ARIZONA DEPARTMENT
OF HEALTH SERVICES

ARIZONA PANDEMIC INFLUENZA RESPONSE PLAN

May 2019.v2

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Record of Changes

ADHS maintains the Arizona Pandemic Influenza Response Plan as a living document intended to be annually reviewed and revised, with input from all stakeholders.

PLAN REVIEW, EVALUATION, AND CHANGES			
Date of Change	**Summary of Activity**	**Plan Section**	**Recommendation and Entry Made By**
06/2018	Plan Revision Remove appendix 13 and incorporated into the base plan	All through	ADHS
05/2019	Data updated in Supplement 6 including appendix 1 and 2	All through	ADHS
08/2019	Plan Revision—v.1 with minor design and layout changes to the plan Incorporated Stakeholder comments	All through	ADHS

ADHS is committed to ongoing training, exercise, and engagement for the Arizona Pandemic Influenza Response Plan, to validate public health and health care capabilities.

TRAINING, EXERCISE, AND ENGAGEMENT ACTIVITY			
Date	**Summary of Activity**	**Partners Involved**	**Entry Made By**
11/2018	Vaccine & Antiviral Priorization Advisory Committee (VAPAC)	DEMA, ADHS, PVGS, AZDA, County Public Health and Emergency Management	ADHS
08/2019	National Level Exercise: Crimson Contagion—Pandemic Influenza scenario	Multitude of Federal Partners: Office of the Assistant Secretary for Public Affairs (ASPR), Center for Disease Control (CDC). State Agencies: ADHS, DEMA, ADE, and ADOA. Local Government: Local Health Department and Tribal Government and Health Department Health Care Coalition: Arizona Health Care Association	ADHS

Purpose

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), Department of Emergency and Military Affairs (DEMA), local health departments and other partners and stakeholders, and updated again in 2011.

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.

Scope

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.

Situation Overview

Hazard Analysis Summary

The state of Arizona has many differing 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.

Planning 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 may 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 population shelters and alternate care sites 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.

Concept of Operations

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 entities.

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; receiving, 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.

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 Organization. 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.

Statewide Emergency Response

If the Governor declares a State of Emergency, the State's emergency management structure is activated place (refer to the State Emergency Response and Recovery Plan (SERRP) *https://dema.az.gov/sites/default/files/publications/EM-PLN_SERRP.pdf* and Arizona Department of

Health Services (ADHS) is listed as the primary agency for the Emergency Support Function (ESF 8) for Public Health and Medical Services. DEMA will operate the State Emergency Operations Center (SEOC) and provide other logistical support. ADHS and DEMA will work together, in conjunction with local health departments, local emergency management, and other partners and stakeholders.

ESF 8 provides planning and coordination of public health, healthcare delivery, and emergency response systems to minimize and/or prevent health emergencies from occurring; detect and characterize health incidents; provide medical care and human services to those affected; reduce public health and human service effects on the community; and enhance community resiliency to respond to a disaster.

In addition to the SERRP, State agencies are required to develop Continuity of Operations Plans (COOP). The goal of the COOP 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, the public or disrupting normal business operations and damaging the environment. Each agency has identified its critical business functions and the interdependency among the various 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.

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 counsel in developing these approaches is essential. Public education programs covering the rationale for such decisions can improve their effectiveness.

Tribal Health 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 service for the twenty-two (22) federally recognized Tribal Nations in Arizona (e.g., tribal health agency-only, IHS-only, tribal agency-IHS combinations) this plan does not provide specific response actions at the tribal level.

Border Health Activities

In the event of a Bi-national 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 Bi-national 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 and the border partners utilize the Health Services Gateway (MEDSIS and SIREN email) for bi-national disease surveillance, communication and emergency preparedness and planning coordinating efforts.

At-Risk and Special Needs Populations

Special needs 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 are important approaches that would be effective to communicate to various special needs populations. HHS has adopted the following definition of at-risk individuals: Before, during and after an incident, members of at-risk populations may have additional needs in one or more of the following functional areas: communication, medical care, maintaining independence, supervision, and transportation.

Organization and Assignment of Responsibilities

Primary Agencies		
State	Arizona Department of Health Services (ADHS)	• Monitor surveillance data for the state (on-going). • Activate ADHS Emergency Response Plan if not previously activated. • Initiate Phase 6 – "Pandemic" of the ADHS Influenza Pandemic Response Plan. • Overall coordination of the public health and medical emergency response during a pandemic, to include coordination of all State medical support to communities. • Disseminate pandemic influenza status information to clinicians, localhealth departments, and other stakeholders.

Primary Agencies		
		• Coordinate with SEOC on all non-medical, non- health needs. • Ensure posting of pandemic influenza activity reports on the health department's website throughout the pandemic phase. • Provide isolation and quarantine status information to SEOC and the Governor. • Initiate plan for storing and delivering vaccine as it becomes available to ADHS. • Collaborate with SEOC to discuss potential need to increase antiviral and anti- microbial supplies and increase role of pharmacists in vaccine delivery. • Make recommendation to request medical resources from the Strategic National Stockpile (SNS). • Assist impacted county health operations in performing mass vaccination activities. • Coordinate press releases with appropriate stakeholders. • Utilize the Health Alert Network (HAN) to communicate with county health officials, hospitals, physicians, laboratory directors, community health centers, childcare centers, schools and the media.
Federal	Centers for Disease Control and Prevention (CDC)	• Communicate with ADHS and other state and territorial health departments about ◦ Pandemic stages, Information about the virus (laboratory findings),

Primary Agencies		
		◦ Vaccine availability, ◦ Recommendations for prioritizing vaccine and anti-virals/antibiotics, ◦ National response coordination, and ◦ Other recommended strategies for pandemic detection, control and response
International	World Health Organization (WHO)	• Notify the Centers for Disease Control and Prevention (CDC) and other national health agencies on the progress of the pandemic
Supporting Agencies		
State		
Department of Emergency and Military Affairs (DEMA)		• DEMA will operate the State Emergency Operations Center (SEOC) and provide coordination and support as the incident dictates. • Collaborate with ADHS on the potential need and subsequent request for the SNS. • Shall establish and maintain communications with ADHS Epidemiology. • Upon notification of an influenza pandemic in the State of Arizona, activate the Arizona State Emergency Response and Recovery Plan (SERRP). • DEMA shall coordinate state agencies' activities to respond to an influenza emergency. • Coordinate the procurement of non- medical/ health resources (transportation, personnel, equipment, etc.) as requested. • In conjunction with AZDPS, DEMA may request activation/deployment of the Metropolitan Medical Response System (MMRS). • Provide medical assets of Civil Support Team as requested and as available.

Supporting Agencies	
Arizona State Board of Pharmacy (ASBP)	• Provide guidance regarding proper certification and utilization of pharmacists in an emergency response (ex. Mass vaccination clinics)
Arizona Department of Environmental Quality (DEQ)	• Ensure continuity of operations for key public health and safety programs under DEQ jurisdiction. • Ensure that particulate matter data collection, quality assurance, reporting and forecasting are maintained. • Coordinate with AZ Dept of Agriculture to ensure open burning of infected carcasses occurs with safeguards to prevent aerial broadcast of live viruses in smoke. Open burning must be subject to DEQ or county permission based on forecasted dispersion conditions. • Provide backup assistance (in extreme cases) to ensure operation and maintenance of WQARF remedial action sites. • Coordinate with AZ Dept of Agriculture to determine appropriate mass burial locations for disposal of infected carcasses. • Assist in conducting environmental assessments of disposal sites, as needed. • Assist AZ Dept of Agriculture and Dept of Health Services with assessment of personal protective equipment and decontamination procedures
Arizona Department of Public Safety (DPS)	• Provide security for emergency pharmaceuticals. • Provide other support collateral with the Department's mission and capabilities.
Office of Attorney General (AGA)	• Review legal and liability issues and determine mitigation actions.
Arizona Department of Agriculture (ADA)	• Overall coordination of veterinary response to a domestic animal outbreak of a pandemic virus or virus with pandemic potential. • Ongoing surveillance for influenza in domestic animals and animal products.

Supporting Agencies	
	• Ensuring that the State's commercial supply of meat, poultry, and egg products are wholesome, not adulterated, and properly labeled and packaged.
Arizona Department of Corrections (DOC)	• Manage health care resources within the state penitentiary systems
Arizona Department of Economic Security (DES)	• CPS may assist with the placement in foster care or with relatives of children who have been orphaned or with parents hospitalized or too ill to care for them, after release from quarantine, both in- state and out-of-state. • Provide lists of persons with special needs in impacted areas as requested through normal SEOC operations. • Provide support collateral with the Department's mission and capabilities as required.
Arizona Department of Administration (ADOA)	• Workforce management plans for a pandemic influenza event
County/Tribal	
Health Departments/Emergency Preparedness	• 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
Emergency Management Departments	• Operate the County Emergency Operations Center (CEOC) • Maintain contact with the State Emergency Operations Center (SEOC)
Medical Examiners (OME)	• Coordinates mass fatality operations

Local	
Metropolitan Medical Response Systems (MMRS)	• Administer vaccine to first responder and law enforcement communities • Assist in providing PPE to first responder and law enforcement personnel
Federal	
United States Food and Drug Administration (FDA)	• Oversee the safety and viability of vaccines and pharmaceuticals

Indian Health Services (IHS)	• 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
	• 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

Veterans Administration (VA) Medical Centers	• Coordinates National Disaster Medical System (NDMS) resources for medical surge.
United States Department of Agriculture (USDA)	• Provides leadership for coordination of animal issues such as disposal of animal carcasses, protection of livestock health, and zoonotic diseases associated with livestock. • Controls eradication of an outbreak of a highly contagious or an economically devastating animal disease
Private Sector	
Local Medical Facilities	• Supply resources and volunteers as requested
Arizona Chapter of the American Academy of Pediatrics	
Arizona Health Care and Hospital 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	
American Red Cross (ARC)	• Supply resources and volunteers as requested
Critical Incident Stress Debriefing- Arizona Chapter	
Arizona Voluntary Organizations Active in Disasters (AzVOAD)	
Salvation Army (TSA)	

Direction, Control, and Coordination

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 imbedded within 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.

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. 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.

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.

Supplement 3: Health Care Coordination and Surge Capacity

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

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. This section 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.

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.

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. This supplement provides actions and recommendations to state and local partners and other stakeholders on planning for the different elements of a pandemic vaccination program.

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.

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. This section defines and lists strategies and activities for implementation of community containment measures to be used during a pandemic, it also contains legal preparedness templates.

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.

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. This supplement covers education and information dissemination to the general public, health care providers, response agencies and organizations, community leaders, and other groups of individuals.

Supplement 11: Pandemic Influenza 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. This supplement describes the role and activities for informatics systems that support surveillance, vaccine and pharmaceutical delivery, emergency response and communications needs during an influenza pandemic.

Supplement 12: Preparedness Activities

Supplement 12 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 Pandemic Influenza Response Plan.

Information Collection, Analysis, and Dissemination

ADHS, in partnership with its external partners will utilize all internal forms of Information collection including, but not limited to:

- MEDSIS
- Health Services Portal (HSP)
- Arizona State Public Health Laboratory
- ADHS Epidemiologist Investigation
- County and Tribal Epidemiological Investigation

Communications

ADHS will maintain functional and redundant means of communication by utilizing the multiple platforms available including, but not limited to:

- Arizona Health Alert Network (AzHAN)
- HSP
    - Allows a platform for secure, web-based, communications
- Internal ADHS E-mail
- 800 mHZ radio
- Telephone

Administration, Finance, and Logistics

Continuity of Operations will be maintained throughout ADHS by following guidelines set forth by the Arizona Department of Health Services Continuity of Operations-Executive Management Plan and personnel resource management guidelines outlined by the Arizona Department of Administration (ADOA) Pandemic Influenza Plan for social distancing and telework suggestions.

Plan Development and Maintenance

ADHS plan review and revision involves three types of edits—1) Minor Technical Revisions, 2) Major Technical Revisions, and 3) Complete Plan Overhaul. In collaboration with stakeholders, PHEP takes the lead in reviewing and revising the plan to ensure:

1. The plan will be evaluated through exercises or real-world events at least annually. ADHS and stakeholder participation will vary and is dependent on the scope of the exercise or event. The associated corrective actions, lessons-learned, and best practices will be integrated as appropriate.
2. The maintenance of the plan to will include a review by communicating through email, telephone, or in-person meetings. This will occur at a minimum of every two years in conjunction exercise or real-world event.
3. All plans will be shared with the leadership for review and approval.
    - Plans not classified as “Confidential” will be posted on the ADHS website to allow for public feedback prior to the finalization of the plan.

- Plans that are classified as "Confidential" will be shared with the planning team to allow for feedback prior to finalization of the plan.

4. Plan revision will occur through review by ADHS and stakeholders at a minimum of every three years. Revision of the plan can be accomplished by communicating through email, telephone, or in-person meetings. Plan revision will include a new plan effective date.
5. The revised plan will be posted to the ADHS public-facing website and the agency's secure information sharing portal. A hard copy of the plan will be filed with the ADHS Bureau of Public Health Emergency Preparedness Office, 150 North 18th Ave, Suite 150, Phoenix, AZ 85007 (602-364-3289).
6. PHEP will notify ADHS, stakeholders, and other partners through email when significant changes are made to the plan. The plan will be shared with stakeholders to promote alignment between local and state-level emergency response planning.

Authorities and References

Note: The summary is intended as a basic reference guide – for a comprehensive listing of Arizona Revised Statutes visit the Arizona State Legislature website

http://www.azleg.gov/ArizonaRevisedStatutes.asp

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: 1. if the person(s) is moving or about to move from state to state. 2. 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.

STATUTORY AUTHORITY		
STATUTE	**AGENCY**	**AUTHORITY**
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 § 23-901.06	Department of Emergency and Military Affairs	• Volunteer workers *https://www.azleg.gov/viewdocument/?docName=https://www.azleg.gov/ars/23/00901-06.htm*
ARS § 26-310	Department of Emergency and Military Affairs	• Use of professional skills *(https://www.azleg.gov/viewdocument/?docName=https://www.azleg.gov/ars/26/00310.htm)*
ARS § 26-314	Department of Emergency and Military Affairs	• Immunity of state, political subdivisions and officers, agents, employees and emergency workers; limitation; rules; definitions *(https://www.azleg.gov/viewdocument/?docName=https://www.azleg.gov/ars/26/00314.htm)*
ARS § 36-136	Arizona Department of Health Services	• Powers and duties of the Director
ARS § 36-782	Arizona Department of Health Services	• Defines an Enhanced Surveillance Advisory

STATUTORY AUTHORITY		
STATUTE	**AGENCY**	**AUTHORITY**
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 § 36-787(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 § 36-788	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 § 36-789	Arizona Department of Health Services/County Health Departments	• Describes due process procedures 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 § 36-136	Arizona Department of Health Services	• Powers and duties of the Director
ARS § 36-782	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.

STATUTORY AUTHORITY		
STATUTE	**AGENCY**	**AUTHORITY**
ARS § 36-787(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 § 36-788	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 § 36-789	Arizona Department of Health Services/County Health Departments	• Describes due process procedures 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

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Supplement 1

SUPPLEMENT 1: SURVEILLANCE AND EPIDEMIOLOGY

Arizona Pandemic Influenza Response Plan

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Rationale

Pandemic influenza surveillance includes surveillance for influenza viruses (virologic surveillance) and surveillance for influenza-associated illness, hospitalizations, and deaths (disease surveillance). This guidance may also be applicable during severe seasons.

The goals of virologic 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 and monitor the spread of the virus within affected areas.
- Monitor genetic 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.

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 county health departments, the Arizona Department of Health Services' (ADHS) Office of Infectious Disease Services (OIDS) coordinates human influenza surveillance activities throughout the state.
Veterinary surveillance for domestic animals 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. The Arizona Game and Fish Department (AZGFD) and USDA also monitor wild avian populations for highly pathogenic avian influenza (HPAI) and other diseases of concern through the APHIS Wildlife Services program.

Centers for Disease Control and Prevention (CDC) Intervals

- Investigation: Investigation of novel influenza A infection in humans or animals
- Recognition: Recognition of increased potential for ongoing transmission of a novel influenza A virus

- Initiation: Initiation of a pandemic wave
- Acceleration: Acceleration of a pandemic wave
- Deceleration: Deceleration of a pandemic wave
- Preparation: Preparation for future pandemic waves

Surveillance for the CDC Investigation Interval

ADHS OIDS routinely coordinates and maintains a statewide influenza surveillance system that identifies circulating influenza viruses and monitors influenza activity. While influenza surveillance is generally most intensive in October through May each year, Arizona maintains virologic testing and all surveillance systems year-round. The statewide influenza surveillance system is comprised of the following components:

- Virologic surveillance by subtyping selected influenza isolates or via real-time reverse transcriptase polymerase chain reaction (PCR) testing
- Outpatient ILI surveillance via ILINet and other methods
- Laboratory surveillance through the reporting of positive laboratory tests for influenza from laboratories throughout the state
- Influenza and pneumonia mortality data from county/state vital records offices
- Influenza-associated pediatric mortality
- Influenza-like illness outbreak investigation
- Syndromic surveillance data other sites
- Veterinary surveillance through collaborations with other agencies
- Communication of surveillance findings to the public and public health partners around the state

Components are described in greater detail in Appendix 1.1: Components of the Arizona Influenza Surveillance System and in the sections below. These components provide data that result each week in an overall state-level assessment of influenza activity, which is submitted to the Centers for Disease Control and Prevention (CDC) and communicated to local partners. Activity is characterized as “widespread”, “regional”, “local”, “sporadic” or “no activity”. Definitions for these levels are included in Appendix 1.2: Definitions of the Geographic Spread of Influenza. These assessments are used to compare the extent of influenza activity from state to state are used to generate the national influenza activity map. During a pandemic, CDC may recommend that these assessments be made year- round, rather than only October through May.

National surveillance for influenza involves several components, including: virologic surveillance [state public health laboratories and other global sites], outpatient surveillance [sentinel provider surveillance via ILINet], hospital surveillance [Influenza Hospitalization Network (FluSurv-NET)], mortality surveillance [122 Cities Mortality Reporting System, National Center for Health Statistics (NCHS) mortality surveillance data and Influenza-Associated Pediatric Mortality Surveillance System], and weekly state-level assessments of influenza activity. These are described in more detail on the CDC website and in Appendix 1.3: Overview of Influenza Surveillance in the United States.

Virologic Surveillance for Influenza

Public health goals for surveillance of influenza viruses are twofold: 1. to identify and characterize circulating strains to inform annual vaccine formulation, and 2. to identify and characterize strains with pandemic potential.

The Arizona State Public Health Laboratory (ASPHL) provides testing of influenza specimens submitted by providers and laboratories throughout the state year-round, via PCR or culture. ASPHL performs preliminary typing, forwards isolates or specimens with unusual results to CDC for identification of novel viruses, and provides specimens routinely to CDC for antigenic characterization. ASPHL has the capacity for identification of influenza A H1, H3, H5, and H7 and influenza B lineages Victoria and Yamagata.

In preparation for a pandemic, ASPHL 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. ADHS will issue additional guidelines for testing of suspected influenza patients, as needed, based on available laboratory resources and surveillance needs within Arizona.

ASPHL 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 ASPHL for testing and subtyping. Clinical and reference laboratories also send a select number of specimens for subtyping. The appropriate number is a balance between available resources, competing laboratory priorities, and the need for sufficient specimens to obtain quality data about circulating strains. Submission requests to laboratories may change throughout the season or pandemic phases as influenza activities and information needs change.

OIDS receives ASPHL information through the state laboratory's electronic laboratory information system (STARLIMS). Positive influenza test results are then entered into the statewide, web-based surveillance system, the Medical Electronic Disease Surveillance Intelligence System (MEDSIS). County health departments are able to view and edit information in MEDSIS for persons that reside in their jurisdiction. Any high-priority laboratory results (e.g., identification of a novel strain or the first influenza case of the season) will be relayed to the county health department via telephone to ensure rapid follow-up. The information sharing procedures between OIDS, ASPHL, county health departments and clinical laboratories will continue to change with implementation of new systems allowing submitters to view the status of their samples at ASPHL.

ASPHL is part of a national system of U.S.-based collaborating laboratories of the WHO Global Influenza Surveillance Network. Clinical labs in Arizona participate in the National Respiratory and Enteric Virus Surveillance System (NREVSS) (see Supplement 2 – Laboratory Diagnostics). The objective of this system is to detect trends and compare seasonal differences, rather than to record all influenza tests performed in the United States. These laboratories provide information weekly to describe influenza surveillance on a national level. Visit the NREVSS website for the most up to date listing of participating laboratories in Arizona). In 2010, CDC and ASPHL worked together to implement the Public Health Laboratory Interoperability Project (PHLIP), which allows for daily transmission of

influenza results from ASPHL to CDC and reduces the workload on the user sending the results. CDC also maintains and disseminates national data regarding the antigenic characterization and antiviral resistance of viruses submitted from state public health laboratories and other NREVSS sites.

**Please refer to Supplement 2 – Laboratory Diagnostics, for a full description of laboratory activities.*

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, laboratory-confirmed influenza, hospitalizations, and deaths allow public health to monitor regional disease trends. As mentioned previously, influenza surveillance is most intensive during October through May, although most components of influenza surveillance are now conducted year-round. This enhancement is an important part of surveillance for novel strains of influenza.

Disease surveillance activities in Arizona conducted during a routine influenza season incorporate local components of several of the national surveillance types and can be divided into the following categories:

- Outpatient (ILI) Surveillance
    - County health departments recruit ILI sentinel reporting sites (county health departments or the providers report online to the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet); ADHS accesses this information online).
    - Approximately 80 sites are enrolled each season, from 15 counties.
    - All sites are encouraged to continue reporting through the summer months.
    - County health departments are responsible for helping to recruit sites and follow-up with non- reporting sites. ADHS works with the county health department to ensure geographic representation among sites.
    - County health departments ensure ILI sentinel reporting sites are reporting to the national surveillance system on a regular basis.
    - At least one regularly reporting surveillance site per 250,000 persons population is recommended, or at least one site for smaller counties.
- Laboratory Surveillance
    - All positive influenza tests have been reportable to ADHS by laboratories since October 2004, including influenza cultures, direct fluorescent antibody test, PCR, and rapid influenza diagnostic tests. This component of the state surveillance system provides useful information on the burden of confirmed influenza each week and also helps to determine the type of influenza circulating.
    - Tracking reports of laboratory-confirmed influenza cases from clinical/commercial laboratories around the state. The reporting mechanism for laboratories for influenza is the same as for all other laboratory-reportable morbidities; lab reporting continues year-round. Entering and analyzing laboratory data occurs on a routine basis.
    - Continuing development and implementation of electronic laboratory reporting (ELR). Laboratories using ELR can provide more timely data through automatic data

transmissions from their systems to ADHS. This also reduces data entry time at ADHS and may reduce data transcription errors. Numerous commercial, hospital and public health laboratories have implemented ELR with ADHS and work continues to add more laboratories. More information about MEDSIS and ELR can be found in Supplement 12 – Influenza Pandemic Information Management.

- Hospitalization Surveillance
    - Conducting hospital surveillance for severe acute respiratory illness (SARI) in selected border counties, including characterizing the etiologies of respiratory illnesses within participating hospitals (conducted by ADHS Office of Border Health).
    - Working with county health departments to monitor activity levels or unusual events from infection preventionists, infectious disease doctors, medical examiners or other relevant groups, as warranted by the influenza season.
    - Monitoring the National Syndromic Surveillance Platform (NSSP) for emergency department or inpatient anomalies: A CDC-administered system that includes chief complaints or diagnoses at emergency departments, inpatient and outpatient visits from selected hospitals, and outpatient visits at Department of Defense ambulatory-care centers; multiple Arizona hospitals are included in the national system. Data are available in near real-time and statistical anomalies are flagged within the system, including for influenza-like illnesses and other respiratory syndromes.
    - Collaborating with county health departments to respond to special situations and follow CDC requests (e.g., investigation of pediatric influenza-associated deaths, critically ill pregnant cases, or intensive care unit admissions).
    - Investigating selected hospitalized cases. As a result of the 2009 H1N1 response, a form now exists in MEDSIS for entering information about hospitalized cases, including disease progression and underlying medical conditions. While it is anticipated that few individual hospitalized influenza cases will be investigated outside of a pandemic situation, the forms and data collection mechanism are available.
    - Conducting analysis of influenza-related hospitalizations from the Hospital Discharge Database (HDD), though this information is only available every six months. These data provide baseline information about usual trends among patients hospitalized with influenza and can serve as a comparison for current data.
    - Nationally, the Influenza Hospitalization Surveillance Network (FluSurv-NET) conducts national sentinel population-based surveillance for laboratory-confirmed influenza related hospitalizations in children (persons less than 18 years) and adults. Data is gathered from participating Emerging Infections Program (EIP) and Influenza Hospitalization Surveillance Project (IHSP) states.
- Outbreak Investigation
    - Investigation of outbreaks of influenza-like illness in certain settings can help identify particular populations that are more severely affected by the circulating influenza virus, confirm the etiology of the outbreak, and lead to the prevention of additional cases through education, infection control, vaccination, or antiviral chemoprophylaxis. ADHS Guidelines for the investigation and control of influenza-like illness in schools/

child care centers, medical facilities, assisted living facilities, and long-term care facilities have been created.

    - Work with county health departments to investigate reported ILI outbreaks, particularly those in high-priority settings involving populations at high risk of complications to influenza, or with many severely ill cases, or occurring outside the expected time period.
    - Coordinate with county health departments and ASPHL to obtain and test specimens for respiratory viral illnesses to confirm outbreak etiology.
    - Work with county health departments to recommend and implement control measures to prevent further morbidity in affected settings.
    - ADHS has the ability to track reported outbreaks in MEDSIS via the Outbreak Module. This can assist in identifying particular risk groups and/or settings for the circulating virus. The Outbreak Module allows for several capabilities: tracking of outbreak-level statistics; linking of individual cases to a specific outbreak; and the sharing of all information between ADHS and the relevant county health departments.

- Syndromic Surveillance
    - The sources listed below are monitored by ADHS and/or county health departments throughout the season and will continue to be assessed in the context of other information available. Validation of these methods continues to be needed to reduce false signals and increase sensitivity.
- Monitoring the National Syndromic Surveillance Platform (NSSP) for emergency department or inpatient anomalies: A CDC-administered system that includes chief complaints or diagnoses at emergency departments, inpatient and outpatient visits from selected hospitals; multiple Arizona hospitals are included in the national system. Data are available in near real-time and statistical anomalies are flagged within the system, including for influenza-like illnesses and other respiratory syndromes.
    - Some county health departments also work with their local hospitals to conduct syndromic surveillance within the emergency departments.
- Mortality Surveillance
    - The collection of mortality data can help health departments monitor the severity of seasonal influenza or a pandemic and determine the population and areas most affected. In Arizona, mortality surveillance is accomplished through, an electronic death registration system, the Database Application for Vital Events (D.A.V.E) as well as reports of pediatric deaths due to laboratory-confirmed influenza. 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.
    - Analyzing the number of deaths due to pneumonia and influenza recorded each week and comparing it to historical limits from the previous two years to identify unusual increases; analyzing demographic information for identified deaths to identify changes from expected patterns of mortality.

    - The ADHS Office of Vital Records utilizes an electronic death registration system statewide, which expedites recording and reporting of deaths and allows for prompter access to the data. OIDS staff can access these data for analysis as soon as a cause of death is assigned.
    - This analysis is conducted at both the state level and for four regions within the state.
    - Working with county health departments to identify and investigate influenza-associated pediatric deaths and report this information to CDC.
- Veterinary Surveillance
    - Arizona Department of Agriculture (ADA) has primary responsibility for domestic animal disease surveillance.
    - Surveillance for avian influenza is routinely conducted at the major poultry farms in Arizona. The University of Arizona Veterinary Diagnostic Lab (AzVDL) tests birds for avian influenza and forwards positives to the National Veterinary Services Laboratory (NVSL) in Ames, IA, for confirmation.
    - Three methods of surveillance for wild birds are in place:
    - USDA Animal and Plant Health Inspection Services, Wildlife Services, samples waterfowl when rounding up unwanted birds from urban lake settings and when following up on unexplained events of morbidity and mortality in waterfowl. Cloacal swabs are normally collected.
    - The Arizona Game & Fish Department (AGFD) sets up hunter stations during hunting season in Cibola National Wildlife Refuge, Havasu National Wildlife Refuge and Willcox Playa Wildlife Area to swab cloaca of certain target species of waterfowl and shorebirds.
    - AGFD submits carcasses from die-offs of certain species of waterfowl and game birds for necropsy and/or tracheal swabs for avian influenza testing. Necropsy and avian influenza testing is performed at AzVDL.
    - ADA and AGFD report positive test results to OIDS staff, where they are relayed to the appropriate county health department via phone, teleconferencing, email or fax.
    - More details about Arizona avian influenza surveillance are in Appendix 1.4.
- Surveillance Communications
    - Monitoring of national and/or global influenza activity through CDC reports or conference calls.
    - Conducting bi-weekly conference calls (or as needed, depending on influenza activity) with disease investigators and epidemiologists from county health departments to discuss influenza activity and associated issues in their jurisdictions.
    - Posting weekly (or as needed, depending on influenza activity) influenza activity reports on the ADHS website throughout the influenza season.
    - The influenza activity report includes: laboratory-confirmed cases (including age and geographical distribution, and timing of disease report); subtyping information; ILI activity from sentinel sites; ILI from school surveillance; pneumonia and influenza mortality; and weekly state activity level.

- Distributing communications from ADHS, CDC and WHO to partners via HAN, EpiAZ (bi-weekly outbreak newsletter), press releases, and weekly flu Granicus reports to public health and health care practitioners across the state.
- Distributing other information to internal and external partners as needed.

Surveillance for the CDC Recognition Interval

In the Recognition Interval, the verification that human-to-human transmission of an animal or human-animal influenza reassortant virus has been made and the virus is able to sustain community-level outbreaks. The activities described above, appropriate for the interpandemic phase surveillance, will continue; however, additional activities or planning may be initiated in order to better detect the reassortant virus, as described below.

Monitoring for Novel Strains of Influenza

ADHS will provide any guidance that CDC has made available, such as enhanced surveillance recommendations or testing guidelines 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. CDC has issued information for health professionals and laboratorians regarding clinical guidance and laboratory testing of persons with suspected infection with avian influenza in the U.S.

County 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 exhibits sustained human-to-human transmission (WHO Pandemic Phase), recommendations for further intensified laboratory and disease surveillance will likely be issued. If there is an indication that the novel virus is not developing into a pandemic strain, a de-escalation of surveillance activities will occur (CDC Investigation Interval).

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 in order to obtain appropriate testing and coordinate any special investigations required.

In 2007, novel influenza A virus infections became nationally notifiable. The case definition includes a combination of clinical and epidemiological criteria, or laboratory confirmation of a novel virus. The most recent national case definition, updated in 2014, is included in Appendix 1.7: National Case Definition for Novel Influenza A Virus Infections.

- ADHS would immediately report to CDC any influenza cases that meet the novel influenza A case definition or:
- 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 or 800-232-4636) to report a suspected case of infection with any novel influenza virus. Following the initial telephone report, ADHS OIDS 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. 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.

Surveillance Activities during the Recognition Interval

Routine surveillance operations previously listed for the Investigation Intervalwill continue, and the enhanced surveillance activities below will be implemented. During the alert phase, the objectives are to identify any increases in influenza activity and also identify potential cases of the novel virus and obtain specimens rapidly for testing at ASPHL.

Outpatient (ILI) Surveillance

- Work with county health departments to ensure timely and comprehensive reporting of ILI from sentinel sites.
- Request that any sentinel ILINet providers not already reporting start submitting data weekly.
- If warranted and guidance for screening has been provided, consider requesting that providers screen patients with influenza or ILI for specific epidemiological factors related to the new subtype (e.g., travel to affected areas).
- Enhance surveillance, including obtaining demographic data on clusters, ill travelers, or unusual cases.
- Utilize the “summer influenza case investigations” protocol (Appendix 1.5) if an influenza virus is detected out of season or if another unusual event occurs. This protocol focuses on clinical information, initial influenza testing, and epidemiological factors such as contact with poultry in a region with known avian influenza.
- Investigate any influenza cases, outbreaks, or increases in ILI suspected of being due to a novel virus.
- Steps involved in investigating early cases or clusters include: collecting a specimen or confirming laboratory results by culture or PCR; obtaining clinical information including comorbidities and measures of severity; obtaining risk factor or exposure history; monitoring close contacts for ILI; and ensuring patient is isolated or that the currently recommended infection control precautions have been implemented. This information will be collected through contact with the clinician, infection preventionist, and/or patient. Protocols and investigation forms used will likely depend on what is already known about the novel virus.
- 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)

Laboratory Surveillance

- Request that surveillance partners (e.g., county health departments, sentinel providers, clinical laboratories) increase specimen collection; alert ASPHL to expect an increased number of specimens. Increase influenza laboratory testing for persons with compatible clinical syndromes at emergency departments or among hospitalized cases.
- Ensure that specimens for any suspected cases of novel influenza A virus infections, identified by clinical or epidemiological risk factors possibly in combination with preliminary influenza testing, be sent to ASPHL immediately.
- Work with laboratory staff to identify thresholds for the number of specimens that can be tested in a day. Monitor the number of specimens received daily and develop a plan for how to limit the number of specimens received when the threshold is exceeded, while still maintaining the ability to detect cases of novel virus infection.
- Coordinate between county health departments and ASPHL to ensure that testing is prioritized and that laboratory staff can identify suspicious cases so that they may take appropriate safety precautions.
- Ensure timely reporting, data entry and analysis of influenza cases from laboratories statewide.
- Ensure that representative specimens are sent to CDC for appropriate testing.
- Ensure that any influenza A viruses that cannot be subtyped are reported to CDC immediately and specimens are sent, as appropriate.
- Coordinate with CDC to send specimens from positive PCR at ASPHL for antiviral resistance testing.
- Assess need to change types of laboratory testing performed to adhere to CDC guidance regarding safety concerns in working with the novel virus.

Hospitalization Surveillance

- Consider instituting active surveillance for increases in hospitalizations or emergency department visits for respiratory symptoms or influenza-like illness. Work with county health departments to contact hospitals or emergency departments, or use NSSP for participating hospitals.
    - One example of hospital surveillance at the county level is the enhanced surveillance Maricopa County Department of Public Health has implemented numerous times when heightened health surveillance is desirable because of a large planned event. In those cases, the county health department will send out an email notice to hospital infection preventionists, emergency departments, urgent cares, and medical examiners, requesting that they be alert to unusual diseases or symptoms, including unusual numbers of cases presenting with similar symptoms or exposures or unusual presentation of symptoms. In some cases, providers are requested to report a daily status; in other cases they are asked to report only when something unusual is detected.
- Analyze the characteristics of any known hospitalized influenza cases to identify clinical characteristics or progression of illness.

- 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 1.8: Arizona Draft Emergency Measure for Pandemic Influenza)

Syndromic Surveillance

- Monitor syndromic surveillance data sources or work with county health departments to assess data from NSSP, or other sources of syndromic data to detect unusual patterns of ILI or other respiratory illness activity.
- Consider instituting active surveillance including evaluating school and workforce absenteeism at selected sites.

Mortality Surveillance

- Consider instituting active surveillance (e.g., number of deaths due to respiratory illness among hospitalized patients).

Veterinary Surveillance

- If the novel influenza strain is known to affect birds, ADA will heighten the monitoring of Arizona poultry farms and birds will be actively checked for symptoms.
- AGFD will monitor the sentinel lakes with increased frequency with possible capture and testing of wild birds.
    - If during hunting season, additional check stations will be implemented by the AGFD and avian swabs taken.

Surveillance Communications

- Maintain regular internal communication between ASPHL and OIDS 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, as information is available.
- Communicate changes to surveillance recommendations, testing guidelines, or other information.
- Coordinate with the Logistics Section, if activated, or the Health Alert Network staff to ensure communications to all relevant parties.
- Consider working with the medical professional societies to disseminate messages to their members.
- Distribute CDC guidelines/statements to partners.
- Monitor surveillance reports and communications from CDC and WHO and enact recommendations.
- See also Supplement 10: Public Health Communications.

Surveillance for the CDC's Initiation, Acceleration, and Deceleration Intervals

The Pandemic Phase is defined by widespread global human influenza infection caused by a new subtype.

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 county 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.

Surveillance Activities during the Initiation, Acceleration, and Deceleation Intervals

- Surveillance activities listed in earlier CDC Intervals will continue to the extent possible, in addition to the activities below, but will likely be coordinated within the Operations Section in the ADHS Public Health Incident Management System (PHIMS). ADHS will analyze morbidity and mortality data on a frequent basis to establish geographic or demographic populations most likely to be infected or to develop severe disease, to determine population- and geographic area-specific rates, or to identify risk factors, which may inform vaccine distribution or other control strategies. Communications and analysis of surveillance data will likely occur with greater frequency.
- MEDSIS or its platform (the Health Services Portal (HSP)) may contain the flexibility to quickly accommodate other electronic surveillance needs at various pandemic phases. During the 2009 H1N1 pandemic, the influenza screens within MEDSIS were adapted to include classification of the novel virus as well as information from the form described in Hospitalization Surveillance, below. This allowed for more rapid analysis of the data collected and improved ways to share case-specific data between county and state health departments. Line lists of cases under investigation or with testing results available were posted on a secure document library on the HSP to share information quickly and securely between county and state health departments.

Laboratory Surveillance

- Focus laboratory surveillance on detecting antigenic drift variants or reassortant viruses, or on testing severe cases.
- During the 2009 H1N1 pandemic, ADHS issued guidelines for clinicians regarding which patients should be tested for H1N1 and which samples would be accepted at ASPHL. The last testing recommendation issued was to send specimens to ASPHL for patients hospitalized for at least 24 hours with an influenza-like illness (defined as fever [≥100.4° F (38° C)] and cough and/or sore throat in the absence of a known cause) OR for unexplained deaths with febrile illness.
- Work with laboratory staff and the Operations Section Chief to ensure that current ADHS testing guidelines reflect a good balance between resources available (staff and reagents) and

type of information needed for the public health response. Testing guidelines may change throughout the pandemic and the period leading up to the pandemic as these factors vary with time.

- Utilize Quidel data and analyze rapid test results and percent positivity rates through Virena. Virena is a wireless surveillance system that sends de-identified patient test results daily to a secure database. Data and maps can be accessed at *myvirena.com*.

Hospitalization Surveillance

- Investigate identified, confirmed, hospitalized cases in order to determine risk factors for infection or severe illness, including demographic information or underlying medical conditions, and the medical progression or clinical presentation of cases.
- If laboratory submissions to ASPHL for influenza testing have been restricted to hospitalizations or severe cases, cases with positive tests may be one source of identifying priorities for investigation.
- During the 2009 H1N1 pandemic, CDC requested aggregate reporting of all influenza lab-confirmed hospitalizations, or syndromic hospitalizations. ADHS collected information from BioSense (CDC- administered syndromic surveillance system) inpatient reports in order to detect changes in the number of patients at those hospitals being admitted for influenza-like illness.
- Explore use of the Health Current (state HIE) to monitor or identify influenza hospitalizations

Mortality Surveillance

- Continue to work with county medical examiners to identify influenza-related deaths.
- Report aggregate influenza and pneumonia deaths to CDC, if requested, from the vital records database.
- During the 2009 H1N1 pandemic, CDC requested aggregate reporting of all lab-confirmed influenza- associated deaths, or pneumonia and influenza-related deaths. ADHS provided weekly numbers of newly identified pneumonia or influenza deaths recorded since the previous report.
- Mortality data will be monitored in conjunction with existing surveillance data to evaluate the range and severity of the pandemic.
- Initially, laboratory confirmation of the novel virus will be required for counting deaths suspected to be related to the pandemic. Later in the pandemic, counting of deaths may change to an estimation based on the number of influenza deaths (whether or not laboratory testing has been conducted) as resources may not permit laboratory confirmation of all deaths.

Surveillance Communications

- Disseminate surveillance information regularly to public health partners and the public, via Health Alerts, conference calls, or the ADHS website. Surveillance information and reports will be produced by the Epidemiology staff within PHIMS, but dissemination will likely be coordinated through another part of the PHIMS response.

- 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, emergency medical technician runs). In addition, surveillance programs may be asked to monitor vaccine and anti-viral effectiveness.

Surveillance for the CDC Preparation Interval

Surveillance will likely be overwhelmed during a pandemic, and personnel will need to be diverted to higher-priority activities. Continued testing for the novel virus and investigation of hospitalized or severe cases will be discontinued once enough information is gathered to make public health decisions and/or when resources no longer permit.

Surveillance activities will scale back gradually, in order to provide as much situational awareness as necessary and in order to detect the introduction of a second wave, of viral changes, or of changes to severity or impact. 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. As that happens, the activities of both the ADHS and national influenza surveillance systems will revert to the frequency and intensity described under the Investigation Interval. The changes will be communicated to all surveillance partners through the communication routes established for the pandemic.

Surveillance Activities during the Preparation Interval

- Monitoring and investigating severe or unusual events, clusters, or outbreaks to facilitate rapid identification of important changes in the epidemiology or severity of influenza.
- Maintaining routine surveillance, including for influenza-like illness and cases of severe acute respiratory infections.
- Notifying CDC immediately if any of the following changes are detected:
- Sustained transmission of antiviral-resistance to the pandemic strain
- Human cases of infection with any influenza virus not currently circulating in human populations
- Any notable changes in the severity or other epidemiological or clinical characteristics of the pandemic strain, including changes in the age distribution, the clinical appearance, proportion of cases requiring intensive management, or unexpected increases in numbers of cases

Appendix 1.1 Components of the Arizona Influenza Surveillance System

Surveillance type	Source	Description
Laboratory surveillance	ADHS State Public Health Laboratory	The ADHS State Public Health Laboratory performs influenza culture and polymerase chain reaction (PCR) on respiratory submissions. Subtyping of isolates and PCR performed at ADHS can identify influenza A H1, H3, H5 and H7 subtypes, and influenza B lineages Victoria and Yamagata. Unusual or untypable specimens are forwarded to CDC for further testing.
Laboratory surveillance	ADHS State Public Health Laboratory & Participating Clinical Laboratories	As of August 2015, the State Laboratory and three other Arizona clinical laboratories 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.
Laboratory surveillance	All laboratories	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 Public Health Laboratory for typing.
Outpatient Surveillance	Influenza-like Illness (ILI) Sentinel Provider Network	Health care providers around the state monitor outpatient visits for ILI (fever >100°F AND sore throat and/or cough) and report weekly the number of ILI patients by age group and total visits to their facility. Approximately 80 sites are enrolled each year.
Hospitalization Surveillance	Essence	Participating hospitals identify ILI (fever>100°F AND sore throat and/or cough) and report weekly the number of ILI patients by hospitalization status and total visits to their facility.

Surveillance type	Source	Description
Mortality surveillance	Database Application for Vital Events (DAVE)	All deaths in the state are registered in the Electronic Death Registry System and cause of death assigned for death certificates. The data are analyzed weekly for aberrations in influenza and pneumonia mortality.
Mortality surveillance	National Center for Health Statistics	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.
Mortality surveillance	Influenza-associated pediatric mortality	Reported laboratory-confirmed influenza- related deaths among children <18 years are investigated and reported to CDC.
Outbreak investigation	County Health Departments; Institutions	Outbreaks of influenza-like illness in certain settings (e.g., long-term care facilities) are investigated to determine etiology and control disease spread.
Veterinary surveillance	Arizona Department of Agriculture Arizona Department of Game and Fish	The Department of Agriculture's state veterinarian reports cases of suspected avian influenza to the public health veterinarian. Avian influenza surveillance is discussed in greater detail in Appendix 1.6 of Supplement 1 of the Strategic Arizona Influenza Pandemic Response Plan.
Statewide summary report		ADHS reports to CDC on a weekly basis the overall level of influenza activity as none, sporadic, local, regional, or widespread.

Appendix 1.2 Definitions of the Geographic Spread of Influenza

No Activity: No laboratory-confirmed cases of influenza and no reported increase in the number of cases of influenza-like illness (ILI).

Sporadic: Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.

Local: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of the state.

Regional: Outbreaks of influenza or increases in ILI and recent laboratory confirmed influenza in at least two but less than half the regions of the state with recent laboratory evidence of influenza in those regions.

Widespread: Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

Notes:

- 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.
- Laboratory-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 predicative 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 tests for reporting the first laboratory-confirmed case of influenza of the season.
- 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. In Arizona, four regions are defined (Northern, Southern, Western, and Central), and each county is assigned to one region.

Appendix 1.3 Overview of Influenza Surveillance in the United States

The Epidemiology and Prevention Branch in the Influenza Division at CDC collects, compiles and analyzes information on influenza activity year round in the United States and produces FluView, a weekly influenza surveillance report. The U.S. influenza surveillance system is a collaborative effort between CDC and its many partners in state, local, and territorial health departments, public health and clinical laboratories, vital statistics offices, healthcare providers, clinics and emergency departments. Information in five categories is collected from eight different data sources that allow CDC to:

- Find out when and where influenza activity is occurring
- Track influenza-related illness
- Determine what influenza viruses are circulating
- Detect changes in influenza viruses
- Measure the impact influenza is having on hospitalizations and deaths in the United States

Five Categories of Influenza Surveillance

Virological Surveillance — Approximately 110 U.S. World Health Organization (WHO) Collaborating Laboratories and 240 National Respiratory and Enteric Virus Surveillance System (NREVSS) laboratories, which include both public health and clinical laboratories, located throughout the United States participate in virologic surveillance for influenza. All public health and clinical laboratories report the total number of respiratory specimens tested and the number positive for influenza each week to CDC, along with age or age group of the person, if available. Reports from both sources are presented separately in the weekly influenza update, FluView. Data from clinical laboratories include the weekly total number of specimens tested, the number of positive influenza tests, and the percent positive by influenza type. Data presented from public health laboratories include the weekly total number of specimens tested, the number of positive influenza tests, and the number by influenza virus type, subtype, and influenza B lineage. In addition, the age group distribution of influenza positive tests are also summarized. A subset of the influenza viruses collected by public health laboratories are sent to CDC for further characterization, including antiviral resistance testing and antigenic and/or genetic characterization, and this information is presented in the antiviral resistance and virus characterization sections of the FluView report.

Surveillance for Novel Influenza A Viruses — In 2007, human infection with a novel influenza A virus became a nationally notifiable condition. Novel influenza A virus infections include all human infections with influenza A viruses that are different from currently circulating human seasonal influenza H1 and H3 viruses. These viruses include those that are subtyped as nonhuman in origin and those that are unsubtypable with standard laboratory methods and reagents. Rapid detection and reporting of human infections with novel influenza A viruses – viruses against which there is little to no pre-existing immunity – will facilitate prompt detection and characterization of influenza A viruses with pandemic potential and accelerate the implementation of effective public health responses.

Outpatient Illness Surveillance — Information on patient visits to health care providers for influenza-

like illness is collected through the U.S. Outpatient Influenza-like Illness Surveillance Network (ILINet). ILINet consists of more than 2,900 enrolled outpatient health care providers in all 50 states, Puerto Rico, the District of Columbia and the

U.S. Virgin Islands reporting more than 36 million patient visits each year. Each week, approximately 2,000 outpatient health care providers around the country report data to CDC on the total number of patients seen for any reason and the number of those patients with influenza-like illness (ILI) by age group (0-4 years, 5-24 years, 25- 49 years, 50-64 years, and ≥ 65 years). For this system, ILI is defined as fever (temperature of 100°F [37.8°C] or greater) and a cough and/or a sore throat without a KNOWN cause other than influenza. Sites with electronic health records use an equivalent definition as determined by public health authorities.

The percentage of patient visits to health care providers for ILI reported each week is weighted on the basis of state population. This percentage is compared each week with the national baseline of 2.1%. The baseline is developed by calculating the mean percentage of patient visits for ILI during non-influenza weeks for the previous three seasons and adding two standard deviations. A non-influenza week is defined as periods of two or more consecutive weeks in which each week accounted for less than 2% of the season's total number of specimens that tested positive for influenza. Due to wide variability in regional level data, it is not appropriate to apply the national baseline to regional data; therefore, region specific baselines are calculated using the same methodology.

ILI Activity Indicator Map — Data collected in ILINet are used to produce a measure of ILI activity for all 50 states, Puerto Rico, the District of Columbia, and New York City. Activity levels are based on the percent of outpatient visits in a jurisdiction due to ILI compared with the average percent of ILI visits that occur during weeks with little or no influenza virus circulation (non-influenza weeks). Because the number of sites reporting each week is variable, baselines are adjusted each week based on which sites within each jurisdiction provide data. To perform this adjustment, provider level baseline ratios are calculated for those that have a sufficient reporting history. Providers that do not have the required reporting history are assigned the baseline ratio for their practice type. The jurisdiction level baseline is then calculated using a weighted sum of the baseline ratios for each contributing provider.

The activity levels compare the mean reported percent of visits due to ILI for the current week to the mean reported percent of visits due to ILI for non-influenza weeks. The 10 activity levels correspond to the number of standard deviations below, at or above the mean for the current week compared to the mean of the non-influenza weeks.

There are 10 activity levels classified as minimal (levels 1-3), low (levels 4-5), moderate (levels 6-7), and high (levels 8- 10). An activity level of 1 corresponds to values that are below the mean, level 2 corresponds to an ILI percentage less than 1 standard deviation above the mean, level 3 corresponds to ILI more than 1, but less than 2 standard deviations above the mean, and so on, with an activity level of 10 corresponding to ILI 8 or more standard deviations above the mean.

Mortality Surveillance — Rapid tracking of influenza-associated deaths is done through three systems:

National Center for Health Statistics (NCHS) mortality surveillance data – NCHS collects death certificate data from state vital statistics office for all deaths occurring in the United States. Pneumonia and influenza (P&I) deaths are identified based on ICD-10 multiple cause of death

codes. NCHS surveillance data is aggregated by the week of death occurrence and as a result, P&I percentages based on the NCHS surveillance data are released two weeks after the week of death to allow for collection of enough data to produce a stable P&I percentage. The NCHS surveillance data based P&I percentage for earlier weeks are continually revised and may increase or decrease as new and updated death certificate data are received from the states by NCHS. The seasonal baseline of P&I deaths is calculated using a periodic regression model that incorporates a robust regression procedure applied to data from the previous five years. An increase of 1.645 standard deviations above the seasonal baseline of P&I deaths is considered the "epidemic threshold," i.e., the point at which the observed proportion of deaths attributed to pneumonia or influenza was significantly higher than would be expected at that time of the year in the absence of substantial influenza-related mortality.

Influenza-Associated Pediatric Mortality Surveillance System — Influenza-associated deaths in children (persons less than 18 years) was added as a nationally notifiable condition in 2004. Any laboratory-confirmed influenza- associated death in a child is reported through this system. Demographic and clinical information are collected on each case and are transmitted to CDC.

Hospitalization Surveillance — Laboratory confirmed influenza-associated hospitalizations in children and adults are monitored through the Influenza Hospitalization Surveillance Network (FluSurv-NET).

Influenza Hospitalization Network (FluSurv-NET) — FluSurv-NET conducts surveillance for population-based, laboratory-confirmed influenza related hospitalizations in children (persons less than 18 years) and adults. The network covers over 70 counties in the 10 Emerging Infections Program (EIP) states (CA, CO, CT, GA, MD, MN, NM, NY, OR, and TN) and three additional states (MI, OH, and UT). Cases are identified by reviewing hospital laboratory and admission databases and infection control logs for children and adults with a documented positive influenza test (viral culture, direct/indirect fluorescent antibody assay (DFA/IFA), reverse transcription-polymerase chain reaction (RT-PCR), or a rapid influenza diagnostic test (RIDT)). FluSurv-NET estimated cumulative hospitalization rates are reported each week during the influenza season.

Summary of the Geographic Spread of Influenza — State health departments report the estimated level of geographic spread of influenza activity in their states each week through the State and Territorial Epidemiologists Reports. States report geographic spread of influenza activity as no activity, sporadic, local, regional, or widespread. These levels are defined as follows:

- **No Activity:** No laboratory-confirmed cases of influenza and no reported increase in the number of cases of ILI.
- **Sporadic:** Small numbers of laboratory-confirmed influenza cases or a single laboratory-confirmed influenza outbreak has been reported, but there is no increase in cases of ILI.
- **Local:** Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in a single region of the state.
- **Regional:** Outbreaks of influenza or increases in ILI and recent laboratory confirmed influenza in at least two but less than half the regions of the state with recent laboratory evidence of influenza in those regions.
- **Widespread:** Outbreaks of influenza or increases in ILI cases and recent laboratory-confirmed influenza in at least half the regions of the state with recent laboratory evidence of influenza in the state.

Together, the five categories of influenza surveillance are designed to provide a national picture of influenza activity. Pneumonia and influenza mortality from the 122 Cities Mortality System is reported on a national level only.

FluSurv-NET data provides population-based, laboratory-confirmed estimates of influenza-related hospitalizations but are reported from limited geographic areas. NCHS mortality surveillance data is reported on the national, Department of Health and Human Services (HHS) regional, and state-level. Outpatient influenza-like illness and laboratory data are reported on a national level and by HHS region. The state and territorial epidemiologists' reports of the geographic spread of influenza activity and the ILI activity indicator map display state-level information. Human infections with novel influenza A viruses and influenza-associated pediatric deaths are reported on the state-level but no personal identifying information is released.

It is important to maintain a comprehensive system for influenza surveillance for several reasons:

- Influenza viruses are constantly changing, and thus ongoing data collection and characterization of the strains is required.
- Influenza strains can rapidly undergo changes leading to pandemics of influenza; surveillance of viruses will detect these changes.
- Vaccines must be administered annually and are updated regularly based on surveillance findings.
- Treatment for influenza is guided by laboratory surveillance for antiviral resistance.
- National responses to emerging pandemic strains are triggered by surveillance data.
- Varying segments of the population are affected by influenza and may require targeted interventions. These groups are determined through influenza surveillance.

It is important to remember the following about influenza surveillance in the United States:

All influenza activity reporting by public health partners and health-care providers is voluntary.

The reported information answers the questions of where, when, and what influenza viruses are circulating. It can be used to determine if influenza activity is increasing or decreasing but cannot be used to ascertain how many people have become ill with influenza during the influenza season.

The system consists of nine complementary surveillance components in five categories. These components include reports from more than 350 laboratories, 2,900 outpatient health care providers, the National Center for Health Statistics, vital statistics offices in 122 cities, research and healthcare personnel at the FluSurv-NET sites, and influenza surveillance coordinators and state epidemiologists from all state, local and territorial health departments.

Influenza surveillance data collection is based on a reporting week that starts on Sunday and ends on Saturday of each week. Each surveillance participant is requested to summarize weekly data and submit it to CDC by Tuesday afternoon of the following week. Those data are then downloaded, compiled, and analyzed at CDC. The FluView surveillance report is distributed and posted on this website each Friday: *http://www.cdc.gov/flu/weekly/index.htm*.

Excerpt from http://www.cdc.gov/flu/weekly/overview.htm on January 5, 2016. Page last updated October 13, 2015

Appendix 1.4 Arizona Avian Influenza Surveillance Information

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.

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.

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.

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 county 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.

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 Word Health Organization has developed a guidance document for concerns related to food safety and avian influenza.

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.

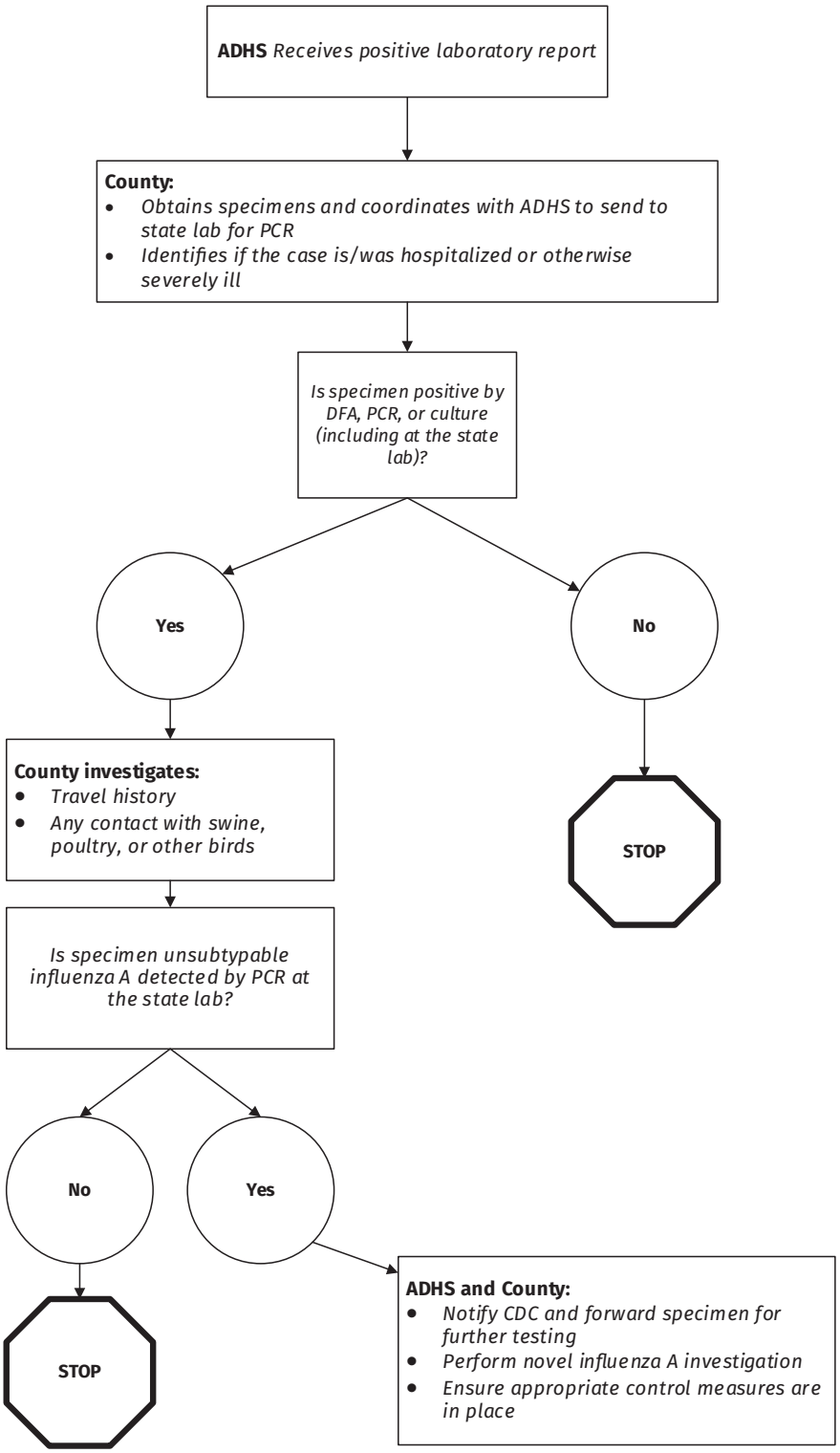
References:

- 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
- USDA Website, Wildlife Damage Management, National Wildlife Disease Program. Highly-Pathogenic Avian Influenza (HPAI): *http://www.aphis.usda.gov/wildlife_damage/nwdp/AI.shtml.*
- Foreign Animal Disease Incident Annex, State Emergency Response and Recovery Plan Available on the HSP, Public Health Preparedness Portal, Response Plans, DEMA plans.
- 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*
- *https://www.osha.gov/Publications/3323-10N-2006-English-07-17-2007.html*
- 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*

Appendix 1.5 Summer Influenza Case Investigations: Protocol for Positive Influenza Test



Appendix 1.6 Excerpt from Avian Influenza: Information for Health Professionals and Laboratorians

As of January 2014, the novel influenza A viruses most commonly associated with severe disease in humans are low pathogenic avian influenza (LPAI) A (H7N9) and highly pathogenic avian influenza (HPAI) A (H5N1) viruses.

Recommendations for Surveillance, Testing, and Investigation

Consider the possibility of infection with novel influenza A viruses with the potential to cause severe disease in humans in patients with medically-attended influenza-like illness (ILI) and acute respiratory infection (ARI) who have had recent contact1 (<10 days prior to illness onset) with sick or dead birds in any of the following categories:

- Domestic poultry (e.g., chickens, turkeys, ducks)
- Wild aquatic birds (e.g., ducks, geese, swans)
- Captive birds of prey (e.g., falcons) that have had contact with wild aquatic birds

If infection with a novel influenza A virus with the potential to cause severe disease in humans is possible, respiratory specimens should be collected with appropriate infection control precautions and sent to the state health department for immediate testing.

If infection with a novel influenza A virus with the potential to cause severe disease in humans is suspected, state health departments are encouraged to initiate a public health investigation with animal health partners and should notify CDC promptly.

Contact may include: direct contact with birds (e.g., handling, slaughtering, defeathering, butchering, preparation for consumption); or direct contact with surfaces contaminated with feces or bird parts (carcasses, internal organs, etc.); or prolonged exposure to birds in a confined space.

From http://www.cdc.gov/flu/avianflu/healthprofessionals.htm, referenced 1/5/2016, page last updated 10/14/2015.

Appendix 1.7 National Case Definition for Novel Influenza A Virus Infection

Novel influenza A virus infections

2014 Case Definition

CSTE Position Statement Number: 13-ID-14

Background

Human infections with novel influenza A viruses that can be transmitted from person to person may signal the beginning of an influenza pandemic. Rapid detection and reporting of human infections with novel influenza A viruses (viruses against which there is little to no pre-existing immunity) will facilitate prompt detection and characterization of influenza A viruses with pandemic potential and accelerate the implementation of effective public health responses.

Clinical Description

An illness compatible with influenza virus infection (fever >100 degrees Fahrenheit with cough and/or sore throat).

Laboratory criteria for diagnosis

A human case of infection with an influenza A virus subtype that is different from currently circulating human influenza H1 and H3 viruses. Novel subtypes include, but are not limited to, H2, H5, H7, and H9 subtypes. Influenza H1 and H3 subtypes originating from a non-human species or from genetic reassortment between animal and human viruses are also novel subtypes. Novel subtypes will be detected with methods available for detection of currently circulating human influenza viruses at state public health laboratories (e.g., real-time reverse transcriptase polymerase chain reaction [RT-PCR]). Confirmation that an influenza A virus represents a novel virus will be performed by CDC's influenza laboratory. Once a novel virus has been identified by CDC, confirmation may be made by public health laboratories following CDC-approved protocols for that specific virus, or by laboratories using an FDA-authorized test specific for detection of that novel influenza virus.

