain or antimicrobial soap and water or use of alcohol-based products (gels, rinse, foams) that contain an emollient and do not require the use of water. If hands are visibly soiled or contaminated with respiratory secretions, they should be washed with soap (either non-antimicrobial or antimicrobial) and water. In the absence of visible soiling of hands, approved alcohol-based products for hand disinfection are preferred over antimicrobial or plain soap and water because of their superior microbicidal activity, reduced drying of the skin, and convenience.
Personal Protective Equipment (PPE) ❖ Gloves ❖ Gown ❖ 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 nonintact skin During procedures and patient-care activities when contact of clothing/exposed skin with blood/body fluids, secretions, and excretions is anticipated During procedures and patient care activities likely to generate splash or spray of blood, body fluids, secretions, 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, light switches).
Patient Resuscitation	Avoid unnecessary mouth-to-mouth contact, use mouthpiece, resuscitation bag, or other ventilation devices to prevent contact with mouth and oral secretions.
Soiled Patient Care Equipment	Handle in a manner that prevents transfer of microorganisms to oneself, other and environmental surfaces, wear gloves if visibly contaminated: perform hand hygiene after handling equipment.
Soiled Linen and Laundry	Handle in a manner that prevents transfer of microorganisms to oneself, others, and to environmental surfaces; wear gloves (gown if necessary) when handling and transporting soiled linen and laundry; and perform hand hygiene.
Needles and other Sharps	Use devices with safety features when available; do not recap, bend, break or hand-manipulate used needles; if recapping is necessary, use a one-handed scoop technique, place used sharps in a puncture-resistant container.

Box 1. Summary of infection control recommendations for care of patients with pandemic influenza (cont.)	
COMPONENT	RECOMMENDATIONS
Standard Precautions (cont'd)	See http://www.cdc.gov/ncidod/dhqp/gl_isolation_standard.html
Environmental Cleaning & Disinfection	Use EPA-registered hospital detergent-disinfectant: follow standard facility procedures for cleaning and disinfection of environmental surfaces, emphasize cleaning/disinfection of frequently touched surfaces (e.g., bed rail, phones, lavatory surfaces).
Disposal of Solid Waste	Contain and dispose of solid waste (medical and non-medical) in accordance with facility procedures and/or local or state regulations, wear gloves when handling waste, wear gloves when handling containers, perform hand hygiene.
Respiratory hygiene/cough etiquette <i>Source control measures for persons with symptoms of a respiratory infection; implement at first point of encounter (e.g., triage/reception areas) within a health care setting</i>	Cover the mouth/nose when sneezing/coughing; use tissues and dispose in no-touch receptacles; perform hand hygiene after contact with respiratory secretions; wear a mask (procedure or surgical) if tolerated; sit or stand as far away as possible (more than 3 feet) from persons who are not ill.
Droplet Precautions	See http://www.cdc.gov/ncidod/dhqp/gl_isolation_droplet.html
Patient Placement	Place patients with influenza in a private room or cohort with other patients with influenza.* Keep door closed or slightly ajar; maintain room assignments of patients in nursing homes and other residential settings; and apply droplet precautions to all persons in the room. *During the early stages of a pandemic, infection with influenza should be laboratory-confirmed, if possible.
Personal Protective Equipment	Wear a surgical or procedure mask for entry into patient room, wear other PPE as recommended for standard precautions.
Patient Transport	Limit patient movement outside of room to medically necessary purposes, have patient wear a procedure or surgical mask when outside the room.
Other	Follow standard precautions and facility procedures for handling linen, laundry, dishes and eating utensils, and for cleaning/disinfection of environmental surfaces and patient care equipment, disposal of solid waste, and postmortem care.
Aerosol-Generating Procedures	During procedures that may generate small particles of respiratory secretions (e.g., endotracheal intubation, bronchoscopy, nebulizer treatment, suctioning), health care personnel should wear gloves, gown, face/eye protection, and a fit-tested N95 respirator or other appropriate particulate respirator.

Box 2. Respiratory hygiene/cough etiquette

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

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

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

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

Masking and separation of persons with symptoms of respiratory infection

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

Arizona Influenza Pandemic Response Plan

Supplement 5: Clinical Guidelines



Supplement 5: Table of Contents

	SUMMARY OF PUBLIC HEALTH ROLES AND RESPONSIBILITIES FOR CLINICAL GUIDELINES	S5-2
I.	RATIONALE	S5-3
II.	OVERVIEW	S5-4
III.	CLINICAL GUIDELINES FOR THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS	S5-5
	A. Criteria for evaluation of patients with possible novel influenza	S5-5
	1. Clinical criteria	S5-5
	2. Epidemiologic criteria	S5-5
	B. Initial management of patients who meet the criteria for novel influenza	S5-6
	C. Management of patients who test positive for novel influenza	S5-8
	D. Management of patients who test positive for seasonal influenza	S5-8
	E. Management of patients who test negative for novel influenza	S5-8
IV.	CLINICAL GUIDELINES FOR THE PANDEMIC PERIOD	S5-9
	A. Criteria for evaluation of patients with possible pandemic influenza	S5-9
	1. Clinical Criteria	S5-9
	2. Epidemiologic criteria	S5-9
	B. Initial management of patients who meet the criteria for pandemic influenza	S5-10
	C. Clinical management of pandemic influenza patients	S5-11
V.	APPENDICES	
	Appendix 1. Clinical Presentation and Complications of Seasonal Influenza	S5-23
	Appendix 2. Clinical Presentation and Complication of Illnesses Associated with Avian Influenza A (H5N1) and Previous Pandemic Influenza Viruses	S5-26
	Appendix 3. Guidelines for Management of Community-acquired Pneumonia, Including Post-influenza Community-acquired Pneumonia (contains Tables 2-5)	S5-28
	Appendix 4. ADHS Clinician Fact Sheet - Influenza	S5-33
	Appendix 5. ADHS Clinician Fact Sheet - Antivirals	S5-35
	Appendix 6. Respiratory Etiquette Poster	S5-38

Summary of Public Health Roles and Responsibilities for Clinical Guidelines

Interpandemic and Pandemic Alert Periods

Health care providers:

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

ADHS and local health department:

- Help educate health care providers about interpandemic (i.e. “normal” influenza) as well as novel and pandemic influenza
- Provide or facilitate testing and investigation of suspected novel influenza cases
- Conduct follow-up of suspected novel influenza cases

HHS agencies:

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

Pandemic Period

Health care providers:

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

ADHS and local health departments:

- Update providers regularly as the influenza pandemic unfolds as to clinical management and treatment issues
- Provide or facilitate testing and investigation of pandemic influenza cases
- Accelerate training on the appropriate use of antivirals among public health staff and health care partners
- Work with health care partners to activate state-based plans for distributing and administering antivirals to persons in priority groups
- Review and modify as needed recommendations for prioritization of antiviral treatment and prophylaxis



- Work with CDC to investigate and report special pandemic situations
- Work with other governmental agencies and non-governmental organizations to ensure effective public health communications

HHS responsibilities:

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

I. Rationale

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

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

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

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

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

II. Overview

Supplement 5 focuses on the initial screening, assessment, and management of patients who present from the community with fever and/or respiratory symptoms during the Interpandemic, Pandemic Alert, and Pandemic Periods (Box 1 defines these periods). Boxes, figures, tables, and appendices are incorporated from the November 2005 HHS Pandemic Influenza Plan (<http://www.hhs.gov/pandemicflu/plan/pdf/HHSPandemicInfluenzaPlan.pdf>).

The Appendices add additional information on the clinical presentation and complications of influenza, the clinical features of human infection with avian influenza A (H5N1), and management of secondary bacterial pneumonia during a pandemic. The appendices also contain Clinician Fact Sheets from the Arizona Department of Health Services (ADHS) about Influenza and Antivirals, as well as a respiratory etiquette poster.

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

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

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



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

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

This Clinical Guidance supplement is current as of January 2006, and is subject to change as experience is gained. Updates will be provided, as needed, on the Arizona Department of Health Services website (www.azdhs.gov) and the CDC website (www.cdc.gov/flu/).

Other supplements in the pandemic plan that cover topics of potential interest to clinicians are:

- Supplement 1: Surveillance and Epidemiology
- Supplement 2: Laboratory Diagnostics
- Supplement 3: health Care Coordination and Surge Capacity
- 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 Interpandemic and Pandemic Alert Periods, the primary goal is to quickly identify and contain cases of novel influenza. To limit evaluating an overwhelming number of patients, screening criteria should rely on a combination of clinical and epidemiologic features.

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

A. Criteria for evaluation of patients with possible novel influenza

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

1. Clinical criteria

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

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

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



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

2. Epidemiologic criteria

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

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

a) Travel risks: Persons have a travel risk if they have:

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

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

- 1) persons who work on farms or live poultry markets
- 2) persons who process or handle poultry infected with known or suspected avian influenza viruses
- 3) workers in laboratories that contain live animal or novel influenza viruses
- 4) health care 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 is **required** for further evaluation.



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

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

Other avian influenza A viruses

Although the epidemiologic criteria for novel influenza are based on recent human cases of avian influenza A (H5N1), they are intended for use in the evaluation of suspected cases of infection with any novel influenza A virus strain, 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, health care 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. Health care personnel should wear surgical or procedure **masks** on entering a patient's room, as per Droplet Precautions. They should also wear **gloves** and **gowns** **when indicated** for Standard Precautions (Table 1). Patients should be admitted to a single-patient room, and patient movement and transport within the hospital should be limited to medically necessary purposes (see also Supplement 4, Infection Control).

2. **Notify the local health department or ADHS.** Report each patient who meets the clinical and epidemiologic criteria for a suspected case of novel influenza to the state or local health department as quickly as possible to facilitate initiation of public health measures (see Supplement 1, Surveillance). Designate one person as a point of contact to update public health authorities on the patient's clinical status.

3. **Obtain clinical specimens** for novel influenza A virus testing and notify the local and state health departments to arrange testing. Testing of suspected novel or pandemic influenza will be directed by public health authorities (see Supplement 2, Laboratory Diagnostics for more detailed guidelines).
 - a. Where feasible, collect of the following respiratory specimens for novel influenza A virus testing: 1) nasopharyngeal swab; 2) throat swab; 3) tracheal aspirate (for intubated patients); and 4) nasal swab, aspirate or wash.
 - b. Store specimens at 4°C in viral transport media until transported or shipped for testing. Acute (within 7 days of illness onset) and convalescent serum specimens (2–3 weeks after the acute specimen and at least 3 weeks after illness onset) should be obtained and refrigerated at 4°C or frozen at minus 20–80°C. Serological testing for novel influenza virus infection can be performed only at CDC.
 - c. Immediately notify their local health departments of their intention to ship clinical specimens from suspected cases of human infection with avian influenza, to ensure that the specimens are handled under proper biocontainment conditions.
 - d. Novel influenza can be confirmed by RT-PCR or virus isolation from tissue cell culture with subtyping. However, RT-PCR for testing of novel influenza viruses cannot be performed by a hospital laboratory and is available only at state public health laboratories and CDC. Viral culture of specimens from suspected novel influenza cases should be attempted **only** in laboratories that meet the biocontainment conditions for BSL-3 with enhancements or higher.
 - e. Rapid influenza diagnostic tests and immunofluorescence (indirect fluorescent antibody staining [IFA] or direct fluorescent antibody staining [DFA]) may be used to detect seasonal influenza, but **should not be used to confirm or exclude novel influenza during the Pandemic Alert Period**. Rapid influenza tests have relatively low sensitivity for detecting seasonal influenza, and their ability to detect novel influenza subtypes is unknown. Such tests can identify influenza A viruses but cannot distinguish between human infection with seasonal and novel influenza A viruses. A negative rapid influenza test result does **not** necessarily exclude human infection with either seasonal or novel influenza A viruses. A positive rapid influenza test result could be a false positive or represent infection with either seasonal or novel influenza A viruses. Therefore, both negative and positive rapid influenza test and immunofluorescence results should be interpreted with caution, and RT-PCR testing for influenza viruses should be performed. (See Supplement 2, Laboratory Diagnostics for further information on rapid diagnostic testing).
 - f. Acute and convalescent serum samples and other available clinical specimens (respiratory, blood, and stool) should be saved and refrigerated or frozen for additional testing until a specific diagnosis is made.

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

5. **Decide on inpatient or outpatient management.** The decision to hospitalize a suspected novel influenza case will be based on the physician's clinical assessment and assessment of risk and whether adequate precautions can be taken at home to prevent the potential spread of infection.
 - a. Patients cared for at home should be separated from other household members as much as possible.
 - b. All household members should carefully follow recommendations for hand hygiene, and tissues used by the ill patient should be placed in a bag and disposed with other household waste (Box 4).



- c. Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit.
 - d. Separation of eating utensils for use by a patient with influenza is not necessary, as long as they are washed with warm water and soap (Box 4).
6. **Initiate antiviral treatment as soon as possible**, even if laboratory results are not yet available. Clinical trials have shown that these drugs can decrease the illness due to seasonal influenza duration by several days when they are initiated **within 48 hours of illness onset**. The clinical effectiveness of antiviral drugs for treatment of novel influenza is unknown, but it is likely that the earlier treatment is initiated, the greater the likelihood of benefit. During the Pandemic Alert Period, available virus isolates from any case of novel influenza will be tested for resistance to the currently licensed antiviral medications. (See Supplement 7 for antiviral information).
 7. **Assist public health officials with identifying exposed contacts**. After consulting with ADHS or local public health officials, clinicians might be asked to help identify persons exposed to the suspected novel influenza case-patient (particularly health care 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 health care providers (see Supplement 8 and Supplement 9).

C. Management of patients who test positive for novel influenza

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

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

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



D. Management of patients who test positive for seasonal influenza

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

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

E. Management of patients who test negative for novel influenza

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

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

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

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

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

IV. Clinical guidelines for the pandemic period

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



transmission characteristics similar to those of seasonal influenza viruses, illnesses will likely spread throughout the community too rapidly to allow the identification of obvious exposures or contacts.

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

A. Criteria for evaluation of patients with possible pandemic influenza

1. Clinical criteria

Suspected cases of pandemic influenza virus infection should meet the criteria for an influenza-like illness (ILI): **temperature of $>38^{\circ}\text{C}$ plus one of the following: sore throat, cough, or dyspnea.**

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

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

2. Epidemiologic criteria

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

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

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

1. **Report** according to local and state health department recommendations for patients who meet the criteria for pandemic influenza. See Supplement 1 for guidance on case reporting during the Pandemic Period.
2. If the patient is hospitalized, implement **infection control precautions** for pandemic influenza, including Respiratory Hygiene/Cough Etiquette (see Supplement 4, Box 2).
 - a. Place the patient on Droplet Precautions for a minimum of 5 days from the onset of symptoms.
 - b. Health care personnel should wear surgical or procedure masks on entering a patient's room, as per Droplet Precautions
 - c. Health care personnel should wear gloves and gowns, when indicated, as per Standard Precautions (Table 1, Infection Control).
 - d. Patients should be admitted to either a single-patient room or an area designated for cohorting of patients with influenza.
 - e. Patient movement and transport outside the isolation area should be limited to medically necessary purposes (see Table 1, Infection Control).
3. **Limit hospital admission** of patients should be limited to those with severe complications who cannot be cared for outside the hospital setting, especially once a pandemic is underway.
4. Obtain **clinical specimens**, as clinically indicated (see Box 2).
 - a. Once pandemic influenza has arrived in a community, influenza testing will likely not be needed for most patients.
 - b. Work in conjunction with health departments to perform laboratory testing in a subset of pandemic influenza cases, as part of ongoing virologic surveillance (see Supplement 1).
 - c. Influenza diagnostic testing should be considered before initiating treatment with antivirals (see Supplement 7).
 - d. See Supplement 2, Laboratory Diagnostics for guidelines for pandemic influenza virus testing.
 - e. As with seasonal influenza, RT-PCR and virus isolation from tissue culture will be the most accurate methods for diagnosing pandemic influenza.
 - f. Specimens should generally include combined nasopharyngeal aspirates or nasal swabs, and throat swabs, stored at 4°C in viral transport media.
 - g. BSL-2 conditions should be sufficient for viral culture of clinical specimens from suspected pandemic influenza patients during the Pandemic Period.
5. **Know how to properly use rapid diagnostic tests** for influenza
 - a. Rapid tests and immunofluorescence may be helpful for initial clinical management, including cohorting and treatment, but have relatively low sensitivity for detecting seasonal influenza, and their ability to detect pandemic influenza viruses is unknown.
 - b. The sensitivity of rapid diagnostic tests will likely be higher in specimens collected within two days of illness onset, in children, and when tested at clinical laboratories that perform a high volume of testing.
 - c. During a pandemic a negative rapid test may be a false negative. Therefore test results need to be interpreted within the overall clinical context. For example, it may not be optimal to withhold antiviral treatment from a seriously ill high-risk patient on the basis of a negative test; however, in a setting of limited antiviral drug availability, treatment decisions in less high-risk situations could be based on test results.
 - d. The risk of a false-negative test also must be taken into account in making cohorting decisions.
 - e. Rapid diagnostic testing should not preclude more reliable testing, if available.
 - f. See Supplement 2, Laboratory Diagnostics for further information on rapid diagnostic testing.

6. Decide on inpatient or outpatient management.

The decision to hospitalize a suspected pandemic influenza case will be based on the physician's clinical assessment of the patient as well as the availability of hospital beds and personnel. Guidelines on cohorting and infection control for admitted patients can be found in Supplement 3, Health Care Planning, and Supplement 4, Infection Control.

- a. High priority for admission
 - i. An unstable patient
 - ii. Patients with high-risk conditions (see Appendix 1) might also warrant special attention, such as observation or close follow-up, even if disease is mild.
- b. Appropriate for home management with follow up
 - i. Well-appearing young children with fever alone.
- c. See Supplement 7, Antiviral Drug Distribution and Use for inpatient and outpatient antiviral treatment strategies.

7. Infection control for home care

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



C. Clinical management of pandemic influenza patients

See Supplement 7, Antiviral Drug Distribution and Use for current antiviral information and treatment strategies. In addition to the use of antivirals, clinical management of severe influenza should address supportive care and the rapid identification and treatment of secondary complications.*

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

* Ribavirin and immunomodulatory therapies, such as steroids, are not approved by the FDA for treatment of severe influenza of any type and are 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.

Box 1. Risk of Novel Influenza in Persons with Severe Respiratory Disease or Influenza-like Illness during the

Interpandemic and Pandemic Alert Periods

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

Phases 1, 2: Interpandemic Period

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

Phases 3, 4: Pandemic Alert Period

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

Phase 5: Pandemic Alert Period

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

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

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

RT-PCR testing is not available in hospital laboratories and must be performed at a qualified laboratory such as a state health department laboratory or the CDC Influenza Laboratory. Viral culture should be performed only at biosafety level 3 [BSL-3] with enhancements (see Supplement 2).

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

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

**Health care personnel should wear surgical or procedure masks on entering a patient's room (Droplet Precautions), as well as gloves and gowns, when indicated (Standard Precautions) (see Table and Supplement 4).

Box 3. Special Situations and Exceptions to the Clinical Criteria

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

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

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

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

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

Management of influenza patients in the home

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

Management of other persons in the home

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

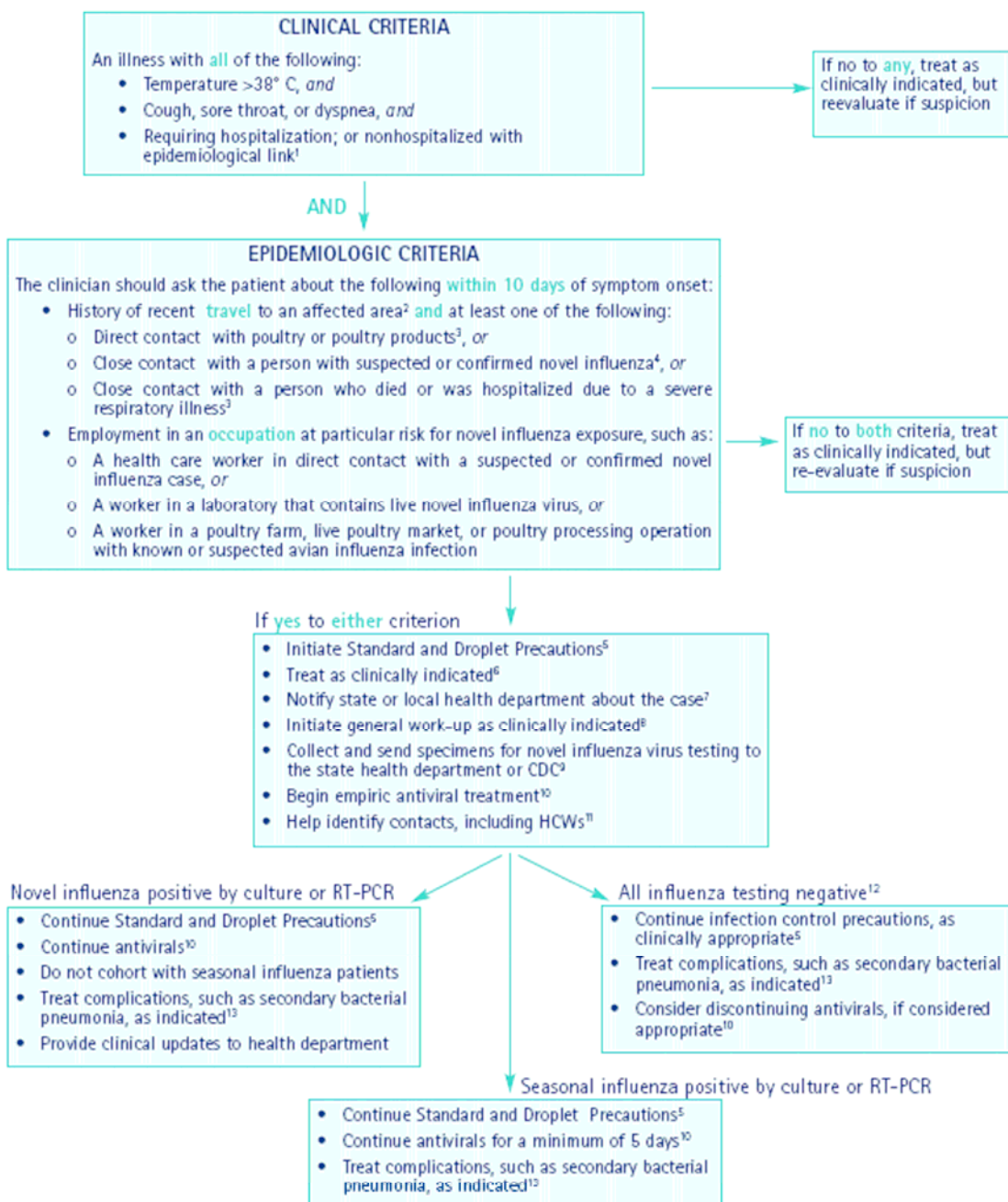
Infection control measures in the home

- All persons in the household should carefully follow recommendations for hand hygiene (i.e., hand washing with soap and water or use of an alcohol-based hand rub) after contact with an influenza patient or the environment in which they are receiving care.
- Although no studies have assessed the use of masks at home to decrease the spread of infection, using a surgical or procedure mask by the patient or caregiver during interactions may be beneficial.
- Soiled dishes and eating utensils should be washed either in a dishwasher or by hand with warm water and soap. Separation of eating utensils for use by a patient with influenza is not necessary.
- Laundry may be washed in a standard washing machine with warm or cold water and detergent. It is not necessary to separate soiled linen and laundry used by a patient with influenza from other household laundry. Care should be used when handling soiled laundry (i.e., avoid “hugging” the laundry) to avoid self-contamination. Hand hygiene should be performed after handling soiled laundry.
- Tissues used by the ill patient should be placed in a bag and disposed of with other household waste. Consider placing a bag for this purpose at the bedside.
- Environmental surfaces in the home should be cleaned using normal procedures

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

FIGURE 1. CASE DETECTION AND CLINICAL MANAGEMENT DURING THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS

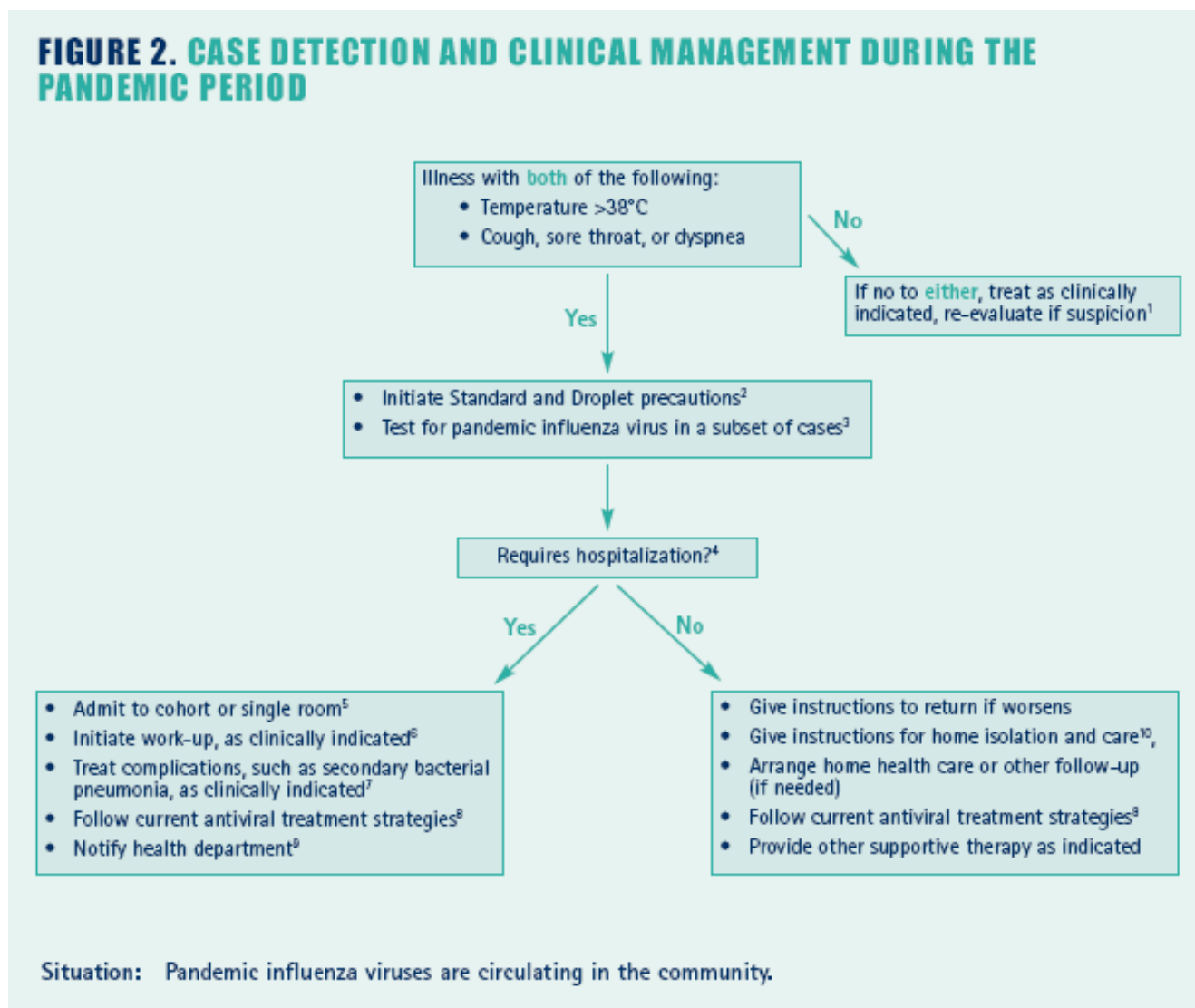
Situation: No human cases of novel influenza are present in the community. Human cases might be present in another country or another region of the United States.



Footnotes to Figure 1:

1. Further evaluation and diagnostic testing should also be considered for outpatients with strong epidemiologic risk factors and mild or moderate illness. (See Box 2).
2. Updated information on areas where novel influenza virus transmission is suspected or documented is available on the CDC website at www.cdc.gov/travel/other/avian_flu_ah5n1_031605.htm and on the WHO website at www.who.int/en/.
3. For persons who live in or visit affected areas, close contact includes touching live poultry (well-appearing, sick or dead) or touching or consuming uncooked poultry products, including blood. For animal or market workers, it includes touching surfaces contaminated with bird feces. In recent years, most instances of human infection with a novel influenza A virus having pandemic potential, including influenza A (H5N1), are thought to have occurred through direct transmission from domestic poultry. A small number of cases are also thought to have occurred through limited person-to-person transmission or consumption of uncooked poultry products. Transmission of novel influenza viruses from other infected animal populations or by contact with fecally contaminated surfaces remains a possibility. These guidelines will be updated as needed if alternate sources of novel influenza viruses are suspected or confirmed.
4. Close contact includes direct physical contact, or approach within 3 feet (1 meter) of a person with suspected or confirmed novel influenza.
5. Standard and Droplet Precautions should be used when caring for patients with novel influenza or seasonal influenza (Table and Supplement 4). Information on infection precautions that should be implemented for all respiratory illnesses (i.e., Respiratory Hygiene/Cough Etiquette) is provided at: www.cdc.gov/flu/professionals/infectioncontrol/resphgiene.htm
6. Hospitalization should be based on all clinical factors, including the potential for infectiousness and the ability to practice adequate infection control. If hospitalization is not clinically warranted, and treatment and infection control is feasible in the home, the patient may be managed as an outpatient. The patient and his or her household should be provided with information on infection control procedures to follow at home (Box 3). The patient and close contacts should be monitored for illness by local public health department staff.
7. Guidance on how to report suspected cases of novel influenza is provided in Supplement 1.
8. The general work-up should be guided by clinical indications. Depending on the clinical presentation and the patient's underlying health status, initial diagnostic testing might include:
 - Pulse oximetry
 - Chest radiograph
 - Complete blood count (CBC) with differential
 - Blood cultures
 - Sputum (in adults), tracheal aspirate, pleural effusion aspirate (if pleural effusion is present) Gram stain and culture
 - Antibiotic susceptibility testing (encouraged for all bacterial isolates)
 - Multivalent immunofluorescent antibody testing or PCR of nasopharyngeal aspirates or swabs for common viral respiratory pathogens, such as influenza A and B, adenovirus, parainfluenza viruses, and respiratory syncytial virus, particularly in children
 - In adults with radiographic evidence of pneumonia, *Legionella* and pneumococcal urinary antigen testing
 - If clinicians have access to rapid and reliable testing (e.g., PCR) for *M. pneumoniae* and *C. pneumoniae*, adults and children <5 yrs with radiographic pneumonia should be tested.
 - Comprehensive serum chemistry panel, if metabolic derangement or other end-organ involvement, such as liver or renal failure, is suspected See Box 2 for additional details.
9. Guidelines for novel influenza virus testing can be found in Supplement 2. All of the following respiratory specimens should be collected for novel influenza A virus testing: nasopharyngeal swab; nasal swab, wash, or aspirate; throat swab; and tracheal aspirate (for intubated patients), stored at 4° C in viral transport media; and acute and convalescent serum samples.
10. Strategies for the use of antiviral drugs are provided in Supplement 7.
11. Guidelines for the management of contacts in a health care setting are provided in Supplement 3.
12. Given the unknown sensitivity of tests for novel influenza viruses, interpretation of negative results should be tailored to the individual patient in consultation with the local health department. Novel influenza directed management may need to be continued, depending on the strength of clinical and epidemiologic suspicion. Antiviral therapy and isolation precautions for novel influenza may be discontinued on the basis of an alternative diagnosis. The following criteria may be considered for this evaluation:
 - Absence of strong epidemiologic link to known cases of novel influenza
 - Alternative diagnosis confirmed using a test with a high positive-predictive value
 - Clinical manifestations explained by the alternative diagnosis
13. Guidance on the evaluation and treatment of suspected post-influenza community-associated pneumonia is provided in Appendix 3.

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



Footnotes to Figure 2:

1. Antiviral therapy and isolation precautions for pandemic influenza should be discontinued on the basis of an alternative diagnosis only when both the following criteria are met:
 - Alternative diagnosis confirmed using a test with a high positive-predictive value, and
 - Clinical manifestations entirely explained by the alternative diagnosis
2. Standard and Droplet Precautions should be used when caring for patients with novel influenza or seasonal influenza (Table and Supplement 4). Information on infection precautions that should be implemented for all respiratory illnesses (i.e., Respiratory Hygiene/Cough Etiquette) is provided at: www.cdc.gov/flu/professionals/infectioncontrol/resphygiene.htm
3. Guidance on laboratory testing during the Pandemic Period can be found in Supplement 2. Generally, specimens should include respiratory samples (e.g., nasopharyngeal wash/aspirate; nasopharyngeal, nasal or oropharyngeal swabs, or tracheal aspirates) stored at 4°C in viral transport media. Routine laboratory confirmation of clinical diagnoses will be unnecessary as pandemic activity becomes widespread in a community. CDC will continue to work with state health laboratories to conduct virologic surveillance to monitor antigenic changes and antiviral resistance in the pandemic virus strains throughout the Pandemic Period.
4. The decision to hospitalize should be based on a clinical assessment of the patient and the availability of hospital beds and personnel.
5. Guidelines on cohorting can be found in Supplement 4. Laboratory confirmation of influenza infection is recommended when possible before cohorting patients.
6. The general work-up should be guided by clinical indications. Depending on the clinical presentation and the patient's underlying health status, initial diagnostic testing might include:
 - Pulse oximetry
 - Chest radiograph
 - Complete blood count (CBC) with differential
 - Blood cultures
 - Sputum (in adults) or tracheal aspirate Gram stain and culture
 - Antibiotic susceptibility testing (encouraged for all bacterial isolates)
 - Multivalent immunofluorescent antibody testing of nasopharyngeal aspirates or swabs for common viral respiratory pathogens, such as influenza A and B, adenovirus, parainfluenza viruses, and respiratory syncytial virus, particularly in children
 - In adults with radiographic evidence of pneumonia, *Legionella* and pneumococcal urinary antigen testing
 - If clinicians have access to rapid and reliable testing (e.g., PCR) for *M. pneumoniae* and *C. pneumoniae*, adults and children <5 yrs with radiographic pneumonia should be tested.
 - Comprehensive serum chemistry panel, if metabolic derangement or other end-organ involvement, such as liver or renal failure, is suspected See Box 2 for additional details.
7. Guidance on the evaluation and treatment of community acquired pneumonia and suspected post-influenza community-acquired bacterial pneumonia are provided in Appendix 3.
8. Strategies for the use of antiviral drugs are provided in Supplement 7.
9. Guidance on the reporting of pandemic influenza cases is found in Supplement 1.
10. Patients with mild disease should be provided with standardized instructions on home management of fever and dehydration, pain relief, and recognition of deterioration in status. Patients should also receive information on infection control measures to follow at home (Box 4). Patients cared for at home should be separated from other household members as much as possible. All household members should carefully follow recommendations for hand hygiene, and tissues used by the ill patient should be placed in a bag and disposed of with other household waste. Infection within the household may be minimized if a primary caregiver is designated; ideally, someone who does not have an underlying condition that places them at increased risk of severe influenza disease. Although no studies have assessed the use of masks at home to decrease the spread of infection, using a surgical or procedure mask by the patient or caregiver during interactions may be beneficial. Separation of eating utensils for use by a patient with influenza is not necessary, as long as they are washed with warm water and soap. Additional information on measures to limit the spread of pandemic influenza in the home and community can be found in Supplement 4 and Supplement 8.