Exposure

Criteria for epidemiologic linkage:

- The patient has had contact with one or more persons who either have or had the disease, AND
- Transmission of the agent by the usual modes of transmission is plausible

A case may be considered epidemiologically linked to a laboratory-confirmed case if at least one case in the chain of transmission is laboratory confirmed. Laboratory testing for the purposes of case classification should use methods mutually agreed upon by CDC and the Council of State and Territorial Epidemiologists (CSTE). Currently, only viral isolation, RT-PCR, gene sequencing, or a 4-fold rise in strain-specific serum antibody titers are considered confirmatory.

Case Classification

- **Suspected:** A case meeting the clinical criteria, pending laboratory confirmation. Any case of human infection with an influenza A virus that is different from currently circulating human influenza H1 and H3 viruses is classified as a suspected case until the confirmation process is complete.

- **Probable:** A case meeting the clinical criteria and epidemiologically linked to a confirmed case, but for which no confirmatory laboratory testing for influenza virus infection has been performed or test results are inconclusive for a novel influenza A virus infection.
- **Confirmed:** A case of human infection with a novel influenza A virus confirmed by CDC's influenza laboratory or using methods agreed upon by CDC and CSTE as noted in Laboratory Criteria, above.

Comments

Once a novel virus is identified by CDC, it will be nationally notifiable until CSTE in consultation with CDC determines that it is no longer necessary to report each case.

On December 13, 2006, the United States formally accepted the revision of the International Health Regulations, referred to as IHR (2005) (*http://archive.hhs.gov/news/press/2006pres/20061213.html*). The IHR (2005) are an international legal instrument that governs the roles of the World Health Organization (WHO) and its member countries in identifying and responding to and sharing information about public health emergencies of international concern (*http://whqlibdoc.who.int/publications/2008/9789241580410_eng.pdf*). The updated rules are designed to prevent and protect against the international spread of diseases, while minimizing interference with world travel and trade. The revised regulations add human infections with new influenza strains to the list of conditions that Member States must immediately report to WHO. An outbreak of infections with a new influenza A virus that demonstrates human-to-human transmission could signal the beginning of the next pandemic. Robust epidemiologic and laboratory surveillance systems are required for a coordinated public health response to infections with a novel influenza virus subtype. Early detection of an influenza virus with pandemic potential will permit identification of viral characteristics (e.g., genetic sequence, antiviral susceptibility, and virulence) that will affect clinical management and public health response measures. It should also facilitate development of a virus- specific vaccine and testing strategies.

All state public health laboratories have the capacity to test respiratory specimens for influenza viruses with sensitive and specific assays that can detect human and non-human influenza A viruses. They also have the capacity to subtype currently circulating human influenza A H1, H3, and avian H5 (Asian lineage) viruses. The detection or confirmation by a state public health laboratory of an influenza A virus that is unsubtypable with standard methods (e.g., real-time RT-PCR assays for human influenza A(H3) or (H1) viruses), or a non-human influenza virus (e.g., H5) from a human specimen, could be the initial identification of a virus with pandemic potential. Prompt notification of CDC by a state epidemiologist in conjunction with the public health laboratory will permit rapid confirmation of results and reporting to WHO. In addition, it will aid prompt viral characterization, and the development of virus- specific diagnostic tests.

The 2013 and 2014 case definitions for novel influenza A virus infections are identical. An interim CSTE position statement (dated 8/8/2012), which represents a revision to the novel influenza A virus infection case definition, was approved by CSTE's Executive Committee and represents the source for the 2013 NNDSS case definition for novel influenza A virus infections. The full membership of CSTE approved this revised case definition in June 2013, as per CSTE position statement 13-ID-04, and this position statement represents the source for the 2014 NNDSS case definition for novel influenza A virus infections.

From http://wwwn.cdc.gov/nndss/conditions/novel-influenza-a-virus-infections/case-definition/2014/, referenced 1/5/2016, page last updated 5/6/2015.

Appendix 1.8 Arizona Draft Pandemic Emergency Measure

ARIZONA DEPARTMENT OF HEALTH SERVICES

ADMINISTRATIVE ORDER 20XX-XX

(Emergency Measures for Pandemic Influenza)

WHEREAS, the Director of the Department of Health Services, pursuant to Arizona Revised Statutes (ARS) §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 ARS §36-136(G), as established by the following:

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. Pandemic influenza manifestations are often severe, including death, and severe illnesses often occur in previously healthy persons, including health care workers.

While Pandemic influenza can be highly contagious, its overall rate of spread can be slowed with early recognition and aggressive implementation of control measures. The key to controlling pandemic influenza is prompt detection of cases, followed by rapid implementation of control measures.

Effective surveillance for pandemic influenza is challenging because the early signs and symptoms are not specific enough to reliably distinguish pandemic influenza from seasonal influenzas and 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 novel influenza virus transmission in the world.

The World Health Organization has developed guidelines for pandemic influenza. These emergency measures are needed to implement the WHO guidelines for the detection and control of pandemic influenza.

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 healthcare providers, clinical laboratories, and healthcare institutions and to ensure that they implement appropriate control measures for pandemic influenza.

NOW, THEREFORE, I, Cara M. Christ, 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:

Reporting Requirements and Control Measures in the Absence of Known Person-to-Person Transmission of Pandemic Influenza Worldwide

A healthcare provider[1] or administrator of a healthcare institution shall:

Ensure that each patient hospitalized for influenza like illness is screened for the following that might indicate a higher index of suspicion of a novel influenza virus infection:

In the 10 days before illness onset, travel to or close contact[3] with another ill individual who recently traveled to a geographical area with known novel influenza virus activity. Immediately report to the local health agency by telephone or equally expeditious means each suspected or positive novel influenza virus test result; and

Include the following information in each report made under subsection (A)(1)(b):

The patient's name, address, telephone number, date of birth, race or ethnicity, gender, and occupation;

The disease, date of onset, date of diagnosis, date of laboratory confirmation (if applicable) and test results; and

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 ARS §36-401.

A local health agency shall:

Conduct an epidemiologic investigation of each patient reported under subsection (A)(1)(b); and

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.

In conjunction with the Department and other local health agencies or in alignment with the incident command structure, implement as available:

Appropriate community notification Community education

Community mitigation Antiviral distribution

Vaccine strategy based upon the current information

Reporting Requirements and Control Measures in the Presence of Person to Person

Transmission of Pandemic Influenza

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:

Ensure that each patient presenting to an outpatient clinic with influenza like illness is screened for the following pandemic influenza risk factors:

Travel within 10 days of illness onset to a foreign or domestic location with documented or suspected recent local transmission of Novel Influenza infection, or

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

_____ , 20XX

having authority to do so under Arizona Law

DIRECTOR

ON this _____ day of _____, 20XX,

Cara M. Christ, MD MPH, Director of the Arizona Department

of

Health Services, signed and acknowledged this document in my presence.

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Supplement 2

SUPPLEMENT 2: LABORATORY DIAGNOSTICS

Arizona Pandemic Influenza Response Plan

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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 pandemic phase of an epidemic, 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 2.1 and Appendix 2.1)

Overview

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

- The ASPHL 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 ASPHL 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 ASPHL plays a key role in laboratory preparedness and response efforts. Federal funding has been used by the ASPHL not only to enhance biological /chemical terrorism preparedness and response activities but also to improve diagnostic capabilities and capacities for emergency preparedness and planning for emerging and re-emerging infectious diseases including pandemic influenza. Specifically, the ASPHL:

- 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 and emerging resistance throughout the pandemic period and contribute to the selection of future vaccine strains.

The ASPHL not only contributes to the detection and identification of influenza, but must also work closely with a network of clinical, research, and veterinary 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.
- Assisting the clinical laboratories in the validation and implementation of in-house and commercial assays
- Providing representative samples of novel virus types to collaborative research facilities for the research and development of assays to assist in the monitoring of a novel influenza pandemic.
- 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.

CDC's Recognition and Initiation Interval

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 ASPHL is a participant in the WHO surveillance network (see Box 2.2)

Routine Surveillance Activities

On a weekly basis, information regarding the number of influenza isolates 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 during each influenza season as directed. These samples are selected to represent early, middle, and late season isolates.

Roles and responsibilities

Clinical and Hospital Laboratories

- Develop a pandemic response plan and work with the ASPHL to address laboratory surge capacity issues.
- Train personnel in the management of respiratory specimens during an influenza pandemic.
- Perform diagnostic testing on clinical and reference specimens for the detection of influenza viruses
- Refer specimens from patients with suspected novel influenza to the ASPHL. Institute surveillance for influenza-like illness among laboratory personnel working with influenza virus.

Arizona State Public Health Laboratory

- Perform diagnostic testing on clinical and reference specimens for the detection of influenza viruses.
- Support surveillance activities on a year-round basis for seasonal and novel strains of the influenza virus
- Participate in pandemic influenza planning and exercises.
- Institute surveillance for influenza-like illness among laboratory personnel.
- Develop and review pandemic response plans and checklists.
- Educate clinical laboratorians on the safety and handling of specimens suspected to contain novel influenza viruses (see Appendices 2.3 and 2.4).

Laboratory testing

Clinical Laboratories

- Perform diagnostic testing on clinical samples using commercial or in-house assays including rapid test kits and viral culture.
- Forward specimens containing suspect novel viruses to the ASPHL (see page S2-8 for contact information).

Arizona State Public Health Laboratory

- Test all influenza specimens received by the ASPHL by real-time reverse transcription polymerase chain reaction (RT-PCR) for seasonal and novel strains of the influenza virus following CDC-recommended testing algorithms.
- Inoculate PCR positive specimens into cell culture for virus isolation, unless an avian strain of influenza is suspected
- Perform hemagglutination inhibition (HAI) testing to determine influenza A subtype or influenza B subtype using CDC/WHO reagents and protocols.
- Refer specimens to the CDC if a patient meets the requirements for infection with a novel influenza virus and tests positive for influenza A virus.

Laboratory safety - Biocontainment

During the period of Limited Human Spread, specimens from suspected cases of human infection with novel influenza viruses should be sent to the ASPHL 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 2.4 for additional laboratory BioSafety Guidelines).

Surge capacity planning

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 and receiving staff to handle surges in testing and demographic entry.
- Develop and maintain plans for multiple shifts, including after-hours and seven day per week testing capacity.

Supplies and Equipment

- Establish inventory system to determine current level of diagnostic supplies, including personal protective equipment.
- Assess anticipated equipment needs and maintain a redundancy in test equipment
- Determine mechanism to monitor consumption of supplies during the pandemic.
- Maintain an adequate supply of testing reagents to conduct surveillance activities.

Partnerships

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

CDC's Acceleration Interval

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.
- Enhance testing capacity 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 (ASPHL)
- Maintain laboratory capacity to conduct surveillance activities and report results in a timely fashion year-round.
- Expand and sustain laboratory capacity to manage a surge of testing, reporting, and client services anticipated during an influenza pandemic following plans developed for surge capacity testing.
- Work with federal partners and APHL to supply health care providers and clinical laboratories with guidelines on all aspects of specimen management and diagnostic testing.

- Collaborate with the clinical laboratory community to facilitate timely and appropriate use of influenza diagnostics.
- Collaborate with the clinical laboratory community to implement testing algorithms to assure efficient use of laboratory resources during periods of surge of testing demand.
- Work with federal partners to monitor the pandemic virus and conduct special studies with CDC related to vaccine development, antibiotic resistance testing, and other aspects of emergency response.
- Maintain reference testing for seasonal and novel strains of the influenza virus.
- Continue education of clinicians & laboratorians.
- Share data/information in "real-time".
- Maintain other diagnostic services.

Laboratory support for health care providers

Arizona State Public Health Laboratory (ASPHL)

- 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 2.4 and 2.5).
- Provide rapid communication of test results.
- Provide guidance on the use of commercially available diagnostic tests, including rapid test kits, for the detection of influenza A (see Appendix 2.6).
- Provide guidance on the specimens to refer to the State Public Health Laboratory.

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 2.4).

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 Periods of Limited Human Spread and Widespread Human Infection.

- Conduct laboratory procedures under appropriate biocontainment conditions.
- Encourage routine vaccination of laboratory employees exposed to specimens with respiratory infections. (See Appendix 2.7).

Use of diagnostic assays during an influenza pandemic

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 within 15 minutes. Some tests can detect influenza A viruses, including avian strains. Testing is not capable of distinguishing between the subtypes of influenza. (See Appendix 2.6).

RT-PCR Subtyping

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

Virus Isolation

This method requires growth of virus in cell culture. Identification of the virus is usually confirmed through the use of immunofluorescence antibody (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.

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. This method is of limited value in the monitoring of an ongoing influenza pandemic.

CDC's Deceleration and Preparation Intervals

Roles and responsibilities

Clinical Laboratories

- Continue to perform diagnostic testing to look for new cases of influenza.
- Continue to support surveillance activities – refer selected specimens from possible pandemic influenza patients to the ASPHL.
- Maintain other diagnostic services.

Arizona State Public Health Laboratory (ASPHL)

- Maintain laboratory capacity to conduct surveillance activities and report results in a timely fashion year-round. Continue to submit original clinical material and isolates for national virologic surveillance in the U.S. WHO collaborating laboratories influenza virus surveillance program.
- Maintain reference testing for seasonal and novel strains of the influenza virus.
- Maintain other diagnostic services.

Appendices

Reference Testing Guidelines

The ASPHL 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 2.2. Influenza A viruses other than currently circulating H1 and H3 subtypes should also be considered as potentially pandemic if detected in humans. (See Appendix 2.3).

Box 2.1 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 2.1.

Virus Isolation

Virus isolation—growing the viral strain in cell culture—is considered the "gold standard" for influenza diagnostics. 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 the ASPHL, 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 2.3), 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 viral characterization.

Immunofluorescence Antibody Staining

IFA staining following virus isolation can be used to identify influenza types (A and B) and influenza A 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 the typing and subtyping of currently circulating influenza viruses by IFA. Many laboratories use commercially available reagents to type influenza viruses by direct immunofluorescence tests (DFA).

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. ASPHL 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 the detection of antibodies to avian influenza viruses in humans, it is currently unavailable at ASPHL.

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 15 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 2.6 for additional information.

Box 2.2 Laboratory support for seasonal influenza surveillance

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

All state public health laboratories, including ASPHL, 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/surveillance/nrevss/*) is a laboratory-based system to monitor selected respiratory and enteric viruses. More than 600 laboratories throughout the country, including hospital laboratories, state public health laboratories, and private commercial laboratories, participate in NREVSS surveillance. Some NRVESS 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 2.3 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 cleavage site 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 in1983-84 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 don't 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 2.1 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: periods of Sustained Human Infection and Widespread Human Infection– 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 "gold standard" for diagnosis of influenza virus infections.

Highly pathogenic avian influenza (HPAI) viruses are BSL-3 agents. During the periods of Sustained Human Infection and Widespread Human Infection, 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.

[1]*The 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 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.

Real Time Reverse-Transcription Polymerase Chain Reaction (rRT-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 rRT-PCR detection of human and avian HA subtypes of current concern at the APHL website (ASPHL is an APHL member laboratory and has these capabilities). These protocols use rRT-PCR methods with fluorescent-labeled probes that allow automatic, semi-quantitative estimation of the input template. The rRT-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 rRT-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 rRT-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. The original clinical material and its corresponding isolate (if available) should be forwarded to the CDC. 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 15 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 50-70% sensitive and 90-95% specific. Thus, as many as 30-50% 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/diagnosis/*. Detailed information on the use of rapid diagnostics tests is provided in Appendix 2.6.

[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 Tests[3]

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: periods of Sustained Human Infection and Widespread Human Infection – 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.

[3]Enzyme-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.

Procedure	Influenza Types Detected	Acceptable Specimens	Time for Results	Rapid result available
Viral culture	A and B	NP swab[2], throat swab, nasal wash, bronchial wash, nasal aspirate, sputum	3-10 days[3]	No
Immunofluorescence [Direct Fluorescent Antibody (DFA) or Indirect Fluorescent Antibody (IFA) Staining]	A and B	NP[2] swab, nasal wash, bronchial wash, nasal aspirate, sputum	2-4 hours	No
RT-PCR5	A and B	NP[2] swab, throat swab, nasal wash, bronchial wash, nasal aspirate, sputum	2-4 hours	No
Serology*	A and B	paired acute and convalescent serum samples6	2 weeks or more	No
Enzyme Immuno Assay (EIA)	A and B	NP[2] swab , throat swab, nasal wash, bronchial wash	2 hours	No
Rapid Diagnostic Tests				
3M™ Rapid Detection Flu A+B Test[7,9] (3M)	A and B	NP[2] swab/aspirate; Nasal wash/aspirate	15 minutes	Yes
Directigen EZ Flu A+B[7,9] (Becton-Dickinson)	A and B	NP[2] wash/aspirate/swab; throat swab;	15 minutes	Yes
BinaxNOW Influenza A&B[7,8,9] (Inverness)	A and B	NP[2] swab/Nasal swab/ wash/ aspirate	15 minutes	Yes
OSOM® Influenza A&B[7,9] (Genzyme)	A and B	Nasal swab	less than 15 minutes	Yes
QuickVue Influenza Test[4,7,8] (Quidel)	A and B	Nasal swab/ wash/ aspirate	less than 15 minutes	Yes
QuickVue Influenza A+B Test[7,8,9] (Quidel)	A and B	NP[2] swab, nasal swab/ wash/aspirate	less than 15 minutes	Yes
SAS FluAlert[7,9] (SA Scientific)	A and B	Nasal wash/aspirate	15 minutes	Yes

Procedure	Influenza Types Detected	Acceptable Specimens	Time for Results	Rapid result available
SAS Influenza A Test,[8] (SA Scientific)	A	NP[2]/aspirate	15 minutes	Yes
SAS Influenza B Test,[8] (SA Scientific)	B	NP[2]/aspirate	15 minutes	Yes
TRU FLU[7,9] (Meridian Bioscience)	A and B	NP[2] aspirate/swab Nasal wash/swab	15 minutes	Yes
XPECT Flu A&B[7,9] (Remel)	A and B	Nasal wash/swab, throat swab	15 minutes	Yes

*Serology is not recommended for routine diagnostic testing, only for research purposes or sero-epidemiological investigations

List may not include all test kits cleared by the U.S. Food and Drug Administration. NP = nasopharyngeal.

Shell vial culture, if available, may reduce time for results to 2 days. Does not distinguish between influenza A and B virus infections.

RT–PCR = reverse transcription polymerase chain reaction.

A fourfold or greater rise in antibody titer from the acute– (collected within the 1st week of illness) to the convalescent- phase (collected 2-4 weeks after the acute sample) sample is indicative of recent infection.

Moderately complex test – requires specific laboratory certification.

CLIA–waived test. Can be used in any office setting. Requires a certificate of waiver or higher laboratory certification. Distinguishes between influenza A and B virus infections.

Appendix 2.2 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. The CDC and the Association of Public Health Laboratories (APHL) 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°F (>38°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 2.3 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 2.2. Influenza A viruses other than currently circulating seasonal H1 and H3 subtypes, such as the 2009 Novel H1N1 Influenza Virus, should also be considered as potentially pandemic if detected in humans.

- ASPHL should send specimens to CDC if a sample tested by ASPHL 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 2.5.

**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 2.4 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/bmbl5/bmbl_5th_edition.pdf*
- 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 2.5 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.

Respiratory specimens [4]

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

- nasopharyngeal wash/aspirates
- nasopharyngeal swabs
- oropharyngeal swabs
- bronchoalveolar lavage
- tracheal aspirate
- pleural fluid tap
- sputum
- 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. For suspected avian flu, oropharyngeal swabs and, if available, lower respiratory tract specimens (e.g., bronchoalveolar lavage or tracheal aspirate) are preferred.

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.

Collecting specimens from the upper respiratory tract

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–3ml 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).

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).

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

Collecting specimens from the lower respiratory tract

Broncheoalveolar 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).

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).

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.

Autopsy specimens

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

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

Shipping instructions

- Local health departments, pathologists, or medical examiners should call ASPHL before sending specimens for influenza A reference testing. ASPHL will contact the CDC Influenza Branch to coordinate the shipment of the sample to the CDC for testing. In some cases, the ASPHL 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. Specimens can be stored and shipped at 4°C. If specimens will not be shipped for more than two days, the specimens should be frozen at or below -70°C and shipped on dry ice. Avoid repeated freeze/thaw cycles.
- ASPHL will provide the necessary paperwork to be included in the shipment. 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.

Appendix 2.6 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 the period of Limited Human Spread. 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.

Information for clinicians

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 15 minutes.

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.

Sensitivities of rapid diagnostic tests are generally ~50-70% when compared with viral culture, but 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.

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.

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 Flu Information 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*

Information for clinical laboratory directors

Background

Rapid diagnostic tests for influenza are screening tests for influenza virus infection; they can provide results within 30minutes. 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 2.1).

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 sensitivities are approximately 50%–70% and 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.

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.

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 rateis...
VERY LOW (2.5%)	POOR (80%)	V POOR (6%–12%)	V. 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.

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.

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.

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).

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.

For further information

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

Table 2.1 Comparison of the number of positive influenza A test results from three RIDTs* with the number of positive results from rRT-PCR† assay, by influenza A type and cycle threshold (Ct) interval --- United States, 2009

RIDT	Influenza A virus type	No. of specimens positive by RIDT/ No. positive by rRT-PCR Ct interval§				Total no. of specimens positive by RIDT/ Total no. positive by rRT-PCR	(%)
		(<20)	(20 to <25)	(25--30)	(>30)		
BinaxNOW Influenza A&B	Novel H1N1	8/9	7/17	2/13	1/6	18/45	(40)
	Seasonal H1N1	---¶	2/3	1/2	---	3/5	(60)
	Seasonal H3N2	---	10/10	2/4	0/1	12/15	(80)
Directigen EZ Flu A+B	Novel H1N1	8/9	10/16	2/12	1/6	21/43**	(49)
	Seasonal H1N1	---	2/2	1/2	---	3/4**	(75)
	Seasonal H3N2	---	8/8	2/3	0/1	10/12**	(83)
QuickVue A+B	Novel H1N1	9/9	13/17	6/13	3/6	31/45	(69)
	Seasonal H1N1	---	2/3	2/2	---	4/5	(80)
	Seasonal H3N2	---	10/10	2/4	0/1	12/15	(80)

* Rapid influenza A diagnostic tests.

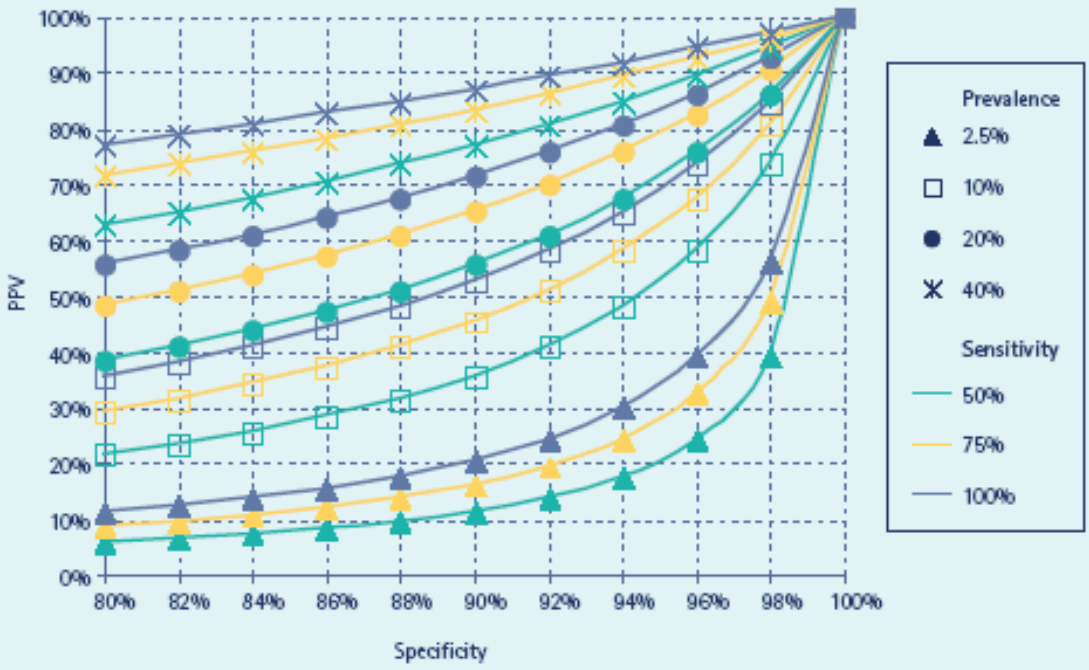
† Real-time reverse transcription--polymerase chain reaction.

§ A Ct value of 37 or lower is considered a positive rRT-PCR result.

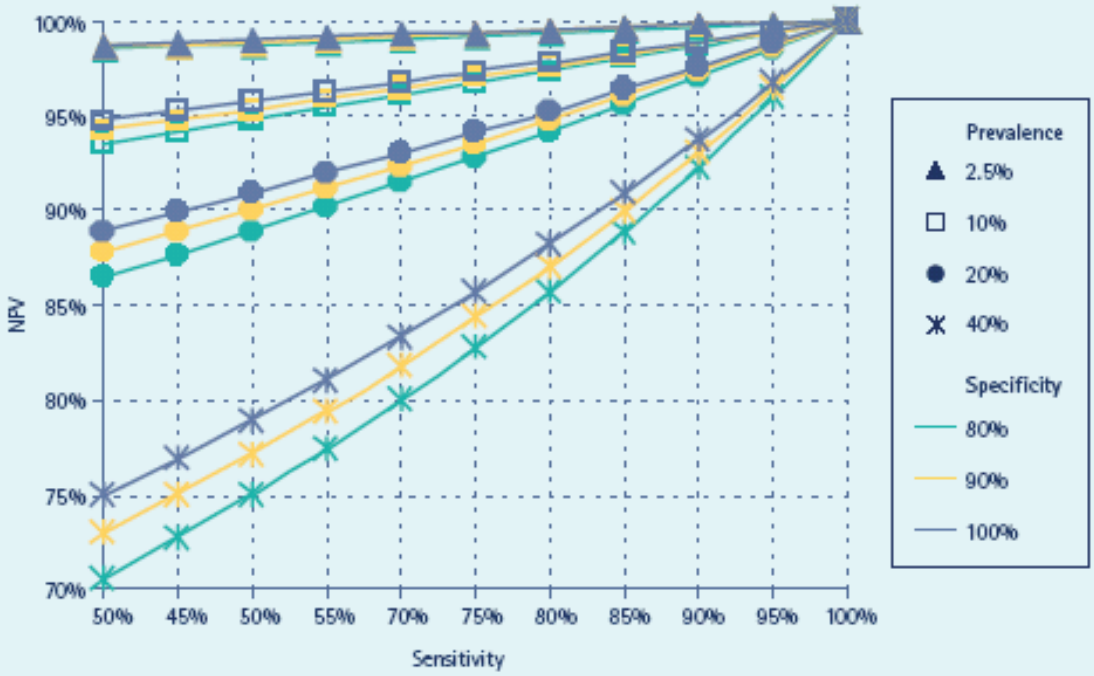
¶ No data available.

** For this RIDT, insufficient material was available to test two specimens that were rRT-PCR positive for novel H1N1, one for seasonal H1N1, and three for seasonal H3N2

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 2.7 Guidelines for Medical Surveillance of Laboratory Research Personnel

(those 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.

Prerequisites for working with novel avian or human influenza viruses

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.

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.

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.

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.

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

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).

Evaluation and treatment

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.

**If 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.

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.

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 2.8 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 www.cdc.gov/flu/pandemic*
- 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*
- Biosafety in Microbiological and Biomedical Laboratories (BMBL), 5th ed *http://www.cdc.gov/od/ohs/biosfty/bmbl5/bmbl_5th_edition.pdf*

Supplement 3

SUPPLEMENT 3: HEALTH CARE COORDINATION AND SURGE CAPACITY

Arizona Pandemic Influenza Response Plan

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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 with fewer essential personnel.

Overview

Several key public health and healthcare strategies will be utilized 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 social distancing measures, isolation of the sick, quarantine of contacts (see Supplement 8). Other strategies include the judicious use of antiviral medications (see Supplement 7) and maintenance of essential public health services. If there is rapid 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 identify planning and response elements for:

- Ensuring adequate surveillance is in place to detect a novel influenza virus
- Limit the spread of influenza through early containment measures to increase the amount of time available to implement preparedness measures.
- Limit morbidity and mortality during an influenza pandemic.
- 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
- Address the stress on the healthcare system through early identification and use of additional resources.

Actions for CDC Investigation and Recognition Intervals

Planning for Provisional Care in Hospitals

Planning Process

Planning 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 pandemic influenza patient and public health needs. ADHS/PHEP is charged with developing a state healthcare coordination plan and assisting in the development of regional and

county plans, additional response plans in place that contain relevant information should be used whenever possible. Arizona Regional Public Health Preparedness Coordinating Committees should assist in the development of pandemic response plans within their jurisdiction. The planning process should include:

- 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.
- In accordance with the National Response Framework (NRF), 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.
- 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.

Partnership/Coalition

ADHS developed partnerships for healthcare emergency response with local jurisdictions, hospitals and healthcare associations. The main objective is to provide a forum for the healthcare community to interact with one another, along with other response agencies at the county, regional and state levels. These efforts promote emergency preparedness, and improvement to the delivery of healthcare emergency response services when needed.

Currently, there are four Arizona Coalitions for Healthcare Emergency Response (AzCHER): (1) AzCHER-Central in Central Region includes Maricopa, Pinal & Gila Counties; (2) SoAZHCC in Southeast Region includes Pima, Santa Cruz, Cochise, Graham and Greenlee counties.; (3) AzCHER- Northern in Northern Region includes Coconino, Yavapai, Apache and Navajo counties; and (4) AzCHER-Western in Western Region includes La Paz, Mohave and Yuma counties. Each coalition includes participation from the following organizations:

- Local jurisdictions such as county public health and emergency management
- Healthcare facilities including specialty hospitals (pediatric, trauma centers, burn care centers), the community health centers, skilled nursing facilities, ambulatory surgery centers, dialysis centers, and home health
- Metropolitan Medical Response Systems (MMRS)
- Arizona Healthcare and Hospital Association (AzHHA)
- Arizona Association of Community Health Centers
- Arizona Healthcare Association
- Arizona Pediatric Disaster Coalition
- Coyote Crisis Collaborative
- Arizona Tribal Health Care Coalition

Each coalition has a memorandum of understanding (MOU) which focuses on sharing and coordination of information, resources and personnel during emergencies.

Planning Elements

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 are important in helping ADHS to react quickly. Hospital surveillance procedures are outlined in Supplement 1. Laboratory procedures are located in Supplement 2.

Hospital Communications

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

- Communications must be coordinated during pandemic operations, so all elements of the public health response network operate as a single entity.
- Hospital, regional
- Using the approved pandemic messages and communications, all hospitals, health care coalition partners, and local public health providers will provide uniform and reliable information proving their ability to meet the demands of the pandemic and still provide critical health care services to the community.

Education and Training

Each hospital should update their education and training plan and ensure that it addresses the needs of staff, patients, family members and visitors.

Staff Education:

- Provide opportunity for educational resources for clinicians, including federally sponsored teleconferences, state and local health department programs, web-based training materials, and locally prepared presentations.
- Educate staff on sick leave policies related to the current influenza pandemic.
- Ensure staff is familiar with the facility's emergency response plan.
- General topics for staff education should include:
    - Prevention and control of influenza
    - Implications of pandemic influenza
    - Benefits of annual influenza vaccination and importance in the prevention of disease.
    - Role of antivirals
    - Infection control strategies
    - Education of patients, family members, and visitors
    - Identify language-specific and reading-level appropriate materials

- Distribute information to all persons who enter the hospital. Identify staff to answer questions about procedures for preventing influenza transmission

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.

Facility Access

Uncertainty, anxiety and ongoing stress will affect all segments of the population. This may 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 routine non-influenza patient loads.

The following should be considered while controlling access to the facility:

- Visitors should be limited to reduce the likelihood of pandemic influenza transmission among visitors, patients, and healthcare workers.
- Visitors should receive infection control training from hospital infection control departments (e.g., brochures or videos) and comply with infection control measures.
- Symptomatic persons exposed to pandemic influenza patients should be excluded from visiting patients.
- Transportation of patients within the facility needs to be controlled. Patient transportation requirements are listed in Supplement 4, Infection Control. Disinfecting the transportation equipment as well as other potentially exposed surfaces and equipment must take place.
- Transportation outside of the facility may also be considered. Additional precautions and disinfection will be necessary if the person is undergoing mechanical ventilation.
- Review security risk assessments and make changes as necessary to enhance the facility's perimeter control and the ability to secure and limit access to the facility.

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. Comprehensive occupational health programs can reduce transmission from ill employees and allow them to go back into the field where their services are needed. Employee health programs should:

- Develop an active education of all staff in hygiene precautions. This includes proper hand washing procedures and techniques for donning gloves, N95 mask, gown and eyewear.
- Develop a plan to identify staff that may have acquired immunity to the pandemic influenza virus and might be deployed to high exposure areas.
- Keep a register of all staff who have recovered from pandemic influenza.

- 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.
- Encourage staff to self-report influenza-like illness and have a surveillance system in place to capture data.
- 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.
- Ensure time off policies and procedures and consider staffing needs during periods of clinical crisis.
- 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.
- Anticipate the potential need to isolate staff working in high exposure areas such as the emergency department between shifts.
- Ensure hospital workers and their immediate families receive prophylaxis and/or vaccination as appropriate.

Use and Administration of Vaccines and Antiviral Drugs.

Vaccines and antiviral drugs will be in short supply early in a pandemic. Public Health officials and key decision makers will need to carefully consider and balance medical needs with resource allocation issues. Information on vaccines is located in Supplement 6. Procedures for antiviral medications can be found in Supplement 7.

Surge Capacity

ADHS has the responsibility for projecting health resource needs in the event of a major health-related emergency and for allocating scarce resources to meet those needs. The four Regional Public Health Preparedness Coordinating Committees are designed to assist ADHS in managing resource allocations within their area. This arrangement establishes a more effective span of control for Arizona, with only a few regions rather than multiple individual facilities, reporting data and resource needs. It also allows for plans to consolidate inventories of supplies, epidemiological data, medical response, communications, and command and control. These intrastate regional coalitions will be incorporated into regional multi-agency coordination planning and response.

ADHS is using a six-tier system for medical surge capacity and capability consistent with the Health and Human Services (HHS) model. Medical surge capacity also includes fatality management planning for hospitals in the event the mortuary affairs system is overloaded and hospitals must retain remains of patients for several days before transportation agencies can pick them up.

Security

Healthcare facilities should plan for additional security. This may be required given the increased demand for services coupled with 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.

Healthcare facility administrators should consider the following when planning for additional security measures:

- Emphasize to staff the importance of maintaining the facility's access control, security, revised visitor policies, limited access plans and procedures, and how to report security breaches.
- Review security risk assessments and make changes as necessary to enhance the facility's perimeter control, and ability to secure and limit access to the facility.
- Establish/review plans to protect scarce resources, and protection of staff handling them.
- Confirm that security equipment is functioning properly and that security vendors have backup capability and redundancy and staffing plans.
- Determine signage needs inside and outside the facility with consideration for the diversity of your population and changes in location of service or hours of operations.
- Identify potential additional waiting area space and implement its usage before existing space is overflowing. Adequate seating, drinking water, waste disposal containers, and alcohol based sanitizer should be provided.
- Determine if your visitation policy adequately protects your patients, staff, visitors, and others coming to the hospital campus. Make necessary modifications and communicate changes to the public to reduce the chance of negative encounters.
- Remind staff to be aware of potential crimes within the facility that may be committed during times of overcrowded conditions and staff distractions.

Mortuary Issues

During a pandemic, hospitals have to be prepared to manage additional deaths far above the number of fatalities normally experienced. The ability to quickly secure refrigerated storage will enable the hospital to "hold" remains until they can be retrieved by a funeral home or the Office of the Medical Examiner (OME). To prepare for the possibility of increased patient deaths during an influenza pandemic, hospitals should:

- Develop a plan for setting up a temporary morgue in the hospital or in close proximity to handle the increased patient fatality rate.
- Coordinate a mass fatality management plan and a temporary morgue plan with the County Public Health Department, local Funeral Homes and the OME.
- Determine the scope and volume of supplies (e.g. human remains pouches) equipment (shelving or storage area for patient remains) and refrigeration unit(s) needed to handle an increased number of patient fatalities.
- Hospitals should train staff in human remains handling.
- 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 and contact precautions when caring for decedent influenza patients or as directed by the County Health Department.
- Hospital temporary holding morgues require temperature and biohazard control, adequate water, lighting and should be in communication with the hospital emergency operations center as a minimum.
- Infection control and housekeeping should be involved in setting up and maintaining the hospital temporary morgue:

- Proper cleaning and infection control methods must be employed
- Temporary morgue temperature checking procedures and schedules should be established and maintained by Infection Control.
- Transfer to a Central Mortuary Affairs Collection Point, OME, or funeral home should occur as soon as possible.

Vulnerable Populations

Pandemic influenza may adversely impact persons who have special needs or live in institutions such as, assisted –living facilities, group homes, and correctional facilities. Additional planning efforts by healthcare facilities will be necessary. The characteristics of the influenza outbreak may also require additional preparedness and response actions for certain segments of the population. These issues will be considered as the epidemiology of the influenza pandemic is clarified.

Actions for the CDC Acceleration and Deceleration Intervals

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 actions based upon pandemic influenza phases.

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 (Supplement 1), 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.

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. (Supplement 1)
- Identify, isolate, and treat all patients with potential pandemic influenza, when possible. 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.

Planning for Provision of Care in Non-Hospital Settings

Demand for healthcare services will be high at hospital emergency departments as other primary healthcare facilities such as private providers begin to surge. This may disrupt normal patient services, leave some primary healthcare assets with limited service and create great pressures on hospital emergency departments. Understaffed skilled nursing facilities may face influenza outbreaks among fragile patients. Home healthcare services may be critically challenged, leaving many vulnerable clients without services. Some of these clients will manage with the help of family, friends, or neighbors, but others who require skilled nursing services may be at higher risk of severe illness or infection. State and local public health departments and healthcare facilities will need to develop call centers, hotlines, and website information repositories to help ease the burden on emergency departments.

The intent is to reduce the transmission of influenza within facilities and to conserve critical healthcare resources and personnel for more severe influenza patients. Also, hospitals may become overwhelmed with the additional demands brought on by a pandemic while patients are seeking 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 may be established away from primary care, emergency departments and hospitals.

These alternate care sites could be schools, gymnasiums, or other sites identified by ADHS and local health departments for use during the pandemic.

Supplement 4

SUPPLEMENT 4: INFECTION CONTROL

Arizona Pandemic Influenza Response Plan

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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)—current literature supports droplet transmission as the more common mode.

These precautions apply for any respiratory infection, including seasonal or pandemic influenza.

Overview

Supplement 4 provides guidance to health care and public health partners on basic principles of infection control for limiting the spread of influenza. These principles (summarized in Box 4.1) 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 influenza; implementation of source-control measures to limit virus dissemination from respiratory secretions; hospitalization of influenza patients; and detection and control of nosocomial transmission.

In addition, Supplement 4 includes guidance on infection control procedures for 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.

Recommendations for Infection Control in Health Care Settings

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

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 suspected 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 various health care setting follow (see also Appendix 4.1).

- Limit contact between infected and non-infected persons[1]
    - 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 suspected to have influenza or an unknown respiratory infection.
    - 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
    - Wear a surgical or procedure mask[2] for close contact with infectious patients.
    - Use contact, and when appropriate, airborne precautions, including the use of N95 respirators, (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 4.2).
    - Promote use of masks[3] 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

[1]During WHO Alert Phase, recommendations on laboratory-confirmation of influenza infection will be issued by public health.

[2]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.

[3]Coughing persons may wear either a surgical or procedure mask. However, only procedure masks come in both adult and pediatric sizes.

Management of infectious patients

Respiratory Hygiene/Cough Etiquette

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

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

The elements of respiratory hygiene/cough etiquette include:

- 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.

Droplet Precautions

Patients with known or suspected pandemic influenza should be placed on droplet precautions for a minimum of five 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. 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.

Infection Control Practices for Health Care Personnel

Infection control practices for influenza are the same as for other human influenza viruses and primarily involve the application of standard and droplet precautions (Box 4.1) during patient care in health care settings (e.g., hospitals, nursing homes, outpatient offices, emergency transport vehicles) as well as for health care personnel providing home health care. 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) where people with influenza may be encountered. See also Appendix 4.1 for more detailed information on infection control in the healthcare setting.

Personal Protective Equipment

PPE for standard and droplet precautions

PPE is used to prevent direct contact with the 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 4.1). 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/hicpac/2007IP/2007isolationPrecautions.html*

Masks (surgical or procedure)

- Wear a mask when entering a patient's room. A mask should be worn once and then discarded. If 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 followed by hand hygiene.
- 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 or patients 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 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 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. See *http://www.cdc.gov/niosh/topics/eye/eye-infectious.html* for additional information related to the use of eye protection for infection control.

PPE for special circumstances *(See also Appendix 4.1)*

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 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.

Health care personnel should avoid when caring for influenza patients:

- 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.

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

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/* for more information.

Disposal of solid waste

Standard precautions are recommended for disposal of solid waste (medical and non-medical) that might be contaminated with an 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. (See *http://www.azdeq.gov/environ/waste/solid/rules.html* for Arizona's solid waste rules, including bio hazardous medical waste disposal)

- Discard as routine waste used patient-care supplies that are not likely to be contaminated (e.g., paper wrappers).
- Wear disposable gloves when handling waste. Perform hand hygiene after removal of gloves.

Linen and laundry

Standard precautions are recommended for linen and laundry that might be contaminated with respiratory secretions from patients with 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.
  (See *https://www.cdc.gov/infectioncontrol/guidelines/isolation/prevention.html* for more information.)

Dishes and eating utensils

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

Wash reusable dishes and utensils in a dishwasher with recommended water temperature *https://www.cdc.gov/infectioncontrol/guidelines/isolation/prevention.html*

- Disposable dishes and utensils should be discarded with other general waste.
- Wear gloves when handling patient trays, dishes, and utensils.

Patient-care equipment

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

- 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.
  (See: *https://www.epa.gov/pesticide-registration/selected-epa-registered-disinfectants*)

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 influenza follow the same general principles used in health care settings.
(See: *https://www.cdc.gov/infectioncontrol/guidelines/isolation/prevention.html*)

Cleaning and disinfection of patient-occupied rooms

- 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 an 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/hicpac/2007IP/2007isolationPrecautions.html*).

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

Postmortem care

Follow standard facility practices for care of the deceased.

Laboratory specimens and practices

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

Occupational health issues

Health care personnel are at risk for influenza through community and health care-related exposures. Once 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. These facilities should consider:

- Implementing a system to educate personnel about occupational health issues related to influenza.
- Screening all personnel for influenza-like symptoms before they come on duty. Symptomatic personnel should be excluded from providing patient care.
- Informing personnel at high risk for complications of influenza (e.g., pregnant women, immunocompromised persons) about their medical risk.

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 health care facilities caring for influenza patients (i.e., do not visit patients, postpone nonessential medical care).

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.

Hospitals

Persons entering the facility who may have influenza

- Post visual alerts (in appropriate languages) at the entrance of the hospital and/or its 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/bam/body/GermStopper_Color_LR.pdf* 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 seasonal influenza may be circulating during a pandemic, 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. Healthcare facilities may want to also provide surgical masks to these patients.

"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.

Hospitalization of pandemic influenza patients

Patient placement

- Most patients with mild to moderate influenza symptoms will not require hospitalization, and can be discharged home with instructions for at home care.
- If hospitals are reaching capacity, facilities may need to triage patients with severe complications of influenza who cannot be cared for at home.
- Cohorting
    - Designated units or areas of a facility should be used for cohorting patients with influenza. During the early stages of a pandemic, laboratory confirmation of influenza infection is recommended when possible before cohorting patients. During a pandemic, other respiratory viruses (e.g., seasonal 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 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 of patients with influenza-like illness 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, limiting surfaces touched, and use of personal protective equipment (PPE) according to current facility policy while in the patient's room.
- Visitors should not be present during aerosol-generating procedures.
- Visitors should be instructed to limit their movement within the facility.

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

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 to the affected unit(s) (except for other pandemic influenza patients)
    - Restriction of visitors to the affected unit(s) to those who are essential for patient care and support
- If widespread nosocomial transmission occurs, control measures 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

Nursing homes and other residential facilities

Residents of nursing homes and other residential facilities will be at particular risk for transmission of influenza and disease complications. 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.

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 offered a mask or should be sent home until they are physically able to return to duty.

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 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 influenza symptoms 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 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).

Pre-hospital care including Emergency Medical Services (EMS)

Patients with severe 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.

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.

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.

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/resphygiene.htm*). Sample visual alerts may be found on CDC's flu website: *http://www.cdc.gov/flu/protect/covercough.htm*
- Triage patients calling for medical appointments for influenza symptoms:
    - Reschedule 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.

"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.

Patient placement

- Where possible, designate separate waiting areas for patients with symptoms of 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.

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 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

Care of influenza patients in the home

Most patients with 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 influenza within and outside the home. When care is provided by a household member, basic infection control precautions should be emphasized (e.g., segregating the ill patient, hand hygiene). Infection within the household may be minimized if a primary caregiver is designated; ideally someone who does not have an underlying condition that places them at increased risk of severe influenza disease. Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit.

Management of influenza patients

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

Management of other persons in the home

- Persons who have not been exposed to influenza and who are not essential for patient care or support should not enter the home while persons are actively ill with influenza.
- If unexposed persons must enter the home, they should avoid close contact with the patient.
- Persons living in the home with the influenza patient should limit contact with the patient to the extent possible; consider designating one person as the primary care provider.
- Household members should monitor closely for the development of influenza symptoms and contact a telephone hotline or medical care provider if symptoms occur.

Infection control measures in the home

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

- Although no studies have assessed the use of masks at home to decrease the spread of infection, use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit. The wearing of gloves and gowns is not recommended for household members providing care in the home.
- Soiled dishes and eating utensils should be washed either in a dishwasher or by hand with warm water and soap. Separation of eating utensils for use by a patient with influenza is not necessary.
- Laundry can be washed in a standard washing machine with warm or cold water and detergent. It is not necessary to separate soiled linen and laundry used by a patient with influenza from other household laundry. Care should be used when handling soiled laundry (i.e., avoid "hugging" the laundry) to avoid contamination. Hand hygiene should be performed after handling soiled laundry.
- Tissues used by the ill patient should be placed in a bag and disposed with other household waste. Consider placing a bag for this purpose at the bedside.
- Normal cleaning of environmental surfaces in the home should be followed.

Care of pandemic influenza patients at alternative sites

If an influenza pandemic results in severe illness that overwhelms the capacity of existing health care resources, it may become necessary to provide care at alternative sites. 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.

Recommendations for Infection Control in Schools

- In schools, infection control for 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 should promote proper hygiene with students and staff, including frequent and thorough hand washing; covering coughs and sneezes with tissue or the elbow; and refraining from touching the eyes, nose, and mouth. If soap and water are not readily available, the use of alcohol-based hand sanitizers is recommended. Educational messages and infection control guidance for pandemic influenza are available for distribution. (See: *https://www.cdc.gov/flu/school/*)
- Schools should be on alert for students and staff exhibiting flu-like symptoms. Students and staff who have flu-like symptoms should be separated from others (preferably in a separate room) until they can be sent home.
- It is recommended for students and staff with flu-like illness to stay home until fever resolves or upon specific recommendations by the state and local health departments at the time of the pandemic.

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. Masks 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 influenza is prevalent 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 4.1. Summary of infection control recommendations for care of patients with pandemic influenza

COMPONENT	RECOMMENDATIONS
Standard Precautions	See *http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html*
Droplet Precautions	See *http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.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	For touching blood, body fluids, secretions, excretions, and contaminated items; for touching mucous membranes and nonintact skin
Gown	During procedures and patient-care activities when contact of clothing/exposed skin with blood/body fluids, secretions, and excretions is anticipated
Face/eye protection (e.g., surgical or procedure mask and goggles or a face shield)	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.

Box 4.1. Summary of infection control recommendations for care of patients with pandemic influenza

COMPONENT	RECOMMENDATIONS
Needles and other Sharps	Use devices with safety features when available; do not recap, bend, break or hand–manipulate used needles; if recapping is necessary, use a one-handed scoop technique, place used sharps in a puncture-resistant container.
Environmental Cleaning & 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 *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*	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.
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 4.2. 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.

Appendix 4.1

Guidance on Infection Control Measures for Influenza in Healthcare Settings, Including Protection of Healthcare Personnel

Definition of healthcare personnel

For the purposes of this guidance, healthcare personnel are defined as all persons whose occupational activities involve contact with patients or contaminated material in a healthcare, home healthcare, or clinical laboratory setting. Healthcare personnel are engaged in a range of occupations, many of which include patient contact even though they do not involve direct provision of patient care, such as dietary and housekeeping services.

Definition of suspect influenza

A febrile respiratory illness (fever defined as 38 degrees Celsius, 100.4 degrees Fahrenheit) plus a sore throat and/or cough and/or other respiratory symptoms.

GENERAL RECOMMENDATIONS

Review Pandemic Plans for the 2009-2010 Fall/Winter Influenza Season

Facilities should review and, if not already in place, develop written pandemic influenza plans.

Use a Hierarchy of Controls to Prevent Influenza Transmission in Healthcare Settings

Facilities should use a hierarchy of controls approach to prevent exposure of healthcare personnel and patients and prevent influenza transmission within healthcare settings. The hierarchy of controls to protect workers from occupational injury or illness places preventive interventions in groups that are ranked according to their likely effectiveness in reducing or removing the source of exposure. To apply the hierarchy of controls to prevention of influenza transmission, facilities should take the following steps, in order of preference:

1. **Elimination of potential exposures:** Eliminating the potential source of exposure ranks highest in the hierarchy of controls. Examples of interventions in this category include: taking steps to minimize outpatient visits for patients with mild influenza-like illness who do not have risk factors for complications, postponing elective visits by patients with suspected or confirmed influenza until they are no longer infectious, and denying entry to visitors who are sick.
2. **Engineering controls:** Engineering controls rank second in the hierarchy of controls. These controls can protect patients as well as personnel. Administrative controls: Administrative controls are required work practices and policies that prevent exposures. As a group, they rank third in the hierarchy of controls because their effectiveness is dependent on consistent implementation by management and employees. Examples of administrative controls include promoting and providing vaccination; enforcing exclusion of ill healthcare personnel, implementing respiratory hygiene/cough etiquette strategies; and setting up triage stations and separate areas for patients who visit emergency departments with influenza-like illness, managing patient flow, and assigning dedicated staff to minimize the number of healthcare personnel exposed to those with suspected or confirmed influenza. Of note, although it is ranked lower on the list as an administrative control, vaccination is one of the most important interventions for preventing transmission of influenza to healthcare personnel.

3. **Personal protective equipment (PPE):** PPE ranks lowest in the hierarchy of controls. It is a last line of defense for individuals against hazards that cannot otherwise be eliminated or controlled. While providing personnel with appropriate PPE and education in its use is important, effectiveness of PPE is dependent on a number of factors. PPE is effective only if used throughout potential exposure periods. PPE will not be effective if adherence is incomplete or when exposures to infectious patients or ill co-workers are unrecognized. In addition, PPE must be used and maintained properly, and must function properly, to be effective.

Careful attention to elimination of potential exposures, engineering controls, and administrative controls will reduce the need to rely on PPE, including respirators.

SPECIFIC RECOMMENDATIONS

Promote and administer and seasonal influenza vaccines

Facilities and organizations providing healthcare services are strongly encouraged to provide vaccine to healthcare personnel and to promote their use aggressively. Healthcare and emergency medical services personnel are among the priority groups recommended to receive influenza vaccine. To improve adherence, vaccination should be offered to healthcare personnel free of charge and during working hours. Vaccination campaigns with incentives such as lotteries with prizes should be considered. Healthcare facilities should require personnel who refuse vaccination to complete a declination form.

Enforce respiratory hygiene and cough etiquette

This form of source control should be implemented by everyone in healthcare settings - patients, visitors, and staff alike. Respiratory hygiene and cough etiquette procedures should continue to be followed for the entire duration of stay.

Establish facility access control measures and triage procedures

- Establish non-punitive policies that encourage or require ill health care personnel workers to stay home. Post signage at entry points instructing patients and visitors about hospital policies.
- Establish mechanisms to identify patients with symptoms of respiratory illness at any point of entry to the facility. Provisions should be made for symptomatic patients to cover their nose and mouth with tissues when coughing or sneezing, or put on facemasks for source control, if tolerated, and for their prompt isolation and assessment.
- Establish triage procedures and engineering controls (e.g., partitions) that separate ill and well patients and limit the need for PPE use by staff.
- Consider limiting points of entry to the facility.

Manage visitor access and movement within the facility

Establish procedures for managing visitors to include:

- Limiting visitors for patients in isolation for influenza to persons who are necessary for the patient's emotional well-being and care. Scheduling and controlling visits to allow for:
    - Screening for symptoms of acute respiratory illness before entering the hospital.
    - Instruction, before entering the patient's room, on hand hygiene, limiting surfaces touched, and use of PPE according to current facility policy while in the patient's room.

Establish policies and procedures for patient placement and transport

Any patient with respiratory illness consistent with influenza should promptly be asked to wear a facemask for source control, if tolerated, or cover their nose and mouth with tissues when coughing or sneezing, and placed directly in an individual room with the door kept closed, where medically appropriate. The precautions required for entry into patient rooms should be posted on the door. Follow current facility procedures for transport and movement of patients under isolation precautions, including:

- Communicating information about patients with suspected, probable or confirmed influenza to appropriate personnel before transferring them to other departments in the facility (e.g., radiology, laboratory) and to other facilities.
- Limiting patient transport and movement of patients outside of the room to medically necessary purposes and minimizing waiting times and delays associated with transport and procedures conducted outside the patient's room.
- Providing influenza patients with facemasks to wear for source control, as tolerated, and tissues to contain secretions when outside of their room.

Limit the number of healthcare personnel entering the isolation room

- Healthcare personnel entering the room of a patient in isolation should be limited to those truly necessary for performing patient care activities.

Apply isolation precautions

The following isolation precautions are recommended for healthcare personnel who are in close contact with patients with suspected or confirmed influenza. For the purposes of this document, close contact is defined as working within 6 feet of the patient or entering into a small enclosed airspace shared with the patient (e.g., average patient room):

- **Standard Precautions** - For all patient care, use nonsterile gloves for any contact with potentially infectious material, followed by hand hygiene immediately after glove removal; use gowns along with eye protection for any activity that might generate splashes.
- **Respiratory Protection** – Recommendation: ADHS recommends the use of a surgical mask for health care personnel who are in close contact with patients with suspected or confirmed influenza or other febrile respiratory illness. ADHS will continue to revisit its guidance as new information becomes available, within this season if necessary.
- Healthcare facilities should provide fit tested N95 respirators (or better) to any healthcare worker who requests them when resources are available to do so.

Special care should be taken to ensure that respirators are available for situations where respiratory protection is most important, such as performance of aerosol-generating procedures on patients with suspected or confirmed influenza or provision of care to patients with other infections for which respiratory protection is strongly indicated (e.g., tuberculosis).

Prioritized respirator use: Where a shortage of respirators exists despite reasonable efforts to obtain and maintain a sufficient supply for anticipated needs, in particular for very high exposure risk situations such as some aerosol-generating procedures (listed below), a facility should consider shifting to a prioritized respirator use mode. In this mode, respirator use is prioritized to ensure availability for

healthcare personnel at most risk from influenza exposure. Even under conditions of prioritized use, personnel attending aerosol-generating procedures on patients with suspected or confirmed influenza should always use respiratory protection at least as protective as fitted N95 respirators. Prioritization should be adapted to local conditions and should consider intensity and duration of exposure, personal health risk factors for complications of infection, and vaccination status.

Facemasks for healthcare personnel who are not provided a respirator due to the implementation of prioritized respirator use: If a facility is in prioritized respirator use mode and unable to provide respirators to healthcare personnel who provide care to suspected and confirmed influenza cases, the facility should provide those personnel with facemasks.

Aerosol-generating procedures

Some procedures performed on patients are more likely to generate higher concentrations of respiratory aerosols than coughing, sneezing, talking, or breathing, presenting healthcare personnel with an increased risk of exposure to infectious agents present in the aerosol. ADHS views the following procedures as being very high exposure risk aerosol-generating procedures for which special precautions should be used:

- Bronchoscopy
- Sputum induction
- Endotracheal intubation and extubation
- Open suctioning of airways
- Cardiopulmonary resuscitation
- Autopsies

Although some have suggested that administration of nebulized medications (due to risk of inducing cough), acquisition of nasopharyngeal swabs/samples, and use of high-flow oxygen might create infectious aerosols of concern, less is known about the magnitude or potential for exposure. Clinical judgment should be used to determine the need for fit tested N95 respirators as PPE for health care personnel performing nebulized medication treatments. The availability of N95 respirators should be taken into account in this decision.

A combination of measures should be used to reduce exposures from high-risk aerosol-generating procedures, including:

- Only perform these procedures on patients with suspected or confirmed influenza if they are medically necessary and cannot be postponed.
- Limit the number of healthcare personnel present during the procedure to only those essential for patient care and support.
- Conduct the procedures in an airborne infection isolation room (AIIR) when feasible.
- Portable HEPA filtration units may be used to further reduce the concentration of contaminants in the air. Some of these units can connect to local exhaust ventilation systems (e.g. hoods, booths, tents) or have inlet designs that allow close placement to the patient in order to assist with source control; however, these units do not eliminate the need for

respiratory protection for individuals entering the room because they may not entrain all of the room air. Information on air flow/air entrainment performance should be evaluated for such devices.

- Healthcare personnel should adhere to standard precautions *http://www.cdc.gov/hicpac/2007IP/2007isolationPrecautions.html* and wear respiratory protection equivalent to a fitted N95 filtering facepiece respirator or higher level of protection during aerosol-generating procedures.
- Unprotected healthcare personnel should not be allowed in a room where an aerosol-generating procedure has been conducted until sufficient time has elapsed to remove potentially infectious particles. Environmental surface cleaning also is necessary to ensure that environmental contamination does not lead to infection transmission.

Hand Hygiene

Healthcare personnel should perform hand hygiene frequently, including before and after all patient contact, contact with respiratory secretions, and before putting on and upon removal of PPE. Soap and water or alcohol- based hand sanitizers should be used.

Duration of Isolation Precautions for Patients

Isolation precautions for patients who have influenza symptoms should be continued for the 7 days after illness onset or until 24 hours after the resolution of fever and respiratory symptoms, whichever is longer, while a patient is in a healthcare facility. Shedding of influenza viruses generally diminishes over the course of 7 days, with transmission apparently correlating with fever. Patients should be discharged from medical care when clinically appropriate, not based on the period of isolation.

In some cases, facilities may choose to continue isolation precautions for longer periods such as in the case of young children or severely immunocompromised patients, who may shed influenza virus for longer periods of time and who might be shedding antiviral resistant virus. Clinical judgment should be used to determine the need for continued isolation precautions for such patients. Communications regarding the patient's diagnosis with post hospital care providers (e.g. Home-healthcare agencies, long-term care facilities) as well as transporting agencies is essential.

Monitor and Manage Ill Healthcare Personnel

In most cases, decisions about work restrictions and assignments for personnel with respiratory illness should be guided by clinical signs and symptoms rather than by laboratory testing for influenza. Personnel should be provided with information about risk factors for complications of influenza, so those at higher risk know to promptly seek medical attention and be evaluated for early treatment if they develop symptoms of influenza. All personnel should be provided with specific instructions to follow in the event of respiratory illness with rapid progression, particularly when experiencing shortness of breath. Anyone with the following emergency warning signs needs urgent medical attention and should seek medical care promptly:

- Difficulty breathing or shortness of breath
- Pain or pressure in the chest or abdomen
- Sudden dizziness
- Confusion

- Severe or persistent vomiting
- Flu-like symptoms improve but then return with fever and worse cough

Healthcare personnel who develop a fever and respiratory symptoms should be:

- Instructed not to report to work, or if at work, to promptly notify their supervisor and infection control personnel/occupational health.
- Excluded from work for at least 24 hours after they no longer have a fever, without the use of fever-reducing medicines such as acetaminophen and ibuprofen.
- If returning to work in areas where severely immunocompromised patients are provided care, considered for temporary reassignment or exclusion from work for 7 days from symptom onset or until the resolution of symptoms, whichever is longer. Clinical judgment should be used for personnel with only cough as a symptom, since cough after influenza infection may be prolonged and may not be an indicator of viral shedding. Healthcare personnel recovering from a respiratory illness may return to work with immunocompromised patients sooner if absence of influenza viral RNA in respiratory secretions is documented by real-time reverse transcriptase-polymerase chain reaction (rRT-PCR).
- Reminded of the importance of practicing frequent hand hygiene (especially before and after each patient contact) and respiratory hygiene and cough etiquette after returning to work following an acute respiratory illness.
- Healthcare personnel who develop acute respiratory symptoms without fever should be:
- Allowed to continue or return to work unless assigned in areas where severely immunocompromised patients are provided care. In this case they should be considered for temporary reassignment or exclusion from work for 7 days from symptom onset or until the resolution of symptoms, whichever is longer. Clinical judgment should be used for personnel with only cough as a symptom, since cough after influenza infection may be prolonged and may not be an indicator of viral shedding. Healthcare personnel recovering from a respiratory illness may return to work with immunocompromised patients sooner if absence of influenzaviral RNA in respiratory secretions is documented by rRT-PCR. Additional information on diagnostic testing for influenza infection can be found at *http://www.cdc.gov/flu/professionals/diagnosis/molecular- assays.htm*
- Reminded of the importance of practicing frequent hand hygiene (especially before and after each patient contact) and respiratory hygiene and cough etiquette after returning to work following an acute respiratory illness.

Facilities and organizations providing healthcare services should:

- Ensure that sick leave policies for healthcare personnel (e.g., staff and contract personnel) are flexible and consistent with public health guidance and that employees are aware of the policies.
- Ensure that sick employees are able to stay home without fear of losing their jobs.
- Consider offering alternative work environments as an accommodation for employees at higher risk for complications of influenza during periods of increased influenza activity or if influenza severity increases.