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

FIGURE 3. MANAGEMENT OF COMMUNITY-ACQUIRED PNEUMONIA DURING AN INFLUENZA PANDEMIC: ADULTS

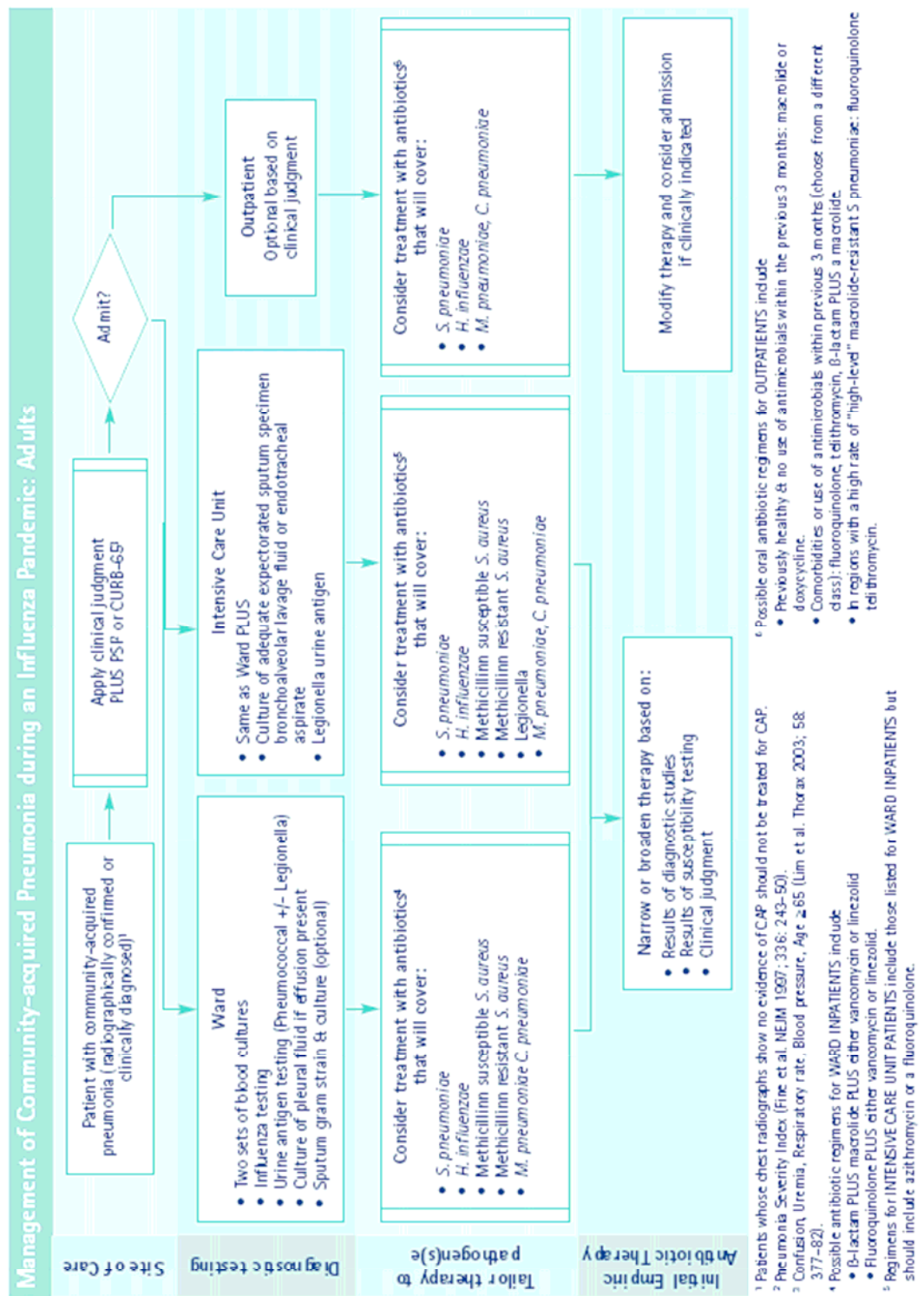


Figure 4: Management of Community Acquired Pneumonia during an Influenza Pandemic: Children

FIGURE 4. MANAGEMENT OF COMMUNITY-ACQUIRED PNEUMONIA DURING AN INFLUENZA PANDEMIC: CHILDREN

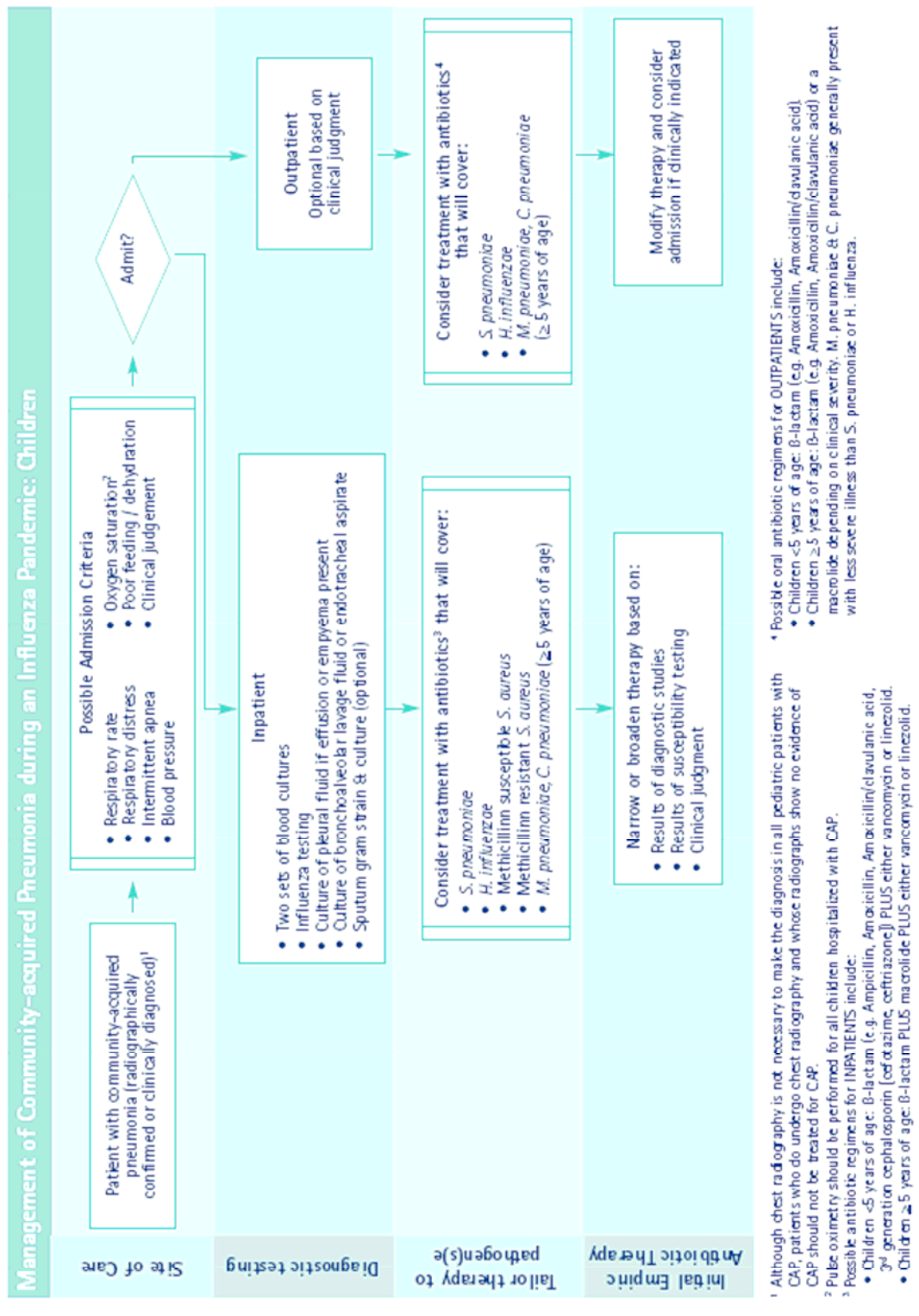


Table 1. Pandemic Influenza Infection Control Guidance For health Care Providers

Component	Recommendations
Standard Precautions	As per www.cdc.gov/ncidod/hip/ISOLAT/std_prec_excerpt.htm
Hand hygiene	Perform hand hygiene after touching blood, body fluids, secretions, excretions, and contaminated items; after removing gloves; between patient contacts. Hand hygiene includes both handwashing with either plain or antimicrobial soap and water and use of alcohol-based products (gels, rinses, foams) that contain an emollient and do not require the use of water. If hands are visibly soiled or contaminated with respiratory secretions, they should be washed with soap (either non-antimicrobial or antimicrobial) and water. In the absence of visible soiling of hands, approved alcohol-based products for hand disinfection are preferred over antimicrobial or plain soap and water because of their superior microbiocidal activity, reduced drying of the skin, and convenience.
Personal protective equipment (PPE) Gloves Gown 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 nonintact skin • During procedures and patient-care activities when contact of clothing/exposed skin with blood/body fluids, secretions, and excretions is anticipated • During procedures and patient care activities likely to generate splash or spray of blood, body fluids, secretions, 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, light switches).
Patient resuscitation	Avoid unnecessary mouth-to-mouth contact; use mouthpiece, resuscitation bag, 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; perform hand hygiene after handling equipment.
Soiled linen and laundry	Handle in a manner that prevents transfer of microorganisms to oneself, others, and to environmental surfaces; wear gloves (gown if necessary) when handling and transporting soiled linen and laundry and perform hand hygiene
Needles and other sharps	Use devices with safety features when available; do not recap, bend break or hand-manipulate used needles; if recapping is necessary, use a one-handed scoop technique; place used sharps in a puncture-resistant container.
Environmental cleaning and disinfection	Use EPA-registered hospital detergent-disinfectant; follow standard facility procedures for cleaning and disinfection of environmental surfaces; emphasize cleaning/disinfection of frequently touched surfaces (e.g., bed rails, phones, lavatory surfaces).
Disposal of solid waste	Contain and dispose of solid waste (medical and non-medical) in accordance with facility procedures and/or local or state regulations; wear gloves when handling waste; wear gloves when handling waste containers and perform hand hygiene
Respiratory Hygiene/Cough Etiquette	Source control measures for persons with symptoms of a respiratory infection; implement at first point of encounter (e.g., triage/reception areas) within a health care setting. Have the patient cover the mouth/nose when sneezing/coughing; use tissues and dispose in no-touch receptacle; 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) away from persons who are not ill.

Droplet Precautions	As per www.cdc.gov/ncidod/hip/ISOLAT/droplet_prec_excerpt.htm
Patient placement	Place patients with influenza in a private room or cohort with other patients with influenza.* Keep door closed or slightly ajar; maintain room assignments of patients in nursing homes and other residential settings, and apply droplet precautions to all persons in the room. *During the early stages of a pandemic, infection with influenza should be laboratory-confirmed, if possible. Personal protective equipment Wear a surgical or procedure mask for entry into patient room; wear other PPE as recommended for standard precautions.
Patient transport	Limit patient movement outside of room to medically necessary purposes; have patient wear a procedure or surgical mask when outside the room.
Other	Follow standard precautions and facility procedures for handling linen and laundry and dishes and eating utensils, and for cleaning/disinfection of environmental surfaces and patient care equipment, disposal of solid waste, and postmortem care.
Aerosol-Generating Medical Procedures	During procedures that may generate small particles of respiratory secretions (e.g., endotracheal intubation, bronchoscopy, nebulizer treatment, suctioning), health care personnel should wear gloves, gown, face/eye protection, and a fit-tested N-95 respirator or other appropriate particulate respirator.

Standard Precautions for home health care

Health care providers who enter homes where there is a person with an influenza-like illness should follow the recommendations for Standard and Droplet Precautions. Standard Precautions include performing hand hygiene and respiratory hygiene/cough etiquette, wearing gloves and gowns, using face/eye protection when needed; and following safe work practices.

Droplet Precautions for home health care

Health care providers who enter homes where there is a person with an influenza-like illness should follow the recommendations for Standard and Droplet Precautions. Droplet Precautions include all Standard Precautions plus separating the patient from others in the household as much as possible and wearing a surgical or procedure mask for patient interactions. Professional judgment should be used in determining whether to don a mask upon entry into the home or only on entering the patient's room. Factors to consider in this decision include the possibility that others in the household may be infectious and the extent to which the patient is ambulating within the home.

Appendix 1

Clinical Presentation and Complications of Seasonal Influenza

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

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

Presentation of Seasonal Influenza

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

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

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

Routine laboratory findings for seasonal influenza

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

Differential diagnosis

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

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

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

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

Complications

Groups at risk for complications of influenza

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

- Persons aged = 65 years
- Residents of nursing homes and other chronic-care facilities that house persons of any age who have chronic medical conditions
- Adults and children who have chronic disorders of the pulmonary or cardiovascular systems, including asthma
- Adults and children who required regular medical follow-up or hospitalization during the previous year because of chronic metabolic diseases (including diabetes mellitus), renal dysfunction, hemoglobinopathies, or immunosuppression (including immunosuppression caused by medications or by infection with human immunodeficiency virus [HIV])
- Children and adolescents (aged 6 months–18 years) who are receiving long-term aspirin therapy (and are therefore at risk for Reye syndrome)
- Pregnant women
- All children aged <2 years
- All persons with conditions that can compromise respiratory function or the handling of respiratory secretions, or that can increase the risk of aspiration

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

Types of influenza complications

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

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

Appendix 2

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

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

Human infection with avian influenza A (H5N1)

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

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

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

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

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

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

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

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

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

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

Illnesses associated with previous pandemic viruses

Since most people do not have previous immunity to novel influenza A viruses, an influenza pandemic results in an increased rate of severe disease in a majority of age groups. Nevertheless, the three pandemics of the past century demonstrated significant variability in terms of morbidity.

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

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

Implications for the next pandemic

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

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

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

^{3,4,5} de Jong MD, Bach VC, Phan TQ, Vo MH, Tran TT, Nguyen BH, et al. Fatal avian influenza A (H5N1) in a child presenting with diarrhea followed by coma. *N Engl J Med*. 2005;352:686-91.
Apisarnthanarak A, Kitphati R, Thongphubeth K, Patoomanunt P, Anthanont P, Auwanit W, et al. Atypical avian influenza (H5N1). *Emerg Infect Dis* 2004;10:1321-4
Beigel JH, Farrar J, Hayden FG, Hyer R, de Jong MD, Lochindrat S, et al. Avian influenza A (H5N1) infection in humans. *N Eng J Med*. 2005 Sep 29;353(13):1374-85.

Appendix 3

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

Rationale

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

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

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

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

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

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

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

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

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

These recommendations are from the November 2005 HHS Pandemic Influenza Plan

(<http://www.hhs.gov/pandemicflu/plan/pdf/HHSPandemicInfluenzaPlan.pdf>).

For adults, the guidance draws heavily from the current draft guidelines for the management of CAP developed jointly by the Infectious Diseases Society of America (IDSA)² and the American Thoracic Society (ATS).³ For children, the guidance incorporates recommendations from the British Thoracic Society (BTS),⁴ a published review⁵ and expert opinions

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

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

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

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

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

Prevention

Efforts to maximize vaccination coverage against *Streptococcus pneumoniae* are an important component of post-influenza bacterial community-acquired pneumonia prevention during the Interpandemic, Pandemic Alert, and Pandemic Periods. Current guidelines on the use of the 23-valent pneumococcal polysaccharide vaccine among adults⁶ and the 7-valent pneumococcal conjugate vaccine among children⁷ are available.

Site of care: inpatient versus outpatient

Adults

IDSA-ATS draft guidelines recommend the use of severity scores, such as the Pneumonia PORT Severity Index (PSI) and the CURB-65 system, to determine which patients can be safely treated as outpatients (Tables 2–5). The use of these or other similar systems could be extremely important during the next pandemic, as hospital beds will be in short supply. However, these systems should be used to supplement rather than replace the judgment of the individual clinician.

Children

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

As with pandemic influenza, the decision to hospitalize for post-influenza bacterial community-acquired pneumonia during the Pandemic Period will rely on the physician's clinical assessment of the patient as well as availability of personnel and hospital resources. Although an unstable patient will be considered a high priority for admission, patients with certain high-risk conditions (see Appendix 1) might also warrant special attention. Home management with follow-up might be appropriate for well-appearing young children with fever alone.

Diagnostic testing

Adults

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

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

Children

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

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

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

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

Antibiotic treatment

Adults and children

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

1. Antimicrobial therapy is best managed by culture and susceptibility testing of appropriate clinical specimens, and by awareness of local antibiotic susceptibility patterns. (See Figures 1 and 2 for additional clinical management algorithms and information.)
2. A history of a preceding influenza-like illness, especially when pandemic influenza is circulating in the community, might help to select those patients more likely to have viral rather than bacterial respiratory infection.
3. Empiric therapy should be directed toward the most likely etiologies of post-influenza bacterial community-acquired pneumonia.
4. Concurrent antiviral treatment should also be considered, depending on the timing and presentation of illness, the clinical status of the patient, and the availability of antivirals (see Supplement 7, Antiviral Drug Distribution and Use).

Supplement 5. Appendix 3. Table 2.
Pneumonia PORT Severity Index (PSI) Calculation

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

Supplement 5. Appendix 3. Table 3.
Pneumonia Severity Index Risk Classification

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

Supplement 5. Appendix 3. Table 4.
CURB-65 Scoring System

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

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

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

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

Epidemiology

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

Clinical Presentation

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

Differential Diagnosis

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

Laboratory

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

Infection control

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

Treatment & Prophylaxis

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

	Amantadine (Symmetrel®)	Rimantadine (Flumadine®)	Oseltamivir (Tamiflu®)	Zanamivir (Relenza®)
Effective for Influenza A	Not recommended for 2005-2006 season		Yes	Yes
Effective for Influenza B	No	No	Yes	Yes
Mode	Oral	Oral	Oral	Inhaled
Treatment	≥ 1 y.o.	≥ 13 y.o.	≥ 1 y.o.	≥ 7 y.o.
Prophylaxis	≥ 1 y.o.	≥ 1 y.o.	≥ 1 y.o.	Not licensed

Follow CDC's recommendations for ages and contraindications

- Don't use smaller doses than recommended
- Only use LAIV (Flumist™) in healthy people ages 5 years-49 years
- Persons receiving LAIV should avoid close contact with severely immunosuppressed people for 7 days
- Contraindications to inactivated influenza vaccine or LAIV
 - Anaphylactic allergy to eggs
 - Previous Guillain-Barré syndrome during the 6 weeks following a previous influenza vaccine

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

Influenza Vaccine Recommendations for 2005-2006 season

Inactivated intramuscular shot [Multiple manufacturers]:

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

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

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

Pediatric pointers

- Children ages 5 years-8 years old receiving any influenza vaccine for the first time need two doses of vaccine.
 - Two inactivated shots should be spaced $\geq$ 4 weeks apart
 - Two LAIV doses should be separated by 6-10 weeks
- Notify local or county health department for pediatric influenza deaths.

Staphylococcal and MRSA disease associated with influenza

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

For More Information

- ADHS website at <http://www.azdhs.gov/phs/immun/providersflu.htm>
- Centers for Disease Control and Prevention website at www.cdc.gov/flu
- MMWR July 29, 2005 “Treatment and Control of Influenza” at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5408a1.htm>
- Recorded ADHS Hotline for the Public:

Metro Phoenix 602-364-4500 Statewide 1-800-314-9243

**Arizona Department of Health Services
Division of Public Health Services**

Four antiviral drugs are licensed for treatment and chemoprophylaxis

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

	Amantadine (Symmetrel®)	Rimantadine (Flumadine®)	Oseltamivir (Tamiflu®)	Zanamivir (Relenza®)
Effective for Flu A	Not recommended for 2005-2006 season		Yes	Yes
Effective for Flu B	No	No	Yes	Yes
Mode	Oral	Oral	Oral	Inhaled
Treatment	≥ 1 y.o.	≥ 13 y.o.	≥ 1 y.o.	≥ 7 y.o.
Prophylaxis	≥ 1 y.o.	≥ 1 y.o.	≥ 1 y.o.	N/A

Priority groups for treatment with antiviral medicines

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

Priority groups for chemoprophylaxis with antiviral medicines

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

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

Chemoprophylaxis

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

Treatment

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

Length of Antiviral Treatment and Chemoprophylaxis

	Treatment Length	Chemoprophylaxis Length		
		After exposure	Institutional outbreak	After vaccine**
Amantadine	3-5 days*	7 days	Until outbreak over	2 weeks
Rimantadine				
Oseltamivir	5 days	7 days	Until outbreak over	2 weeks
Zanamivir		N/A	N/A	N/A

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

Pediatric Pointers

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

ANTIVIRAL MEDICINES

Amantadine [100 mg capsule; 50 mg/5 ml syrup]

- Treatment and prophylaxis (T&P) of influenza A in ≥ 12 months of age.
- Standard dose in adults for both T&P: 100 mg PO twice a day.
- Standard dose in children for T&P: 5 mg/kg/day PO in two divided doses (max of 150 mg/day).
- Side effects: CNS effects (e.g. trouble concentrating, insomnia & lowered seizure threshold, dry mouth, urinary retention).
- Decrease dose to 100 mg Q day
 - $\text{CrCl} \leq 50$ ml/min
 - Age ≥ 65 years
 - When side effects occur on 100 mg BID

Rimantadine [100 mg tablet; 50 mg/5 ml syrup]

- Treatment of influenza A in ≥ 13 y.o.
- Prophylaxis of influenza A in ≥ 1 y.o.
- Standard dose in adults: 100 mg PO twice a day (see above table for length)
- Standard dose in children: 5 mg/kg/day PO in two divided doses (max of 150 mg/day).
- Similar but fewer side effects than amantadine
- Decrease dose to 100 mg Q day
 - Nursing home residents
 - Age ≥ 65 years
 - Severe hepatic dysfunction
 - $\text{CrCl} \leq 10$ ml/min
 - When side effects occur on 100 mg BID

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

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

Zanamivir (Relenza®) [Inhaler]

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

For more detailed information about each antiviral medication

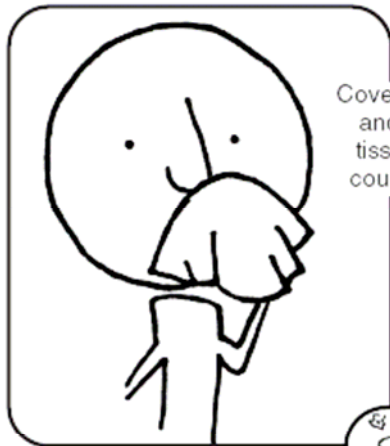
See <http://www.cdc.gov/flu/professionals/treatment>

**Arizona Department of Health Services
Division of Public Health Services**

Appendix 6:
Respiratory Etiquette Poster

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

Cover your Cough



Cover your mouth
and nose with a
tissue when you
cough or sneeze
or
cough or sneeze into
your upper sleeve,
not your hands.



Put your used tissue in
the waste basket.



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

Clean your Hands

after coughing or sneezing.



Wash with
soap and water

or
clean with
alcohol-based
hand cleaner.



Minnesota Department of Health
717 SE Delaware Street
Minneapolis, MN 55414
612-476-6414 or 1-877-676-6414
www.health.state.mn.us



Minnesota
Antibiotic
Resistance
Collaborative

APIC
ASSOCIATION FOR PROFESSIONAL
INFECTION CONTROL AND
HYGIENE (AIC) AND INFECTION PREVENTION (IP)

Arizona Influenza Pandemic Response Plan

Supplement 6: Vaccine Distribution and Use

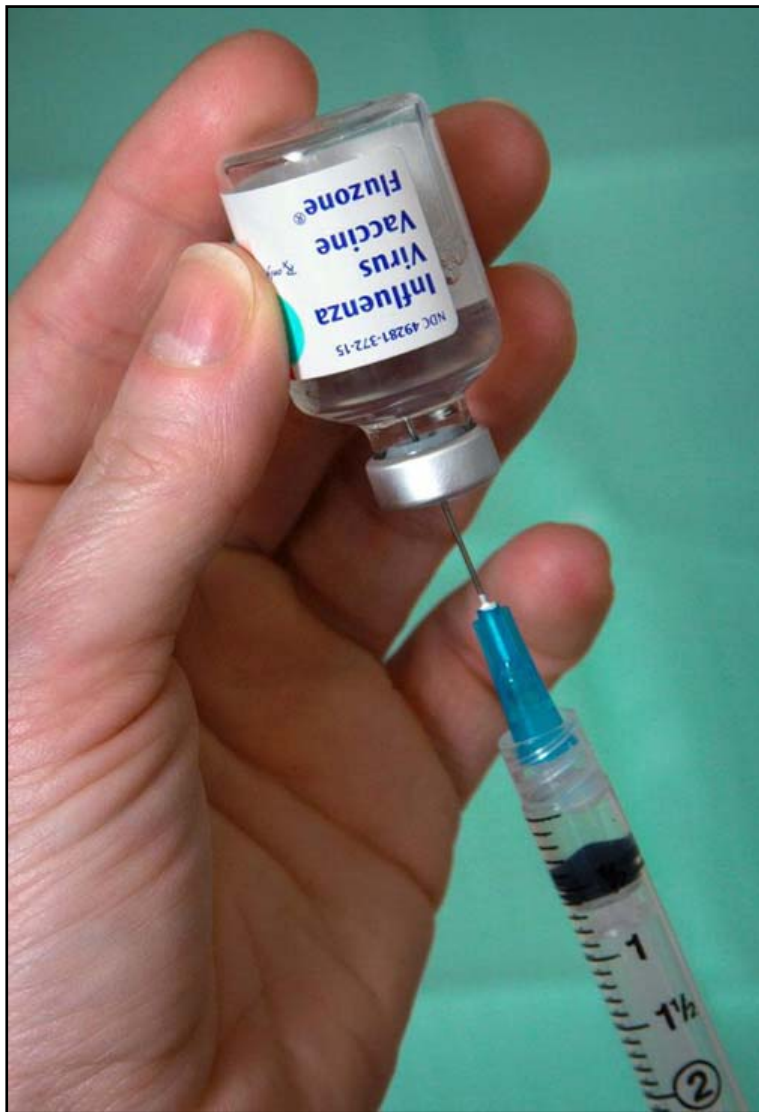


Photo by James Gatheny

Supplement 6: Table of Contents

	SUMMARY OF PUBLIC HEALTH ROLES AND RESPONSIBILITIES FOR VACCINE DISTRIBUTION AND USE	S6-2
I.	RATIONALE	S6-4
II.	OVERVIEW	S6-4
III.	ACTIONS FOR THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS	S6-5
	A. Vaccination against seasonal influenza virus strains	S6-5
	B. Preparedness for vaccination against a pandemic influenza virus	S6-6
	1. Vaccination of priority groups	S6-7
	2. Vaccine production, procurement and distribution	S6-11
	3. Vaccine monitoring and data collection	S6-12
	4. Public health communications	S6-14
	5. Coordination with bordering jurisdictions	S6-14
	6. Legal preparedness	S6-14
	7. Training	S6-14
IV.	ACTIONS FOR PANDEMIC PERIOD	S6-15
	A. Before a vaccine is available	S6-15
	B. When a vaccine becomes available	S6-15
V.	APPENDICES	
	Appendix 1. Time table of immunizations to various priority groups	S6-17

Summary of Public Health Roles and Responsibilities for Vaccine Distribution and Use

(The following actions for HHS, ADHS, and county and tribal health departments are described in further detail, later in this Supplement. The roles and responsibilities of health care partners in vaccine distribution and use are described in Supplement 3.)

Interpandemic and pandemic alert periods

ADHS

- Work with local health departments, health care providers and other stakeholders to develop state-based plans for monitoring vaccine effectiveness and safety, and coordinating vaccine distribution and use.

County and tribal health departments

- Develop and implement plans, systems and capacities to receive, distribute, and administer vaccine to population of jurisdiction

HHS agencies:

- Work with manufacturers to expedite public-sector vaccine purchasing contracts during a pandemic and establish mechanisms for vaccine procurement and distribution.
- Develop guidance on priority groups for vaccination.
- Develop and stockpile vaccine for influenza strains with pandemic potential.
- Expedite the rapid development, licensure, and production of new influenza vaccines, as well as evaluate dose optimization strategies to maximize use of limited vaccine stocks.
- Estimate rates of reports of mild and severe adverse events following immunization (AEFIs)
- Identify mechanisms and define protocols for conducting vaccine-effectiveness studies.
- Develop reporting specifications for tracking data on vaccine administration
- Develop and distribute communication and education materials for use by states and other stakeholders.

Pandemic period

After the first reports of pandemic influenza are confirmed and before a vaccine becomes available:

ADHS

- If stockpiled vaccine of the pandemic subtype is available, ensure delivery to county and tribal health departments and health care partners, as determined by priority status.
- Keep the health care and public health workforce up-to-date on projected timelines for availability of vaccines against pandemic influenza.
- Provide updated information to public on vaccine status and prioritization (see Supplement 10).

County and tribal health departments

- Mobilize response partners, and prepare to activate plans for receiving, distributing, and administering vaccines.
- Activate plans and systems to receive, distribute, and administer pre-pandemic stockpiled vaccines to designated groups, upon delivery by ADHS
- Review modifications, if any, to recommendations on vaccinating priority groups.
- Accelerate training in vaccination and vaccine monitoring for public health staff and for partners responsible for vaccinating priority groups.
- Be prepared to administer unlicensed vaccines (if needed) under FDA's Investigational New Drug (IND) provisions
- Work with other governmental agencies and non-governmental organizations to ensure effective public health communications.

HHS agencies:

- Facilitate vaccine procurement, distribution, and tracking, working with private partners.
- Revise recommendations on vaccination of priority groups, guided by epidemiologic information about the pandemic virus
- Provide guidance on reporting specifications for tracking administration of vaccine
- Provide guidance on Investigational New Drug (IND) and Emergency Use Authorization (EUA)
- Provide guidance on which adverse event reports are highest priority for investigation.
- Provide regulatory guidance to vaccine manufacturers

After a vaccine becomes available:**ADHS**

- Submit requests to HHS for appropriate number of vaccine doses
- Work with emergency management to ensure the safe delivery of pandemic vaccines to county and tribal health departments and to health care agencies, for prioritized vaccinations
- Monitor vaccine supplies, distribution, and use.
- Monitor and investigate adverse events.
- Provide updated information to the public via the news media.
- Ensure that vaccine requests to HHS and distribution to clinics and other facilities accounts for the need for second doses
- Work with HHS to evaluate vaccine-related response activities when the pandemic is over.

County and tribal health departments

- Activate plans and systems to receive, distribute and administer vaccines to designated groups, upon delivery from ADHS.
- Phase in vaccination of the rest of the population after priority groups have been vaccinated.

HHS agencies:

- Provide forecasts of pandemic vaccine availability from the manufacturers
- Continue to provide input into appropriate strain selection for seasonal influenza vaccine.
- Distribute public stocks of vaccines to state and large city health departments and to federal agencies with direct patient care responsibility, as needed.
- Implement protocols for assessing vaccine effectiveness.
- Monitor vaccine coverage rates.



Photo by James Gatheny

I. Rationale

The initial response to an influenza pandemic will include medical care, community containment and personal protective measures, and targeted use of antiviral drugs. Before a vaccine containing the circulating pandemic virus strain becomes available, pre-pandemic vaccine from stockpiles (if available for the pandemic subtype or partially cross-protective to the circulating virus) may be considered for persons in designated priority groups. Once a vaccine against the circulating pandemic virus strain becomes available, its distribution and delivery will be a major focus of pandemic response efforts. Public health goals for vaccination during an influenza pandemic include:

- Developing pre-pandemic strategies for vaccine manufacturing and stockpiling that will maximize manufacturing capability
- Stockpiling influenza vaccine for strains and subtypes with pandemic potential
- Expediting development of a pandemic virus reference strain and distribution of the strain to vaccine manufacturers
- Accelerating production of a pandemic vaccine
- Maximizing the immune response to the vaccine
- Ensuring efficient and equitable distribution of pandemic vaccine, according to priority lists
- Rapidly determining vaccine effectiveness
- Providing ongoing and timely monitoring of vaccine coverage
- Providing ongoing and timely monitoring of vaccine safety

ADHS goals for vaccination, once vaccine becomes available, are:

- Securing sufficient quantities of vaccine for priority groups
- Ensuring equitable distribution of vaccine to providers serving priority groups
- Distributing and delivery of vaccine to pre-identified public providers
- Facilitating special immunizations clinics for easy access by the priority groups, the vulnerable, and hard to reach population
- Monitoring vaccine usage and effectiveness according to set protocols
- Communicating the benefits of vaccine for priority groups
- Collecting data and reporting any adverse events following vaccination

II. Overview

Supplement 6 provides recommendations to state and local partners and other stakeholders on planning for the different elements of a pandemic vaccination program. The recommendations for the Interpandemic and Pandemic Alert Periods focus on planning for vaccine distribution, vaccination of priority groups, monitoring of adverse events, tracking of vaccine supply and administration, vaccine coverage and effectiveness studies, communications, legal preparedness, and training. The recommendations for the Pandemic Period focus on working with health care partners to implement plans for vaccination against pandemic influenza and initiate monitoring activities.

The activities described below are primarily the responsibility of government health authorities at the state, federal, local, and tribal levels. Additional issues that might be of interest to health partners that administer vaccine are addressed in Supplement 3.



III. Actions for the Interpandemic and Pandemic Alert Periods

ADHS

- Work with local health departments, health care providers and other stakeholders to develop state-based plans for monitoring vaccine effectiveness and safety, and coordinating vaccine distribution and use.

County and tribal health departments

- Develop and implement plans, systems and capacities to receive, distribute, and administer vaccine to population of jurisdiction

A. Vaccination against seasonal influenza virus strains

During the Interpandemic Period, the Arizona Department of Health Services (ADHS) and county health departments will continue to work with tribes, IHS, community partners, mass immunizers, health care partners, targeted populations, and immunization coalitions to promote and enhance levels of:

- 1) Seasonal influenza vaccination in groups at risk for severe influenza
 - a. persons aged ≥ 65 years with co-morbid conditions
 - b. residents of long-term care facilities
 - c. persons aged 2-64 years with co-morbid conditions
 - d. persons aged ≥ 65 years without co-morbid conditions
 - e. children aged 6-23 months
 - f. pregnant women
 - g. health care personnel
 - h. household contacts and out-of-home caregivers of children aged < 6 months
 - i. household contacts of children and adults at increased risk for influenza-related complications
- 2) Pneumococcal polysaccharide vaccination among those for whom it is recommended:
 - a. persons aged ≥ 65 years
 - b. persons aged 2-64 years with co-morbid conditions or who are living in special environments or social settings
 - c. persons aged 50-64 years
 - d. immunocompromised persons

The success of the pandemic influenza vaccination program will be determined in large part by the strength of the ADHS and local vaccination programs during the Interpandemic Period. ADHS, county health departments, and mass immunizers work collaboratively each year, to increase public confidence and to provide flu vaccine to high-risk populations and to the general public. ADHS participates in the Adult Immunization coalition with representatives from health plans, vaccine manufacturers, mass immunizers to address annual flu vaccine concerns/issues and to get information to the public regarding these issues. The ADHS Immunization Program Office supports the Community Information and Referral (CIR) hotline and website, the statewide “flu and pneumococcal immunization clinic locator” each year by publicizing the hotline number and web address in print materials and media messages. During an influenza pandemic, the CIR Hotline will play a critical role providing information to the general public.

Higher annual vaccination rates will foster increased familiarity with and public confidence in influenza vaccines, increased manufacturing capacity for influenza vaccines, and strengthened distribution channels. HHS is working with industry partners to ensure influenza vaccine can be produced on an emergency basis at any time throughout the year (see Box 1). In past years, approximately 80%-90% of flu vaccine administered in Arizona has been administered by the private sector. Although geographical, provider, and demographic information on this segment has not been readily available, ADHS and county health departments have improved communications the past 2 years prompted by the flu vaccine shortage in 2004-2005, and delayed shipments in 2005-2006.

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

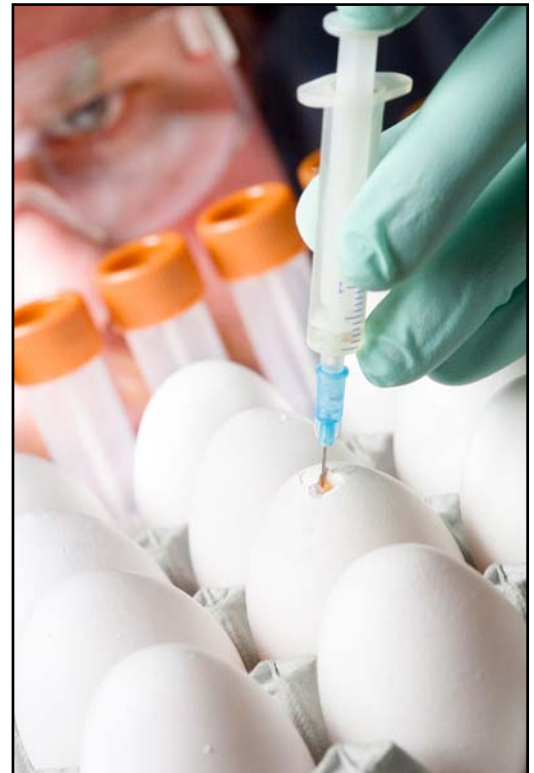
With funding from the Governor's Health Crisis Fund, ADHS began a campaign promoting pneumococcal immunization on December 26, 2005. The campaign will be conducted through March and again from October – December, 2006. Media messages will be broadcast in English and Spanish on cable and radio channels, and educational materials will be developed, printed and distributed to provider offices serving targeted populations.

The state has recognized the increased need to vaccinate the high risk population with pneumococcal vaccine. Each year, pneumococcal vaccination will be promoted in advance of an influenza pandemic. These efforts have begun in December 2005 to vaccinate those individuals 65 and older as well as other individuals with a high-risk medical conditions for which this vaccine is recommended.

B. Preparedness for vaccination against a pandemic influenza virus

A limited amount of avian influenza A (H5N1) vaccine is being stockpiled and will be considered for early use in the event of an H5N1 pandemic. Development of vaccines against other strains with pandemic potential is also being considered. A monovalent vaccine directed against the circulating pandemic virus strain of influenza should begin to be available within 4-6 months after identification of the new pandemic virus strain (Box 1). The number of persons who may be protected by vaccination depends on the manufacturing capacity, the amount of antigen per dose needed for a protective immune response, and the number of doses required. Although annual influenza vaccine is immunogenic in older children and adults with a single 15 microgram (μg) dose, a higher antigen concentration and/or two doses may be needed for pandemic vaccine where persons have no previous exposure to the influenza subtype and lack any immunity. Preliminary results from a recent clinical trial of an H5N1 vaccine in healthy adults suggested that two doses of 90 μg were required. Additional clinical trials are ongoing to evaluate possible ways to improve the immune response to lower the amounts of vaccine antigen needed for protection.

Initial pandemic vaccine stocks will be used to vaccinate designated priority groups (Part 1, Appendix D). After vaccination of these priority groups, vaccination of all those who desire it will be phased in depending on available supplies. In working with health care partners to develop state-based plans for distributing vaccines, ADHS and county health departments might use existing state-based plans for emergency mass distribution of medical supplies as the basis for developing local pandemic vaccination plans (e.g., smallpox and bioterrorism response plans).



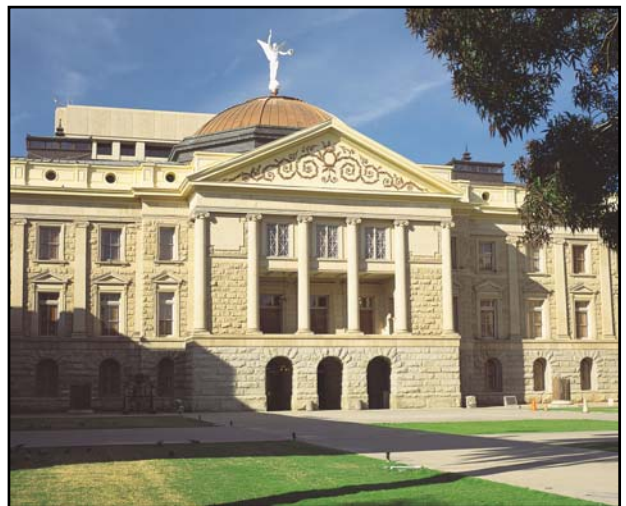
Preparation Steps by ADHS to protect Arizona's population
☐ Review CDC's priority groups and recommendations; accept or modify groups for Arizona
☐ Update "Arizona's Influenza Vaccine Estimate Worksheet" with the numbers of individuals in targeted priority groups established by CDC
☐ Prompt CHD's to compile list of potential clinic sites for vaccine administration
☐ Compile list of qualified ADHS staff who can assist or administer vaccine in the clinics and/or provide support functions (e.g., set-up, crowd control, data entry)
☐ Compile list of volunteers from other agencies/organizations, who can assist.
☐ Prompt CHD's to compile list of physicians in community who are/ would likely be giving vaccine.
☐ Conduct inventory of vaccine distribution related supplies (e.g. styrofoam coolers, ice packs) and establish written procedures/ names of vendors to order additional supplies.
☐ Identify additional storage facilities (refrigerators) for vaccine.
☐ Review written SOPs for mass vaccination clinics and update if needed.
☐ Educate and train clinic staff on importance of proper storage and handling protocols
☐ Establish financial/logistical mechanisms for obtaining and distributing necessary vaccine and distribution supplies
☐ Recommend appropriate security measures during vaccine storage and transportation
☐ Review SNS protocol in the event state supplies become exhausted
☐ Anticipate adverse reactions to vaccine, possible vaccine failures, and potential liability issues
☐ Establish a continuity of operations plan in the event of increased workload, staff absenteeism, or staff losses

1. Vaccination of priority groups

A list of priority groups for receiving vaccination and the rationale for prioritization is provided in Part 1, Appendix D, as interim recommendations. In addition, during a pandemic, changes may be made based on the characteristics of the causative virus (e.g., transmissibility, virulence, initial geographic distribution, age-specific attack rates, complication rates) and on vaccine effectiveness.

In the pandemic alert periods, ADHS will establish a Vaccine and Antiviral Prioritization Policy Committee (VAPPC) composed of

- Representative(s) from the Governor's office
- State Epidemiologist
- State physician(s)
- ADHS influenza epidemiologist
- Office of Infectious Disease Services office chief
- ADHS administrator(s)
- Arizona Immunization Program Office (AIPO) representative
- Arizona Local Health Officers Association representative
- Arizona Medical Association representative
- Hospital Association representative
- Arizona Emergency Medical Service representative
- Arizona Pharmacy Alliance representative
- Long-term care representative



The VAPPC will define how these priority groups will apply on a local level, and will define who should be included in the groups of public safety workers, essential service providers, and key governmental decision makers.

During an influenza pandemic, the VAPPC will modify these priority groups as needed based on the availability of antiviral medicines and vaccine, the characteristics of the causative virus (e.g., drug susceptibilities, initial geographic distribution, fatality rate, age-specific morbidity and mortality rates) and the effectiveness of implemented strategies.

The VAPPC will provide the rationale for establishing the priority groups so that the reasons for prioritization can be communicated to the community.

A listing of the priority groups identified by the federal pandemic plan has been inserted into the Arizona's Influenza Vaccine Estimate Worksheet (Table 1). The worksheet also acts as a tool for a County Health Department to estimate the County's population in each group. The definition of each prioritization group and the rationales for each groups are found in the HHS Pandemic Influenza Plan, Appendix D, Part 1. Some priority groups require further discussion (ie: key government leaders, telecommunications, utility service workers, etc) for better estimation of numbers.



Table 1. Arizona's Influenza Vaccine Estimate Worksheet

Resource: 2005 National Strategy for Pandemic Influenza Appendix D: Table D-1

Assumptions: 2004 Census data and AZ/US ratio ~2%

Estimates include Federal health care providers to Indian Nations and Tribes

Tiers	Pandemic Priority Groups	Estimated Population			County	# of doses (2 doses per person)
		U.S.	Arizona Pop.	Arizona Winter Pop and migrant seasonal workers		
ALL	Total Population	312,000,000	5,832,150	600,000		11,664,300
1A	Vaccine & antiviral manufacturers	~ 40,000	~ 800			
1A	Medical workers and public health workers w/direct patient care	~ 8 – 9 million	~160,000 – 180,000			
1B	Persons $\geq$ 65 years w/ 1 or more high-risk conditions	~ 18.2 million	~364,000	250,000		
1B	Persons 6 months to 64 w/ 2 or more high-risk conditions	~ 6.9 million	~138,000			
1B	Persons 6 months or older w/ history of hospitalization for pneumonia or influenza in past year	~ 740,000	~14,800			
1C	Pregnant women	~ 30 million	~ 600,000			
1C	Household contacts of severely immunocompromised persons who could not receive vaccine	~ 2.7 million	~ 54,000			
1C	Household contact of children < 6 months olds	~ 5.0 million	~100,000			
1D	Public health emergency response workers critical to pandemic response	~ 150,000	~ 3,000			
1D	Key government leaders	TBD	TBD			

2A	Healthy persons 65 years and older	~ 17.7 million	~ 354,000	300,000		
2A	Persons 6 months to 64 years of age w/1 high-risk condition	~ 35.8 million	~716,000	50,000		
2A	Healthy children 6 – 23 months olds	~ 5.6 million	~112,000			
2B	Other public health emergency responders	~ 300,000	~6,000			
2B	Public safety workers including police, fire, 911 dispatchers, and correctional facility staff	2.99 million	59,800			
2B	Utility workers essential for maintenance of power, water, and sewage	364,000	7,280			
2B	Transportation workers transporting fuel, water, food, and medical supplies	3.8 million	72,000			
2B	Telecommunications/IT for essential network operations and maintenance	1.08 million	21,600			
3	Other key government health decision-makers	TBD	TBD			
3	Funeral directors/embalmers	62,000	1,240			
4	Healthy persons 2-64 years not included in other categories	~179.3 million	~3,026,630			

Table 2 below represents the total populations by tier/groups needed for Arizona:

Tiers/Groups	Arizona population	Migratory/ Seasonal
1	1,455,600	250,000
2	1,348,680	350,000
3	1,240	0
4	~ 3,026,630	?
Total Population	5,832,150	600,000

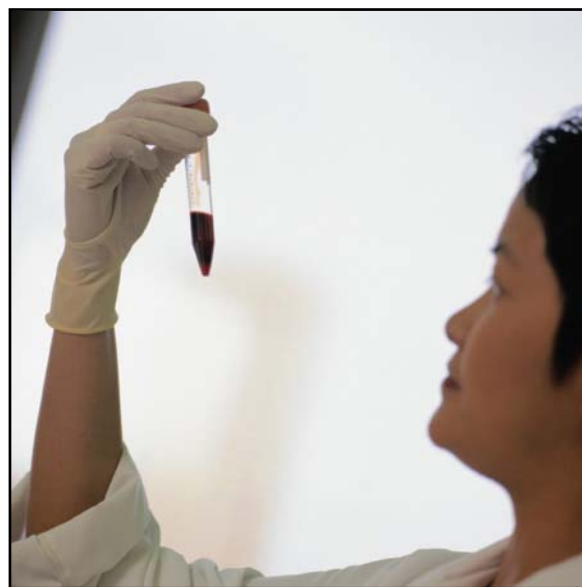
2. Vaccine production, procurement and distribution

HHS is working to expand pandemic influenza vaccine production capacity and will signal to manufacturers when to shift from annual to pandemic vaccine production and assure that pandemic vaccine is produced at full capacity.

At the onset of an influenza pandemic, HHS, in concert with the Congress in collaboration with the states, will work with the pharmaceutical industry to acquire vaccine directed against the pandemic strain. Distribution of pandemic vaccine to ADHS and providers will occur via private-sector vaccine distributors or directly via manufacturer. (Only stockpiled pre-pandemic vaccine would be distributed by the federal government, if used.)

ADHS will receive available vaccine in proportion to the size of its population in defined priority groups. The following concepts are used to formulate the event-specific vaccination response plan, specific to the amount of vaccine that available to the state:

- Use of the Vaccine and Antiviral Prioritization Policy Committee (VAPPC) to determine and estimate the size of the priority groups that will be vaccinated
- Identify organizations that will provide vaccination to persons in priority groups
- Identify locations for vaccination clinics to achieve vaccination of those populations
- Determine whether vaccine will be shipped from the manufacturer to ADHS further distribution or directly to immunization providers
- Ensure event-specific plan includes strategies for vaccinating medically underserved, hard to reach populations, seasonal visitors, and migrant populations to improve equity in access within priority groups and, later, the general population.
- If vaccinations are provided by private-sector organizations or providers at offices, clinics, or other sites, ADHS and county health departments will:
 - Allocate vaccine based on projected need.
 - Collect unused vaccine (if any) from health care providers who have met their priority vaccination goals and distribute the vaccine to those who have not.
 - Monitor that vaccine administration follows existing plans on priority groups.



ADHS, in conjunction with the county health departments, will the authorized vaccine providers pre-authorized to receive influenza vaccine. ADHS will procure the influenza vaccine through CDC and/or the vaccine manufacturers. It is anticipated the CDC will determine the number of doses each state is allotted on monthly basis.

Arizona Influenza Vaccine Distribution:

- Submit the quantity of desired or monthly allotment of influenza vaccine to CDC and/or vaccine manufacturer
- Request direct shipments of vaccine from the manufacturer to the vaccine providers. It is highly unlikely the vaccine manufacturers could accommodate nationwide direct shipments. Arizona has 500-1000 potential influenza vaccine providers.
- Utilize a two-prong approach to vaccine distribution, dependent upon doses in inventory and scheduled shipments allotted from manufacturer. Current vaccine storage capacity at ADHS is 100,000 doses at any time. ADHS will utilize the existing 3rd party distributor, to handle the storage and distribution of this vaccine if ADHS storage capacity is exceeded.
- Transport vaccine from ADHS to predetermined locations on a weekly basis to control distribution and adjustments to geographical areas, minimize storage problems at the vaccine providers.
- Review the adequacy of the current security measures at ADHS and CHD offices and enhance security, if needed. ADHS may request assistance from law enforcement agencies. The AIPO would remain responsible for management of vaccine, including coordination of distribution. Enhanced security for vaccine at the local distribution sites will be the responsibility of the local authorities.

a) Second-dose vaccination

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

b) Contingency planning for Investigational New Drug use

ADHS and county and tribal health departments need to be prepared to distribute unlicensed vaccines (if needed) under FDA's Investigational New Drug (IND) provisions. Unlicensed vaccines might be needed, for example, if pandemic spread is rapid and standard vaccine efficacy and safety tests are not completed in time to play a role in the response.

IND provisions require strict inventory control and record-keeping, completion of a signed consent form from each vaccinee, and mandatory reporting of specified types of adverse events.

IND provisions also require approval from Institutional Review Boards (IRBs) in hospitals, health departments, and other vaccine-distribution venues. The FDA regulations permit the use of a national or "central" IRB. A treatment IND is one IND mechanism that FDA has available for use and is especially suited for large scale use of investigational products (http://www.access.gpo.gov/nara/cfr/waisidx_99/21cfr_99.html).

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

3. Vaccine monitoring and data collection

i. Vaccine effectiveness

To ensure optimal use of a new pandemic influenza vaccine, state and county and tribal health departments and participating immunization providers should be prepared to collect data on vaccine effectiveness, vaccine supply and distribution, vaccine coverage, and vaccine safety.

ADHS has the capability and capacity to collect data and store vaccine/immunization data in the Arizona State Immunization Information System (ASIIS), the state immunization registry. Vaccine supply can be tracked and data collected on coverage. Vaccine effectiveness and safety will be monitored through ASIIS, VAERS reports, and disease surveillance. ASIIS is continually upgraded and enhanced to collect additional information and expand data collection on all ages (currently, Arizona providers are only required to report immunizations administered to individuals birth through 18 years of age only). ASIIS is a web-based system which will allow any health care professional licensed under title 32 to provide immunizations, to enroll and submit immunization data on any age person to ASIIS

ii. Vaccine supply and distribution

Vaccine effectiveness will be assessed by comparing rates of influenza-related illness, hospitalization, and/or death among vaccinated and unvaccinated persons. These studies will be implemented by CDC in collaboration with health care and university partners and with state and local health departments that participate in influenza surveillance systems (see Supplement 1)

- Vaccine tracking and coverage information may be used by federal, state, and local decision-makers to estimate adverse event rates based on the number of doses administered and to determine if vaccine is being administered according to established priority groups for pandemic vaccine (especially in the early phases of vaccination). Data will be collected from individual providers, collated at the local and state levels, and reported to federal authorities on a scheduled routine basis.
- ADHS will be able to utilize the state immunization registry, ASIIS, to track coverage with pandemic influenza vaccine. Health professionals administering vaccines to individuals birth through 18 years of age have been required (ARS §36-135) to report those immunizations to ASIIS since 1998. ASIIS is a web-based system and can be expanded to allow any health professional administering pandemic flu vaccine to any age person to report those doses and other needed information. Data currently collected includes name, address, social security number if known, gender, and date of birth. Fields can be added to collect, at a minimum, tracking data such as:
 - Number of doses administered, by date and age, priority group, and state or county (or zip code)
 - ASIIS includes a reminder/recall program that could be utilized to recall patients for a second dose, if necessary.
 - ADHS and county and tribal health departments may consider additional data requirements for their own needs.

iii. Vaccine coverage

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

iv. Vaccine safety

ADHS and county health departments will use VAERS to report and investigate adverse events following immunization (AEFI) with a pandemic influenza vaccine.

- Currently, the Immunization Services Manager in the ADHS Immunization Program Office, serves as the point of contact for adverse events occurring in and reported by facilities using publicly purchased vaccine. Currently, AEFI occurring in private provider offices are reported directly to VAERS by the provider site.
- ADHS will review existing policies for AEFI reporting and follow-up to ensure timeliness of reporting and will work with private provider organizations and mass immunizers to report all AEFI to the state coordinator to minimize duplicate reporting of AEFI to VAERS.
- ADHS will develop a plan to ensure timely reporting of and communication about large numbers of AEFI reports.
- ADHS will review procedures for and familiarize program staff with the strengths, imitations, and objectives of VAERS. VAERS typically involves direct reporting by individual health care providers, with periodic feedback to the states. AEFI reporting in Arizona will build on the infrastructure and experience developed during the 2003 smallpox vaccination program. Adverse events related to use of IND vaccines may be reported through other mechanisms in addition to or in place of VAERS, in accordance with specific regulatory or policy requirements. Adverse events will also be monitored through the Vaccine Safety Datalink (www.cdc.gov/nip/vacsafe/default.htm#VSD), a network of seven geographically diverse health maintenance organizations through which active surveillance vaccine safety studies are conducted. Another potential resource for vaccine safety research is CDC's Clinical Immunization Safety Assessment (CISA) **network** (www.vaccinesafety.org/CISA/index.htm).



4. Public health communications

The provision of vaccine information will be an important component of ongoing public health communication during a pandemic (see Supplement 10).

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

5. Coordination with bordering jurisdictions

ADHS and county and tribal health departments will vaccine distribution plans with health authorities in bordering jurisdictions, including neighboring states, Sonora, Mexico, and other unique populations.

6. Legal preparedness

ADHS and county and tribal departments need to ensure that appropriate legal authorities are in place to facilitate implementation of plans for distributing pandemic influenza vaccines.

- ARS 36-787 provides authority to ADHS to coordinate a mass immunization campaign during a public health emergency
- Arizona Revised Statutes delineate who is allowed to provide immunizations in the state of Arizona (see below).
- ARS also allows for licensed volunteers or health care workers from other jurisdictions to administer influenza vaccines.
- During a declared public health emergency under ARS 36-787, licensing requirements can be suspended to allow others to perform these tasks
- ARS 36-788 provides for mandatory vaccination during a public health emergency, with an exception for those who refuse on religious grounds, who in turn can be quarantined during the period of risk for exposure. It is not felt that this would be an appropriate action for a pandemic response in Arizona.

7. Training

ADHS and county health departments will assist health care partners in conducting training exercises to facilitate rapid and effective delivery and use of vaccines (see Supplement 3). Exercises and drills are essential to ensure that emergency procedures are in place and roles and responsibilities are well understood. By 2006, most Arizona CHDs have exercised their own county-wide mass vaccination clinic plans, or have participated in such exercises with ADHS. Such exercises have included practice in receiving large quantities of vaccine; storing and handling vaccine from distributor and from the Strategic National Stockpile; setting up and staffing clinics; administering vaccine; testing information management systems; educating the public, media, and medical providers; targeting specific priority groups). Ongoing exercising of rapid response activities will be undertaken.



Administration of vaccine to the general population will most likely take place at large vaccination “clinics”. CHDs will continually evaluate existing emergency response plans and supplement them as needed to ensure that lists of appropriate sites, properly licensed professionals who can be called on to staff clinics, and partner organizations (e.g., voluntary organizations, health care facilities) are up-to date.

Presently in Arizona, physicians, registered nurses and registered nurse practitioners have authority to administer vaccines in accordance with their respective “scopes of practice.” Additionally, physician’s assistants may do so under protocols established with a supervisory physician. Medical assistants and personal care assistants may administer vaccinations under appropriate physician supervision. Certain military personnel may have training as well to administer vaccinations. The potential emergency need for additional non-professional personnel to administer vaccinations will be assessed and necessary mechanisms (e.g., emergency orders from the Governor), appropriate training, supervisory guidelines, etc. of such staff will be developed.

IV. Actions for the Pandemic Period

A. Before a vaccine is available

ADHS

- If stockpiled vaccine of the pandemic subtype is available, ensure delivery to county and tribal health departments and health care partners, as determined by priority status.
- Keep the health care and public health workforce up-to-date on projected timelines for availability of vaccines against pandemic influenza.
- Provide updated information to public on vaccine status and prioritization (see Supplement 10).

County and tribal health departments

- Mobilize response partners, and prepare to activate plans for receiving, distributing, and administering vaccines.
- Activate plans and systems to receive, distribute, and administer pre-pandemic stockpiled vaccines to designated groups, upon delivery by ADHS
- Review modifications, if any, to recommendations on vaccinating priority groups.
- Accelerate training in vaccination and vaccine monitoring for public health staff and for partners responsible for vaccinating priority groups.
- Be prepared to administer unlicensed vaccines (if needed) under FDA's Investigational New Drug (IND) provisions
- Work with other governmental agencies and non-governmental organizations to ensure effective public health communications.

B. When a vaccine becomes available

- Submit requests to HHS for appropriate number of vaccine doses
- Work with emergency management to ensure the safe delivery of pandemic vaccines to county and tribal health departments and to health care agencies, for prioritized vaccinations
- Monitor vaccine supplies, distribution, and use.
- Monitor and investigate adverse events.
- Provide updated information to the public via the news media.
- Ensure that vaccine requests to HHS and distribution to clinics and other facilities accounts for the need for second doses
- Work with HHS to evaluate vaccine-related response activities when the pandemic is over.

County and tribal health departments

- Activate plans and systems to receive, distribute and administer vaccines to designated groups, upon delivery from ADHS.
- Phase in vaccination of the rest of the population after priority groups have been vaccinated, based on age or other criteria that will ensure fair, equitable, and orderly distribution
- After the pandemic has ended, ADHS and county health departments will evaluate all response activities, including vaccine tracking and delivery, adverse event monitoring, and communications. Written reports of all such activities will be available to HHS and CDC.

Box 1. Development of vaccines against pandemic strains of influenza

HHS is working with industry partners to ensure that influenza vaccine can be produced on an emergency basis at any time throughout the year (<http://www.HHS.gov/nvpo/pandemicplan/>) and to facilitate the development of cell- and recombinant-based interpandemic and pandemic influenza vaccines towards FDA licensure in U.S.-based manufacturing facilities. Activities in support of these goals include:

- Stimulating expanded manufacturing capacity by increasing annual demand for influenza vaccines by the CMS and CDC
- Securing a year-round egg supply for production of inactivated egg-based influenza vaccines
- Promoting the development of new technologies that:
- Shorten the time required to develop a vaccine against a new strain of influenza.
- Facilitate rapid expansion of vaccine production during a pandemic.
- Optimize the use of limited vaccine supplies (e.g., antigen-sparing strategies).

HHS is also spearheading the development of human vaccines against avian influenza A (H5N1) and against other influenza A viruses with pandemic potential. HHS is providing funding to develop and manufacture pilot investigational lots of these vaccines at licensed influenza vaccine manufacturers and to evaluate their safety and immunogenicity in NIH-sponsored clinical trials in healthy adult, elderly, and pediatric populations.

HHS is acquiring commercial scale lots of influenza A (H5N1) vaccine to provide vaccine manufacturers with experience initially and then to establish and maintain stockpiles of pre-pandemic H5N1 vaccine.

Appendix 1
Time Table of Immunizations to Various Priority Groups

Time table of immunizations to various priority groups			
	Dose 1		Dose 2 (if needed)
Vaccine Priority Groups	Total doses per group	Estimated doses in Weeks 1-4	Weeks 5-8
1A	180,800	135,600	
1B	514,800	463,320	
1C	754,000	377,000	
1D	3,100	2,790	
Subtotal	1,452,700	978,710	
1A = 180,800 doses Assumption: 75% coverage rate = 135,600 1B = 514,800 doses Assumption: 90% coverage rate = 463,320 1C = 754,000 doses Assumption: 50% coverage rate = 377,000 1D = 3,100 doses Assumption: 90% coverage rate = 2,790			

Arizona Influenza Pandemic Response Plan

Supplement 7: Antiviral Drug Distribution and Use



Supplement 7: Table of Contents

I.	RATIONALE	S7-2
II.	OVERVIEW	S7-2
III.	SUMMARY OF PUBLIC HEALTH ROLES AND RESPONSIBILITIES FOR ANTIVIRAL DISTRIBUTION AND USE	S7-2
IV.	RECOMMENDATIONS FOR ANTIVIRAL USE IN THE INTERPANDEMIC AND PANDEMIC ALERT PERIODS	S7-4
	A. Use of antivirals in management of seasonal strains of influenza	S7-4
	B. Use of antivirals in management of cases of novel influenza	S7-5
	1. Use of antivirals for treatment	S7-5
	2. Use of antivirals for prophylaxis of contacts	S7-6
	3. Use of antivirals for containment of disease clusters	S7-6
	C. Preparedness planning for use of antivirals during a pandemic	S7-6
	1. National recommendations on use of antivirals during a pandemic	S7-6
	2. Arizona planning	S7-6
V.	RECOMMENDATIONS FOR ANTIVIRAL USE IN THE PANDEMIC PERIOD	S7-14
	A. When pandemic influenza is reported abroad, or sporadic pandemic influenza cases are reported in the United States, without evidence of spread	S7-14
	B. When there is limited transmission of pandemic influenza in the United States	S7-14
	C. When there is widespread transmission of pandemic influenza in the United States	S7-15
	Appendix 1: Arizona’s Priority Groups for Antiviral Use during an Influenza Pandemic: Estimation of the Number of Treatment Courses Required in Arizona for Select Priority Groups	S7-20
	Appendix 2: Projected use of Antivirals in Arizona During an Influenza Pandemic	S7-22
	Appendix 3: ADHS’ Clinician Fact Sheet: Antivirals for Influenza 2005-2006	S7-23
	Appendix 4: ADHS’ Clinician Fact Sheet: Influenza 2005-2006	S7-25

I. Rationale

Appropriate use of antiviral agents during an influenza pandemic may reduce morbidity and mortality and diminish the overwhelming demands that will be placed on the health care system. Antivirals might also be used during the Pandemic Alert Period in limited attempts to contain small disease clusters and potentially slow the spread of novel influenza viruses.

Drugs with activity against influenza viruses (“antivirals”) include the M2 ion channel inhibitors or amantadanes [amantadine (Symmetrel®) and rimantadine (Flumadine®)] and the neuraminidase inhibitors [oseltamivir (Tamiflu®) and zanamivir (Relenza®)]. These drugs have been useful for the management of inter pandemic (i.e. seasonal) influenza.



However, a large and uncoordinated demand for antivirals early in a pandemic could rapidly deplete national and local supplies. Planning for optimal use of antiviral stocks is therefore essential. During an influenza pandemic, the Arizona Department of Health Services (ADHS) will need to play a central role in insuring that limited supplies of antivirals will be distributed efficiently to where there is the greatest need and benefit.

II. Overview

Supplement 7 provides recommendations to state and local partners and to health care providers in Arizona on the distribution and use of antiviral drugs for treatment and prophylaxis during an influenza pandemic. These recommendations are up to date as of January 2006, and will be revised as new information is available.

In this document the term “novel strains of influenza” refers to avian or animal influenza strains that can infect humans (like avian influenza virus or swine influenza virus), or new or re-emergent human influenza viruses that cause cases or clusters of human disease. A pandemic occurs when a novel influenza virus emerges that can infect humans and be efficiently transmitted from person to person.

The Interpandemic and Pandemic Alert Period recommendations focus on 1) preparedness planning for the rapid distribution and use of antiviral drugs, 2) the use of antiviral drugs in the management and containment of cases and clusters of infection with novel or pandemic strains of influenza, and 3) the education of health care providers about antiviral use in the management of both seasonal and pandemic influenza.

The Pandemic Period recommendations focus on the local use of antiviral drugs in three situations: 1) when pandemic influenza is sporadically reported in the United States (without evidence of spread in the United States), 2) when there is limited transmission of pandemic influenza in the United States, and 3) when there is widespread transmission in the United States.

Throughout the Pandemic Period, education of health care providers will continue. ADHS recommendations for optimal use of limited stocks of antivirals will be updated throughout the course of an influenza pandemic to reflect new epidemiologic data, laboratory results, and the availability of an effective pandemic influenza vaccine.