- Not require a doctor's note for workers with influenza to validate their illness or return to work.

Antiviral Treatment and Chemoprophylaxis of Healthcare Personnel

Please refer to *http://www.cdc.gov/flu/professionals/antivirals/summary-clinicians.htm* for the most current recommendations on the use of antiviral agents for treatment and chemoprophylaxis: All healthcare personnel concerned about symptoms of influenza should seek advice from their medical provider promptly.

Training and education of healthcare personnel

All healthcare personnel should receive training on influenza prevention and risks for complications of influenza. The training should include information on risk assessment; isolation precautions; vaccination protocols; use of engineering and administrative controls and personal protective equipment; protection during high-risk aerosol- generating procedures; signs, symptoms, and complications of influenza; and to promptly seek medical attention for any concerns about symptoms of influenza.

Healthcare Personnel at Higher Risk for Complications of Influenza

Personnel at higher risk for complications from influenza infection include pregnant women, persons 65 years old and older, and persons with chronic diseases such as asthma, heart disease, diabetes, diseases that suppress the immune system, and certain other chronic medical conditions.

Vaccination and early treatment with antiviral medications are very important for healthcare personnel at higher risk for influenza complications because they can prevent hospitalizations and deaths. Healthcare personnel at higher risk for complications should check with their healthcare provider if they become ill so that they can receive early treatment.

Environmental Infection Control

Routine cleaning and disinfection strategies used during influenza seasons can be applied to the environmental management of influenza. Management of laundry, utensils and medical waste should also be performed in accordance with procedures followed for seasonal influenza. More information can be found at: *http://www.cdc.gov/hicpac/pubs.html*.

Table 1. Prioritization of Respiratory Protection During Respirator Shortages for Healthcare Personnel Not Participating in Aerosol-Generating Procedures [a]

(Numbers 1 through 4 indicate relative priorities for respiratory protection, with 1 the highest priority and 4 the lowest priority)

Exposure Scenario	Not Vaccinated [b]	Vaccinated [c]
Personnel Without Risk Factors for Influenza-Related Complications [d]		
Routine care – frequent close exposure [e]	2	4
Routine care – infrequent close exposure [f]	3	4
Personnel With Risk Factors for Influenza-Related Complications [g]		
Routine care – frequent close exposure	1	3
Routine care – infrequent close exposure	2	4

[a] – This table is provided as an example of prioritization that considers intensity and duration of exposure, personal health risk factors for complications of infection, and vaccination status. Advance planning is critical to efficient implementation of prioritized use during supply shortages.

[b] – Not vaccinated: not vaccinated or less than 14 days after vaccination. Consider including those with immunosuppressive conditions or treatment with immunosuppressive therapies anticipated to impair vaccine response in this group.

[c] – Vaccinated: 14 or more days after vaccination.

[d] - See section on "Healthcare Personnel at Higher Risk for Complications of Influenza" for list of personal risk factors for influenza-related complications.

[e] – Personnel frequently in close contact with patients with suspected or confirmed influenza. For the purposes of this document, close contact is defined as working within 6 feet of the patient or entering into a small enclosed airspace shared with the patient (e.g., average patient room). This generally includes personnel working in settings where cases of suspected or confirmed influenza are routinely seen (e.g. emergency departments and primary care in environments such as clinics in outpatient settings, employee healthcare facilities, and correctional facilities).

[f] – Personnel infrequently in close contact with patients with suspected or confirmed influenza. This generally includes personnel working in settings where cases of suspected or confirmed influenza are not routinely seen and/or having job duties not involving close contact.

[g]– Gathering of personal information for the purposes of pandemic planning and response must be done in a fashion that is compliant with all applicable rules and regulations, including the Americans with Disabilities Act (ADA).

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Supplement 5

SUPPLEMENT 5: CLINICAL GUIDELINES

Arizona Pandemic Influenza Response Plan

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Summary of Public Health Roles and Responsibilities for Clinical Guidelines

CDC Recognition and Initiation Intervals

Health care providers:

- Follow public health clinical guidance and recommendations
- Know the appropriate tests for influenza
- Know appropriate infection control measures and recommendations
- Know appropriate antiviral regimens for seasonal and/or novel influenza viruses
- Notify health departments about suspected or confirmed novel influenza cases and fatalities
- When requested, forward specimens to designated state and federal laboratories for the diagnosis of novel influenza strains

ADHS and local health departments:

- Help educate health care providers about seasonal and pandemic influenza
- Provide or facilitate testing and investigation of suspected novel influenza cases
- Conduct follow-up of suspected novel influenza cases

U.S. Department of Health and Human Services (HHS):

- 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 seasonal and/or novel strains of influenza
- Establish case definition and reporting mechanisms.

CDC Acceleration and Deceleration Intervals

Health care providers:

- Follow updates on diagnosis/clinical management, laboratory testing, and treatment algorithms for pandemic influenza
- Follow recommendations on antiviral use from federal, state, and local health agencies
- Choose antiviral medication 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 See Arizona Crisis Standard of Care (AZCSC) for priority guidance.
- Report pandemic influenza cases or fatalities as requested by health departments
- When feasible 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, adverse reactions to treatment or vaccine, vaccine failure, or any other unusual 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 or changes in recommendations for prevention, diagnosis, or treatment
- 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 AZCSOC
- Review and modify as needed recommendations for prioritization of antiviral treatment and prophylaxis
- Work with CDC to investigate and report special pandemic situations
- Collaborate with CDC and private research laboratories to monitor anti-viral drug resistance
- Work with other governmental agencies and non-governmental organizations to ensure effective public health communications

HHS:

- 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

Rationale

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

Clinical management of patients during pandemic influenza will follow many of the same principles of patient care in cases of seasonal strains of influenza. Health care workers will need to know

- The symptoms of an influenza-like illness
- The strains that are circulating in the community

- The appropriate tests to diagnose influenza
- The appropriate infection control precautions
- How to select the correct antiviral medicine
- The side effects of the antiviral medicines
- How to prescribe antivirals for prophylaxis (see Supplement 7)

Additional difficulties in managing pandemic influenza include: differentiating seasonal strains of influenza from pandemic strains; deciding which antiviral medicine would be most appropriate to use; and 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.

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 WHO Phases 1-4. (Box 5.1 defines these phases). Boxes, figures, tables, and appendices have been revised from similar information located in 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 novel influenza; management of secondary bacterial pneumonia during a pandemic; and respiratory etiquette posters.

During the WHO Interpandemic and Alert Phases, early recognition of illness caused by a novel influenza virus 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, or when sporadic cases of animal-to-human transmission or rare instances of limited human-to-human transmission of a novel influenza virus have occurred in the world, the risk to travelers is low.

Once local person-to-person transmission of a novel influenza virus has been confirmed (WHO Phase 4), 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 WHO Pandemic Phase (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 Supplement 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*), the CDC website (*www.cdc.gov/flu/*), and the HHS- sponsored website (*www.flu.gov/*).

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

Clinical Guidelines for WHO CDC Investigation, Recognition, and Initiation Intervals

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 WHO Interpandemic Phases, 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 WHO Interpandemic and Alert Phases are outlined in Figure 5.1. In Arizona Coccidioidomycosis can mimic influenza symptoms. Thus additional testing to evaluate acute febrile respiratory illnesses for coccidioidomycosis shall be considered.

Criteria for evaluation of patients with possible novel influenza

Human infections with novel influenza 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* and/or *www.flu.gov/*.

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 illnesses during a typical influenza season, laboratory evaluation for novel influenza viruses is recommended only for:

- Hospitalized patients with severe ILI, including pneumonia, who meet the epidemiologic criteria (see below), or
- Non-hospitalized patients with ILI and with strong epidemiologic suspicion of novel influenza virus exposure (e.g., direct contact with ill animals 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 5.2.

Exceptions to the current clinical criteria are:

- 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 (i.e., 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/).

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 one to four 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.

The majority of human cases of novel influenza will result from animal-to-human transmission (see Box 5.1). Therefore, a history of direct contact with animals associated with influenza (well-appearing, sick, or dead), consumption of uncooked animals associated with influenza, or direct exposure to environmental contamination with animal feces in an affected area will be important to ascertain.

During Initiation Intervals, 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.

Exposure risks fall into three categories: travel; direct contact with animal-associated influenza; and occupational.

Travel risks

Persons have a travel risk if they have:

- recently visited or lived in an area affected by highly pathogenic animal-associated influenza outbreaks in domestic poultry or where a human case of novel influenza has been confirmed, and
- 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/), CDC (*www.cdc.gov/flu/*), and HHS (*www.flu.gov/*). Close contact with a person from an infected area with confirmed or suspected novel influenza is defined as being within 3 feet (as a practical matter one arms length is a useful estimate) of that person during their illness.

Direct contact with animal-associated influenza

is defined as:

- touching the animals (well-appearing, sick, or dead), or
- touching animal feces or surfaces contaminated with feces, or
- consuming uncooked animal products (including blood) in an affected area.
- Because specific testing for human infection with animal-associated influenza 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 WHO Interpandemic and Alert Phases, 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.

Occupational risks

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

- persons who work on farms or live poultry markets
- persons who process or handle animals infected with known or suspected influenza viruses
- workers in laboratories that contain live animal or novel influenza viruses
- healthcare workers in direct contact with a suspected or confirmed novel influenza case.
- Information on limiting occupational risk is provided on the Occupational Health and Safety Administration (OSHA) website at: *http://www.osha.gov/dsg/topics/pandemicflu/index.html*.

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:

Implement infection control precautions for novel influenza, including respiratory hygiene/cough etiquette

Patients shall 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 shall wear surgical or procedure masks on entering a patient's room, as per Droplet Precautions. They shall also wear gloves and gowns when indicated for Standard Precautions. Patients should be admitted

to a single-patient room (if available), and patient movement and transport within the hospital shall be limited to medically necessary purposes (see also Supplement 4, Infection Control).

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

Obtain clinical specimens and notify the local and state health departments to arrange testing

Testing of suspected novel or pandemic influenza shall be directed by public health authorities (see Supplement 2, Laboratory Diagnostics, for more detailed guidelines).

- Where feasible, collect the following respiratory specimens for novel influenza virus testing: nasopharyngeal swab; throat swab; oropharyngeal swab; tracheal aspirate (for intubated patients); and nasal swab, aspirate or wash. Store specimens at 4°C in viral transport media until transported or shipped for testing.
- Immediately notify their local health departments of their intention to ship clinical specimens from suspected cases of human infection with novel influenza, to ensure that the specimens are handled under proper biocontainment conditions.
- Novel influenza can be confirmed by RT-PCR or virus isolation with subtyping at the Arizona State Laboratory. RT-PCR testing of novel influenza viruses may also be available at clinical laboratories. Viral culture of specimens from suspected novel influenza cases should be attempted only in laboratories that meet the biocontainment conditions for BSL-3 with enhancements or higher.
- Rapid influenza diagnostic tests and immunofluorescence (indirect fluorescent antibody [IFA] staining or direct fluorescent antibody [DFA] staining) may be used to detect seasonal influenza, but should not be used to confirm or exclude novel influenza. 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 viruses but cannot distinguish between human infection with seasonal and novel influenza viruses. A negative rapid influenza test result does not necessarily exclude human infection with either seasonal or novel influenza viruses. A positive rapid influenza test result could be a false positive or represent infection with either seasonal or novel influenza viruses. Therefore, both negative and positive rapid influenza test and immunofluoresence results should be interpreted with caution, and RT-PCR testing for influenza viruses should be performed. (See Supplement 2, Laboratory Diagnostics, for further information on rapid diagnostic testing).
- Serological testing for novel influenza virus infection can be performed only at CDC with approval.
    - If requested, collect acute (within seven days of illness onset) and convalescent serum specimens (two to three weeks after the acute specimen and at least three weeks after illness onset) should be obtained and refrigerated at 4°C or frozen at minus 20–80°C. Refrigerated specimens should be shipped on ice; frozen samples

should be shipped with dry ice to prevent thawing.

- If collected, 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.

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, coccidioidomycosis serology, PCR, or 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.

Decide on inpatient or outpatient management

The decision to hospitalize a suspected novel influenza case will be based on the physician's clinical assessment and assessment of risk and whether adequate precautions can be taken at home to prevent the potential spread of infection.

- Patients cared for at home should be separated from other household members as much as possible.
- All household members should carefully follow recommendations for hand hygiene, and tissues used by the ill patient should be placed in a bag and disposed with other household waste (Box 5.4).
- Use of surgical or procedure masks by the patient and/or caregiver during interactions may be of benefit if the patient is cared for at home.
- 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 5.4).

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 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 early treatment will be beneficial. During WHO Alert Phase, available isolates of novel influenza will be tested for resistance to the currently licensed antiviral medications. (See Supplement 7 for antiviral information).

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).

Management of patients who test negative for novel influenza

The sensitivity of the currently available tests for detecting novel influenza viruses in clinical specimens

are not 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:

- Some patients 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. In Arizona coccidioidomycosis testing should be done.
- 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:
- There is no strong epidemiologic link
- An alternative diagnosis is made using a test with a high positive-predictive value
- The clinical manifestations are explained by the alternative diagnosis

Clinical Guidelines for CDC Acceleration and Deceleration Intervals

During WHO Pandemic Phase, the primary goal of rapid detection is to appropriately identify and triage cases of pandemic influenza. Outpatient clinics and emergency departments may 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 for influenza (which may be in short supply). 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 these phases are outlined in Figure 5.2.

Criteria for evaluation of patients with possible pandemic influenza

Clinical criteria

Suspected cases of pandemic influenza virus infection should meet the criteria for an influenza-like illness (ILI): temperature of ≥38°C plus one of the following: sore throat, cough, or dyspnea. Past influenza pandemics have most frequently resulted in respiratory illness,but the next pandemic influenza virus strain might present with a different clinical syndrome (see Appendix 5.1 and Appendix 5.2). During a pandemic, updates on other clinical presentations will be provided at: *www.pandemicflu.gov*; *www.cdc.gov/flu/*; and *www.flu.gov/*.

Recommendations for general evaluation of patients with ILI are provided in Box 5.2. Exceptions to the current clinical criteria are:

- 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 (i.e., young children, elderly patients, patients in long-term care facilities, and persons with underlying chronic illnesses) might not have typical influenza-like symptoms. When such patients have a strong epidemiologic risk factor, novel influenza should be considered with any substantial change in health status, even in the absence of typical clinical features. For example 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/*).

Epidemiologic criteria

During WHO Pandemic Phase, an exposure history will be marginally useful for clinical management when disease is widespread in a community. In addition, there will be a 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.

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:

- 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. If the patient is hospitalized, implement infection control precautions for pandemic influenza, including Respiratory Hygiene/Cough Etiquette.
    - Place the patient on Droplet Precautions for a minimum of 7 days from the onset of symptoms or 24 hours after resolution of fever, whichever is longer.
    - Health care personnel should wear surgical or procedure masks on entering a patient's room, as per Droplet Precautions
    - Health care personnel should wear gloves and gowns along with eye protection for any activity that might generate splashes of respiratory secretions or other infectious material, as per Standard Precautions (see Supplement 4, Infection Control).
    - Patients should be admitted to either a single-patient room or an area designated for cohorting of patients with influenza.
    - Patient movement and transport outside the isolation area should be limited to medically necessary purposes (see Supplement 4, Infection Control).
    - Obtain clinical specimens, as clinically indicated (see Box 5.2).
    - Once pandemic influenza has arrived in a community, influenza testing will likely not be needed for most patients.
    - Work in conjunction with health departments to perform laboratory testing in a subset of pandemic influenza cases, as part of ongoing virologic surveillance (see Supplements 1 and 2).
    - As with seasonal influenza, RT-PCR and virus isolation from tissue culture will be the most accurate methods for diagnosing pandemic influenza.
    - Specimens should generally include combined nasopharyngeal aspirates or nasal swabs, and throat swabs, stored at 4°C in viral transport media.
- Know how to properly use rapid diagnostic tests for influenza
    - Rapid tests and immunofluoresence 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.
    - 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.
    - 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.
    - The risk of a false-negative test also must be taken into account in making cohorting decisions.
    - Rapid diagnostic testing should not preclude more reliable testing, if available.

    - See Supplement 2, Laboratory Diagnostics for further information on rapid diagnostic testing.

- 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, Healthcare Coordination and Surge Capacity, and Supplement 4, Infection Control.
    - High priority for admission is an unstable patient. Patients with high-risk conditions (see Appendix 5.1) might also warrant special attention, such as observation or close follow-up, even if disease is mild.
    - Appropriate for home management with follow up is a well-appearing young children with fever alone.
- Infection control for home care
    - Patients cared for at home should be separated from other household members as much as possible.
    - All household members should carefully follow recommendations for hand hygiene, and tissues used by the ill patient should be placed in a bag and disposed with other household waste (Supplement 4, Infection Control).
    - 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.
    - Using a surgical or procedure mask by the patient or caregiver during interactions should be used when feasible..
    - 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 (Supplement 4, Infection Control).

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.*

- Provide ADHS with virus isolates from persons who fail treatment or antiviral prophylaxis for testing at CDC, as these strains may more likely be drug resistant.
- 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).
- 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, extremes of age, pregnancy, and neuromuscular disease are described in Appendix 5.1. Limited data are available on risk factors and complications related to infection with novel influenza viruses, and these may change as individual strains evolve.

- Review the summary of the clinical presentations and complications associated with recent influenza A (H5N1) viruses in Appendix 5.2.
- 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 5.3.

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 5.1. Risk of Novel Influenza in Persons with Severe Respiratory Disease or Influenza-like Illness during WHO Interpandemic and Alert Phases

Due to the year round circulation of influenza viruses throughout the world 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).

Interpandemic Phase

Phases 1 through 3 range from no infection in humans to small clusters or limited human transmission. During these phases, the risk of human infection with a novel influenza virus 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.

Alert Phase

Human-to-human transmission of an animal or human-animal influenza reassortant virus is able to sustain community-level outbreaks and has been verified. During these phases, the risk of human infection with a novel influenza virus is elevated. The risk of human infection with human influenza viruses or other viruses is much higher in persons living in or traveling to affected areas.

In my view Box 5.1 and figure 5.1 and its footnotes should be inserted here. It should be followed by Box 5.2 and figure 5.2 with footnotes.

Box 5.2. Clinical Evaluation of Patients with Influenza-like Illness during CDC Recognition and Initiation Intervals

- Patients who require hospitalization for an influenza-like illness for which a definitive alternative diagnosis is not immediately apparent* should be questioned about:
  - travel to an area affected by influenza virus outbreaks in animals
  - direct contact with poultry
  - close contact with persons with suspected or confirmed novel influenza; or
  - 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 virus should be initiated as follows:
  - Collect the following specimens as needed: 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 all hospital laboratories and may be performed at a qualified laboratory such as the Arizona State 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
  - Coccidioidomycosis serology or culture
  - 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)

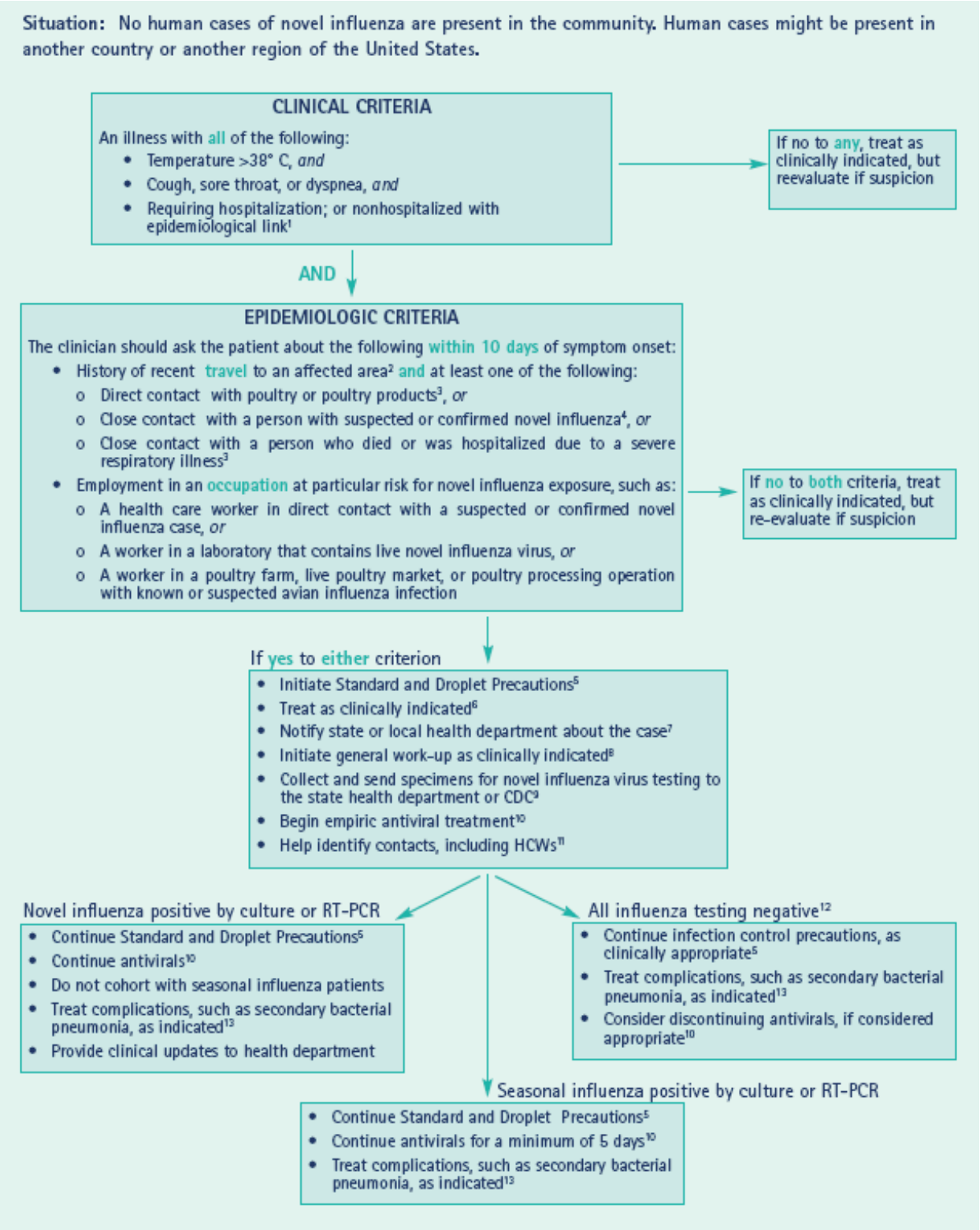
Box 5.2. Clinical Evaluation of Patients with Influenza-like Illness during CDC Recognition and Initiation Intervals

- 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
- 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.

**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 Supplement 4).

Figure 5.1. Case Detection and Clinical Management during CDC Recognition and Initiation Intervals



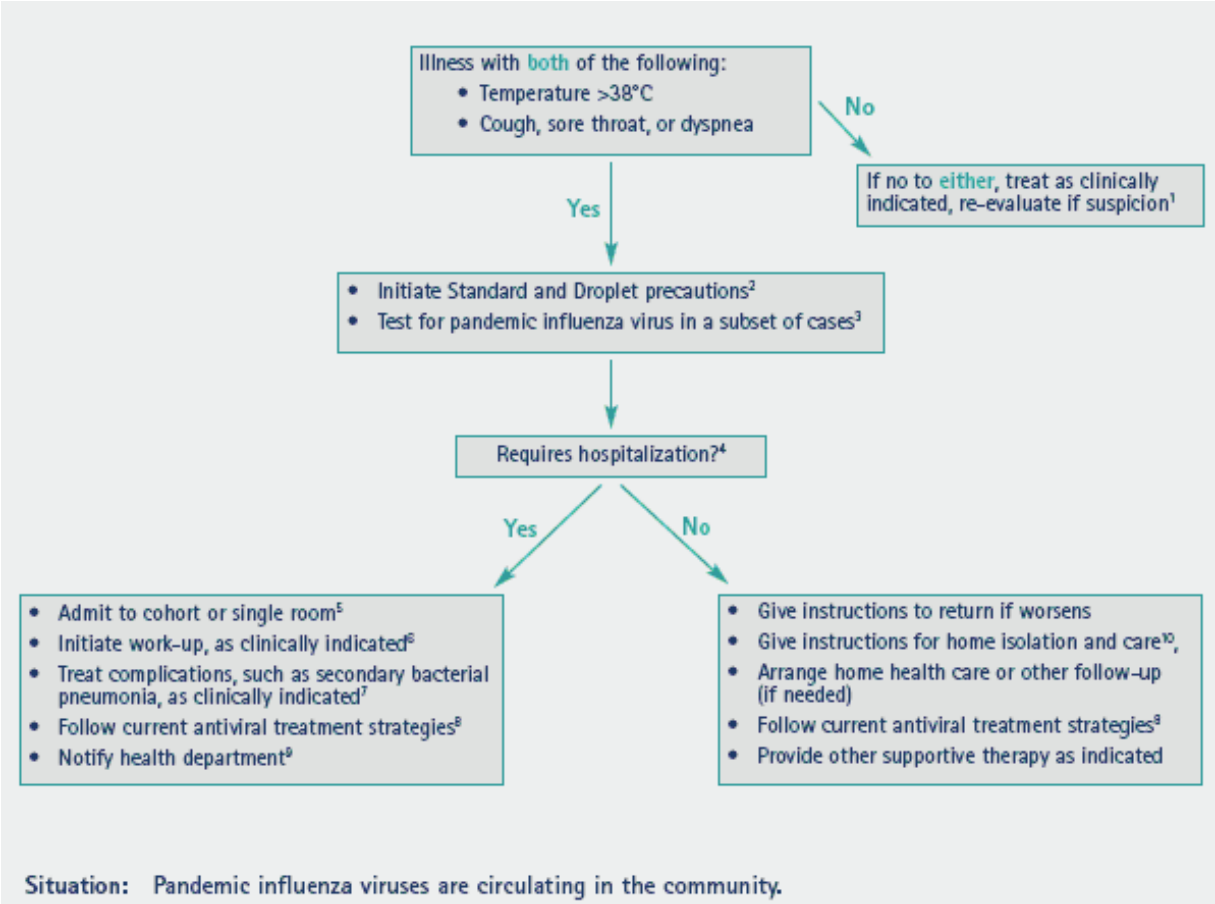
Footnotes to Figure 5.1:

1. Further evaluation and diagnostic testing should also be considered for outpatients with strong epidemiologic risk factors and mild or moderate illness. (See Box 5.2).
2. Updated information on areas where novel influenza virus transmission is suspected or documented is available on the CDC website at *http://wwwnc.cdc.gov/travel* 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/resphygiene.htm*
6. Hospitalization should be based on all clinical factors, including the potential for infectiousness and the ability to practice adequate infection control. If hospitalization is not clinically necessary, 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 (Supplement 4). 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
    - Coccidioidomycosis serology, culture, or PCR.
    - 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 5.2 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 and/or Arizona Dept. of Health Services. 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 5.3.

Figure 5.2. Case Detection and Clinical Management during CDC Acceleration and Deceleration Intervals



Footnotes to Figure 5.2:

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
    - Coccidioidomycosis serology, culture, or PCR
    - 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 5.2 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 5.3.
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 (Supplement 4, Infection Control). 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.

Appendix 5.1 Management of Scarce Resources & Crisis Standards of Care

During a pandemic, healthcare resources may be inadequate to meet demands. This situation is anticipated in the Arizona Crisis Standards of Care (CSC) Plan (*http://www.azdhs.gov/documents/preparedness/emergency- preparedness/response-plans/azcsc-plan.pdf*). The critical first step would be the activation of the State Disaster Medical Advisory Committee (SDMAC).

During a public health disaster, the State Disaster Medical Advisory Committee (SDMAC) will convene to develop incident-specific priorities and guidance for the delivery of healthcare and use of scarce medical resources. This guidance may address:

- Triage for emergency medical services (EMS);
- Primary, secondary, and tertiary triage for healthcare facilities;
- Expanded scopes of practice, as approved by regulatory authorities;
- Priorities for medical resources including space, staff, and supplies; and
- Considerations for healthcare access points, including hospitals, out-of-hospital facilities, and alternate care sites.

Once activated for a disaster response, the SDMAC will serve as the statewide policy group for the Health Emergency Operating Center (HEOC). The HEOC, managed by ADHS, will operate in a Unified Command (UC) structure with the State Emergency Operation Center (SEOC) to coordinate the public health, medical, and behavioral health responses. Representatives from state and local agencies, healthcare organizations, public health officials, medical and legal experts, and other subject matter experts (SMEs) will participate in the SDMAC. As the statewide policy group for CSC, the SDMAC will establish guidance for healthcare institutions and providers, but will not manage the emergency response. As such, the following procedures, diagrams, job action sheets, and other resources contained in this plan apply only to the SDMAC and are intended to support the ADHS Health Emergency Operation Center Standard Operating Procedure (2013).

Figure 5.3. Management of Community-Acquired Pneumonia during an Influenza Pandemic: Adults

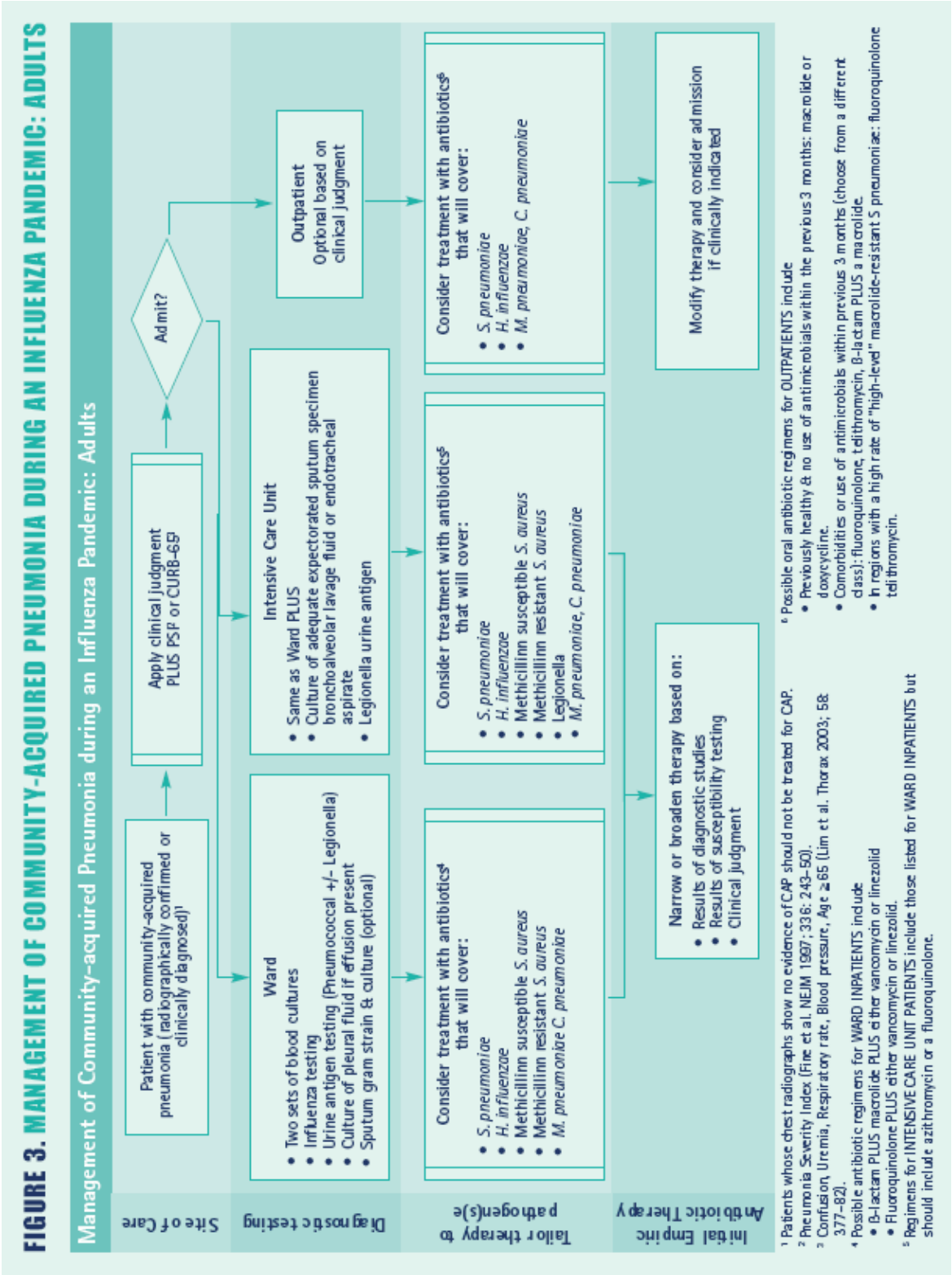
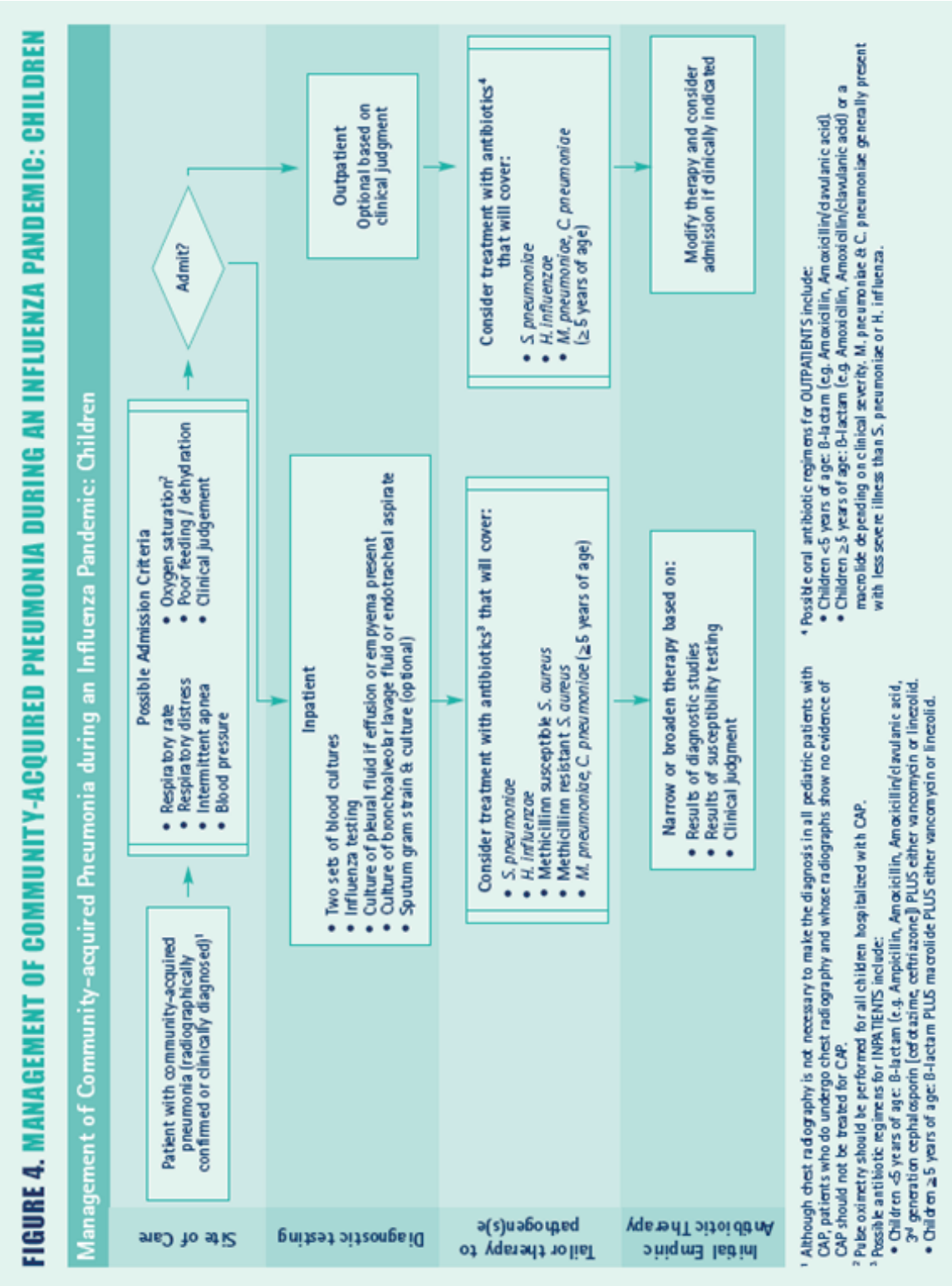


Figure 5.4: Management of Community Acquired Pneumonia during an Influenza Pandemic: Children



Appendix 5.2 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/diagnosis/*.

Complications

Groups recommended for vaccination

Each year, the Advisory Committee on Immunization Practices (ACIP) publishes recommendations for prevention and control of seasonal influenza (see Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP). Please reference the current seasonal ACIP guidelines when making decisions regarding groups recommended for vaccination. The 2010 guidelines: MMWR, Early Release, 2010; 59: 1-62 *http://www.cdc.gov/vaccines/pubs/ACIP-list.htm#flu*).

Types of influenza complications

- 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.

- 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*.
- 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.
- 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.
- Bronchiolitis due to influenza. This occurs more commonly in children, with a clinical picture similar to that of RSV or parainfluenza virus infections.
- 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.
- 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.
- 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. Recent and past investigations show that elderly patients have an increased occurrence acute myocardial infarction during influenza infection. Cardiac inflammation, such as myocarditis and pericarditis, can be found occasionally. 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.
- 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.

- 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.
- 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.
- 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.
- Reye syndrome. This 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.
- 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 5.3 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.

[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.

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.

Whereas all patients described above presented with pulmonary symptoms, subsequently published case reports suggest that other clinical syndromes can occur with H5N1 infection.33,4,5 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 *Streptococcum pneumoniae*, *Staphylococcus aureus*, group A Streptococcus, or *Haemophilus influenzae*.

[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.

[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.

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.

Appendix 5.4 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* (including *Methicillin Resistant Staphylococcus Aureus* (MRSA)), 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 WHO Phases 1-4 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. None the less blood cultures and, when readily available, cultures of respiratory secretions are useful. However, these antibacterials will likely be in short supply during a pandemic.

[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.

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.

These recommendations have been updated 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 review[5] and expert opinions.

Prevention

Efforts to maximize vaccination coverage against Streptococcus pneumoniae are an important component of post- influenza bacterial community-acquired pneumonia prevention. Current guidelines on the use of the 23-valent pneumococcal polysaccharide vaccine among adults[6] and the 7-valent and 13-valent pneumococcal conjugate vaccine among children[7] 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 WHO Phases 5 and 6 will rely on the physician's clinical assessment of the

[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.

[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).

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 5.1) 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 will continue to occur during a pandemic. Familiarity with the appropriate use of available diagnostic tests is therefore a key feature of clinical preparedness.

- Look for *S. pneumoniae* and *S. aureus* (MRSA). 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 pneumonia are *Streptococcus pneumoniae, Staphylococcus aureus* (including *Methicillin Resistant Staphylococcus Aureus* (MRSA)), group A Streptococcus, and *Haemophilus influenzae* and are treated differently, diagnostic testing especially pre antibiotic blood cultures should be performed to the extent feasible to distinguish among these pathogens.
- Do additional tests for hospitalized patients.
    - Blood cultures, pneumococcal urine antigen testing, and pleural fluid aspiration with Gram stain and culture should be considered.
    - Since sputum Gram stain and culture are highly dependent on patient and technical conditions, these are considered optional for hospitalized but non-severe patients.
    - 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.

- Blood cultures should be obtained from all children suspected of having post-influenza bacterial community-acquired pneumonia.
- 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.
- If pleural effusions are present, they should be aspirated and submitted for Gram stain and culture.
- Test antibiotic susceptibility testing of any bacterial isolates to direct treatment, where feasible.

Antibiotic treatment

Adults and children

Antibiotics may be in short supply during the pandemic, 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.

- 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.)
- 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.
- Empiric therapy should be directed toward the most likely etiologies of post-influenza bacterial community- acquired pneumonia.
- 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).

Appendix 5.4 Table 2 Pneumonia PORT Severity Index (PSI) Calculation

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

Appendix 5.4 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

Appendix 5.4 Table 4 CURB-65 Scoring System

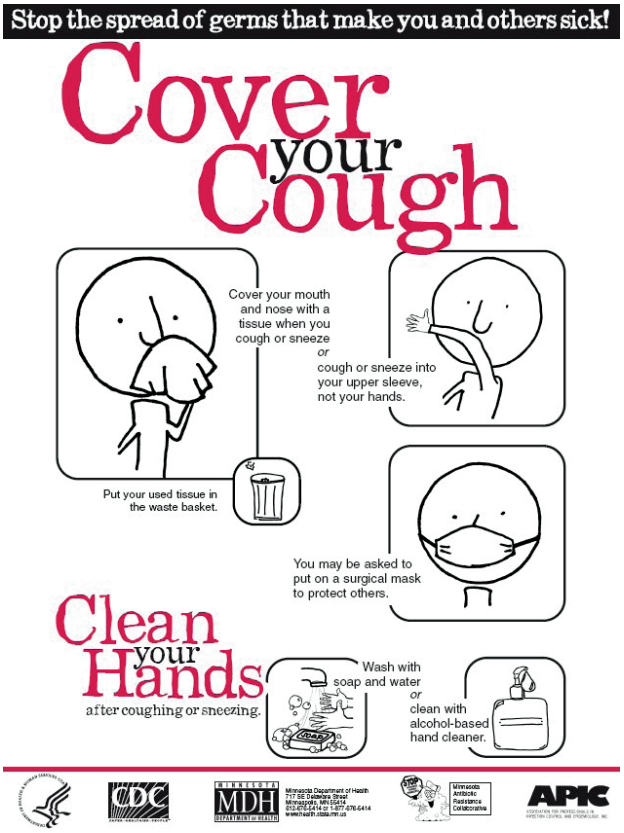
Characteristic	Points
Confusion[1]	+1
Urea >7mmol/l (20mg/dl)	+1
Respiratory rate >30 breaths per minute	+1
Blood pressure (Systolic <90 or diastolic <60 mm Hg)	+1
Age >65 years	+1

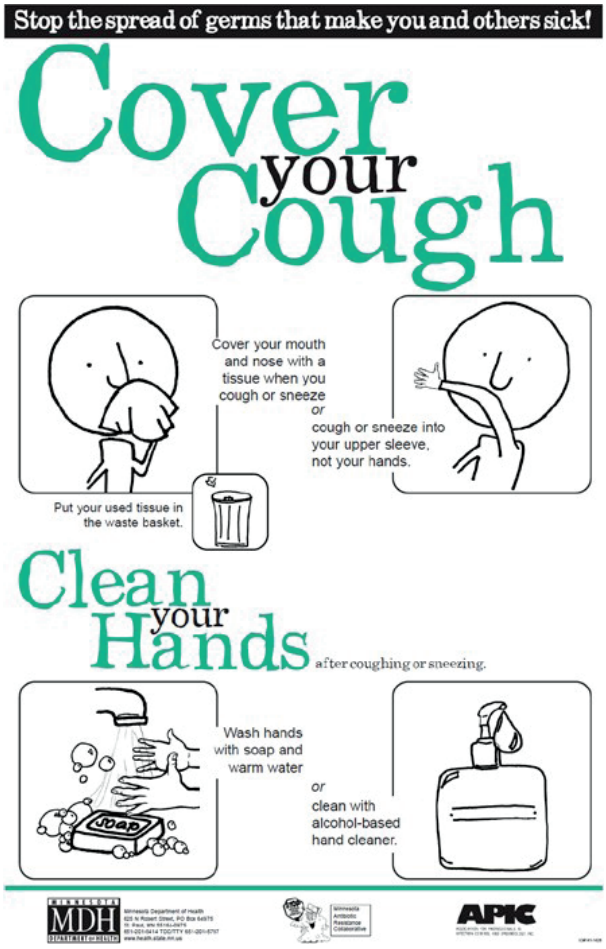
[1] Based on a specific mental test or disorientation to person, place, or time.

Appendix 5.4 Table 5 Recommended site of care based on CURB-65 system

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

Appendix 5.5: Respiratory Etiquette Posters





Supplement 6

SUPPLEMENT 6: VACCINE DISTRIBUTION AND USE

Arizona Pandemic Influenza Response Plan

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Rationale

The initial response to an influenza pandemic will include medical care, community containment, 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 prioritized target 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 identified priority populations
- Rapidly determining vaccine effectiveness
- Providing ongoing and timely monitoring of vaccine coverage
- Providing ongoing and timely monitoring of vaccine safety
- Licensing the vaccine and/or establishing alternate use policies (Emergency Use Authorizations and Investigational New Drug protocols).

ADHS goals for vaccination are:

- Communicating the benefits of vaccine for prioritized target groups
- Securing sufficient quantities of vaccine for prioritized target groups
- Ensuring equitable distribution of vaccine to providers serving prioritized target groups
- Communicating vaccine ordering status, storage and handling requirements, and policy and administrative solutions regarding insurance, vaccine licensing, and administration fees to the provider community
- Coordinating, brokering, distributing and delivering vaccine to identified public and private providers, retail pharmacies, local health departments and community vaccinators based on need
- Facilitating special immunization clinics for easy access by the prioritized target groups, the vulnerable, and hard-to-reach populations
- Utilizing the Arizona State Immunization Information System for ordering pandemic vaccine, tracking vaccine use, and assessing vaccine efficacy according to set protocols. Collecting data and reporting any adverse events following vaccination
- Ensuring the safe return and disposal of unused or expired vaccines

Overview

Supplement 6 provides recommendations to state and local partners and other stakeholders on planning for the various elements of a pandemic influenza vaccination program. Recommendations during recognition and initiation of a pandemic focus on how to update and operationalize the plans for vaccine distribution, achieving vaccination of prioritized target groups, monitoring of adverse events, tracking of vaccine supply and administration, evaluating vaccine coverage and effectiveness, communications with health care providers and the community, legal preparedness, and training. The recommendations during acceleration of a pandemic wave focus on working with healthcare partners to vaccinate against pandemic influenza and to monitor vaccine activities. The recommendations during deceleration of a pandemic wave include continued vaccination, evaluating vaccine coverage and effectiveness, and analyzing reported adverse events.

Actions during Recognition and Initiation of a Pandemic Wave

Summary of public health roles and responsibilities

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.
- 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 state and other stakeholders.
- Work with industry partners to ensure influenza vaccine can be produced on an emergency basis at any time throughout the year.

ADHS

- Work with local health departments (county health departments and tribal 638 facilities), healthcare providers, retail pharmacies, medical associations, state licensing boards, healthcare coalitions, tribes, Indian Health Services (IHS) and other stakeholders to develop state-based plans to prepare for pandemic influenza vaccination and coordinate vaccine distribution and use.
- Work with local health departments (LHDs), tribes, and healthcare providers to develop plans and systems to receive, distribute, and administer pandemic influenza vaccines to designated groups.

- Develop and distribute communication and education materials for use statewide.
- Prepare systems for registering providers, receiving provider orders, updating providers as to status of their orders, tracking vaccine distribution, reporting on vaccine distribution and coverage, monitoring adverse events, and recovering unused vaccine.
- Assemble the Vaccine and Antiviral Prioritization Advisory Committee (VAPAC) to discuss federal recommendations for prioritized target populations, and to give Arizona recommendations regarding Arizona target groups, prioritization tiers, and vaccine allocations.
- Encourage vaccination with seasonal influenza vaccine (when appropriate) and pneumococcal vaccine so as to have as many people as possible properly vaccinated by the time pandemic influenza vaccine is available.

Local health departments

- Develop and implement plans, systems and capacities to receive, distribute, and administer the vaccine to the jurisdiction's population.
- Plan for and exercise running a mass vaccination clinic according to CDC and state guidance.
- Identify Points of Dispensing Sites (PODS) for pandemic influenza vaccination for critical infrastructure personnel (CIP) and prioritized target groups.
- Recruit potential pandemic influenza providers in addition to those in the Vaccine for Children (VFC) network and PODS.
- Identify points of contact for CIP and communicate with them about pandemic influenza pandemic plans for their personnel.
- Identify federal facilities within their jurisdiction that would need allocations of pandemic influenza vaccine.
- Assess vaccination sites for suitability, cold storage capacity, and vulnerability.

Vaccination against seasonal influenza virus strains

Before the initiation of a pandemic wave, the Arizona Department of Health Services (ADHS) and local health departments will continue to work with tribes, IHS, community partners, mass immunizers, healthcare partners, targeted populations, and immunization coalitions to:

1. Promote universal and seasonal recommendations for influenza vaccination
2. Focus on persons at risk for medical complications from influenza
    a. all children aged 6 months-4 years (59 months)
    b. all persons aged ≥50 years
    c. adults and children who have chronic pulmonary (including asthma) or cardiovascular (except isolated hypertension), renal, hepatic, neurological, hematologic, or metabolic disorders (including diabetes mellitus)
    d. persons who have immunosuppression (including immunosuppression caused by medications or by HIV)
    e. women who are or will be pregnant during the influenza sea

f. children and adolescents (aged 6 months-18 years) who are receiving long-term aspirin therapy and who might be at risk for experiencing Reye syndrome after influenza virus infection

g. residents of nursing homes and other long-term care facilities

h. American Indians/Alaska Natives

i. persons who are morbidly obese (Body Mass Index ≥40)

j. healthcare personnel

k. household contacts and caregivers of children aged <5 years and adults aged ≥50 years, with particular emphasis on vaccinating contacts of children aged <6 months

l. household contacts and caregivers of persons with medical conditions that put them at higher risk for severe complications from influenza

m. other priority groups recommended by the Advisory Committee on Immunization Practices (ACIP) as new seasonal influenza strains are identified

Each year, the Advisory Committee on Immunization Practices (ACIP) publishes recommendations for prevention and control of seasonal influenza (see Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices (ACIP). Please reference the current seasonal ACIP guidelines when making decisions regarding groups recommended for vaccination. The 2017-2018 guidelines are found in *Morbidity and Mortality Weekly Report* (MMWR), (RR-2), August 25, 2017. *https://www.cdc.gov/mmwr/volumes/66/rr/pdfs/rr6602.pdf*. Guidelines for seasonal influenza vaccination are updated yearly in the MMWR at *www.cdc.gov/mmwr*.

It is possible that seasonal influenza vaccine season could overlap with pandemic influenza vaccine. If this is the case, as soon as there is recognition and initiation of a pandemic influenza wave, seasonal influenza vaccination efforts should be amplified to immunize as many people as possible against seasonal influenza so that immunization efforts can be more focused on pandemic influenza vaccination once pandemic vaccine becomes available. However, it is possible that both seasonal and pandemic influenza vaccination would need to be provided to some patients during the same clinic encounter.

During an influenza pandemic, the increased use of pneumococcal vaccines may decrease rates of secondary bacterial infections. Because large-scale pneumococcal vaccination with pneumococcal conjugate vaccine (PCV13) and pneumococcal polysaccharide vaccine (PPSV23) would not be feasible during pandemic influenza vaccination efforts, the initiation of a pandemic is the ideal time to deliver pneumococcal vaccines to those recommended to receive them but who are still unvaccinated.

PPSV23 is recommended for:

- Adults ≥ 65 years old
- Immunocompetent adults 19-64 years with medical risk condition or risk factor (chronic heart disease excluding hypertension), chronic lung disease, asthma, diabetes mellitus, cerebrospinal fluid leak, cochlear implant, alcoholism, chronic liver disease, cirrhosis, cigarette smoking).
- Children and adults 2-64 years with functional or anatomic asplenia, or who are immunocompromised, including chronic renal failure and nephrotic syndrome.
- Immunocompetent children 2-18 years with chronic heart disease, chronic lung disease, diabetes mellitus, cerebrospinal fluid leak, or cochlear implant.

PCV13 is recommended for:

- All children 2-59 months of age.
- Children 60-71 months with chronic heart disease, chronic lung disease, diabetes mellitus, cerebrospinal fluid leak, and cochlear implant.
- Children and adults 6 years-64 years with cerebrospinal fluid leak, cochlear implant, functional or anatomic asplenia, or who are immunocompromised, including chronic renal failure and nephrotic syndrome.
- Adults ≥ 65 years old

Resources for pneumococcal vaccination

- Immunization Action Coalition (IAC). Pneumococcal Vaccination Recommendations for Children and Adults by Age and/or Risk Factor. *http://www.immunize.org/catg.d/p2019.pdf* (11/15)
- IAC. Standing Orders for Administering Pneumococcal Vaccines to Adults *http://www.immunize.org/catg.d/p3075.pdf* (1/17)
- IAC. Standing Orders for Administering Pneumococcal Conjugate Vaccine to Children *http://www.immunize.org/catg.d/p3086.pdf* (4/13)
- IAC. Standing Orders for Administering Pneumococcal Polysaccharide Vaccine to Children and Teens *http://www.immunize.org/catg.d/p3075a.pdf* (10/17)

Preparedness for vaccination against a pandemic influenza virus

A monovalent vaccine directed against the circulating pandemic virus strain of influenza should begin to be available within four to six months after identification of the new pandemic virus strain, unless there is already stockpiled pandemic influenza vaccine available. HHS works with industry partners to ensure that influenza vaccine can be produced on an emergency basis at any time throughout the year and to facilitate the development of cell- and recombinant-based 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 Centers for Medicare & Medicaid Service (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 also spearheads the development of human vaccines against novel influenza viruses with pandemic potential. This included the development of the 2009 H1N1 vaccine and continuing to prepare vaccine for a potential H5N1 pandemic and a potential H7N9 pandemic. HHS provides funding to develop and manufacture pilot investigational lots of these vaccines at licensed influenza vaccine manufacturers and to evaluate their safety and immunogenicity in National Institute of Health (NIH)-sponsored clinical trials in healthy adult, elderly, and pediatric populations.

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 immunity. Additional clinical trials are ongoing to evaluate possible ways to improve the immune response to lower the amounts of vaccine antigen needed for protection.

For several years, ADHS, LHDs, and healthcare partners have been planning for the distribution of vaccine and antivirals for pandemic influenza. These plans tie closely with existing state and local emergency response plans such as emergency mass distribution of medical supplies and other public health emergency plans. Detailed plans for mass vaccination are described in the "Arizona Pandemic Influenza Mass Vaccination Plan" (see Appendix 1 of this plan) and the "Arizona Mass Vaccination Clinic Plan" (see Appendix 2 of this plan).

In conjunction with local health departments, healthcare providers, tribes, and other stakeholders, ADHS will conduct the following steps to prepare for the pandemic and protect Arizona's population:

- Review HHS', CDC's and ACIP's recommendations on prioritization of target groups; accept or modify target groups for Arizona based on local needs and pandemic severity.
- Update vaccine allocation and planning worksheets with the numbers of individuals in targeted priority groups established by CDC.
- Prompt LHDs to implement their pandemic influenza plans, confirm refrigerator capacity for storage of pandemic vaccines, identify and prioritize target groups, recruit and expand the number of public and private providers for administering pandemic vaccine, update lists of local immunization providers and immunizing staff, compile lists of potential clinic sites for mass vaccine administration, and educate and train clinic staff on importance of proper vaccine storage and handling protocols.
- Prepare the Arizona State Immunization Information System (ASIIS) to have the ability to register potential pandemic influenza vaccine providers, accept pandemic influenza vaccine orders, determine prioritization of target groups based on guidance from VAPAC, track orders, inform providers of the status of their orders, report on vaccine distribution and vaccine coverage, and track patients who need second doses.
- Prepare a public-facing ADHS website where providers will register as emergency vaccine providers through an online process via the state immunization registry, ASIIS.
- Identify 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, etc.).
- Compile lists of volunteers from other agencies/organizations who can assist such as private partners, mass immunizers, etc.
- Utilize the Arizona Emergency System for the Advanced Registration of Volunteer Health Professionals (ESAR-VHP) to verify and credential needed health volunteers.
- Pre-register physicians and private providers who are or would likely be administering vaccine and ensure they are complying with federal requirements and integrating with federal systems.

- Identify additional storage facilities for the vaccine such as refrigerators.
- Review written standard operating procedures (SOPs) for mass vaccination clinics, update them as needed, and share this guidance with LHDs.
- Review written Standard Operating Procedures for setting up and operating the ADHS Health Emergency Operations Center and Public Health Incident Management System (PHIMS), if activated.
- Establish financial/logistical mechanisms for obtaining and distributing necessary vaccine and distribution supplies.
- Recommend appropriate security measures during vaccine storage and transportation.
- Review the Strategic National Stockpile (SNS) protocol in the event SNS assets are pre-deployed to Arizona or in case state supplies of vaccine and materials become exhausted and SNS supplies are needed.
- Prepare refrigerators at the Arizona State Public Health Laboratory for receipt of limited amounts of pandemic influenza vaccine, if needed, and obtain the necessary vaccine administration supplies.
- Anticipate adverse reactions to vaccine, possible vaccine failures, vaccine lot recalls, and potential liability issues.
- Develop protocols to address vaccine handling and administration and licensing issues.
- Develop data reporting and other communication systems for healthcare providers.
- Develop systems to report to the public through the ADHS website, public messaging, and the news media about vaccine supplies, the amount of vaccine distributed and administered, the rationale for target groups and tier prioritization based on pandemic severity, and report on vaccine-associated adverse events.
- Begin planning for vaccine recovery programs for unused or expired vaccines.
- Establish a continuity of operations plan in the event of increased workload, staff absenteeism, or staff losses.

Vaccination of target groups

During a pandemic, changes to prioritized target groups may be made based on the characteristics of the causative virus (e.g., drug susceptibilities, fatality rate, transmissibility, virulence, initial geographic distribution, age-specific morbidity and mortality rates, complication rates, etc.) and on vaccine effectiveness. During the initiation of a pandemic wave, ADHS will establish a Vaccine and Antiviral Prioritization Advisory Committee (VAPAC).

The VAPAC will make recommendations on how these prioritized target groups can apply on a state and local level and modify these recommendations as needed based on the availability of antiviral medicines and vaccine, the characteristics of the causative virus and the effectiveness of implemented strategies. With guidance from the CDC and ACIP recommendations and led by the ADHS Director, the VAPAC will develop key strategies to target the highest prioritized target groups for vaccination in the most efficient and effective manner. With integration from statewide partners, the VAPAC will provide the rationale for recommending the target groups so that the reasons for prioritization can be communicated to the community. Each local health officer or tribal health authority may utilize the recommendations or modify them to fit local needs.

The VAPAC will be comprised of:

- Representative(s) from the Governor's office
- State Epidemiologist
- State physician(s)
- ADHS influenza epidemiologist
- ADHS Bureau of Epidemiology and Disease Control representative(s)
- ADHS Bureau of Public Health Emergency Preparedness representative(s)
- ADHS Division of Licensing representative(s)
- ADHS administrator(s)
- Arizona Immunization Program Office (AIPO) representative
- ADHS Office of Infectious Disease Services Chief
- Arizona Local Health Officers Association representative
- Arizona Medical Association representative
- Hospital Association representative
- Arizona Emergency Medical Service representative
- Arizona Pharmacy Association representative
- Arizona Chapter of the American Academy of Pediatrics
- Long-term care representative
- Indian Health Services
- Representative from the Inter Tribal Council of Arizona (ITCA)
- Representative from the Navajo Nation
- Other stakeholders as needed

Initial stocks of pandemic influenza vaccine will be used to vaccinate high risk target groups based on a tier system of prioritization epidemiology at the time, critical infrastructure personnel, risk for complications, and assessments of local situations. After vaccination of prioritized target groups, vaccination of all those who desire vaccination will be phased in depending on available pandemic influenza vaccine supplies.

Vaccination target groups and prioritization tiers will differ depending on whether the pandemic influenza epidemic is categorized as severe, moderate, or less severe. The "Arizona Pandemic Influenza Mass Vaccination Plan" (see Appendix 1 of this plan) used the HHS document "Guidance on Allocating and Targeting Pandemic Influenza Vaccine, 2008," as a basis to calculate Arizona's estimated populations, vaccination target groups, and prioritization tiers.

Below is Table 1 from the HHS document "2018 Guidance on Allocating and Targeting Pandemic Influenza Vaccine, page 9" which shows these vaccination target groups and prioritization tiers.

Table 1. Category, vaccination population groups, estimated number in population group, and tiers for low, moderate, and high/very high pandemic severity

Source: https://www.cdc.gov/flu/pandemic-resources/national-strategy/planning-guidance/guidance_508.html

Tier 1[1]	Tier 2	Tier 3	Tier 4	Tier 5	Not Targeted[2]	
Category	**Population Group**		**Estimated Number[3]**	**Low Severity[4]**	**Moderate Severity**	**High/ Very High Severity**
Homeland and national security	Deployed[5] & mission essential personnel		850,000			
	Essential military support & sustainment personnel		650,000			
	Intelligence services		150,000			
	National Guard personnel		500,000			
	Other domestic national security personnel		150,000			
	Other active duty military & essential support		1,500,000			
Health care and community support services	Public health personnel		300,000			
	Inpatient health care providers		3,200,000			
	Outpatient & home health providers		2,600,000			
	Health care providers in long-term care facilities		1,600,000			
	Pharmacists & pharmacy technicians		725,000			
	Community support & emergency management		600,000			
	Mortuary services personnel		50,000			
	Other health care personnel		350,000			
Other critical infrastructure	Emergency services & public safety sector personnel (EMS, law enforcement, & fire services)		2,000,000			
	Manufacturers of pandemic vaccine & antivirals		50,000			
	Communications/information technology (IT), electricity, nuclear, oil & gas, water sector personnel, & financial clearing & settlement personnel		2,200,000			
	Critical government personnel - operational & regulatory functions		425,000			
	Banking & finance, chemical, food & agriculture, pharmaceutical, postal & shipping, & transportation sector personnel (critical infrastructure with greater redundancy)		3,400,000			
	Other critical government personnel		400,000			
General population	Pregnant women		4,000,000			
	Infants & toddlers 6-35 months old		11,000,000			
	Household contacts of infants <6 months old		4,500,000			
	Children 3-18 years old with high risk condition		7,000,000			
	Children 3-18 years old without high risk condition		62,000,000			
	Adults 19-64 years old with high risk condition		38,000,000			
	Adults ≥65 years old		41,000,000			
	Healthy adults 19-64 years old		132,000,000			

NOTES:

[1]Across categories, vaccine will be allocated and administered according to tiers where all groups designated for vaccination within a tier have equal priority for vaccination. Groups within tiers vary depending on pandemic severity. Tier 1 is the highest priority group to receive vaccination if there is limited vaccine supply for any pandemic severity.