III. Summary of Public Health Roles and Responsibilities for Antiviral Distribution and Use

Interpandemic and Pandemic Alert Periods

1. Health care providers

- a. Learn how to identify influenza-like illnesses
- b. Know procedures for influenza screening and laboratory testing
- c. Know appropriate infection control measures for influenza
- d. Know appropriate antiviral regimens for influenza A and B

2. ADHS and county and tribal health departments
 - a. Develop state-based plans for the distribution and use of antivirals during a pandemic (ADHS)
 - b. Work with stakeholders to develop a system by which ADHS will assist in brokering antivirals during a pandemic where there is limited supply
 - c. Develop state-based plans for requesting antivirals through the Strategic National Stockpile (SNS)
 - d. Work with stakeholders to develop a system to monitor interpandemic use of antivirals throughout the state (ADHS and county and tribal health)
 - e. Procure a supply of antivirals under the control of ADHS for to use for special populations (ADHS)
 - f. Help educate health care providers about clinical presentation and control of novel and pandemic influenza (ADHS and county and tribal health)
 - g. Give guidance to health care providers about using antivirals in the medical management of cases of novel strains of influenza (ADHS and county and tribal health)
 - h. Provide or facilitate testing and investigation of suspected novel influenza cases (ADHS and county and tribal health)
 - i. Conduct follow-up of suspected novel influenza cases (County health departments)
3. HHS
 - a. Develop national guidance on the use of antivirals during both the pandemic alert and pandemic periods
 - b. Develop a national stockpile of antiviral drugs for use during a pandemic
 - c. Identify priority groups for antiviral drug treatment and prophylaxis
 - d. Procure and maintain national supplies of antivirals in the Strategic National Stockpile (SNS)
 - e. Maintain a program to test and extend dating of stockpiled antivirals
 - f. Develop protocols for monitoring antiviral effectiveness, safety, and resistance during a pandemic
 - g. Develop and distribute communication and education materials about antivirals for use by states and other stakeholders

Pandemic Period

- Health care providers
 1. Choose antivirals appropriate for circulating influenza strains
 2. Follow recommendations on antiviral use from federal, state, and local health agencies
 3. When antiviral supplies are limited, prescribe antivirals for persons in priority groups where the need and benefit are the greatest
- ADHS and local health departments
 1. Work with health care partners to activate plans for distributing and administering antivirals to persons in priority groups (county health departments)
 2. Review and modify as needed recommendations for prioritization of antiviral treatment and prophylaxis (ADHS)
 3. Accelerate training on the appropriate use of antivirals among public health staff and health care partners (ADHS and county and tribal health)
 4. Work with CDC to monitor antiviral drug use and effectiveness, to monitor antiviral drug resistance, and to monitor and investigate adverse events associated with antivirals (ADHS)
 5. Work with other governmental agencies and non-governmental organizations to ensure effective public health communications (ADHS and county and tribal health)

- HHS responsibilities
 1. Revise recommendations for treatment and prophylaxis with antivirals for priority groups, if necessary
 2. Provide state, territorial and local health departments and health care partners with guidance on reporting specifications for tracking distribution, effectiveness, and safety of antivirals.
 3. Work with WHO and global partners to determine and monitor the drug susceptibilities of the pandemic strain
 4. Provide state, territorial and local health departments and health care partners with guidance on reporting specifications for tracking distribution, effectiveness, and safety of antivirals
 5. Provide information to health professionals and the public on issues related to availability and use of antiviral drugs during an influenza pandemic
- Federal responsibilities
 1. Maintain stockpiles of influenza antiviral drugs at the SNS
 2. Distribute antiviral drugs from the SNS to states, cities, and federal agencies as appropriate
 3. Work with states to monitor antiviral drug use and effectiveness, to monitor antiviral drug resistance, and to monitor and investigate adverse events associated with antivirals
 4. Monitor the emergence of antiviral resistance
 5. Issue updated national guidelines for appropriate use of antivirals as the pandemic continues
 6. Continue to provide pertinent information to health professionals and the public on drug availability, distribution, administration, side effects, and the rationale for targeted drug use



IV. Recommendations for antiviral use in the interpandemic and pandemic alert periods

A. Use of antivirals in management of seasonal strains of influenza

Influenza epidemics occur every winter in Arizona. Antiviral medicines are a useful adjunct to influenza vaccine for controlling, treating, and preventing influenza (MMWR July 29, 2005

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5408a1.htm>). Current human influenza illness in the United States can be treated and prevented with antivirals.

The M2 ion channel inhibitors (also known as amantadanes) are amantadine (Symmetrel®) and rimantadine (Flumadine®). They have historically been effective for most influenza A strains. The neuraminidase inhibitors oseltamivir (Tamiflu®) or zanamivir (Relenza®) are effective for both influenza A and B. Although many influenza A strains are sensitive to amantadine or rimantadine, the avian influenza A (H5N1) isolates are resistant. At the present time, avian influenza A (H5N1) is usually sensitive to both oseltamivir and zanamivir.

As long as pandemic influenza is not being reported abroad or in the United States, and there is no epidemiologic link to cases of avian influenza, seasonal influenza is unlikely to be caused by a novel influenza virus. Epidemiologic links that should suggest the risk of a novel influenza virus would include:

- A history of travel to areas where there are avian influenza outbreaks
- A history of contact with a person with an unexplained respiratory disease in an area with avian influenza outbreaks
- Contact with patients ill with a known or suspected novel virus
- Contact with sick poultry

See Clinical Guidelines Supplement 5 for more detailed information about epidemiologic criteria for suspecting a novel influenza virus.

Physicians can use antiviral medicines to treat and give prophylaxis against seasonal influenza. Treatment is most effective in reducing the length of illness when given within the first 48 hours of symptoms. Physicians should choose which antiviral medicine to use based on a variety of factors:

- What strain is currently circulating in the community (influenza A or B or both)
- The known sensitivities to antivirals of these circulating strains
- Rapid influenza testing results
- The age of the patient
- Whether the antiviral medicine will be used for treatment or prophylaxis

(See Appendix 3: ADHS Clinician Fact Sheet: Antivirals for Influenza 2005-2006; Appendix 4: ADHS Clinician Fact Sheet: Influenza 2005-2006; and MMWR July 29, 2005 <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5408a1.htm>)

The educational components about antivirals of the ADHS' Pandemic Influenza Plan will assist health care providers in the appropriate use of antivirals during seasonal influenza. This will allow health care providers to be better prepared to use antivirals during pandemic influenza.

B. Use of antivirals in management of cases of novel influenza

In this document the term “novel strains of influenza” is used to refer to avian or animal influenza strains that can infect humans (like avian influenza A [H5N1]) and new or re-emergent human influenza viruses that cause cases or clusters of human disease. Criteria for early detection and identification of novel strains of influenza are discussed in Supplement 1.

Sentinel laboratories throughout Arizona send influenza isolates to Arizona Public Health Laboratory. Influenza A viral isolates are tested to detect hemagglutinins H1, H3, H5, or H7. Recent circulating influenza strains have been H1 and H3. If the isolate were H5 or H7, or if could not be identified, the isolate would be immediately sent to the Centers for Disease Control and Prevention (CDC) for further characterization to exclude a novel influenza virus.

1. Use of antivirals for TREATMENT of suspected avian influenza A (H5N1) or another novel strain of influenza.

A patient with a suspected case of avian influenza A (H5N1) or another novel strain of influenza should be isolated as described in Supplement 4 and treated in accordance with the clinical algorithm for the Pandemic Alert Period provided in Supplement 5.

As of December 2005, a patient with a suspected case of avian influenza A (H5N1) or another novel strain of influenza should be treated with oseltamivir or zanamivir. The antiviral should be administered as early as possible and ideally **within 48 hours after onset of symptoms**.

Neuraminidase inhibitors are preferred because the majority of avian influenza A (H5N1) viruses currently affecting humans are resistant to amantadine and rimantadine. Cross-resistance between zanamivir- and oseltamivir-resistant viruses is variable. Current recommended doses for antiviral treatment are provided in Table 2 and in ADHS' Clinician Fact Sheet on Antivirals for Influenza in Appendix 3. This information will be updated as circumstances warrant.



2. Use of antivirals for PROPHYLAXIS of contacts suspected avian influenza A (H5N1) or another novel strain of influenza.

ADHS and local health departments, in consultation with CDC, will consider whether it is necessary and feasible to trace a patient's close contacts and provide them with postexposure antiviral prophylaxis. Close contacts may include family, schoolmates, workmates, health care providers, and fellow passengers if the patient has been traveling. If deemed necessary by public health authorities, these persons may receive post-exposure prophylaxis with oseltamivir, as zanamivir is not currently indicated for prophylaxis.

If the exposure to the novel influenza virus strain occurs during the regular influenza season, the patient's health care contacts (who may also care for persons with seasonal influenza) should be **vaccinated against seasonal influenza** to reduce the possible risk of co-infection and reassortment of seasonal and novel strains.

3. Use of antivirals for containment of disease clusters caused by suspected avian influenza A (H5N1) or another novel strain of influenza.

In special circumstances, ADHS could recommend "targeted antiviral prophylaxis" as a community-based measure for containing small clusters of infection with novel strains of influenza (see Supplement 8). This measure would be implemented in small, well-defined settings such as the initial introduction of a virus with pandemic potential into a small community or a military base. However, once a pandemic is underway, such a strategy would not represent an efficient use of limited antiviral supplies.

Because targeted antiviral prophylaxis would require rapid delivery and administration of substantial stocks of antiviral drugs, the feasibility to use antivirals to contain disease clusters caused by a novel strain of influenza will be evaluated at the time based on available antiviral supply and interim updated recommendations on antiviral drug use. These decisions will involve the Vaccine and Antiviral Prioritization Policy Committee (VAPPC) as described below in C-2-b: "Establishing priority groups."

Targeted antiviral prophylaxis would involve investigation of disease clusters, administration of antiviral treatment to persons with confirmed or suspected cases of pandemic influenza, and provision of drug prophylaxis to all persons in the affected community. Targeted antiviral prophylaxis would also require intensive case finding in the affected area as well as effective communication with the affected community.

C. Preparedness planning for use of antivirals during a pandemic

1. National recommendations on use of antivirals during a pandemic

During an influenza pandemic, demand is likely to far outstrip supplies available in stockpiles or through usual channels of distribution. The U.S. Department of Health and Human Services' HHS Pandemic Influenza Plan, November 2005 Part 1, Appendix D, table D-2, page D-21 (<http://www.hhs.gov/pandemicflu/plan/pdf/AppD.pdf>) provides a list of priority groups for receiving antiviral treatment or prophylaxis and the rationale for prioritization

During an actual pandemic, these recommendations will be modified, based on the characteristics of the causative virus (e.g., drug susceptibilities, initial geographic distribution, fatality rate, age-specific morbidity and mortality rates) and the effectiveness of implemented strategies.

2. Arizona planning

ADHS is working with the federal government, local health departments, tribal governments, bordering states, and the government of Sonora, Mexico to develop and integrate state-based plans for antiviral needs assessment, procurement, distribution, and targeted use. ADHS will use:

- Interim recommendations developed by the National Vaccine Advisory Committee on priority groups for prophylaxis and treatment (<http://www.hhs.gov/pandemicflu/plan/pdf/AppD.pdf>) to assist in calculations for Arizona priority groups
- Strategies outlined in Box 1 for optimizing antiviral use in treatment and prophylaxis.
- Clinical treatment algorithms provided in Clinical Guidance Supplement 5
- Existing ADHS plans for emergency distribution of medical supplies

ADHS has, as part of its Influenza Pandemic Response Plan, procuring antiviral drugs for state and local stockpiles; distributing antivirals to priority groups by health care providers and through public health dispensing sites; data collection to monitor drug use, drug-related adverse events, and drug resistance; coordination with bordering jurisdictions; legal preparedness; training; and dissemination of public health information.

This requires coordination and collaboration with health care providers who will administer antivirals during a pandemic.

- ADHS will convene state-wide pandemic influenza strategy meetings on the use of antivirals to facilitate local planning and define public- and private-sector roles (e.g., related to rapid administration to priority groups and medical surge capacity)
- ADHS continues to communicate with the medical community throughout the state about national guidelines for treatment and prophylaxis and the appropriate use of antivirals
- ADHS is beginning to identify, and will maintain, contacts with federal agencies, local health departments, tribal governments, bordering states, and the government of Sonora, Mexico for coordinating distribution of antivirals.

a. Procurement

The needs in Arizona for antiviral treatment and prophylaxis during an influenza pandemic will likely not be met by federally supplied antivirals from the SNS stockpile. Therefore, state and local governments, and private institutions need to consider additional ways to obtain antivirals.

Typically, human influenza outbreaks can be prevented and treated with four different antivirals. Influenza A usually can be treated with amantadine (Symmetrel®) or rimantadine (Flumadine®) or the neuraminidase inhibitors oseltamivir (Tamiflu®) or zanamivir (Relenza®). Influenza B is only sensitive to neuraminidase inhibitors. Unfortunately, the currently circulating avian influenza strain H5N1 is not sensitive to amantadine or rimantadine. Additionally, on January 16, 2006, CDC announced that the adamantanes were no longer recommended treatments against the human influenza strains circulating in the 2005-2006 influenza season, due to reportedly high rates of resistance (91%). Zanamivir has only been approved for treatment of influenza. Therefore, oseltamivir is the only antiviral drug that would be available for *both prophylaxis and treatment*.



ADHS has estimated the quantity of antiviral drugs that would be needed in Arizona (see Appendix 1) based on the U.S. Department of Health and Human Services' Pandemic Influenza Plan, November 2005 (<http://www.hhs.gov/pandemicflu/plan/pdf/AppD.pdf>). The cumulative amount to provide oseltamivir for all 11 of these priority groups would require 2,615,500 treatment courses, or 26,155,000 doses of oseltamivir.

Procurement of State Stockpile

Due to space constraints, management logistics, and challenges with rotating stock, ADHS will only be able to maintain a limited stockpile of antiviral medicines. ADHS has identified \$1,000,000 to procure oseltamivir. Potential recipients of the ADHS stockpile of oseltamivir will include people who have an urgent and pressing need for antiviral therapy but are not covered by existing distribution processes, such as public health workers, hard to reach populations, and institutional outbreaks.

Management of State Antiviral Stockpile

ADHS is the responsible authority for coordinating and managing the Arizona antiviral stockpile. Stockpiled antiviral inventory will be managed to prevent expiration of purchased antivirals. The ADHS stockpile may be managed under:

- Vendor-managed inventory (VMI),
- Direct ADHS management, where the stockpile would be stored, rotated, and from where it would be distributed
- Agreement with specific hospitals that they would rotate ADHS' supply into their own pharmaceutical supply.

Arizona will increase the supply of antivirals for pandemic influenza in Arizona by 1) encouraging health care facilities to consider their own institutional stockpiles or vendor-managed inventories, 2) explore how to make arrangements with local private-sector distributors for emergency purchase of antiviral drugs, and 3) when needed, requesting antivirals from the Strategic National Stockpile (SNS).

ADHS' office of HIV/AIDS Services has developed an infrastructure in order to provide HIV-related medicines for patients throughout the state who are participating in the Arizona Drug Assistance Program (ADAP). As of April 1, 2006, all HIV medicines will be provided and distributed by a large outpatient pharmacy chain. ADHS will explore ways to utilize this infrastructure to assist in distributing antivirals to community pharmacies.

b. Establishing priority groups

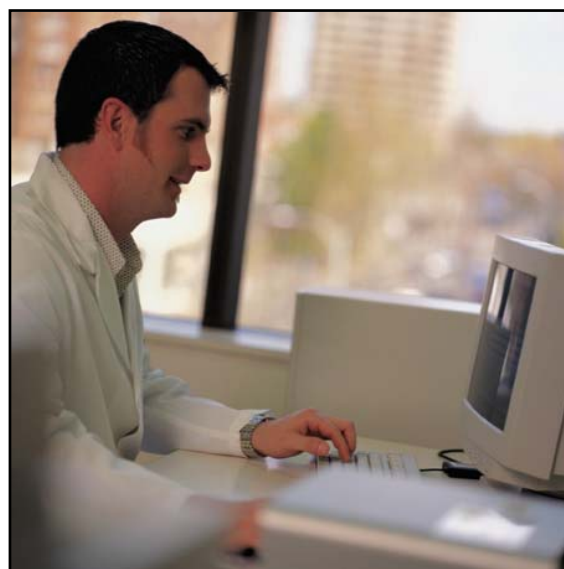
In situations where there are limited supplies of antivirals for influenza, the medicine should go to people who have the greatest need and are most likely to benefit from it.

The highest priority should be **treatment** of **high-risk individuals** who are **hospitalized** due to pandemic influenza illness. The next priorities would be 1) **prophylaxis** of health care workers (HCW) with direct patient contact and emergency medical service (EMS) providers, and 2) **treatment** of pandemic health responders (public health, vaccinators, vaccine and antiviral manufacturers), public safety (police, fire, corrections), and government decision-makers.

Only when there is adequate antiviral medicine should there be able to be **treatment** of low-risk outpatients and **prophylaxis** of high-risk outpatients and other high-risk health care workers.

In the interpandemic and pandemic alert periods, ADHS will establish a Vaccine and Antiviral Prioritization Policy Committee (VAPPC) composed of

- Representative(s) from the Governor's office
- State Epidemiologist
- State physician(s)
- ADHS influenza epidemiologist
- Office of Infectious Disease Services office chief
- ADHS administrator(s)
- Arizona Immunization Program Office (AIPO) representative
- Arizona Local Health Officers Association representative
- Arizona Medical Association representative
- Hospital Association representative
- Emergency Medical Service representative
- Arizona Pharmacy Alliance representative
- Long-term care representative



The VAPPC will define how these priority groups will apply on a local level, and will define who should be included in the groups of public safety workers, essential service providers, and key governmental decision makers.

During an influenza pandemic, the VAPPC will modify these priority groups as needed based on the availability of antiviral medicines, the characteristics of the causative virus (e.g., drug susceptibilities, initial geographic distribution, fatality rate, age-specific morbidity and mortality rates) and the effectiveness of implemented strategies.

The VAPPC will provide the rationale for establishing the priority groups so that the reasons for prioritization can be communicated to the community.

Appendix 1 provides estimates for treatment and prophylaxis of priority groups based on the 11 priority groups in the HHS Pandemic Influenza Plan, November 2005 table D-2, page D-21, found at <http://www.hhs.gov/pandemicflu/plan/pdf/AppD.pdf>. One underlying assumption is that 25% of the U.S. population would become ill with influenza. The cumulative amount to provide oseltamivir for all 11 of these priority groups in Arizona would require 2,615,500 treatment courses, or 26,155,000 doses of oseltamivir. These initial calculations can help the VAPPC to estimate the size of the various priority groups in Arizona.

c. Distributing and dispensing antivirals to priority groups

Deciding how, where, and when to distribute

Distribution of antivirals will depend on the amounts of antivirals available in the state, the priority groups that are to be targeted (as per the VAPPC), and the locations of greatest need. In order to equitably and effectively distribute antivirals to priority groups during an influenza pandemic, ADHS will need to know the location and amount of antivirals throughout the state, and be able to rapidly direct their flow to the appropriate priority groups.



During the interpandemic and pandemic alert periods, ADHS will:

- Work with stakeholders to develop a system to assess and track antiviral stocks at the state and local level (both in inpatient and outpatient settings) to allow for tracking during a pandemic.
- Constitute and exercise the VAPPC
- Work with local health departments to plan for and to exercise the distribution of antiviral medicines based on priorities and needs.
- Establish the legal authority to have standing orders for antivirals both at the state and local health department level
- Explore how to implement standing orders if they are needed for treatment of certain priority groups (e.g. hospitalized patients and health care workers)
- Review and update pre-existing plans for the transport, receipt, storage, security, tracking, and delivery of:
 - Antiviral stocks for use in treatment to hospitals, clinics, nursing homes, alternate care facilities, and other health care institutions.
 - Antiviral stocks for use in post-exposure prophylaxis (e.g., for direct contacts of infected patients)
 - Antiviral stocks for use in prophylaxis even when there is no known direct pandemic influenza exposure (e.g. pandemic health responders, public safety workers, government decision-makers, and pandemic societal responders)
- Explore how to implement standing orders for antivirals for high priority groups (e.g. hospitalized patients, health care workers, etc.)
- Develop a system to obtain antivirals for treatment of pandemic influenza, or prophylaxis of a close contact of someone with pandemic influenza, where lack of financial resources prevents the individual from purchasing available antivirals.

During an influenza pandemic, ADHS will:

- Handle requests for antivirals through an incident command system (ICS).
 - The providers would request antivirals through their local health department [or county Emergency Operating Center (EOC)] and these requests would be sent on to ADHS [or the Arizona state EOC].
- Be guided by the VAPPC's recommendations about priority groups
- Request and handle SNS antiviral supplies according to the ADHS SNS Plan for Receipt, Store, and Stage (RSS)

ADHS Brokering of Antiviral Supply

According to Arizona Revised Statutes 36-787:

[<http://www.azleg.state.az.us/FormatDocument.asp?inDoc=/ars/36/00787.htm&Title=36&DocType=ARS>], during a state of emergency in which there is a pandemic disease that poses a substantial risk of a significant number of human fatalities, the Governor, in consultation with the director of the Department of Health Services, may issue orders that ration medicine and vaccines, and provide for procurement of medicines and vaccines.

Under these circumstances, ADHS will take the lead to direct the prioritization of limited antiviral supplies during an influenza pandemic.

ADHS does not have the capacity to purchase, store, rotate, and distribute the estimated 2,615,500 treatment doses of oseltamivir that would be needed in Arizona if all 11 priority groups were to receive medication (see Appendix 1).

Therefore, ADHS would need to use the current system of antiviral distribution in order to get antiviral medicines to patients during an influenza pandemic. In the interpandemic and pandemic alert period, ADHS will assist providers in overcoming antiviral shortages by informing them of ways to obtain antivirals. Hospitals will be encouraged and to prepare and maintain their own antiviral stockpile.

During the pandemic period, if there are inadequate supplies of antivirals, ADHS will work directly with the manufacturer and the pharmaceutical distributors, in order to direct and broker the flow of medicines. Priority distribution will go to the sites of greatest need that service the **highest priority groups** according to the priorities outlined in C-2-b.

The Arizona Immunization Program Office (AIPO) is experienced in the brokering of influenza vaccine during shortages. However, early in an influenza pandemic, vaccine will not be widely available, and antivirals will be the pharmaceutical most in need of brokering. Therefore, the AIPO will take the lead at ADHS for brokering antivirals

When the supply of antivirals in Arizona during an influenza outbreak is insufficient to provide for the needs of the citizens, the Director of Arizona Department of Health Services will make an emergency request for federal assets in the SNS. HHS and CDC officials will make the decision whether to deploy federal assets to Arizona. Federal supplies of antivirals will be delivered to Arizona's Receipt, Storage and Staging (RSS) site. ADHS SNS coordinators will provide logistical guidance on the receipt and distribution of federal assets to priority groups.

Critical Stakeholder's Committee

In order for ADHS to effectively broker antiviral distribution in Arizona during pandemic influenza, there will need to be a broad consensus among stakeholders as to how this best can be accomplished. ADHS will form a Critical Stakeholders' Committee (CSC) to discuss prioritization and implementation of ADHS antiviral plan. Potential stakeholders include:

- Roche (oseltamivir manufacturer)
- Glaxo Wellcome (Zanamivir manufacturer)
- Pharmaceutical distributors
- Arizona Board of Pharmacists
- Arizona Medical Association
- Arizona Osteopathic Medical Association
- Arizona Chapter of the American Academy of Pediatrics
- Arizona Hospital Association
- Major local pharmacy chains
- AHCCCS plans
- Large insurance companies
- IHS hospitals
- Tribal health
- ADHS Border Health Office
- County health departments
- Long-term care representative

Topics for discussion with stakeholders will include 1) coordination between manufacturer, distributors, pharmacies, health care providers and ADHS; 2) proposed situations where ADHS would begin actual brokering and prioritization of antivirals; 3) plans on how and when to institute prioritization; 4) restrictions on when physicians can write prescriptions for oseltamivir;

Distribution based on electronic monitoring of supply

ADHS does not have information on the amount and type of antivirals currently used in Arizona. Such information is regarded as proprietary. However, in the United States in 2003-2004, there were 1,524,687 treatments of oseltamivir given (www.iom.edu/Object.File/Master/21/608/0.pdf slide #9). Since Arizona's population is approximately 2% of the United States, a proportional number of oseltamivir treatments would be 30,500.

In order for ADHS to effectively and equitably distribute a limited amount of antivirals, it will be essential to know where, when, by whom, and how much antiviral medicine is needed and/or is being used. That information is not currently available in Arizona. However, ADHS has established an electronic system with pharmacies for syndromic surveillance to watch sales of over the counter medicines. A similar system could be established with antiviral medicines.

ADHS will work with the Critical Stakeholder Committee (CSC) and meet with pharmacy and pharmaceutical representatives to develop a system by which ADHS is informed of the amount and location of antiviral medicines in the state.

d. Monitoring and data collection

To ensure optimal use of antiviral drugs during an influenza pandemic, ADHS will work with federal officials and health care partners to collect data on 1) distribution of state or federal supplies of antiviral drugs, 2) occurrence of adverse events following administration of antiviral drugs, 3) effectiveness of treatment and prophylaxis, and 4) development of drug resistance.

- 1) influenza specimens to CDC on a periodic basis, usually after testing them by RT-PCR, viral culture, or rapid diagnostic testing to confirm the presence of strains of influenza A. CDC will test the drug susceptibilities of viruses isolated from different age groups and geographic groups over the course of the pandemic (see Antiviral Effectiveness above). Changes in antiviral resistance patterns will influence changes in recommendations for treatment and prophylaxis

e. Coordination with bordering jurisdictions

ADHS will review and coordinate antiviral drug distribution plans with health authorities in bordering jurisdictions, including:

- Arizona Counties
- Tribal governments
- Mexico, specifically the state of Sonora
- Surrounding states

During an influenza pandemic, ADHS will share details regarding their distribution of antivirals with these jurisdictions to monitor antiviral needs and optimize targeting of antiviral use.

Due to Arizona's international border, additional planning will be needed with Mexico, since pandemic influenza will not stop at the border with Mexico. If Sonora, Mexico does not have adequate amounts of vaccines and antivirals, people will be coming to the United States for further evaluation and treatment. ADHS will meet with representatives of Sonora, Mexico to share information about pandemic influenza planning as it regards such things as diagnostic supplies, antiviral supplies, provider education, and coordination of pandemic planning. In addition, ADHS will prepare Spanish versions of ADHS messages for the Spanish-speaking public.



f. Legal preparedness

According to Arizona Revised Statutes 36-787, during a state of emergency in which there is a pandemic disease that poses a substantial risk of a significant number of human fatalities, the Governor, in consultation with the director of the Department of Health Services, may issue orders that ration medicine and vaccines, and provide for procurement of medicines and vaccines. [<http://www.azleg.state.az.us/FormatDocument.asp?inDoc=/ars/36/00787.htm&Title=36&DocType=ARS>]. Under these circumstances, ADHS will take the lead to direct the prioritization of limited antiviral supplies during an influenza pandemic.

During pandemic influenza, there may be a need for the ADHS medical director or local health departments to issue a blanket prescription for dispensing of antivirals. The state medical director would need the authority to do so in a way that is consistent with Arizona's prescription laws.

A problem with blanket prescriptions is that as per ARS 32-1401, 27 (ss), it is unprofessional conduct for a physician to prescribe or dispense a prescription medication to a person without first conducting a physical examination of that person or having previously established a doctor-patient relationship.

However, close contacts of patients with confirmed or suspected pandemic influenza should be able to receive appropriate prophylaxis without undue waiting. Currently, in nonemergency situations, hospitals and treating physicians usually refer patients to local health departments or primary care physicians for prophylactic medications. In a pandemic situation, this would cause undue delay in light of the short incubation period of influenza (1-3 days).

Hospitals and physicians need to have the resources, the authority, and legal protection in order to rapidly provide antiviral prophylaxis to close contacts of confirmed or suspected cases of pandemic influenza.

In addition, there needs to be clarification as to whether adverse side effects of antivirals when taken for prophylaxis by essential workers would be covered by worker's compensation insurance.

ADHS will investigate:

- Ways to give health departments and physicians the authority to issue a blanket prescription for dispensing antivirals to contacts as a public health measure in a way that is consistent with state prescription laws.
- How worker's compensation laws apply to health care workers and other essential workers who take antivirals for prophylaxis.
- Whether a state or county employee would be covered for malpractice or tort claims coverage under state law if they administer an antiviral medication in the course of his/her official duties.
- What legal authority is in place, or needs to be put in place, to facilitate implementation of plans for the ADHS medical director or local health departments to issue a blanket prescription for dispensing of antivirals in a way that is consistent with Arizona's prescription laws.



g. Training

ADHS will work with local health departments, tribal governments, bordering states, and the government of Sonora, Mexico to enhance training and education efforts related to use of antiviral drugs during a pandemic.

ADHS has developed concise information sheets for health care providers called Clinician Fact Sheets that give clinically pertinent information about use of antiviral medicines and influenza. (See Appendices 3 & 4). These Clinician Fact Sheets are available on ADHS' influenza website. ADHS will also develop Clinician Fact Sheets for health care providers for identifying, diagnosing, and managing pandemic influenza, and post it on the ADHS website.

ADHS physicians, nurses, and epidemiologists will participate in statewide lectures to inform health care providers about pandemic influenza and appropriate antiviral use.

It is essential that those who will be involved in prioritizing and distributing antivirals understand their roles and responsibilities. ADHS will conduct exercises with local health departments to plan for and to exercise the distribution of antiviral medicines based on priorities and needs. ADHS will involve its Vaccine and Antiviral Prioritization Policy Committee (VAPPC) and its Critical Stakeholders' Committee (CSC) in these exercises.

h. Public health information

ADHS will work with county health departments, tribal governments, bordering states, and the government of Sonora, Mexico to develop and implement plans to educate the public, the medical community, and other stakeholders about:

- Role of antivirals in responding to pandemic influenza
- Need to prioritize use of limited antiviral supplies for treatment and prophylaxis
- Rationale for the priority groups identified in the interim recommendations
- Importance of appropriate use (i.e., using the drugs as prescribed and for the full number of days recommended) to minimize the development of drug resistance

Pandemic influenza information will also be provided in Spanish.

i. Contingency planning for Investigational New Drug (IND) use

Unlicensed antiviral drugs may be available under FDA's Investigational New Drug (IND) provisions during an influenza pandemic. IND provisions require strict inventory control and record keeping, completion of a signed consent form from each person who receives the medication, and mandatory reporting of specified types of adverse events. IND provisions also require approval of the protocol and consent form by an Institutional Review Board (IRB). These requirements are extremely time consuming.

FDA regulations permit the use of a national or "central" IRB for IND medications, and would likely be used in such a situation. A treatment IND is one IND mechanism that FDA has available for use and is especially suited for large-scale use of investigational products. http://www.access.gpo.gov/nara/cfr/waisidx_99/21cfr_99.html

As an alternative to IND use of an unapproved antiviral drug, HHS may utilize the drug product under Emergency Use Authorization procedures as described in the FDA draft Guidance "Emergency Use Authorization of Medical Products"

<http://www.fda.gov/cber/gdlns/emerase.pdf>

In order for state and local health departments to be able to help to distribute antiviral drugs under IND provisions, there needs to be funding for nurses, physicians, and pharmacists to provide the necessary services. ADHS will investigate available funding sources and will decide on the feasibility of providing antivirals under IND provisions based on the availability of funding sources and personnel.



V. Recommendations for Antiviral Use in the Pandemic Period

ADHS will update interim recommendations for use of antivirals throughout the course of an influenza pandemic to reflect current epidemiologic and laboratory data. Interim recommendations may also be updated as an effective influenza vaccine becomes available.

A. When pandemic influenza is reported abroad, or sporadic pandemic influenza cases are reported in the United States, without evidence of spread

If an influenza pandemic has begun in other countries, ADHS will work with the federal government, county health departments, tribal governments, bordering states, and the government of Sonora, Mexico to:

- Use antiviral drugs in the management of persons infected with novel strains of influenza and their contacts.
- Work with health care partners to provide antiviral prophylaxis to persons at highest risk for pandemic influenza. Examples of such persons include:
 - Public health workers who investigate suspected cases of pandemic influenza
 - Health care workers in emergency departments, intensive care units, and, dialysis centers
 - Paramedics and Emergency Medical Technicians
- Meet with local partners and stakeholders to review the state-based antiviral drug distribution plan. As part of this effort, state and local partners will:
 - Modify the distribution plan to take into account
 - Updated federal recommendations on target groups
 - Updated information on projected supplies of antiviral drugs.
 - Notify the medical community about the status of the plan and the availability of antiviral drugs.
 - Disseminate public health guidelines that encourage drug-use practices to minimize the development of drug resistance.
 - Provide the public with information on interim recommendations and their rationale
 - Work with federal partners to monitor the safety and effectiveness of drugs and ensure that available antivirals are used in accordance with federal and local recommendations.

B. When there is limited transmission of pandemic influenza in the United States

When there is limited transmission of pandemic influenza in the United States, ADHS will work with county health departments, tribal governments, bordering states, and the government of Sonora, Mexico to:

- Activate state-based plans for targeting antiviral drugs to priority groups for prophylaxis and treatment.
- Request antiviral drugs, as needed, from previously identified including the SNS.
- Continue to educate health care partners to ensure appropriate use of antivirals in the medical management of early cases and contacts.
- Assist hospitals in implementing procedures for early detection and treatment of influenza in health care workers (see Supplement 3).
- Work with federal partners to begin monitoring the safety and effectiveness of drugs and ensure that available antivirals are used in accordance with federal and local recommendations.



C. When there is widespread transmission of pandemic influenza in the United States

- When pandemic influenza has become widespread, the goals of antiviral use will be to 1) treat those at highest risk of severe illness and death, and 2) to preserve the delivery of health care and other essential critical services through early treatment and limited prophylaxis.
- After a vaccine becomes available, antiviral drugs will continue to be used to protect persons who have an inadequate vaccine response (e.g., the elderly and those with underlying immunosuppressive disease) as well as persons with contraindications to vaccination, such as anaphylactic hypersensitivity to eggs or other vaccine components.
- Until the pandemic has waned, ADHS will continue to work with federal and health care partners to monitor the safety and effectiveness of antivirals and to encourage appropriate drug use practices that help minimize the development of drug resistance.

Box 1. Strategies for Antiviral Use in Pandemic Influenza Treatment and Prophylaxis

The goals of vaccine and antiviral use during an influenza pandemic are to limit mortality and morbidity, minimize social disruption, and reduce economic impact. Because a pandemic vaccine is unlikely to be available during the first 4 to 6 months of the pandemic, appropriate use of antivirals may play an important role in achieving these goals.

A. Treatment

1. Planning considerations

- The effectiveness of antivirals against a new pandemic influenza virus cannot be predicted.
- Early treatment may reduce the risk of hospitalization by ~50%, although there are no data on the effectiveness of neuraminidase inhibitors in preventing either serious morbidity or mortality (MMWR July 29, 2005 <http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>).
- Antiviral agents used against seasonal influenza show efficacy in clinical trials when treatment is started within 48 hours of the onset of symptoms. Assuming that antivirals have a similar level of effectiveness against pandemic influenza, it will be essential to have rapid diagnosis, distribution, and administration of antivirals during a pandemic.
- Early treatment is a more efficient use of antivirals than widespread prophylaxis. Because prophylaxis for approximately 6 weeks would require at least four times the number of doses as a 5-day treatment course per individual, huge antiviral stockpiles would be required to permit prophylaxis of more than a small proportion of the U.S. population.
- Most influenza A (H5N1) viruses currently in circulation in southeast Asia are resistant to the M2 ion channel inhibitors (amantadine and rimantadine). Strains that may evolve from these viruses are likely to be resistant to this class of antivirals.
- The emergence of drug resistant strains is less likely during treatment with neuraminidase inhibitors (oseltamivir and zanamivir) than with M2 ion channel inhibitors (amantadine and rimantadine). Neuraminidase inhibitors may also have a lower incidence of severe side (MMWR July 29, 2005 <http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>).

Reserve oseltamivir and zanamivir for treatment whenever possible. Because supplies of oseltamivir and zanamivir are expected to be limited, early depletion of oseltamivir and widespread use of M2 ion channel inhibitors could lead to increased rates of side effects and drug resistance.

2. Treatment Strategies

Optimal use of limited stocks of antiviral drugs will vary depending on the phase of the pandemic. The following is interim guidance that will be updated as more information becomes available.

At all stages of a pandemic:

- Target antiviral therapy to influenza patients admitted to a hospital who present within 48 hours of symptom onset.
- Test to detect the emergence of drug-resistant variants of a pandemic influenza strain (e.g., obtaining specimens from persons who develop influenza while on prophylaxis or who progress to severe disease despite treatment).
- Modify priority groups for treatment based on up-to-date information (e.g. drug supplies, drug susceptibilities, geographic distribution, fatality rate, age-specific morbidity and mortality rates, and the effectiveness of implemented strategies).

Box 1. Strategies for Antiviral Use in Pandemic Influenza Treatment and Prophylaxis –cont.

- Monitor availability of antivirals. When appropriate, recommend changes in priority groups for receiving antivirals
- Purchase antivirals as needed as they become available if not provided by the federal government.
- Distribute antivirals as they become available
- Use an electronic management system for antiviral inventory tracking. ADHS and the Division of Strategic National Stockpile are both working to develop such a management system.

During the earliest stages of a pandemic in the United States:

- Antiviral treatment decisions should be made on laboratory results. A positive rapid antigen test for influenza A would be sufficient grounds for initiating treatment, with a confirmatory, definitive laboratory test required for continuation of treatment (e.g. viral isolate or RT-PCR).
- Negative results of influenza testing would permit stopping antiviral treatment, given the overall low rate of infection in a particular community.
- Target use of antivirals to contain small, well-defined pandemic disease clusters, to possibly delay or reduce the spread to other communities (see Supplement 8).

When there is increasing disease activity in the United States:

- Treatment decisions will be based on:
 - Laboratory-confirmed identification of the pandemic subtype (e.g. by viral isolation and subtyping, or RT-PCR), *or*
 - Detection of influenza A by rapid antigen test, *or*
 - Epidemiologic and clinical characteristics.
- Initiation of antiviral treatment should be on a clinical basis (i.e. before results from viral isolation, IFA, RT-PCR assays, or rapid antigen tests become available) since early treatment is more likely to be effective.

Once infection becomes more common, negative rapid antigen test results are more likely to represent false negatives; therefore, treatment should continue while awaiting results from confirmatory testing.

When the pandemic is widespread in the United States:

- Antiviral treatment decisions will be made on clinical features and epidemiologic risk factors, taking into account updated knowledge of the epidemiology of the pandemic virus.

As the pandemic progresses, recommendations for antiviral treatment will be revised as new information is obtained about the pandemic strain.

B. Prophylaxis

1. Planning considerations for prophylaxis

- 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.
- The need for antiviral prophylaxis may decrease once an effective pandemic influenza vaccine becomes available for use among healthcare workers and other groups.
- Post-exposure prophylaxis might be useful in attempts to control small, well-defined disease clusters (institutional outbreaks or household introductions). The potential use of targeted prophylaxis to contain disease clusters is discussed in **Supplement 8**.
- The number of persons who receive **prophylaxis** with oseltamivir should be **minimized**, primarily to extend supplies available to treat persons at highest risk of serious morbidity and mortality. If sufficient antiviral supplies are available, prophylaxis should be used only during peak periods of viral circulation to protect small groups of front-line healthcare workers and other providers of essential community services prior to availability of vaccine.
- If a pandemic virus is susceptible to M2 ion channel inhibitors, amantadine and rimantadine can be used for prophylaxis, although drug resistance may emerge quickly.
- Where supplies allow, rimantadine is preferred over amantadine, because it is associated with a lower incidence of

Box 1. Strategies for Antiviral Use in Pandemic Influenza Treatment and Prophylaxis – cont.

- Prophylaxis with amantadine or rimantadine decreased the risk of influenza illness during the 1968 pandemic and the 1977 reappearance of H1N1 viruses.*
- A study of post-exposure prophylaxis using amantadine—conducted during the 1968 pandemic—demonstrated little effectiveness, possibly due to rapid development of resistance.*
- Oseltamivir has >70% efficacy as prophylaxis against laboratory-confirmed febrile influenza illness during interpandemic periods in unimmunized adults.*

*See MMWR July 29, 2005 <http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>

2. Strategies for prophylaxis

Strategies for effective use of antiviral prophylaxis during a pandemic include:

- **Targeting prophylaxis to priority groups throughout the first wave of the pandemic.** (See **Appendix 1**, and U.S. Department of Health and Human Services' HHS Pandemic Influenza Plan, November 2005, Appendix D: NVAC/ACIP recommendations for prioritization of pandemic influenza vaccine and NVAC recommendations on pandemic antiviral drug use, table D-2, page D-21, <http://www.hhs.gov/pandemicflu/plan/pdf/AppD.pdf>. Data from 20th century influenza pandemics suggest that the first wave of these pandemics lasted approximately 4 to 8 weeks in a community)
- **Using post-exposure prophylaxis** (generally for 10 days) to:
 - Control small, well-defined disease clusters, such as outbreaks in nursing homes or other institutions, to delay or reduce transmission to other communities.
 - Protect individuals with a known recent exposure to a pandemic virus (e.g., household contacts of pandemic influenza patients).
- **Modify priority groups for prophylaxis based on up-to-date information** (e.g. drug supplies, drug susceptibilities, geographic distribution, fatality rate, age-specific morbidity and mortality rates, the effectiveness of implemented strategies, and when a vaccine becomes available).
- **Consider post-exposure prophylaxis to protect key personnel** (when a vaccine becomes available) during the period between vaccination and the development of immunity.

C. Strategies for Combined Treatment and Prophylaxis

During the Pandemic Alert Period, combined antiviral treatment for ill persons and targeted post-exposure prophylaxis of contacts would be considered in attempts to contain small disease clusters (e.g., institutional outbreaks or household introductions as described in **Supplement 8**.

The administration of oseltamivir does not interfere with the development of antibodies to influenza viruses after administration of trivalent inactivated influenza vaccine. Therefore, persons receiving prophylaxis can continue to receive oseltamivir during the period between vaccination and the development of immunity. Whether oseltamivir can interfere with the immune response elicited by a live-attenuated pandemic vaccine is unknown.

D. Pediatric Use

None of the available influenza antivirals are currently FDA approved for use among children aged <1 year. In particular, the safety and efficacy of oseltamivir have not been studied in children aged <1 year for either treatment or prophylaxis of influenza (see oseltamivir package insert). The decision by an individual physician to treat children aged <1 year in an emergency setting on an off-label basis with an antiviral must be made on a case-by-case basis with full consideration of the potential risks and benefits.

Oseltamivir is available as an oral suspension for use in children. However, this formulation of oseltamivir may not be available in sufficient supply during a pandemic to treat all pediatric patients. If physicians use 75 mg oseltamivir capsules to deliver a partial, pediatric dose to children, they should know that there are insufficient data on palatability, stability, and dosing consistency to predict the safety or effectiveness of such a use.

Box 2. Federal Supplies of Antiviral Drugs in the Strategic National Stockpile

During an influenza pandemic, a decision to deploy federal assets from the Strategic National Stockpile (SNS) will be made by HHS. As of October 2005, the SNS (<http://www.bt.cdc.gov/stockpile/>) contained 2.26 million treatment regimens of oseltamivir (capsules and suspension), 5 million treatment regimens of rimantadine (tablets and syrup), and 84,000 treatment regimens of zanamivir. Two million additional oseltamivir courses will be delivered to the SNS by November 2005 and additional purchases of antivirals are pending.

The details of the HHS approach for allocation and distribution of SNS assets during an influenza pandemic are currently under consideration. ADHS will work with federal the federal government, local health departments, tribal governments, bordering states, and Sonora, Mexico to:

- Develop plans to allot antivirals to health care facilities, assuming that distribution of limited supplies of antivirals will initially be targeted to patients hospitalized with pandemic influenza and for treatment or prophylaxis of essential health care workers.
- Develop a system that would allow for standing orders for the prescription of antivirals, particularly for use in health care workers.
- Work with occupational health clinics in hospitals and other health care organizations on plans for delivery of antivirals to health care workers.
- Instruct health care providers **not** to prescribe oseltamivir to individuals for prophylaxis against pandemic influenza, and counsel individuals **not** to stockpile oseltamivir in homes. At the present time, antivirals are needed to treat and give prophylaxis to the highest priority groups for the current seasonal influenza. Inappropriate use and stockpiling of oseltamivir will take away necessary resources from those who have the highest priority.

Table 1. Characteristics of Anti-Influenza Antiviral Drugs

	Inhibits	Acts on	Administration	Common Side Effects
Amantadine	M2 ion channel	Influenza A	Oral	CNS, GI
Rimantadine	M2 ion channel	Influenza A	Oral	CNS, GI (less often than amantadine)
Oseltamivir	Neuraminidase	Influenza A and B	Oral	GI
Zanamivir	Neuraminidase	Influenza A and B	Inhaler	Bronchospasm

These agents differ in mechanisms of action, pharmacokinetics, FDA-approved indications, dosages, cost, and potential for emergence of drug resistance (see July 2005 recommendations of the AHIC (<http://www.cdc.gov/mmwr/PDF/rr/rr5408.pdf>)). The neuraminidase inhibitors and rimantadine are superior to amantadine with regard to the frequency of serious side effects. The use of M2 ion channel inhibitor, particularly for treatment, is likely to lead to the emergence and spread of drug-resistant influenza viruses.

Source of Table 1: <http://www.hhs.gov/pandemicflu/plan/10>

Table 2. Recommended Daily Dosage of Antivirals for Treatment and Prophylaxis

(From *Prevention and Control of Influenza, Recommendations of the Advisory Committee on Immunization Practices [ACIP], MMWR July 29, 2005*)

Antiviral Agent	Age Groups (years)				
	1–6	7–9	10–12	13–64	≥65
Amantadine^a					
Treatment, influenza A	5mg/kg body weight/day up to 150 mg in two divided doses ^b	5mg/kg body weight /day up to 150 mg in two divided doses ^b	100 mg twice daily ^c	100 mg twice daily ^c	≤100 mg/day
Prophylaxis, influenza A	5mg/kg body weight /day up to 150 mg in two divided doses ^b	5mg/kg body weight /day up to 150 mg in two divided doses ^b	100 mg twice daily ^c	100 mg twice daily ^c	≤100 mg/day
Rimantadine^d					
Treatment, ^e influenza A	NA ^f	NA	NA	100 mg twice daily ^{c,g}	100 mg/day
Prophylaxis, influenza A	5m/kg body weight /day up to 150 mg in two divided doses ^b	5mg/kg body weight /day up to 150 mg in two divided doses ^b	100 mg twice daily ^c	100 mg twice daily ^c	100 mg/day ^h
Zanamivir^{i,j}					
Treatment, influenza A and B	NA	10 mg twice daily	10 mg twice daily	10 mg twice daily	10 mg twice daily
Oseltamivir					
Treatment, ^k influenza A and B	dose varies by child's weight ^l	dose varies by child's weight ^l	dose varies by child's weight ^l	75 mg twice daily	75 mg twice daily
Prophylaxis, influenza A and B	NA	NA	NA	75 mg/day	75 mg/day

^a The drug package insert should be consulted for dosage recommendations for administering amantadine to persons with creatinine clearance ≤50 ml/min/1.73m².

^b 5 mg/kg body weight of amantadine or rimantadine syrup = 1 tsp/2.2 lbs.

^c Children aged ≥10 years who weigh <40 kg should be administered amantadine or rimantadine at a dosage of 5 mg/kg body weight /day.

^d A reduction in dosage to 100 mg/day of rimantadine is recommended for persons who have severe hepatic dysfunction or those with creatinine clearance ≤10 mL/min. Other persons with less severe hepatic or renal dysfunction taking 100 mg/day of rimantadine should be observed closely, and the dosage should be reduced or the drug discontinued, if necessary.

^e Approved by FDA only for treatment among adults.

^f Not applicable.

^g Rimantadine is approved by FDA for treatment among adults. However, certain experts in the management of influenza consider it appropriate for treatment among children. (See American Academy of Pediatrics, 2003 Red Book.)

^h Older nursing-home residents should be administered only 100 mg/day of rimantadine. A reduction in dosage to 100 mg/day should be considered for all persons aged ≥65 years if they experience possible side effects when taking 200 mg/day.

ⁱ Zanamivir administered via inhalation using a plastic device included in the medication package. Patients will benefit from instruction and demonstration of the correct use of the device.

^j Zanamivir is not approved for prophylaxis.

^k A reduction in the dose of oseltamivir is recommended for persons with creatinine clearance <30 ml/min.

^l The dose recommendation for children who weigh ≤15 kg is 30 mg twice a day. For children who weigh >15 to 23 kg, the dose is 45 mg twice a day. For children who weigh >23 to 40 kg, the dose is 60 mg twice a day. And for children who weigh >40 kg, the dose is 75 mg twice a day.

Source of table 2: <http://www.hhs.gov/pandemicflu/plan/10>

Appendix 1

Arizona's Priority Groups for Antiviral Use during an Influenza Pandemic Estimation of the Number of Treatment Courses Required in Arizona for Select Priority Groups

	Priority Group	Strategy	Estimated Population		C.F.	Number of Treatment Courses (10 pills/course)		Rationale
			US (millions)	AZ		Target group	Cumulative courses	
1	Patients admitted to hospital	Treat	10.0	200,000	75%	150,000	150,000	Treat those seriously ill and most likely to die
2	HCWs with direct patient care and EMS	Treat	9.2	184,000	25%	46,000	196,000	HCWs needed for medical care
3	Highest risk outpatients: Pregnant women; immuno-compromised	Treat	2.5	50,000	25%	12,500	208,500	Highest risk of hospitalization and death; hard to protect immuno-compromised by vaccine
4	Pandemic health responders, Public Safety, Government decision-makers	Treat	3.3	66,000	25%	16,500	225,000	Critical for effective public health response
5	Increased risk patients: Ages 12-23 mos., ≥65 yrs.; underlying medical conditions	Treat	85.5	1,710,000	25%	427,500	652,500	High risk for hospitalization and death
6	Outbreak response	Post Exposure Prophyl.	~ 2 million	~ 40,000	2%	40,000	692,500	Treatment & prophylaxis to contacts stop outbreaks
7	HCWs in emergency departments, ICU, EMS, dialysis centers	Prophyl.	1.2	240,000	x4	960,000	1,652,500	Most critical to prevent absenteeism and surge capacity response
8	Pandemic societal responders & HCWs without direct patient contact	Treat	10.2	204,000	25%	51,000	1,703,500	Impact on maintaining health, implementing pandemic response, maintaining societal functions
9	Other outpatients	Treat	180	3,600,000	25%	72,000	1,775,500	Those who develop influenza and do not fit in about groups
10	Highest risk outpatients	Prophyl.	2.5	50,000	x4	200,000	1,975,500	Prevents illness in highest risk groups
11	Other HCWs with direct patient contact	Prophyl.	8.0	160,000	x4	640,000	2,615,500	Reduce absenteeism and preserve optimal health care response

Note: This does not include calculations for family members of high priority or high-risk individuals

Appendix 1

Assumptions, Definitions, and Abbreviations

Assumptions:

- US population as per estimated population in table = 314.4 million
- AZ population in 2004 = 5,832,150 (2004)
- Therefore, AZ/US Ratio ~ 2%

C.F.=Conversion Factors: Mirroring assumptions in HHS PIP 11-05 document for US

- 75% of hospitalized patients would get treated.
- 25% of select priority groups would get infected and need treatment.
- Two million people in the US may need Post Exposure Prophylaxis (PEP); 2% of that = 40,000.
- x4 derives from the average need for prophylaxis for select priority groups would be the equivalent of 4 treatment courses (20 days or forty 75 mg pills)

HCWs=Health Care Workers

EMS=Emergency Medical Service providers

ICU= Intensive care units

Prophy.=Prophylaxis

NA=Not applicable

Treatment Courses: 10 pills (i.e. Five days of 75 mg pills twice a day)

Public Health Responders (PHR): Public health, vaccinators, vaccine and antiviral manufacturers

Public safety: Police, fire, corrections

Outbreak response: (Nursing homes and residential settings)

Source of US population and suggested priority groups: U.S. Department of Health and Human Services' HHS Pandemic Influenza Plan, November 2005. Appendix D: NVAC/ACIP recommendations for prioritization of pandemic influenza vaccine and NVAC recommendations on pandemic antiviral drug use, table D-2, page D-21.

<http://www.hhs.gov/pandemicflu/plan/pdf/AppD.pdf>

Appendix 2
Projected use of Antivirals in Arizona During an Influenza Pandemic

Arizonans who would receive Antivirals Based on Appendix 1's priority Groups and Estimates:	#	% of population
Treatment	775,500	13.2%
Prophylaxis	490,000	8.5%
Treatment or Prophylaxis	1,265,500	21.7%

Supporting documents:

1. HHS Pandemic Influenza Plan, November 2005. U.S. Department of Health and Human Services.
<http://www.hhs.gov/pandemicflu/plan>
2. HHS Pandemic Influenza Plan, Part 1--HHS Strategic Plan, Appendix D: NVAC/ACIP Recommendations on Use of Vaccines and NVAC Recommendations on Pandemic Antiviral Drug Use.
<http://www.hhs.gov/pandemicflu/plan/pdf/AppD.pdf>
3. HHS Pandemic Influenza Plan, Part 2—Public Health Guidance for State and Local Partners, Supplement 7: Antiviral Distribution and Use. <http://www.hhs.gov/pandemicflu/plan/pdf/S07.pdf>

Clinician Fact Sheet: Antivirals for Influenza 2005-2006

Updated 19 Jan 2006

Four antiviral drugs are licensed for treatment and chemoprophylaxis

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

	Amantadine (Symmetrel®)	Rimantadine (Flumadine®)	Oseltamivir (Tamiflu®)	Zanamivir (Relenza®)
Effective for Flu A	Not recommended for 2005-2006 season		Yes	Yes
Effective for Flu B	No	No	Yes	Yes
Mode	Oral	Oral	Oral	Inhaled
Treatment	≥ 1 y.o.	≥ 13 y.o.	≥ 1 y.o.	≥ 7 y.o.
Prophylaxis	≥ 1 y.o.	≥ 1 y.o.	≥ 1 y.o.	N/A

Priority groups for treatment with antiviral medicines

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

Priority groups for chemoprophylaxis with antiviral medicines

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

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

Chemoprophylaxis

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

Treatment

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

Length of Antiviral Treatment and Chemoprophylaxis

	Treatment Length	Chemoprophylaxis Length		
		After exposure	Institutional outbreak	After vaccine**
Amantadine	3-5 days*	7 days	Until outbreak over	2 weeks
Rimantadine				
Oseltamivir	5 days	7 days	Until outbreak over	2 weeks
Zanamivir		N/A	N/A	N/A

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

Pediatric Points

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

ANTIVIRAL MEDICINES

Amantadine [100 mg capsule; 50 mg/5 ml syrup]

- Treatment and prophylaxis (T&P) of influenza A in ≥ 12 months of age.
- Standard dose in adults for both T&P: 100 mg PO twice a day.
- Standard dose in children for T&P: 5 mg/kg/day PO in two divided doses (max of 150 mg/day).
- Side effects: CNS effects (e.g. trouble concentrating, insomnia & lowered seizure threshold, dry mouth, urinary retention).
- Decrease dose to 100 mg Q day
 - CrCl ≤ 50 ml/min
 - Age ≥ 65 years
 - When side effects occur on 100 mg BID

Rimantadine [100 mg tablet; 50 mg/5 ml syrup]

- Treatment of influenza A in ≥ 13 y.o.
- Prophylaxis of influenza A in ≥ 1 y.o.
- Standard dose in adults: 100 mg PO twice a day (see above table for length)
- Standard dose in children: 5 mg/kg/day PO in two divided doses (max of 150 mg/day).
- Similar but fewer side effects than amantadine
- Decrease dose to 100 mg Q day
 - Nursing home residents
 - Age ≥ 65 years
 - Severe hepatic dysfunction
 - CrCl ≤ 10 ml/min
 - When side effects occur on 100 mg BID

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

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

Zanamivir (Relenza®) [Inhaler]

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

For more detailed information about each antiviral medication
See <http://www.cdc.gov/flu/professionals/treatment>

Clinician Fact Sheet: Influenza 2005-2006

Epidemiology

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

Clinical Presentation

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

Differential Diagnosis

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

Laboratory

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

Infection control

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

Treatment & Prophylaxis

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

	Amantadine (Symmetrel®)	Rimantadine (Flumadine®)	Oseltamivir (Tamiflu®)	Zanamivir (Relenza®)
Effective for Influenza A	Not recommended for 2005-2006 season		Yes	Yes
Effective for Influenza B	No	No	Yes	Yes
Mode	Oral	Oral	Oral	Inhaled
Treatment	≥ 1 y.o.	≥ 13 y.o.	≥ 1 y.o.	≥ 7 y.o.
Prophylaxis	≥ 1 y.o.	≥ 1 y.o.	≥ 1 y.o.	Not licensed

Follow CDC's recommendations for ages and contraindications

- Don't use smaller doses than recommended
- Only use LAIV (Flumist™) in healthy people ages 5 years-49 years
- Persons receiving LAIV should avoid close contact with severely immunosuppressed people for 7 days
- Contraindications to inactivated influenza vaccine or LAIV
 - Anaphylactic allergy to eggs
 - Previous Guillain-Barré syndrome during the 6 weeks following a previous influenza vaccine

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

Influenza Vaccine Recommendations for 2005-2006 season

Inactivated intramuscular shot [Multiple manufacturers]:

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

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

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

Pediatric pointers

- Children ages 5 years-8 years old receiving any influenza vaccine for the first time need two doses of vaccine.
 - Two inactivated shots should be spaced $\geq$ 4 weeks apart
 - Two LAIV doses should be separated by 6-10 weeks
- Notify local or county health department for pediatric influenza deaths.

Staphylococcal and MRSA disease associated with influenza

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

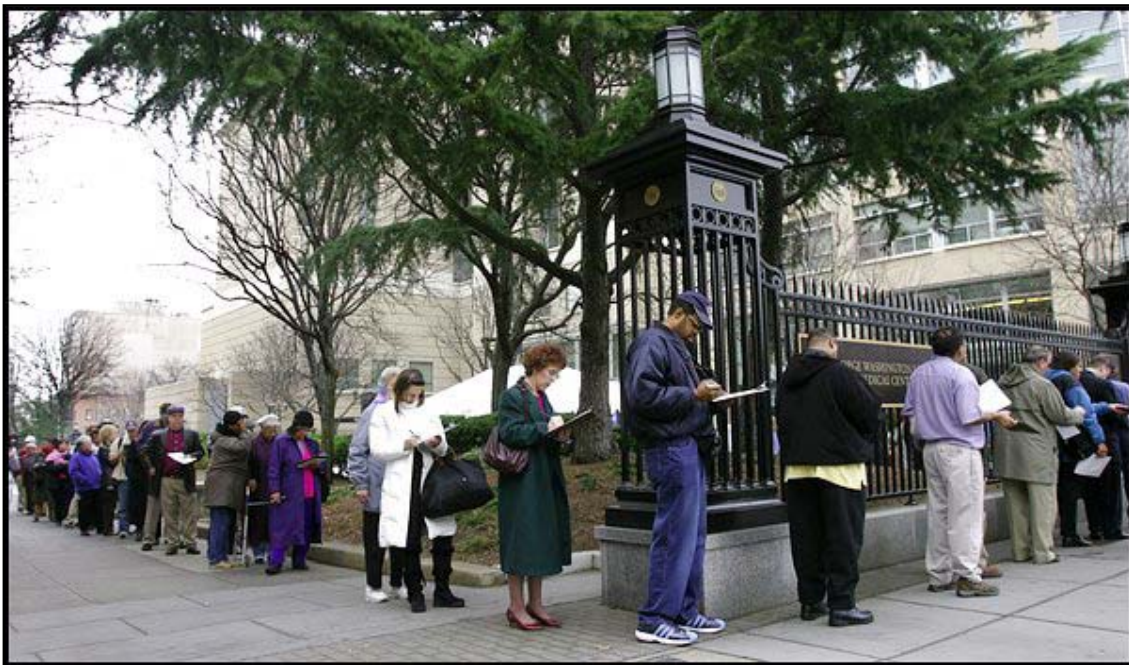
For More Information

- ADHS website at <http://www.azdhs.gov/phs/immun/providersflu.htm>
- Centers for Disease Control and Prevention website at www.cdc.gov/flu
- MMWR July 29, 2005 "Treatment and Control of Influenza" at <http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5408a1.htm>
- Recorded ADHS Hotline for the Public: **Metro Phoenix** 602-364-4500, **Statewide** 1-800-314-9243

**Arizona Department of Health Services
Division of Public Health Services**

Arizona Influenza Pandemic Response Plan

Supplement 8: Community Disease Control and Prevention



Susan Biddle

Supplement 8: Table of Contents

I.	OVERVIEW	S8-2
II.	ACTIONS FOR THE INTERPANDEMIC ALERT PERIODS	S8-2
	A. Community preparedness for implementation of pandemic influenza containment measures	S8-2
	1. Planning for disease control and containment	S8-2
	2. Legal preparedness	S8-3
	3. Planning for influenza clinics and hotlines	S8-6
	4. Public understanding of disease containment measures	S8-6
	5. Enforcement of community containment measures	S8-6
	B. Management of patients infected with novel strains of influenza and their contacts	S8-6
	1. Patient isolation	S8-7
	2. Management of close contacts	S8-7
	C. Containment of small clusters of infection with novel strains of influenza	S8-8
	1. Targeted chemoprophylaxis of disease clusters	S8-8
	2. Influenza hotlines and clinics	S8-8
III.	ACTIONS FOR THE PANDEMIC PERIOD	S8-8
	A. Containment measures for individuals	S8-8
	1. Patient isolation	S8-9
	2. Management of contacts	S8-9
	B. Community-based containment measures	S8-9
	1. Measures that affect groups of exposed or at-risk persons	S8-9
	2. Measures that affect communities	S8-10
	3. Scaling back community containment measures	S8-12
IV.	APPENDICES	
	Appendix 1. Interventions for Community Containment	S8-15
	Appendix 2. Preparedness Checklist for Community Containment Measure	S8-19
	Appendix 3. Planning Checklists	S8-22
	Appendix 4. Legal Preparedness: Isolation and Quarantine Templates	S8-29
	Appendix 5. Frequently Asked Questions about Quarantine	S8-43
	Appendix 6. Recommendations for Quarantine	S8-45
	Appendix 7. Evaluation of Homes and Facilities for Isolation and Quarantine	S8-47

I. Overview

The initial response to the emergence of a novel influenza subtype that spreads between people will focus on containing the virus at its source, if feasible, and preventing a pandemic. Once spread beyond the initial focus occurs and with introduction of the virus into the United States, the foci of containment activities will be public health and individual measures that attempt to slow and limit viral transmission. Containment measures refer to measures that attempt to fully limit transmission as well as those that attempt to slow transmission. (Box 1) Containment strategies aimed at controlling and slowing the spread of the virus might include measures that affect individuals (e.g., isolation of patients and monitoring their contacts) as well as measures that affect groups or entire communities (e.g., cancellation of public gatherings; implementation of community-wide “Stay Home Days”). (Appendix 1) Guided by epidemiologic data, ADHS and local health agencies will implement the most appropriate of these measures in efforts to maximize impact on disease transmission and minimize impact on individual freedom of movement.



Although states and localities have primary responsibility for public health matters within their borders, including isolation and quarantine, under the authority of Section 361 of the Public Health Service Act (42 USC 264), the HHS Secretary may make and enforce regulations necessary to prevent the introduction, transmission, or spread of communicable diseases from foreign countries into the United States or from one state or possession into another.

Containment measures applied to individuals (e.g., isolation and quarantine) may have limited impact in preventing the transmission of pandemic influenza, due to the short incubation period of the illness, the ability of persons with asymptomatic infection to transmit virus, and the possibility that early symptoms among persons infected with a novel influenza strain may be non-specific, delaying recognition and implementation of containment. Nevertheless, during the Pandemic Alert Period with a less efficiently transmitted virus, these measures may have great effectiveness, slowing disease spread and allowing time for targeted use of medical interventions. In addition, implementing these measures early in a pandemic when disease is first introduced into the U.S. and when the scope of the outbreak is focal and limited may slow geographical spread and increase time for vaccine production and implementation of other pandemic response activities.

Later, when disease transmission is occurring in communities around the U.S., individual quarantine is much less likely to have an impact and likely would not be feasible to implement. Thus, community-based containment measures (e.g., closing schools or restricting public gatherings) and emphasizing what individuals can do to reduce their risk of infection (e.g., hand hygiene and cough etiquette) may be more effective disease control tools.

II. Actions for Inter-pandemic and Pandemic Alert Periods

A. Community preparedness for implementation of pandemic influenza containment measures

Both individual and community-based containment measures raise legal, logistic, and social challenges that should be addressed during the Interpandemic Period. This section provides information on planning for disease control and containment, legal preparedness, planning for potential use of influenza hotlines and the role of communications in preparing the public to accept the possible need for restrictive measures to reduce the spread of pandemic influenza.

1. Planning for disease control and containment

Although individual quarantine as a control measure is likely only to be used during the Pandemic Alert and very early during the Pandemic Period—for example, among communities where initial cases are introduced into the U.S.—all state and local health departments and tribal authorities should anticipate and prepare for the challenges of effectively implementing this measure by working with community partners to review the steps involved in establishing and maintaining quarantine facilities and procedures.

Key activities include (see Appendix 2):

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

Planning checklists for businesses, individuals & families, and faith-based & community organizations are in Appendix 3.

2. Legal preparedness

ADHS, county health departments, and tribes (including Indian Health Services, as appropriate) have primary responsibility for public health matters within their borders, including isolation and quarantine. Specific statutory authorities for the government agencies are listed below:

Isolation and Quarantine

For purposes of this response plan, “Isolation” refers to the separation of an individual with influenza from non-infected individuals. “Quarantine” refers to the separation of an individual, or individuals, exposed to influenza from non-infected and non-exposed individuals. There are three sources of authority and direction for Isolation and Quarantine in Arizona:



1. ARS § 36-624

Gives the counties the authority to conduct isolation and quarantine measures. Must be consistent with the due process requirements that are specified under ARS § 36-788 and 36-789 (see below). Some counties may have established their own procedures for isolation and quarantine under this authority, however many counties may not be prepared in this area.

2. ARS § 36-787 through 36-789

Provides isolation and quarantine authority to the state during a state of emergency or state of war emergency. Quarantine orders at the state level can only be given by the Governor, in consultation with the director of the Arizona Department of Health Services.

3. AAC R9-6-388

These rules give the local health agency a process from which to issue isolation and/or quarantine orders that are congruent with ARS § 36-624, ARS § 36-788 and ARS §36-789 (see figures 8.1 and 8.2).

Templates for documents needed to request isolation and quarantine orders are in Appendix 4.