[2]Persons not targeted for vaccination in an occupational group would be vaccinated as part of the General Population based on their age and health status.

[3]Estimates rounded to closest 50,000. Occupational population group sizes may change if worker populations fluctuate or as plans are developed further and population groups may change in number over time.

[4]ACIP recommendations for prioritization would guide tiered vaccination during pandemics with low to moderate levels of severity. (http://www.cdc.gov/vaccines/hcp/acip-recs/index.html).

[5]Includes military forces and other mission critical personnel, not limited to active duty military or US government employees, who are critical to protecting national security

Pandemic influenza vaccine production, procurement, and allocation

At the beginning of a pandemic wave, HHS will assess whether there is an existing stockpile of pandemic influenza vaccine and will work to expand pandemic influenza vaccine production capacity. It is possible that at the time, influenza vaccine manufacturers will be working on production of seasonal influenza vaccine. If so, HHS will signal to manufacturers when to shift from seasonal to pandemic influenza vaccine production. This will help to ensure that pandemic vaccine is produced at full capacity.

At the onset of an influenza pandemic, HHS, in concert with the Congress and in collaboration with the states, will work with the pharmaceutical industry to acquire vaccine directed against the pandemic influenza strain. Distribution of pandemic influenza vaccine to health care providers may occur via a central distributor or directly from the manufacturer.

If available, stockpiled pandemic influenza vaccines and adjuvants would be used for early vaccination efforts among those who play critical roles in the vaccine response, those who are necessary for maintaining essential societal functions, and those at increased risk of severe disease because of age or underlying medical conditions. During the 2009-2010 influenza pandemic, the first doses of pandemic H1N1 vaccine became available only after about 26 weeks from the initial decision to begin vaccine development and manufacturing. Early on it was only available in small quantities and was allocated by local health officers to areas of greatest need.

Arizona will receive available vaccine in proportion to the size of its population.

The following concepts will be used to formulate the event-specific vaccination response plan, in relation to the amount of vaccine that is made available to the state:

- Use VAPAC to determine and estimate the size of the target groups that need to be vaccinated, and prioritize these target groups according to pandemic severity, current federal recommendations, and local needs.
- Identify organizations that will administer vaccines to target groups according to prioritization tiers.
- Identify locations for vaccination clinics or alternative means of vaccinating prioritized target populations.
- Determine how the vaccines will be shipped from a central distributor or from the manufacturer directly to vaccine providers or to Point of Dispensing Sites (PODS) for further distribution.
- Ensure event-specific plans include strategies for vaccinating medically underserved, hard-to-reach populations, Native American and Alaska Natives, seasonal visitors, and migrant populations to improve equity in access within target groups and, later, the general population.
- It is expected that pandemic influenza vaccine will be administered by public health facilities, federal health facilities, private-sector organizations, and other health care providers at offices, clinics, or other sites, ADHS and LHDs will:
    - Allocate vaccine based on projected need according to federal guidance, VAPAC recommendations, target groups, tier prioritization based on pandemic severity, providers' areas of specialization, and local needs.
    - Manage unused vaccine (if any) from health care providers who have met their priority vaccination goals and re-distribute the vaccine to those who still need vaccine.

    - Monitor that vaccine administration is consistent with existing plans on prioritized target groups.
- It is anticipated the CDC will determine the number of doses each state is allocated. Arizona is expected to receive about 2% of available pandemic influenza vaccine.
- ADHS, in conjunction with LHDs, will identify the vaccine providers who will be authorized to receive influenza vaccine according to prioritized target groups. As these target groups are able to receive vaccine, vaccine distribution authorizations will be broadened to include additional people.
- CDC will allocate vaccine to ADHS as it becomes available. ADHS will allocate vaccine to LHDs based on population, prioritization goals, target groups, availability of vaccine, and vaccine presentation types. Allocations will take into account a provider's area of specialization, target groups, and high risk groups. LHDs will decide where the allocated vaccine should be shipped within their jurisdiction.
- LHDs will assess the readiness and ability of providers in their jurisdictions to provide vaccine to target groups and the general population. Based on VAPAC recommendations, they will prioritize providers to receive vaccines and decide on the number of doses to be distributed in their jurisdictions as vaccine becomes available.

Arizona pandemic influenza vaccine ordering and distribution

Preparation for vaccine distribution

In order to prepare for vaccine distribution, ADHS will:

- Finalize preparations for ASIIS to track pandemic influenza vaccine distribution statewide.
- Inform providers about the way to register with ADHS to be able to receive pandemic influenza vaccine, CDC requirements for administering vaccine, and the mechanisms by which they can they can be reimbursed for vaccine administration if a person does not have healthcare insurance.
- Assess the refrigerator capacity of LHDs. Vaccine storage capacity at ADHS would be for emergency use only and of small quantities.
    - There are two refrigerators at the Arizona State Public Health Laboratory that could be made available. Together they could hold approximately 250,000 doses in multi-dose vials. The associated supplies for vaccine storage and transportation would need to be purchased if these refrigerators were to be utilized. If more vaccine storage at ADHS were needed, ADHS would utilize an existing third party distributor to handle the storage and distribution of this vaccine if ADHS storage capacity is exceeded.
- Estimate the numbers of doses of vaccine that would be needed by target groups and prioritization tiers based on pandemic influenza severity (see Table 1 and Table 2 in Appendix 1, "Arizona Pandemic Influenza Mass Vaccination Plan").
- Receive guidance from VAPAC regarding vaccine focused allocation strategies for the Native American population. Table 3 in Appendix 1, "Arizona Pandemic Influenza Mass Vaccination Plan" shows the number and percentage of Native Americans in each Arizona County.
- Provide guidance to LHDs regarding local preparation for vaccine distribution and administration. LHDs will need to identify provider vaccine capacity based on the number vaccination sites, the personnel that can vaccinate, and the vaccine supply.

    - Vaccines administration sites would be expected to include hospitals, medical health care offices, LHD clinics (existing and mass vaccination), and workplace vaccination sites.
    - Pharmacies would also be an important partner in pandemic influenza vaccination efforts. In 2016, pharmacies administered 499,431 doses of seasonal influenza vaccine (approximately 17% of all influenza vaccines given and 7% of the total Arizona population [ADHS unpublished data]).
- Advise LHDs to review the adequacy of their current security measures at vaccination sites in order to enhance them, as needed. ADHS and LHDs may request assistance from law enforcement agencies to do so. Although the ADHS Immunization Program Office will be responsible for ordering pandemic influenza vaccine, including coordinating its distribution, the security for pandemic influenza vaccine at distribution sites will be the responsibility of the local authorities.

Ordering vaccine

- ADHS will email information to LHDs regarding vaccine presentations and available amounts. In turn, LHDs will notify their providers to directly enter their vaccine order into the Arizona State Immunization System (ASIIS), Arizona's electronic vaccine registry.
- Operating under VAPAC recommendations, LHDs will have jurisdiction over the order sets for providers in their area of responsibility and will allocate vaccine orders for providers in their area of responsibility.
- After providers enter vaccine orders into ASIIS, the designated LHD must pre-approve their providers' orders.
- ADHS will give the final approval of vaccine orders and will electronically submit orders to the designated distributor or vaccine manufacturer.
- Vaccine will be directly shipped to providers by the commercial distributor or vaccine manufacturer.
- ADHS will import the shipping log into ASIIS which populates the vaccine order information. Providers then must log into ASIIS and receive the order.
- The provider will need to verify on the "receive order screen" that the order information is correct. By clicking the "receive order" button, the provider's vaccine inventory in ASIIS is updated, including vaccine presentations, lot numbers, amounts, NDC numbers, and expiration dates.
- When a provider enters "dose administered" into ASIIS, automated inventory management occurs.
- ADHS and LHDs will use ASIIS inventory data for determining future allocations and other vaccine ordering activities.
- Current Arizona law requires that all vaccine doses administered to individuals under 18 years of age and all vaccines given to people of any age be reported to ASIIS. During an influenza pandemic, additional reporting requirements will be added:
    - Reporting pandemic influenza vaccine doses administration regardless of patient age.
    - Reporting pandemic influenza vaccine administration within a specific time period.
    - Requiring the use of ASIIS to report vaccine administration in order to provide automated inventory management.

- ADHS staff will monitor ASIIS to assess appropriate administration of the vaccines, with assistance as needed from LHDs.
- LHDs will be given the responsibility of pandemic influenza vaccine redistribution, as needed.

Receipt of vaccine

Arizona LHDs and vaccine providers may receive the vaccine in one of two ways:

- ADHS orders the vaccine from a centralized distributor based on LHDs decisions on vaccine allocations to pre-identified sites or health care providers within their jurisdictions. The vaccine is then sent directly to health care partners statewide from the centralized distributor.
- ADHS orders the vaccine directly from the vaccine manufacturer on behalf of the LHDs. Vaccine is then shipped directly to the pre-identified sites or health care providers.

Recipients of pandemic vaccine should follow guidance for vaccine storage and handling as found in CDC's Storage and Handling Toolkit, including keeping refrigerator temperatures between 36° F. to 46° F and using digital data loggers (DDLs) with buffered temperature probes to continuously monitor refrigerator temperatures.

At first, vaccine supply will likely be limited. Table 4 in Appendix 1, "Arizona Pandemic Influenza Mass Vaccination Plan" shows scenarios as to how much vaccine could be available in each county based on population, depending on the amount of vaccine that is being allocated per week to Arizona.

Second-dose vaccination

A vaccine against pandemic influenza may require two doses to provide a level of immunity comparable to that obtained with seasonal influenza vaccines, especially in children. 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. It is expected that CDC would provide vaccination cards that will accompany the vaccine shipments. These cards will document receipt of pandemic influenza vaccine, and give guidance to the vaccine recipient as to when a second dose of pandemic vaccine is needed. It is planned that second dose reminder recalls will be built into ASIIS with future software updates. If an ASIIS reminder recall capability is not yet available for a pandemic, a reminder-recall system could be established by vaccinators providing a pre-stamped postcard for people to fill out at the time of vaccination that would be sent to remind people to return for a second dose.

LHDs should have plans for how to vaccinate 80% of their jurisdiction's population with two doses of a pandemic influenza vaccine (separated by at least 21 days) in less than 16 weeks. Table 5 and Table 6 in Appendix 1, "Arizona Pandemic Influenza Mass Vaccination Plan" shows how many doses per day and per week would need to be administered per county in order to achieve this goal. After the first three weeks of vaccination, the numbers of people needing to be vaccinated would double, since people who are coming for their first dose of vaccine will overlap with people coming in for their second dose of vaccine.

Table 7 and Table 8 in Appendix 1, "Arizona Pandemic Influenza Mass Vaccination Plan," show data collection categories that can be used by LHDs to estimate the vaccine administration capacity for non-pharmacy and pharmacy vaccine providers in their jurisdiction.

Contingency planning for Investigational New Drug use

ADHS and LHDs need to be prepared to distribute unlicensed pandemic influenza vaccines (if needed) under FDA's Investigational New Drug (IND) provisions. Unlicensed vaccines might be needed, for example, if pandemic influenza 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 vaccine recipient, and mandatory reporting of specified types of adverse events.

IND provisions also require approval from Institutional Review Boards (IRBs) in hospitals, health departments, and other vaccine-distribution venues. The FDA regulations permit the use of a national or "central" IRB. A treatment IND is one IND mechanism that FDA has available for use and is especially suited for large scale use of investigational products.

As an alternative to IND, use of an unlicensed pandemic influenza vaccine may be authorized under Emergency Use Authorization (EUA) procedures as described in the FDA Guidance "Emergency Use Authorization of Medical Products and Related Authorities." An EUA would permit the FDA Commissioner to allow medical countermeasures to be used in an emergency to diagnose, treat, or prevent serious or life-threatening diseases where there are no adequate, approved, and available alternatives.

Vaccine monitoring and data collection

To ensure optimal use of a new pandemic influenza vaccine, state and local health departments and participating immunization providers should be prepared to collect data on vaccine utilization, vaccine coverage and evaluation, and vaccine safety. The following data collection systems and resulting data will be utilized to evaluate coverage, prioritized target groups for vaccination, and identify ways to improve vaccination activities.

Vaccine utilization

- Vaccine allocation
    - ADHS is responsible for tracking that a sufficient and appropriate amount of vaccine is being delivered to participating providers and prioritized target groups and that all areas of the state are being served. Vaccine tracking is accomplished through vaccine maintenance systems managed by ADHS in coordination with LHDs.
- Vaccine doses administered
    - ADHS will track who has received the vaccine through ASIIS, the state electronic immunization registry. Since ASIIS can track vaccine by individual doses, data can be readily collected on vaccine administration and coverage. ASIIS is continually upgraded and enhanced to collect information and expand data collection on all ages. ASIIS is a web-based system which will allow any health care professional who is licensed to provide immunizations under Arizona Revised Statutes (A.R.S.) Title 32 to enroll in and submit immunization data on any aged person. The enrollment and log in process will be expedited.

Vaccine coverage and evaluation

ADHS will use ASIIS, to track coverage with pandemic influenza vaccine. Since 1998, health care

professionals administering vaccines to individuals from birth to 18 years of age have been required to report those immunizations to ASIIS. (A.R.S. §36-135). Since 2009, pharmacists have been required to report to ASIIS vaccines that are given to a person of any age (A.R.S. §32-1974).

Health care providers administering pandemic influenza vaccine to any age person will need to report those doses and other needed information. Patient and Vaccine information will be collected at the time of vaccine administration and entered into ASIIS or pandemic module as defined by ADHS. ASIIS could be utilized for a reminder/recall program that would be utilized to recall patients for a second dose, if necessary.

ASIIS and VAERS reports may be used by federal, state, and local decision-makers to review adverse events related to the doses administered.

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

Vaccine safety

Screening

The comprehensive screening techniques of vaccine recipients should minimize the vaccination of individuals with contraindications or precautions. Individuals will receive educational information prior to vaccination about the post vaccination symptoms to anticipate, if any. It is expected that CDC will require the following documents:

- Medical history screening for contraindications to be used by medical and public health staff
- The CDC Vaccine Information Sheet (VIS) for pandemic influenza vaccine (see *https://www.cdc.gov/vaccines/hcp/vis/index.html* for the latest version)
- Post-vaccination information sheet to explain potential adverse reactions
- A patient consent form

People who will be receiving the pandemic influenza vaccine will be instructed to read the CDC VIS and the post-vaccination information sheet. Spanish documents will be made available. Materials in additional languages will be provided as available. Medical staff and volunteers will be needed to assist with interpreting as necessary.

People who do not have contraindications will be vaccinated and have their vaccine documented on an immunization card. They will proceed to a final check out area where medical counselors can answer any additional questions and collect forms as needed. Vaccinations will be administered according to CDC guidelines and ADHS protocols.

Screeners, vaccinators and medical counselors will have a health or medical background. The ability of administering mass vaccination quickly and safely will depend on the numbers of health care workers and staff able to be adequately trained. Screeners and medical counselors need to have enough experience and training to make adequate clinical judgments about contraindications. It is preferable that they be nurses, nurse practitioners, emergency medical technicians (intermediate or paramedic), physicians, physician's assistants, epidemiologists, or vaccine-certified pharmacists. Vaccinators need to have enough medical or health background to be trained in proper and safe administration of vaccine and to have vaccination as part of their

scope of practice. Translators for common languages will be an essential part of staffing the clinic to assure adequate education.

Contraindications

The number of contraindications will depend on the severity level of the influenza pandemic. CDC guidance will be sought for any change in current contraindications. The contraindications for the pandemic influenza vaccine are assumed to be the same as the seasonal influenza vaccine.

Adverse Events Management

Mass vaccination will create health care demands for education about possible vaccine side effects and evaluation of adverse events after vaccination. Pre-vaccination education, mass media education of the public and health care providers, education about locations of additional resources for patients and health care providers, and continued education of health care providers about adverse events will all be needed.

During the 2009-2010 influenza pandemic, ADHS and county health departments had hotlines with a recorded message in English and Spanish about expected reactions to pandemic influenza vaccine, and when physician consultation should be sought. Serious adverse events should be evaluated quickly by a health care provider. The vaccinated person will be told to contact his/her primary care provider for evaluation and management of serious adverse events. Health care providers should report significant events following pandemic influenza vaccine to the Vaccine Adverse Event Reporting System (VAERS).

ADHS and LHDs will use VAERS to report and monitor Arizona adverse events following immunization with a pandemic influenza vaccine. VAERS is a United States federal centralized vaccine monitoring system for collecting and analyzing reports of adverse events following vaccinations that are received both from health care providers and from individuals. VAERS is co-managed by CDC and the FDA. VAERS data cannot be used to show a cause-and-effect relationship between a vaccine and the subsequent adverse event, but VAERS helps to watch for unusual or severe adverse events that need to be further investigated. The CDC will share pandemic influenza vaccine VAERS reports with ADHS through the Arizona Immunization Program Office (AIPO) in a timely fashion. AIPO will assist CDC with further investigation of VAERS reports as requested.

Following CDC guidance, all providers should report clinically significant adverse events following vaccination directly to VAERS by completing an online form, or by downloading a Writable PDF Form and subsequently uploading the information. Information on how to report to VAERS can be found at *http://vaers.hhs.gov*. If a provider has difficulty in reporting to VAERS, they can email *info@VAERS.org* or call 1-800-822-7967. In addition, the AIPO VAERS Coordinator can be contacted at (602) 364-3630.

During an influenza pandemic, the AIPO Medical Director will be the ADHS primary point of contact for local and federal entities for vaccine safety concerns and adverse events following immunization. The AIPO VAERS Coordinator will be the secondary ADHS point of contact. These AIPO vaccine safety staff will maintain frequent contact with CDC vaccine safety staff to ensure adequate exchange of information, prompt responses to vaccine safety emergencies, and optimize risk communication activities. Additionally, they will maintain logon access to Epi-X, a secure CDC website, so that in the event of an influenza pandemic they will be able to obtain the most current communications, alerts, and reports regarding vaccine adverse event activity for Arizona.

Vaccine safety updates will be disseminated to provider and partner organizations as necessary, using the current Health Alert Notice communication network, and will be posted on the ADHS website. ADHS physicians and nurses will serve as a resource about adverse events to influenza pandemic vaccine. Information for health care providers about potential adverse events to pandemic influenza vaccine will be available at ADHS' website, *www.azdhs.gov*, the CDC website, *www.cdc.gov*.

Each county should identify a clearly defined location where concerns about vaccine reactions or less serious adverse reactions can be evaluated. This can be either within their established vaccination clinic or in separate off-site locations. Whenever possible, telephone triage should be used in order to minimize unnecessary use of the post-vaccination adverse events evaluation sites.

CDC also monitors the safety of vaccines by analyzing adverse events following receipt of vaccines by using the Vaccine Safety Datalink (VSD). VSD is a collaborative effort between CDC and eight large managed care organizations (MCOs) to analyze medical conditions in relationship to vaccine receipt. The MCOs represent approximately 3% of the U.S. population.

Public health communications

Vaccine information will be an important component of ongoing public health communication during a pandemic. Some key points for public health communications include:

- ADHS and LHDs will work with federal partners to disseminate accurate, useful, and consistent public health messages and will tailor information to local needs.
- ADHS will disseminate information on vaccine use to health care providers that includes the benefits, risks, and contraindications of the vaccine.
- ADHS and LHDs will provide information to healthcare providers, state and local government officials, and the news media on:
    - Rationale for target groups and tier prioritization.
    - Phasing in of broader vaccination coverage after prioritized target groups have been vaccinated
    - When and where pandemic influenza vaccines are available
    - Updated information as to the amounts of vaccine distributed and administered
    - The importance of vaccination given the likelihood of subsequent pandemic waves, particularly if public interest in vaccination has decreased

Coordination with bordering jurisdictions

ADHS and LHDs will coordinate vaccine distribution plans with health authorities in bordering jurisdictions, including neighboring states, Sonora, Mexico, and other unique populations.

Legal preparedness

ADHS and local health departments need to ensure that appropriate legal authorities are in place to facilitate implementation of plans for distributing and administering pandemic influenza vaccines. Some legal preparedness key points for vaccine administration include:

- A.R.S. §36-787 provides authority to ADHS to coordinate a mass immunization campaign during a public health emergency.

- The Arizona Revised Statutes allow for licensed volunteers or health care workers from other jurisdictions to administer influenza vaccines.
- During a declared public health emergency under A.R.S. §36-787, licensing requirements can be suspended to allow others to perform these tasks.
- A.R.S. §36-788 provides for mandatory vaccination during a public health emergency, except for those who refuse on religious grounds and who can be quarantined during the period of risk for exposure. However, these legal allowances have not been exercised and may not be an appropriate action for a pandemic response in Arizona.

Presently in Arizona, physicians (M.D. and D.O.), registered nurses, registered nurse practitioners, naturopathic physicians, and certified pharmacists have authority to administer vaccines in accordance with their respective "scope 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. The scope of practice of the various professions and occupations can be found in A.R.S. Title 32.

Trained and certified Intermediate Emergency Medical Technicians (EMT-I) and EMT Paramedic (EMT-P) can administer immunizations under the authorization and direction of a medical director as long as there is compliance with A.A.C. R9-25-505. 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.

Since October 2009, A.R.S. §32-1974 allows certified pharmacists to administer vaccines without a prescription with certain exemptions. The pharmacists administering the vaccines are overseen by the Arizona Board of Pharmacy. There are approximately 3,000 pharmacists holding immunization certificates. The rules regarding pharmacists administering immunizations can be found at Arizona Administrative Code (A.A.C.) R4-23-411.

Pharmacists can administer the seasonal influenza vaccine without requiring a prescription to patients 3 years old and above. During a public health emergency such as pandemic influenza, certified pharmacists are authorized to give pandemic influenza vaccination to patients of any age. Having certified pharmacists authorized to administer influenza vaccines increases the capacity for influenza vaccination during a pandemic.

Training

ADHS and LHDs will assist health care partners in conducting training exercises to facilitate rapid and effective delivery and use of vaccines. Exercises and drills are essential to ensure that emergency procedures are in place and roles and responsibilities are well understood. Exercises conducted at the state and local levels have included:

- Practice in receiving large quantities of vaccine
- Storing and handling vaccine from the 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

Actions during Acceleration of a Pandemic Wave

In addition to the actions described below, federal, state, and local public health agencies will begin to implement the preparedness planning and actions described in the preceding sections and throughout this document.

Before a pandemic influenza vaccine is able to be manufactured and become available

HHS agencies

- Facilitate pandemic influenza vaccine procurement, distribution, and tracking by working with private partners.
- Revise recommendations on vaccination of prioritized target groups guided by epidemiologic information about the pandemic virus.
- Release stockpiled supplies of pandemic influenza vaccine, if applicable.
- Provide guidance on reporting specifications for tracking the administration of pandemic influenza 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.

ADHS

- If stockpiled vaccine of the pandemic subtype is available, ensure delivery to LHDs and health care providers, as determined by VAPAC guidance regarding prioritized target group.
- Work with the LHDs regarding ensuring that vaccine delivery sites have the capacity to receive pandemic influenza vaccine.
- Keep the health care and public health workforce up-to-date on projected timelines for vaccine manufacturing and the availability of vaccines against pandemic influenza.
- Provide updated information to the public on vaccine prioritization and target groups.
- Continue to assess prioritized target groups and determine allocations of pandemic influenza vaccine based on current epidemiology, vaccine availability, vaccine receipt, and vaccine administration.
- Update recommendations for vaccine prioritization as needed.
- Continue to encourage vaccination with seasonal influenza vaccine (when appropriate) and pneumococcal vaccine so as to have as many people as possible properly vaccinated by the time pandemic influenza vaccine is available.

Local health departments

- Mobilize response partners and prepare to activate plans for receiving, distributing, and administering vaccines.
- Ensure that vaccine delivery sites have the capacity to receive pandemic influenza vaccine.
- Activate plans and systems to receive, distribute, and administer pandemic influenza vaccines to designated groups
- Review modifications, if any, to recommendations on vaccinating prioritized target groups.
- Accelerate training in vaccine administration and vaccine monitoring for public health staff and for health care partners responsible for vaccinating prioritized target groups.
- Be prepared to administer unlicensed vaccines (if needed) under FDA's Investigational New Drug (IND) provisions or Emergency Use Authorization procedures (EUA).
- Work with other governmental agencies and non-governmental organizations to ensure effective public health communications.

After a pandemic influenza vaccine becomes available

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 local health departments and to federal agencies with direct patient care responsibility, as needed.
- Implement protocols for assessing vaccine effectiveness.
- Monitor vaccine coverage rates.

ADHS

- Submit requests to HHS for appropriate number of vaccine doses.
- Work with emergency management to ensure the safe delivery of pandemic influenza vaccines to LHDs and to health care facilities for prioritized target populations.
- 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 account for the need for second doses.

Local health departments

- Activate plans and systems to receive, distribute and administer vaccines to designated target groups.
- Phase in vaccination of the balance of the population after prioritized target groups have been vaccinated, based on age or other criteria that will ensure fair, equitable, and orderly distribution.

Activities during Deceleration of a Pandemic Wave

ADHS

- Participate in recovery of unused pandemic influenza vaccine according to federal guidelines.
- Work with HHS to evaluate vaccine-related response activities when the pandemic is over.
- Distribute information from CDC about adverse events associated with the pandemic influenza vaccine.

Local health departments

- After the pandemic has ended, ADHS and LHDs will evaluate all pandemic response activities, including vaccine tracking and delivery, monitoring of adverse events to vaccine, and communications with health care providers and the community. After-action reports and other written documentation, including an assessment of lessons learned and best practices, will be made available to HHS, CDC, LHDs, and other key stakeholders.

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Supplement 6
Appendix 1

Appendix 1
ARIZONA PANDEMIC INFLUENZA MASS VACCINATION PLAN

Division of Public Health Services
Bureau of Public Health Emergency Preparedness

FEBRUARY 2018

CARA CHRIST, M.D., M.A., DIRECTOR

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General Planning Issues

This plan guides the Arizona Department of Health Services' (ADHS) public health activities involved in statewide mass vaccination campaigns in the event of an influenza pandemic. CDC has given guidance that states should plan to be able to vaccinate 80% of their population with two doses of vaccine (separated by at least 3 weeks) within 16 weeks. In the event of an influenza pandemic, The Centers for Disease Control and Prevention (CDC) will establish a blended public-private strategy for ensuring that pandemic influenza vaccine is made available nationwide. Vaccine will be distributed to local health departments (LHDs) and private providers for providing vaccinations to individuals in prioritized target groups based on the severity of the pandemic and the availability of pandemic influenza vaccine. LHDs include county health departments (CHDs) and tribal health departments (THDs).

This plan is designed to give guidance, to supplement, to support, and not to supplant the county and tribal health departments' mass vaccination plans and mass vaccination activities. This plan relies on LHDs ability to administer vaccine to its population. LHDs will ensure that vaccine priorities are addressed at the local level by assessing local needs and working closely with partners. LHDs may conduct mass vaccination clinics and/or other public health activities to ensure that their vulnerable populations are being reached. These public health activities may be conducted in coordination with private partners, such as community influenza vaccinators. Exercising of LHD pandemic influenza vaccination plans and mass vaccination clinics will be an important part of preparing for an influenza pandemic.

This plan focuses on the procedures to mass vaccinate the pre-pandemic and pandemic prioritized target groups sequentially with limited pandemic influenza vaccine. As vaccine supply increases, pandemic influenza vaccine will be offered to the entire Arizona population based on the prioritization tiers of target groups and availability of vaccine. There also needs to be seasonal influenza vaccine and pneumococcal vaccine administered during the initiation of a pandemic wave. Each LHD needs to have plans to address facilities and resources needed to operate mass vaccination clinics. LHDs who need assistance in responding to influenza pandemic mass vaccination may request state support and public health support through ADHS.

For the purposes of this plan, we are assuming the influenza pandemic is imminent. During the pre-pandemic period, state, tribal, and county public health personnel will be busy with enhanced surveillance activities of suspect cases of the pandemic influenza strain as well as surveillance of the season influenza strains. It is expected that if pandemic influenza strains are detected anywhere in the U.S., the Secretary of Health and Human Services (HHS) would release existing stockpiled supplies of pandemic influenza vaccine for mass vaccinations. The President would declare a State of Emergency. The Arizona Governor, or designee, would request pandemic influenza vaccine from the Center for Disease Control and Prevention (CDC). ADHS would be responsible for ordering allocated vaccine for Local Health Departments who would be responsible for determining where pandemic influenza vaccine would be distributed as well as carrying out mass vaccination efforts in their jurisdictions. Memorandums of Agreement (MOAs) to address transportation, security, storage, and other support and logistical needs would need to be updated and verified.

It is assumed that the federal government will be responsible for the vaccination of all federal employees working in Arizona. This includes the federal correction facilities staff and prisoners, Veterans Administration employees and clients, Indian Health Service staff, Public Health Service employees, Transportation Security Administration, federal air traffic controllers, federal Homeland Security employees, federal border patrol agents, etc.

This plan addresses what is currently known about pandemic influenza vaccination. However, federal guidance and statewide planning continues to evolve. Thus tactics and timelines presented in this plan will be subject to change based on additional information about pandemic influenza virus and pandemic influenza vaccine supply.

Other plans that relate to this Arizona Pandemic Influenza Mass Vaccination Plan include:

- County Health Departments' Mass Vaccination Plans
- Tribal Health Departments' Mass Vaccination Plans
- Arizona Mass Vaccination Clinic Plan (See Appendix 2 for the current plan)
- HHS, November 2007 "Update: Status of pandemic influenza vaccine manufacturing capacity, pre-pandemic stockpile, and planning for vaccine distribution." *www.dshs.texas.gov/commprep/planning/panflu/CDCVaccinePlanning.doc*
- HHS 2008 "Guidance on Allocating and Targeting Pandemic Influenza Vaccine" *https://www.cdc.gov/flu/pandemic-resources/pdf/allocatingtargetingpandemicvaccine.pdf*
- HHS Pandemic Influenza Plan 2017 Update https://www.cdc.gov/flu/pandemic-resources/pdf/pan-flu-report-2017v2.pdf

Vaccine Manufacturing

CDC is stockpiling vaccines (for influenza A(H5N1) and influenza A(H7N9) and adjuvants that could be used for early vaccination efforts among those who are increased risk of exposure if these viruses were to develop into pandemic strains. Current influenza manufacturers would be involved in producing pandemic influenza vaccines. It is expected that it would take at least 4-6 months to be able to start to have additional vaccine supplies available for distribution. Therefore, in light of initial limited vaccine supplies, pandemic influenza vaccines will need to be prioritized for target groups that focus on critical infrastructure personnel and those at highest risk of complications from pandemic influenza.

Calculating Vaccine Requirements and Distribution

The HHS guidance indicates the vaccine will be allocated to each state based on population. The 2016 U.S. population was over 323 million. Arizona's 2016 population of approximately 6.9 million represented about 2% of the national population. The rapidity of vaccination will depend on the amount of vaccine that is allocated to Arizona every week, the rate of distribution of vaccine to vaccination sites, and the numbers of vaccine sites and vaccinators that are able to administer the vaccines. LHDs need to continue to develop plans that would facilitate rapid delivery of pandemic vaccines in their jurisdiction.

Table 1 applies HHS' guidance as to vaccination priority tiers and target groups based on Arizona's 2017 population. While target groups and prioritization tiers may differ somewhat for each pandemic, Table 1 will assist in estimating target groups and reinforcing key planning elements. Data in Table 1 will need to be modified based on updated population and census statistics as well as target group prioritization based on federal guidance, Vaccine and Antiviral Advisory Committee (VAPAC) guidance, and local needs. Target groups in Table 1 will also require further discussion and updating of Critical Infrastructure Personnel [CIP] (i.e., key government leaders, telecommunications, utility service workers, etc.) for better estimation of the numbers of these people who need early vaccination and how they are best reached through allocation decisions and vaccination clinics.

Critical Workforce & General Population Groups

		U.S. Estimated Population as of 07/01/17	325,719,178	Arizona Estimated Population as of 07/01/17			7,165,822
		Arizona % of 2017 U.S. population	2.2%				
Category	**Pop. Group No.**	**Population Group**	**Estimated Number**	**AZ Estimated Number (2.2%) Based on U.S. 2017 Population Data**	**Vaccination Priority Order**	**Do you have the resources to vaccinate population group?**	**Do you have a Dispensing Setting?**
		Critical Workforce Groups					
Homeland and National Security	A1	Deployed & mission essential personnel	850,000	**18,700**			
	A2	Essential military support & sustainment personnel	650,000	**14,300**			
	A3	Intelligence services	150,000	**3,300**			
	A4	National Guard personnel	500,000	**11,000**			
	A5	Other domestic national security personnel	150,000	**3,300**			
	A6	Other active duty military & essential support	1,500,000	**33,000**			
Health Care and Community Support Services	B1	Public health personnel	300,000	**6,600**			
	B2	Inpatient health care providers	3,200,000	**70,400**			
	B3	Outpatient & home health providers	2,600,000	**57,200**			
	B4	Health care providers in long-term care facilities	1,600,000	**35,200**			
	B5	Pharmacists & pharmacy technicians	725,000	**15,950**			
	B6	Community support & emergency management	600,000	**13,200**			
	B7	Mortuary services personnel	50,000	**1,100**			
	B8	Other health care personnel	350,000	**7,700**			
Other critical infrastructure	C1	Emergency services & public safety sector personnel (EMS, law enforcement, & fire services)	2,000,000	**44,000**			
	C2	Manufacturers of pandemic vaccine & antivirals	50,000	**1,100**			
	C3	Communications/information technology (IT), electricity, nuclear, oil & gas, water sector personnel, & financial clearing & settlement personnel	2,200,000	**48,400**			
	C4	Critical government personnel - operational & regulatory functions	425,000	**9,350**			
	C5	Banking & finance, chemical, food & agriculture, pharmaceutical, postal & shipping, & transportation sector personnel (critical infrastructure with greater redundancy)	3,400,000	**74,800**			
	C6	Other critical government personnel	400,000	**8,800**			
		Critical Workforce Groups	***21,700,000***	***477,400***			
		General Population					
General population	D1	Pregnant women	4,000,000	**88,000**			
	D2	Infants & toddlers 6-35 months old	11,000,000	**242,000**			
	D3	Household contacts of infants <6 months old	4,500,000	**99,000**			
	D4	Children 3-18 years old with high risk condition	7,000,000	**154,000**			
	D5	Children 3-18 years old without high risk condition	62,000,000	**1,364,000**			
	D6	Adults 19-64 years old with high risk condition	38,000,000	**836,000**			
	D7	Adults >= 65 years old	41,000,000	**902,000**			
	D8	Healthy adults 19-64 years old	132,000,000	**2,904,000**			
		Critical Workforce Groups	***299,500,000***	***6,589,000***			
Arizona Unique population Group	E1	Native American or Alaskan Native (4.2 %)	295,925	**0**			
	E2	Winter residents	400,000	**0**			
	E3	Migrant and seasonal farmworkers	120,000	**0**			
	E4	Other:	0	**0**			
	E5	Other:	0	**0**			
	E6	Other:	0	**0**			
	E7	Other:	0	**0**			
	E8	Other:	0	**0**			
Note:		Population groups will be prioritized by tiers based on CDC guidance, depending if the influenza pandemic is of high severity, moderate severity, or low severity.					

US Target Groups and Tier prioritization are described in the 2018 document "Guidance on Allocating and Targeting Pandemic Influenza Vaccine."
https://www.cdc.gov/flu/pandemic-resources/pdf/2018-Influenza-Guidance.pdf

Notes for Table 1

- The categories, target groups, and tiers in Table 1 are based on population estimates from "Guidance on Allocating and Targeting Pandemic Influenza Vaccine," published in 2008 by the US Department of Health and Human Services and the US Department of Homeland Security (unless otherwise specified). The US target group population estimates in the 2008 document came from 2000 US census data extrapolated to 2006. United States population is taken from 2017 US Census data. Arizona population is taken from Arizona Department of Health Services 2017 data.
- US population increased approximately 8% from 2006 (299,398,484) to 2017 (325,719,178). Arizona population in 2017 (7,165,822) was approximately 2.2% of the 2017 US population. Starting with numbers in the document "Guidance on Allocating and Targeting Pandemic Influenza Vaccine," estimates for the Arizona target groups take into account the 8% increase in US population from 2006 to 2017 and Arizona population being about 2.2% of US population. Final numbers were rounded up to approximate the 2017 Arizona population. Since calculations for household contacts of children under 6 months of age from the US data was even less than the number of pregnant women, the number of Arizona household contacts were estimated at 50% higher than the number of pregnant women.
- The Arizona Health Status and Vital Statistics 2015 report describes the number of pregnancies in Arizona from 2005-2015. The maximum number of pregnancies was 113,756 in 2007 with a minimum of 98,027 pregnancies in 2015. Therefore, the estimate of pregnancies in Arizona for this table is 100,000.
- Pharmacists will be an important part of pandemic influenza vaccination, so they will remain at Tier 2 even during a less severe pandemic.
- The Arizona Department of Health Services added target groups for Native American, Winter Residents, and Migrant and Seasonal Farmworkers.
- The Arizona Native American population is from Arizona Department of Health Services 2016 data. In 2017, Arizona's Native Americans made up 4.2% of Arizona's population.
- Estimating the population of winter residents is challenging. Winter residents during the 1999-2000 winter season were estimated to be approximately 273,000 according to the Arizona State University study "Counting snowbirds: The importance of and the problems with estimating seasonal populations." Population Research and Policy Review. 21: 227-240, 2002. The number of winter visitors now would be expected to be higher since Arizona has increased 33% in population from 2000 to 2016. *http://snowbirdsdestinations.com/arizona* describes approximately 400,000 snowbirds (winter residents) in Arizona (accessed 2/12/2018). Winter residents would be prioritized for pandemic vaccine by their age and health status. However, since many are likely to be older or have underlying health conditions, their tier reflects that of adults with underlying health conditions or those > 65 years old.
- Migrant and seasonal farmworker data by county from 2008 can be found in "Migrant and Season Farmworkers by County." Arizona Alliance for Community Health Centers. 2013 Arizona

Migrant Health Profile, November 2013, p. 4. Migrant farmworkers and their families would be prioritized for pandemic vaccine as the general population by their age and health status.

- Persons not targeted for vaccination in an occupational group would be vaccinated as part of the General Population based on their age and health status.

Abbreviations for Table 1: IT: Information technology; NT: Not targeted; FA: Focused allocation (based on assessed need at time of pandemic); GP: General population.

Yearly updates to Arizona population statistics will be found in Vital Statistics Annual Reports on the website "Advanced Vital Statistics by County and Arizona Health Status" at *http://pub.azdhs.gov/health-stats/report/index.php*. Yearly updates to U.S. population can be found at *https://www.census.gov/quickfacts*.

It is not known whether a specific pandemic vaccine will need one or two doses to achieve optimal protection. Therefore, vaccination planning should consider that two doses may be needed.

Table 2 shows the estimated total doses of pandemic influenza vaccine that would be needed to immunize all people in Arizona with two doses of vaccine.

Table 2: Severe Pandemic Influenza Tiers/Groups and Doses Needed Per Person

Tiers/Groups*	Doses needed (1 per person)	Doses needed (2 per person)
1	572,000	1,114,000
2	352,000	704,000
3	1,496,000	2,992,000
4	1,738,000	3,476,000
5	2.904,000	5,808,000
Arizona 2017 population§	6,965,897§	13,931,794
Migrant Workers**	120,000	240,000
Seasonal Visitors**	400,000	800,000
Total doses needed	7,355,518	14,711,036
Native Americans***	295,925§	591,850

Footnotes for Table 2

* Pandemic Influenza Tiers/Groups as defined by CDC's 2018 Interim Updated Guidance on Allocation and Distribution of Pandemic Influenza Vaccine during an Influenza Pandemic, Figure 1, page 10, adjusted to the Arizona population being 2.2% of the U.S. population.
https://www.cdc.gov/flu/pandemic-resources/pdf/2018-Influenza-Guidance.pdf

§ 2017 ADHS Population Health and Vital Statistics, Population Denominators.
http://pub.azdhs.gov/health-stats/menu/info/pop/index.php

** Migrant farmworkers, their families, and seasonal visitors would be prioritized for pandemic vaccine as the general population by their age and health status.

*** The Native Americans in Arizona in 2017 were 295,925 (4.2% of the population) and are part of the total Arizona population count.
http://pub.azdhs.gov/health-stats/menu/info/pop/index.php

Native Americans are at higher risk for developing influenza-related complications. VAPAC will take this into account in their recommendations for pandemic influenza vaccine allocations. This table shows how Native American populations differ by Arizona county.

Table 3: Arizona 2017 Population and Native American (NA) Population by County

County	Population	% of Native American	Native American Population
Apache	72,713	74.36%	54,071
Cochise	128,383	1.00%	1,287
Coconino	144,057	26.65%	38,389
Gila	54,947	16.39%	9,007
Graham	38,275	13.09%	5,012
Greenlee	10,961	2.63%	288
La Paz	21,598	12.52%	2,704
Maricopa	4,221,684	1.81%	76,394
Mohave	209,792	2.27%	4,759
Navajo	111,266	45.07%	50,144
Pima	1,026,099	2.63%	26,954
Pinal	427,603	4.84%	20,679
Santa Cruz	51,507	0.34%	177
Yavapai	225,364	1.64%	3,694
Yuma	221,648	1.07%	2,366
Total	**6,965,897**	**4.25%**	**295,925**

*Arizona Public Health Statistics 2017: *http://pub.azdhs.gov/health-stats/menu/info/pop/index.php*

As Arizona recieves pandemic influenza vaccines allotments from CDC, distribution of pandemic influenza vaccine will be allotted to local health departments based on vaccine supply, population, and prioritiezed target groups. Table 4 demonstrates the amounts of vaccine that could be distributed to each county on a proportional basis, considering the projected number of vaccine doses received each week.

Table 4. Vaccine availability by county: Scenarios based on vaccine doses received each week

			Projected number of doses received each week in Arizona						
County	**Population in 2017**	**% of AZ Population**	**25,000**	**50,000**	**75,000**	**100,000**	**200,000**	**300,000**	**400,000**
Apache	72,713	1.02%	255	510	765	1,021	2,041	3,062	4,082
Cochise	128,383	1.78%	445	889	1,334	1,778	3,556	5,334	7,112
Coconino	144,057	2.01%	502	1,003	1,505	2,006	4,013	6,019	8,026
Gila	54,947	0.76%	191	381	572	763	1,525	2,288	3,050
Graham	38,275	0.53%	133	267	400	534	1,068	1,602	2,136
Greenlee	10,961	0.13%	34	67	101	135	270	404	539
La Paz	21,598	0.29%	73	147	220	294	587	881	1,174
Maricopa	4,221,684	61.39%	15,347	30,693	46,040	61,386	122,773	184,159	245,545
Mohave	209,792	2.95%	738	1,477	2,215	2,953	5,906	8,859	11,813
Navajo	111,266	1.55%	388	776	1,165	1,553	3,106	4,659	6,212
Pima	1,026,099	14.58%	3,644	7,289	10,933	14,577	29,154	43,731	58,308
Pinal	427,603	6.13%	1,533	3,066	4,599	6,132	12,264	18,396	24,528
Santa Cruz	51,507	0.66%	165	329	494	659	1,317	1,976	2,635
Yavapai	225,364	3.25%	813	1,626	2,439	3,252	6,504	9,756	13,008
Yuma	221,648	2.96%	739	1,479	2,218	2,958	5,916	8,874	11,832
Total	**6,965,897**	**100%**							

If it is determined that each person needs two doses of pandemic influenza vaccine, local helath departments will need to plan for there to be an overlapping of persons who are receiving their first dose of vaccine with those who are coming for their second dose of vaccine. This table demonstrates the number of doses that would need to be administered for each county to vaccinate 80% of its population with two doses with 16 weeks if immunization efforts are conducted 7 days a week.

Table 5. Calculations of Daily and Weekly Doses of Pandemic Influenza Vaccine Needed to Vaccinate 80% of the Population with 2 Doses at Least 3 Weeks Apart within 16 weeks (112 days)

Assumption: Immunizing 7 days a week for 16 weeks (112 days)									
				Doses per Day			Doses per week		
County	Population in 2017	80% of population	Two doses for 80%	First 21 days	Next 70 days	Last 21 days	First 3 weeks	Next 10 weeks	Last 3 weeks
Apache	72,713	58,170	116,341	639	1,278	639	4,473	8,946	4,473
Cochise	128,383	102,706	205,413	1,129	2,258	1,129	7,903	15,806	7,903
Coconino	144,057	115,246	230,491	1,266	2,532	1,266	8,862	17,724	8,862
Gila	54,947	43,958	87,915	483	966	483	3,381	6,762	3,381
Graham	38,275	30,620	61,240	336	672	336	2,352	4,704	2,352
Greenlee	10,961	8,769	17,538	96	192	96	672	1,344	672
La Paz	21,598	17,278	34,557	190	380	190	1,330	2,660	1,330
Maricopa	4,221,684	3,377,347	6,754,694	37,114	74,228	37,114	259,798	519,596	259,798
Mohave	209,792	167,834	335,667	1,844	3,688	1,844	12,908	25,816	12,908
Navajo	111,266	89,013	178,026	978	1,956	978	6,846	13,692	6,846
Pima	1,026,099	820,879	1,641,758	9,021	18,042	9,021	63,147	126,294	63,147
Pinal	427,603	342,082	684,165	3,759	7,518	3,759	26,313	52,626	26,313
Santa Cruz	51,507	41,206	82,411	453	906	453	3,171	6,432	3,171
Yavapai	225,364	180,291	360,582	1,981	3,962	1,981	13,867	27,734	13,867
Yuma	221,648	177,318	354,637	1,949	3,898	1,949	13,643	27,286	13,643
Total	**6,965,897**	**5,572,718**	**11,145,435**	**61,238**	**122,476**	**61,238**	**428,666**	**857,422**	**428,666**

*Arizona Public Health Statistics 2017: *http://pub.azdhs.gov/health-stats/menu/info/pop/index.php*

If it is determined that each person needs two doses of pandemic influenza vaccine, local helath departments will need to plan for there to be an overlapping of persons who are receiving their first dose of vaccine with those who are coming for their second dose of vaccine. This table demonstrates the number of doses that would need to be administered for each county to vaccinate 80% of its population with two doses with 16 weeks if immunization efforts are conducted 5 days a week.

Table 6. Calculations of Daily and Weekly Doses of Pandemic Influenza Vaccine Needed to Vaccinate 80% of the Population with 2 Doses at Least 3 Weeks Apart within 16 weeks (80 days)

Assumption: Immunizing 5 days a week for 16 weeks (112 days)									
				Doses per Day			Doses per week		
County	Population in 2017	80% of population	Two doses for 80%	First 15 days	Next 50 days	Last 15 days	First 3 weeks	Next 10 weeks	Last 3 weeks
Apache	72,713	58,170	116,341	895	1,790	895	4,475	8,950	4,475
Cochise	128,383	102,706	205,413	1,580	3,160	1,580	7,900	15,800	7,900
Coconino	144,057	115,246	230,491	1,773	3,546	1,773	8,865	17,730	8,865
Gila	54,947	43,958	87,915	676	1,352	676	3,380	6,760	3,380
Graham	38,275	30,620	61,240	471	942	471	2,355	4,710	2,355
Greenlee	10,961	8,769	17,538	135	270	135	675	1,350	675
La Paz	21,598	17,278	34,557	266	532	266	1,330	2,660	1,330
Maricopa	4,221,684	3,377,347	6,754,694	51,959	103,918	51,959	259,795	519,590	259,795
Mohave	209,792	167,834	335,667	2,582	5,164	2,582	12,910	25,820	12,910
Navajo	111,266	89,013	178,026	1,369	2,738	1,369	6,845	13,690	6,845
Pima	1,026,099	820,879	1,641,758	12,629	25,258	12,629	63,145	126,290	63,145
Pinal	427,603	342,082	684,165	5,263	10,526	5,263	26,315	52,630	26,315
Santa Cruz	51,507	41,206	82,411	634	1,268	634	3,170	6,340	3,170
Yavapai	225,364	180,291	360,582	2,774	5,548	2,774	13,870	27,740	13,870
Yuma	221,648	177,318	354,637	2,727	5,455	2,727	13,635	27,270	13,635
Total	**6,965,897**	**5,572,718**	**11,145,435**	**85,733**	**171,467**	**85,733**	**428,665**	**857,330**	**428,665**

*Arizona Public Health Statistics 2017: *http://pub.azdhs.gov/health-stats/menu/info/pop/index.php*

Table 7: Vaccination Administration Capacity for AZ Non-pharmacy Providers

Table 7: Vaccination Administration Capacity for AZ Non-pharmacy Providers is a tool to estimate the vaccine admistration capacity for non-pharmacy providers. The weekly capacity per provider site (column I) was calculated by multiplying the number of vaccinators per site (column E) by the hourly capacity per vaccinator (column F) by number of hours per day (column G) by the number of days per week (column H). The weekly capacity per provider type (column J) was calculated by multiplying the estimated number of non-pharmacy providers (column D) by the weekly capacity per provider site (column I). The weekly capacity per non-pharmacy provider type (column J) was calculated by multiplying the estimated number of participating pharmacy providers (column D) by the weekly capacity per provider site (column I).

Table 7: Vaccination Administration Capacity for AZ Non-pharmacy Providers

A	B	C	D	E	F			G	H	I			J		
Non-pharmacy providers types	Estimated #	Estimated % participation	Estimated # participating (Column D = B * C)	# of vaccinators per site	Hourly capacity per vaccinator			Hrs/day	Days/wk	Weekly capacity per provider site (Column I = E*F*G*H)			Weekly capacity per provider type Column J = D*I)		
					Min	Max	Typical			Min	Max	Typical	Min	Max	Typical
Hospitals	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0
Dr. Offices and Clinics	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0
Health Department	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0
Workplace	0	0%	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**		**0**							**0**	**0**	**0**	**0**	**0**	**0**

Table 8: Vaccination Administration Capacity for AZ Pharmacy Providers

Table 8: Vaccination Administration Capacity for AZ Pharmacy Providers is a tool to estimate the vaccine administration capacity for pharmacy providers. The estimated number participating (column D) was calculated by multiplying the estimated number of pharmacies (column B) with the estimated percent participation (column C). The weekly capacity per provider site (column H) was calculated by multiplying the hourly capacity per pharmacy (column E) by the vaccine availability hours per day (column F) by the number of days per week (column G). The weekly capacity per pharmacy provider type (column I) was calculated by multiplying the estimated number of participating pharmacy providers (column D) by the weekly capacity per provider site (column H).

Table 8: Vaccination Administration Capacity for AZ Pharmacy Providers

A	B	C	D	E			F	G	H			I		
Pharmacy Providers type	Estimated #	Estimated % participation	Estimated # participating (Column D = B * C)	Capacity per hour			Hrs/day	Days/wk	Weekly capacity per provider site (Column H = E * F * G)			Weekly capacity per provider type Column I = D * H)		
				Min	Max	Typical			Min	Max	Typical	Min	Max	Typical
Chain	0	0%	0	0	0	0	0	0	0	0	0	0	0	0
Hospital	0	0%	0	0	0	0	0	0	0	0	0	0	0	0
Independent	0	0%	0	0	0	0	0	0	0	0	0	0	0	0
Government	0	0%	0	0	0	0	0	0	0	0	0	0	0	0
Limited Service	0	0%	0	0	0	0	0	0	0	0	0	0	0	0
Total	**0**		**0**						**0**	**0**	**0**	**0**	**0**	**0**

Vaccination of Prioritized Target Groups

Eventually, there will be enough pandemic influenza vaccine to vaccinate all Arizona residents desiring a pandemic influenza vaccine. However at first, vaccine will likely be in limited supply and will be given to prioritized target groups (see Table 1 of this "Arizona Pandemic Influenza Mass Vaccination Plan"). Vaccine allocation decisions will be made according to pandemic influenza epidemiology, federal guidance, VAPAC recommendations, vaccine availability, critical infrastructure personnel, patients at highest risk of complications, and local needs.

CDC has stated that the decision on when and how to expand the priority groups is a state and local decision. ADHS and LHDs will make coordinated vaccine prioritization decisions and coordinate vaccine ordering based on local needs.

Arizona has used the HHS 2008 "Guidance on Allocating and Targeting Pandemic Influenza Vaccine" for estimating target groups and priority tiers. This guidance considers prioritization categories such as homeland and national security, critical infrastructure personnel, health care and community support services, and the general population (see Table 1 in HHS' "Guidance on Allocating and Targeting Pandemic Influenza Vaccine").

Recruiting and Expanding the Number of Public and Private Providers for Administering Pandemic Influenza Vaccine

ADHS will reach out to recruit providers through vaccine partners, professional associations Health Alert Notices (HANs), emails, news releases, etc. to recruit providers (public and private) such as physicians, nurses, pharmacies, county health departments (CHDs), IHS, tribal government and tribal medical facilities, etc. to administer pandemic influenza vaccine. Partners and professional associations include:

- The Arizona Partnership for Immunization [TAPI]
- Arizona chapter of the American Academy of Pediatrics [AzAAP]
- Arizona Academy of Family Practitioners [AzAFP]
- Arizona Osteopathic Medical Association [AOMA]
- Arizona Medical Association [ArMA]
- Arizona section of the American College of Obstetricians and Gynecology (AzACOG)
- Arizona Naturopathic Medical Association [AzNMA]
- Arizona Nursing Association [AzNA]
- Arizona Board of Pharmacy [ABP)
- Arizona Pharmacy Association [AzPA]
- Arizona Alliance for Community Health Centers [AACHC]
- Arizona Hospital and Healthcare Association [AzHHA]

If health care providers do not already report vaccinations to the state electronic immunization registry, ASIIS (Arizona State Immunization Information System), they will need to register as emergency vaccine providers through an online process. Registration will include completing ASIIS enrollment forms and Pandemic Provider Agreement. These data will auto-populate in ASIIS to allow providers to order and track vaccine doses.

Use of Investigational New Drug or Emergency Use Authorization Protocols

Federal officials are expected to authorize release of available vaccine from the influenza pandemic vaccine stockpile and implementation of all or portions of the CDC Influenza Pandemic Response Plan if a pandemic influenza wave is deemed imminent by HHS. The release of vaccine may be prior to licensure by the FDA. The use of the vaccine will need to follow an Investigational New Drug (IND) protocol or an Emergency Use Authorization (EUA) protocol. ADHS and LHDs need to be prepared to distribute unlicensed vaccines (if needed) under FDA's Investigational New Drug (IND) provisions.

IND provisions require strict inventory control and record-keeping, completion of a signed consent form from each vaccine recipient, and mandatory reporting of specified types of adverse events.

IND provisions also require approval from Institutional Review Boards (IRBs) in hospitals, health departments, and other vaccine-distribution venues. The FDA regulations permit the use of a national or "central" IRB. A treatment IND is one mechanism that FDA has available for use and is especially suited for large scale use of investigational products.

As an alternative to IND, use of an unlicensed pandemic influenza vaccine may be authorized under Emergency Use Authorization (EUA) procedures as described in the FDA guidance "Emergency Use Authorization of Medical Products and Related Authorities." An EUA would permit the FDA Commissioner to allow medical countermeasures to be used in an emergency to diagnose, treat, or prevent serious or life-threatening diseases where there are no adequate, approved, and available alternatives.

Legal protection for providers giving pandemic influenza vaccine

Under authority from the Public Readiness and Emergency Preparedness (PREP) Act, the HHS Secretary is expected to issue a declaration that gives providers immunity from tort liability (except for willful misconduct) for claims of loss caused, arising out of, relating to, or resulting from administration or use of countermeasures to diseases, threats and conditions determined by the Secretary to constitute a present, or credible risk of a future public health emergency to entities and individuals involved in the development, manufacture, testing, distribution, administration, and use of such countermeasures such as the pandemic influenza vaccine.

Recipient's Ship-to Sites for Pre-Pandemic and Pandemic Vaccine

The initial number of ship-to-sites for pandemic influenza vaccine is estimated at 25. As the quantity of vaccine distributed to the state increases, and as Tier 1 groups are receiving vaccine, there will be a need to ship vaccine to more sites to reach Tiers 2-5. The number of ship-to-sites could increase to 1,000.

Requesting Pandemic Influenza Vaccine

Arizona's Governor, or designee, will request pandemic influenza vaccine from the CDC. The Governor's request will provide justification for the need for vaccine for Arizona and the number of doses requested. The decision to request pandemic influenza vaccine may be based on input from the Department's Director, the Department's State Epidemiologist, the Department's Bureau of Epidemiology and Disease Control Services, and the Department's Bureau of Emergency Preparedness and Response. The Governor will decide when to declare a State of Emergency. ADHS will be responsible for organizing the vaccine allotment process and vaccine ordering for mass vaccination efforts according to the guidance of the Vaccine and Antiviral Prioritization Advisory Committee (VAPAC).

Upon CDC's release of influenza pandemic influenza vaccine, the vaccine will be shipped from the vaccine manufacturer(s) by private courier to predetermined clinic sites in Arizona according to

the guidance of ADHS. The ADHS Immunization Program Office Chief, who is the State's Vaccine Controller and point of contact for vaccine, will provide CDC's vaccine distributor and/ or the vaccine manufacturer(s) with vaccine delivery sites, based on input from LHDs according to guidance from VAPAC. CHD immunization managers and the primary county vaccine storage locations (as of 1-19-2018) are listed in Attachment 1 of this "Arizona Pandemic Influenza Mass Vaccination Plan." Tribal, Urban, and Indian Health Service directors (as of February 2018) are listed in Attachment 2. Attachment 3 diagrams the vaccine distribution process.

The State Vaccine Controller will provide guidance to providers regarding proper vaccine storage and handling according to CDC's Storage and Handling Toolkit. The Arizona Bureau of Public Health Emergency Preparedness will oversee LHD activities to ensure that vaccine receiving sites are prepared for the storage, handling, and security requirements, as specified by CDC guidelines.

The CHDs and THDs have existing relationships to ensure the populations of both are served. During an influenza pandemic, some tribal governments may decide to have pandemic influenza vaccine be delivered directly to tribal 638 facilities as determined by their THD. Other tribal governments may choose to work with their respective CHD for vaccine distribution to their tribal population. The state will provide the LHDs with vaccine based on vaccine availability, vaccine allotment decisions, and population estimates. The CHDs and THDs should include in their pandemic influenza preparedness plans how to work with the respective governments in order to vaccinate the prioritized target groups within their jurisdictions.

Early in a pandemic influenza way, when there is limited vaccine supply, there will be a limited number of ship-to-sites selected to vaccinate Tier 1 individuals. As more vaccine becomes available, LHDs will increase the number of sites needed to vaccinate people in their jurisdiction. Ship-to site locations will be maintained by ADHS and will include CHDs, tribal health care facilities, hospitals, Indian Health Services (IHS) hospitals and clinics, community health centers, mass vaccinators, occupational health clinics, private health care providers, and pharmacies. Ship-to-sites will need to demonstrate to ADHS and LHDs that they have the capacity to properly receive, store, and handle pandemic influenza vaccine according to the guidance in CDC's Vaccine Storage and Handling Toolkit.

The status of pandemic influenza vaccine manufacturing capacity, pre-pandemic stockpile, and planning for vaccine distribution was provided to the states from HHS on November 26, 2007. This document provided the states with information on vaccine distribution from the manufacturer. If there is a single manufacturer of pandemic vaccine, vaccine will be shipped to designated ship-to sites via commercial transportation. When more than one manufacturer is producing pandemic vaccine, it is expected that vaccine from the different manufacturers will be consolidated using a centralized distribution system with distribution to public health designated ship-to sites or directly to the ordering providers.

Vaccine Ordering and Allocation

ADHS will be responsible for ordering pandemic influenza vaccine on behalf of public health departments and private providers statewide based on guidance from the CDC, Arizona's VAPAC, and input from local health officers.

Tribal governments with 638 facilities that have the ability to store and administer vaccines can choose to be responsible for organizing the ordering and distribution of their allotment of pandemic influenza vaccine to their jurisdiction. County health officers will direct prioritized distribution for their jurisdiction, including Indian Health Services facilities and tribes without participating 638 facilities.

The ADHS ordering process will take place in three steps described below - pre-registration, enrollment, and ordering/reordering.

During a pandemic current immunizers and ASIIS users will be utilized first. At the same time new immunizers and ASIIS users will be identified and enrolled. The paperwork for this process will be expedited. New ASIIS users will be notified by the AIPO that they are enrolled and able to order pandemic vaccine(s).

AIPO will provide weekly updates to LOGISTICS related to the number of enrolled providers that are able to order/have ordered vaccines.

PINs will be assigned to providers who do not have an existing VFC PIN to allow the provider to order vaccine, enter immunizations into the ASIIS and to be identified as a vaccine provider. Providers with existing PINs will retain these same numbers for accessing ASIIS for pandemic influenza vaccine ordering.

Providers will be tracked by specialization and location, along with any other needed variables.

ADHS will have an unlimited capacity to register providers depending on the staffing resources available to process the applications.

Enrollment

Upon AIPO completion of data cleaning and VFC/ASIIS status determination, providers who are not yet registered through VFC or ASIIS will need to enroll in ASIIS. This will allow the providers to be assigned a PIN number that they will use to order vaccine. Providers who are enrolled in the VFC program and/or in ASIIS at the time of registration will already have a PIN number, which they will use to order pandemic influenza vaccine. As needed, provider staff will be trained on the use of ASIIS with a hotline available for questions. The training module supplied to pandemic influenza vaccine providers will concentrate primarily on the mass immunizations module in ASIIS, which is more streamlined than the regular process of ASIIS and is designed to collect minimal data fields quickly.

AIPO will email the Pandemic Influenza Vaccine Distribution Program enrollment packet to registered providers. The enrollment packet will include the provider's PIN number, a provider agreement, vaccine storage and handling requirements, vaccine safety information, vaccine ordering instructions, and instructions regarding the Arizona State Immunization Information System (ASIIS) and how to report vaccine doses that have been administered.

The Arizona provider agreement will be based on a CDC template and will contain the minimum requirements for participation in the Pandemic Influenza Vaccine Distribution Program. ADHS must review, sign and submit an Assurance of Conformance form to the CDC assuring that the Arizona provider agreement meets CDC requirements. The Arizona provider agreement will require providers to agree to:

- Administer the pandemic influenza vaccine according to the recommendations of the Advisory Committee on Immunization Practices.
- Store and handle the vaccine in accordance with the package insert and in compliance with cold chain requirements. *https://www.cdc.gov/vaccines/hcp/admin/storage/toolkit/index.html*
- Provide a current pandemic influenza Vaccine Information Statement (VIS) to each individual before vaccination and answer questions about the benefits and risks of vaccination.
- Record in ASIIS the date and site of administration, the vaccine type and lot number, and the name of the immunization provider.