Figure 8.1 During a Governor-declared state of war or state of emergency, the Department (ADHS) must follow the process below to issue an order for isolation or quarantine:

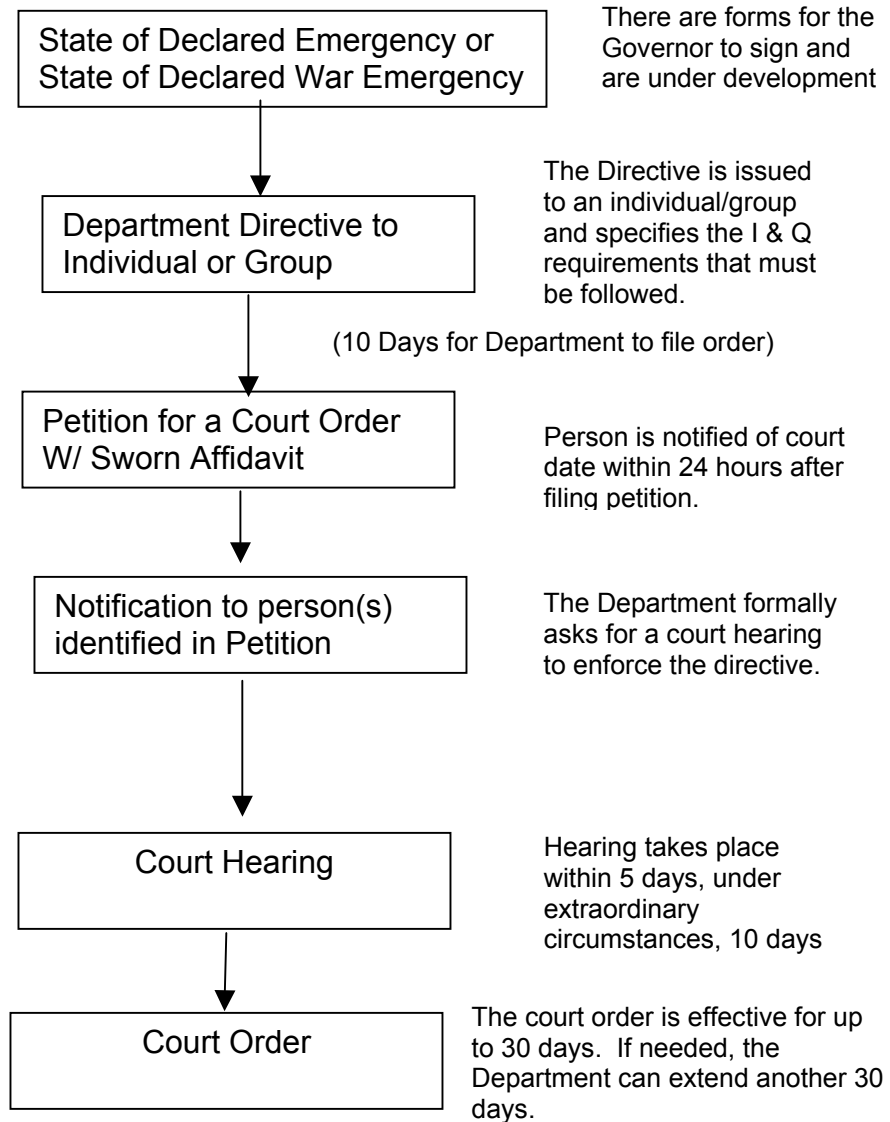
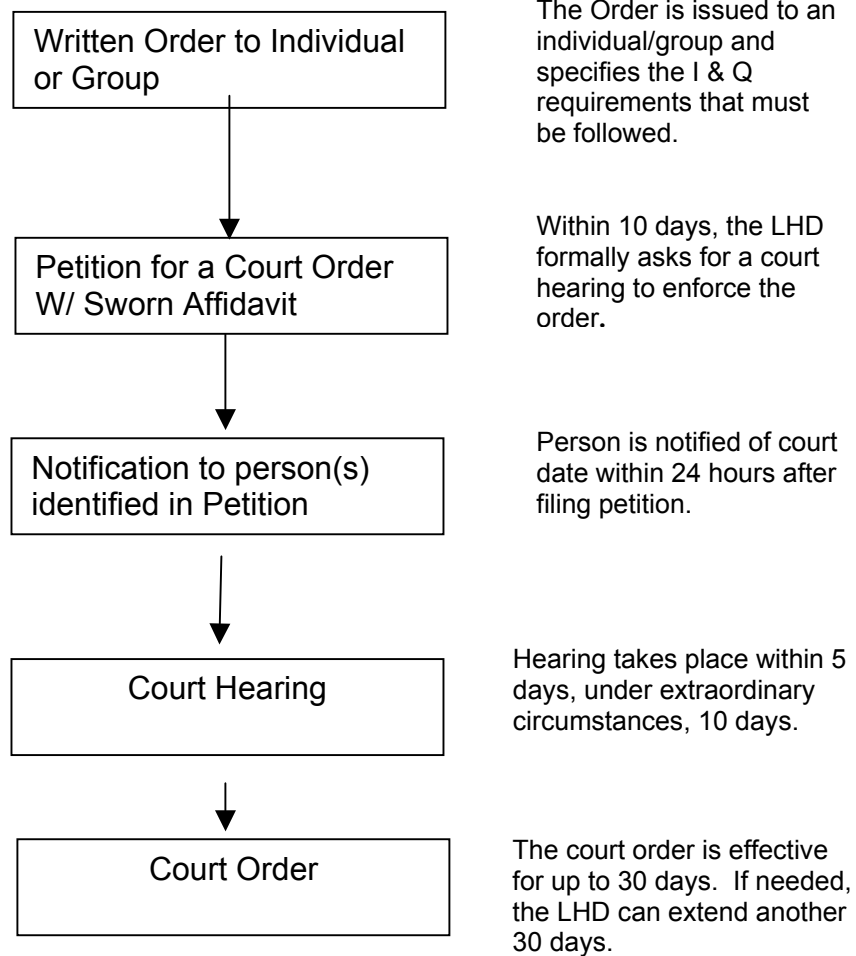


Figure 8.2 The local health agency must follow the process below to issue an order for isolation or quarantine:



3. Planning for influenza clinics and hotlines

An influenza pandemic is likely to put great stress on Arizona's health care delivery system, in particular emergency departments. A hospital and health care surge capacity plan has been designed to address the overwhelming demand on the health care system, especially emergency departments (see Supplement 3).

Ill persons will be encouraged to call special *influenza hotlines* that provide advice on whether to stay home or to seek medical care. ADHS and the county health departments have hotline capacities that can act as triage and information systems to support this need. These "community triage" efforts may help prevent hospitals from being overwhelmed with patients who do not require hospital-level care. Moreover, community triage efforts may also reduce the number of uninfected persons who mingle with infected persons at clinics and hospitals. Activated influenza hotline systems will include:

- Telephone hotline numbers that people can call to report specific symptoms (e.g., fever) that will be specified by ADHS
- Protocols for hotline staff members that include training components and triage decision trees or algorithms
- Communication systems with influenza clinics or alternative treatment facilities, if they are established



4. Public understanding of disease containment measures

Community preparedness for implementation of both individual and community control measures needs to be enhanced during the Interpandemic Period by improving public understanding of the dangers of pandemic influenza and the benefits of community-wide disease control practices, including social-distancing measures that can prevent illness and death. Strategies for disease control will be facilitated by clear communication of the rationale for—and duration of—containment measures.

Public health education campaigns that involve community partners will be designed to build public confidence in the ability to cope with an influenza pandemic. Partners will include schools, faith-based organizations, community-based organizations, and local government institutions that can help educate the public and provide support to families and persons who are incapacitated by illness.

Local public health campaigns will explain how individual action (e.g., strict compliance with respiratory hygiene, staying home when ill) and community efforts (e.g., implementation of "Stay Home Days" and self-isolation, as described below) can help reduce disease transmission. Education campaigns will describe the criteria, justification, role, methodology, and duration of quarantine and the social, medical, and psychological ways in which persons will be supported during the quarantine period. They can also explain that quarantine—which temporarily restricts personal movement—is a collective action implemented for the common good. In addition, they can allay public concerns about privacy issues related to the provision of medical information to health care workers and public health officials. These key messages will be translated and modified as required to address the cultural and linguistic needs of local neighborhoods.

5. Enforcement and support of community containment measures

Experience from the 2003 SARS outbreak suggests that quarantine applied on a voluntary basis can be sufficient to reduce disease. Nevertheless, ADHS and the county health are prepared to enact and enforce individual and community-based containment measures, if needed.

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

In this document, the term "novel strains of influenza" is used to refer to avian or animal influenza strains that can infect humans (like influenza A [H5N1]) and new or reemergent human viruses that cause cases or clusters of human disease. The choice of measures to contain the spread of novel strains of influenza during the Pandemic Alert Period will vary depending on the assessment of risk, as reflected in the three Pandemic Alert Phases described by WHO (Box 2).

1. Patient isolation

Infection control precautions and procedures for isolating influenza patients—in a residence, community facility, or hospital—are described in Supplement 4. The patient will be admitted to a hospital if clinically indicated, if public health needs require it, or if isolation at home or in a community facility cannot be achieved safely and effectively. Information for evaluating the suitability of homes and facilities for patient isolation is provided in Appendix 6.

ADHS or county health department personnel will advise the health care provider and health care facility on additional steps that may be taken, before and after laboratory test results become available, via the Arizona State Public Health Laboratory or CDC.

2. Management of close contacts

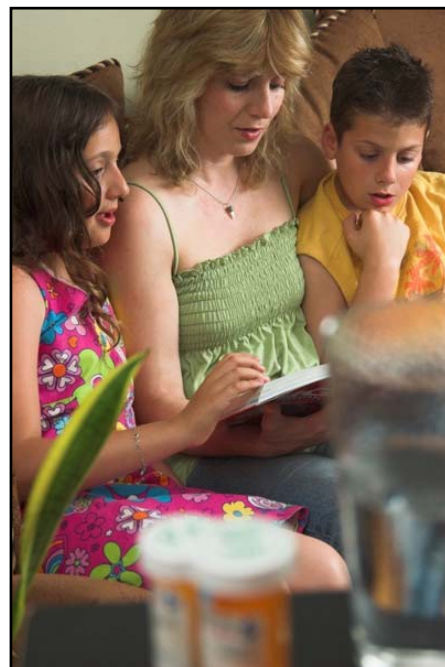
In most situations—even at the earliest stages of a pandemic—it will not likely be possible to trace and quarantine close contacts of suspected or confirmed cases within 48 hours (the average incubation period for human influenza). However, in certain situations, especially during the later phases of the WHO Pandemic Alert Period (Box 2), efforts to identify exposed individuals or groups might be recommended. Examples might include:

- Suspected or confirmed cases of novel influenza. For example, a suspected or confirmed case of avian influenza A (H5N1) in persons who have traveled to an H5N1-affected country and have been exposed to sick poultry (either through handling or eating poultry products) or a laboratory-confirmed human case of H5N1 influenza
- Suspected or confirmed cases of avian influenza A (H5N1) or another novel strain of influenza in travelers on internationally-originating airplanes about to arrive in Arizona (see Supplement 9)
- Suspected or confirmed cases of avian influenza of any type in persons with known exposure to sick poultry or birds in the United States
- Clusters of avian influenza A (H5N1) or another novel strain of influenza in small, well defined settings, such as a military base
- Cases of laboratory exposure to avian influenza A (H5N1) or influenza viruses with the potential to cause a pandemic (e.g., influenza A [H2N2])

Decisions on whether to trace a patient's contacts and how to manage them will be made on a case-by-case basis by county health officers and/or ADHS officials, taking into consideration:

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

A patient's close contacts may include family, friends, work colleagues, classmates, fellow passengers, and/or health care providers. Management of contacts might include passive or active monitoring without activity restrictions and/or quarantine at home or in a designated facility. In the Pandemic Alert Period, especially during Phase 3 or 4 when little or limited person-to-person transmission has been documented, quarantine of contacts should be implemented **only when there is a high probability that the ill patient is infected with a novel influenza strain that may be transmitted to others.**



A county, state, or tribal health department official will monitor contacts that are quarantined at least once a day—by phone or in person—to assess symptoms and address any needs. Frequent monitoring (e.g., twice a day) will facilitate early detection, reducing the interval between the onset of symptoms and the isolation of the sick person, but may not be feasible, depending on resource availability. Early signs of influenza include fever, respiratory symptoms, and chills, rigors, myalgia, headache, or diarrhea. Quarantine may be lifted as soon as the exposed contact has remained without signs or symptoms of disease for a complete incubation period for influenza disease. (Experience with seasonal influenza suggests the incubation period is 1-4 days, with an average length of 2 days. However, the clinical behavior

of a novel influenza virus may be different and could potentially be as long as 10 days. Pandemic influenza preparedness activities should plan for containment measures that may last between 1-10 days. For the purposes of this document, 10 days is referred to as the incubation period, following the HHS planning model; however, this time frame may be adjusted as more is known about the virus.)

C. Containment of small clusters of infection with novel strains of influenza

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

1. Targeted chemoprophylaxis of disease clusters

This intervention includes investigation of disease clusters, administration of antiviral treatment to persons with confirmed or suspected pandemic influenza, and provision of drug prophylaxis to all likely exposed persons in the affected community. CDC will assist ADHS and county health departments in these efforts, as needed. Targeted chemoprophylaxis also requires intensive disease surveillance to ensure coverage of the entire affected area, effective communication with the affected community, and rapid distribution and administration of antivirals because they are most effective when provided within 48 hours of symptom onset or when used as post-exposure prophylaxis before onset of illness. This intervention may only be useful upon the recognition of the first cases or introduction in Arizona, especially in a closed community, such as an assisted living facility.

2. Influenza hotlines and infectious disease referral centers

During the later phases of a Pandemic Alert, in a community experiencing a disease cluster, a combination of self-assessment and establishment of influenza hotlines may be effective in detecting potential influenza disease and conducting “community triage” to direct persons with symptoms to the appropriate site and level of care. This intervention includes asking all members of the affected community to monitor their symptoms in accordance with instructions from ADHS. For example, all members of the community might be asked to take their temperature (and the temperature of their household members) once or twice daily. Persons with temperatures above a certain level may be asked to either stay home and phone a designated influenza hotline for a medical consult, or proceed to a designated infectious disease referral center, established by regional public health and health care authorities (see Supplement 3).

III. Actions for the Pandemic Period

During the Pandemic Period, control measures such as contact tracing and quarantine applied to individuals may have limited impact in decreasing influenza transmission. In addition, individual-level measures may no longer be feasible. During this stage, ADHS and local health departments will consider measures that decrease social contact within groups or whole communities (e.g., self-isolation, cancellation of public events, “Stay Home Days”) and measures that individuals can take personally to decrease their risk of infection

Box 2 outlines measures that may be employed at different stages of a pandemic, as disease becomes more widespread. These begin with containment activities for individuals and move on, as needed, to community-based measures

A. Containment measures for individuals

1. Patient isolation

As noted above, a patient with a suspected or confirmed case of pandemic influenza need to be separated from persons who are well, using infection control measures described in Supplement 4. If a surge in patients overwhelms health care capacity or if home isolation is not feasible, health departments may need to use alternative facilities for isolation of influenza patients. Guidance on use of alternative facilities for isolation of influenza patients is provided in Appendix 7 and in Supplement 3.

2. Management of contacts

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

B. Community-based containment measures

If disease transmission in the community is significant and sustained, ADHS and county and tribal health authorities may implement community-based containment measures. Community-based containment measures can be grouped into two broad categories: measures that affect groups of exposed or at-risk persons and measures that affect entire communities. Table 1 lists quantifiable factors that may influence decisions on where and when to impose community-based containment measures. Social considerations—including levels of community cooperation and mobility—will also inform decision-making.

1. Measures that affect groups of exposed or at-risk persons

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

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

These measures should be considered when:

- There is limited disease transmission in the area.
- Most cases can be traced to contact with an earlier case or exposure to a known transmission setting (e.g., a school or workplace where a person has fallen ill).
- The intervention is likely to either significantly slow the spread of infection or to decrease the overall magnitude of an outbreak in the community.

a) Quarantine of groups of exposed persons

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

- Persons who might have been exposed to an influenza case
 - Via family members
 - At a public gathering
 - On an airplane or other closed conveyance (see also Supplement 9), or
 - At their school or workplace
- Health care providers who work at a facility where influenza cases receive care



Group quarantine (like patient isolation) is optimally performed on a voluntary basis, in accordance with instructions of health care providers and health officials. However, the Governor and the county health officer have the basic legal authority (A.R.S. 36-624, 36-787-9) to compel mandatory isolation and quarantine of individuals and groups when necessary to protect the public's health. Recommendations for quarantine and monitoring of quarantined persons in different situations (home quarantine, quarantine in a designated facility, working quarantine) are provided in Appendix 6.

b) Measures that apply to use of specific sites or buildings

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

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

2. Measures that affect communities

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

- Promotion of community-wide infection control measures (e.g., respiratory hygiene/cough etiquette)
- “Stay Home Days” and self-isolation
- Closure of office buildings, shopping malls, schools, and public transportation (e.g., buses; see Supplement 9)

Measures that affect whole communities will be considered when:

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

As community outbreaks of pandemic influenza occur, community-wide infection control measures may decrease the overall magnitude of the outbreak (see Box 2). Community-based measures may also include school closures, “Stay Home Days”, and self-isolation.

a) Community-wide infection control measures

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



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

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

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

the general public should try to avoid close contact with ill individuals.

Nevertheless, persons may choose to wear a mask as part of individual protection strategies that include cough etiquette, hand hygiene, and avoiding public gatherings. Mask use may be most important for persons who are at high risk for complications of influenza and those who are unable to avoid close contact with others or must travel for essential reasons such as seeking medical care, or attending religious services. Public education should be provided on how to use and dispose of masks appropriately. In addition, this education should emphasize that mask use is not a substitute for social distance or other personal protection measures (see also Supplement 4). Supply issues should be considered so that mask use in communities does not limit availability for health care settings where the importance and effectiveness of this use has been documented.

b) “Stay Home Days” and Self-isolation

Implementation of “Stay Home Days”—asking everyone to stay home—involves the entire community in a positive way, is acceptable to most people, and is relatively easy to implement (note: “Stay Home Days” is the same as “Snow Days” in HHS and other state plans, but the title was changed for obvious reasons). “Stay Home Days” may be declared at a county or state level, by the respective health officer, for an initial 10-day period, with final decisions on duration based on an epidemiologic and social assessment of the situation. Such a declaration would be an official public health recommendation, but would not be legally enforceable. States and local authorities need to consider recommendations to the public for acquisition and storage of necessary provisions including type and quantity of supplies needed during “Stay Home Days”. “Stay Home Days” can effectively reduce transmission without explicit activity restrictions (i.e., quarantine). Consideration will be given to personnel who maintain primary functions in the community (e.g., law enforcement personnel, transportation workers, utility workers [electricity, water, gas, telephone, sanitation]). Compliance with “Stay Home Days” might be enhanced by “self-isolation” behavior (i.e., many people may stay home even in the absence of an official “Stay Home Days” Declaration).

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

Closure of office buildings, stores, schools, and public transportation systems may be feasible community containment measures during a pandemic. All of these have significant impact on the community and workforce, however, and careful consideration will be focused on their potential effectiveness, how they can most effectively be implemented, and how to maintain critical supplies and infrastructure while limiting community interaction. For example, when public transportation is cancelled, other modes of transportation must be provided for emergency medical services and medical evaluation.



Although data are limited, school closures may be effective in decreasing spread of influenza and reducing the overall magnitude of disease in a community. In addition, the risk of infection and illness among children is likely to be decreased, which would be particularly important if the pandemic strain causes significant morbidity and mortality among children. Children are known to be efficient transmitters of seasonal influenza and other respiratory illnesses. Anecdotal reports suggest that community influenza outbreaks may be limited by closing schools. Results of mathematical modeling also suggest a reduction of overall disease, especially when schools are closed early in the outbreak. During a Pandemic Period, parents will be encouraged to consider child care arrangements that do not result in large gatherings of children outside the school setting.

d) Widespread community quarantine (cordon sanitaire)

In extreme circumstances, state and county officials may implement widespread or community-wide quarantine, which is the most stringent and restrictive containment measure. It differs from “Stay Home Days” in two respects: 1) It may involve a legally enforceable action, and 2) it restricts travel into or out of an area circumscribed by a real or virtual “sanitary barrier” or “*cordon sanitaire*” except to authorized persons, such as public health or health care workers. While HHS includes this containment intervention in the Federal guidance, it is not included here as a viable option, due to a lack of legal authority in Arizona to enforce such an intervention, and the low-likelihood of success of physically maintaining such a containment.

3. Scaling back community containment measures

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

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

General recommendations are to withdraw the most stringent or disruptive measures first.

Box 1. Containment Measures: Terms and Definitions

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

Quarantine is the separation and restriction of movement or activities of persons who are not ill but who are believed to have been exposed to infection, for the purpose of preventing transmission of disease. Individuals may be quarantined at home or in designated facilities; health care providers and other response workers may be subject to quarantine when they are off duty. **Quarantine of close contacts** refers to the quarantine of individuals exposed to patients with communicable diseases (e.g., family members, work or school mates, health care workers). **Quarantine of groups of exposed persons** refers to quarantine of people who have been exposed to the same source of illness (e.g., a case of influenza at a public gathering, on an airline, train, or cruise ship, at a school or workplace or apartment complex, or at a recently visited store or office).

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

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

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

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

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

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

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

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

BOX 2. GRADED IMPLEMENTATION OF COMMUNITY CONTAINMENT MEASURES

Level of influenza activity	Response
No novel influenza strains of public health concern in global circulation	Preparedness planning
Limited novel influenza virus ² transmission abroad; all local cases are either imported or have clear epidemiologic links to other cases	Quarantine of close contacts
Limited novel influenza virus transmission in the area, 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
Sustained novel influenza virus transmission in the area, with a large number of cases without clear epidemiologic links to other cases; control measures aimed at individuals and groups appear to be effective	Focused measures to increase social distance; ³ consider community-based measures
Sustained novel influenza activity in the area, with a large number of cases in persons without an identifiable epidemiologic link at the time of initial evaluation; control measures are believed to be ineffective	Community-level measures to increase social distance; consider snow days and community-wide quarantine
Decreases in the number of new cases, unlinked (or "unexpected") cases, and generations of transmission	Quarantine of contacts
Transmission has been controlled or eliminated; no new cases reported	Active monitoring in high-risk populations; continue for 2-3 incubation periods after control or elimination of transmission.

² "Novel influenza viruses" include avian or animal influenza strains that can infect humans (like avian influenza A [H5N1]) and new or reemergent human viruses that cause cases or clusters of human disease.

³ "Focused measures to increase social distance" include measures applied to groups rather than individuals or whole communities (e.g., quarantine of groups of exposed persons and measures that apply to the use of specific sites or buildings)

TABLE 1. THRESHOLD DETERMINANTS FOR THE USE OF COMMUNITY CONTAINMENT MEASURES

Data on cases and contacts—as well as on depletion of healthcare and public health resources over the course of a pandemic—can help state and local health authorities decide when to implement community-level containment measures. As part of preparedness planning, state and local health agencies and healthcare partners may estimate at what point in the pandemic—in terms of such variables as numbers of cases and numbers of unoccupied hospital beds—that more extensive measures may be imposed. During an actual pandemic, state and local departments may also evaluate social considerations, such as levels of community cooperation and mobility.

Potential parameters	Variable
Cases and contacts	- Number of cases (absolute or estimated) - Rate of incident cases - Number of hospitalized cases - Number and percentage of cases with no identified epidemiologic link - Morbidity (including disease severity) and mortality - Number of contacts under surveillance and/or quarantine
Healthcare resources	- Hospital/facility bed capacity - Staff resources - Patient/staff ratio - Number of ill or absent staff members - Availability of specifically trained specialists and ancillary staff members - Availability of ventilators - Availability of other respiratory equipment - Availability of personal protective equipment and other measures - Availability of therapeutic medications (influenza and non-influenza specific)
Public health resources	- Investigator to case and contact ratios - Number of contacts under active surveillance - Number of contacts under quarantine - Ability to rapidly trace contacts (number of untraced/interviewed contacts) - Ability to implement and monitor quarantine (staff member to contact ratio) - Ability to provide essential services (food, water, etc.)
Community cooperation, mobility, and compliance	- Degree of compliance with voluntary individual isolation - Degree of compliance with active surveillance and voluntary individual quarantine - Degree of movement out of the community - Degree of compliance with community-containment measures

Appendix 1

Interventions For Community Containment

Contacts of pandemic influenza patients can be managed by use of a range of interventions, all of which are designed to facilitate early recognition of illness in persons at greatest risk of becoming infected and thereby prevent transmission to others. Whereas many of these interventions are applied individually to persons identified as contacts of a person with possible or known influenza disease, others are applied to larger groups of persons, or communities, that share a similar risk of exposure. Measures applied to individuals may not be feasible during the Pandemic Period, when quarantining individuals and tracing close contacts may not be possible. The range of interventions includes the following:

Passive Monitoring

<i>Definition</i>	• The contact is asked to perform self-assessment at least twice daily and to contact authorities immediately if respiratory symptoms and/or fever occur.
<i>Application</i>	• Situations in which 1) the risk of exposure and subsequent development of disease is low, and 2) the risk to others if recognition of disease is delayed is also low
<i>Benefits</i>	• Requires minimal resources • Places few constraints on individual movement
<i>Challenges</i>	• Relies on self-reporting • Affected persons may not perform an adequate self-assessment
<i>Resources Required</i>	• Supplies (thermometer; symptom log; written instructions) • Hotline to notify authorities about symptoms or needs • Staff to receive telephone reports and provide in-person evaluation and care • Plans and procedures for rapid isolation of persons who develop symptoms
<i>Partners</i>	• Household members
<i>Forms/Templates</i>	• Symptom logs
<i>Under development</i>	• Instructions for patients and health care workers

Active Monitoring without Explicit Activity Restrictions

<i>Definition</i>	• A health care or public health worker evaluates the contact on a regular (at least daily) basis by phone and/or in person for signs and symptoms suggestive of influenza
<i>Application</i>	• Situations in which 1) the risk of exposure to and subsequent development of disease is moderate to high, 2) resources permit close observation of individuals, and 3) the risk of delayed recognition of symptoms is low to moderate
<i>Benefits</i>	• Places few constraints on individual liberties
<i>Challenges</i>	• Requires adequate staffing to track information and to verify monitoring and appropriate actions based on findings
<i>Resources Required</i>	• Trained staff to provide in-person and/or telephone evaluations Plans and procedures for rapid isolation of persons who develop symptoms Contingency plans for managing noncompliant persons Hotline to notify authorities about symptoms or needs
<i>Partners</i>	• Professional and lay health care workers to perform evaluations on behalf of the health department • Possible need for law enforcement to assist with management of noncompliant persons
<i>Forms/Templates</i>	• Checklist for assessment of active monitoring
<i>Under development</i>	• Template for recording results of clinical evaluation

Working Quarantine

<i>Definition</i>	Employees are permitted to work but must observe activity restrictions while off duty. Monitoring for influenza-like illness is usually required. This may change based on the clinical presentation of the pandemic strain. Use of appropriate PPE while at work is required.
<i>Application</i>	Persons for whom activity restrictions (home or facility quarantine) are indicated but who provide essential services (e.g., health care workers).
<i>Benefits</i>	Reduces risk of community spread from high-risk contacts while minimizing adverse impact of activity restrictions on provision of essential services. Clinical monitoring at work reduces the staff required for active monitoring at the quarantine site.
<i>Challenges</i>	Need for close and consistent pre-shift monitoring at the work site to prevent inadvertent exposures May require means of transporting persons to and from work site to minimize interactions; persons in working quarantine should wear appropriate PPE during transport. Must maintain close cooperation and communication between work site and local health authorities. Need to provide mental health services to address concerns about isolation from family and friends
<i>Resources Required</i>	Appropriate facility for off-duty quarantine if home is unavailable or inadequate. Staff, funding, and goods for provision of essential services Personal protective equipment Hotline for notification of symptoms and personal needs System to track results of work-site monitoring and location(s) of off-duty quarantine Mental health, psychological, and behavioral support services, especially if work includes care of influenza patients
<i>Partners</i>	Work-site administrators and infection control personnel Community volunteers/workers Staff/volunteers to assist with transportation to and from work Mental health professionals Potential need for law enforcement to assist with noncompliant person
<i>Forms/ Templates</i>	<i>Under Development</i> Guidelines and instructions for persons in working quarantine Instructions for supervisors of persons in working quarantine Checklist to evaluate homes for quarantine Guidelines for monitoring compliance Checklist for active monitoring at work site Template for recording results of clinical evaluation Forms for recording compliance

Active Monitoring with Activity Restrictions (Quarantine)

<i>Definition</i>	The contact remains separated from others for a specified period (up to 10 days after potential exposure), during which s/he is assessed on a regular basis (in person at least once daily) for signs and symptoms of influenza disease. Persons with fever, respiratory, or other early influenza symptoms require immediate evaluation by a trained health care provider. Restrictions may be voluntary or legally mandated; confinement may be at home or in an appropriate facility. No specific precautions are required for those sharing the household with a person in quarantine as long as the person remains asymptomatic. Because onset of symptoms may be insidious, it may be prudent to minimize interactions with household members during the period of quarantine, if feasible

<i>Application</i>	Situations in which the risk of exposure and subsequent development of disease is high and the risk of delayed recognition of symptoms is moderate
<i>Benefits</i>	Reduces risk of spread from persons with subacute or subclinical presentations or from delayed recognition of symptoms
<i>Challenges</i>	May infringe on personal movement May lead to a feeling of isolation from family and friends May lead to loss of income or employment Requires plans/protocols for provision of essential services Requires plan for provision of mental health support Risk of noncompliance, particularly as duration increases May require enforcement for noncompliance
<i>Resources Required</i>	Staff for monitoring and evaluation Appropriate facility if home setting is unavailable or inadequate Staff, funding, and goods for provision of essential services Hotline for notification of symptoms or personal needs Mechanisms to communicate with family members outside the household or facility Mental health and social support services Delivery systems for food and other essential supplies
<i>Partners</i>	Professional and lay health care workers to perform assessments on behalf of the health department Community volunteers/workers to assist with provision of essential services Potential need for law enforcement to assist with noncompliant persons
<i>Forms/Templates</i>	Under development

Focused Measures to Increase Social Distance

<i>Definition</i>	Intervention applied to specific groups, designed to reduce interactions and thereby transmission risk within the group. When focused, the intervention is applied to groups or persons identified in specific sites or buildings, most but not necessarily all of whom are at risk of exposure to influenza.
<i>Examples</i>	Quarantine of groups of exposed persons Cancellation of public events Closure of office buildings, schools, and/or shopping malls; closure of public transportation such as subways or bus lines
<i>Application</i>	Groups or settings where transmission is believed to have occurred, where the linkages between cases is unclear at the time of evaluation, and where restrictions placed only on persons known to have been exposed is considered insufficient to prevent further transmission
<i>Benefits</i>	Applied broadly, reduces the requirement for urgent evaluation of large numbers of potential contacts to determine indications for activity restrictions May enable reductions in transmission among groups of persons without explicit activity restrictions (quarantine)
<i>Challenges</i>	May be difficult to solicit cooperation, particularly if popular buildings are closed or popular events are cancelled Requires excellent communication mechanisms to notify affected persons of details and rationale May need to provide replacement for affected activities Generally relies on passive monitoring
<i>Resources Required</i>	Systems to communicate relevant messages May require enforcement, particularly if closure of buildings or gathering places is necessary Requires resources for passive monitoring Hotlines to report symptoms and obtain follow-up instructions Transportation for medical evaluation, with appropriate infection control precautions

<i>Partners</i>	News media and communication outlets Law enforcement Community groups
<i>Forms/Templates</i>	Messages for affected persons
<i>Under development</i>	Messages for employers of affected persons Messages for persons supplying essential services

Community-Wide Measures to Increase Social Distance

<i>Definition</i>	Intervention applied to an entire community or region, designed to reduce personal interactions and thereby transmission risk. The prototypical example is implementation of a “Stay Home Days” or “snow days” declaration, in which offices, schools, and transportation systems are cancelled as for a major snowstorm.
<i>Application</i>	All members of a community in which 1) extensive transmission of influenza is occurring, 2) a significant number of cases lack clearly identifiable epidemiologic links at the time of evaluation, and 3) restrictions on persons known to have been exposed are considered insufficient to prevent further spread.
<i>Benefits</i>	Reduces need for urgent evaluation of large numbers of potential contacts to determine indications for activity restrictions. May enable reductions in transmission among groups without explicit activity restrictions quarantine “Snow days” may be familiar concepts and thus maybe easy to implement on short notice
<i>Challenges</i>	May be difficult to solicit cooperation Requires excellent communication mechanisms to notify affected persons of details and rationale May need to provide replacement for affected activities May need to address mental health and financial support issues When an entire community is involved, requires cooperation with neighboring jurisdictions that may not be using a similar intervention, particularly in situations where persons live in one city and work in another and only one locale is affected by the intervention Generally relies on passive monitoring Social and economic impact of public transportation closures
<i>Resources Required</i>	Communication outlets Enforcement Resources for passive monitoring Hotlines and other communication systems to report symptoms and obtain follow-up instructions
<i>Partners</i>	News media and other communication outlets Law enforcement and transportation officials to enforce restrictions (e.g., closure of bridges, roads, or mass transit systems) and plan for provision of critical supplies and infrastructure
<i>Forms/Templates</i>	Messages for affected persons
<i>Under development</i>	Messages for employers of affected persons Messages for persons supplying essential services

Appendix 2

Preparedness Checklist For Community Containment Measure

General

- ☐ Establish an incident command structure that can be used for influenza response.
- ☐ Establish a legal preparedness plan.
- ☐ Establish relationships with partners, such as law enforcement, first responders, health care facilities, mental health professionals, local businesses, and the legal community.
- ☐ Plan to monitor and assess factors that will determine the types and levels of response, including the epidemiologic profile of the outbreak, available local resources, and level of public acceptance and participation.
- ☐ Develop communication strategies for the public, government decision-makers, health care and emergency response workers, mental health professionals, and the law enforcement community.
- ☐ Invite key partners to participate in pandemic influenza containment exercises and drills.

Management of cases and contacts (including quarantine)

- ☐ Develop protocols, tools, and databases for:
 - Case surveillance
 - Clinical evaluation and management
 - Contact tracing, monitoring, and management
 - Reporting criteria
- ☐ Develop standards and tools for home and non-hospital isolation and quarantine.
- ☐ Establish supplies for non-hospital management of cases and contacts.
- ☐ Establish a telecommunications plan for “hotlines” or other services for:
 - Case and contact monitoring and response
 - Fever triage
 - Public information
 - Provider information
- ☐ Plan to ensure provision of essential services and supplies to persons in isolation and quarantine, keeping in mind the special needs of children. Services and supplies include:
 - Food and water
 - Shelter
 - Medicines and medical consultations
 - Mental health and psychological support services
 - Other supportive services (e.g., day care or elder care)
 - Transportation to medical treatment, if required
- ☐ Plan to address issues of financial support, job security, and prevention of stigmatization.
- ☐ Establish procedures for medical evaluation and isolation of quarantined persons who exhibit signs of illness.
- ☐ Develop protocols for monitoring and enforcing quarantine measures, such as:
 - Protocols for follow-up of persons who cannot be reached by telephone.

These may include a threshold period for nonresponsiveness that should trigger a home visit or other means to locate the person.

Partnerships with law enforcement and other community-based resources will be helpful in tracing the whereabouts of persons who have violated restrictions.

- ☐ Protocols for monitoring persons who cannot or will not comply with voluntary home quarantine. These may include:
 - Issuing official, legally binding quarantine orders
 - Posting a guard outside the home
 - Using electronic forms of monitoring
 - Using guarded facilities
 - Protocols for using checkpoints to restrict travel between neighborhoods.