- Report moderate and severe events following vaccination to the Vaccine Adverse Event Reporting System (VAERS). *https://vaers.hhs.gov*

By signing the Arizona provider agreement, the providers acknowledge that they:

- Cannot charge patients, health insurance plans, or other third-party payers for the vaccine, the syringes, or the needles.
- May charge a fee for the administration of the vaccine to the patient, their health insurance plan, or other third-party payer, which cannot exceed the regional Medicare vaccine administration fee.
- May either administer pandemic influenza vaccine free of charge to individuals who cannot afford the administration fee or refer these individuals to a public health clinic.
- Understand that providing an immunization record card to the vaccine recipient is strongly encouraged. The record card provides proof of vaccination, serves as an information source if a VAERS report is necessary, and serves as a reminder of the need for a second dose of vaccine.

Public health providers (CHDs, tribes, IHS, and their partners) will have additional stipulations including the requirement that they cannot turn people away. A provider agreement for public health providers will be developed for the specific pandemic event.

Once the signed Arizona provider agreement is returned, providers will be assessed for eligibility to participate in the Pandemic Influenza Distribution Program. To be eligible, providers must have a valid Arizona medical license (unless they are practicing at an IHS, military, or other federal government site), provide complete address information, have a physical practice location that has the capacity to properly store and handle vaccine. ADHS will conduct provider authentication using online license information. Medical licenses of providers already reporting to ASIIS, including VFC providers, will have already been verified upon enrollment with the VFC program. Once authenticated, the provider will receive instructions for ordering and tracking vaccine using ASIIS.

Ordering/Reordering

After a provider has returned the provider agreement to ADHS via email, the provider is eligible to order vaccine using ASIIS. The vaccine distributor will keep ADHS informed of current vaccine availability.

The vaccine distributor (or vaccine manufacturer) will ship vaccine directly to the provider. Once the provider receives the vaccine, additional vaccine can be reordered as needed. The vaccine re-ordering process is the same as the initial ordering process, but will depend on ASIIS records being up-to-date by the provider reflecting the number of pandemic influenza vaccine doses still on-hand and the number of doses administered. Providers must submit their current vaccine inventory at the time of re-order.

Involvement of Local Health Departments in Allocation and Ordering

Target groups and prioritization tiers will vary depending on the severity of the pandemic. At the time of an influenza pandemic, CDC will give additional guidance as to which groups are high-risk. Up-to-date population denominators by county and ethnicity will be able to be obtained through the ADHS Population Health and Vital Statistics Population Denominators. *http://pub.azdhs.gov/health-stats/menu/info/pop/index.php*

Operating under VAPAC recommendations and ADHS allotments, LHDs will have jurisdiction over the order sets for providers in their area of responsibility and will decide how to allocate vaccine orders. Indian Health Service (IHS) facilities will work with their respective CHD regarding vaccine allocations and orders.

ADHS will email spreadsheets that contain vaccine presentations and available vaccine amounts to the LHDs. In turn, LHDs will notify providers to enter orders into ASIIS for the allocated vaccine. LHDs must pre-approve provider orders in ASIIS before ADHS orders the vaccine from the CDC vaccine allotment. ASIIS uses the CDC Vaccine Tracking System (VTrckS) for vaccine ordering and dose accountability.

ADHS will give the final approval of all vaccine orders and will electronically submit orders to a designated distributor or vaccine manufacturer.

Vaccine will be direct-shipped to providers by the designated distributor or vaccine manufacturer. ADHS will import the shipping log into ASIIS which will populate a "receive order screen" for each provider in ASIIS.

The provider will need to receive their order in ASIIS BEFORE administering the vaccine. By clicking the "receive order" button, the provider's vaccine inventory in ASIIS will be updated, including presentations, lot numbers, amounts, NDC numbers, and expiration dates. When a provider enters "doses administered" into ASIIS, automated inventory management will occur in ASIIS. ADHS and LHDs will use ASIIS inventory data for decisions relating to future allocations.

ADHS will monitor ASIIS to assess appropriate administration of the vaccine, with assistance as needed from LHDs. CHDs, THDs, and IHS facilities will be given the responsibility of vaccine redistribution on a local level, and with the feedback/approval of AIPO All redistribution must be recorded within ASIIS to maintain inventories.

Vaccine and Supplies Distribution

A centralized vaccine distributor would function similar to the existing system for the VFC program. ADHS will collect and process vaccine orders from providers, and forward them to CDC. The vaccine distributor will ship the ordered vaccine directly to provider sites. The pandemic influenza vaccine will be a federal asset and all pandemic influenza vaccine will be provided to health care providers free of charge. Federal guidance will be given as to aspects of charging an administration fee. It is anticipated that vaccine doses will be available as multi-dose vials, pre-filled syringe formulations, and possibly nasal spray vaccine.

During the 2009-2010 influenza pandemic, CDC determined a preliminary formula for calculating the total number of sites per project area for distribution, taking into account that Arizona has approximately 2% of the U.S. population. The maximum number of ship-to-sites at that time was 1,862 sites.

In the same way, CDC provided ancillary supplies for pandemic influenza vaccine that arrived around the same time as the vaccine shipments. These ancillary supplies were provided free of charge and included syringes, needles, alcohol swabs, sharps containers, and vaccination cards for patients for each dose of vaccine ordered.

Vaccine Storage and Monitoring

Pandemic influenza vaccine storage and handling must follow guidelines of CDC's Vaccine Storage and Handling Toolkit. Refrigerator temperatures should be monitored by Digital Data Loggers (DDLs) using a

buffered temperature probe with an alarm system to alert when temperatures are out of the acceptable vaccine storage range.

Storage recommendations for pandemic influenza vaccine are expected to be similar to those for seasonal influenza vaccine. Standard 2-door household refrigerators with separate temperature controls for each section, commercial units, or single door refrigerators without a freezer compartment inside are appropriate storage units for vaccine. Dorm-style refrigerators with a single door and a freezer compartment inside are not acceptable for vaccine storage.

Detailed storage and handling requirements for pandemic influenza vaccine will be included in the Pandemic Influenza Distribution Program enrollment packet.

When vaccine is stored in a refrigerator, space must be left around the vials/boxes to allow air to circulate around the vaccine. Additionally, bottles of water should line the walls to maintain a constant temperature. In other words, the vaccine refrigerators cannot be packed top to bottom with vaccine. Leaving space around vaccine will limit the amount of vaccine each refrigerator can accommodate. Vaccine should not be stored in crisper bins or in the door of the refrigerator. Refrigerator temperatures for pandemic influenza vaccine must be maintained at 36° to 46°F (2°- 8° C). For additional details on vaccine storage and handling, see CDC's Vaccine Storage and Handling Toolkit.

Ancillary supply kits containing syringes, needles, alcohol swabs, sharps containers and pandemic influenza vaccination cards should arrive at approximately the same time as the vaccine boxes, but the size of these ancillary supply boxes is currently unknown. The size of the ancillary supplies box will depend on the number of vaccine doses ordered.

Statewide immunization refrigerator capacity for Arizona will be documented in updates to Attachment 4 in this "Arizona Pandemic Influenza Mass Vaccination Plan."

ADHS Vaccine Storage Capacity and Safeguards

Pandemic influenza vaccine will be sent directly to providers and point of distribution sites (PODS), but it is possible that ADHS may receive a limited quantity of vaccine. AIPO does not currently have a refrigerator on site for vaccine storage. However, two refrigerators at the Arizona State Public Health Laboratory (250 N. 17th Avenue, Phoenix AZ) have been identified that could be utilized for a limited amount of vaccine. The refrigerators are currently being used by the Arizona State Public Health Laboratory (ASPHL). However, in a pandemic situation they could be cleaned out with bleach and pandemic influenza vaccines could be stored in them.

The ASPHL building uses security ID cards to gain entrance to the building, as well as code and card security to gain access to different sections within the laboratory. The building has security guards monitoring the entrance and exits of employees and visitors to the building during regular working hours. The building has 24-hour security with a surveillance camera on the main and rear entrances.

One of the ASPHL refrigerators is on the second floor: Silver TurboAir Deluxe Refrigerator, State ID Tag #: 93016. It has a built-in thermometer that is ISO 17025 certified. It is a two-door unit with no barrier between the 2 sides of this unit. The measurements are as follows: Shelf 1 to the ceiling of the unit is 17" high; shelf 2 up to shelf 1 is 10" high; shelf 3 up the shelf 2 is 10" high; floor up to shelf 3 is 13" high. This unit is estimated to be able to hold 25,000 boxes of multidose vials (250,000 adult doses).

The other ASPHL refrigerator is on the loading dock, accessible only by authorized personnel. It is a white household unit, State ID Tag #: 15461. This unit measures 12"W x 14" H X 12" D. Shelf 1 to the ceiling

of the unit is 6.5" high; shelf 2 to shelf 1 measures 6.5"; floor up to shelf 2 measures 8". This unit is estimated to be able to hold 672 boxes of multidose vials (6,720 adult doses).

The refrigerators are housed in locked areas, accessible only by authorized personnel. The power sources for the refrigerators are electrical connections with a back-up emergency power source.

If these refrigerators were to be used for pandemic influenza vaccine storage and distribution, AIPO would need to obtain vaccine-related supplies (e.g., thermometer, syringes, needles, Styrofoam coolers, ice packs, etc.). A plan needs to be written to maintain names and contacts of vendors to order to obtain the necessary vaccine supplies in case these refrigerators need to be used for vaccine storage.

Local Health Department Vaccine Depots

There are currently vaccine warehouses identified at the 15 CHDs. The capacity of CHD and THD vaccine depot(s) were surveyed during the 2009-2010 influenza pandemic. The results of this survey are available in Attachment 4 of this "Arizona Pandemic Influenza Mass Vaccination Plan" and will need to be updated in the future. Each facility and provider that will be receiving pandemic influenza vaccine needs to have the capacity to properly receive vaccine, identify sites for proper storage of pandemic influenza vaccine, and have plans for alternative vaccine storage site(s), if needed.

The Medical Director for the CHD or THD or the designated County or Tribal Vaccine Controller will sign for vaccine as they receive pandemic influenza vaccine shipments, and they will be responsible for ensuring that all storage, handling and security requirements are met. Transportation of pandemic influenza vaccine between facilities will be accomplished with these safeguards in place:

- A "Chain of Custody" form and inventory form will travel with the vaccine (see Attachment 5 of this "Arizona Pandemic Influenza Mass Vaccination Plan"). The Chain of Custody form will document the person who has custody of the vaccine. This person must safeguard the vaccine and be the only person designated to handle the transport container.
- Pandemic influenza vaccine will be transported in a polyfoam insulated storage chest(s) designed to provide optimal temperature stability during vaccine transport. The container for influenza pandemic transportation must have insulating wall of at least 1½ inch thick. Vaccine temperatures during transport will be monitored by Digital Data Loggers using a buffered temperature probe.
- Each shipping/transport container should be packed with enough refrigerant gel packs to maintain temperatures between 36°-46°F (2°- 8° C) for an 8-hour period. A barrier of either paper or polyethylene sheets will surround the vaccine to protect them from the refrigerant gel packs. Additional packing material will be used to fill voids in the container.
- The recipient of the vaccine at each facility will be required to call the State or designated County or Tribal Vaccine Controller while opening the container to determine the viability of the vaccine. Additional vaccine handling protocols are expected from CDC at the time of a pandemic vaccine distribution.

Clinic Handling of the Vaccine

A public or private health care organization must enter into a Memorandum of Agreement (MOA) with ADHS to receive influenza pandemic vaccine. This MOA lists the compliance criteria required of the health care organization prior to receiving and administering pandemic influenza vaccine.

The pandemic influenza vaccine will be provided free of charge to providers. Providers cannot charge recipients for the vaccine. However, providers can charge an administration fee. This could either be through fee-for-service or by billing insurance companies. CDC will need to give guidance as to how administration fees can be covered for those who do not have insurance.

In addition, CDC will need to give guidance as to whether a provider can turn away a patient if they are unable to pay an administration fee. It is likely that private providers will not be obligated to administer pandemic influenza vaccine if the patient cannot pay the administration fee, but this issue will be finalized at the time as part of the provider agreement. Public health providers will not be able to turn patients away for inability to pay the fee, but they can request payment of an administration fee from insurance companies or the patient.

It is the responsibility of the County Immunizations Coordinators, the County Vaccine Controllers, the Tribal Immunization Coordinators, and the Tribal Vaccine Controllers to remain aware of the most up-to-date vaccine handling protocols. The County and Tribal Vaccine Controllers will ensure that vaccine storage, handling and security requirements, as specified in CDC guidelines are followed. The County and Tribal Vaccine Controllers will ensure that all personnel who handle the vaccine and administer vaccinations are properly trained in vaccine handling and storage.

The County and Tribal Vaccine Controllers are responsible for maintaining the cold chain. All transportation of the pandemic influenza vaccine must receive the consent from the State Vaccine Controller, the County Vaccine Controller, or the Tribal Vaccine Controller and be approved within ASIIS prior to transport.

The County and Tribal Vaccine Controllers will oversee the proper vaccine storage and handling procedures that follow the guidance of CDC's Vaccine Storage and Handling Toolkit. Vaccine accountability will be handled according to CDC guidance. Experienced immunization staff will inventory the vaccine daily, accounting for doses administered, doses wasted, and doses of viable vaccine by entering this information into ASIIS.

Plans for accessed and unopened vials of influenza pandemic vaccine are:

- After vaccination clinics, if there are partially used vials of vaccine, these should be properly stored and used at the next vaccination clinic to minimize wastage. An unused vial of vaccine will not be opened until a search for any partially used vial has been conducted.
- Pandemic influenza vaccines that have been drawn up into a syringe and not used by the end of the clinic day must be discarded, and the vaccine dose wastage must be recorded in ASIIS.
- Properly stored vaccine (including accessed vials) is viable and remains usable until its expiration date. This is regardless of the time from when the vial was first accessed and used. The expiration date is expressed in month/day/year and is valid until midnight of the expiration date. This policy assumes that aseptic technique has been used, no contaminated object was in contact with the vaccine, and no visible contamination is present. Influenza pandemic vaccine must be kept cool according to CDC protocols when opened and in use by the vaccinators.

Vaccine Tracking and Data Management

When there is not a public health emergency such as an influenza pandemic, Arizona Revised Statutes (A.R.S.) §36-135 mandates that all immunizations administered to children be reported to ASIIS. In addition, all pharmacist-administered vaccines given to both children and adults are required to be reported to ASIIS. Other health care providers who give vaccines to adults are not required by statute to report these vaccines to ASIIS, but may do so if the adult patient consents.

In the case of pandemic influenza vaccines, providers will need to use ASIIS to both order and report administration of all pandemic influenza vaccine doses for people of all ages. Many Arizona healthcare providers are already enrolled in ASIIS through the VFC program, through voluntary participation, or because of pharmacy reporting laws. When a provider registers to order pandemic influenza vaccine, the provider will need to enroll in ASIIS if they are not currently enrolled.

Providers who enroll in ASIIS will be assigned a site ID number, which will coordinate with the PIN number for vaccine ordering, an ASIIS user ID and a password for each user identified, and a link to the ASIIS on-line training module. This information will be sent to the provider by secure email. The training module supplied to pandemic influenza vaccine providers will concentrate primarily on the mass immunizations module in ASIIS, which is more streamlined than the regular process of ASIIS and is designed to collect minimal data fields quickly. The providers' staff will be trained on the use of ASIIS with a hotline available for questions.

Once enrolled and trained, providers will use ASIIS to order pandemic influenza vaccine, to acknowledge vaccine receipt, and to record vaccine administration or wastage. ASIIS will provide immunization data to ADHS on the supply of pandemic influenza vaccine at each site and how many patients have received pandemic influenza vaccine.

At a mass vaccination clinic or PODS, data can be captured on paper or directly entered into ASIIS using the following methods:

- Entry into the existing ASIIS application, requiring internet connectivity and additional keystrokes than the mass vaccination application.
- Web based mass vaccination clinic module in ASIIS, requiring internet connectivity.
- XXXX (TBD)for mass vaccination clinic application without internet connectivity and later uploaded to the web-based application.

ASIIS is accessible by regular laptop computer for data look-up and data entry at a vaccination clinic location, if there is a wireless connection. With proper authorization, it is accessible at *https://asiis.azdhs.gov/login.jsp*.

A quick entry application (with no patient query capability) that can be placed on a thumb drive can be used in remote locations that do not have wireless connectivity. Data collected in this application will be later uploaded to ASIIS. If needed, paper forms can be used for data collection. All paperwork data will need to be collected and stored in a confidential manner for prompt ASIIS data entry at a later time.

It is important that vaccine administration data are entered within a timely manner. Providers will not be able to order more vaccine until there is up-to-date accounting into ASIIS of vaccine receipt and administration. In addition, timely entry into ASIIS will allow for vaccine tracking if there were to be the need for a second dose of pandemic influenza vaccine. ASIIS records would help to ensure that the person receives a second dose of vaccine to be administered at least three weeks after the first dose. If immunization data is collected on paper, all paperwork should be sent to records management to be destroyed after being entered into ASIIS.

Security

Security Deployed by CDC for Transfer of the Pandemic Influenza Vaccine to Arizona

According to the HHS on the status of pandemic influenza vaccine manufacturing capacity, pre-pandemic stockpile, and planning for vaccine distribution (November 2007), the Department of

Homeland Security is the federal agency responsible for coordinating security (with Federal and State, Local, Tribal, and Territorial (SLTT) law enforcement) when vaccine is under Federal control. Once vaccine is turned over to Arizona SLTT officials at ship-to sites, Arizona SLTT will assume responsibility for security.

The Arizona Department of Public Safety (AZDPS) is the lead agency for providing security oversight for state assets, facilities, and personnel. The AZDPS Strategic National Stockpile (SNS) Security Plan has been developed in order to provide direction the AZDPS's fourteen (14) Divisions. Specific details of this plan are held in isolation of this document in order to ensure that operational security components are not compromised. Refer to the ADHS Medical Counter Measure (MCM) Operational Plan for a general concept of operations for SNS security.

The Arizona Counter Terrorism Information Center (ACTIC) functions as the intelligence gathering and information dissemination center to provide streaming and continuous intelligence information to AZDPS operations personnel.

The identity and locations of vaccine storage sites will be communicated to all local security/law enforcement officials involved with securing the vaccine location. The State Immunization program will provide CDC with the shipping locations, and ADHS will assist in overall security coordination regarding receipt and storage of vaccine.

SNS Security Following Transfer to the State

The Incident Commander will work with the State SNS Coordinator, ADHS Health Emergency Operations Center (HEOC), and State Receipt, Store, and Stage (RSS) Warehouse Security Officer to determine and coordinate the needs and level of armed law enforcement security services for the following:

- State RSS Warehouse (internal/external);
- State reapportioning site if separate from the State RSS Warehouse;
- Distribution vehicles loading, offloading, and in transit from State RSS to County/Tribal RSS distribution and dispensing sites and treatment centers; and
- Distribution routes used by vehicles transporting the resources or SNS materiel.

Additional security staffing needs will be requested through the State EOC as needed.

State RSS Warehouse Security

State RSS Warehouse site security will prevent any unauthorized entry through the State RSS site perimeter. Security personnel will be responsible for determining and securing the perimeter. State and local law enforcement will coordinate to provide security at the State RSS Warehouse, which will involve planning for the following:

- Access control into, within, and throughout the facility. This measure involves actions such as sign-in logs after proper identification, and identification badges for authorized personnel. Volunteers to staff this or other facilities must be credentialed. The public, including members of the media, will not be allowed access to the State RSS Warehouse site. The location of the State RSS Warehouse site will not be intentionally disclosed to the public or the media.
- Alternate routes for entry and exit to the facility; and
- Perimeter force protection using physical barriers such as perimeter fences, barriers of various types, vehicle gates, personnel gates and turnstiles, closed circuit television, and perimeter lighting.

Distribution System Security

Depending on the vaccine storage site location, the law enforcement agency having jurisdiction should assist with site security, if possible. Should the security needs exceed the capability of the on-site agency, additional assistance will be obtained under law enforcement mutual aid.

AZDPS law enforcement will coordinate escort, including traffic control and security in transit, while the SNS packages move from staging to local distribution warehouses. These movements should largely occur within AZDPS's overall jurisdiction. If the State RSS Warehouse is located on a Military Base, adjunct security assigned to the base should be requested from and provided by the military. State law enforcement will share responsibility at the point that vehicles transporting the SNS enter and exit the base. Areas of needed security will include, but not be limited to the following:

- Escort of vehicles to and from distribution destinations;
- Securing of key transportation arteries so that only SNS and other emergency vehicles can use them; and
- Use of alternative transportation, including
    - Movement of entire cargo containers of material over congestion by slinging them under a helicopter; or loading of material into the aircraft cabin
    - Movement around congestion using rail, subway, or waterways and watercraft to points where ground transportation can move more freely.

Vaccine Security

Pandemic influenza vaccine that is not part of SNS will be delivered from a centralized vaccine distributor or vaccine manufacturer by carrier service directly to CHDs, THDs, PODS, and provider offices. All providers will be responsible for storing the vaccine in a secure location.

In cooperation with county and local law enforcement agencies, LHDs are responsible for providing security at county and tribal mass vaccination clinic locations. If necessary, state security services can be requested to escort resources or vaccines to these locations.

Each mass vaccination clinic has a job action sheet for a Safety Chief, Security Coordinator, Security Chief, and Security Guard. The clinic personnel includes the Safety Chief who is responsible for crowd control, determining the security needs, overseeing the security personnel, and coordinating with local law enforcement. The Security Coordinator oversees the Security Chief and Security Guard who is also responsible for the security of the site and coordinates with local law enforcement if additional security is required.

Pandemic influenza vaccine will be considered part of the SNS and will implement some, but not all, of the security measures used for SNS material. This will include security for:

- All locations that support SNS operations
- Vehicles that transport the SNS
- Crowd control that might interfere with effective operations
- Transport
- Protecting the personnel, equipment, and SNS assets
- Other incident response plans based on current intelligence and situational awareness

- Formal agreements are currently in place with both public agencies and private security to provide services as identified in the Arizona Medical Countermeasure Management Plan, October 2016. The Arizona Department of Emergency Management will assist in procuring any needed security services during the state of emergency.
- To date, AZDPS and ACTIC have conducted hazard vulnerability assessments (HVAs) only for state facilities which have been identified as critical infrastructure or program based critical assets that would negatively affect critical infrastructure if they were to fail. This includes state-level RSS sites. The local law enforcement agencies are responsible for conducting vulnerability assessments for local clinic operations, with support and guidance from AZDPS and ACTIC.

State Vaccine Controller

The State Vaccine Controller, Immunization Office Chief or designee, will be assigned to determine shipment of influenza vaccine and arrange for the shipment of the vaccine to pre-designated sites. All transportation of influenza vaccine must have the consent from the State Vaccine Controller.

A public or private healthcare organization must enter into an MOA with ADHS prior to receiving and administering the influenza vaccine. This MOA lists compliance criteria including the use of a Chain of Custody form that must accompany the organization's allotment of the vaccine. See Attachment 5 of this "Arizona Pandemic Influenza Mass Vaccination Plan" for an example of a Chain of Custody form.

Administration of Influenza Pandemic Vaccine with County and Tribal Health Departments

Routine Vaccination Clinics

The largest county health department (CHD) in Arizona, Maricopa County Department of Public Health (MCDPH), is accustomed to conducting clinics for children. In the "back to school" period, MCDPH averages 1,200 children a day, and this volume is sustained for four to six weeks. Children require more time than vaccinating adults as they receive multiple vaccines, multiple Vaccine Information Statements, more time for parent concerns, and time to research into the state's immunization information system. Other CHDs have conducted large vaccination clinics in their counties in the past, due to hepatitis A outbreaks, meningococcal outbreaks, and measles outbreaks. In the event of an influenza pandemic, CHD and tribal 638 facilities would increase the number of people vaccinated per day.

However, CHD and tribal 638 locations will be insufficient by themselves to deliver vaccine rapidly to the entire Arizona population. Alternate sites that have the ability to store and administer vaccine safely will need to be utilized. Potential partners include:

- Healthwaves Corporate Wellness Team (provides workplace influenza vaccine clinics with an estimated 50 people immunized per hour).
- Occupational health facilities:
    - Banner (3 sites in the Phoenix-metropolitan area)
    - Concentra (8 clinics in Phoenix-metropolitan area
- Hospital-based occupational health sites and clinics
- Travel vaccine clinics such as
    - Passport Health (4 clinics in Phoenix-metropolitan area, 1 in Tucson)
    - Arcadia Physicians Travel Clinic (Phoenix)
    - Yellow Fever Vaccine Providers

- Visiting Nurses Association
- Nursing students under supervision
- Certified pharmacists
- Pharmacy students under supervision
- Paramedics/Firefighters

County and Tribal Health Department Responsibilities

Vaccination Activities

This plan primarily relies on CHDs and THDs and their designees to operate mass vaccination clinics for pandemic influenza vaccine. In advance of a pandemic, CHDs and THDs will need to identify the number of needed clinics, location and capacity of each clinic location, and the required number of personnel in order to quickly vaccinate the population in their jurisdiction. The quantity of vaccine and the prioritized target groups to vaccinate will be factors influencing these resource needs. (See Tables 1-8 of this "Arizona Pandemic Influenza Mass Vaccination Plan").

Facilities housing mass vaccination clinics must meet requirements for proper vaccine storage and handling. CHDs and THDs are responsible for entering into formal agreements with these facilities in advance. All CHDs have listings of identified clinic sites and THDs are in various stages of identifying these clinics.

CHDs, tribes and IHS have engaged in pandemic influenza planning in recent years and have plans in place for the mass vaccination of priority groups with designated points of contact.

Each CHD, THD, and IHS facility is expected to have a plan in place (Standard Operating Guidelines [SOGs]) for the mass vaccination of the recommended prioritized target groups. They will designate a point of contact, if other than the County Immunization Manager listed in Attachment 2 of this "Arizona General Pandemic Influenza Mass Vaccination Plan." This person will be the point of contact for ADHS for all mass vaccination issues. Each of the 15 CHDs has determined the number of clinics needed and their locations.

ADHS requires that each CHD and each participating tribal 638 facility that plans to receive pandemic influenza vaccine and conduct mass vaccination clinics to either have formal agreements with the facilities where these mass vaccination clinics would be held or to be working toward obtaining formal agreements. CHDs and participating tribal 638 facilities also need to determine the number of personnel required to vaccinate each prioritized target group.

At least one CHD plans to conduct mass vaccination clinics in schools and other venues. They will adjust their existing mass vaccination plans to accommodate the unique requirements of pandemic influenza vaccine. More details on mass vaccination clinics can be found in the "Arizona Mass Vaccination Clinic Plan" (Appendix 2).

ASIIS should be used for tracking immunizations administered in a mass vaccination setting. A custom-made ASIIS mass vaccination module is specially designed for a large-scale vaccination clinic to capture the necessary data in a quick streamlined process and can be used for pandemic influenza vaccination clinics. The mass vaccination module is an application that will be made available to the LHDs in two formats: (1) web based application requiring internet connectivity; and (2) XXX (TBD)for locations without internet connectivity.

Table 9 is a tool that can be used by LHDs to organize locations that could be used as vaccination clinics or dispensing sites for outbreak-related medicines.

Table 9. Vaccine Clinic or Dispensing Site Facility Information

Facility Name	Facility Address	Vaccination or Dispensing Site (V or D)	Facility Phone Number	Facility Fax Number	Facility Contact	Formal or Informal Agreement with Facility Owner (F or I)	Has Facility Been Assessed for Adequacy?	Vacc/Disp capacity per day (# of patients/day)

During an influenza pandemic, CHDs and tribal 638 facilities will offer pandemic influenza vaccine during their regular immunization clinics. These clinics will immunize individuals who cannot afford the vaccine administration fee for pandemic influenza vaccine. In addition, many LHDs have the ability to bill insurance companies, so they could bill for a pandemic influenza administration fee. However, providers cannot charge for federally-supplied pandemic influenza vaccine or ancillary supplies.

CHDs and THDs will serve as front line contacts for pandemic influenza vaccine in their communities. Indian Health Service (IHS) will be allotted vaccine by their respective CHDs, and IHS will work with CHDs and THDs to assure pandemic influenza vaccine for tribal populations that are not reached by tribal 638 facilities. These public health entities will need to collaborate with various community sectors to plan for the allocation and administration for pandemic influenza vaccines. Vaccination planning activities would include:

- Determining how they will operationalize their plans for giving pandemic influenza vaccine to the people in their jurisdiction.
- Identifying critical infrastructure personnel and high-risk patients and planning how they would be given pandemic influenza vaccine as it becomes available.
- Communicating and collaborating with community vaccinators (such as private mobile clinics, public fire departments, occupational health businesses, and pharmacies) and other healthcare providers to assist with pandemic influenza vaccine planning and delivery in their communities
- Deciding how to obtain the staff necessary to carry out mass vaccination clinics.
- Holding mass vaccination clinic exercises.
- Working with school districts on pandemic influenza preparedness plans for their schools.
- Meeting with school nurses to prepare for school mass vaccination clinics.
- Delivering informational and educational presentations in their communities on seasonal and pandemic influenza surveillance, vaccination, and vaccine prioritized target groups.
- Collaborating with childcare consultants to share pandemic vaccine information with child care centers.
- Educating community groups on how to prevent seasonal influenza illness, identify where to get seasonal influenza vaccine on an annual basis, and share information about how to manage influenza if infected.

- Encouraging hospitals, health care providers, and pharmacies to register for pandemic influenza vaccine when it becomes available.

Each CHD and tribal 638 facility will have the responsibility of the control of each of their mass vaccination clinics: their operation, location, and security. The clinic personnel should include a Safety Chief who is responsible for crowd control, determining the security needs, overseeing the security personnel, and coordinating with local law enforcement if additional security is required.

State Public Health Mass Vaccination Clinics

When a LHD is not able to operate sufficient clinics to serve the population or asks for assistance to vaccinate a specific group (i.e., key State government officials), ADHS will assist LHDs in organizing mass vaccination clinics within their jurisdiction as needed.

Public high schools can be considered as a site for mass vaccination clinics during a pandemic. The rationale for using high schools is:

- 464 high schools are located throughout the state and their locations correlate with the state's population. [*http://arizona.educationbug.org/public-schools, accessed 2-12-2018*]
- In general, high schools provide adequate facilities needed to operate mass vaccination clinics, including adequate parking and refrigeration.
- High school locations are accessible and commonly known to Arizona residents.
- High schools may be shut down during an emergency of this nature.

The Arizona Department of Education (ADE) has indicated that high schools would be a suitable venue for mass vaccination clinics. The ADE has made the verbal commitment to encourage schools and school districts to partner with ADHS and local health departments in mass vaccination clinic planning. The ADE noted that this type of function aligns with school emergency response activities and expects school cooperation.

The ADHS Director or designee will determine, with the recommendation of the Public Health Incident Management System (PHIMS) Policy Group, when and in which jurisdiction state-assisted mass vaccination clinics are needed. The Director or designee will contact the Department of Education representative who will facilitate the dedication of appropriate resources for this purpose.

Specifically, which high schools will be used for state clinics will depend on the status of the CHDs plans and the nature of the mass vaccination effort. These issues, along with the large number of high schools statewide, also preclude on-site assessments for facility adequacy for State Clinics.

Vaccine Safety Monitoring

Comprehensive screening techniques of potential vaccine recipients will minimize the vaccinating an individual with contraindications or precautions. Individuals will receive educational information prior to vaccination and will be advised of what symptoms to expect after vaccination, if any. It is expected that CDC will require the following documents:

- Medical history screening for contraindications for use by medical and public health staff
- The CDC Vaccine Information Sheet (VIS) for pandemic influenza vaccine (see *https://www.cdc.gov/vaccines/hcp/vis/index.html* for a current version at the time)
- Post-vaccination information sheet to explain potential adverse reactions
- Patient consent form

Those that will be receiving the vaccine will be instructed to read the CDC VIS and the post-vaccination information sheet. Spanish documents will be made available. Materials in additional languages will be provided as available.

People who do not have contraindications will receive vaccinations, and have the vaccine documented on an immunization card. They will proceed to a final check out area where a medical counselor answers any additional questions and collect forms as needed. Vaccinations will be administered according to the CDC guidelines (as per CDC website *https://www.cdc.gov/flu/pandemic-resources/index.htm*) and ADHS protocols.

Screeners, vaccinators and medical counselors will be trained personnel with a health or medical background. The ability of administering mass vaccination quickly and safely will depend on the numbers of health care workers and staff able to be adequately trained. Screeners and medical counselors need to have enough experience and training to make adequate clinical judgments about contraindications and risk of exposure. It is preferable that the screeners be nurses, nurse practitioners, EMT-Is, physician's assistants or epidemiologists. Vaccinators need to have enough medical or health background to be trained in proper and safe administration of vaccine. Translators for common languages will be an essential part of staffing a mass vaccination clinic to assure adequate education.

Contraindications

The level of contraindications will depend on the risk of the influenza pandemic. CDC guidance will be sought for any change in current contraindications. The contraindications for the influenza pandemic vaccine are assumed to be the same as the seasonal influenza vaccine. Adverse events will be decreased by excluding people who have contraindications.

Vaccine Safety

Vaccine safety is an important part of any vaccination program. Ongoing clinical trials will study side effects of any pandemic influenza vaccine. Pandemic influenza vaccines will be made using the same manufacturing process as seasonal influenza vaccines. The safety profile of pandemic influenza vaccines is expected to be similar to seasonal influenza vaccines. Serious adverse events after seasonal influenza vaccination are uncommon. However, for any vaccine, rare side effects can only be detected by monitoring for adverse events after vaccination. This will be done through the Vaccine Adverse Event Reporting System (VAERS), through the Vaccine Safety Datalink (VSD) that analyzes clinical data from large health maintenance organizations, and through active surveillance for Guillain-Barré Syndrome (GBS).

VAERS is a US federal centralized vaccine monitoring system for collecting and analyzing reports of adverse events following vaccinations that are received both from health care providers and from individuals. The CDC will share pandemic influenza vaccine VAERS reports with ADHS through the Arizona Immunization Program Office (AIPO) in a timely fashion. AIPO will assist CDC with further investigation of VAERS reports as requested by the CDC.

Following CDC guidance, all providers should report clinically significant adverse events following vaccination directly to VAERS by completing an online form.Information on how to report to VAERS can be found at *http://vaers.hhs.gov*. If a provider has difficulty in reporting to VAERS, they can email *info@VAERS.org* or call 1-800-822-7967. In addition, the AIPO VAERS Coordinator can be contacted at (602) 364-3630.

Cases of GBS after pandemic influenza vaccine will be looked for because the 1976 swine influenza vaccine was associated with an increased frequency of GBS (estimated at one additional case of GBS per 100,000 persons vaccinated). However, it is important to inform patients that influenza virus infection itself can serve as a trigger of GBS, with the frequency of influenza-related GBS estimated at four to seven times higher than the frequency that has been estimated for influenza-vaccine-associated GBS (*Morbidity and Mortality Weekly Report*, July 31, 2009, p.17 *http://www.cdc.gov/mmwr/PDF/rr/rr5808.pdf*).

The Arizona Immunization Program Office (AIPO) has a designated VAERS Coordinator for Arizona. This person is responsible assisting the CDC in investigating serious vaccine-associated adverse events from Arizona that have been reported to the CDC.

VAERS Coordinator: Aneisa Johnson, RN, MBA
(602) 364-3630
Aneisa.johnson@azdhs.gov

During an influenza pandemic, the AIPO Medical Director will be the ADHS primary point of contact for local and federal entities for vaccine safety concerns and adverse events following immunization. The AIPO VAERS Coordinator will be the secondary ADHS point of contact.

AIPO Medical Director: Karen Lewis, M.D.
(602) 364-3630
Karen.lewis@azdhs.gov

These AIPO vaccine safety staff will maintain frequent contact with CDC vaccine safety staff to ensure adequate exchange of information, prompt response to vaccine safety emergencies, and optimal risk communication activities. Additionally, they will maintain logon access to Epi-X, a secure CDC website for vaccine safety monitoring, so that in the event of an influenza pandemic they will be able to obtain the most current communications, alerts, and reports regarding vaccine adverse event activity for Arizona.

Vaccine safety updates will be disseminated to provider and partner organizations as necessary, using the current Health Alert Notice communication network, and will be posted on the ADHS website. ADHS physicians and AIPO nurses will assist in medical triage for vaccination clinics and answer questions from clinicians about adverse events to influenza pandemic vaccine. Resources will be available for health care providers at the CDC website (*www.cdc.gov*), ADHS' website (*www.azdhs.gov*), and any specified CDC clinician information lines.

Each LHD should identify a clearly defined location where concerns about reactions or less serious adverse reactions can be evaluated. This can be either within their mass vaccination clinic or in separate off-site locations. Whenever possible, telephone triage should be used in order to minimize unnecessary use of the post-vaccination adverse events evaluation sites.

Adverse Events Management

It is difficult to know the precise numbers of people who will seek medical care after mass influenza pandemic vaccination. However, an estimate can be made based on seasonal influenza vaccination. Therefore, mass vaccination will create health care demands for vaccine education, vaccine administration, and evaluation of adverse events. Pre-vaccination education, mass media education of the public and health care providers, education about locations of additional resources for patients and health care providers, and continued education of health care providers about adverse events will all be needed. Information about potential adverse events after pandemic influenza vaccination will be posted at the websites for CDC (*www.cdc.gov*) and ADHS (*www.azdhs.gov*).

ADHS and CHDs will have a recorded message in English and Spanish about expected reactions to pandemic influenza vaccine and when physician consultation should be sought. Serious adverse events should be evaluated quickly by a physician or in an emergency department. The vaccine recipient will be told to contact his/her primary care provider for evaluation and management of serious adverse events.

Attachment 1

County Health Department Immunization Contact List

February 2019

COUNTY	IMMUNIZATION MANAGER	ADDITIONAL CONTACTS
Apache County Public Health Services District 323 S. Mountain Ave. Suite 102 Springerville, AZ 85938-5104 Main: 928-333-2415	Carla Walker, IZ Program Coordinator *cwalker@co.apache.az.us* 928-333-2415 Ext: *230 Marian Bigelow, RN (PHN) *mbigelow@co.apache.az.us*	Cleta Keller, RN, BSN – Clinical Services Divsion Manager (DON) *ckeller@co.apache.az.us* 928-333-2415
Cochise Health and Social Services 1415 Melody Lane, Bldg, A Bisbee, AZ 85603 Main: 502-432-9400	Sara Davidson, RN Immunization Coordinator *sdavidson@cochise.az.gov* Shannon Ebert, RN Back-up IZ Coordinator *sebert@cochise.az.gov*	Carrie Langley, RN-BC, MSN, MPH Deputy Director, Clinical Services Director of Nursing *clangley@cochise.az.gov*
Coconino County Public Health Services District 2625 N. King St. Flagstaff, AZ 86004-1884 Main: 928-679-7272	Mary Ellen Ormsby, RN Interim IZ Coordinator *mormsby@coconino.az.gov* 928-679-7357 Jennifer Reyes, RN Back-up IZ Coordinator *jreyes@coconino.az.gov* 928-679-7222	Sarah Schildecker, MPH Division Manager *sschildecker@coconino.az.gov* 928-679-7377
Gila County Division of Health Department & Emergency Services 5515 S. Apache Ave. Globe, AZ 85501-4428 Main: 928-425-3189	Ginnie Scales, RN, Health Services Program Manager, IZ Coordinator *gscales@gilacountyaz.gov* 928-402-8802	
Graham County Health Department 826 W. Main St. Safford, AZ 85546-2896 Main: 928-428-1962	Melissa Lunt, RN, Director of Nursing, IZ Coordinator *mlunt@graham.az.gov* 928-428-0110 928-428-1962	
Greenlee County Health Department P.O. Box 936 Clifton, AZ 85533-0936 Main: 928-865-2601	Annette Newman, RN, Director of Nursing, IZ Coordinator *anewman@co.greenlee.az.us* 928-865-2601	Janice Lovett, LPN *jlovett@co.greenlee.az.us*
LaPaz County Health Department 1112 S. Joshua Ave. Ste. 206 Parker, AZ 85344-5756 Main: 928-669-1100	Diana Grazier, RN, Director of Nursing, IZ Coordinator *dgrazier@co.la-paz.az.us* 928-669-6155	
Maricopa County Department of Public Health 4041 North Central Avenue, Suite 600 Phoenix, AZ 85012 Main: 602-506-8815	Lori Rehder, RN, BSN, Immunization Program Supervisor *Lori.rehder@maricopa.gov* 602-506-6934	Machrina Leach, RN, BSN, Nurse Program Manager, Community Health Nursing *machrina.leach@maricopa.gov* 602-506-6662
Mohave County Department of Public Health 700 West Beale St. Kingman, Arizona 86402 Main: 928-753-0714	Jocelyn Fernandez, RN Interim IZ Program Coordinator *Jocelyn.fernandez@mohavecounty.us* 928-453-0703 ext	Lynne Valentine, RN, Director of Nursing *Lynne.valentine@mohavecounty.us* 928-753-0714 ext 4281

COUNTY	IMMUNIZATION MANAGER	ADDITIONAL CONTACTS
Navajo County Public Health Services District 600 N. 9th Place Show Low, AZ 85901 Main: 928-532-6050 press 3	Janelle Linn, RN, Public Health Nursing Supervisor *Janelle.Linn@navajocountyaz.gov* 928-532-6050 press 3	Jonnel Szentgyorgyi (Office Manager) *Jonnel.szentgyorgyi@navajocountyaz.gov*
Pima County Health Department Vaccine Preventable Disease Suite 200 3950 S. Country Club Road Tucson, AZ 85714 Main: 520-724-7988	Crystal Rambaud, MPH, BSN, RN (interim) VPD Program Manager, IZ Coordinator *Crystal.rambaud@pima.gov* 520-724-5305/520-724-7763 Kristin Robinson-Lund, RN *Kristin.robinson-lund@pima.gov* 520-724-5308	Richard May, RN, BSN Community Health Services Clinical Nurse Manager *richard.may@pima.gov* 520-724-7995
Pinal County Public Health Services District P.O. Box 2945 Florence, AZ 85232-2945 Main: 520-866-7358	Yezenia Viezcas, RN Immunization Coordinator *yezenia.viezcas@pinalcountyaz.gov* 520-866-4551	Marcela Salinas, MPH Assistant Director, Public Health Operations *marcela.salinas@pinalcountyaz.gov* 520-866-4454 Cell: 520-510-5883
Santa Cruz County Public Health Department c/o Mariposa Community Health Center 1852 N. Mastic Way Nogales, AZ 85621-1063 Main: 520-281-1550 (IZ – ext 1267)	Brenda Coppola, RN Director of Nursing- Maternal Child Health, Immunization Coordinator *bcoppola@mariposachc.net* 520-281-1550 ex 1246	Melanie Barnett, LPN Back-up IZ Coordinator *mbarnett@mariposachc.net* 520-281-1550 ext 1300
Yavapai County Community Health Services 1090 Commerce Dr. Prescott, AZ 86305 Main: 928-583-1000	Cathy Sutton, RN, BSN, MSH Public Health Nurse Supervisor, IZ Program Coordinator *catherine.sutton@yavapai.us* 928-442-5489 (Prescott Valley location) Sally McCoy, RN, PHN, Back-up IZ Coordinator *Sally.mccoy@yavapai.us*	
Yuma County Public Health Services District 2200 W. 28th St. Yuma, AZ 85364-6935 Main: 928-317-4559	Miriam Galindo, IZ Office Supervisor *Miriam.galindo@yumacountyaz.gov* 928-317-4559	Kathy Ward, RN, Nursing Supervisor *kathy.ward@yumacountyaz.gov* 928-317-4540 ext 34653

Attachment 2

Arizona Tribal Population Characteristics

There are 22 sovereign American Indian communities in Arizona. According to 2016 ADHS population denominators (*http://pub.azdhs.gov/health-stats/menu/info/pop/index.php*), American Indians make up more than 290,000 (4.2%) of Arizona's population.

The health care that most American Indian people receive comes from a blend of tribal 638 facilities, Indian Health Services (IHS), County Health Departments (CHDs), and private providers.

Through Public Law 93-638, tribes may contract with IHS to assume responsibility for health care formerly offered by the federal government. The term "638" refers to this law through which tribes can operate part or all of their health programs, including hospitals and clinics.

A directory of Arizona Tribal, Urban, and Indian Health Service Directors, Urban Health Programs, and IHS Area Directors can be found at the ADHS Tribal Liaison website at *http://azdhs.gov/director/tribal-liaison/index.php#tribal-directories*. The directory from February 2018 is included below. Information on American Indian Health Facilities, including tribally-operated 638 health programs, can be accessed at *https://www.azahcccs.gov/AmericanIndians/AmericanIndianHealthFacilities*.

IHS services are provided directly and through tribal and urban contracts, as well as partnerships (MOU/MOA) with other federal agencies, universities, foundations, and corporate entities. Health services also include health care purchased from private providers. All hospitals operated by the IHS and tribal programs are accredited by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO).

ARIZONA DEPARTMENT OF HEALTH SERVICES

Tribal, Urban, and Indian Health Service Directors

February 2018

TRIBAL HEALTH DIRECTORS

Ak-Chin Indian Community
Brian Holiday, Director
Health & Human Services
48227 West Farrell Road
Maricopa, AZ 85138
520-568-1092
520-568-1096 (fax)
BHoliday@ak-chin.nsn.us

Cocopah Indian Tribe
Leo Maxwell, Health Director
Cocopah Wellness Center
14526 S. Veteran Dr.
Somerton, AZ 85350
928-627-2681
928-627-2929 (fax)
maxwelll@cocopah.com

Colorado River Indian Tribes
Sylvia Dawavendewa, Executive Director
Department of Health & Social Services
12302 Kennedy Dr.
Parker, AZ 85344
928-669-6577
928-669-8881 (fax)
sylvia.dawavendewa@crit-dhs.org

Ft. McDowell Yavapai Nation
Demetra D. Barr, M.D.
Acting Health Division Director
PO Box 17779
Fountain Hills, AZ 85269
480-837-5074
480-837-1270 (fax)
dbarr@ftmcdowell.org

Ft. Mojave Indian Tribe
John Manning, Director
Fort Mojave Indian Health Center
1607 Plantation Rd.
Mojave Valley, AZ 86440
928-346-4679
928-346-4686 (fax)
john.manning@ihs.gov

Pascua Yaqui Tribe
Reuben Howard, Executive Director
Health Services Division
7474 S. Camino De Oeste
Tucson, AZ 85757
520-879-6019
520-883-1057 (fax)
reuben.howard@pascuayaqui-nsn.gov

Quechan Tribe
Sosa Nita Diaz, CHR Program Director
PO Box 965
Winterhaven, CA 92283
760-572-0753
760-572-2988 (fax)
s.diaz@quechantribe.com

Salt River Pima-Maricopa Indian Community
Annette Brown, Assistant Director
Department of Health & Human Services
10005 E. Osborn Rd.
Scottsdale, AZ 85256
480-362-2723
480-850-8789 (fax)
annette.brown@srpmic-nsn.gov

San Carlos Apache Tribe
David Reede, Executive Director
Department of Health & Human Services
PO Box 0
Bldg 15, San Carlos Ave.
San Carlos, AZ 85550
928-475-2798 x1104
928-475-2417 (fax)
david.reede@scat-nsn.gov

San Juan Southern Paiute Tribe
Carlene Yellowhair
President
PO Box 2950
Tuba City, AZ 86045
928-283-4762
928-283-4758 (fax)
cyellowhair_sjspt.president@outlook.com

Gila River Indian Community
Christina Floyd, Acting Director
Health Resource Department - D3
PO Box 147
433 W. Seed Farm Rd.
Sacaton, AZ 85147
520-562-5119
520-562-5196 (fax)
christina.floyd@gric.nsn.us

Havasupai Tribe
Lenora Jones, CHR Program Director
PO Box 10
Supai, AZ 86435
928-448-2127
928-448-2551 (fax)
lenorajones@gmail.com

Hopi Tribe
Lori Joshweseoma, Director
Department of Health Services
PO Box 123
Kykotsmovi, AZ 86039
928-734-3401
928-737-6353 (fax)
ljoshweseoma@hopi.nsn.us

Hualapai Tribe
Sandra Irwin, Health Director
Health Education & Wellness Department
PO Box 397
Peach Springs, AZ 86434
928-769-2207
928-769-2588 (fax)
sirwin@hualapai-nsn.gov

Kaibab-Paiute Tribe
Laura Savala, CHR Health Director
HC 65 Box 2
Fredonia, AZ 86022
928-643-8331
928-643-8317 (fax)
lsavala@kaibabpaiute-nsn.gov

Navajo Nation
Glorinda Segay, Executive Director
Department of Health
PO Box Drawer 1390
Window Rock, AZ 86515
928-871-6350
928-871-6255 (fax)
glorinda.segay@nndoh.org

Tohono O'odham Nation
Veronica Geronimo, Executive Director
Department of Health & Human Services
PO Box 810
Sells, AZ 85634
520-383-6000
520-383-3930 (fax)
veronica.geronimo@tonation-nsn.gov

Tonto Apache Tribe
Michelle Johnson, Community Health Representative
#30 Tonto Apache Reservation
Payson, AZ 85541
928-474-5000 x8137
928-474-9125 (fax)
michellej@tontoapache.org

White Mountain Apache Tribe
Jessica Rudolfo, Executive Director
Division of Health Programs
PO Box 1210
Whiteriver, AZ 85941
928-338-4955
928-338-1615 (fax)
jessicarudolfo@wmat.us

Yavapai-Apache Nation
Trudy Clark, Medical Clinic Manager
Yavapai-Apache Health Center
2400 West Datsi Road
Camp Verde, AZ 86322
928-567-8471
928-567-8449 (fax)
tclark@yan-medical.org

Yavapai-Prescott Indian Tribe
Betty Hunter, CHR Assistant
530 E. Merritt
Prescott, AZ 86301
928-515-7318
928-778-9445 (fax)
chr@ypit.com

URBAN HEALTH PROGRAMS

Native Americans for Community Action, Inc.
Jeff Axtell, CEO
2717 North Steves Blvd, Suite 11
Flagstaff, AZ 86004
928-526-2968 x131
928-526-0708 (fax)
jaxtell@nacainc.org

Tucson Indian Center, Inc.
Jacob Bernal, Executive Director
97 E. Congress St.
PO Box 2307
Tucson, AZ 85701
520-884-7131
520-884-0240 (fax)
jbernal@ticenter.org

Native American Community Health Center, Inc.
Walter Murillo, CEO
4520 N. Central Avenue, Suite 620
Phoenix, AZ 85012
602-279-5262 x3102
602-279-5390 (fax)
wmurillo@nachci.com

IHS AREA DIRECTORS

Navajo Area Indian Health Service
Brian Johnson, Acting Area Director
PO Box 9020
Window Rock, AZ 86515-9020
928-871-5811
928-871-5872 (fax)
brian.johnson@navajo.ihs.gov

Tucson Area Indian Health Service
Dixie Gaikowski, Area Director
7900 South J Stock Road
Tucson, AZ 85746-7012
520-295-2406
520-295-2602 (fax)
dixie.gaikowski@ihs.gov

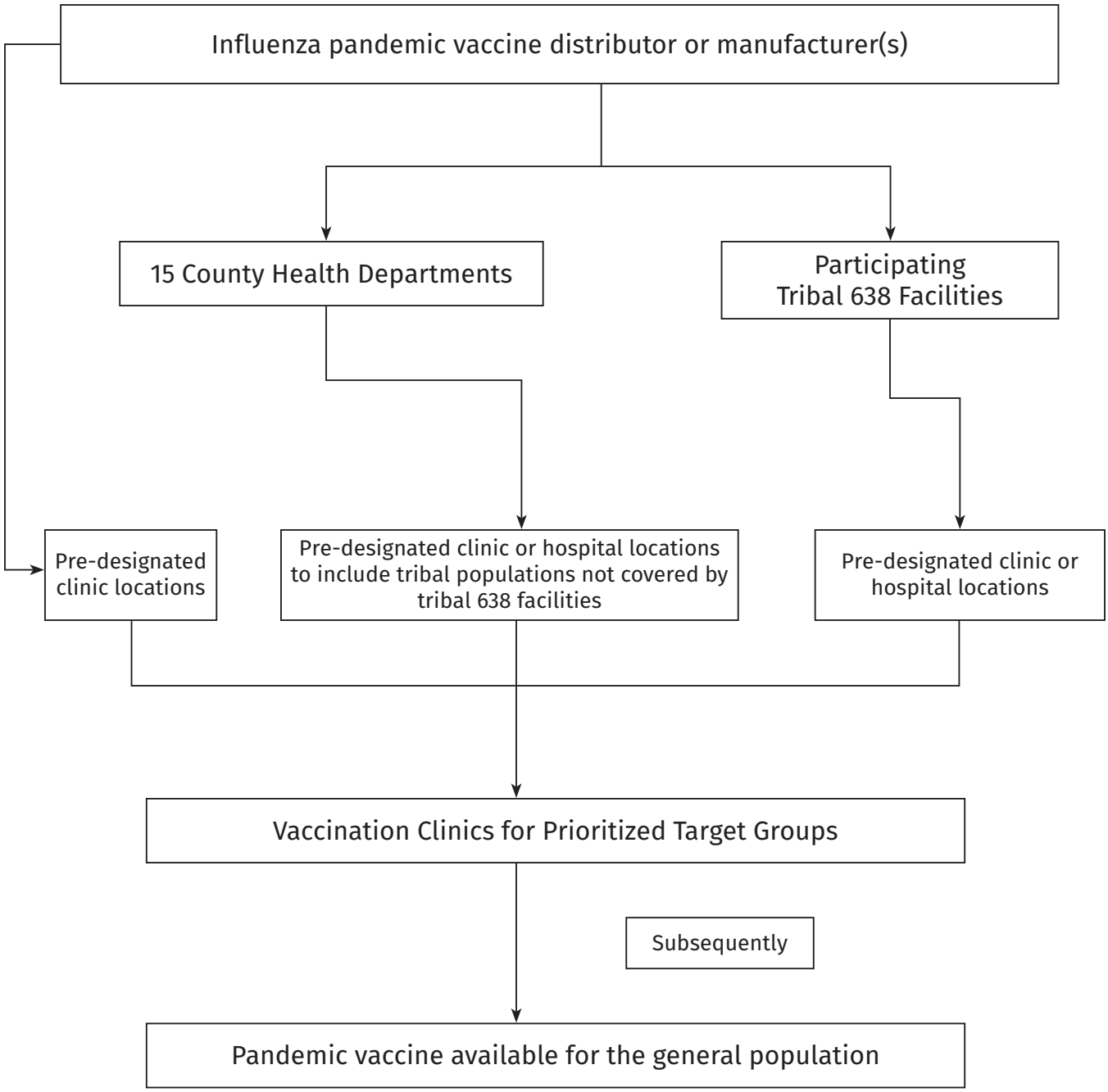
Phoenix Area Indian Health Service
Ty Reidhead, Area Director
Two Renaissance Square
40 North Central Ave., Rm 504
Phoenix, AZ 85004
602-364-5039
602-364-5042 (fax)
charles.reidhead@ihs.gov

INTER-TRIBAL/STATE

Inter Tribal Council of Arizona, Inc.
Maria Dadgar, Executive Director
2214 N. Central Ave. Suite 100
Phoenix, AZ 85004
602-258-4822
602-258-4825 (fax)
maria.dadgar@itcaonline.com

Arizona Advisory Council on Indian Health Care
Kim Russell, Executive Director
141 East Palm Lane
Suite 108
Phoenix, AZ 85007
602-542-5725
602-542-5761 (fax)
kim.russell@azahcccs.gov

Arizona Pandemic Influenza Vaccine Distribution Plan For Prioritized Target Groups



Attachment 4

Statewide Immunization Refrigerator Capacity for Arizona

PIN	Provider	Refrigerator Capacity (Doses In Syringes)	Refrigerator Capacity (Doses In Vials)	Generator (Yes or No)	Alarm System (Yes or No)
000001	ARIZONA IMMUNIZATION PROGRAM	7,710	108,000	Yes	Yes
000010	NAVAJO CTY PUBLIC HEALTH SVCS	13,890	194,400	No	No
0001	APACHE COUNTY HEALTH DEPARTMENT	4,630	64,800	No	No
0002	COCHISE COUNTY HEALTH DEPT-BISBEE	4,630	64,800	Yes	Yes
0003	COCONINO COUNTY HEALTH DEPARTMENT	7,710	108,000	Yes	Yes
0004	GILA COUNTY DIVISION OF HEALTH	7,710	108,000	Yes	Yes
0005	GRAHAM COUNTY HEALTH DEPARTMENT	4,630	64,800	Yes	No
0006	GREENLEE COUNTY HEALTH DEPARTMENT	560	7,860	Yes	Yes
0007	LA PAZ COUNTY HEALTH DEPARTMENT	4,630	64,800	No	No
0008	MARICOPA COUNTY PUBLIC HEALTH-CHN	33,940	453,600	Yes	Yes
0009	MOHAVE COUNTY DEPT OF PUBLIC HEALTH	21,600	302,400	Yes	Yes
0009A	MOHAVE CTY HEALTH DEPT-LAKE HAVASU	9,260	129,600	No	Yes
0009B	MOHAVE CTY HLTH DEPT-BULLHEAD CITY	9,260	129,600	Yes	Yes
0009C	MOHAVE COUNTY DEPT OF PUBLIC HEALTH	4,630	64,800	No	No
0011	PIMA COUNTY HEALTH DEPT-MAIN	7,710	108,000	Yes	Yes
0012	PINAL CTY HEALTH DEPT - COOLIDGE	2,470	34,560	No	No
0013	YAVAPAI COUNTY COMM HLTH SVCS	2,315	32,400	Yes	Yes
0014	YAVAPAI COUNTY COMM HLTH SVCS (PV)	4,630	64,800	Yes	Yes
0015	YUMA COUNTY PUBLIC HEALTH SERVICES	13,890	194,400	Yes	Yes
0024	NATIVE AMERICAN COMMUNITY HLTH CTR	4,630	64,800	No	No
0028	NATIVE AMER. FOR COMMUNITY ACTION	1,852	25,920	No	No
0033	CHINLE COMPREHENSIVE HC FACILITY	7,710	108,000	Yes	Yes
0034	FORT DEFIANCE INDIAN HOSP-PEDIATRIC	1,230	17,280	Yes	Yes
0036	INSCRIPTION HOUSE HEALTH CENTER	4,120	56,170	Yes	No
0037	TUBA CITY REGIONAL HEALTH CARE	4,630	64,800	Yes	Yes
0038	WINSLOW INDIAN HEALTH CARE CLINIC	1,930	27,000	Yes	No
0038A	WINSLOW INDIAN HLTH CARE CTR-LEUPP	2,470	34,560	Yes	No
0038B	WINSLOW INDIAN HLTH CARE CTR-DILKON	4,630	64,800	Yes	No
0039	PARKER INDIAN HLTH SERVICE HOSPITAL	1,542	21,600	Yes	Yes
0040	PEACH SPRINGS INDIAN HEALTH CENTER	4,630	64,800	No	No
0041	WASSAJA MEMORIAL HEALTH CENTER	2,470	34,560	Yes	No
0043	HOPI HEALTH CARE CENTER	615	8,640	Yes	Yes
0044	PHOENIX INDIAN MEDICAL CENTER	32,390	453,600	Yes	Yes
0044A	SALT RIVER HEALTH CENTER	5,150	72,140	Yes	No
0045	HU HU KAM MEMORIAL HOSPITAL	4,630	64,800	Yes	No
0046	SAN CARLOS INDIAN HOSPITAL	620	8,640	Yes	Yes
0047	WHITERIVER INDIAN HOSPITAL	16,970	237,600	No	Yes
0048	SELLS INDIAN HOSPITAL	5,030	51,960	Yes	No
0057	BYLAS HEALTH CENTER	4,630	64,800	Yes	Yes
0076	YAVAPAI COUNTY SPECIAL PROGRAMS	4,630	64,800	No	No
0084	CHIRACAHUA COMMUNITY HEALTH CENTER	4,630	64,800	Yes	Yes
0085	GILA CROSSING CLINIC	4,630	64,800	Yes	No
0102	SAN XAVIER PHS INDIAN HEALTH CENTER	2,470	34,560	No	No
0105	GILA COUNTY HEALTH DEPT-PAYSON	3,473	48,600	No	No
0106	COCHISE CO HEALTH DEPT- SIERRA VIST	4,630	64,800	No	No
0110	COCHISE COUNTY HEALTH DEPARTMENT	3,085	43,200	Yes	No

PIN	Provider	Refrigerator Capacity (Doses In Syringes)	Refrigerator Capacity (Doses In Vials)	Generator (Yes or No)	Alarm System (Yes or No)
0112	PINAL CTY HEALTH DEPT - APACHE JUNC	4,630	64,800	Yes	Yes
0113	PINAL COUNTY HEALTH DEPT - CASA GRA	4,630	64,800	Yes	Yes
0114	PINAL CTY HEALTH DEPT - ELOY	3,470	48,600	No	No
0115	PINAL CTY HEALTH DEPT - FLORENCE	4,630	64,800	No	No
0116	PINAL COUNTY HEALTH DEPT - KEARNY	2,470	34,560	No	No
0117	PINAL CTY HEALTH DEPT - MAMMOTH	2,470	34,560	No	No
0119	COCHISE CTY HEALTH DEPT-BENSON	2,470	34,560	No	No
0120	YAVAPAI COUNTY COMM HEALTH SERVICES	9,260	129,600	No	Yes
0122	SANTA ROSA HEALTH CENTER	5,150	64,800	No	No
0123	PIMA COUNTY HLTH DEPT-GREEN VALLEY	4,630	64,800	No	No
0124	PIMA COUNTY HEALTH DEPARTMENT	4,630	64,800	No	No
0155	GREENLEE CTY HLTH DEPT-DUNCAN	2,470	34,560	No	No
0163	KAYENTA HEALTH CLINIC-IHS	10,820	151,620	Yes	Yes
0164	NAVAJO COUNTY PUBLIC HEALTH SVCS	4,630	64,800	No	No
0165	NAVAJO COUNTY PUBLIC HEALTH SVCS	4,630	64,800	No	No
0171	COCHISE CTY HEALTH DEPT-DOUGLAS	4,630	64,800	No	No
0176	PIMA COUNTY HEALTH DEPT-SOUTH	5,860	82,080	No	No
0177	PIMA COUNTY HEALTH DEPT - EAST	4,630	64,800	No	No
0178	PIMA COUNTY HEALTH DEPT - NORTH	9,260	129,600	No	No
0191	PINON HEALTH CENTER	3,700	26,784	Yes	Yes
0192	TSAILE INDIAN HEALTH CENTER	2,465	34,560	Yes	Yes
0196	MARICOPA COUNTY HEALTH-REFUGEE	4,630	64,800	No	Yes
0210	CHIRICAHUA COMM. HEALTH CENTER, INC	4,630	64,800	No	No
0231	CHIRICAHUA COMMUNITY HLTH CTR, INC	4,630	64,800	No	Yes
0237	CHILCHINBETO HEALTH CLINIC	4,630	64,800	No	Yes
0239	FORT MOHAVE INDIAN HEALTH CENTER	520	7,340	No	No
0242	SUPAI INDIAN HEALTH CENTER	4,630	64,800	Yes	No

Attachment 5

ADHS Pandemic Influenza Vaccination
MANIFEST/CHAIN OF CUSTODY

Final Destination Address:

_____

_____

Quantity Sent	Description	Manufacturer	Lot No.
	Vials of 10-Dose Flu Vaccine		
	Immunization Administration Records		
	Copy of VIS (English and Spanish)		
	Re-packaging Instructions		

Quantity Returned	Description	Manufacturer	Lot No.
	Vials of 10-Dose Flu Vaccine		
	Original Immunization Administration Records		

Relinquished By: (Signature) (Print Name)	Temp Within Range	Received By: (Signature) (Print Name)	Temp Within Range	Date/ Time	Comments
	Y N		Y N		
	Y N		Y N		
	Y N		Y N		
	Y N		Y N		
	Y N		Y N		

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Supplement 6
Appendix 2

Appendix 2
ARIZONA MASS VACCINATION CLINIC PLAN

Maintained By:
Arizona Department of Health Services
Division of Public Health Services
Bureau of Epidemiology and Disease Control
Arizona Immunization Program Office

REVISED FEBRUARY 2018

CARA CHRIST, M.D., M.A., DIRECTOR

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Mass Vaccination Clinics

1.0 Introduction

Arizona Department of Health Services Immunization Program nursing staff and county immunization nurses developed the Arizona Mass Vaccination Clinic Plan. The plan is intended and written as an "off the shelf" manual for Local Health Departments (LHDs) to implement in the event of mass vaccination. It is not designed specifically for an influenza pandemic vaccination clinic.