Temporary emergency facilities for patient isolation, quarantine, and assessment of patients with fever (see **Appendix 7** for a list of facility characteristics)

- ☐ Identify appropriate community-based facilities for isolation of patients who have no substantial health care requirements.
- ☐ Develop policies related to use of these facilities.
- ☐ Identify facilities for persons for whom home isolation is indicated but who do not have access to an appropriate home setting, such as travelers and homeless populations.
- ☐ Ensure that required procedures for assessment of potential isolation or quarantine sites are available and up to date.
- ☐ Identify potential quarantine facilities and prepare contingency plans for staffing and equipping them.
- ☐ Identify potential sites for fever clinics and prepare contingency plans for staffing and equipping them, including the ability to dispense antiviral drugs to identified cases in the priority groups

Community containment measures

- ☐ Ensure that legal authorities and procedures are in place to implement the various levels of movement restrictions as necessary.
- ☐ **Establish procedures for medical evaluation and isolation of quarantined persons who exhibit signs of illness.** (Additional information on medical evaluation is provided in **Supplement 5**.)
- ☐ **Develop tools and mechanisms to prevent stigmatization and provide mental health services to persons in isolation or quarantine.**
- ☐ Identify key partners and personnel for the implementation of movement restrictions, including quarantine, and the provision of essential services and supplies:
 - Law enforcement
 - First responders
 - Other government service workers
 - Utilities
 - Transportation industry
 - Local businesses
 - Schools and school boards

Establish procedures for delivering medical care, food, and services to persons in isolation or quarantine. Examples of services that will require the help of non-traditional partners include:

- ☐ Training for responders and health care workers, as necessary, in use of personal protective equipment
- ☐ Plans for the mobilization and deployment of public health and other community-service personnel

General

- ☐ Establish an incident command structure that can be used for influenza response.
- ☐ Establish a legal preparedness plan.
- ☐ Establish relationships with partners, such as law enforcement, first responders, health care facilities, mental health professionals, and the legal community.
- ☐ Plan to monitor and assess factors that will determine the types and levels of response, including the epidemiologic profile of the outbreak, available local resources, and level of public acceptance and participation.
- ☐ Develop communication strategies for the public government decision-makers, health care and emergency response workers, mental health professionals, and the law enforcement community. These strategies should consider privacy concerns.
- ☐ Invite key partners to participate in pandemic influenza containment exercises and drills.

Management of cases and contacts (including quarantine)

- ☐ Develop protocols, tools, and databases for management of cases and contacts, considering account security and privacy concerns. These may include protocols for:
 - Case surveillance
 - Clinical evaluation and management
 - Contact tracing, monitoring, and management
 - Reporting criteria
- ☐ Develop standards and tools for home and non-hospital isolation and quarantine.
- ☐ Establish supplies for non-hospital management of cases and contacts.
- ☐ Establish a telecommunications plan for “hotlines” or other services for case and contact monitoring and response
 - Fever triage
 - Public information
 - Provider information
- ☐ Plan to ensure provision of essential services and supplies to persons in isolation and quarantine, including:
 - Food and water
 - Shelter
 - Medicines and medical consultations
 - Mental health and psychological support services
 - Other supportive services (e.g., day care or elder care).
 - Transportation to medical treatment, if required
- ☐ Plan to address issues of financial support, job security, privacy concerns and prevention of stigmatization.

Appendix 3

Planning Checklists (<http://pandemicflu.gov/plan/checklists.html>)

3.1 Business

<http://pandemicflu.gov/plan/pdf/businesschecklist.pdf>

3.2 Individuals and Families

<http://pandemicflu.gov/plan/pdf/individuals.pdf>

3.3 Faith-Based and Community Organizations

<http://pandemicflu.gov/plan/pdf/faithbasedcommunitychecklist.pdf>

Appendix 3.1 Business Checklist

BUSINESS PANDEMIC INFLUENZA PLANNING CHECKLIST



In the event of pandemic influenza, businesses will play a key role in protecting employees' health and safety as well as limiting the negative impact to the economy and society. Planning for pandemic influenza is critical. To assist you in your efforts, the Department of Health and Human Services (HHS) and the Centers for Disease Control and Prevention (CDC) have developed the following checklist for large businesses. It identifies important, specific activities large businesses can do now to prepare, many of which will also help you in other emergencies. Further information can be found at www.pandemicflu.gov and www.cdc.gov/business.

1.1 Plan for the impact of a pandemic on your business:

Completed	In Progress	Not Started	
☐	☐	☐	Identify a pandemic coordinator and/or team with defined roles and responsibilities for preparedness and response planning. The planning process should include input from labor representatives.
☐	☐	☐	Identify essential employees and other critical inputs (e.g. raw materials, suppliers, sub-contractor services/ products, and logistics) required to maintain business operations by location and function during a pandemic.
☐	☐	☐	Train and prepare ancillary workforce (e.g. contractors, employees in other job titles/descriptions, retirees).
☐	☐	☐	Develop and plan for scenarios likely to result in an increase or decrease in demand for your products and/or services during a pandemic (e.g. effect of restriction on mass gatherings, need for hygiene supplies).
☐	☐	☐	Determine potential impact of a pandemic on company business financials using multiple possible scenarios that affect different product lines and/or production sites.
☐	☐	☐	Determine potential impact of a pandemic on business-related domestic and international travel (e.g. quarantines, border closures).
☐	☐	☐	Find up-to-date, reliable pandemic information from community public health, emergency management, and other sources and make sustainable links.
☐	☐	☐	Establish an emergency communications plan and revise periodically. This plan includes identification of key contacts (with back-ups), chain of communications (including suppliers and customers), and processes for tracking and communicating business and employee status.
☐	☐	☐	Implement an exercise/drill to test your plan, and revise periodically.

1.2 Plan for the impact of a pandemic on your employees and customers:

Completed	In Progress	Not Started	
☐	☐	☐	Forecast and allow for employee absences during a pandemic due to factors such as personal illness, family member illness, community containment measures and quarantines, school and/or business closures, and public transportation closures.
☐	☐	☐	Implement guidelines to modify the frequency and type of face-to-face contact (e.g. hand-shaking, seating in meetings, office layout, shared workstations) among employees and between employees and customers (refer to CDC recommendations).
☐	☐	☐	Encourage and track annual influenza vaccination for employees.
☐	☐	☐	Evaluate employee access to and availability of healthcare services during a pandemic, and improve services as needed.
☐	☐	☐	Evaluate employee access to and availability of mental health and social services during a pandemic, including corporate, community, and faith-based resources, and improve services as needed.
☐	☐	☐	Identify employees and key customers with special needs, and incorporate the requirements of such persons into your preparedness plan.

December 6, 2005
Version 3.6



1.3 Establish policies to be implemented during a pandemic:

Completed	In Progress	Not Started	
☐	☐	☐	Establish policies for employee compensation and sick-leave absences unique to a pandemic (e.g. non-punitive, liberal leave), including policies on when a previously ill person is no longer infectious and can return to work after illness.
☐	☐	☐	Establish policies for flexible worksite (e.g. telecommuting) and flexible work hours (e.g. staggered shifts).
☐	☐	☐	Establish policies for preventing influenza spread at the worksite (e.g. promoting respiratory hygiene/cough etiquette, and prompt exclusion of people with influenza symptoms).
☐	☐	☐	Establish policies for employees who have been exposed to pandemic influenza, are suspected to be ill, or become ill at the worksite (e.g. infection control response, immediate mandatory sick leave).
☐	☐	☐	Establish policies for restricting travel to affected geographic areas (consider both domestic and international sites), evacuating employees working in or near an affected area when an outbreak begins, and guidance for employees returning from affected areas (refer to CDC travel recommendations).
☐	☐	☐	Set up authorities, triggers, and procedures for activating and terminating the company's response plan, altering business operations (e.g. shutting down operations in affected areas), and transferring business knowledge to key employees.

1.4 Allocate resources to protect your employees and customers during a pandemic:

Completed	In Progress	Not Started	
☐	☐	☐	Provide sufficient and accessible infection control supplies (e.g. hand-hygiene products, tissues and receptacles for their disposal) in all business locations.
☐	☐	☐	Enhance communications and information technology infrastructures as needed to support employee telecommuting and remote customer access.
☐	☐	☐	Ensure availability of medical consultation and advice for emergency response.

1.5 Communicate to and educate your employees:

Completed	In Progress	Not Started	
☐	☐	☐	Develop and disseminate programs and materials covering pandemic fundamentals (e.g. signs and symptoms of influenza, modes of transmission), personal and family protection and response strategies (e.g. hand hygiene, coughing/sneezing etiquette, contingency plans).
☐	☐	☐	Anticipate employee fear and anxiety, rumors and misinformation and plan communications accordingly.
☐	☐	☐	Ensure that communications are culturally and linguistically appropriate.
☐	☐	☐	Disseminate information to employees about your pandemic preparedness and response plan.
☐	☐	☐	Provide information for the at-home care of ill employees and family members.
☐	☐	☐	Develop platforms (e.g. hotlines, dedicated websites) for communicating pandemic status and actions to employees, vendors, suppliers, and customers inside and outside the worksite in a consistent and timely way, including redundancies in the emergency contact system.
☐	☐	☐	Identify community sources for timely and accurate pandemic information (domestic and international) and resources for obtaining counter-measures (e.g. vaccines and antivirals).

1.6 Coordinate with external organizations and help your community:

Completed	In Progress	Not Started	
☐	☐	☐	Collaborate with insurers, health plans, and major local healthcare facilities to share your pandemic plans and understand their capabilities and plans.
☐	☐	☐	Collaborate with federal, state, and local public health agencies and/or emergency responders to participate in their planning processes, share your pandemic plans, and understand their capabilities and plans.
☐	☐	☐	Communicate with local and/or state public health agencies and/or emergency responders about the assets and/or services your business could contribute to the community.
☐	☐	☐	Share best practices with other businesses in your communities, chambers of commerce, and associations to improve community response efforts.

Appendix 3.2
Individuals and Families Checklist



Pandemic Flu Planning Checklist for Individuals and Families

You can prepare for an influenza pandemic now. You should know both the magnitude of what can happen during a pandemic outbreak and what actions you can take to help lessen the impact of an influenza pandemic on you and your family. This checklist will help you gather the information and resources you may need in case of a flu pandemic.

1. To plan for a pandemic:

- ☐ Store a supply of water and food. During a pandemic, if you cannot get to a store, or if stores are out of supplies, it will be important for you to have extra supplies on hand. This can be useful in other types of emergencies, such as power outages and disasters.
- ☐ Ask your doctor and insurance company if you can get an extra supply of your regular prescription drugs.
- ☐ Have any nonprescription drugs and other health supplies on hand, including pain relievers, stomach remedies, cough and cold medicines, fluids with electrolytes, and vitamins.
- ☐ Talk with family members and loved ones about how they would be cared for if they got sick, or what will be needed to care for them in your home.
- ☐ Volunteer with local groups to prepare and assist with emergency response.
- ☐ Get involved in your community as it works to prepare for an influenza pandemic.

2. To limit the spread of germs and prevent infection:

- ☐ Teach your children to wash hands frequently with soap and water, and model the correct behavior.
- ☐ Teach your children to cover coughs and sneezes with tissues, and be sure to model that behavior.
- ☐ Teach your children to stay away from others as much as possible if they are sick. Stay home from work and school if sick.



3. Items to have on hand for an extended stay at home during an influenza pandemic:

Examples of food and non-perishables

- ☐ Ready-to-eat canned meats, fruits, and vegetables
- ☐ 5 days of broth-based soups
- ☐ Protein or fruit bars
- ☐ Dry cereal or granola
- ☐ Peanut butter or nuts
- ☐ Dried fruit
- ☐ Crackers
- ☐ Canned juices
- ☐ Bottled water
- ☐ Canned or jarred baby food and formula
- ☐ Pet food

Examples of medical, health, and emergency supplies

- ☐ Prescribed medical supplies such as glucose and blood-pressure monitoring equipment
- ☐ Soap and water
- ☐ 60 % alcohol-based hand sanitizer
- ☐ Medicines for fever, such as acetaminophen or ibuprofen
- ☐ Over the counter flu medicines
- ☐ Thermometer
- ☐ 70% Isopropyl alcohol for disinfecting thermometer
- ☐ Anti-diarrheal medication
- ☐ Throat lozenges
- ☐ Vitamins
- ☐ Fluids with electrolytes
- ☐ Flashlight
- ☐ Batteries
- ☐ Portable radio
- ☐ Manual can opener
- ☐ Garbage bags
- ☐ Tissues, toilet paper, disposable diapers
- ☐ Disinfectant

Appendix 3.3 – Faith-Based & Community Organizations Checklist

FAITH-BASED & COMMUNITY ORGANIZATIONS PANDEMIC INFLUENZA PREPAREDNESS CHECKLIST

The collaboration of Faith-Based and Community Organizations with public health agencies will be essential in protecting the public's health and safety if and when an influenza pandemic occurs. This checklist provides guidance for religious organizations (churches, synagogues, mosques, temples, etc.), social service agencies that are faith-based, and community organizations in developing and improving influenza pandemic response and preparedness plans. Many of the points suggested here can improve your organization's ability to protect your community during emergencies in general. You can find more information at www.pandemicflu.gov.



1. Plan for the impact of a pandemic on your organization and its mission:

Completed	In Progress	Not Started	
☐	☐	☐	Assign key staff with the authority to develop, maintain and act upon an influenza pandemic preparedness and response plan.
☐	☐	☐	Determine the potential impact of a pandemic on your organization's usual activities and services. Plan for situations likely to require increasing, decreasing or altering the services your organization delivers.
☐	☐	☐	Determine the potential impact of a pandemic on outside resources that your organization depends on to deliver its services (e.g., supplies, travel, etc.)
☐	☐	☐	Outline what the organizational structure will be during an emergency and revise periodically. The outline should identify key contacts with multiple back-ups, role and responsibilities, and who is supposed to report to whom.
☐	☐	☐	Identify and train essential staff (including full-time, part-time and unpaid or volunteer staff) needed to carry on your organization's work during a pandemic. Include back up plans, cross-train staff in other jobs so that if staff are sick, others are ready to come in to carry on the work.
☐	☐	☐	Test your response and preparedness plan using an exercise or drill, and review and revise your plan as needed.

2. Communicate with and educate your staff, members, and persons in the communities that you serve:

Completed	In Progress	Not Started	
☐	☐	☐	Find up-to-date, reliable pandemic information and other public health advisories from state and local health departments, emergency management agencies, and CDC. Make this information available to your organization and others.
☐	☐	☐	Distribute materials with basic information about pandemic influenza: signs and symptoms, how it is spread, ways to protect yourself and your family (e.g., respiratory hygiene and cough etiquette), family preparedness plans, and how to care for ill persons at home.
☐	☐	☐	When appropriate, include basic information about pandemic influenza in public meetings (e.g. sermons, classes, trainings, small group meetings and announcements).
☐	☐	☐	Share information about your pandemic preparedness and response plan with staff, members, and persons in the communities that you serve.
☐	☐	☐	Develop tools to communicate information about pandemic status and your organization's actions. This might include websites, flyers, local newspaper announcements, pre-recorded widely distributed phone messages, etc.
☐	☐	☐	Consider your organization's unique contribution to addressing rumors, misinformation, fear and anxiety.
☐	☐	☐	Advise staff, members, and persons in the communities you serve to follow information provided by public health authorities--state and local health departments, emergency management agencies, and CDC.
☐	☐	☐	Ensure that what you communicate is appropriate for the cultures, languages and reading levels of your staff, members, and persons in the communities that you serve.

continued

January 9, 2006



3. Plan for the impact of a pandemic on your staff, members, and the communities that you serve:

Completed	In Progress	Not Started	
☐	☐	☐	Plan for staff absences during a pandemic due to personal and/or family illnesses, quarantines, and school, business, and public transportation closures. Staff may include full-time, part-time and volunteer personnel.
☐	☐	☐	Work with local health authorities to encourage yearly influenza vaccination for staff, members, and persons in the communities that you serve.
☐	☐	☐	Evaluate access to mental health and social services during a pandemic for your staff, members, and persons in the communities that you serve; improve access to these services as needed.
☐	☐	☐	Identify persons with special needs (e.g. elderly, disabled, limited English speakers) and be sure to include their needs in your response and preparedness plan. Establish relationships with them in advance so they will expect and trust your presence during a crisis.

4. Set up policies to follow during a pandemic:

Completed	In Progress	Not Started	
☐	☐	☐	Set up policies for non-penalized staff leave for personal illness or care for sick family members during a pandemic.
☐	☐	☐	Set up mandatory sick-leave policies for staff suspected to be ill, or who become ill at the worksite. Employees should remain at home until their symptoms resolve and they are physically ready to return to duty (Know how to check up-to-date CDC recommendations).
☐	☐	☐	Set up policies for flexible work hours and working from home.
☐	☐	☐	Evaluate your organization's usual activities and services (including rites and religious practices if applicable) to identify those that may facilitate virus spread from person to person. Set up policies to modify these activities to prevent the spread of pandemic influenza (e.g. guidance for respiratory hygiene and cough etiquette, and instructions for persons with influenza symptoms to stay home rather than visit in person.)
☐	☐	☐	Follow CDC travel recommendations during an influenza pandemic. Recommendations may include restricting travel to affected domestic and international sites, recalling non-essential staff working in or near an affected site when an outbreak begins, and distributing health information to persons who are returning from affected areas.
☐	☐	☐	Set procedures for activating your organization's response plan when an influenza pandemic is declared by public health authorities and altering your organization's operations accordingly.

5. Allocate resources to protect your staff, members, and persons in the communities that you serve during a pandemic:

Completed	In Progress	Not Started	
☐	☐	☐	Determine the amount of supplies needed to promote respiratory hygiene and cough etiquette and how they will be obtained.
☐	☐	☐	Consider focusing your organization's efforts during a pandemic to providing services that are most needed during the emergency (e.g. mental/spiritual health or social services).

6. Coordinate with external organizations and help your community:

Completed	In Progress	Not Started	
☐	☐	☐	Understand the roles of federal, state, and local public health agencies and emergency responders and what to expect and what not to expect from each in the event of a pandemic.
☐	☐	☐	Work with local and/or state public health agencies, emergency responders, local healthcare facilities and insurers to understand their plans and what they can provide, share about your preparedness and response plan and what your organization is able to contribute, and take part in their planning. Assign a point of contact to maximize communication between your organization and your state and local public health systems.
☐	☐	☐	Coordinate with emergency responders and local healthcare facilities to improve availability of medical advice and timely/urgent healthcare services and treatment for your staff, members, and persons in the communities that you serve.
☐	☐	☐	Share what you've learned from developing your preparedness and response plan with other Faith-Based and Community Organizations to improve community response efforts.
☐	☐	☐	Work together with other Faith-Based and Community Organizations in your local area and through networks (e.g. denominations, associations, etc) to help your communities prepare for pandemic influenza.

Appendix 4
Legal Preparedness: Isolation and Quarantine Templates

- 4.1 Quarantine Directive for Public Health Emergencies: A.R.S. § 36-788 and 789
- 4.2 Isolation Directive for Public Health Emergencies: A.R.S. § 36-788 and 789
- 4.3 Petition for Compulsory Isolation or Quarantine: A.R.S. § 36-789 (B)
- 4.4 Affidavit in Support of Compulsory Isolation or Quarantine: A.R.S. § 36-789 (C)
- 4.5 Order for Isolation or Quarantine: A.R.S. § 36-789 (B), (F), (G)
- 4.6 Verification of Petition for Compulsory Isolation or Quarantine: A.R.S. § 36-789(B)

Appendix 4.1 – Quarantine Directive for Public Health Emergencies
A.R.S. § 36-788 and 789

QUARANTINE DIRECTIVE FOR PUBLIC HEALTH EMERGENCIES
(INDIVIDUAL OR MULTIPLE PERSONS/GROUPS)

To: _____ Address: _____

The Governor of the State of Arizona has declared a State of Emergency or State of War Emergency that includes an occurrence or imminent threat of smallpox, plague, viral hemorrhagic fevers or a highly contagious and highly fatal disease with transmission characteristics similar to small pox.

The Arizona Department of Health Services (“the Department”) has reason to suspect that you have come in contact with a person who has one of the designated diseases and you may have or develop this disease. Specifically, you are suspected of having come into contact with a person who has _____. If you were to have this disease you would pose a substantial threat to the health of other persons. **Because any delay in implementing your quarantine will pose an immediate and serious threat to the public health, the Department, in order to prevent transmission of this contagious disease, directs you to be placed in quarantine in accordance with A.R.S. § 36-789(A).** The time and location of the premises for your quarantine are:

Time:

Location:

The Department considers this the least restrictive clinically appropriate place of quarantine given the nature of the disease with which you may have come into contact. Within ten days after issuing this Directive, the Department shall file a petition for a court order authorizing the continued quarantine of the person or persons named in this Directive. A court hearing will be set following the filing of the petition.

During this period you may be required to undergo a medical exam and may be ordered to receive medical treatment and/or vaccination. A person subject to quarantine shall comply with the Department’s rules and orders, shall not go beyond the quarantine premises, and shall not come in contact with any person not subject to quarantine other than a health care provider, the Department or local health authority, or other person authorized by the Department or local health authority.

This directive will be in effect until you are deemed non-contagious by the Department and therefore do not pose a substantial threat to the health of the public, or upon the expiration of the Directive or by court order. It is anticipated that you will need to be quarantined for at least _____ to verify whether or not you have a contagious disease.

If you leave the place of quarantine designated above without the prior consent of the Department, action will be taken as authorized under A.R.S. § 36-787 to have you taken into custody by law enforcement officials and returned to the place of quarantine.

If you object to this order of quarantine or to the conditions of your quarantine, you may request a hearing in the superior court in accordance with A.R.S. §§ 36-789 (I) and (J). The court will then schedule a hearing. The request for a hearing does not suspend the effect of the Quarantine Directive.

Any questions regarding this order may be directed to _____ at (602) _____.

Notice was provided to the person or persons subject to this directive as follows:

ف This directive was served in-hand to the above-named individual on _____ at _____ a.m./p.m.

Appendix 4.1 – Quarantine Directive for Public Health Emergencies
A.R.S. § 36-788 and 789

☞ This quarantine directive applies to a group of persons for whom it is impractical to provide individual copies. A copy of this directive has been posted in a conspicuous place at

_____.

_____, Director
Arizona Department of Health Services

Date

412033

**Appendix 4.2: – Isolation Directive for Public Health Emergencies:
A.R.S. § 36-788 and 789**

**ISOLATION DIRECTIVE FOR PUBLIC HEALTH EMERGENCIES
(INDIVIDUAL OR MULTIPLE PERSONS/GROUPS)**

To: _____ Address: _____

The Governor of the State of Arizona has declared a State of Emergency or State of War Emergency that includes an occurrence or imminent threat of smallpox, plague, viral hemorrhagic fevers or a highly contagious and highly fatal disease with transmission characteristics similar to small pox.

The Arizona Department of Health Services (“the Department”) has reason to suspect that you are infected with the contagious disease _____. If you are in fact infected with this disease you pose a substantial threat to the health of other persons. Because any delay in implementing your isolation will pose an immediate and serious threat to the public health, the Department, in order to prevent transmission of this contagious disease, directs you to be placed in isolation in accordance with A.R.S. § 36-789(A). The time and location of the premises for your isolation are:

Time: _____

Location: _____

The Department considers this the least restrictive clinically appropriate place of isolation given the nature of the disease you are suspected of having. Within ten days after issuing this Directive, the Department shall file a petition for a court order authorizing the continued isolation of the person or persons named in this Directive. A court hearing will be set following the filing of the petition.

During this period you will be required to undergo a medical exam and may be ordered to receive medical treatment. A person subject to isolation shall comply with the Department’s rules and orders, shall not go beyond the isolation premises, and shall not come in contact with any person not subject to isolation other than a health care provider, the Department or local health authority, or other person authorized by the Department or local health authority.

This directive will be in effect until you are deemed non-contagious by the Department and no longer pose a substantial threat to the health of the public, or upon expiration of this Directive or by court order. It is anticipated that you will need to be isolated for at least _____ to verify a diagnosis and render you non-contagious.

If you leave the place of isolation designated above without the prior consent of the Department, action will be taken as authorized under A.R.S. § 36-787 to have you taken into custody by law enforcement officials and returned to the place of isolation.

If you object to this isolation directive or to the conditions of your isolation, you may request a hearing in the superior court in accordance with A.R.S. § 36-789 (I) and (J). The court will then schedule a hearing. The request for a hearing does not suspend the effect of this Isolation Directive.

Any questions regarding this directive may be directed to _____ at (602) _____.

Notice was provided to the person or persons subject to this directive as follows:

☐ This directive was served in-hand to the above-named individual on _____ at _____ a.m./p.m.

☐ This directive applies to a group of persons for whom it is impractical to provide individual copies. A copy of this directive has been posted in a conspicuous place at: _____.

Arizona Department of Health Services, Director

Date

412047

Appendix 4.3 – Petition for Compulsory Isolation or Quarantine: A.R.S. § 36-789 (B)

1 TERRY GODDARD
Attorney General
2 Firm State Bar No. 14000
3 Assistant Attorney General
1275 West Washington
4 Phoenix, Arizona 85007
Telephone: (602) -----
5 Fax: (602) -----
State Bar No. -----
6

7 **SUPERIOR COURT OF ARIZONA**
8 **MARICOPA COUNTY**

9 STATE OF ARIZONA)
10)
11)

Petitioner,)

12 vs.)

15 Respondent.)
16)

Case No.:

**PETITION FOR COMPULSORY
ISOLATION OR QUARANTINE
PURSUANT TO A.R.S. § 36-789(B)**

(Oral Argument Requested)

17 The Arizona Department of Health Services (“Department”) petitions the Court
18 for an Order authorizing the initial or continued isolation/quarantine of a person or group
19 of persons, pursuant to A.R.S. § 36-789(B).

20 The Governor of the State of Arizona has declared a State of Emergency or State
21 of War Emergency that includes an occurrence or imminent threat of smallpox, plague,
22 viral hemorrhagic fevers or a highly contagious and highly fatal disease with transmission
23 characteristics similar to small pox. A copy of the Governor’s State of Emergency or
24 State of War Emergency is attached and incorporated herein as Exhibit A. Under
25

2) The premises subject to isolation or quarantine.

_____;

3) The date and time at which isolation or quarantine commences.

_____;

4) The suspected contagious disease, if known.

_____;

5) A statement of compliance with the conditions and principles for isolation and quarantine.

The Department is in compliance with the conditions and principles for isolation and quarantine under A.R.S. §§ 36-787 through 36-789.

6) A statement of the basis on which isolation or quarantine is justified.

(If seeking a quarantine order, the following information must be provided in this section:

What is the reasonable basis for the Department's conclusion as to how the Respondent(s) have been exposed to this highly contagious disease, why the disease poses a serious threat to public health, why quarantine and the conditions of the quarantine are the least restrictive means by which the public can be protected from transmission of the disease, and any details of the refusal of the Respondent(s) to accept less restrictive measures.)

(If seeking an isolation order, the following information must be provided in this section:

What is the reasonable basis for the Department's conclusion that the Respondent(s) have contracted one of the enumerated highly contagious diseases, why the disease poses a serious threat to public health, why isolation and the conditions of this isolation are the least restrictive means by which the public can be protected from transmission of the disease, and any details of the refusal of the Respondent(s) to accept less restrictive measures.)

1 Also attached to this petition as Exhibit B is a copy of an Affidavit of a
2 representative of the Department attesting to the facts asserted in this petition. If the
3 Department is seeking a court order authorizing the continued isolation or quarantine of
4 the Respondent(s), there is also attached, as Exhibit C, a copy of the Department's
5 written directive to isolate or quarantine the Respondent(s) named in this petition.

6 Conclusion.

7 The Department requests the issuance of a court order authorizing the isolation or
8 quarantine of the Respondent(s) in order to prevent transmission of a highly contagious
9 and deadly disease.

10 DATED this ____ day of _____, ____.

11 TERRY GODDARD
12 ATTORNEY GENERAL

13 _____
14 _____
15 (name)
16 Assistant Attorney General
17 1275 West Washington
18 Phoenix, Arizona 85007
19 Telephone: (602) -----
20 Fax: (602) -----

21 Original filed _____ with:

22 Clerk of the Superior Court
23 Maricopa County Superior Court
24 201 W. Jefferson
25 Phoenix, Arizona 85003-2205

Copy hand delivered _____ to:

Honorable
Maricopa County Superior Court
201 W. Jefferson
Phoenix, Arizona 85003-2205

1 Copy personally served _____ on:

2

3

4

5 Copy mailed _____ to:

6

7

8

9

10 By: _____

11

12

13

14

15

16

17

18

19 # 412053

20

21

22

23

24

25

Appendix 4.4 – Affidavit in Support of Compulsory Isolation or Quarantine: A.R.S. § 36-789 (C)

1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

AFFIDAVIT

STATE OF ARIZONA)
) ss.
County of Maricopa)

_____, being first duly sworn upon his oath, deposes and says:

1. That I am the State Epidemiologist or designee of the Arizona Department of Health Services and I am authorized to execute this affidavit in support of the Petition for Compulsory Isolation or Quarantine on behalf of the Department.

2. That I have read the Petition for Compulsory Isolation or Quarantine Pursuant to A.R.S. § 36-789(B) and know the contents thereof.

3. That the facts asserted in the Petition are true to the best of my knowledge except to those matters stated therein upon information and belief and as to those matters, I believe them to be true, specifically:

 a. The identity of the person or group of persons subject to isolation or quarantine;

 b. The premises subject to isolation or quarantine;

 c. The date and time at which isolation or quarantine commences;

 d. The suspected contagious disease;

 e. The compliance of the Department with the conditions and principles for isolation and quarantine; and

 f. The basis on which isolation or quarantine is justified pursuant to A.R.S. Title 36, Chapter 6, Article 9.

4. (OPTIONAL PARAGRAPH) The following additional information is relevant for the Court's consideration: _____

_____.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

Dated: _____

(name)
State Epidemiologist or Designee

SUBSCRIBED AND SWORN to before me this ____ day of _____, 200_.

NOTARY PUBLIC

My Commission Expires:

463802

Appendix 4.5 – Order for Isolation or Quarantine: A.R.S. § 36-789 (B), (F), (G)

1 TERRY GODDARD
Attorney General
2 Firm State Bar No. 14000
3 Assistant Attorney General
1275 West Washington
4 Phoenix, Arizona 85007
Telephone: (602) -----
5 Fax: (602) -----
State Bar No. -----
6

7 **SUPERIOR COURT OF ARIZONA**
8 **MARICOPA COUNTY**

9 STATE OF ARIZONA)
10)
11)

11 Petitioner,)

12 vs.)

15 Respondent.)
16 _____)

Case No.:

**ORDER FOR ISOLATION OR
QUARANTINE PURSUANT TO A.R.S.
§ 36-789(G)**

17 A Petition having been filed by the Arizona Department of Health Services
18 (“Department”) for an Order authorizing the initial or continued isolation/quarantine of a
19 person or group of persons pursuant to A.R.S. § 36-789(B); and the matter having come
20 before this Court for hearing; and the Court having considered the Petition and attached
21 exhibits, the testimony of the parties and witnesses, and after due consideration of this
22 matter;

23 I make the following findings that warrant the ordering of isolation or quarantine
24 pursuant to A.R.S. Title 36, Chapter 6, Article 9:
25

1 1. The Governor of the State of Arizona has declared a State of Emergency or
2 State of War Emergency that includes an occurrence or imminent threat of smallpox,
3 plague, viral hemorrhagic fevers or a highly contagious and highly fatal disease with
4 transmission characteristics similar to smallpox and issued an order under A.R.S. § 36-
5 787(C)(2) to isolate and quarantine persons.

6 3.

7 (If seeking a quarantine order, the following information must be provided
8 in this section:

9 What is the reasonable basis for the Department's conclusion as to how the
10 Respondent(s) have been exposed to this highly contagious disease, why the
11 disease poses a serious threat to public health, why quarantine and the conditions
12 of the quarantine are the least restrictive means by which the public can be
13 protected from transmission of the disease, and any details of the refusal of the
14 Respondent(s) to accept less restrictive measures.)

15 (If seeking an isolation order, the following information must be provided in this
16 section:

17 What is the reasonable basis for the Department's conclusion that the
18 Respondent(s) have contracted one of the enumerated highly contagious diseases,
19 why the disease poses a serious threat to public health, why isolation and the
20 conditions of this isolation are the least restrictive means by which the public can
21 be protected from transmission of the disease, and any details of the refusal of the
22 Respondent(s) to accept less restrictive measures.)

23 IT IS HEREBY ORDERED THAT:

24 1. The Department has met the requirements for the issuance of this Order;

25 2. The Department has shown by a preponderance of the evidence that
isolation or quarantine is reasonably necessary to protect the public health;

 3. The following person or group of persons shall be isolated or quarantined
beginning at (date and time), at (location):

Identify the isolated or quarantined person or group of persons by name or shared
or similar characteristics or circumstances)

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

4. The isolation or quarantine shall be effected with the following conditions necessary to ensure that the isolation or quarantine is carried out within the stated purposes and restrictions of A.R.S. Title 36, Chapter 6, Article 9:

5. This Order shall be served on the above-named person or group of persons in accordance with the Arizona Rules of Civil Procedure.

IT IS FURTHER ORDERED THAT this Order shall expire 30 days from the date of its issuance unless the Department is granted continuance of this Order under A.R.S. §36-789(H).

DATED this ____ day of _____, _____.

Honorable (name)

412053

Appendix 4.6 – Verification of Petition for Compulsory Isolation or Quarantine: A.R.S. § 36-789 (B)

1	
2	STATE OF ARIZONA)
3	County of Maricopa)
4	_____ , being first duly sworn upon her oath, deposes and says:
5	1. That I am the Director or Deputy Director of the Arizona Department of
6	Health Services and I am authorized to verify the Complaint on behalf of the Department.
7	2. That I have read the Petition for Compulsory Isolation and Quarantine and
8	the Affidavit in support of it prepared by the State Epidemiologist or his designee, and
9	know the contents thereof.
10	3. That the facts contained in the Petition and the supporting Affidavit of the
11	State Epidemiologist or his designee are true to the best of my knowledge except to those
12	matters stated therein upon information and belief, and as to those matters, I believe them
13	to be true.
14	
15	
16	_____ (name) Director/Deputy Director
17	
18	SUBSCRIBED AND SWORN to before me this ____ day of _____, 200__.
19	
20	
21	_____ NOTARY PUBLIC
22	
23	My Commission Expires:
24	
25	_____

APPENDIX 5

FREQUENTLY ASKED QUESTIONS ABOUT QUARANTINE

If an influenza pandemic occurs, will my community be quarantined?

Community-wide quarantine is only one of a spectrum of actions that may be considered during an influenza pandemic in the United States. Although rapid control is likely to require bold and swift action, measures that are less drastic than legally enforced quarantine may suffice, depending on the epidemiologic characteristics of the pandemic. For example, active monitoring without activity restrictions may be adequate when most cases are either imported or have clear epidemiologic linkages at the time of initial evaluation. When the epidemiology of the outbreak indicates a need for stronger measures, jurisdictions can adopt a voluntary quarantine approach and reserve compulsory measures for only extreme situations. When an outbreak progresses to include large numbers of cases for which no epidemiologic linkages can be identified, community-level interventions may become necessary. Even at this stage, however, measures designed to increase social distance, such as “Stay Home Days”, may be preferred alternatives to quarantine. Wider use of quarantine is generally reserved for situations in which all other control measures are believed to be ineffective.

The choice of containment measures requires frequent and ongoing assessment of an outbreak and evaluation of the effectiveness of existing control measures. Officials must be prepared to make decisions based on limited information and then modify those decisions as additional information becomes available.

Does the effectiveness of containment measures require 100% compliance?

No. Containment measures, including quarantine, are effective even if compliance is less than 100%. Although health officials should strive for high compliance, even partial or “leaky” quarantine can reduce transmission. Therefore, strict enforcement is not always needed; in most cases, jurisdictions can rely on voluntary cooperation. The incremental benefit of quarantine approaches a maximum at a compliance rate of approximately 90%, with little additional benefit from higher rates of compliance. Therefore, containment measures can be important components of the response to a communicable disease outbreak even when compliance is not 100%.

Does “quarantine” always mean using a legal order to restrict someone’s activity?

No. The term “quarantine” is often defined narrowly to refer to the legally mandated separation of well persons who have been exposed to a communicable disease from those who have not been exposed. Although the precise legal definition of quarantine may differ from jurisdiction to jurisdiction, when used clinically or programmatically, quarantine may be defined more broadly to include all interventions, both mandatory and voluntary, that restrict the activities of persons exposed to a communicable disease. Therefore, whenever an exposed person is placed under a regimen of monitoring that includes an activity restriction, even when those restrictions are voluntary, the person is said to be under quarantine.

Must quarantine be mandatory to be effective?

Although the federal government and nearly all states have the basic legal authority to place persons exposed to certain communicable diseases under quarantine and enforce the required restrictions on activity, use of this authority may not always be necessary or practical. Previous experiences with the use of quarantine, including those during the 2003 SARS outbreak, suggest that the majority of persons comply voluntarily with requests from health authorities to remain in quarantine and observe the recommended activity restrictions. In the event voluntary measures are not successful, it may be necessary to implement mandatory containment measures.

Does being placed in quarantine increase a person’s risk for acquiring disease?

One of the fundamental principles of modern quarantine is that persons in quarantine are to be closely monitored so that those who become ill are efficiently separated from those who are well. A second principle is that persons in quarantine should be among the very first to receive any available disease-prevention interventions. Adherence to these two principles of modern quarantine should prevent an increase in risk for acquiring disease while in quarantine.

Is quarantine really necessary if everyone who develops symptoms is rapidly placed in isolation?

Although theoretically true, it would be unrealistic to believe that even the most efficient system for initiation of isolation will minimize delays to the extent required to prevent transmission. Among the factors contributing to delays in recognition of symptoms are the insidious nature of disease onset and denial that symptoms have developed.

Quarantine helps to reduce transmission associated with delays in isolation in two ways. First, quarantine enables health officials to quickly locate symptomatic persons who should be placed in isolation. Second, although quarantine locations may not be as efficient as isolation facilities in preventing transmission, quarantine reduces the number of persons who might be exposed while awaiting transfer to an isolation facility. If quarantine was not used, symptomatic and infectious persons could move about freely in public places, potentially exposing large numbers of additional persons and thereby fueling the outbreak.

Is quarantine useful only for diseases that are spread by the airborne route?

No. Quarantine simply refers to the separation and restriction of activity of persons exposed to a communicable disease who are not ill. It is designed to minimize interactions between those exposed to a disease and those not yet exposed. As such, quarantine can be used for any disease that is spread from person to person. In practice, however, because of the activity restrictions associated with quarantine, the intervention is generally reserved for diseases like SARS or pandemic influenza that are easily and rapidly spread from person to person. However, this tool can also be useful where transmission can occur through close personal contact with secretions or objects contaminated by an ill person. Smallpox is an excellent example of a disease where quarantine can be effective in controlling spread although transmission may occur by means other than the airborne route.

Will the public accept the use of quarantine?

Yes. The negative connotations associated with quarantine likely stem from its misuse or abuse in the past. Although inappropriate use of quarantine, either voluntary or mandatory, would not and should not be accepted by the public, efforts should be made to gain public acceptance when use of this measure is indicated. Experiences with the use of quarantine during the SARS outbreaks of 2003 suggest that public acceptance of quarantine may be greater than previously thought. For example, during the 2003 SARS outbreak in Canada, almost all persons asked to observe quarantine restrictions did so willingly, with only a small number requiring a legal order to gain cooperation. In all cases, cooperation and acceptance was achieved through clear and comprehensive communication with the public about the rationale for use of quarantine.

APPENDIX 6

RECOMMENDATIONS FOR QUARANTINE

(Note: Recommendations on patient isolation are provided in **Supplement 3**.)

General considerations

- Monitor each quarantined person daily, or more frequently if feasible, for fever, respiratory symptoms, and other symptoms of early influenza disease.
- Monitor compliance with quarantine through daily visits or telephone calls.
- Provide a hotline number for quarantined persons to call if they develop symptoms or have other immediate needs.
- If a quarantined person develops symptoms suggestive of influenza, arrangements should be in place for separating that person from others in quarantine and ensuring immediate medical evaluation.
- Provide persons in quarantine with all needed support services, including 1) psychological support, 2) food and water, 3) household and medical supplies, and 4) care for family members who are not in quarantine. Financial issues, such as medical leave, may also need to be considered.
- Collect data related to quarantine activities to guide ongoing decision-making including information on each person quarantined:
 - Relationship to the case-patient
 - Nature and time of exposure
 - Whether the contact was vaccinated, on antiviral prophylaxis or using PPE
 - Underlying medical conditions
 - Number of days in quarantine
 - Symptom log
 - Basic demographics
 - Compliance with quarantine

Based on current available data, the recommended duration of quarantine for influenza is generally **10 days** from the time of exposure. (This period may be adjusted based on available information during a pandemic.) At the end of the designated quarantine period, contacts should have a final assessment for fever and respiratory symptoms. Persons without fever or respiratory symptoms may return to normal activities.

Home quarantine

Whenever possible, contacts should be quarantined at home. Home quarantine requires the fewest additional resources, although arrangements must still be made for monitoring patients, reporting symptoms, transporting patients for medical evaluation if necessary, and providing essential supplies and services. Home quarantine is most suitable for contacts with a home environment that can meet their basic needs and in which unexposed household members can be protected from exposure. Other considerations include:

- Persons in home quarantine must be able to monitor their own symptoms (or have them monitored by a caregiver).
- The person's home should be evaluated for suitability before being used for quarantine, using a questionnaire administered to the quarantined person or the caregiver. Additional guidance on use of a residence for quarantine is provided in Appendix 7.
- Quarantined persons should minimize interactions with other household members to prevent exposure during the interval between the development and recognition of symptoms. Precautions may include 1) sleeping and eating in a separate room, 2) using a separate bathroom, and 3) appropriate use of personal protective equipment (see **Supplement 4**).
- Persons in quarantine may be assessed for symptoms by either active or passive monitoring. Active monitoring of contacts in quarantine may overcome delays resulting from the insidious onset of symptoms or denial among those in quarantine.
- Household members may go to school, work, etc., without restrictions unless the quarantined person develops symptoms. If the quarantined person develops symptoms, household members should remain at home in a room separate from the symptomatic person and await additional instructions from health authorities.

- Household members can provide valuable support to quarantined persons by helping them feel less isolated and ensuring that essential needs are met.
- Immediate and ongoing psychological support services should be provided to minimize psychological distress.
- Quarantined persons should be able to maintain regular communication with their loved ones and health care providers.

Quarantine in designated facilities

In some cases, affected persons may not have access to an appropriate home environment for quarantine. Examples include travelers; persons living in dormitories, homeless shelters, or other group facilities; and persons whose homes do not meet the minimum requirements for quarantine. In other instances, contacts may have an appropriate home environment but may not wish to put family members at risk. In these situations, health officials should identify an appropriate community-based quarantine facility. Monitoring of quarantined persons may be either passive or active, although active monitoring may be more appropriate in a facility setting. Facilities designated for quarantine of persons who cannot or choose not to be quarantined at home should meet the same criteria listed for home quarantine. Evaluation of potential sites for facility-based quarantine is an important part of preparedness planning (see Appendix 7).

Working quarantine

This type of quarantine applies to health care workers or other essential personnel who are at occupational risk of influenza infection. These groups may be subject to quarantine either at home or in a designated facility during off-duty hours. When off duty, contacts on working quarantine should be managed in the same way as persons in quarantine at home or in a designated facility. Local officials should:

- Monitor persons in working quarantine for symptoms during work shifts
- Promptly evaluate anyone who develops symptoms
- Provide transportation to and from work, if needed
- Develop mechanisms for immediate and ongoing psychological support

At the end of the designated quarantine period, contacts should receive physical (fever and respiratory symptoms) and psychological health assessments. Persons without fever or respiratory symptoms may return to normal activities. Persons who exhibit psychological distress should be referred to mental health professionals for additional support services.

APPENDIX 7

Evaluation Of Homes And Facilities For Isolation And Quarantine Isolation Facilities

Home isolation

Ideally, persons who meet the criteria for a case of pandemic influenza and who do not require hospitalization for medical reasons should be isolated in their homes. The home environment is less disruptive to the patient's routine than isolation in a hospital or other community setting.

If feasible—especially during the earliest stages of a pandemic—a home being considered as an isolation setting should be evaluated by an appropriate authority, which could be the patient's physician, health department official, or other appropriate person to verify its suitability. The assessment should center on the following minimum standards for home isolation of an influenza patient:

Infrastructure

- Functioning telephone
- Electricity
- Heating, ventilation, and air conditioning (HVAC)
- Potable water
- Bathroom with commode and sink
- Waste and sewage disposal (septic tank, community sewage line)

Accommodations

- Ability to provide a separate bedroom for the influenza patient
- Accessible bathroom in the residence; if multiple bathrooms are available, one bathroom designated for use by the influenza patient

Resources for patient care and support

- Primary caregiver who will remain in the residence and who is not at high risk for complications from influenza disease
- Meal preparation
- Laundry
- Banking
- Essential shopping
- Social diversion (e.g., television, radio, Internet access, reading materials)
- Masks, tissues, hand hygiene products, and information on infection control procedures
- Educational material on proper waste disposal

Isolation in a community-based facility

When persons requiring isolation cannot be accommodated either at home or in a health care facility, a community-based isolation facility will be required. The availability of a community-based facility will be particularly important during a large outbreak (See also <http://www.ahrq.gov/research/altsites.htm>).

Much of the work in identifying and evaluating potential sites for isolation should be conducted in advance of an outbreak as part of preparedness planning. Each jurisdiction should assemble a team (including infection control specialists, public health authorities, engineers, sanitation experts, and mental health specialists) to identify appropriate locations and resources for community influenza isolation facilities, establish procedures for activating them, and coordinate activities related to patient management. The team should consider the use of both existing and temporary structures. Options for existing structures include community health centers, nursing homes, apartments, schools, dormitories, and hotels. Options for temporary structures include trailers, barracks, and tents.

Considerations include:

Basic infrastructure requirements

- Meets all local code requirements for a public facility
- Functioning telephone system
- Electricity
- Heating, ventilating, and air conditioning (HVAC)
- Potable water
- Bathroom with commode and sink
- Waste and sewage disposal (septic tank, community sewage line)
- Multiple rooms for housing ill patients (individual rooms are preferred)

Access considerations

- Proximity to hospital
- Parking space
- Ease of access for delivery of food and medical and other supplies
- Handicap accessibility
- Basic security

Space requirements

- Administrative offices
- Offices/areas for clinical staff
- Holding area for contaminated waste and laundry
- Laundry facilities (on- or off-site)
- Meal preparation (on- or off-site)

Social support resources

- Television and radio
- Reading materials

To determine priorities among available facilities, consider these features:

- Separate rooms for patients or areas amenable to isolation of patients with minimal construction
- Feasibility of controlling access to the facility and to each room
- Availability of potable water, bathroom, and shower facilities
- Facilities for patient evaluation, treatment, and monitoring
- Capacity for providing basic needs to patients
- Rooms and corridors that are amenable to disinfection
- Facilities for accommodating staff
- Facilities for collecting, disinfecting, and disposing of infectious waste
- Facilities for collecting and laundering infectious linens and clothing
- Ease of access for delivery of patients and supplies
- Legal/property considerations

Additional considerations include:

- Staffing and administrative support
- Training
- Ventilation and other engineering controls
- Ability to support appropriate infection control measures
- Availability of food services and supplies
- Ability to provide an environment that supports the social and psychological well-being of patients
- Security and access control
- Ability to support appropriate medical care, including emergency procedures
- Access to communication systems that allow for dependable communication within and outside the facility
- Ability to adequately monitor the health status of facility staff

QUARANTINE FACILITIES

Home quarantine

A person's residence is generally the preferred setting for quarantine. As with isolation, home quarantine is often least disruptive to a person's routine. Because persons who have been exposed to influenza may need to stay in quarantine for as long as 10 days (may be modified based on information about the virus), it is important to ensure that the home environment meets the individual's ongoing physical, mental, and medical needs. An evaluation of the home for its suitability for quarantine should be performed, ideally before the person is placed in quarantine. This evaluation may be performed on site by a health official or designee. However, from a practical standpoint, it may be more convenient to evaluate the residence through the administration of a questionnaire to the individual and/or the caregiver. Factors to be considered in the evaluation include:

- Basic utilities (water, electricity, garbage collection, and heating or air-conditioning as appropriate)
- Basic supplies (clothing, food, hand-hygiene supplies, laundry services)
- Mechanism for addressing special needs (e.g., filling prescriptions)
- Mechanism for communication, including telephone (for monitoring by health staff, reporting of symptoms, gaining access to support services, and communicating with family)
- Accessibility to health care workers or ambulance personnel
- Access to food and food preparation
- Access to supplies such as thermometers, fever logs, phone numbers for reporting symptoms or accessing services, and emergency numbers (these can be supplied by health authorities if necessary)
- Access to mental health and other psychological support services.

Quarantine in a community-based facility

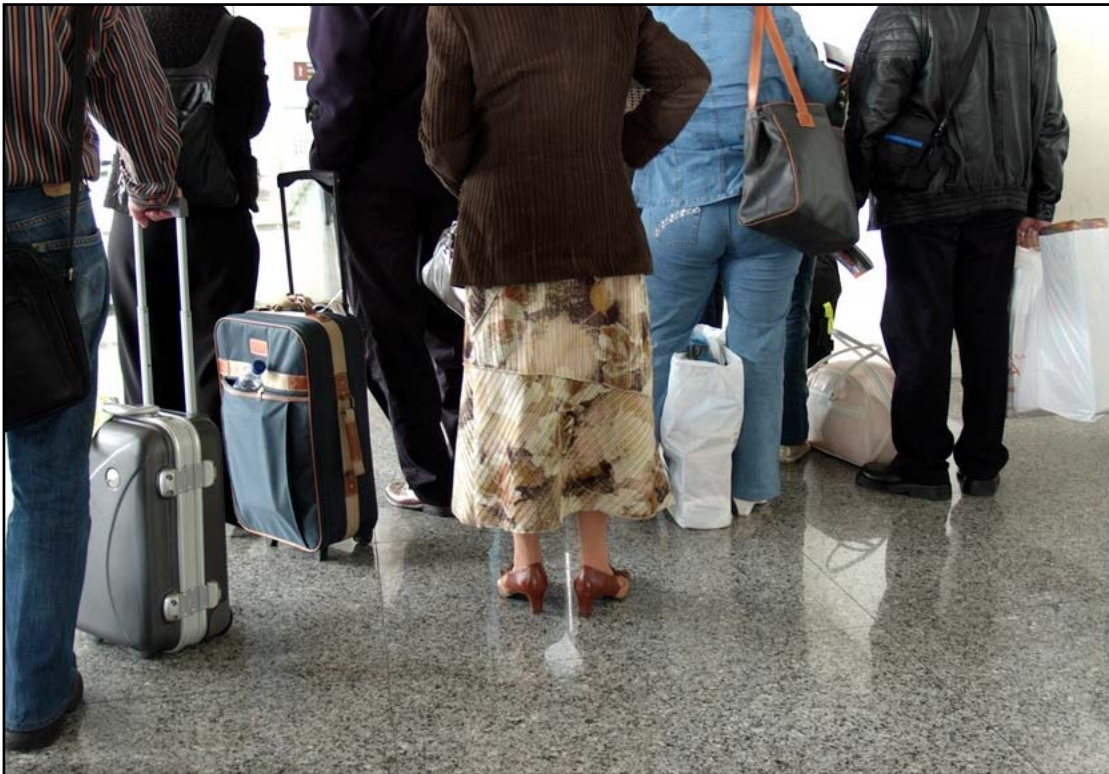
Although the home is generally the preferred setting for quarantine, alternative sites for quarantine may be necessary in certain situations. For example, persons who do not have a home situation suitable for this purpose or those who require quarantine away from home (e.g., during travel) will need to be housed in an alternative location. Because persons who have been exposed to influenza may require quarantine for as long as 10 days, it is important to ensure that the environment is conducive to meeting the individual's ongoing physical, mental, and medical needs. Ideally, one or more community-based facilities that could be used for quarantine should be identified and evaluated as part of influenza preparedness planning. The evaluation should be performed on site by a public health official or designee. Additional considerations, beyond those listed above for home quarantine, include:

- Adequate rooms and bathrooms for each contact
- Delivery systems for food and other needs
- Staff to monitor contacts at least daily for fever and respiratory symptoms
- Transportation for medical evaluation for persons who develop symptoms
- Mechanisms for communication, including telephone (for monitoring by health staff, reporting symptoms, gaining access to support services, and communicating with family)
- Adequate security for those in the facility

Services for removal of waste. No special precautions for removal of waste are required as long as persons remain asymptomatic.

Arizona Influenza Pandemic Response Plan

Supplement 9: Managing Travel-Related Risk of Disease Transmission



Supplement 9: Table of Contents

PRIMARY RESPONSE AGENCIES	S9-2
PRIMARY RESPONSIBILITIES	S9-2
Arizona Department of Health Services	S9-2
County Health Department	S9-2
City Police and Fire Departments	S9-2
Federal	S9-2
I. RATIONALE	S9-3
II. OVERVIEW	S9-3
III. INTERPANDEMIC AND PANDEMIC ALERT PERIODS	S9-4
A. Preparedness for implementation of travel-related containment measures	S9-4
1. Engaging community partners	S9-4
2. Protocols for managing ill travelers at ports of entry	S9-4
3. Quarantine preparedness at ports of entry	S9-5
4. Legal preparedness	S9-5
B. Health information for travelers	S9-5
C. Evaluation of travel-related cases of infection with novel strains of influenza	S9-5
D. Preventing the importation of infected birds and animals	S9-6
IV. THE PANDEMIC PERIOD	S9-6
A. Travel-related containment measures	S9-6
1. Travel into Arizona	S9-6
2. Travel out of the United States	S9-7
3. Travel within the United States and Arizona	S9-7
B. De-escalation of travel-related control measures	S9-7

PRIMARY RESPONSE AGENCIES

- **Arizona Department of Health Services**
- **Arizona Office of Homeland Security**
- **Arizona Department of Emergency Management**
- **County Health Departments**
- **Tribal Health Agencies**
- **City Police and Fire Departments**
- **Centers for Disease Control and Prevention**
- **U. S. Border Patrol**

PRIMARY RESPONSIBILITIES

Arizona Department of Health Services Responsibilities:

- Coordinate w/ HHS and CDC on activities related to travel-related risk
- Provide guidance to county health departments on implementing travel-related containment measures
- Provide public health information to residents that may travel to countries of concern for exposure

County Health Department and Tribal Health Agencies Responsibilities:

- Ensure readiness to implement travel-related disease containment measures.
- Provide public health information to travelers who visit countries where avian or animal influenza strains that can infect humans (e.g., avian influenza A [H5N1]) or human strains with pandemic potential have been reported.
- Evaluate and manage arriving ill passengers who might be infected with avian or animal influenza strains or human strains with pandemic potential.
- Evaluate and implement quarantine, as necessary, on exposed passengers or other individuals related to travel
- Evaluate the need to implement or terminate travel-related containment measures as the pandemic evolves.

City Police and Fire Departments

- Provide Incident Command and Security related to travel disease control and risk containment strategies

Federal responsibilities (as outlined in the HHS Pandemic Response Plan):

- Work with local points of entry to prevent the importation of influenza-infected birds and animals into the United States.
- Provide state and local health departments with legal preparedness templates for use in implementing quarantine and patient isolation measures.
- Work with travel industry partners to ensure that airplane captains and crew are familiar with procedures for identifying and managing arriving ill passengers.
- Coordinate with other countries and WHO to prevent the spread of novel influenza via international travel.
- Work with state and local health departments and CDC quarantine stations to prevent the importation and exportation of cases of pandemic influenza.
- Develop and maintain procedures for isolating sick and quarantining exposed border crossers on the Arizona-Sonora international border
- Coordinate with other countries and WHO to prevent the spread of pandemic influenza via international travel.

I. Rationale

The 2003 pandemic of severe acute respiratory syndrome (SARS) demonstrated how quickly human respiratory viruses can spread, especially in a world of modern air travel. Disease spread will likely be even faster during an influenza pandemic because a typical influenza virus has a shorter average incubation period (typically 2 days vs. 7-10 days for SARS associated coronavirus [SARS-CoV]) and is more efficiently transmitted from person to person. If an influenza pandemic begins outside the United States, public health authorities might screen inbound travelers from affected areas to decrease disease importation into the United States. If a pandemic begins in or spreads to the United States, health authorities might screen outbound passengers to decrease exportation of disease or implement domestic travel-related measures to slow disease spread within the United States.

Because some persons infected with influenza will still be in the incubation period, be shedding virus asymptomatically, or have mild symptoms, it will not be possible to identify and isolate all arriving infected or ill passengers and quarantine their fellow passengers. Moreover, if an ill passenger is identified after leaving the airport, it might not be possible to identify all travel contacts within the incubation period for influenza. Nevertheless—depending on the situation—these activities might slow spread early in a pandemic, allowing additional time for implementation of other response measures such as vaccination.

Once a pandemic is underway, exit screening of travelers from affected areas is likely to be more efficient than entry screening to identify ill travelers. Early in a pandemic, this intervention may decrease disease introductions into the U.S. Later, however, as pandemic disease spreads in communities, ongoing indigenous transmission will likely exceed new introductions and, therefore, federal authorities might modify or discontinue this strategy. Voluntary limitations on travel during a pandemic alert and pandemic, as persons decide to limit their own personal risk by canceling nonessential trips, will also decrease the amount of disease spread. Limiting or canceling travel of U.S. residents and others from affected countries will depend on the properties of the pandemic virus that emerges, and will be informed by the facts on the ground at the time of emergence.



II. Overview

Supplement 9 details travel-related containment strategies that can be used during different phases of an influenza pandemic. These strategies range from distribution of travel health alert notices, to isolation and quarantine of new arrivals, to restriction or cancellation of nonessential travel. ADHS and county health departments will implement these strategies in coordination with CDC quarantine stations located at 18 U.S. ports of entry (currently no CDC quarantine station exists in Arizona; the nearest station is the Los Angeles station). The actions for the Interpandemic and Pandemic Alert Periods focus on preparedness planning and on management of arriving ill passengers on international flights, primarily at Sky Harbor International Airport, in Phoenix, and on cross-border travel associated with the Arizona-Sonora border. The actions for the Pandemic Period focus on travel-related measures to decrease disease spread into, out of, and within the United States.

III. Interpandemic And Pandemic Alert Periods

A. Preparedness for implementation of travel-related containment measures

If a pandemic begins outside the United States, early application of travel-related control measures (i.e., identification and isolation of ill travelers, quarantine of close contacts) might slow the introduction of the virus into Arizona, allowing more time for healthcare preparedness efforts.

The effectiveness of these measures might be limited because asymptomatic travelers can transmit disease, travelers in the incubation phase might not become symptomatic until after arrival at their destinations, and it might not be possible to trace contacts within the incubation period for influenza. Results of mathematical models suggest that even with international flights, if persons are asymptomatic but incubating influenza when they board, they may remain asymptomatic when they arrive and, therefore, may not be detected by either exit or entry screening. Nevertheless, the ability to detect some cases early in the pandemic may slow disease spread even for a short time.

Actions

1. Engaging community partners

While primary planning and response activities occur at the local level (county health and city emergency response), ADHS is working closely with Maricopa County, and other affected counties, to engage appropriate community partners and develop and exercise appropriate plans. Community partners currently or soon-to-be engaged include:

- City emergency responders (firefighters, police officers)
- Local members of the legal community
- Emergency medical services and other emergency responders
- Referral hospital personnel
- Representatives of Sky Harbor International and Tucson International Airports,
- CDC Quarantine officers
- U. S. Border Patrol
- Political leaders
- American Red Cross and other non-governmental organizations
- Business services



2. Protocols for managing ill travelers at ports of entry

County health officials are responsible, in conjunction with ADHS, for developing protocols for managing ill travelers at airports. These protocols include provisions for:

- Meeting flights with a reported ill passenger
- Establishing notification procedures and communication links among organizations involved in the response
- Reporting potential cases to ADHS (ADHS will ensure reporting to CDC)
- Providing a medical assessment of the ill traveler and referral for evaluation and care
- Separating the ill traveler from other passengers during the initial medical assessment
- Transporting the ill traveler to a designated healthcare facility (see also Supplement 3)
- Identifying other ill passengers and separating them from passengers who are not sick
- Transporting and quarantining contacts, if necessary (see #3 below)
- Enforcing isolation and quarantine, if necessary, when ill travelers or their contacts are uncooperative

A copy of the final version of the Maricopa County/Sky Harbor Airport Quarantine Plan will be included as an Appendix to Supplement 9, when it is completed.

Phoenix Sky Harbor Airport is currently being considered as a future site of a CDC Division of Quarantine Station. This Station would be the lead response entity for managing ill travelers at Sky Harbor, as well as the lead point of contact for federal quarantine actions in Arizona. If this site becomes a Quarantine Station, Supplement 9 will be updated, to reflect any necessary changes in protocols.

U. S. Border patrol is the primary agency responsible for identifying potential cases of pandemic influenza crossing the international border into Arizona. Border Patrol has developed a Standard Operating Guideline detailing the procedures for:

- Detaining and isolating suspect cases
- Transporting such cases to referral hospitals
- Specimen collection and transport to the Arizona State Health Laboratory
- Quarantining contacts

Border Patrol is working with the Arizona Department of Health Services, and the border counties and tribes on this Guideline. A copy of the final version of the guideline will be included as an appendix in future versions of this Supplement.

3. Quarantine preparedness at ports of entry

County health officials, in collaboration with the ADHS, need to identify quarantine facilities for housing passengers, crew, and emergency workers who may have been exposed to an ill traveler. These plans need to account for:

- Temporary quarantine (a few hours to a few days), until the results of diagnostic tests become available
- Longer-term quarantine (up to 10 days) if a diagnosis of pandemic influenza is confirmed
- The provision of goods and services to persons in quarantine (see Supplement 8).

4. Legal preparedness

The primary legal remedies for preventing the introduction, transmission, and spread of communicable diseases related to travel are the county and state legal authorities prescribed in the Arizona Revised Statutes (36-264, 36-787-9) (see Supplement 8 for a better explanation of quarantine authorities). The Federal government has primary responsibility for preventing international importation of diseases. The U.S. Public Health Service authority for quarantine relates to international travel, as well as travel between states, to help prevent domestic disease spread. These authorities are used at the state and local level when such authorities don't exist at the local level or there is no capacity to enact local level authorities.

State and local authorities are primarily responsible for restricting travel within their borders, although there is no statutory authority in Arizona for large scale travel restrictions, especially related to cordon sanitaire, and these measures, therefore, are not currently part of the Arizona Influenza Pandemic Response Plan (see Supplement 8).

B. Health information for travelers

Arizona, through the ADHS website (www.azdhs.gov) and www.az211.gov (see Supplement 10) will link to the CDC's Travelers' Health website (www.cdc.gov/travel/) to provide up-to-date travel notices for international travelers to countries affected by novel influenza viruses during the Pandemic Alert Period and Pandemic Period. These notices are issued depending on the scope, risk for travelers, and recommended preventive measures.

C. Evaluation of travel-related cases of infection with novel strains of influenza

During the Pandemic Alert Period, travel-related cases of infection might be detected after entry into the United States, specifically Arizona, or reported during transit by airline personnel before arrival of an ill passenger. Information on the detection and identification of novel strains of influenza is provided in Supplement 1. Guidance on the clinical management of suspected cases of novel influenza is provided in Supplement 5.

County health departments are required to ensure the completion and implementation of protocols for the management of arriving ill passengers, arriving in their county, who meet the clinical and epidemiologic criteria for infection with a novel strain of influenza, and for the management of contacts of such passengers. ADHS is responsible for assisting counties in the development and implementation of these protocols. Additionally, ADHS is responsible for ensuring all state and local protocols are coordinated with federal protocols and systems.

D. Preventing the importation of infected birds and animals

While there are no legal authorities for ADHS to impose interventions to prevent the importation of infected birds or animals into the state, ADHS works closely with Department of Agriculture and the Arizona Game and Fish Department on all animal issues that relate to human health. For more information on surveillance related to infected birds and animals please see Supplement 1.

IV. The Pandemic Period

Over the course of an influenza pandemic, ADHS and county health authorities might consider a range of travel-related control measures to decrease the spread of disease into or within Arizona. The following factors will be considered in developing policy:

- The relative magnitude, duration, and stage of indigenous transmission versus the risk associated with further introduced cases. When pandemic disease is widespread in the U.S., the additional contribution of introduced cases to the magnitude or spread of the pandemic will be minimal depending on the state of the epidemic in the specific location of introduction.
- The value of compulsory restrictions in a setting of voluntary changes in travel patterns. Voluntary changes in travel will occur during a pandemic as persons choose to cancel nonessential travel to decrease their potential exposure and risk of acquiring influenza infection. In this context, the added value of compulsory restrictions should be considered relative to the societal disruptions that limitations on movement would cause.

A. Travel-related containment measures

1. Travel into Arizona

Early during an influenza pandemic that begins outside the United States, affected county health departments will heighten disease surveillance at airports and maintain close communication with ADHS. ADHS will maintain close communication with U.S. Border Patrol and CDC regarding disease surveillance and containment at the Arizona-Sonora border. Travel-related disease control measures will include management of ill travelers arriving at ports of entry and provision of travel health alert notices to incoming travelers.



a) Managing arriving ill passengers

Identification and management of incoming ill travelers may delay and decrease the introduction of novel influenza strains into the United States during the Pandemic Alert Period. These efforts will continue during the early stages of the Pandemic Period, especially if a pandemic strain emerges in another country but has not yet entered the United States.

Once the pandemic has spread outside and within the United States, screening for arriving ill passengers will become less useful and feasible. Although exit-screening of travelers from affected areas is likely to be a more effective disease control measure, its effectiveness too will be limited.

To manage arriving ill passengers, public health authorities or quarantine officers will need to do the following:

- If a suspected case of pandemic influenza is reported aboard an arriving airplane during the early stages of a pandemic, obtain preliminary information about the ill passenger, and advise the captain and crew on patient isolation and infection control.
- If the likelihood of pandemic influenza infection appears high, established airline quarantine response plans (see Interpandemic And Pandemic Alert Periods-3.A.2 above) The major objective activities of these plans are to :
 - Notify the airport to mobilize its first responders, and arrange for patient transport and preparation of quarantine facilities.
 - Meet the airplane, perform a medical evaluation of the ill traveler, and assess the risk to public health.
 - Inform the passengers and crew of the situation, and do not allow them to disembark until the evaluation is complete.

b) Travel health precautions and warnings

As the pandemic spreads from country to country, CDC will update country-specific travel notices and post them on the CDC Travelers' Health website (<http://www.cdc.gov/travel/>). ADHS and county health officials will assist in providing this information to the public through websites (e.g., www.azdhs.gov, www.az211.gov), information lines, and the local media (see Supplement 10).

c) Travel-related measures at early stages of a pandemic

When there is limited transmission in other countries and potential for importation of cases into the United States, specifically Arizona, ADHS and county health departments, in conjunction with federal partners, may conduct the following actions, depending on status of statewide disease spread, and the established epidemiology of the pandemic:

- Initiate enhanced disease surveillance at ports of entry.
- Provide guidance on infection control procedures that can be implemented, if needed, on airplanes (e.g., separate the ill passenger from other passengers; provide the ill passenger with a mask or tissues to prevent viral spread via coughing).
- Isolate arriving ill passengers or border crossers, and quarantine their contacts as necessary.
- Collect information on all arriving passengers if notification is warranted (e.g., for antiviral administration, vaccination, or health monitoring).
- Ensure appropriate containment of exposed border-crossers, as feasible



d) Travel-related measures at later stages of a pandemic

If the situation worsens overseas and there is extensive and sustained transmission in other countries, CDC and ADHS and county health departments may conduct these actions:

- Distribute travel health alert notices to passengers arriving from affected countries (i.e., countries for which health warnings have been issued).
- Post travel health alert notices in airports (e.g., on posters).
- Recommend canceling or limiting nonessential travel to affected countries.
- Further collection of information on all arriving passengers will likely not be feasible due to resource needs

2. Travel out of the United States

If the level of influenza transmission in the United States presents a high risk for exportation of disease, CDC and ADHS and county health authorities will likely conduct the following actions:

- Distribute travel health warnings to outbound passengers who live in or have visited affected parts of the United States.
- Recommend the cancellation of nonessential travel to other countries from ports of entry in affected parts of the United States.
- Recommend the implementation of pre-departure screening (e.g., temperature screening or visual screening) of outbound travelers.

3. Travel within the United States and Arizona

If the level of influenza transmission in a U.S. area is high and if most other areas have not yet been affected, CDC and state authorities will consider recommending the limiting or canceling of nonessential travel to that area or to implement increased disease surveillance measures. If the area of high disease transmission includes Arizona, community infection control measures will be used to slow the spread of illness within the state (see Supplement 8).

B. De-escalation of travel-related control measures

Decisions to de-escalate control measures related to international travel will be made in consultation with CDC.