Overview of vaccination components of a mass vaccination clinic

The comprehensive screening techniques of vaccine recipients should minimize the vaccinating an individual with contraindications or precautions. Individuals will receive educational information prior to vaccination and the post vaccination symptoms to anticipate, if any. It is expected that CDC will require the following documents:

- Medical history screening for contraindications for use by medical and public health staff
- The CDC Vaccine Information Sheet (VIS) for pandemic influenza vaccine
- Post-vaccination information sheet to explain potential adverse reactions
- Patient consent form

Those that will be receiving the vaccine will be instructed to read the CDC VIS and the post-vaccination information sheet. Spanish documents will be made available. Materials in additional languages will be provided as available.

People who do not have contraindications will receive vaccinations, and have the vaccine documented on an immunization card. They will proceed to a final check out area where a medical counselor answers any additional questions and collect forms as needed. Vaccinations will be administered according to the CDC guidelines and ADHS protocols.

Screeners, vaccinators and medical counselors will be trained personnel with a health or medical background. The ability of administering mass vaccination quickly and safely will depend on the numbers of health care workers and staff able to be adequately trained. Screeners and medical counselors need to have enough experience and training to make adequate clinical judgments about contraindications and risk of exposure. It is preferable that the screeners be nurses, nurse practitioners, paramedics (EMT-Is), physician's assistants or epidemiologists. Vaccinators need to have enough medical or health background to be trained in proper and safe administration of vaccine. Translators for common languages will be an essential part of staffing a mass vaccination clinic to assure adequate education.

2.0 Authority to Administer Vaccines (Pharmaceutical Agents) in Arizona

Authorized to give drugs/vaccines:

- Medical Doctor - ARS 32-1491 - A doctor of medicine may "dispense" (includes administer) drugs per outlined protocol.
- Osteopathic Physicians & Surgeons - ARS 32-1852 - Osteopathic physicians & surgeons are authorized to exercise all the same rights and privileges possessed by physicians and surgeons of other complete schools of medicine.
- Registered Nurse (RN) – A.A.C. R4-19-402 - Professional Nurse - (Scope of Practice) Can perform those nursing activities for which the professional nurse has been prepared through basic education (NCLEX-RN).

- Licensed Practical Nurse (LPN) - A.A.C. R4-19-309 - Practical Nurse - (Scope of Practice) Under the supervision of a professional nurse or licensed physician can perform those nursing activities for which the licensed practical nurse has been prepared through basic education (NCLEX-PN).
- Medical Assistant - ARS 32-1456 - A medical assistant may administer injections under the direct supervision of a doctor of medicine, physician assistant or nurse practitioner.
- Physician Assistant – ARS 32-2531 - A physician assistant may perform those duties and responsibilities, including the ordering, prescribing, dispensing and administration of drugs and medical devices,that are delegated by the supervising physician.

Authorized to give limited or specific drugs/vaccines:

- Emergency Medical Technician-Intermediate or Emergency Medical Technician-Paramedic (EMT-I or EMT-P) – ARS 36-2205, A.A.C. R9-25-503 may administer an agent to a patient or other individual if a table in the rules indicates that an EMT with the certification held by the EMT may administer the agent.
- School Nurse - ARS 36-673 - A local health department, on request by a school nurse and approval by the school administrator, shall train and authorize the school nurse to administer required immunizations.
- Dentist - ARS 32-1202 - Specific reference and application to the teeth, gums, jaws, oral cavity or tissues.
- Naturopathic doctor - ARS 32-1581 - A doctor of naturopathic medicine, certified by the board, may dispense a natural substance or device to a patient for a condition being diagnosed or treated by the doctor.
- Pharmacists – A.A.C. R4-23-411 - Upon receipt of a valid prescription order and completion of training may administer all vaccines to adults and to children 6 years and older. Pharmacists can administer many vaccines without a prescription: influenza vaccine to patients 3 years and older; most vaccines to adults 18 years and older (except as specified in A.A.C. R9-6-1301); may administer specified vaccines to adolescents; and may administer vaccines to patients of any age when there is a public health emergency.

Not authorized to give injected drugs/vaccines:

- Optometrists - ARS-32-1706 (D) (8) - A licensee shall not prescribe, dispense or administer substances administered by injection.
- Chiropractors - ARS - 32-925 (B) - A doctor of chiropractic licensed under this chapter shall not prescribe or administer medicine or drugs.

3.0 Licensed Medical Volunteers for Mass Immunizations Clinics

Basic Requirements:

- Citizen of United States or legal/registered alien
- Current mailing address and contact information (Complete volunteer information form)
- Current professional licensure information (copy of current licensure or credentials)
- Able to stand for long periods of time
- Able to lift up to 25 pounds

Licensure

In the event of a large public health emergency including mass vaccination clinics, the governor may waive licensure requirements and authorize retired and out-of-state professionals to perform in medical capacities. In which case, members whose licenses are inactive may be utilized in the same manner as those with current licensure.

Assignments

In the event of a large public health emergency, on the first day of emergency clinic operations,

- Provide "Just-in-time" training
- Establish on-site personnel assignments
- Determine staffing needs determined
- Make shift assignments

A skills assessment will be conducted to determine the appropriate job assignment for the volunteer. Though there are some tasks that members whose licenses have expired will be prohibited from performing such as vaccinations, their expertise and training may be utilized in other areas such as review of medical information, exit interviews, supply management, etc.

Training

All volunteers will be required to receive training in patient confidentiality and bloodborne pathogens/ universal precautions prior to working with the public.

Mass Vaccination/Mass Dispensing Clinics

On the first day of clinic operations, offer vaccination to clinic staff and their immediate family members, if available and authorized.

4.0 Example of a Volunteer Information Form

Name: _____

Home Address: _____ Apt # _____

City: _____ State: _____ Zip: _____

Mailing Address (if different than home) _____

City: _____ State: _____ Zip: _____

Home Phone: (_____) _____ Work Phone: (_____) _____

Pager or Cellular: (_____) _____ Email: _____@_____

Special Skills/language: _____

Can you perform data entry? Yes / No 18 years or older? Yes / No

Vaccination Clinic Volunteer Positions

Please mark an "X" in this column if willing and able to serve in this capacity.	Position	Experience Required	Responsibilities
	Triage	Nurse or Paramedic (EMT)	Triages potential vaccine recipients. Directs traffic to vaccinators, medical screeners, or physicians, as deemed appropriate.
	Medical Screeners	MD or Nurse	Reviews patient history for those with contraindication and answers questions for informed consent.
	Vaccinators/ Witness	Must be allowed to administer vaccinations under state law.	Alternates between administering vaccination, filling out vaccine card, and signing as witness. Collects signed vaccination consent and completed medical screening form.
	Vaccine Preparation	Pharmacists, pharmacy technicians, or nurse experienced with vaccine reconstitution.	Reconstitutes or dispenses vials of vaccine.
	Exit Reviewers	Medical or public health personnel	Answers final questions about site care, adverse event symptoms or non-take reporting procedures/ follow-up, and other issues following vaccination.

5.0 Traffic Control

Traffic Control staff should be bilingual (English/Spanish). They should be able to answer questions and have the skill to keep people calm and deal with large crowds. All clients will be asked to complete and read the Immunization Screening Form and the Consent Form. Each client must provide name, birth date, age, complete address and phone number. Once the form is complete all clients will go to screening.

Nurses (or available staff) will be available to clients waiting in line to answer questions and assist with completing the forms.

Screening

Screening supplies: Pens, ink stamps with date and organization name, stamp pads, immunization record books, vaccine information statement (VIS), stapler and staples.

Consideration should be given to using licensed healthcare personnel to screen clients for immunization history.

Staff will confirm name, birth date, address, and phone number. Staff will review the Immunization Screening form with the client. The Screening form will be attached to the consent form. Explain to client about the vaccine being given and screen the client for any contraindications to the vaccine. Provide the VIS and offer to answer any questions. Provide a record of the immunization administered and phone numbers for follow up if they have any questions or concerns.

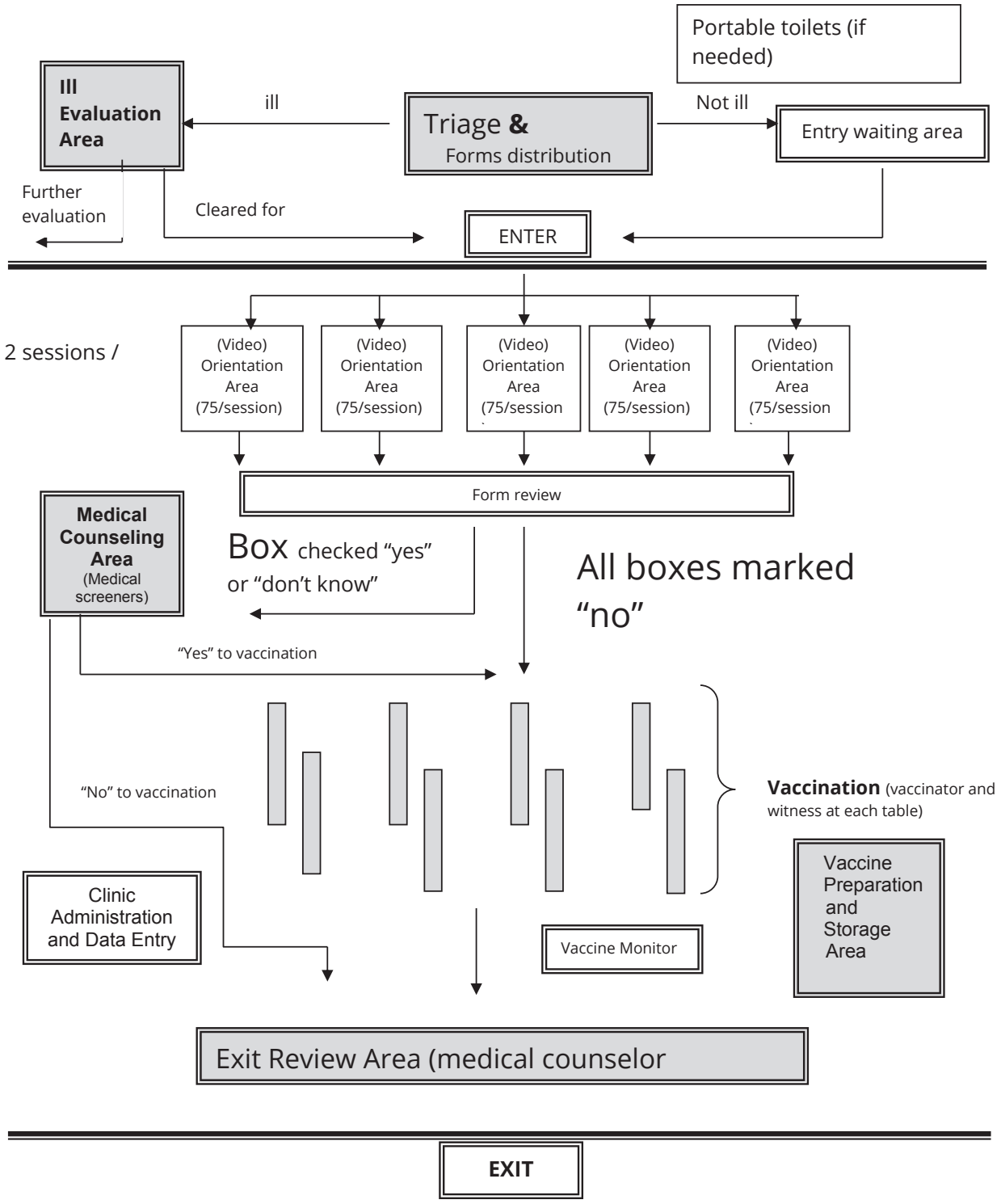
Screening staff will take a 15 minute break every two hours and will rotate between screening and administering vaccines after 4 hours.

Possible Mass Vaccination Clinics

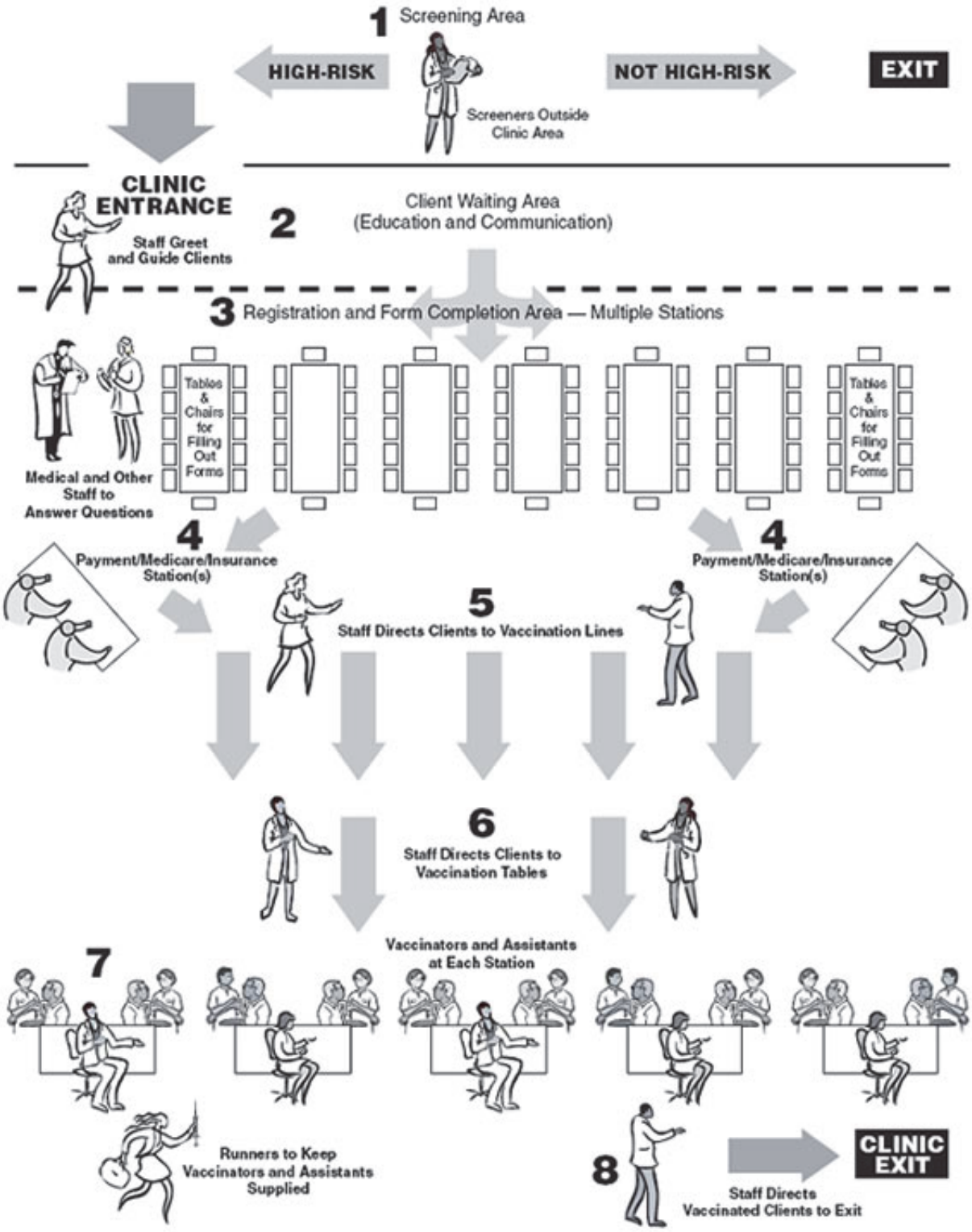
- Influenza
- Smallpox
- Anthrax

6.0 GUIDELINES FOR LARGE-SCALE VACCINATION CLINIC PLANNING
MASS VACCINATION CLINIC MODEL

(It is recommended that staff in each of the shaded boxes be licensed medical personnel)



High-Volume Influenza Vaccination Clinic



http://www.cdc.gov/flu/professionals/vaccination/images/vax_clinic.jpg

7.0 Mass Vaccination Clinic Security Considerations

- Vaccine storage sites (clinic and non-clinic) to include security personnel and locked, limited access areas for vaccine storage
- Backup power sources (generators) should be identified for all sites where vaccine is stored (vaccination clinics and storage sites)
- Vaccination clinic sites: security personnel for crowd control, traffic movement, clinic Personnel
- Vaccine transportation to storage sites and dispensing clinics

Security/job action guidelines

- Non-medical
- Law enforcement or security background preferable
- Bi-lingual preferred
- Training required
- Coordinate with local Security personnel. Work with bioterrorism to facilitate agreement and collaboration with local entities
- Maintain perimeter security outside clinic
- Maintain security of clinic supply storage site
- Maintain security within clinic

Clinic security

- Consider using uniformed presence to act as security and assist in managing crowds
- Require all staff to wear identification badges color coded for their job functions
- Wear ID badge at all times
- Patrol all clinic stations frequently to maintain order
- Patrol outside clinic frequently to maintain order
- Contact Security Manager for backup if necessary
- Ensure supply/storage site is locked and secure before vaccine/medication preparation staff leaves for the day

Shift Checklist

- Report to Safety/Security Manager
- Sign personnel checklist at staging area
- Wear ID badge at all times
- Patrol all clinic stations frequently to maintain order
- Contact Security Manager for backup if necessary
- Ensure supply/storage site is locked and secure before vaccine/medication preparation staff leaves for the day
- Report to oncoming Security personnel
- Patrol frequently after clinic hours
- Sign off/report to Security Manager

8.0 Clinic Supplies and Set-up

Supplies for immunization clinics will vary based on size, locations, and local needs. Vaccines need to be properly, handled, administered, and accounted for. Clinic staff needs to be properly trained to handle and administer vaccine. Vaccinators need to be certified in CPR.

The National Immunization Summit has published a document titled "Checklist of Best Practices for Vaccination Clinics Held at Satellite, Temporary, or Off-Site Locations. Below is an outline of this document's guidance. For the full document, see *www.izsummitpartners.org/off-site-vaccination-clinic-checklist*.

DURING ALL STAGES (PRE-CLINIC, DURING THE CLINIC, AND POST-CLINIC)

- Keep vaccines at the correct temperature at all times using proper procedures for vaccine transport, handling and storage. Document temperature monitoring at appropriate intervals during all stages. For further guidance: *https://www.cdc.gov/vaccines/hcp/admin/storage/toolkit/index.html*

PRE-CLINIC:

- Decide on the needed supplies depending on the size, scope, and location of the clinic. Obtain and securely store the needed transport supplies and equipment for the clinic. Prepare a list of all the needed supplies. Use this list to check the vaccines and other supplies to make sure that nothing has expired and that all the needed supplies are available and prepared for transport.
- The clinic coordinator/supervisor should review the "Checklist of Best Practices for Vaccination Clinics Held at Satellite, Temporary, or Off-Site Locations" to make sure that the clinic will fulfill all the requirements for vaccine transportation, vaccine storage, vaccine handling, clinic preparation and supplies, vaccine preparation, vaccine administration, vaccine documentation, and post-clinic actions and documentation.
- An emergency medical kit to be used in case of anaphylaxis would include epinephrine and CPR pocket resuscitation masks for adults and children.
- Have vaccine shipped directly to the site. If direct shipment is not possible, transport vaccine using correct storage and handling guidelines. Vaccine must be maintained between 36°-46°F (2° -8° C).
- Train staff to perform CPR and treat medical emergencies, including anaphylaxis. Ensure supplies are on site, including an emergency medical kit and infection control supplies, as well as enough Vaccine Information Statements (VISs).

DURING THE CLINIC:

- Always check for medical contraindications and allergies before vaccinating anyone. Provide VISs for all patients or guardians.
- Follow manufacturers' instructions and Advisory Committee on Immunization Practices guidelines for correct age and intervals (for vaccines that require more than one dose).
- Follow manufacturers' instructions for injection dose, site, and route.
- Ensure a clean working environment to provide patient care.
    - The surfaces and equipment used for patient contact shall be cleaned with an EPA-registered hospital disinfectant, following manufacturer's recommendations for use.

    - Use drape sheets for barriers on the surface for areas where vaccine is prepared.
    - A trash bag will be attached with masking tape to the work area for the disposal of non-biohazard materials.
    - The clinic layout should be arranged so that patient care items are in a separate area from the information and assessment area.
    - Any patient spills will be handled utilizing universal precautions.
    - Wash or cleanse hands between each patient.
- Only use vaccines that are not damaged, not expired, at the correct temperature, and prepared using aseptic technique.
- Follow safe handling of needles and syringes, including using a new needle and syringe for every injection. Dispose of all sharps in a sharps container.
- Document every vaccination and give patients a copy showing what vaccine(s) they received.
- Record vaccinations in the Arizona State Information Immunization System (ASIIS) during the clinic, if access is available at the time of the clinic. Otherwise, collect information in a form that the information can later be entered into ASIIS as previously specified.

POST-CLINIC:

- Patient areas will be returned to their previous condition and arrangement
    - All contaminated items will go into the biohazard containers
    - All non-contaminated items will go into the trash bag
    - All items will be brought back to the office and disposed of properly.
    - Patient areas should be returned to their previous arrangement.
- Keep patient information secure and private. If vaccination information could not be entered into ASIIS during the clinic, enter vaccine data into ASIIS after the clinic.
- Field clinic information and record keeping should be obtained and maintained in the same manner as it is done in the regular health department or medical clinic.
- When the clinic is complete, transfer patient information to the main offices as is appropriate.

8.1 Examples of Supplies and Equipment for Mass Vaccination Clinics

The following are examples of supplies that will be needed in a mass vaccination clinic. Actual amounts will vary depending on the physical layout and size of each clinic. Cases of certain materials may need to be ordered in order to get sufficient quantities. Parentheses indicate some standard quantity sizes to assist with ordering.

Table 8.1.1. VACCINE SUPPLIES AND EQUIPMENT Immunization Clinic Supplies—Calculate for the clinic size Item Description
Plastic storage containers to transport supplies
Vaccines in appropriate pediatric and adult dosing
Insulated containers that are qualified for vaccine transport and pack-out to transport refrigerated vaccine
Cold packs for insulated containers

Table 8.1.1. VACCINE SUPPLIES AND EQUIPMENT Immunization Clinic Supplies—Calculate for the clinic size Item Description
Digital data logger with phenol probe with current certification. 1 for each insulated container and/or portable refrigeration unit.
Logs for documenting vaccine temperatures during transport and during clinic. 1 for each vaccine transport and storage container
Vanish Point Syringes 23G x 5/8” 3cc
Vanish Point Syringes 23G x 1” 3cc
Large sharps containers—quantity and number to hold all discarded needles and syringes 1 available per vaccinator at all times
Non-latex gloves – large, medium, small
Emesis Basin—Disposable
Surgical masks (for ill patients)
Adhesive bandages (¾”x3” strips or circular)
Isopropyl alcohol 70% 16 ounce bottle
Cotton Balls
Alcohol Prep Pads
Drape Sheets (40 x 48)
Red Biohazard Bags (24” x 24”)
Hand Sanitizer (≥ 60% alcohol content)
Germicidal disposable cleaning wipes
Liquid soap for washing hands when visibly soiled
Facial tissue boxes for staff and patients
EPA-approved disinfectant in a spray bottle
Small and large trash containers

Table 8.1.2. MEDICAL AND EMERGENCY SUPPLIES Immunization Clinic Supplies—Calculate for the clinic size Item Description
Surgical masks (for ill patients)
Hand Sanitizer (≥ 60% alcohol content)
Germicidal disposable hand wipes
Liquid soap for washing hands when visibly soiled
EPA-approved disinfectant in spray bottle
Facial tissue boxes for staff and patients
Paper towels
Drape Sheets (40 x 48)
Emesis Basins—Disposable
Non-latex gloves – large, medium, small
Digital Thermometers
Digital Thermometer probe covers
Tongue depressors
Flashlights
Flashlight batteries
Stethoscopes
BP Cuff/Sphygmomanometer – Pediatric
BP Cuff/Sphygmomanometer – Adult
BP Cuff/Sphygmomanometer – Adult Extra Large
Epinephrine Auto Injector - Adult
Epinephrine Auto Injector - Child
Sharps container

Table 8.1.2. MEDICAL AND EMERGENCY SUPPLIES Immunization Clinic Supplies—Calculate for the clinic size Item Description
Adult one-way valve CPR pocket masks
Pediatric one-way valve CPR pocket masks
EPA-approved antimicrobial for blood spills and body fluid clean-up
Fluid control solidifier for blood spills
Small trash containers
Red Biohazard Bags (24” x 24”)

Table 8.1.3. FORMS, OFFICE SUPPLIES, AND MISCELLANEOUS SUPPLIES Immunization Clinic Supplies—Calculate for the clinic size Item Description
Laptop with internet connection for ASIIS queries and reporting
Printer with copying ability or separate printer and copier
Paper for printer; extra paper for notes or making additional signs
XXX (TBD) for ASIIS reporting data collection if no internet connection
Paper documents on which to collect ASIIS reporting data
Vaccine standing orders and protocols
Patient sign-in document
Contraindication screening checklist (sections 14.9 - 14.13)
Vaccine Information Statements (VISs)—English & Spanish (section 14.25) Quantities as needed
Vaccine Information Statements (VISs)—see other available languages (section 14.26) At least one copy of each available language for copying as needed
Consent forms for vaccines being administered (English & Spanish; other languages?) Quantities and needed
Contraindication screening checklist (English & Spanish; others—see section 9.2) Quantities as needed
Vaccine administration record for patient—quantities as needed
Information for “After the Shot” (English & Spanish; others (see section 14.24) Quantities as needed
Billing forms, if needed
Receipt book and cash pouch
Temperature logs for vaccines
Plastic storage containers to transport supplies
Juice or other liquids for symptomatic patients
Water bottles; cups for water or juice
Calendar; directory for essential telephone and email contacts
Pens and pencils
Highlighter felt pens
Stapler and staples
Adhesive tape—clear masking, and heavy-duty
Paper clips; rubber bands; scissors
Clipboards
Folders: File folders and accordion folders
Sticky notes (several sizes)
Paper towels
Portable chairs/table
Clinic Signage (See section 9.0 for details)
Cell phones and power adapters; power strips
Medical license/credentials; identification cards
Identification badges

Table 8.1.4. OTHER SUPPLIES TO CONSIDER AS NEEDED Immunization Clinic Supplies
Sterile Gauze 2x2
Paper Tape
N-95 Masks (small and regular)
Different colored vests for staff/volunteers designating position
Walkie-Talkies (900 mHz radios for staff communication)
Hand Trucks
Supply boxes with wheels
Corrugated Waste Receptacles
Can Liners
Cold Packs
Supply Bins

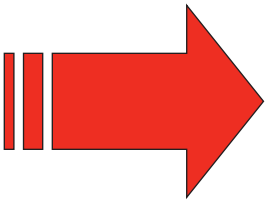
9.0 Example of Signage for Mass Vaccination Clinics

The following are examples of signage that can assist in organizing a mass vaccination clinic. Amounts will vary depending on the site and expected size of each clinic.

SIGN	SIZE	# NEEDED
Sandwich boards	48” x 24”	10 per clinic
VACCINATION CLINIC	36” X 24”	4 per clinic
ENGLISH SPEAKING	36” X 24”	2 per clinic
SPANISH SPEAKING	36” X 24”	2 per clinic
NON-ENGLISH SPEAKING	36” X 24”	2 per clinic
Parking	48” x 24”	4 per clinic
Enter Here	36” X 24”	4 per clinic
Sign In (yellow)	36” X 24”	5 per clinic
Education (blue)	36” X 24”	5 per clinic
Screening (green)	36” X 24”	5 per clinic
Vaccination (red)	36” X 24”	5 per clinic
Handicapped	36” X 24”	2 per clinic
Special Needs	36” X 24”	2 per clinic
Dispensing (red)	36” X 24”	5 per clinic
After-Care (orange)	36” X 24”	5 per clinic
Exit (yellow)	36” X 24”	2 per clinic
Restrooms	36” X 24”	2 per clinic
WOMEN	36” X 24”	2 per clinic
MEN	36” X 24”	2 per clinic
Staff Only	36” X 24”	2 per clinic
No Smoking	36” X 24”	5 per clinic
No Food/Drink	36” X 24”	5 per clinic
First Aid Area	36” X 24”	2 per clinic
Arrows	24” x 10”	50 per clinic 10 – red 10 – green 10 – blue 10 – orange 10 – yellow

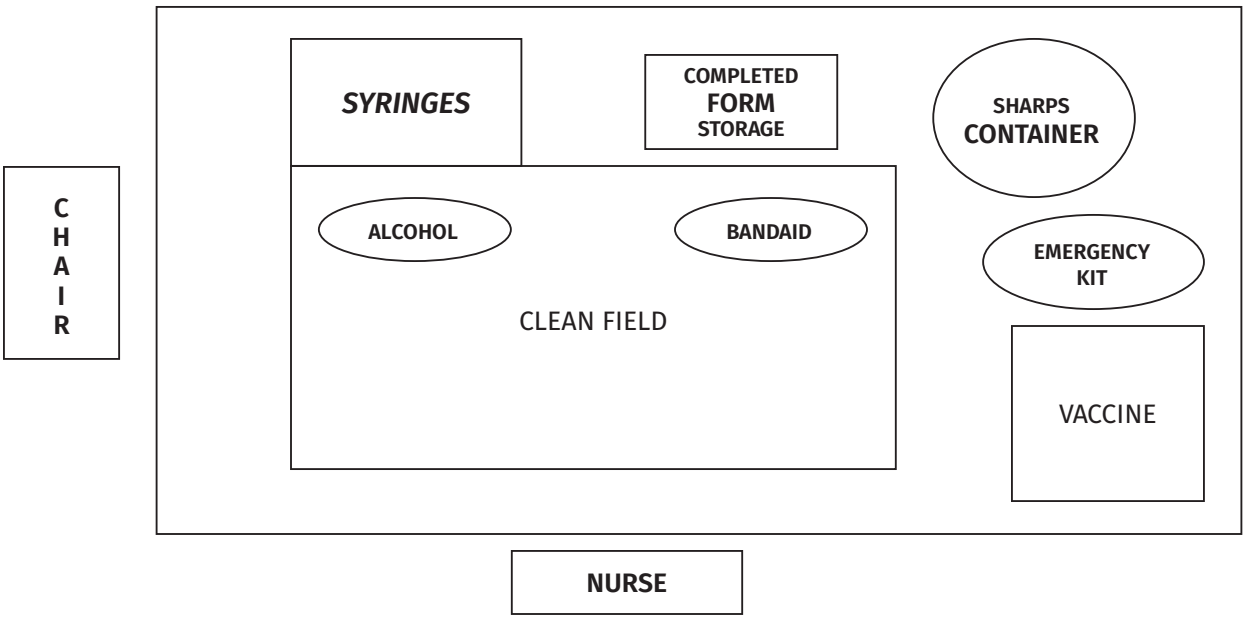
SIGN	SIZE	# NEEDED
Plastic tape	Rolls 4" wide x 36yds	10 rolls 2 - Yellow 2 - Blue 2 - Green 2 - Orange 2 - Red
Velcro squares		600

- Sandwich boards are portable and can be easily moved from one place to another
- Signs (laminated) will be contracted out to be printed
- Velcro squares can be placed on the corners and on the sides of the sandwich boards (6 squares pr sandwich board)
- Corresponding Velcro squares can be placed on the 48” x 24” signs and can quickly be adhered to the sandwich boards
- 24” x 48” (reading side to side) signs will have to be mounted on walls, posts, etc.
- Need lots of large, bright arrows to post wherever needed.



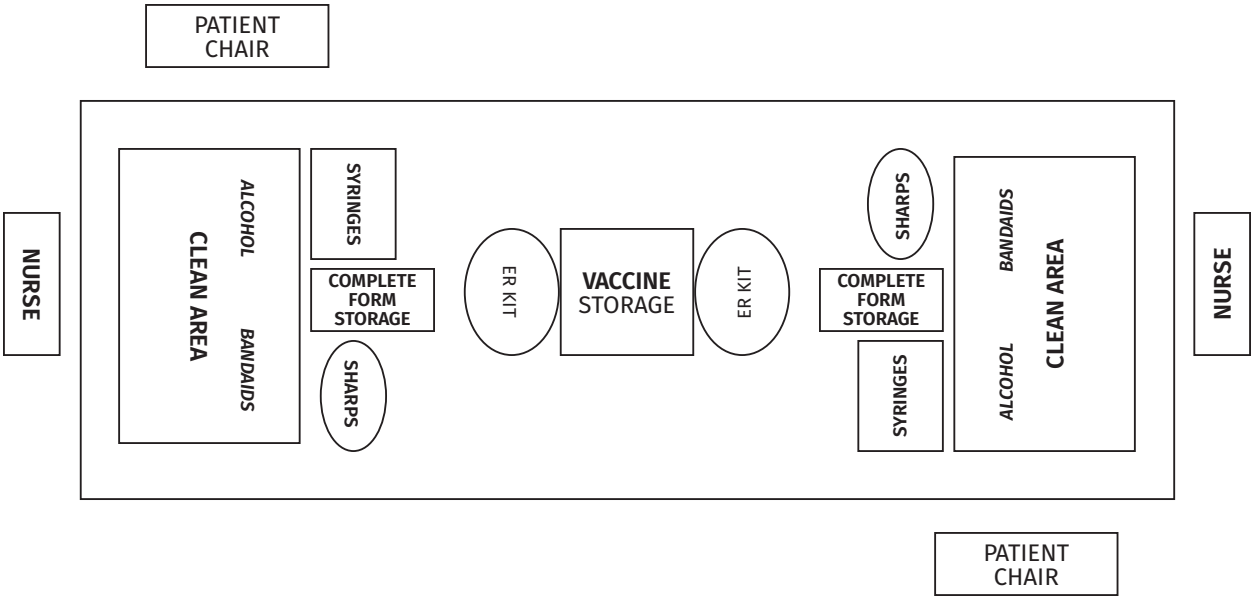
10.0 Example of layout for vaccine administration table top/station.

Minimal amount of vaccine will be kept at each table, in appropriate storage container that meets cold chain requirement for the specific vaccine. Main supply of vaccine will be kept in the refrigerator system to allow for appropriate cold chain management.



11.0 Example of layout for 2 vaccine administration stations at one table:

Ideally, a minimal amount of vaccine will be kept at each table, in appropriate storage containers that meet cold chain requirements for the specific vaccine. The main supply of vaccine will be kept in refrigerator system to allow for appropriate cold chain management.



12.0 Infection Control

Universal or standard precautions shall be observed to prevent contact with blood or other potentially infectious materials. Under circumstances in which differentiation between body fluid types is difficult or impossible, all body fluids shall be considered potentially infectious material.

Safe Work Practices

Eating, drinking, smoking, applying cosmetics or lip balm, and handling contact lenses are prohibited activities in work areas where there is a reasonable likelihood of exposure to potentially infectious materials.

Personal Protective Equipment

Use of protective barriers such as gloves, gowns, masks is recommended for direct contact with blood and other body fluids.

Patient Resuscitation

Avoid unnecessary mouth-to-mouth contact; use mouthpiece, resuscitation bag or other ventilation devices to prevent contact with mouth and oral secretions.

Emergency Mouth-to-mouth resuscitation

Mouth pieces, resuscitation bags or other ventilation devices should be strategically located and available for use in areas where the need for resuscitation might be anticipated.

Gloves

Gloves shall be worn when it can be reasonably anticipated that the employee may have hand contact with blood, other potentially infectious materials, mucous membranes, and non-intact skin; and when handling or touching contaminated items or surfaces.

Supplies

Clean and dirty materials are kept in separate areas. Needles and syringes should be stored in a secure area.

Syringes and Needles

A needle shall not be bent, sheared, replaced in the sheath or guard, or removed from the syringe following use. The needle and syringe shall be promptly placed in a sharps container. Do not recap a needle.

Sharps Containers

Sharps containers are to be discarded when filled ¾ full or less with used needles and syringes. When moving contaminated sharps from the area of use, the containers shall be closed immediately prior to removal. An adequate supply of sharps containers should be available at every vaccination clinic.

Hand Hygiene

Hands are to be washed with soap and water when visibly dirty or soiled.
Alcohol-based (≥60% alcohol) hand rubs can be used when hands are not visibly soiled.
Hands should be washed/cleaned between each patient.

Work Surfaces

For routine surface cleaning, use an EPA-registered disinfectant labeled for use in health care for disinfections.

Vaccine clinics do not usually result in work surfaces becoming contaminated with blood and body fluids.

However, work surfaces that have been contaminated with blood and body fluids shall be decontaminated with an EPA-approved antimicrobial after completion of procedures; immediately or as soon as feasible when surfaces are overtly contaminated or after any spill of blood or other potentially infectious materials; and at the end of the work shift if the surface may have become contaminated since the last cleaning.

For more details on infection prevention in outpatient settings, see the CDC guide at *https://www.cdc.gov/infectioncontrol/pdf/outpatient/guide.pdf*.

Potentially biohazardous materials

Potentially infectious materials should be cleaned up promptly. If the potentially infectious material is in a liquid state, use of a fluid control solidifier can aid in effective clean-up. The area should then be treated with an EPA-approved antimicrobial.

Soiled Patient Care equipment

Handle in a manner that prevents transfer of microorganisms to oneself, others, and environmental surfaces. Wear gloves when handling soiled items and perform hand hygiene afterwards.

Disposal of solid waste

Wear gloves when handling waste containers and perform hand hygiene afterwards.

13.0 Contact information for Selected Vaccine Manufacturers and Distributors

Manufacturer/Distributor	Telephone Number	Product(s)
Centers for Disease Control and Prevention *https://www.cdc.gov/laboratory/drugservice/index.html*	404-639-3670	Distributor for anthrax and smallpox vaccines, and diphtheria antitoxin
Emergent BioSolutions *www.emergentbiosolutions.com*	877-246-8472	Anthrax, Smallpox
GlaxoSmithKline *www.gskvaccines.com*	866-475-8222	DTaP, DTaP-HepB-IPV, DTaP-IPV, HepA, HepB, HepA-HepB, Hib, Influenza, IPV, MenACWY-CRM, MenB-4C, Rabies, RV1, Tdap
Grifols *http://www.grifolstdvaccine.com/en/web/td-vaccine/ordering-td-vaccine*	844-GRF-VACC 844-473-8222	Distributor for Td manufactured by Massachusetts Biological Labs
Massachusetts Biological Labs *www.umassmed.edu/massbiologics*	800-457-4626	Td
MedImmune, Inc. *www.flumistquadrivalent.com*	877-633-4411	Influenza (LAIV)
Merck & Co., Inc. *www.merckvaccines.com*	877.829.6372	HepA, HepB, Hib, 9vHPV, MMR, MMR-V, PPSV23, RV5, VAR, ZOS
PaxVax *http://www.paxvax.com*	858-450-9595	Cholera, Typhoid (oral)
Pfizer *www.pfizerpro.com*	800-438-1985	PCV13, Men B
sanofi pasteur *www.vaccineshoppe.com*	800-822-2463	DT, DTaP, DTaP-IPV, DTaP-IPV-Hib, DT, Hib, Influenza, IPV, MenACWY-D, Tdap, Typhoid (IM), YF
Seqiris *www.seqirus-us.com/products.htm*	855-358-8966	Influenza

Also see: *https://www.cdc.gov/vaccines/hcp/admin/storage/downloads/manufact-dist-contact.pdf* October 2017

14.0 RESOURCES AND FORMS FOR MASS VACCINATION CLINICS

14.1 Vaccine Storage and Handling Guidelines
See CDC's Vaccine Storage & Handling Toolkit.
https://www.cdc.gov/vaccines/hcp/admin/storage/toolkit/storage-handling-toolkit.pdf

14.2 Checklist for Safe Vaccine Storage and Handling
http://www.immunize.org/catg.d/p3035.pdf (11/16)

14.3 Maintaining the Cold Chain during Transport
Guidelines for Emergency Vaccine Transport and Short-Term Storage
California Department of Public Health, Immunization Branch
http://www.eziz.org/assets/docs/IMM-983.pdf (1/18)

14.4 Vaccine Transportation Temperature Log
Refrigerated Vaccine Transport Log, Vaccine for Children Program,
California Department of Public Health, Immunization Branch
http://eziz.org/assets/docs/IMM-1132.pdf (11/16)

14.5 Checklist of Best Practices for Vaccination Clinics Held at Satellite, Temporary, or Off-Site Locations
https://www.izsummitpartners.org/content/uploads/2017/02/NAIIS-Vaccination-Clinic-Checklist_v2.pdf

14.6 Ten Principles for Holding Safe Vaccination Clinics at Satellite, Temporary, or Off-Site Locations
https://www.izsummitpartners.org/content/uploads/2017/04/Ten-principles-for-safe-vac-clinics-1-pg-sum.pdf

14.7 Guidelines for Large Scale Influenza Vaccine Clinics
https://www.cdc.gov/flu/professionals/vaccination/vax_clinic.htm#location

14.8 Skills Checklist for Vaccine Administration
http://www.immunize.org/catg.d/p7010.pdf (10/17)

14.9 Screening Checklist for Contraindications to Vaccines for Adults

- English: *http://immunize.org/catg.d/p4065.pdf* (8/17)
- Spanish: *http://immunize.org/catg.d/p4065-01.pdf*
- Arabic: *http://immunize.org/catg.d/p4065-20.pdf*
- Chinese: *http://immunize.org/catg.d/p4065-08.pdf*
- French: *http://immunize.org/catg.d/p4065-10.pdf*
- Hmong: *http://immunize.org/catg.d/p4065-02.pdf*
- Korean: *http://immunize.org/catg.d/p4065-09.pdf*
- Russian: *http://immunize.org/catg.d/p4065-07.pdf*
- Vietnamese: *http://immunize.org/catg.d/p4065-05.pdf*

14.10 Screening Checklist for Contraindications to Vaccines for Children and Teens

- English: *http://immunize.org/catg.d/p4060.pdf* (9/17)
- Spanish: *http://immunize.org/catg.d/p4060-01.pdf*
- Arabic: *http://immunize.org/catg.d/p4060-20.pdf*
- Chinese: *http://immunize.org/catg.d/p4060-08.pdf*
- French: *http://immunize.org/catg.d/p4060-10.pdf*

- Korean: *http://immunize.org/catg.d/p4060-09.pdf*
- Russian: *http://immunize.org/catg.d/p4060-07.pdf*
- Vietnamese: *http://immunize.org/catg.d/p4060-05.pdf*

14.11 Screening Checklist for Contraindications to Inactivated Injectable Influenza Vaccination

- English: *http://immunize.org/catg.d/p4066.pdf* (9/17)
- Spanish: *http://immunize.org/catg.d/p4066-01.pdf* (9/16)

14.12 Screening Checklist for Contraindications to Live Attenuated Intranasal Influenza Vaccination

- English: *http://immunize.org/catg.d/p4067.pdf* (9/16)
- Spanish: *http://immunize.org/catg.d/p4067-01.pdf* (2/14)

14.13 Administering Vaccines: Dose, Route, Site, and Needle Size

http://www.immunize.org/catg.d/p3085.pdf (10/17)

14.14 Standing Orders for Administering Influenza Vaccine to Adults

http://www.immunize.org/catg.d/p3074.pdf (9/17)

14.15 Standing Orders for Administering Pneumococcal Vaccines to Adults

http://www.immunize.org/catg.d/p3075.pdf (1/17)

14.16 Standing Orders for Administering Influenza Vaccine to Children and Adolescents

http://www.immunize.org/catg.d/p3074a.pdf (9/17)

14.17 Standing Orders for Administering Pneumococcal Conjugate Vaccine to Children

http://www.immunize.org/catg.d/p3086.pdf (4/13)

14.18 Standing Orders for Administering Pneumococcal Polysaccharide Vaccine to Children and Teens

http://www.immunize.org/catg.d/p3075a.pdf (10/17)

14.19 How to Administer Intramuscular and Subcutaneous Vaccine Injections to Adults

http://www.immunize.org/catg.d/p2020a.pdf (11/15)

14.20 How to Administer Intramuscular and Subcutaneous Vaccine Injections

http://www.immunize.org/catg.d/p2020.pdf (9/17)

14.21 How to Hold Your Child during Vaccinations

https://www.cdc.gov/vaccines/parents/tools/holds-factsheet.pdf (CS218609; download 12/2017)

14.22 Medical Management of Vaccine Reactions in Adults

http://www.immunize.org/catg.d/p3082.pdf (7/16)

14.23 Medical Management of Vaccine Reactions in Children and Teens

http://www.immunize.org/catg.d/p3082a.pdf (7/16)

14.24 After the Shots...What to do if your child has discomfort.

- English: *http://www.immunize.org/catg.d/p4014.pdf* (7/14)
- Spanish: *http://www.immunize.org/catg.d/p4014-01.pdf*
- Arabic: *http://www.immunize.org/catg.d/p4014-20.pdf*

- Chinese: *http://www.immunize.org/catg.d/p4014-08.pdf*
- French: *http://www.immunize.org/catg.d/p4014-10.pdf*
- Korean: *http://www.immunize.org/catg.d/p4014-09.pdf*
- Russian: *http://www.immunize.org/catg.d/p4014-07.pdf*
- Vietnamese: *http://www.immunize.org/catg.d/p4014-05.pdf*

14.25 VISs on the Centers for Disease Control and Prevention Website
https://www.cdc.gov/vaccines/hcp/vis/index.html

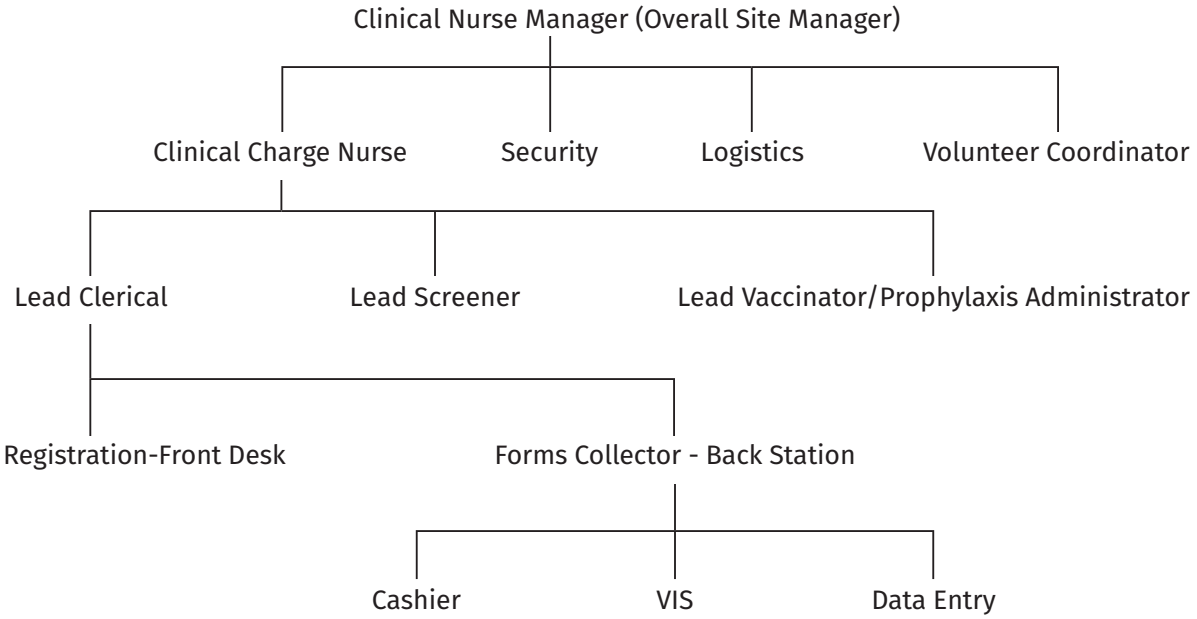
14.26 VISs in Multiple Languages
http://www.immunize.org/vis

15.0 Mass Immunization/Prophylaxis Clinic Job Descriptions

Arizona Mass Vaccination Clinic Plan contains 37 job action sheets for the personnel operating the mass vaccination clinic. The job action sheets include the job requirements, job qualifications, job duties, and National Incident Management System (NIMS) compliance components.

The Arizona Mass Vaccination Clinic Plan utilizes licensed medical volunteers for clinic staffing needs which are the responsibility of the Volunteer Coordinator for the clinic. It is also the local health departments' responsibility to identify sources of all clinic staffing, including back up positions identified for each clinic position.

MASS IMMUNIZATION/PROPHYLAXIS CLINIC ORGANIZATIONAL CHART



The job descriptions outlined in the above Organizational Chart for a Mass Immunization/ Prophylaxis Clinic are listed in the pages below. Most of the positions have a:

- Position summary- lists job requirements and qualifications
- Functional job description- describes more detail re: job duties
- Positional Checklists- NIMS Compliant

Basic Life Support (BLS) training should be considered for all licensed providers.

Mass Immunization and/or Prophylaxis Clinics

Position Title: Clinical Nurse Manager (Overall Site Manager)
Organizational Unit: Health Department

Position Summary
Oversees the overall immunization and/or mass prophylaxis clinic and its operations.

Supervision Exercised
The clinical nurse manager supervises all employees at the vaccination clinic.

Supervision Received
The clinical nurse manager receives supervision from the County Health Officer or her/his designee.

Duties/Tasks

- Coordinates with site facility staff to ensure clinic operations.
- Ensures adequate staffing levels are maintained for clinic operations.
- Maintains contact with the Health Department representative filling the Annex H position at the Emergency Operations Center (EOC).

Job Requirements and Qualifications

Supervision experience required: Current Arizona R.N. Nursing license

The qualifications listed above are intended to represent the minimum skills and experience levels associated with performing the duties and responsibilities contained in this job description. The qualifications should not be viewed as expressing absolute performance or promotional standards, but as general guidelines that should be considered along with other job-related selection or promotional criteria.

Physical Requirements [This job requires the ability to perform the essential functions contained in this description. These include, but are not limited to, the following requirements. Reasonable accommodations will be made for otherwise qualified applicants unable to fulfill one or more of these requirements]:

- climbing stairs
- bending or stooping
- ability to travel
- ability to stand and walk for extended periods of time

Working Conditions: May travel to various sites throughout the county and state.

Position Title: Clinical Nurse Manager (Overall Site Nurse Manager)

Vest Color:

Functional Job Description:

- Provides general on-location oversight of clinic operation
- Responsible for managing clinic flow so that services are provided to clients in a timely and efficient manner. Will notify Charge Nurse when adjustments need to be made to achieve established customer service goals.
- Responsible for open and close times of clinic. Will assure that policy is followed regarding service hours and responsibilities of staff
- Responsible for monitoring to ensure that staffing is adequate in all areas throughout the duration of clinic
- Responsible for managing client complaints, problems, as needed
- Directly supervises Clinical Charge Nurse, Logistics, Security and Volunteer Coordinator
- Ensures that volunteers have completed applications and are approved to be on-site.
- Monitors Security and adjusts assignments as needed.
- Receives close report from Clinical Charge Nurse and Logistics prior to clinic end. Assures all assignments have been completed.
- Keeps Public Health Nurse Administrator advised and notifies her of any significant problems or issues pertaining to the clinic.

Position Title: Clinical Nurse Manager - Overall Nursing Site Manager

Position Checklist: NIMS Compliant

Upon Activation:

- Receive briefing from Health Department Operation Center Staff and/or from State Joint Emergency Operation Center (JEOC). Ensures knowledge of full mission request. Communicate any concerns or problems prohibiting mission completion.
- Review Mass Immunization or Prophylaxis Planning Guide.
- Responsibilities:
    - Brief all other staff personnel of roles and responsibilities verbally and written job descriptions.
    - Establish communications and communications protocol with all staff members.
    - Establish Point of Arrival and Briefing for new incoming staff members.
    - Establish chain of command and performance expectations for all staff. Share this with members at appropriate time.
    - Meet with assigned team members and ensure that they are personally prepared, self-sufficient and adequately equipped to perform their assignment.
    - Assemble personnel for a briefing, to include:
        - Mission as assigned by local management
        - Latest event information and environmental conditions
        - Any hazards or threats to staff safety and health
        - Media plan and procedures
        - Identification of the affected local emergency management structure
        - Pertinent or unique cultural and local considerations
        - Information flow and reporting requirements
        - Shift considerations, and transition instructions to oncoming staff
    - Problem solving process and methods for establishing or changing priorities On-site Operations:
    - Conduct on-site briefing with Logistics Chief, Security Chief, Pharmacy Chief, Communications Officer.
    - Notify local officials when you are ready to begin processing clients through the stations.
    - Review work schedule and specific assignments for each group of staff.
    - Ensure consistency in information provided to clients in all stations.
    - Report progress to local management as appropriate.
    - Assist local government in briefing State or Federal officials, as appropriate.
    - Establish time schedule for planning meetings, briefings, and team meetings.
    - Review Demobilization Plan as end of mission becomes eminent.

Deactivation Phase:

- Conduct exit interviews with staff members and appropriate local officials.
- Ensure that an After Action Review occurs and is documented.
- Participate in After Action review meetings, as required.

Position Title: Clinical Charge Nurse

Organization Unit: Health Department

Position Summary:

The clinical charge nurse coordinator oversees nursing staff assigned to the clinic and assists clinical nurse manager in making clinic assignments for nursing staff, and assists on-duty nurses as needed.

Supervision Exercised:

The clinical charge nurse supervises the clinic nursing staff.

Supervision Received:

The clinical charge nurse is supervised by the clinical nurse manager.

Duties/Tasks

- Oversees nursing staff assigned to the clinic.
- Assists clinical nurse manager in making clinic assignments for nursing staff.
- Assists on-duty nurses as needed.

Job Requirements and Qualifications:

Currently licensed in Arizona as a physician, physician's assistant, nurse practitioner, or nurse.

The qualifications listed above are intended to represent the minimum skills and experience levels associated with performing the duties and responsibilities contained in this job description. The qualifications should not be viewed as expressing absolute performance or promotional standards, but as general guidelines that should be considered along with other job-related selection or promotional criteria.

Physical Requirements

This job requires the ability to perform the essential functions contained in this description.

These include, but are not limited to, the following requirements. Reasonable accommodations will be made for otherwise qualified applicants unable to fulfill one or more of these requirements:

- climbing stairs
- bending or stooping
- ability to travel
- ability to stand and walk for extended periods of time

Position Title: Clinical Charge Nurse

Vest Color:

Functional Job Description:

- Reports to Clinical Nurse Manager
- Assure staff members are present, assigned and lead staff identified
- Assure that volunteers sign-in. Responsible for submitting completed sign in log to Public Health Nursing Administration following clinic.
- Provide on-site supervision of staff and volunteers.
- Assure that all stations are set up, staffed, and supplied
- Make sure return date sheets are completed and available for use by staff during clinic
- Check emergency kits
- Note clinic site code and confirm that encounter forms are correctly marked.
- Check in with volunteers assigned to clinic areas.
- During clinic and as needed, assist staff when “record look-ups” are indicated.
- Check in at all stations periodically
- Schedule breaks and lunches. No station shall be closed. Rotate breaks and lunch hours so that service levels are maintained
- Rotate station assignments for staff during clinic
- Be available to staff and volunteers as needed
- Review encounter forms for completeness
- In coordination with Logistics RN, inventory supplies at end of clinic, assure vaccines are properly stored and transported after clinic, make sure final temps are recorded,
- Assure that all equipment has been put away at end of clinic
    - Emergency kits
    - Sharps containers are taped up for removal.
    - Money and reconciliation forms completed and prepared for transport, if applicable.
- Ensure that all staff has logged their in and out time on clinic log book or clinic form.

Position Title: Security Coordinator

Organization Unit: Health Department

Position Summary

The security coordinator oversees security personnel working at the clinic site. Is responsible for the overall security needs of the site.

Supervision Exercised

Supervises security personnel at the clinic.

Supervision Received

The security coordinator is supervised by the clinical nurse manager.

Duties/Tasks

- Oversees personnel assigned to security activities at the clinic site.
- Assists the clinical nurse manager in making duty assignments of security personnel.
- Determines appropriate number of security staff necessary according to clinic size and location.
- Maintains a list of authorized clinic staff and their phone numbers.
- Assigns and coordinates use of cell phones and pagers.
- Establishes staff check-in and check-out procedures.
- Ensures that all staff wear ID badges.
- Maintains communication with local law enforcement officials.
- Assist supply officer/vaccine manager secure the vaccine storage site.

Job Requirements and Qualifications

Law enforcement experience required. Supervisory experience required. Must be able to orally communicate effectively with the public. Respects cultural differences of diverse groups of people.

Position Title: Security Officer

Organizational Unit: Health Department

Security personnel are responsible for maintaining orderly clinic operations, providing for the safety of persons at the clinic, and protecting facility property.
Supervision Exercised None

Supervision Received

The security officer receives supervision from the security coordinator and the clinical nurse manager.

Duties/Tasks

- Maintain orderly clinic operations.
- Protect vaccine/prophylaxis recipients.
- Protect clinic employees.
- Protect facility property, including medical supplies, vaccines, and medication prophylaxis.
- Assist with parking control.

Job Requirements and Qualifications

Prior law enforcement, military, or security experience preferred. Must be able to orally communicate effectively with the public. Respects cultural differences of the diverse group of people. Languages spoken in addition to English are highly desired.

The qualifications listed above are intended to represent the minimum skills and experience levels associated with performing the duties and responsibilities contained in this job description. The qualifications should not be viewed as expressing absolute.

Position Title: Security Guard

Functional Job Description:

- Reports to Clinical Nurse Manager
- Security will be asked to report one hour prior to clinic and will be remain one hour after clinic or until staff leave the facility unless discharged by Nurse Manager
- Direct clients with questions to the appropriate person
- Monitor area for safety. Watch for uncertain people or those who may inadvertently “take cuts” into line in front of people already waiting.
- Watch for suspicious behavior
- Monitor fee collection area, if applicable
- Escort staff to vehicles as requested
- At the discretion of the Clinical Charge Nurse and the Security person, other responsibilities such as giving people forms when they first arrive and/or directing people from one station to another may be assigned. It is critical to remember that the priority for security is the safety of clients and staff.

Note: Security guards should not bring books or engage in other distracting activities while on Duty.

Position Title: Safety Chief Position

Position Checklist: NIMS Compliant

Upon Activation:

- Receive briefing from Overall Site Manager or Logistics Chief. Ensure knowledge of full mission request and plan of operations.
- Review Mass Prophylaxis Planning Guide.
- Orient Security Staff to their specific goals and responsibilities

On-site Operations:

- Receive on-site briefing from Overall Site Manager or Logistics Chief.

Responsibilities:

- Determines the dispensing site security needs
- Prevent unauthorized access to the dispensing site
- Facilitate movement of vehicles at the dispensing site
- Control crowds that might interfere with effective operation
- Brief all security personnel as needed.
- Maintain exterior security operation ensuring safety of building access, exits, parking lots, etc.
- Maintain interior building security operation. Include entry and exit points, line monitoring, stations, pharmacy and supply area, mental health counseling area, and general public activities. Check all stations for any potential problems with security and/or safety.
- Take necessary action. Report findings/activities to the Overall Site Manager or Logistics Chief.
- Supervise the set-up of Crowd Control system (cones, ropes, etc.)
- Participate in meetings and briefings to ensure that safety considerations are a part of the plan at all times.
- Meet with other security and/or safety personnel assigned to the area of operation and make sure they understand their responsibilities.
- Ensure security is provided for all personnel, equipment, vehicles, and buildings at the dispensing site.
- Meet with local law enforcement and coordinate issues/efforts.
- Coordinate staff badges/passes as necessary.
- Identify and make known to Overall Site Manager/ Chief Pharmacist/ Logistics Chief any security or safety issues as prophylaxis process occurs.
- Offer operational assistance and recommendations regarding evidence collection, processing, and security to local law enforcement.
- Review sanitation requirements and report concerns to Dispensing Site Manager.
- Devise evacuation procedure.
- Ensure that evacuation signals and routes are known to all.
- Ensure that accident reports are written and that accidents are investigated.

Deactivation Phase:

- Ensure all records and reports are turned over to Dispensing Site Manager.
- Identify issues and participate in After Action Report.

Position Title: Logistics Coordinator/Supply Officer/Vaccine Manager

Organization Unit: Health Department

Position Summary:

The supply officer/vaccine/prophylaxis manager ensures that all necessary clinic supplies are on site and are available in sufficient quantities during clinic operations. This includes maintaining an inventory and distributing supplies. Accounts for cold chain management and chain of custody of vaccine or prophylaxis medications.

Supervision Exercised: None

Supervision Received

The supply officer is supervised by the Clinical Nurse Manager.

Duties/Tasks

- Ensures that all necessary clinic supplies are on site and are available in sufficient quantities during clinic operations.
- Maintains an inventory of supplies.
- Oversees distribution of supplies to appropriate locations in the clinic.
- Ensures that sufficient vaccine or prophylaxis medicine is available, and that the cold chain is maintained through proper handling and storage.
- Ensures that vaccine or prophylaxis medicine is stored in a secure manner at the clinic site and that unused vaccine is returned and accounted for.
- Maintains adequate vaccine, prophylaxis medicine, and other supplies at the vaccination or distribution station.
- Ensures that infectious waste materials are handled and disposed of properly.

Job Requirements and Qualifications

Prefer an individual currently licensed by the State of Arizona as a pharmacist, physician, physician's assistant, nurse practitioner, nurse, paramedic, or with vaccine experience.

Position Title: Logistics RN

Functional Job Description:

- Reports to Clinical Nurse Manager
- Primary responsibility is to ensure the acquisition, shipment, and transport of equipment/ supplies to the vaccination site for the duration of the summer back to school immunization season.
- The Logistics RN is not responsible for staffing and personnel issues.
- Vaccines:
    - Assure vaccine supplies are adequate and being handled properly. Monitor during clinic.
    - Check that temperatures are recorded at required intervals using a Digital Data Logger with phenol probe
    - Identify vaccine quantities that are required
    - Place primary order with VFC, if applicable, for delivery to appropriate location
    - Coordinate with Central Supply for receipt and storage of vaccine
    - Arrange for vaccine pick up and delivery using proper cold chain protocols
    - Address any other vaccine related equipment/supply needs as indicated
- VIS forms
    - Identify quantities required
- Assure adequate supply on hand
    - Assure dates are current and consistent with those listed on standing orders Non-vaccine medical supplies
- Identify and order all non-vaccine medical supplies
    - Prepare for transport and storage at vaccine site
    - Office supplies including coordination for delivery of computers, copier, 2-way radios
- Emergency supplies
    - Order emergency supplies and confirm availability at each session
- Order other supplies (for example, water and cups)
- Create inventory, stocking procedure and train other staff to its function
- Ensure that each site is adequately supplied prior to the start of each session
- Provide clerical staff doing spreadsheet data entry with primary lot numbers and expiration dates for all vaccines to be used that day. Notify staff if there will be a secondary lot number used that day. Follow procedure for documenting secondary lot numbers.
- Primary liaison with site contacts during hours of operation
- Provide instructions on site lay out and facilities requirements including placement of signage.
- Coordinate with Clinical Charge Nurse to assure that supplies are returned to appropriate containers and that inventory is conducted at the end of each clinic session
- Participate in immunization committee planning and wrap-up meetings
- Must be available by phone if not on site during clinic session.
- Ensures that infectious wastes are handled and disposed of properly.

Position Title: Logistics Chief

Position checklist: NIMS Compliant

Upon Activation:

- Receive briefing from Health Department Operations Center Staff/Overall Site Manager. Ensure knowledge of full mission request and plan of operations.
- Review Mass Prophylaxis and/or Immunization Planning Guide.
- Confirm activation of all staff members with logistics duties.
- Ensure shipment of equipment/supplies and arrange for transport to treatment site.
- Ensure that ground transportation is ordered and available for all staff when team reaches destination.

On-site Operations:

- Receive on-site briefing from Operations Chief.

Responsibilities:

    - Arrange for security of equipment/supplies as they arrive at the site.
    - Set up all communications equipment (phones and radios) and work with Operations Manager to establish communications protocols.
    - Check all areas as they are being set up. Make sure staff has all equipment and supplies needed to carry out their functions.
    - Work with staff in each area to set up physical work stations.
    - Arrange for procurement of additional equipment/supplies as needed and as authorized by Operations Chief or Incident Commander.
    - Work with Site Commander to make sure that the security, ordering, inventory, and re-supply of the pharmaceutical cache meets standards.
    - Make arrangements for food and beverages for all staff members. Provide plenty of fluids at each work location.
    - Participate in staff briefings and assist Site Commander as requested.
    - Maintain Unit Log.
    - Anticipate staff needs and request additional staff as needed.
    - Arrange for transportation of staff members to and from the treatment site.
    - Provide logistical support as needed by each station.
    - Establish mechanism to procure additional equipment/supplies as needed.
    - Participate in the Demobilization Planning process.

Deactivation Phase:

- Supervise the break down and repacking of all equipment/supplies at each station.
- Arrange to have all equipment/supplies returned to place of origin.
- Ensure that all records and reports are turned in to the Overall Site Manager.
- Participate in the After Action process.
- Ensure clean-up of all work spaces.

Position Summary: Volunteer Coordinator

Organizational Unit: Health Department

Position Summary:

Recruits, registers, screens, trains and promotes retention of medical and non-medical volunteers. Oversees volunteer activity at the clinic sites and interacts with the Clinical Nurse Manager and representatives from the physical site of the clinic, if applicable.

Supervision Exercised:

Directly supervises Greeter/Educators, Registration Staff, Forms Collectors and Clinic Flow Controllers to ensure those positions are filled. Provides relief positions as needed. Maintains confidentiality and protects sensitive data.

Supervision Received:

Under the direction of the manager of Bioterrorism Preparedness and/or Office of Emergency Management provides coordination of all activities associated with the management of volunteers (individual and groups) to be used in response to typical Health Department operations and public health emergencies.

Duties/Tasks:

- Oversees volunteer activity at the clinic site.
- Assists the clinic manager in making duty assignments of volunteer staff.
- Maintains roster and database of volunteers available for clinic duty.
- Maintains a schedule of times that volunteers are available to work.

Clinic Operations:

Upon Clinic activation, receives briefing from Clinic Manager or Logistics Chief, ensuring knowledge of full mission request and plan of operations. Reviews Mass Prophylaxis and/or Immunization planning guide. During Operational Phase, receives periodic on-site briefing from Clinic Manager or Logistics Chief. Plans for deactivation and provides input for After Action Report.

Job Requirements and Qualifications:

Experienced in the National Incident Management System and the Incident Command System. Works well with a culturally diverse group of volunteers. Volunteer registration and supervisory experience required.

Working Conditions: Travels to various sites throughout the county as required by clinic schedules.

Position Title: Volunteer

Functional Job Description:

- Reports to Clinical Nurse Manager or Volunteer Coordinator for initial assignment
- Assist staff at all stations excluding vaccine administration and fee collection, if applicable
- Monitor lines and assist clients in completing forms
- Direct clients to appropriate areas
- Assist in monitoring flow from one station to the next
- Assist staff by distributing appropriate VIS form
- Assist staff by collecting surveys, pens, etc.
- Make copies of immunization records for children as directed
- Assist with translation as needed (Spanish Speaking Volunteers)
- Assist charge nurse as requested

Position Title: Volunteer Coordinator

Position Checklist: NIMS Compliant

Requirements: Experienced with volunteer registration

Upon Activation:

Receive briefing from Overall Site Manager or Logistics Chief. Ensure knowledge of full mission request and plan of operations. Review Mass Prophylaxis and/or Immunization Planning Guide.

On-site Operations:

Receive on-site briefing from Overall Site Manager or Logistics Chief.

Responsibilities:

- Assist with set-up of the volunteer check-in tables.
- Signs in all “staff” volunteers on a line listing.

Deactivation Phase:

- Assist with the tear-down and re-packing of the staff room and any other areas as requested.
- Ensure the staff area is cleaned
- Ensure the collection of all paperwork.
- Provide input for the After Action Report.

Position Title: Clinic Flow Coordinator

Organization Unit: Health Department

Position Summary

Clinic flow coordinators are responsible for continuously monitoring and directing client activity throughout the facility. They must be able to calmly manage and assist people who may be anxious and unable to follow directions. When congestion (backlog) is noted, flow controllers determine if staff at other locations are less busy and request assistance in the congested area. They are also responsible for feeding back information about the number and rate of "upstream" clients to the vaccination/prophylaxis assistants to enable them to maximize use of all vaccine doses in opened vaccine vials or other vials. Flow controllers may be in a position to provide early alert of situations that may require additional security personnel.

Supervision Exercised: None

Supervision Received

This position is supervised by the clinical nurse manager and the volunteer coordinator.

Duties/Tasks

- Direct vaccine recipients through the clinic process.
- Monitor clinic flow.

Job Requirements and Qualifications

Must be able to orally communicate effectively with the public. Respects cultural differences of the diverse group of citizens.

The qualifications listed above are intended to represent the minimum skills and experience levels associated with performing the duties and responsibilities contained in this job description. The qualifications should not be viewed as expressing absolute performance or promotional standards, but as general guidelines that should be considered along with other job-related selection or promotional criteria.

Position Title: Line Workers

Position Checklist: NIMS Checklist

Requirements:
Must be able to stand and walk for shift Upon Activation:

- Receive briefing from Overall Site Manager or Logistics Chief. Ensure knowledge of full mission request and plan of operations.
- Review Mass Prophylaxis of Immunization Planning Guide.

On-site Operations:

- Receive on-site briefing from Overall Site Manager or Logistics Chief.

Responsibilities:

- Assist with the set-up of the Check-In area and any other areas as requested.
- Ensure Crowd Control system (cones, ropes, etc.) is set up by security/safety personnel.
- Answer general questions about forms, clinic process, restrooms, assistance of any kind.
- Let people know that clinical questions and medication/vaccination issues will be addressed at clinical station, and that experts are on-site.
- Keep lines moving smoothly, assist where necessary and provide reassurance.
- Collects all forms on clipboard from all clients
- Enter time of exit on the information form.
- Collect all medication containers and put in the designated bin.
- Gives the clipboard to data entry.
- Report any security/safety issues immediately to the security/safety staff. Document incidents appropriately.

Script:
[If an exercise] Thank you for participation in the NPS exercise. My I have all forms and medication. Have you completed the survey?

[If a medication and/or vaccination clinic]: As directed for the specific clinic

Deactivation Phase:

- Assist with the tear-down and re-packing of the Check-In Area and any other areas as requested.
- Ensure the collection of all paperwork.
- Provide input for the After Action Report.

Position Title: Gate Keeper

Positional checklist: NIMS Compliant

Requirements: Must be able to stand and walk for shift

Upon Activation:

- Receive briefing from Overall Site Manager or Logistics Chief. Ensure knowledge of full mission request and plan of operations.
- Review Mass Prophylaxis or Immunization Planning Guide.

On-site Operations:

- Receive on-site briefing from Overall Site Manager or Logistics Chief.

Responsibilities:

- Assist with the set-up of the Check-In area and any other areas as requested.
- Ensure Crowd Control system (cones, ropes, etc.) is set up by security/safety personnel.
- Answer general questions about forms, clinic process, restrooms, assistance of any kind.
- Let people know that clinical questions and medication and/or immunization issues will be addressed at clinical station, and the experts are on-site.
- Directs the patient at the end of the line to the first available station. If that patient has special needs Identified from the information form or by the roving RN, direct to the appropriate designated station.

Deactivation Phase:

- Assist with the tear-down and re-packing of the Check-In Area and any other areas as requested.
- Ensure the collection of all paperwork.
- Provide input for the After Action Report.

Position Title: Greeter-educator

Organization Unit: Health Department

Position Summary

Greeter–educators are the first point of contact for potential vaccine or prophylaxis recipients. They must be able to explain the purpose of receiving the vaccine or prophylaxis, outline the clinic process, and distribute and explain the clinic documents to potential recipients individually and in groups.

Supervision Exercised: None.

Supervision Received

This position is supervised by the clinic manager and volunteer coordinator.

Duties/Tasks

- Greet and conduct initial orientation of potential vaccine recipients upon their arrival.
- Provide basic information (verbally or with a video presentation) about the vaccine/prophylaxis and the vaccination/prophylaxis process.
- Distribute informational material and clinic documents.
- Explain how to complete the documents and answers questions.

Job Requirements and Qualifications

Must be able to orally communicate effectively with the public. Respects cultural differences of the diverse group of citizens. Languages spoken in addition to English are highly desired.

The qualifications listed above are intended to represent the minimum skills and experience levels associated with performing the duties and responsibilities contained in this job description. The qualifications should not be viewed as expressing absolute performance or promotional standards, but as general guidelines that should be considered along with other job-related selection or promotional criteria.

Position Title: Line Workers - First Entry Greeters RNs

Position Checklist: NIMS compliant

Requirements:
Registered Nurse with current license

Upon Activation:

- Receive briefing from Overall Site Manager or Logistics Chief. Ensure knowledge of full mission request and plan of operations.
- Review Mass Prophylaxis and/or Immunization Planning Guide.

On-site Operations:

- Receive on-site briefing from Overall Site Manager or Logistics Chief.

Responsibilities:

- Assist with set-up of Triage area, and other areas as requested.
- Greet clients as they first arrive/assemble, and answer their initial questions. Let clients know that all of their technical questions will be answered in the briefings and/or the clinical interview phase.
- Performs visual check of the clients entering the dispensing site to assess for illness that is suggestive of infection due to the implicated biologic agent
- Makes a health assessment when a person looks sick or ill, has a fever, difficulty breathing, or marked weakness, if found, escorts patient to Triage.
- Direct patient to the clip-board station or general questions to the information table.
- Report any security/safety issues immediately to the security/safety staff. Document incidents appropriately.

Deactivation Phase:

- Assist with the tear-down and re-packing of the Check-In Area and any other areas as requested.
- Ensure the collection of all paperwork
- Provide input for the After Action Report

Position Title: First Entry Greeters

Position Checklist: NIMS Compliant

Requirements: Must be able to stand during shift (3-4 hours)

Upon Activation:

- Receive briefing from Overall Site Manager or Logistics Chief.
- Ensure knowledge of full mission request and plan of operations.
- Review Mass Prophylaxis and/or Immunization Planning Guide.

On-site Operations:

- Receive on-site briefing from Overall Site Manager or Logistics Chief.

Responsibilities:

- Assist with set-up of Check-In area, and other areas as requested.
- Ensure Crowd Control system (cones, ropes, etc.) is set up by security/safety personnel.
- Greet clients as they first arrive/assemble, and answer their initial questions. Let clients know that all of their technical questions will be answered in the briefings and/or the clinical interview phase.
- Directs patient to the clipboard station or general questions to the information table.
- Assist RN greeter identifying special need clients.
- Report any security/safety issues immediately to the security/safety staff. Document incidents appropriately.

Script:

Thank you for coming. We are concerned that you get the care you need. Where may direct you?

Deactivation Phase:

- Assist with the tear-down and re-packing of the Check-In Area and any other area as requested.
- Ensure the collection of all paperwork.
- Provide input for the After Action Report

Position Title: Medical Screeners

Organization Unit: Health Department

Position Summary

This role should be filled by a physician, nurse or paraprofessional who has good interviewing skills and is well-versed in the technical information regarding exposure risks, medical contraindications to vaccination/prophylaxis medicine, risks of vaccination/prophylaxis medicine, and risk-benefit analysis. Medical screeners will review the list of normal or expected reactions to the vaccine or prophylaxis medicine with each recipient. If necessary, medical screening personnel will contact a designated physician consultant to assist in making a final decision about whether or not to vaccinate or administer prophylaxis medication. If the vaccine or prophylaxis medicine is still on Investigational New Drug (IND) status, medical screening personnel should ensure that the consent form has been read, understood and signed by each potential vaccine/prophylaxis recipient and ask recipients to sign the consent form.

Supervision Exercised: None

Supervision Received

Medical screeners receive supervision from the clinical nurse manager and the clinical charge nurse.

Duties/Tasks

- Assess clients for contraindications to vaccine or prophylaxis medicine.
- Refer those clients for physical examination who state that they may have dermatological conditions that may constitute contraindications to clinic medical doctor for evaluation if necessary.
- Answer medical questions.

Job Requirements and Qualifications

Currently licensed by the State of Arizona as a physician, physician's assistant, nurse practitioner, registered nurse or LPN. Languages spoken in addition to English are highly desired.

- ➢ In the event licensed staff members are not available, appropriately selected staff will conduct screening under the direct supervision of licensed professional staff.

Position Title: Lead Screener

Vest Color:

Functional Job Description:

- Responsible to Clinical Charge Nurse and acts as point of contact for Charge Nurse in screening area
- Responsible for walkie-talkie for screening area
- If acting at end of clinic, will collect line listings and deliver to Charge Nurse, if applicable
- Supervise set up / tear down of work area

Position Title: Screener

Functional Job Description:

- Reports to Charge Nurse through Lead Screener
- Assure that each child under 18 years old is accompanied by a parent/guardian
- Verify child's demographic data including zip code and telephone number. Complete any missing information as indicated.
- Review immunization history and screening information on encounter form before ordering vaccines. Proceed if no contraindications are present. If contraindications, contact the Medical Director.
- Review encounter form for completeness
- For children under 18 years of age, obtain parent/guardian signature for consent to administer vaccines.
- Assure signed consent for clients 18 years of age and older.
- Circle vaccines to be given and enter dose number
- Document return date for next vaccine
- Sign on screener's signature line and date
- Make parent aware of information on backside of form and advise them to review it at home.
- Give forms to client or parent/guardian and direct to next station.

Position Title: Clinical Screeners for Mass Prophylaxis

Position Checklist: NIMS Compliant

Requirements: MD, DO, RN, Pharmacist, PA, NP

Upon Activation:

- Receive briefing from Chief Pharmacist or Overall Site Manager. Ensure knowledge of full mission request and plan of operations.
- Review Mass Prophylaxis Planning Guide.

On-site Operations:

- Receive on-site briefing from Chief Pharmacist or Overall Site Manager.

Responsibilities:

- Ensure that interview site is physically set up and ready for operations
- Ensure that all necessary flowcharts and forms are available including:
    - Treatment Protocol Flowchart
    - Flowchart for Optimal Preventative Therapy
    - Standing orders for antibiotic prophylaxis
    - Alternative Antibiotic List
    - Anti-Seizure Medication Matrix Worksheets Drug Interaction Matrix Worksheets
    - Notification to Patient's Primary Care Provider

If prescriptions are given for antibiotics

- Ensure that all patient registration and consent forms are complete and signed.
- Ensure that all clients receive appropriate prescription for antibiotics as per treatment protocol.
- Ensure that all clients are referred to Pharmacy/Medical Consultants as per protocol.
- Direct patient to dispensing section.
- Patient should leave with:
    - Completed medical history forms
    - Medical care provider information sheet
    - Prescription

Deactivation Phase:

- Assist with the tear-down and re-packing of the Clinical Interview Area.
- Ensure the collection of all paperwork and turn in to administration.
- Provide input for the After Action Report

Position Title: Vaccine/Prophylaxis Administrator

Organization Unit: Health Department

Position Summary

Vaccine/Prophylaxis administrators are individuals who have had or can receive technical training in administration of vaccines and/or prophylaxis medicine. Vaccinators must have the ability to quickly develop a high level of skill in vaccinating with a bifurcated needle or other needles. They must have in-depth understanding of proper vaccination techniques, methods to prevent contamination of the vaccine, exposure risks, the medical conditions that constitute contraindications for vaccinations, the risks of vaccination, preparation of the vaccination site, normal and abnormal post vaccination responses, and proper follow-up care of the vaccination site. Vaccinators/Prophylaxis administrators must also be prepared to respond to medical emergencies that may occur within the clinic area.

Supervision Exercised

Vaccine/Prophylaxis administrators supervise vaccination/prophylaxis assistants.

Supervision Received

The vaccine/prophylaxis administrator is supervised by the clinical nurse manager and Clinical Charge Nurse.

Duties/Tasks

- Oversee the vaccination/prophylaxis process.
- Administer the vaccine/prophylaxis.
- Sign the clinic record.
- Observe vaccine/prophylaxis recipients for immediate reaction or complications.

Job Requirements and Qualifications

Currently licensed by the State of Arizona as a physician, physician's assistant, nurse practitioner, nurse, or paramedic. Other designated paraprofessionals may qualify.

Position Title: Lead Vaccinator

Vest Color:

Functional Job Description:

- Responsible to Charge Nurse and acts as point of contact for charge nurse in vaccination area
- Responsible for walkie-talkie for vaccination area
- Supervise set up / tear down of work area

Position Title: Vaccine Administrator

Functional Job Description:

- Review Encounter Form for completeness including:
- Signature boxes, vaccines ordered are circled and dose number indicated
- If any discrepancy is found, attempt to correct. If not possible, or if doing so will significantly affect flow, return to screener for correction.
- Prepare/select vaccine
- Verify client's name
- Quickly inform parent of immunization(s) being given. Remember child is already anxious. Do not delay any longer than is necessary.
- Administer vaccine.
- DO NOT administer vaccine to any client who cannot remain in control of self or any child who cannot be safely restrained with parent's assistance or permission.
- Dispose of each syringe in red sharps container.
- Document: Vaccine site: R or L arm or deltoid or R or L leg or vastus lateralis, your name and title, today's date
- Prior to client leaving, make sure that vaccines are documented in the client's immunization history book
- Client may leave area unless there are obvious signs of distress (e.g. fainting). If this is observed have the person wait in a nearby area for 15 minutes. Juice and Gatorade will be available for symptomatic patients only. If necessary follow your County Health Department Emergency Standing Orders.

Position Title: Vaccination/Prophylaxis Assistant

Organization Unit: Health Department

Position Summary

Vaccination/Prophylaxis assistants must have a thorough understanding of the vaccination/prophylaxis process and the necessary supplies, proper technique for reconstituting the vaccine with diluent, proper care and handling of vaccine in the clinic, how to disinfect contaminated surfaces and dispose of soiled materials, and where to access additional.

Vaccination/Prophylaxis assistants are also responsible for entering the vaccine and diluent lot numbers on the patient's consent form and clinic record and providing the vaccine recipient with vaccination card that documents when and where the vaccine was administered.

Supervision Exercised: None

Supervision Received

Vaccination/prophylaxis assistants are supervised by the vaccine/prophylaxis administrator and nurse coordinator.

Duties/Tasks

- Assist the vaccine/prophylaxis administrator with all aspects of pre and post vaccination/prophylaxis activities.
- Prepare vaccine with diluent if applicable.
- Ensure that vaccination/prophylaxis station maintains adequate supplies.
- Instruct recipients on location of vaccination.
- Assist vaccine recipients in preparing the vaccination site (roll up sleeve, remove arm from shirt/blouse, etc.).
- Clean vaccination site if necessary.
- Apply dressing to the vaccination site.
- Instructs clients about care and changing of the dressing.

Position Title: Vaccination/Prophylaxis Assistant (Filling syringes/preparing vaccines)

Organization Unit: Health Department

Functional Job Description:

Drawn up vaccine/syringes may be out of refrigeration and at room temperature during the clinic for the following vaccines. If you are working in an area that is not cooled or air- conditioned, pre-drawn vaccines should rest upon a cooled surface (blue ice, et.al.)

MMR vaccine will be kept in an insulated bag with blue ice and adult MMR vaccine will only be drawn up as needed. MMR diluent can be pre-drawn and diluent vials left on end of their respective syringe.

Pre-draw only one vaccine type at a time. Make sure that it is the only vaccine in your work area. Double-check when placing in bag (or other designated container) to assure that label on bag and vaccine match. Pre-draw for assigned table only. Check each multi-dose vial for vaccine name and expiration date when drawing up vaccine. For identification purposes, on single dose vials, syringes may be left inside the vials after contents are pulled into the syringe. Do not inject air to displace vaccine in single dose vials as they are already manufactured to draw up easily.

Vaccine administrators will get their own vaccine from color-coded and labeled bags.

Re-supply coded bags with appropriate vaccine as needed. Take direction from Charge Nurse or Lead Vaccinator as indicated.

Position Title: Registration Staff/Front Desk

Organization Unit: Health Department

Position Summary

Registration staff assists potential vaccines or prophylaxis medicine recipients complete necessary forms and paperwork. The registration staff must be familiar with each form that is distributed. They must be able to follow instructions on how to respond to exceptional situations such as non-English speaking patients or patients who are anxious, hostile, or disoriented. If the form has not been completed correctly or completely, registration staff must be able to address and correct these problems. They should be prepared to read the forms to illiterate or semiliterate persons needing their assistance.

Supervision Exercised: None

Supervision Received

This position is supervised by the clinic manager and the volunteer coordinator.

Duties/Tasks

- Review each vaccine/prophylaxis recipient's documents for completeness and accuracy.
- Assist clients with completing documents.

Job Requirements and Qualifications

Must be able to read and write English, additional languages are highly desired. Must be able to orally communicate effectively with the public. Respects cultural differences of the diverse group of citizens.

The qualifications listed above are intended to represent the minimum skills and experience levels associated with performing the duties and responsibilities contained in this job description. The qualifications should not be viewed as expressing absolute performance or promotional standards, but as general guidelines that should be considered along with other job-related selection or promotional criteria.

Position Title: Lead Clerical

Vest Color:

Functional Job Description:

- Reports to Charge Nurse
- Responsible for Front Desk/Registration, VIS/Copy, and Data Entry areas. In addition to clerical responsibilities the lead clerical staff person will:
    - Confirm that all stations are staffed prior to beginning of clinic. In the event of problems, the lead clerical will confer with the Charge Nurse for resolution of any issues.
    - With the Charge Nurse, coordinate lunch / dinner / and break times for staff and volunteers assigned to the area
    - Collect and return completed encounter forms to designated location with pick up by Health Records the next business day as requested

Position Title: Line Workers: Patient Check In—Clip Board Operations

Position Checklist: NIMS Compliant

Requirements: Must be able to stand and walk for shift

Upon Activation:

- Receive briefing from Overall Site Manager or Logistics Chief. Ensure knowledge of full mission request and plan of operations.
- Review Mass Prophylaxis and/or Immunization Planning Guide.

On-site Operations:

- Receive on-site briefing from Overall Site Manager or Logistics Chief.

Responsibilities:

- Assist with the set-up of the Check-In area and any other areas as requested.
- Ensure Crowd Control system (cones, ropes, etc.) is set up by security/safety personnel.
- Provide to each patient a clipboard and a pen with:
    - Medical Screening Forms
    - Medication Information (if needed for mass prophylaxis)
    - Consents
    - Other forms as directed
- Give brief instructions on reading and filling out forms while waiting in line.
- Direct the clients to the check-in line.
- Keeps clipboards ready with appropriate forms
- Report any security/safety issues immediately to the security/safety staff.
- Document incidents appropriately.
- Make sure that clients do not leave with clip board or pens

Clients leave with information form that is needed for the next station.

Deactivation Phase:

- Assist with the tear-down and re-packing of the Check-In Area and any other areas as requested.
- Ensure the collection of all paperwork.
- Provide input for the After Action Report.

Position Title: Check – in Clerks

Position checklist: NIMS Compliant

Number: 10 with 4 being RNs

Requirements:
Able to sit and stand for long periods of time.

Upon Activation:

- Receive briefing from Overall Site Manager or Logistics Chief. Ensure knowledge of full mission request and plan of operations.
- Review Mass Prophylaxis Planning Guide.

On-site Operations:

- Receive on-site briefing from Overall Site Manager or Logistics Chief.

Responsibilities:

- Assist with the set-up of the Check-In area and any other areas as requested.
- Ensure Crowd Control system (cones, ropes, etc.) is set up by security/safety personnel.
- Answer general questions about forms, clinic process, restrooms, assistance of any kind.
- Let people know that clinical questions and medication issues will be addressed at clinical station, and that experts are on-site.
- Ensure that all forms are present, and that all blanks are filled in (to the greatest extent possible).
- RN checkers will ensure all questions answered yes on the information form are addressed.
    - If the yes statement can be resolved, direct to next station
    - If the question needs a MD or pharmacists consultation, refer to the resource area.
- Direct patient to the interview/screening station
- Report any security/safety issues immediately to the security/safety staff. Document incidents appropriately.

Patient leaves with:

- Completed registration forms

Deactivation Phase:

- Assist with the tear-down and re-packing of the Check-In Area and any other areas as requested.
- Ensure the collection of all paperwork.
- Provide input for the After Action Report.

Position Title: Forms Collectors

Organization Unit: Health Department

Position Summary

The forms collector is responsible for checking that the vaccination team has signed the clinic record and entered the lot numbers on the appropriate documents. As the last staff to have contact with vaccine or prophylaxis recipients, the forms collector must have the ability to ensure a response by the appropriate staff to any remaining concerns that clients may have.

Supervision Exercised: None

Supervision Received

This position is supervised by the clinic manager and the volunteer coordinator.

Duties/Tasks

- Verify that forms are correctly completed.
- Collect all necessary forms from recipients before departure
- Directs vaccine or prophylaxis recipients to the appropriate staff for any remaining concerns he/she may have before departure.

Job Requirements and Qualifications

Must be able to read and write. Respects cultural differences of the diverse group of citizens of the county.

The qualifications listed above are intended to represent the minimum skills and experience levels associated with performing the duties and responsibilities contained in this job description. The qualifications should not be viewed as expressing absolute performance or promotional standards, but as general guidelines that should be considered along with other job-related selection or promotional criteria.

Physical Requirements: This job requires the ability to perform the essential functions contained in this description. These include, but are not limited to, the following:

- climbing stairs
- bending or stooping
- ability to travel
- ability to stand and walk for extended periods of time

Position Title: Clerical

Functional Job Description:

- Reports to Lead Clerical
- Hand out VIS form to client
- Make a copy of records as directed
- Review screening and encounter forms for completeness. Make sure site and clinic codes are documented and correct.
- Verify insurance information
- Enter client data
    - Last name
    - First name
    - DOB (mm/dd/yyyy)
    - VFC Code (if applicable)
    - Parent or guardian name (if applicable)
    - Address
    - Telephone number (if available)
    - Email address (if available)
    - Indicate immunizations given by placing an X under the appropriate vaccine column
- Direct client to the next station
- Balance register at end of clinic, if applicable. Complete reconciliation form as dictated by accounting office. MAKE COPY OF RECONCILIATION FORM.

Position Title: Data Entry Position

Checklist: NIMS Compliant

Requirements: Experience with data entry

Upon Activation:

Receive briefing from Overall Site Manager or Logistics Chief. Ensure knowledge of full mission request and plan of operations.

On-site Operations:

- Receive on-site briefing from Overall Site Manager or Logistics Chief.

Responsibilities:

- Assist with set-up of data entry area.
- Enter data directly into ASIIS (online) at the clinic or collect it in such a way that it will capture all needed data for later entry into ASIIS, such as by thumb drive, a line list, or paper forms.

Deactivation Phase:

- Assist with the tear-down and re-packing of the Check-In Area and any other area as requested.
- Ensure the collection of all paperwork.
- Provide input for the After Action Report

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Supplement 7

SUPPLEMENT 7: ANTIVIRAL DRUG DISTRIBUTION AND USE

Arizona Pandemic Influenza Response Plan

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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 early phases of the pandemic 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 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.

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 July 2010, 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 Phases 1-3 (Limited Human Spread) and Phase 4 (Sustained Human-to-Human Spread) 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.

Phases 5-6 (Widespread Human Infection or Pandemic) 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 Phases 5-6 (Widespread Human Infection or Pandemic), 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.

Summary of Public Health Roles and Responsibilities for Antiviral Distribution and Use

Phases 1-3 (Limited Human Spread) and Phase 4 (Sustained Human-to-Human Spread)

Health care providers

- Learn how to identify influenza-like illnesses
- Know procedures for influenza screening and laboratory testing
- Know appropriate infection control measures for influenza
- Know appropriate antiviral regimens for influenza A and B

ADHS and County and Tribal Health Departments

- Develop state-based plans for the distribution and use of antivirals during a pandemic (ADHS)
- Work with stakeholders to develop a system by which ADHS will assist in brokering antivirals during a pandemic where there is limited supply
- Develop state-based plans for requesting antivirals from the Strategic National Stockpile (SNS)
- Work with stakeholders to develop a system to monitor use of antivirals throughout the state (ADHS and county and tribal health)
- Procure a supply of antivirals under the control of ADHS for to use for special populations (ADHS)
- Help educate health care providers about clinical presentation and control of novel and pandemic influenza (ADHS and county and tribal health)
- 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)
- Provide or facilitate testing and investigation of suspected novel influenza cases (ADHS and county and tribal health)
- Conduct follow-up of suspected novel influenza cases (County health departments)

Department of Health and Human Services (HHS)

- Develop national guidance on the use of antivirals during all phases of a pandemic (Phases 1-6)
- Develop a national stockpile of antiviral drugs for use during a pandemic
- Identify priority groups for antiviral drug treatment and prophylaxis
- Procure and maintain national supplies of antivirals in the Strategic National Stockpile (SNS)
- Maintain a program to test and extend dating of stockpiled antivirals
- Develop protocols for monitoring antiviral effectiveness, safety, and resistance during a pandemic
- Develop and distribute communication and education materials about antivirals for use by states and other stakeholders

Phases 5-6 (Widespread Human Infection or Pandemic)

- Choose antivirals appropriate for circulating influenza strains
- Follow recommendations on antiviral use from federal, state, and local health agencies
- When antiviral supplies are limited, prescribe antivirals for persons in priority groups where the need and benefit are the greatest

ADHS and County and Tribal Health Departments

- Work with health care partners to activate plans for distributing and administering antivirals to persons in priority groups (county health departments)
- Review and modify as needed recommendations for prioritization of antiviral treatment and prophylaxis (ADHS)
- Accelerate training on the appropriate use of antivirals among public health staff and health care partners (ADHS and county and tribal health)
- 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)
- Work with other governmental agencies and non-governmental organizations to ensure effective public health communications (ADHS and county and tribal health)

HHS responsibilities

- Revise recommendations for treatment and prophylaxis with antivirals for priority groups, if necessary
- Provide state, territorial and local health departments and health care partners with guidance on reporting specifications for tracking distribution, effectiveness, and safety of antivirals.
- Work with WHO and global partners to determine and monitor the drug susceptibilities of the pandemic strain
- Provide state, territorial and local health departments and health care partners with guidance on reporting specifications for tracking distribution, effectiveness, and safety of antivirals
- Provide information to health professionals and the public on issues related to availability and use of antiviral drugs during an influenza pandemic

Federal responsibilities

- Maintain stockpiles of influenza antiviral drugs in the SNS
- Distribute antiviral drugs from the SNS to states, cities, and federal agencies as appropriate
- 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
- Monitor the emergence of antiviral resistance
- Issue updated national guidelines for appropriate use of antivirals as the pandemic continues
- 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 Phases 1-3 (Limited Human Spread) and Phase 4 (Sustained Human to Human Spread)

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 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 neuraminadase 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/animal influenza outbreaks
- A history of contact with a person with an unexplained respiratory disease in an area with avian or animal influenza outbreaks
- Contact with patients ill with a known or suspected novel virus
- Contact with sick poultry or animals

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 7.3: ADHS Clinician Fact Sheet: Antivirals for Influenza 2008-2009; Appendix 7.4: ADHS Clinician Fact Sheet: Influenza 2008-2009.)

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.

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 the 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.

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 Phases 1-3 (Limited Human Spread) and Phase 4 (Sustained Human-to-Human Spread) provided in Supplement 5.

As of July 2010, 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 7.2 and in ADHS' Clinician Fact Sheet on Antivirals for Influenza in Appendix 7.3. This information will be updated as circumstances warrant.

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 post-exposure 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.

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 Advisory Committee (VAPAC) 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.

Preparedness planning for use of antivirals during a pandemic

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 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.

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 to assist in calculations for Arizona priority groups
- Strategies outlined in Box 7.1 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, procedures for procuring antiviral medication for state and local entities; distributing antivirals to priority groups through health care

providers and 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 will maintain communication with the medical community statewide regarding national guidelines for treatment, prophylaxis and the appropriate use of antivirals
- ADHS maintains contact information for appropriate federal agencies, county health departments, tribal governments, bordering states, and the government of Sonora, Mexico for coordinating distribution of antivirals.

Procurement

The needs in Arizona for antiviral treatment and prophylaxis during an influenza pandemic may 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 neuraminadase inhibitors oseltamivir (Tamiflu ®) or zanamivir (Relenza®). Influenza B is only sensitive to neuraminidase inhibitors. Of note, avian influenza strain H5N1 is not sensitive to amantadine or rimantadine. 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 7.1) based on the U.S. Department of Health and Human Services' Pandemic Influenza Plan, November 2005. 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 not be able to maintain a stockpile of antiviral medicines.

STATE GUIDANCE FOR STOCKPILING ANTIVIRAL MEDICATION

Arizona will encourage stockpiling antiviral medication for pandemic influenza in Arizona by 1) encouraging health care facilities to consider their own institutional stockpiles or vendor-managed inventories, 2) facilitating/maintaining arrangements with local private-sector distributors for emergency purchase of antiviral drugs, and 3) when needed, requesting antivirals from the Strategic National Stockpile (SNS).

Establishing priority groups

During a pandemic, changes to priority groups may be made based on the characteristics of the causative virus (e.g., drug susceptibilities, fatality rate, transmissibility, virulence, initial geographic distribution, age-specific morbidity and mortality rates, complication rates, etc.) and on vaccine effectiveness. During WHO Phase 4, ADHS will establish a Vaccine and Antiviral Prioritization Advisory Committee (VAPAC).

The VAPAC will make recommendations on how these priority groups can apply on a state and local level and modify these recommendations as needed based on the availability of antiviral medicines and vaccine, the characteristics of the causative virus and the effectiveness of implemented strategies. With guidance from the CDC and ACIP recommendations and led by the ADHS Director, the VAPAC will develop key strategies to target the highest priority groups for vaccination in the most efficient and effective manner. With integration from statewide partners, the VAPAC will provide the rationale for recommending the priority groups so that the reasons for prioritization can be communicated to the community. Each local health officer or tribal health authority may utilize the recommendations or modify them to fit local needs.

The VAPAC will be compromised of:

- Representative(s) from the Governor's office
- State Epidemiologist
- State physician(s)
- ADHS influenza epidemiologist
- ADHS Bureau of Epidemiology and Disease Control representative(s)
- ADHS Bureau of Public Health Emergency Preparedness representative(s)
- ADHS Division of Licensing representative(s)
- ADHS administrator(s)
- Arizona Immunization Program Office (AIPO) representative
- ADHS Office of Infectious Disease Services Chief
- Arizona Local Health Officers Association representative
- Arizona Medical Association representative
- Hospital Association representative
- Arizona Emergency Medical Service representative
- Arizona Pharmacy Alliance representative
- Arizona Chapter of American Academy of Pediatrics
- Long-term care representative
- Indian Health Services
- Other stakeholders as needed

The highest priority should be treatment of high-risk individuals who are hospitalized due to

influenza illness.

The next priorities could be 1) prophylaxis of health care workers (HCW) with direct patient contact and emergency medical service (EMS) providers, and/or 2) treatment of 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.

Appendix 7.1 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. 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 VAPAC to estimate the size of the various priority groups in Arizona.

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 VAPAC), 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 Phases 1-3 (Limited Human Spread) and Phase 4 (Sustained Human-to-Human Spread), 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 VAPAC
- 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 VAPAC's recommendations about priority groups
- Request and handle SNS antiviral supplies according to the ADHS Operational SNS Plan for Receipt, Store, and Stage (RSS)

ADHS BROKERING OF ANTIVIRAL SUPPLY

According to Arizona Revised Statutes §36-787: [*http://www.azleg.gov/arstitle/*], 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 7.1). 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 Phases 1-3 (Limited Human Spread) and Phase 4 (Sustained Human-to-Human Spread), 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 Phases 5-6 (Widespread Human Infection or Pandemic), 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.

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 help facilitate an emergency request for federal assets from 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 Coordinator will provide logistical guidance on the

receipt and distribution of federal assets to priority groups.

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. 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.

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.

- influenza specimens are sent 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.

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 in 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.

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. 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 chief medical officer 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.

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.

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 7.3 & 7.4). These Clinician Fact Sheets are available on ADHS' influenza website. ADHS has also developed Clinician Fact Sheets for health care providers for identifying, diagnosing, and managing pandemic influenza, and posted 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 county and tribal 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 Advisory Committee (VAPAC) in these exercises.

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.

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.

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/RegulatoryInformation/Guidances/ucm125127.htm

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.

Recommendations for Antiviral Use in Phases 5-6 (Widespread Human Infection or Pandemic)

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.

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 influenza. Examples of such persons could 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.

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 sources 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.

When there is widespread transmission of pandemic influenza in the United States

- When 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 7.1. 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.

Treatment

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 13, 2007 *http://www.cdc.gov/mmwr/PDF/rr/rr5606.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 13, 2007 *http://www.cdc.gov/mmwr/PDF/rr/rr5606.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

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).
- 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 influenza virus.

As the pandemic progresses, recommendations for antiviral treatment will be revised as new information is obtained about the circulating influenza strains.

Prophylaxis

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 serious side effects. Strains that are resistant to amantadine are likely resistant to rimantadine.
- Prophylaxis with amantadine or rimandatine 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 pandemic periods in unimmunized adults.*

**See MMWR, July 13, 2007 http://www.cdc.gov/mmwr/PDF/rr/rr5606.pdf*

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.

Strategies for Combined Treatment and Prophylaxis

During Phases 1-3 (Limited Human Spread) and Phase 4 (Sustained Human to Human Spread), 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.

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 7.2. 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 and CDC. The SNS contains a wide range of treatment regimens including oseltamivir (capsules and suspension), rimantadine (tablets and syrup), and zanamivir. The specific amounts present in the stockpile change regularly.

The details of the HHS approach for allocation and distribution of SNS assets during an influenza pandemic are flexible and depend on the severity of the situation. ADHS will work with 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 7.1. 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, pharmokinetics, FDA-approved indications, dosages, cost, and potential for emergence of drug resistance, see MMWR July 13, 2007 *http://www.cdc.gov/mmwr/PDF/rr/rr5606.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 7.2. 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 13, 2007)

Age Groups (years)					
Antiviral Agent	**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]
Zanamiviri,[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	dose varies by child's weight [l]	dose varies by child's weight [l]	dose varies by child's weight [l]	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 and http://www.cdc.gov/mmwr/PDF/rr/rr5606.pdf

Appendix 7.1 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 Prophy.	~ 2 million	~ 40,000	2%	40,000	692,500	Treatment & prophylaxis to contacts stop outbreaks
7	HCWs in emergency departments, ICU, EMS, dialysis centers	Prophy.	1.2	240,000	x4	960,000	1,652,500	Most critical to prevent absenteeism and surge capacity response

	Priority Group	Strategy	Estimated Population		C.F.	Number of Treatment Courses (10 pills/course)		Rationale
			US (millions)	AZ		Target group	Cumulative courses	
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	Prophy.	2.5	50,000	x4	200,000	1,975,500	Prevents illness in highest risk groups
11	Other HCWs with direct patient contact	Prophy.	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

Assumptions, Definitions, and Abbreviations

Assumptions:

- US population as per estimated population in table = 314.4 million
- AZ population in 2009 = 6,595,778 (July 2009)
- 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)

Abbreviations and Definitions

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 7.2 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:

- HHS Pandemic Influenza Plan, November 2005. U.S. Department of Health and Human Services. *http://www.hhs.gov/pandemicflu/plan*
- 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*
- 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*

APPENDIX 7.3
Clinician Fact Sheet: Antivirals for Influenza

ADHS Interim Recommendations for 2008-2009 Influenza Season: Consider use of Zanamivir 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
- This season the antiviral medicines amantadine and rimantadine are not recommended as monotherapy in the U.S. due to influenza resistance.
- For empiric therapy or prophylaxis when unable to use zanamivir, consider combining oseltamivir and amantadine (or rimantadine).

Consider for treatment with antiviral medicines

- Any person with a potentially life-threatening influenza-related illness
- Persons with laboratory-confirmed influenza who are hospitalized, who have influenza pneumonia, who have bacterial co-infection, or who are at higher risk for influenza complications.
- Persons presenting to medical care within 48 hours of influenza illness who want to decrease the duration or severity of their symptoms and reduce transmission of influenza to others

Consider antiviral chemoprophylaxis during influenza season for those at high risk of complications while influenza is circulating in the community

- Persons at high risk of serious complications from influenza for whom influenza vaccine is contraindicated
- Persons at high risk of serious complications, their family members, close contacts, and health-care workers when circulating strains of influenza virus in the community are not well-matched with vaccine strains
- 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
- Unvaccinated staff and residents during an institutional influenza outbreak
- High risk children under 9 years old after receiving influenza vaccine for the first time until 2 weeks after the second vaccine dose
- For 2 weeks after influenza vaccination in persons at high risk of complications from influenza

Length of Antiviral Treatment and Chemoprophylaxis

	Treatment Length	Chemoprophylaxis Length		
		After exposure	Institutional outbreak	After vaccine*
Amantadine** (Symmetrel®)	5 days	7-10 days	Minimum of 2 weeks or 7-10 days after onset of last case	2 weeks
Oseltamivir (Tamiflu®)		7-10 days	Minimum of 2 weeks or 7-10 days after onset of last case	2 weeks
Zanamivir (Relenza®)		10 days	Not proven effective for nursing home residents	2 weeks

*If antiviral prophylaxis is desired for high-risk individuals during the time immunity is developing.

** Only use concurrently with oseltamivir. CDC does not recommend the use of the antiviral medicines amantadine and rimantadine as single use agents this season due to high levels of influenza resistance.

Pediatric Points

- Children 6 months-8 years old who have never had an influenza vaccine need 2 doses of influenza vaccine, > 1 month apart to be optimally protected. So, 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 for Influenza

	Amantadine (Symmetrel®)	Oseltamivir (Tamiflu®)	Zanamivir (Relenza®)
Treatment Recommendations	Only A (H1N1) ≥ 1 y.o.	A (H3N2) & B ≥ 1 y.o.	Both A & B ≥ 7 y.o.
Adult	100 mg BID (maximum of 5 days)	75 mg BID x5 days	Two inhalations (10 mg) twice daily x5 days
Pediatric	Maximum of 5 days: 1-9 years: 5 mg/kg/day in 2 divided doses with max of 150 mg; ≥10 years and <40 kg: 5 mg/kg/day in 2 divided doses; ≥10 years and >40 kg: adult dosing	Based on weight: Length-5 days ≤ 15 kg: 30 mg BID; >15-23 kg: 45 mg BID; >23-40 kg: 60 mg BID; >40 kg: 75 mg PO BID	Two inhalations (10 mg) twice daily x5 days

	Amantadine (Symmetrel®)	Oseltamivir (Tamiflu®)	Zanamivir (Relenza®)
Prophylaxis	≥ 1 y.o.	≥ 1 y.o.	≥ 5 y.o.
Adult	100 mg BID	75 mg daily	Two inhalations (10 mg) once daily
Pediatric	Same total daily dose as treatment	Based on weight: ≤15 kg: 30 mg QD; >15-23 kg: 45 mg QD; >23-40 kg: 60 mg QD; >40 kg: 75 mg PO QD	Two inhalations (10 mg) once daily
Dosage Forms	100 mg tablet	75 mg tablet 60 mg/5ml susp.	Inhaler
Side Effects	100 mg capsule 50 mg/ 5 ml susp.	Nausea, vomiting, delirium, abnormal behavior	Bronchospasm
Contraindications	CNS: Insomnia, seizures, anti-cholinergic		Underlying airway disease
Renal impairment	Adjust dosing in renal insufficiency	Adjust dosing in renal insufficiency	
Note	Use only in combination with Oseltamivir; CNS sxs may need dose reduction or stopping		

For more detailed information about each antiviral medication, see: www.cdc.gov/flu/professionals/treatment

APPENDIX 7.4
Clinician Fact Sheet: Influenza 2008-2009

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 it is positive, it 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 hand washing 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 as single line agents for the 2008-2009 season
- ADHS interim recommendations for 2008-2009 season: Use Zanamivir preferentially for treatment or prophylaxis unless contraindicated.
    - For empiric therapy or prophylaxis when unable to use zanamivir, consider combining oseltamivir and rimantadine (or amantadine).

	Rimantadine (Flumadine ®)	Oseltamivir (Tamiflu®)	Zanamivir (Relenza®)
Influenza type sensitivity	Only A (H1N1)	A (H3N2) and B	Both A and B
Mode	Oral	Oral	Inhaled
Treatment	≥ 1 y.o.	≥ 1 y.o.	≥ 7 y.o.
Prophylaxis	≥ 1 y.o.	≥ 1 y.o.	≥ 5 y.o.

Follow CDC's vaccine recommendations for ages & contraindications

- Don't use smaller vaccine doses than recommended
- Use Live Attenuated Influenza Vaccine (LAIV; Flumist™) only in healthy people ages 2 years- 49 years
- Persons receiving LAIV should avoid close contact with severely immunosuppresed people for 7 days
- Contraindications to inactivated influenza vaccine or LAIV
- Anaphylactic allergy to eggs
- Guillain-Barré syndrome during the 6 weeks following a previous influenza vaccine
- Don't prescribe influenza antivirals for 2 weeks after LAIV
- Stop influenza antivirals for at least 2 days before giving LAIV

Influenza Vaccine Recommendations for 2008-2009 season

- Inactivated intramuscular shot [Multiple manufacturers]:
    - Ages ≥ 50 y.o.
    - All children ages 6 months-18 years old
    - Household contacts and caregivers of children 0-59 months as well as persons at high risk of complications from influenza
    - All persons with chronic medical conditions (e.g. heart disease, lung disease, asthma, diabetes, kidney disease, HIV, immunosuppression).
    - Pregnant in any trimester during influenza season.
    - Children age 6 months-18 years old on chronic aspirin therapy.
    - All health care workers
    - Residents of any age in a nursing home or chronic care facility.
    - Patients with any condition that can compromise respiratory function, handling of respiratory secretions, or can increase risk of aspiration.
    - **Anyone** wishing to reduce their risk of influenza.
- Live attenuated influenza vaccine (LAIV) [Flumist™]:
    - Healthy, nonpregnant people ages 2 y.o. through 49 y.o., including close contacts of infants and most health care workers

Pediatric pointers

- Children ages 6 months-8 years old receiving any influenza vaccine for the first time need two doses of vaccine.
- The two doses should be spaced ≥ 4 weeks apart
- Notify local or county health department for pediatric influenza deaths.

Staphylococcal and MRSA disease associated with influenza

- MRSA is becoming a community-acquired infection and has been associated with severe disease following influenza
- Influenza increases risk of *Staphylococcus aureus* respiratory infection
- Physicians caring for patients who have influenza and worsening respiratory status requiring IV antibiotics should consider adding **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
    - Clindamycin (Also good against *Streptococcus pneumoniae*)
    - Trimethoprim-sulfamethoxazole
        - Poor for *S. pneumoniae* which also complicates influenza
        - Avoid in pregnancy

For More Information

- ADHS website at *www.azdhs.gov/phs/immun/providersflu.htm*
- Centers for Disease Control and Prevention website at *www.cdc.gov/flu*
- MMWR August 8, 2008. "Prevention and Control of Influenza" at *www.cdc.gov/mmwr/PDF/rr/rr5707.pdf*
- ADHS Hotline for the Public (Recorded message):
  Metro Phoenix 602-364-4500; Statewide 1-800-314-9243
- Clinics giving influenza vaccines can be found at *www.cir.org*, (602) 263-8856, or (800) 352-3792 (for area codes 520 & 928)

SUPPLEMENT 8: COMMUNITY DISEASE CONTROL AND PREVENTION

Arizona Pandemic Influenza Response Plan

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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 this coupled with the 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 8.1). 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 8.1). Guided by epidemiologic data, the Arizona Department of Health Services (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 U.S.C. §264), the U.S. Department of Health and Human Services (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 territory 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 early stages of the pandemic 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 interventions (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.

Planning for the Pandemic

Planning for disease control and containment

Both individual and community-based containment measures raise legal, logistical, and social challenges that should be addressed prior to the pandemic. 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.

Although individual quarantine as a control measure is likely only to be used during the initial phases of the pandemic—for example, among communities where initial cases are introduced into the U.S.—all state and local health departments and tribal authorities should 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 also Appendix 8.2):

- Identifying and engaging partners (e.g., public heath and health care workers) and non-traditional community partners (e.g., transportation workers) and inviting them to participate in preparedness planning and in 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 and families, and faith-based and community organizations are in Appendix 8.3.

Legal preparedness: Isolation and Quarantine

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 government agencies are listed below.

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 the general population (non-infected, non-exposed individuals.) There are three sources of legal authority and direction for Isolation and Quarantine in Arizona:

A.R.S. § 36-624

Gives the counties the authority to conduct isolation and quarantine measures. Must be consistent with the due process and other requirements that are specified under A.R.S. §§ 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.

A.R.S. §§ 36-787 through 36-789

Provides isolation and quarantine authority to the state during a state of emergency or state of war

emergency. Quarantine and Isolation orders at the state level can only be given by the Governor, in consultation with the director of the Arizona Department of Health Services, and are implemented by ADHS and local health departments through written directives.

A.A.C. R9-6-303

This rule provides the local health agency a process from which to issue isolation and/or quarantine orders that are congruent with A.R.S. § 36-624, A.R.S. § 36-788 and A.R.S. § 36-789 (see Figures 8.1 and 8.2). *Templates for documents supporting the request for isolation and quarantine orders are in Appendix 8.4.*

Figure 8.1 During a Governor-declared state of war emergency or state of emergency, the Department (ADHS) must follow the process below to issue an order for isolation or quarantine (A.R.S. §§ 36-787 through 36-789):

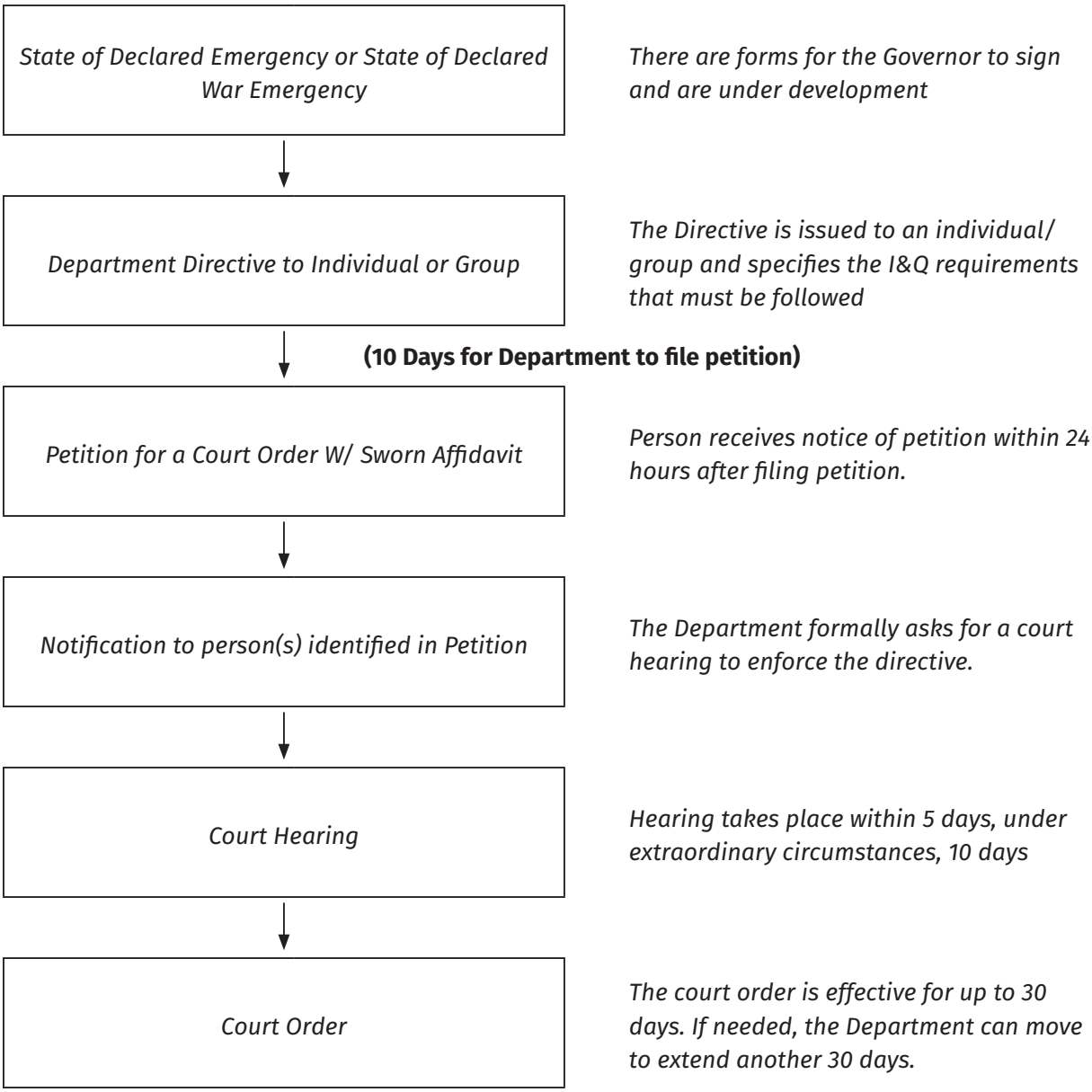
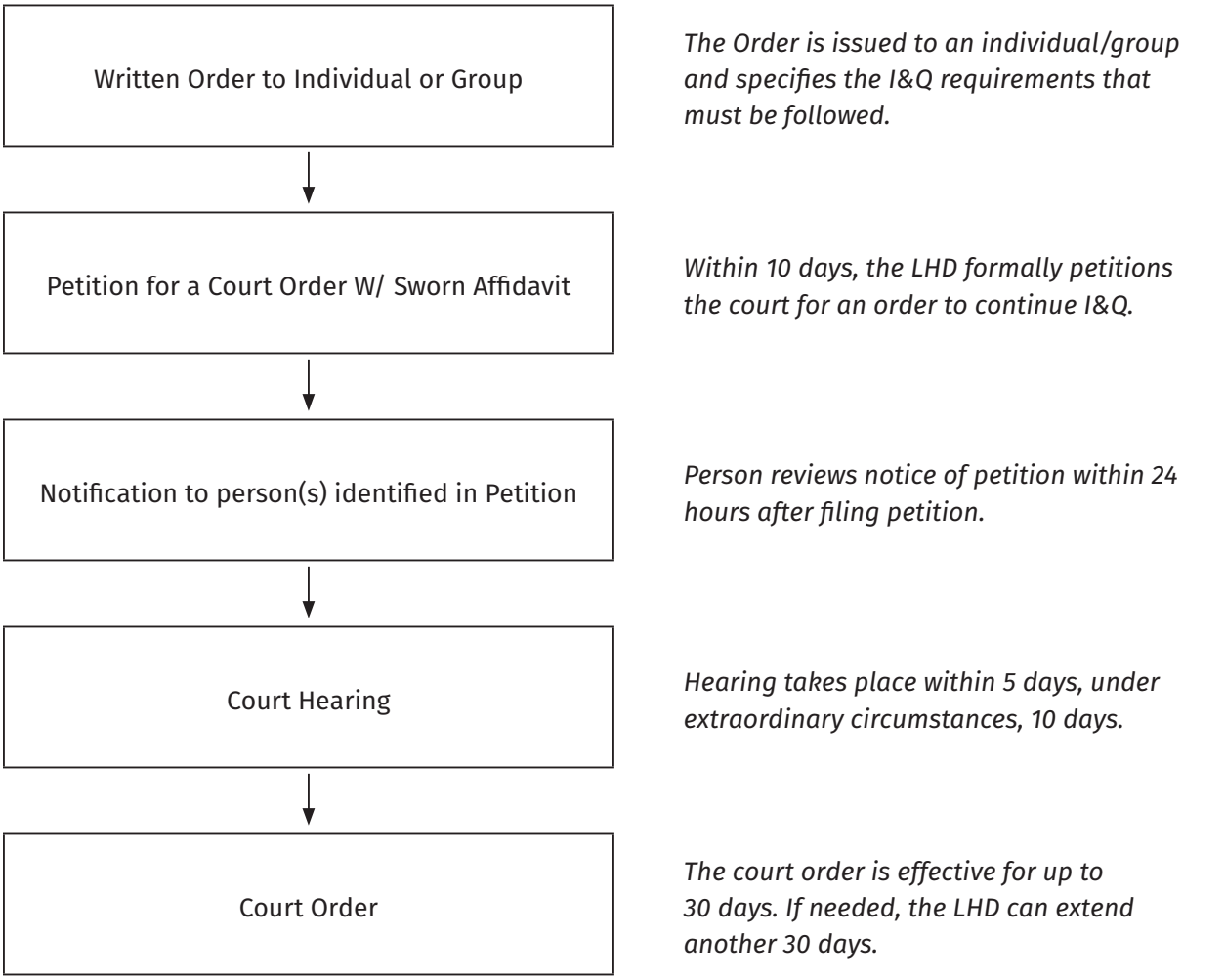


Figure 8.2 The local health department (LHD) must follow the process below to issue an order for isolation or quarantine (A.R.S. § 36-624):



Planning for influenza clinics and hotlines

An influenza pandemic is likely to put great stress on Arizona's health care delivery system, particularly emergency departments. Hospital and health care surge capacity plans are designed to address the overwhelming demand on hospital emergency departments and the overall health care system. (see Supplement 3).

Using hotlines as a method of "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 interact with infected persons at clinics and hospitals. If a hotline is available, ill persons will be encouraged to call to receive advice on whether to stay home or to seek medical care. ADHS and many county health departments have hotline capacities that can act as triage and information systems to support this need. Activated influenza hotline systems will include:

- Communication systems with influenza clinics or alternative treatment facilities, if they are established

- Telephone hotline numbers that people can call to report specific symptoms (e.g., fever)
- Protocols for hotline staff members that include training components and triage decision trees or algorithms

Public understanding of disease containment measures

Community preparedness for implementation of both individual and community control measures needs to be enhanced prior to the pandemic. Improving public understanding of the dangers of pandemic influenza and the benefits of community-wide disease control practices, including social-distancing measures, may increase compliance with public health prevention measures and may prevent illness and death. Strategies for disease control will be facilitated by clear communication of the rationale 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, businesses, 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) combined with 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. Although quarantining temporarily restricts personal movement, they can also explain that it is a collective action implemented for the common good. In addition, they can alleviate 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.

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 departments are prepared to enact and enforce individual and community-based containment measures, if needed.

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

In this document, the term "novel strains of influenza virus" is used to refer to avian or animal influenza strains that can infect humans, and new or reemergent human viruses that cause cases of disease. The choice of measures to contain the spread of novel strains of influenza will vary depending on the assessment of risk.

Patient isolation

Infection control precautions and procedures for isolating influenza patients in various settings 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 8.6.

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 from the Arizona State Public Health Laboratory or CDC.

Management of close contacts

In most situations and 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, 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 a 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 the:

- 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.
- 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.

Quarantine of contacts should be implemented early in the pandemic and only when there is a high probability that the ill patient is infected with a novel influenza strain that may be transmitted to others.

Health department officials will monitor contacts by phone or in person who are quarantined at least once a day 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.

Experience with seasonal influenza suggests the incubation period is one to four days, with an average length of two 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 one to 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.

Containment of small clusters of infection with novel strains of influenza

When cases are first introduced into the U.S., community-based control measures that public health officials might use to contain small clusters of infection with novel strains of influenza include targeted chemoprophylaxis, and early detection of new cases by use of influenza hotlines and clinics. These approaches may be implemented in small, well-defined settings. They are not likely to be useful once a pandemic is underway.

Targeted chemoprophylaxis of disease clusters

This intervention includes investigation of disease clusters, administration of antiviral treatment to persons with confirmed or suspected pandemic influenza, and provision of drug prophylaxis to all likely exposed persons in the affected community. CDC will assist 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. This is important because antivirals are most effective when used as post-exposure prophylaxis before onset of symptoms or provided within 48 hours of symptom onset. This intervention may only be useful upon the recognition of the first exposures or cases in Arizona, especially in a closed community, such as an assisted living facility.

Influenza hotlines and infectious disease referral centers

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 public health directives. 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.

Actions for CDC Acceleration Interval

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.

Table 8.1 outlines measures that may be employed at different stages of a pandemic, as the disease becomes more widespread. These begin with containment activities for individuals and progress, as needed, to community-based measures.

Containment measures for individuals

Patient isolation

As noted above, a patient with a suspected or confirmed case of pandemic influenza may need to be separated from persons who are well, using infection control measures described in Supplement 4. If a surge in patients overwhelms the health care capacity or if home isolation is not feasible, health departments may need to use alternate facilities for isolation of influenza patients. Guidance on use of alternative facilities for isolation of influenza patients is provided in Appendix 8.7 and in Supplement 3.

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 distances will likely be the primary public health intervention.

Community-based containment measures

If disease transmission in the community is significant and sustained, public 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 8.2 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.

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

Quarantine of groups of exposed persons

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

- Persons who might have been exposed to an influenza case
    - Via family members
    - At a public gathering
    - On an airplane or 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, ADHS, and the local health officer have the basic legal authority (A.R.S. §§36-624, 36-787 through 36-789) 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 8.6.

Measures that apply to use of specific sites or buildings

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

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

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 Table 8.1).

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 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 workers' 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 unavoidably have close contact with ill patients, the general public should try to avoid close contact with ill individuals.

Nevertheless, persons may choose to wear masks 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
- Are unable to avoid close contact with others
- 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.

"Stay Home Days" and Self-isolation

"Stay Home Days" asks everyone to stay home (note: "Stay Home Days" is similar to "Snow Days" in Health and Human Services (HHS) and other state plans). This involves the entire community in a positive way, is acceptable to most people, and is relatively easy to implement. "Stay Home Days" may be declared at a state or local level by the respective health officer for an initial set 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 acquiring and storing the 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). Compliance with "Stay Home Days" may be enhanced by "self-isolation" behavior (i.e., many people may stay home even in the absence of an official "Stay Home Days" Declaration).

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. However, this would have significant impact on the community and workforce. Public health officials and others will need to carefully consider the potential effectiveness, how it can most efficiently 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 Who Phases 5 through 6 (Widespread Human Infection or Pandemic), parents will be encouraged to consider child care arrangements that do not result in re- aggregating the children outside the school setting.

Widespread community quarantine (cordon sanitaire)

In extreme circumstances, state and local 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 heath or health care workers. While HHS includes this containment intervention in federal guidance documents, it is not a viable option for Arizona. This is due to a lack of legal authority in Arizona to enforce such an intervention and the low-likelihood of success of physically maintaining it.

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. General recommendations are to withdraw the most stringent or disruptive measures first. 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)

Box 8.1 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 closing community borders or creating real or virtual barriers around a geographic area (a cordon sanitaire) and prohibiting 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).

Table 8.1 Graded Implementation of Community Containment Measures

Level of Influenza Activity	Response
No novel influenza strains of virus[1] public health concern in global circulation	Preparedness Planning
Limited novel influenza virus 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[2], 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 two to three incubation periods after control or elimination of transmission

[1] "Novel strains of influenza virus" include avian or animal influenza strains that can infect humans, and new or reemergent human viruses that cause cases of disease.

[2] "Focus 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 8.2 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, states 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)

Potential Parameters	Variable
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 ratio 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 8.1 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 actual pandemic, when quarantining individuals and tracing close contacts may not be possible. The range of interventions includes the following:

Passive Monitoring	
Definition	The contact is asked to perform self-assessment at least twice daily and to contact authorities immediately if respiratory symptoms and/or fever occur.
Application	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
Benefits	• Requires minimal resources • Places few constraints on individual movement
Challenges	• Relies on self-reporting • Affected persons may not perform an adequate self-assessment
Resources Required	• 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
Partners	Household members
Forms/Templates	• Symptom logs • Instructions for patients and health care workers

Active Monitoring without Explicit Activity Restrictions	
Definition	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
Application	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
Benefits	Places few constraints on individual movement

Active Monitoring without Explicit Activity Restrictions	
Challenges	Requires adequate staffing to track information and to verify monitoring and appropriate actions based on findings
Resources Required	• 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
Partners	• 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
Forms/Templates	• Checklist for assessment of active monitoring • Template for recording results of clinical evaluation

Working Quarantine	
Definition	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
Application	Persons for whom activity restrictions (home or facility quarantine) are indicated but who provide essential services (e.g., health care workers)
Benefits	• 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
Challenges	• 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

Working Quarantine	
Resources Required	• 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
Partners	• 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
Forms/Templates	• 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)	
Definition	The contact remains separated from others for a specific period (up to 10 days after potential exposure), during which 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.
Application	Situations in which the risk of exposure and subsequent development of disease is high and the risk of delayed recognition of symptoms is moderate

Active Monitoring with Activity Restrictions (Quarantine)	
Benefits	Reduces risk of spread from persons with subacute or subclinical presentations or from delayed recognition of symptoms
Challenges	• May infringe on personal movement • May lead to a feeling of isolation from family and friends • May lead to a 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
Resources Required	• 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 system for food and other essential supplies

Focused Measures to Increase Social Distance	
Definition	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.
Examples	• 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
Application	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.
Benefits	• When applied broadly, it 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)

Focused Measures to Increase Social Distance	
Challenges	• May be difficult to solicit cooperation, particularly if popular buildings are closed or popular events are canceled • 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
Resources Required	• Systems to communicate relevant messages • May require enforcement, particularly if closure of buildings or gathering places is necessary • Resources for passive monitoring • Hotlines to report symptoms and obtain follow-up instructions • Transportation for medical evaluation, with appropriate infection control precautions
Partners	• News media and communication outlets • Law enforcement • Community groups
Forms/Templates	• Messages for affected persons • Messages for employers of affected persons • Messages for persons supplying essential services

Community-Wide Measures to Increase Social Distance	
Definition	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.
Application	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.
Benefits	• Reduces the 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 or quarantine • "Snow days" may be familiar concepts and thus may be easy to implement on short notice

Community-Wide Measures to Increase Social Distance	
Challenges	• 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 jurisdiction that may not be using a similar intervention, particularly in situations where persons live in one city and work in another • Generally relies on passive monitoring • Social and economic impact of public transportation closures
Resources Required	• Communication outlets • Enforcement • Resources for passive monitoring • Hotlines and other communication system to report symptoms and obtain follow-up instructions
Partners	• 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
Forms/Templates	• Messages for affected persons • Messages for employers of affected persons • Messages for persons supplying essential services

Appendix 8.2 Preparedness Checklist for Community Containment Measures

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 non-responsiveness 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 8.7 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 8.3 Planning Checklists and Resources

The U.S. Department of Health and Human Services (HHS)-managed website *www.flu.gov/ www.cdc.gov/flu/* provides many useful checklists and planning resources for businesses, individuals and families, faith-based and community organizations, and several others. As stated on the website, it "provides comprehensive government-wide information on seasonal, H1N1 (swine), H5N1 (bird) and pandemic influenza for the general public, health and emergency preparedness professionals, policy makers, government and business leaders, school systems, and local communities".

Planning Checklists available *http://www.flu.gov/professional/checklists.html*)

State & Local Government (*https://www.cdc.gov/flu/pandemic-resources/planning-preparedness/state- local-government-planning.html*)

- CDC 2009 H1N1 Vaccination Campaign Planning Checklist
- (*https://www.cdc.gov/flu/pandemic-resources/archived/state-local-planning.html*) State and Local Pandemic Influenza Planning Checklist (*https://www.cdc.gov/h1n1flu/vaccination/statelocal/planning_checklist.htm*)

Workplace

- (*https://www.cdc.gov/flu/pandemic-resources/archived/business-planning.html*)Law Enforcement Pandemic Influenza Planning Checklist
- Correctional Facilities Pandemic Influenza Planning Checklist
- Business Pandemic Influenza Planning Checklist
- Long-Term Care and Other Residential Facilities Pandemic Influenza Planning Checklist (*https://www.cdc.gov/phpr/healthcare/planning2.htm*)
- Health Insurer Pandemic Influenza Planning Checklist (*https://www.cdc.gov/flu/pandemic-resources/archived/health-professionals-planning.html*)
- Travel Industry Pandemic Influenza Planning Checklist (*https://www.cdc.gov/flu/pandemic-resources/archived/transportation-planning.html*)
- Individuals & Families (*https://www.cdc.gov/nonpharmaceutical-interventions/pdf/gr-pan-flu-ind-house.pdf*)
- Pandemic Flu Planning Checklist for Individuals and Families

Schools

- (*https://www.cdc.gov/flu/pandemic-resources/archived/schools-child-care- planning.html*) Childcare and Preschool Pandemic Influenza Planning Checklist
- School District (K-12) Pandemic Influenza Planning Checklist
- Colleges and Universities Pandemic Influenza Planning Checklist

Healthcare

- (*https://www.cdc.gov/flu/pandemic-resources/archived/health-professionals-planning.html*) CDC 2009 H1N1 Vaccination Campaign Planning Checklist

- Home Health Care Services Pandemic Influenza Planning Checklist
- Medical Offices and Clinics Checklist
- Emergency Medical Services and Medical Transport Checklist
- Hospital Pandemic Influenza Planning Checklist
- Long-Term Care and Other Residential Facilities Pandemic Influenza Planning Checklist

Appendix 8.4 Legal Preparedness: Isolation and Quarantine Templates

8.4.1 Quarantine Directive for Public Health Emergencies: A.R.S. §§ 36-788 and -789

8.4.2 Isolation Directive for Public Health Emergencies: A.R.S. §§ 36-788 and -789

8.4.3 Petition for Compulsory Isolation or Quarantine: A.R.S. § 36-789(B)

8.4.4 Affidavit in Support of Compulsory Isolation or Quarantine: A.R.S. § 36-789(C)

8.4.5 Order for Isolation or Quarantine: A.R.S. § 36-789(B), (F), (G)

8.4.1 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:

☐ This directive was served in-hand to the above-named individual on _____ at _____ a.m./p.m.

8.4.2 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

8.4.3 Petition for Compulsory Isolation or Quarantine: A.R.S. § 36-789(B)

----------Name----------
Attorney General/County Attorney
Firm State Bar No. ---------

----------Name----------
----------Title----------
----------Address--------
----------Address--------
----------Telephone-----
----------Fax----------
----------E-mail---------
State Bar No. ----------

IN THE SUPERIOR COURT OF THE STATE OF ARIZONA

IN AND FOR THE COUNTY OF ----------

STATE OF ARIZONA Petitioner, vs. ---------- Respondent(s).	Case No.: **PETITION FOR COMPULSORY ISOLATION/QUARANTINE PURSUANT TO A.R.S. § 36-789** (Oral Argument Requested)

The Arizona Department of Health Services/County Department of Public Health ("Department") petitions the Court for an Order authorizing the initial/continued isolation/quarantine of Respondent(s), pursuant to A.R.S. § 36-789(B).

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. *See* A.R.S. § 36-787(C). A copy of the Governor's State of Emergency or State of War Emergency is attached and incorporated herein as

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Exhibit A. Under A.R.S. § 36-788(B), the Department may: (1) establish and maintain places of isolation and quarantine; and (2) require the isolation and quarantine of any person or group of persons, by the least restrictive measures available, to protect the public health.

The Department has reasonable cause to believe that a highly contagious and fatal disease exists within its jurisdiction and isolation/quarantine of the Respondent(s) is the least restrictive means by which the public can be protected from transmission of the disease. *See* A.R.S. § 36-788(A). Therefore, the Department seeks a court order authorizing the isolation/quarantine of Respondent(s) ***OR*** has isolated/quarantined Respondent(s) through a written directive and now seeks a court order to continue isolation/quarantine. A copy of the Department's written directive is attached and incorporated herein as Exhibit B. A.R.S. § 36-789.

The following information is provided pursuant to A.R.S. § 36-789(B):

1. The identity of the person/group of persons subject to isolation/quarantine:

   _____

   _____;

2. The premises subject to isolation/quarantine:

   _____

   _____;

3. The date and time at which isolation/quarantine commences:

   _____

   _____;

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4. The suspected contagious disease, if known:

_____

_____;

5. (ADHS ONLY): A statement of compliance with the conditions and principles for isolation/quarantine:

The Department is in compliance with the conditions and principals for isolation/quarantine set forth in A.R.S. §§ 36-787 through 36-789;

(LOCAL HEALTH DEPARTMENT ONLY): The isolation or quarantine and other control measure requirements being imposed, including, if applicable, requirements for physical examinations and medical testing to ascertain and monitor an individual's health status:

_____

_____;

6. A statement of the basis on which isolation/quarantine is justified:

_____

_____;

INFORMATION TO BE INCLUDE FOR STATEMENT #6:

FOR ISOLATION: 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.

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FOR QUARANTINE: 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.

-----Name-----, -----Title----- of the Department attests to the facts asserted in this petition. ---Name---'s sworn Affidavit is attached and incorporated herein as Exhibit B/C.

Conclusion.

The Department requests this Court to issue an order authorizing the isolation/quarantine of the Respondent(s) to prevent the transmission of a highly contagious and deadly disease.

DATED this ____ day of _____, _____.

----------Name----------
Attorney General/County Attorney

_____
----------Name----------
----------Title----------
Attorney for the State

Original filed this ____ day of
_____, _____with:

Clerk of the Superior Court
---------- County Superior Court
----------Address--------
----------Address--------

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Copy of the foregoing hand delivered this
____ day of _____, _____ to:

Honorable ----------
---------- County Superior Court
----------Address--------
----------Address--------

Copy of the foregoing personally served this
____ day of _____, _____ on:

----------Name----------
----------Title----------
----------Address--------
----------Address--------

Copy of the foregoing mailed this____
day of _____, _____ to:

----------Name----------
----------Title----------
----------Address--------
----------Address--------

By: _____
------Name, Title------

DOC: PHX # 862438

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8.4.4 Affidavit in Support of Compulsory Isolation or Quarantine: A.R.S. § 36-789(C)

AFFIDAVIT

STATE OF ARIZONA)
) ss.
County of ----------)

----------Name----------, being first duly sworn upon his/her oath, deposes, and says:

1. I am the ----------Title---------- of the Arizona Department of Health Services/County Department of Public Health ("Department") and I am authorized to execute this affidavit in support of the Petition for Compulsory Isolation/Quarantine on behalf of the Department.

2. I have read the Petition for Compulsory Isolation/Quarantine Pursuant to A.R.S. § 36-789 and know the contents thereof.

3. The facts asserted in the Petition are true to the best of my knowledge, specifically:

a. The identity of the person or group of persons subject to isolation/quarantine;

b. The premises subject to isolation/quarantine;

c. The date and time at which isolation/quarantine commences;

d. The suspected contagious disease;

e. The compliance of the Department with the conditions and principles for isolation/quarantine; and

f. The basis on which isolation/quarantine is justified pursuant to A.R.S. Title 36, Chapter 6, Article 9.

4. OPTIONAL PARAGRAPHS: Include additional factual information that is relevant to the court's consideration.

1

DATED this ____ day of _____. _____.

_____
----------Name----------
----------Title----------

SUBSCRIBED AND SWORN to before me this ___ day of _____. ____.

_____
NOTARY PUBLIC

My Commission Expires:

_____

DOC: PHX # 862439

2

8.4.5 Order for Isolation or Quarantine: A.R.S. § 36-789(B), (F), (G)

----------Name----------
Attorney General/County Attorney
Firm State Bar No. ---------

----------Name----------
----------Title----------
----------Address--------
----------Address--------
----------Telephone-----
----------Fax----------
----------E-mail---------
State Bar No. --------

IN THE SUPERIOR COURT OF THE STATE OF ARIZONA

IN AND FOR THE COUNTY OF ----------

STATE OF ARIZONA Petitioner, vs. ---------- Respondent(s).	Case No.: **ORDER FOR ISOLATION/QUARANTINE PURSUANT TO A.R.S. § 36-789**

Having reviewed the Arizona Department of Health Services'/County Department of Public Health's ("Department") Petition for Compulsory Isolation/Quarantine Pursuant to A.R.S. § 36-789 and attached exhibits, Respondent's -----documents filed, if any------, and the testimony of the parties and witnesses, THE COURT FINDS that:

1. 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 smallpox.

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2. The Department has reasonable cause to believe that a highly contagious and fatal disease exists within its jurisdiction.

3. Isolation/Quarantine of the Respondent(s) is the least restrictive means by which the public can be protected from transmission of the disease.

4. The Department is in compliance with the conditions and principals for isolation/quarantine set forth in A.R.S. §§ 36-787 through 36-789.

5. (Include paragraphs stating the basis on which isolation/quarantine is justified.)

The Department having shown by a preponderance of the evidence that isolation/quarantine is reasonably necessary to protect the public health, IT IS HEREBY ORDERED THAT:

1. The following person or group of persons shall be isolated/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)

2. (Optional paragraph: The isolation/quarantine shall be effected with the following conditions necessary to ensure that the isolation/quarantine is carried out within the stated purposes and restrictions of A.R.S. Title 36, Chapter 6, Article 9: _____)

3. 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 (can be less than, but no more than 30) days from the date of its issuance unless the Department is granted continuance of this Order under A.R.S. §36-789(H).

-2-

SIGNED this ____ day of _____, _____.

_____
Honorable ----------Name----------

DOC: PHX # 862441

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Appendix 8.5 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%. 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 may be 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. Likely, if examples from recent outbreaks are used as an indicator for future acceptance 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 8.6 Recommendations for Quarantine

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, quarantined persons 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, affected persons 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 persons 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 8.7.
- 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 persons 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, affected persons 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 8.7).

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, persons 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, quarantined persons 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 8.7 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, radio, reading materials, internet access

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 quarantined persons 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.

Supplement 9

SUPPLEMENT 9: MANAGING TRAVEL-RELATED RISK OF DISEASE TRANSMISSION

Arizona Pandemic Influenza Response Plan

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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 two days versus seven to 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. However, depending on the situation, these activities might slow the spread early in a pandemic, allowing additional time for implementation of other response measures such as vaccination.

Over the course of an influenza pandemic, ADHS and local health authorities may consider a range of travel-related control measures to decrease the spread of disease into or within Arizona.

Depending on the severity, 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 the 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 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 may choose to cancel nonessential travel to decrease their potential exposure and risk of infection. In this context, the added value of compulsory restrictions should be considered relative to the societal disruptions that limitations on movement would cause.

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. Currently, U.S. Quarantine Stations are located at 20 ports of entry and land-border crossings where international travelers arrive. These stations are staffed with quarantine medical and public health officers from the CDC. Although no CDC quarantine stations exist in Arizona, state and local public health officials work closely with the nearest station in San Diego, California on these issues.

The actions for WHO Phases 1 through 4 (Limited Human Spread to Sustained Human-to-Human

Spread) 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 WHO Phases 5 through 6 (Widespread Human Infection or Pandemic) focus on travel-related measures to decrease disease spread into, out of, and within the United States.

Primary response agencies and responsibilities

Arizona Department of Health Services Responsibilities

- Coordinate with HHS and CDC on activities related to travel-related risk
- Provide guidance to local health departments on implementing travel-related containment measures
- Provide public health information to residents that may travel to countries of concern
- Coordinate with the Arizona Department of Homeland Security and the Arizona Department of Emergency and Military Affairs on response activities and policy decisions regarding travel-related containment measures

County Health Department and Tribal Agency 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 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 cease travel-related containment measures as the pandemic evolves

Municipal Police and Fire Department Responsibilities

- Provide Incident Command and security related to travel disease control and risk containment strategies

Federal Responsibilities (including HHS, CDC, and U.S. Customs and Border Protection)

- 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

Actions for CDC Recognition and Initiation Intervals

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. The ability to detect some cases early in the pandemic may slow disease spread even for a short time.

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

Engaging community partners

While primary planning and response activities occur at the local level, ADHS works closely with these jurisdictions to assist in engaging appropriate community partners and to develop and exercise plans. Community partners include:

- Municipal emergency responders (firefighters, police officers)
- Members of the legal community
- Emergency medical services and other emergency responders
- Referral hospital personnel

- Representatives of Sky Harbor International and Tucson International Airports
- U.S. Customs and Border Protection
- Political leaders and key elected officials
- American Red Cross and other non-governmental organizations
- Businesses and private sector

Protocols for managing ill travelers at ports of entry

Local public 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, if necessary (see also Supplement 3)
- Identifying other ill passengers and separating them from passengers who are not sick
- Transporting and quarantining contacts, if necessary
- Enforcing isolation and quarantine, if necessary, when ill travelers or their contacts are uncooperative

The U. S. Customs and Border Protection (CBP) is the primary agency responsible for identifying potential cases of pandemic influenza crossing the international border into Arizona. A workgroup was established between ADHS, county health departments, airport officials, the Transportation Security Administration Authority, the CDC Quarantine Stations, and U.S. Customs and Border Protection personnel at the Phoenix Sky Harbor Airport. In coordination with other agencies, the CDC has developed emergency response plans detailing procedures such as:

- Reporting
- Planeside Response
- Passenger Screening
- Decontamination
- Media Response
- International Communications
- Agency Roles and Responsibilities
- Communications and Notification Procedures

Quarantine preparedness at ports of entry

County health officials, in collaboration with the ADHS, need to be prepared to identify quarantine

facilities and house passengers, crew, and emergency workers who may have been exposed to an ill traveler. Plans should account for:

- Temporary quarantine (a few hours to a few days)
- CDC Quarantine officers
- Longer-term quarantine (up to 10 days)
- The provision of goods and services to persons in quarantine (see Supplement 8)

Legal preparedness

The primary legal remedies for preventing the introduction, transmission, and spread of communicable diseases related to travel are the state and local legal authorities prescribed in the Arizona Revised Statutes (§§36-264 and 787-9) (see Supplement 8 for more detail). 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 do not exist at the local level or when there is no capacity to implement the authority. State and local jurisdictions are primarily responsible for restricting travel within their borders; however, there is no statutory authority in Arizona for large scale travel restrictions, especially related to cordon sanitaire.

Reporting

During the early stages of the pandemic, if a border traveler using a commercial conveyance has been identified with suspected pandemic influenza either by laboratory report or local health department notification, the ADHS Office of Border Health will immediately notify the CDC Division of Global Migration and Quarantine. If the traveler came from another country, ADHS will also immediately notify the CDC Emergency Operations Center (EOC) following the "Guidelines for Cooperation of Epidemiologic Events of Mutual Interest" (*http://www2a.cdc.gov/PHLP/docs/US_Mexico_Epi_Info_Sharing.pdf*) and the International Health Regulations (*http://www.who.int/ihr/en/*). Notification of other jurisdictions will follow the Council for State and Territorial Epidemiologists (CSTE) guidelines for determining residency. During the pandemic phase, notifications will occur only if residency is known and notification regarding travel status will not be of interest due to the spread of the pandemic.

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 the Department of Emergency and Military Affairs (DEMA) will provide links to this website for international travelers to traveling to countries affected by novel influenza viruses during the pandemic. These notices are issued depending on the scope, risk for travelers, and recommended preventive measures.

Evaluation of travel-related cases of infection with novel strains of influenza

During the early stages of the pandemic, 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.

Local health departments are required to ensure the completion and implementation of protocols for the management of arriving ill passengers in their county who meet the clinical and epidemiological criteria for infection with a novel strain of influenza and for the management of contacts of such passengers. ADHS is responsible for assisting in the development and implementation of these protocols. Additionally, ADHS is responsible for ensuring these are coordinated with federal protocols and systems.

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 coordinate with the U.S. Customs and Border Protection 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.

Identification and management of incoming ill travelers may delay and decrease the introduction of novel influenza strains into the United States during the early stages of the pandemic. These efforts may continue at the beginning of the pandemic phase, especially if a novel influenza 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, establish airline quarantine response plans. 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 manage disembarkation until the evaluation is complete.

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 the Arizona 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, see Supplement 1.

Actions for the CDC Acceleration and Deceleration Intervals

Travel-related measures at later stages of a pandemic

If the situation worsens overseas and there is extensive and sustained transmission in other countries, the CDC, ADHS and local 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 lack of resources.

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 state and local public 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

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 likely be used to slow the spread of illness within the state (see Supplement 8).

De-escalation of travel-related control measures

Decisions to de-escalate control measures related to international travel will be made in consultation with CDC.

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Supplement 10

SUPPLEMENT 10:
PUBLIC HEALTH COMMUNICATIONS

Arizona Pandemic Influenza Response Plan

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Rationale

As a keystone of comprehensive pandemic influenza preparedness and response, effective communication pilots the public, the media, response agencies, healthcare providers and stakeholders through a coordinated response to pandemic outbreaks in compliance with public health measures.

The goal of communications before and during a pandemic is to provide and exchange relevant information with the public, partners, and stakeholders to allow them to make well informed decisions and take appropriate actions to protect health and safety. Effective communication about the risks related to pandemic influenza is critical at every stage of preparedness and response and is a fundamental part of effective risk management. Given the complex risks and perceptions associated with an influenza pandemic, communication strategies that simply disseminate outbreak information and recommendations will be insufficient. The scope and complexity of the task demands frequent, transparent, and proactive communication and information exchange with the public, partners, and other stakeholders about decision making, health recommendations, and related information.

Influenza pandemics are pervasive and long-lasting and will strain national, state, county and local resources. Consequentially, strategic communications planning is integral to a pandemic response.

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, for special needs and at-risk 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.

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.

External Planning Assumptions

- There will be a persistent demand for timely and new information from the public, healthcare providers, elected officials and the media.
- Government and public health officials will stay in constant communication.
- A pandemic is a global event; consequently, the public will pull information from various sources, which could result in conflicting messages.
- Hearsay, rumor and speculation should be expected.
- The availability and/or operability of dissemination channels will depend on the severity of the pandemic and its scope.
- A pandemic will strain the healthcare system, vaccine and antiviral supplies.
- Upon the exhaustion of antiviral prophylaxis supplies, there is no further defense against the virus (assuming a two week protection period between doses).
- Upwards of 40 percent of the workforce will be absent for two or more weeks at the peak of a pandemic wave.

- Calls for assistance, including requests for ambulatory transport, will saturate Emergency call centers and 9-1-1 switchboards.

Internal Planning Assumptions

- CDC (Centers for Disease Control and Prevention) and HHS (U.S. Department of Health and Human Services) will inform ADHS as to:
    - Pandemic phases/stages;
    - Virus characteristics;
    - Vaccine availability;
    - National response coordination;
    - Suggestions for vaccine and antiviral/antibiotic prioritization; and
    - Recommendations for detection, control and response.
- ADHS has formulated a Strategic National Stockpile (SNS) distribution plan and apportioning procedures.
- The Department Director, Deputy Director and Assistant Director of Public Health or their designee will approve all information for public use, or, in a crisis, through the Public Health Incident Management System (PHIMS) Command Structure.
- Federal, state and local partners will establish a Joint Information Center (JIC) in support of response operations; stakeholders will share information and collaborate in the creation of materials and strategies to ensure consistent messaging.
- Public health organizations will determine the content of communication campaigns for effective health education, promotion of health behaviors, and to maintain public trust.
- ADHS, under the direction of the Public Information Officer, will establish a Speaker's Bureau of identified Subject-Matter Experts (SMEs) and agency spokespersons.
- Despite best efforts, crisis demands and unforeseen complications may disrupt interoperable communications between ADHS and its partners. Coordinated activity during an outbreak will require planned regular communication mechanisms, in addition to ad hoc communications.
- ADHS will encourage proper healthcare practices, define appropriate use of medical services, provide information on alternate care sites, outline self-monitoring and reporting of symptoms, and speak to coping strategies and mental health needs.

ADHS will employ a risk communication strategy contingent upon World Health Organization (WHO) pandemic phases and corresponding U.S. federal pandemic response stages. Department priorities, messages, and methods will evolve with the progression of pandemic periods and spread of the influenza. As the pandemic progresses, ADHS will establish a precedent of transparent, swift, empathetic, candid, and inclusive communication. ADHS will collaborate with public health response partners at the local, state and federal levels to develop communication strategies and tactics and messages that comply with risk communication concepts.

Actions for the CDC Recognition and Initiation Intervals

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.

Assessing communications capacity and needs

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

Capacity

- As part of overall pandemic influenza preparedness planning, ADHS has developed this supplement that incorporates pandemic public health risk communications plan information.
- 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.

Needs

- Review and update public health 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; notify 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 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, providing updated preparedness information.

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 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 during the WHO phases 1-3.

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 the Health Services Portal (HSP) and the Health Alert Network (see supplement 12) and to the public through *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*
- Arizona will utilize established local, state and federal hotlines, such as the CDC-INFO telephone line (1-800-CDC-INFO; 1-800-232-4636) for the dissemination of public information. However, during an influenza pandemic, ADHS will also tailor additional information for Arizona through *www.azdhs.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 Department of Emergency and Military Affairs (DEMA); 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 DEMA 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.

Developing, testing, and disseminating locally tailored messages and materials for WHO Phases 1-3 (Limited Human Spread)

The WHO Pandemic Phases 1-3 are an 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 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 Phases 1-3 to prepare communications materials for use during Phase 4

and Phases 5-6. 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, DEMA 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 10.1 and 10.2 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.azdhs.gov*, local/county hotlines, helplines) and self-help (e.g., psychological resources, and stress and anxiety management).

Actions for CDC Acceleration Interval

Communication and public information activities are substantially elevated during Acceleration. Communication and outreach efforts will focus on hygiene, social distancing, preparedness, and vaccine as available

Pandemic alert messages will discuss due diligence and incorporate topics of self-protective practices, containment measures and the responsible utilization of medical services. Boilerplate and novel materials will be tailored to conventional and “at-risk” populations. At this point in the pandemic, ADHS would work with state and local partners develop a Joint Information System (JIS) and/or request activation of the Joint Information Center (JIC). The exact level of activation would be based on factors specific to the pandemic.

ADHS will appraise communications plans and capabilities in coordination with stakeholders.

Communication Actions:

- Writes and/or compiles pandemic influenza collateral materials (e.g., boilerplates, backgrounders, speaking points, fact sheets, etc.) for stakeholders, the media and the public.

(Stakeholders include: healthcare providers, first responders, ESAR-VHP volunteers, large businesses, state healthcare agencies, non-profit agencies).

- Adapts materials from HHS, CDC, WHO and other agencies for distribution through media, hotline, Web site, list servers, local health departments and others.
- Develops collateral materials for all Arizona audiences.
- Collaborates with stakeholders to exercise plans and abilities, pinpoint gaps, isolate weaknesses and apply improvements.
- Promotes AzEIN and Just in Case Arizona as repositories for emergency (e.g., pandemic influenza) updates and preparedness information.
- A representative(s) from ADHS will be assigned to the State JIC (when activated) to coordinate the development and dissemination of messages.

Actions for CDC Acceleration through Deceleration

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.

Activating emergency communications plans

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. 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 systems, including local and state hotlines and messaging on *www.azdhs.gov*.

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.

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.

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 DEMA Joint Information Center.

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.

Actions for CDC Preparation Interval

Communication efforts during the Post Peak Period will focus on local, state, federal and global recovery efforts, psychosocial needs and a return to normalcy. ADHS and its partner agencies will adopt a condition of readiness and review its response. In the wake of an influenza pandemic, there will be a residual need for recovery messages and information.

ADHS Communication Actions:

- Updates automated menu and messages on Public Health Information Line (PHIL);
- Confers with the Division of Behavioral Health Services and other mental health partners (e.g., Regional Behavioral Health Authorities (RBHA)) to compose recovery messages;
- Advertises available public services;
- Emphasizes the successes of community support services;
- Expresses empathy;
- Champions family preparedness and self-protection measures;
- Briefs the public on the status of the pandemic, and local, state and federal recovery efforts;
- Speaks to areas requiring improvement;
- Underscores the implementation of mitigating actions;
- Promotes the revival of everyday activities.

The ADHS communication staff will review and discuss operations (i.e., risk communication plans, campaigns, ideologies and strategies) implemented in the pandemic phases to produce an After Action Report (AAR) and subsequent Improvement Plan (IP).

ADHS:

- Considers critiques solicited from ADHS employees and officials, the public via the ADHS Web site, health care providers, emergency response personnel county and tribal health offices;
- Dissects media interviews given by ADHS personnel, SMEs, etc. for content and observance of risk communication principals;
- Analyzes success of releases, boilerplates and education campaigns to reach audiences and affect behaviors;
- Evaluates procedures/systems employed in the development, approval and dissemination of information; and
- Catalogs “lessons learned,” and
- Implements corrective actions.

Additionally, ADHS will persist in its public education and outreach activities, having measured the potency of previous approaches and methods.

ADHS:

- Directs audiences to AzEIN, Just in Case Arizona and the ADHS/Bureau Of Public Health Emergency Preparedness (BPHEP) Web site for preparedness information on …
    - family preparedness,
    - self-protection practices,
    - non-pharmaceutical containment measures, and
    - the appropriate use of medical services;
- Implements changes to the education/outreach programs based on IP recommendations;
- Consults "best practices" and "lessons learned" reports for applicable materials;
- Devises strategies to better reach conventional and "at-risk" populations.

Actions for Investigation Interval

As Arizona enters the Investigation Period, actions will revolve around recovery and evaluation of actions during the pandemic. After-action reporting and improvement plans will contribute to improving the overall response in preparation for future influenza pandemics.

ADHS:

- Publicly acknowledge contributions of all communities and sectors and communicate the lessons learned; incorporate lessons learned into communications activities and planning for the next major public health crisis
- Evaluate communications response during previous phases; review lessons learned
- Ensure lessons learned are incorporated into revised and improved communication plans of all stakeholders, ready for use in the next pandemic/major public health event.
- Continue to work with Member States to increase the effectiveness of national communication activities

Appendix 10.1 – 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 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 10.2 – 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 made available at appropriate times on the *www.azdhs.gov/pandemic flu* 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
  **Note, this website also has links to Novel H1N1; Seasonal Flu; Swine Flu and Pandemic Flu information (see right side of website)*
- **Guidance to Travelers**
  http://www.cdc.gov/travel/other/avian_flu_ah5n1_031605.htm
- **Managing Anxiety in Times of Crisis**
  http://mentalhealth.samhsa.gov/cmhs/managinganxiety/default.asp

Appendix 10.3 – Additional Resources

HHS and its agencies will make resources available to state and local health professionals to assist with their communications responsibilities during all phases of a pandemic event. Because information may change frequently, check the *www.flu.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 Website *http://www.HHS.gov/nvpo/*
- WHO Pandemic Influenza Website *http://www.who.int/csr/disease/influenza/pandemic/en/*
- CDC Morbidity and Mortality Weekly Report *http://www.cdc.gov/mmwr/*
- 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*
- Centers for Public Health Preparedness
  http://www.bt.cdc.gov/cdcpreparedness/cphp/index.asp
  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 nationwide defense system through the preparation of front-line public health workers and first responders.
- The WHO European Influenza Network Website *http://www.euroflu.org/index.php*

Vaccine-Specific Sites and Resources

- The Vaccine Adverse Events Reporting System (VAERS) *http://vaers.hhs.gov/* or call 1-800-822-7967

Surveillance Sites

- CDC Influenza Surveillance Data *http://www.cdc.gov/flu/weekly/fluactivitysurv.htm*
- EISN: European Influenza Surveillance Network
  http://www.ecdc.europa.eu/en/activities/surveillance/EISN/Pages/home.aspx/

Outbreak Sites

- Animal and Plant Health Inspection Service (APHIS), Veterinary Services, U.S. Department of Agriculture (USDA) *http://www.aphis.usda.gov/*
  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 *http://www.who.int/csr/don/en/*

Research Sites

- National Institute of Allergy and Infectious Diseases (NIAID)
  http://www.niaid.nih.gov/topics/flu/Pages/default.aspx
- USDA Agricultural Research Service *http://www.ars.usda.gov*

Manufacture and Licensing of Influenza Vaccine

- Center for Biologics Evaluation and Research (CBER), FDA
  http://www.fda.gov/BiologicsBloodVaccines/default.htm
  CBER plays a critical role in the manufacture and licensing of influenza vaccine.
- WHO Global Influenza Preparedness Plan (April 2009)
  http://www.who.int/csr/disease/influenza/pipguidance2009/en/index.html

Appendix 10.4 – Joint Information Center

The Joint Information Center (JIC) provides the mechanism to organize, integrate, and coordinate information collection and dissemination to ensure timely, accurate, and consistent messaging across multiple jurisdictions and/or disciplines including the private sector and nongovernmental agencies.

The State of Arizona has a designated JIC at the DEMA State Emergency Operations Center. This facility contains a staging area for the media and a working site for the public information officers (PIO). The primary task of PIO is to clearly and rapidly communicate key facts, explain response activities, and inform the public of any protective measures. During a pandemic response, the JIC will be the primary physical location for the development, coordination, and dissemination of all pandemic information. Once the JIC is established, the JIC becomes the recognized source for the news media and stakeholders to get official information on the incident.

Roles and Responsibilities

The Lead Public Information Officer (PIO), in coordination with other state and federal officials, will:

- Use the media, outreach and other communication systems to provide risk communication to inform and instruct individuals, families, businesses, and industries about health and medical factors related to a pandemic.
    - Maintain fact sheets and draft news releases
    - Oversee the coordination and activation of the ADHS 24-hour hotline
    - Ensure the ADHS website is updated with all current news releases, fact sheets and other pertinent health information
    - Coordinate with local public health agencies, and other state and federal agencies to ensure consistent messages are being delivered
- Ensure accuracy, timeliness, and appropriateness of all health and medical public information before its release to the media.
- Respond to media requests for health and medical information or assign approved spokesperson to media requests.
- Maintain a list of spokespersons and subject matter experts from ADHS and other stakeholders.
    - Director
    - Deputy Director
    - Communications Director
    - Assistant Director, Public Health
    - Public Information Officer, Public Health
    - Deputy Assistant Director, Public Health
    - State Epidemiologist
    - Chief Medical Officer
    - Chief, Bureau of Emergency Preparedness and Response
    - Infectious Disease Specialist

Standard Operating Procedures

- Public Information Distribution
- Media Request Form
- News Release Approval Process
- News Conferences
- Website
- Translations
- Hotline Activation
- Health Alerts
- Draft Messages/Templates
- Media Lists

Information Approval Process

During a pandemic response in which the HEOC and JIC are activated, the approval process for messaging will follow the Public Health Incident Management System (PHIMS) command structure. JIC staff will work with HEOC command staff and their subject matter experts to develop incident specific messaging. The ADHS Director, Deputy Director and Assistant Director of Public Health or their designees will approve information for public use. After approval is obtained, the HEOC Logistics Section and/or JIC staff will be responsible for distributing the information to stakeholders and/or the media.

Staff involved in the approval process must recognize the need for timely and responsive public information. Messages should be evaluated and approved based on the STARCC (Simple, Timely, Accurate, Relevant, Credible and Consistent) criteria.

Information that is posted to the ADHS Website or distributed via social media sites must also be approved by the HEOC Manager and Lead PIO. It is important to note that all individuals responsible for approving information must be well versed in confidentiality guidelines. This is especially important when releasing information related to case fatalities.

Staffing

The staffing of the JIC will be determined by the scope of the event, the number of response agencies and the needs of the public and the media. In accordance with NIMS principles, JIC organizational charts are scalable and flexible. PIOs from a variety of agencies may be called on to serve in the JIC. Although these individuals will be reporting to the Lead PIO, and by default the HEOC Manager, PIOs may still serve as the main point of contact for their respective agencies.

Communication Stakeholders

Federal

- U.S. Department of Health and Human Services
    - Centers for Disease Control (CDC) and Prevention
- Indian Health Services (HIS)
- Food and Drug Administration (FDA)

State

Primary

- Arizona Department of Emergency and Military Affairs

Support

- Department of Agriculture (ADA)
- Department of Economic Security (ADES)
- Department of Emergency & Military Affairs (DEMA)
    - Department of Emergency and Military Affairs (DEMA)
    - National Guard (AZNG)
- Department of Education (ADE)
- Department of Environmental Quality (ADEQ)
- Department of Public Safety (ADPS)
- Department of Transportation (ADOT)
- Office of the Attorney General
- Office of the Governor
- State Board of Funeral Directors and Embalmers
- State Pharmacy Board

County

- County Emergency Management (CM)
- County Health Departments (CPH)
- County Sheriff Departments (CSO)

Local

- Metropolitan Medical Response System (MMRS) cities

Voluntary

- American Red Cross (ARC)
- Arizona Statewide Independent Living Council (AZSILC)
- The Salvation Army (TSA)
- Arizona Volunteer Organizations Active in Disasters (AZVOAD)

Private Sector

- Arizona Funeral Directors Association (AFDA)
- Arizona Hospital and Health Care Association (AHHCA)
- Arizona Pharmaceutical Association (APA)
- Local medical facilities
- Local businesses

Public Sector

- Utility companies
- Schools; private and public

At-risk Populations

Messages must also reach unconventional audiences. Such "at risk" populations are identified by the Centers for Disease Control and Prevention (CDC) and the Hospital Preparedness Program (HPP).

CDC defines "at risk" as ...

- geographically isolated,
- pregnant,
- mobility impairments,
- lack of transportation,
- inability to read,
- chronic disease, and
- social isolation

HPP defines "at risk" as ...

- geographically isolated,
- pregnant,
- non-English speakers,
- homeless,
- elderly, and
- children

Message Categories

Messages can be classified into the following categories by the severity of the public health message and risk. It is suggested that local public health departments and partners follow these guidelines:

- News Advisory: Announces an event such as a news conference, photo or video opportunity
- News Release: Announces new data, issues, reports, etc.
- Health Update: Provides an update to an issue or problem already discussed. It doesn't carry the expectation of an action.
- Health Advisory: Indicates importance to the public's health but no immediate actions. Proactive and preventative information.
- Health Alert: Information about a specific health issue where immediate action is required to protect health.

Modes of Message Distribution

The following vehicles are identified as suitable modes of information distribution to the media, stakeholders, and the public.

Media

- Telephone calls
- E-mails based on the noted preference of the outlet
- Faxes based on noted preference of the outlet
- Tours
- Regular media briefings and interviews

ADHS Partners and Stakeholders

- Telephone calls
- Satellite phones
- E-mail
- Fax
- Health Services Portal (HSP) system
- Arizona Health Alert Network (AzHAN)
- Interpersonal dealings

Public

- Print, broadcast and electronic media
- News conferences and scheduled "town halls"
- Collateral materials (e.g., press releases, fact sheets and brochures) available online and in hard copy
- Call centers to field public inquiries, communicate key messages, identify messaging needs and gaps, and corral rumors
- AzEIN, ADHS and partner Web sites; media Web pages

Upon notification of a significant event requiring a state response, ADHS staff will alert identified personnel to be prepared to meet requirements for representing the Health and Medical Services Emergency Support Function (ESF 8).

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Supplement 11

SUPPLEMENT 11: PANDEMIC INFLUENZA INFORMATION MANAGEMENT

Arizona Pandemic Influenza Response Plan

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Rationale

Public Health Informatics refers to the use of technology for improving access to and utilization of public health information. Public Health Informatics is also 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 is 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 onset through recovery.

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 variances over time. This effort begins with disease 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 monitoring 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 detailed information will support individual patient treatment.
- **Status of Equipment and Resources**
  this includes identification and tracking of existing and recently acquired resources. Resources may 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. Also included in community resources is the 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 involves 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 between 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. Communications of this type are usually directed to specific public health and emergency response roles.
- **Data Collaboration Messaging**
  This communication need is associated with establishing data and 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.

Overview

Addressing the needs of an Influenza 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

(also see Supplement 1)

- **MEDSIS (Medical Electronic Disease Surveillance Intelligence System)**
  MEDSIS is a web-based application to electronically capture and analyze reportable disease information from Arizona hospitals, health care providers, and clinical laboratories. MEDSIS is a statewide system hosted and supported by the ADHS for use by ADHS, local health departments, and institutions responsible for reporting communicable diseases. Participating hospitals and laboratories enter or electronically transmit disease information to MEDSIS. Case data can then be accessed simultaneously by local and state health departments, which can also add information gathered from investigations or other reports. During the 2009 H1N1

pandemic, the fields from the investigation form used for collecting information on H1N1-associated hospitalizations and deaths were added to a "disease- specific observation" tab so that all information could be shared, extracted, and analyzed easily across public health jurisdictions in Arizona.

- **ELR (Electronic Laboratory Reporting)**
  ELR is a system for the electronic collection of reportable laboratory results used for disease surveillance. For influenza, data reported through ELR feeds into MEDSIS and laboratory reports can be easily appended to previously-reported cases or used to create new cases. This web-based system utilizes national data messaging standards.
- **EWIDS (Early Warning Infectious Disease Surveillance)**
  Additional functionality has been added to MEDSIS and the Health Services Portal (HSP) to address surveillance needs along the Arizona-Mexico border. Counterparts from the Sonora, Mexico, health department have been trained on and given access to MEDSIS and HSP. When those users access MEDSIS, they view a Spanish-language version of the system. Cases marked as having binational interest in MEDSIS, due to travel to Mexico during the infectious period, possible acquisition in Mexico, or residency in Mexico, are shared with the Sonoran officials through MEDSIS. This allows for more collaboration on binational investigations. Additionally, Sonoran health officials can access the secure email system on HSP as a means to securely share confidential data with health officials in Arizona. Binational alerting functions are still under development.
- **LIMS (Laboratory Information Management System)**
  This is the State Laboratory Information Management System. All information about specimen receipt and influenza testing results at the state laboratory is recorded here. LIMS can also be accessed by epidemiologists at ADHS for tracking results of specific cases or downloading data for incorporation into the surveillance system. The system also allows for integration with other State Laboratories and transmission of laboratory data via ELR to MEDSIS.
- **CDC BioSense**
  BioSense provides visualization of syndromic surveillance data using ICD-9-coded chief complaints or diagnoses at emergency department visits and admissions from selected hospitals, and outpatient visits at Department of Defense ambulatory-care centers and Department of Veterans Affairs outpatient clinics. County health departments are able to access this system to identify sentinel alerts and unexpected data aberrations for follow up investigations. For influenza surveillance, influenza-like illness data are monitored. Data from eight Arizona hospital emergency departments are included as of June 2010.
- **NRDMS (National Retail Data Monitoring System)**
  The University of Pittsburgh's Real time Outbreak Detection System (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 can access this system to monitor their own areas.

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.
- **EMCredentialCORES RMS (Community Response System – Responder Management System)**
  CORES RMS is a component of the EMSystemIntermedix suite of products. It is a web based application that follows the federal ESAR-VHP (Emergency System for the Advanced Registration of Volunteer Health Professionals) guidelines. CORES RMS is fully operational in Arizona and is capable of credentialing and verifying local health professionals and integrating with local volunteer management systems.
- **Outbreak Management**
  There is currently no established system at the Department of Health Services, although case and suspect case information can be recorded in MEDSIS. 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 HSP Environment. This feature will need to be developed, and collection of the system needs may require the development of another web-application.
- **EMSystem**
  the EMSystemIntermedix Intermedix suite of web-based applications are used by Hospitals, Health Care Facilities, Emergency Medical Services, and Public Health. The EMSystemIntermedix suite is composed of three applications: EMResource, EMTrack, and CORES RMS. EMResource is used 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 and fulfills the Health and Human Services (HHS) requests. EMTrack is used to track patients from scene to facility through the use of hardware scanners and barcoded triage tags. CORES RMS is used to credential and register volunteer health professionals and fulfills the ESAR- VHP (Emergency System for the Advanced Registration of Volunteer Health Professionals) requirements as stated above.

Vaccine and Pharmaceutical Administration

(see also Supplements 6 & 7)

- **Inventory Control & Asset Management**
  (ICAM) is a web-based application used to track and monitor inventory to adhere to guidance for countermeasures and response administration. The application has the ability to maintain multiple warehouses from a single database instance. This will give the department flexibility to manage assets statewide. ICAM will be used to accurately dispense inventory to partners within Arizona during an actual event or exercise. The system can be customized to include Strategic National Stockpile (SNS) data and security can be customized to provide specific

users access only to designated SNS areas.

- **Vaccine Ordering Management Systems (VOMS)**
  is a web-based vaccine ordering system that can be used by Arizona providers to order Vaccine for Children (VFC), other vaccines, or immunization supplies provided by the CDC. The vaccines ordered through VOMS are imported into the CDC Vaccine Management System (VACMAN), once imported into VACMAN, the vaccine orders can be transmitted to CDC for distribution. VACMAN has the ability to track vaccine and supply shipments and monitor vaccine usage by providers. VACMAN will be replaced by the CDC application Vaccine Tracking System (VTrcks) in 2011. VTrcks will enhance the vaccine tracking and monitoring components of VACMAN.
- **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.

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. The system is also utilized call internal staff to fill ICS rolls with the Health Emergency Operation Center (HEOC).
- **HSP (Health Services Portal)**
  HSP is both a system's architecture to support web-based applications (like MEDSIS, HAN messaging, etc.) and 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 a secure online collaborative portal for sharing of information between local health jurisdictions and across the Mexico border.
- **AZEIN (Arizona Emergency Information Network)**
  AZEIN 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 (also see Supplement 10)
- *Additional information on these systems and their contacts is located in Appendix 12.1*

Actions for CDC Recognition and Initiation Intervals

Surveillance

- Respiratory specimens are submitted to the state laboratory for testing and subtyping via culture or PCR; a sample of reference isolates are also sent to the state laboratory 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 (LIMS) or by communication with the laboratory.

- Reports of laboratory-confirmed influenza are recorded in MEDSIS and can be viewed and accessed by ADHS and the relevant local health department. Influenza reports transmitted via ELR are incorporated into MEDSIS.
- Schools, long-term care facilities, or other institutions report influenza or ILI outbreaks to state or local health departments (passive reporting).
- Enhancing influenza surveillance (works in progress):
    - Increase the number of laboratories submitting data via ELR.

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
    - 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 HSP to key partners and stakeholders

Actions for CDC Initiation to Acceleration Intervals

Surveillance

- Investigate additional data sources including pharmaceutical data, hospital emergency department and community health center capacity (bed availability) and incorporate any of these new data sources into other surveillance activities.
- Explore other feeds of surveillance data including hospital admissions 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 WEBEOC. Establish the an incident with activation of PHIMS/HEOC.
- 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 posted online with accurate information on status of the event and State-wide readiness (see Supplement 10).
- Review message maps 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 AZHAN.

Actions for CDC Acceleration through Deceleration Intervals

Surveillance

- Surveillance activities described above and in Supplement 1 will continue, likely with increased frequency. In the later part of Phase 6, surveillance systems will likely be overwhelmed; surveillance activities will continue to the extent possible while diverting personnel to the highest-priority activities.
- Analyze morbidity and mortality data to establish age- and geographic area-specific rates, as long as the relevant data are being collected.

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, DEMA Public Affairs Director, Arizona Department of Homeland Security, county health department PIOs, and other stakeholders of Pandemic response.
- 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 posted online 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 AZHAN.

Actions for CDC Preparation Interval

Surveillance

- Surveillance will return to standard operating 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

- Demobilize 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, DEMA Public Affairs Director, Arizona Department of Homeland Security, county health department PIOs, and other stakeholders that the pandemic is over.
- Maintain information posted online 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 11.1 Information Management Systems: Access Information

Surveillance Systems

- **MEDSIS (Medical Electronic Disease Surveillance Intelligence System)**
  Status: Operational
  Access: Secure Web-based System
  Users: State and Local Public Health, and reporting by health care providers
  System Contact: MEDSIS/ELR Program Manager
- **ELR (Electronic Laboratory Reporting)**
  Status: Operational, additional laboratories being connected
  Access: Secure Web-based System
  Users: State Public Health, and reporting by clinical laboratories; Local Public Health can view results in MEDSIS once imported
  System Contact: MEDSIS/ELR Program Manager
- **EWIDS (Early Warning Infectious Disease Surveillance)**
  Status: Operational, binational alerting still Proposed
  Access: Secure Web-based System
  Users: State and Local Public Health, and Border Partners
  System Contact: MEDSIS/ELR Program Manager
- **LIMS (Laboratory Information Management System)**
  Status: Operational
  Access: Secure Intranet Application
  Users: Arizona Department of Health Services' employees
  System Contact: Assistant Bureau Chief, Arizona State Public Health Laboratory
- **CDC BioSense**
  Status: Operational
  Access: Secure Web-based System Users: State and Local Public Health
  System Contact: Office Chief, Office of Infectious Disease Services
- **NRDMS (National Retail Data Monitoring System)**
  Status: Operational
  Access: Secure Web-based System
  Users: State and Local Public Health
  System Contact: Program Manager, Infectious Disease Epidemiology Section

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: ASIIS Project Leader
- **EMCredential ESAR-VHP (Emergency System for the Advanced Registration of Volunteer**

Health Professionals)
Status: Operational
Access: Secure Web-based System
Users: State Public Health
System Contact: BPHEP Logistics Section Chief

- **Outbreak Management**
  Status: Deployable
  Access: Desktop Application
  Users: State and Local Public Health
  System Contact: Office Chief, Office of Infectious Disease Services
- **Isolation and Quarantine Tracking**
  Status: Proposed
  Access: Secure Web-Based System
  Users: State and Local Public Health
  System Contact: Logistics 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: BPHEP Logistics Section Chief

Vaccine and Pharmaceutical delivery

(see also Supplements 6 & 7)

- **Inventory and Resource Management System (IRMS)**
  Status: Proposed
  Access: Secure Web-Based System
  Users: State and Local Public Health
  System Contact: Logistics Section Chief
- **Vaccine Management System (VACMAN)**
  Status: Deployable
  Access: Desktop Application with web-synchronization
  Users: Arizona Department of Health Services' employees
  System Contact: Office Chief for Arizona Immunization Program Office

Communication

- **HAN Messaging (Arizona Health Alert Network)**
  Status: Operational
  Access: Secure Web-based System
  Users: State and Local Public Health
  System Contact: BPHEP Logistics Section Chief
- **HSP (Health Services Portal)**
  Status: Operational
  Access: Secure Web-based System

Users: State and Local Public Health
System Contact: BPHEP Logistics Section Chief

- AZEIN (Arizona Emergency Information Network)
  Status: Operational
  Access: Public Web-based System *http://www.azein.gov/azein/default.aspx*
  Users: Public

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Supplement 12

SUPPLEMENT 12: PREPAREDNESS ACTIVITIES

Arizona Pandemic Influenza Response Plan

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General Preparedness Guidance

County and tribal health departments will be highly affected 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. There is a wide variety of planning tools, outreach resources, and checklists produced by HHS that can be found at: (*www.pandemicflu.gov*). While HHS planning instruments are not reproduced here, the website contains 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 Pandemic Influenza Response Plan that is an extension of both their jurisdiction's overall Emergency Response Plan and the Arizona Pandemic Influenza 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 within the state.

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 the state health department. 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 Arizona Revised Statute (A.R.S. 36-787 states that 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 Phases 1-3 (Limited Human Spread) 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, the goals 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. The operational plans will need to function in the absence of a state declaration of emergency as seen in previous pandemics. 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 National Incident Management System (NIMS) compliant incident command system (ICS). This requires training of management and staff in NIMS-compliant ICS courses.

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 of the Arizona Influenza Pandemic Response Plan (base plan).

Local health agencies that have not adopted the ICS should use PHIMS as a structure, to ensure 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
- schools and day cares
- long term care facilities
- churches
- volunteer organizations
- health care
- emergency responders
- community leaders
- private citizens and families
- 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).

Specific Activity Preparedness

The following portion of the guidance details specific local health agency activities extracted from Supplements 1-12 of the Arizona Pandemic Influenza Response Plan. These activities are listed, by category, as an outline of specific local actions that will likely 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.

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)

CDC Pandemic Intervals Framework

The framework describes the progression of an influenza pandemic using six intervals (two pre-pandemic and four pandemic). This framework can be used for influenza pandemic planning and provides recommendations for risk assessment, decision making, and action in the United States. The Pandemic Intervals Framework replaces the stages from the 2006 federal implementation plan for the National Strategy for Pandemic Influenza. The framework has six intervals:

- Investigation of cases of novel influenza
- Recognition of increased potential for ongoing transmission Initiation of a pandemic wave
- Acceleration of a pandemic wave
- Deceleration of Pandemic Wave
- Preparation for future pandemic wave

Actions for INVESTIGATION PHASE (CDC Investigation of cases of novel influenza): Identification of novel influenza A infection in humans or animals anywhere in the world with potential implications for human health.

- Ensure participation is ongoing within the influenza surveillance systems
- Continue to increase participation in sentinel surveillance for influenza-like illness
- Explore opportunities to conduct syndrome surveillance with local reporting sources (i.e., clinics, ambulance companies, schools, etc.)
- Maintain participation in the Arizona Health Alert Network, by receiving and re-distributing health alerts to appropriate community members
- Ensure the full implementation of MEDSIS in respective jurisdiction, both at the health department and health care system level
- Work with ADHS to develop and implement protocols for investigating institutional outbreaks
- Ensure the ability to collect death certificates related to infectious causes, especially influenza, in a timely manner
- 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 (ILI)
- Immediately inform ADHS of any suspected human infection with an avian/animal/novel human strain of influenza
- Ensure timely and comprehensive reporting of ILI from sentinel sites
- Monitor syndromic surveillance data sources and evaluate increased activity, as appropriate
- Assist ADHS with distribution of epidemiologic reports of influenza activity updates to surveillance partners and stakeholders and participate in regular surveillance conference calls with ADHS

Actions for CDC RECOGNITION PHASE (Recognition of increased potential for ongoing transmission of a novel influenza A virus): Increasing number of human cases or clusters of novel influenza A infection

anywhere in the world with virus characteristics, indicating increased potential for ongoing human-to-human transmission

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

Actions for INITIATION PHASE (Initiation of a pandemic wave), ACCELERATION PHASE (Acceleration of a pandemic wave), and DECELERATION PHASE (Deceleration of a pandemic wave) and PREPARATION PHASE (Preparation for future pandemic waves)

- INITIATION PHASE: Confirmation of human cases of a pandemic influenza virus anywhere in the world with demonstrated efficient and sustained human- to-human – transmission
- ACCELERATION PHASE: Consistently increasing rate of pandemic influenza cases identified in the United States, indicating established transmission
- DECELERATION PHASE: Consistently decreasing rate of pandemic influenza cases in the United States
- PREPARATION PHASE: Low pandemic influenza activity but continued outbreaks possible in some jurisdictions
- Continue with previous phase activities, likely at increased levels
- Consider activating Public Health Incident Command System, to better coordinate activities within jurisdiction and with ADHS
- 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.
- Analyze morbidity and mortality data to establish population- and geographic area-specific rates
- Assist ADHS in ensuring medical examiner reporting of influenza-related deaths (see Supplement 1)
- Additional sources of surveillance data may be evaluated to determine the effectiveness of pandemic influenza interventions and resource allocation needs.
- Once the virus has been identified throughout the state, surveillance and testing levels may be decreased depending on resource availability
- 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 pandemic influenza seasons

Health Care Response Coordination

Actions for INVESTIGATION PHASE (CDC Investigation of cases of novel influenza).

While health care response during an emergency is primarily a partnership between private sector

health care institutions, ADHS and county/tribal health departments need to work with these responding institutions to ensure overall coordination.

During Phases 1-3, ADHS and county/tribal health departments, along with emergency management and first responder agencies work together with all health care entities through the Arizona Regional Public Health Preparedness Coordinating Committees, to develop preparedness plans including infectious disease referral systems and patient surge capacity plans (see Supplement 3).

Actions

- County and tribal health departments need to maintain active participation in their respective Arizona Regional Public Health Preparedness Coordinating Committee.
- Build close, habitual relationships with the hospital administrators within their jurisdiction, to ensure closer coordination during emergencies.
- Identify multiple lines of redundancy for communication between local health departments and health care institutions.
- Ensure facilities have an influenza pandemic response plan as part of their overall facility emergency response plan.
- Ensure health care partners receive latest guidance from ADHS or HHS during an emergency.
- Work to identify needed health care resources, depending on impact of pandemic on health care system.

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 only 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. Under specific guidance, antiviral medications may be used as a prophylactic measure for close contacts of known cases of pandemic influenza or potentially for response personnel with high risk of exposure (see Supplements 6 and 7)

Actions for CDC Investigation Interval

- Develop and implement plans, systems and capacities to receive, distribute, and administer vaccine to populations within each jurisdiction
- Identify and train public health volunteer workforce to staff and administer mass vaccination clinics
- Identify strategies to deliver vaccine doses to health care and immunization providers within jurisdiction, as part of the overall vaccine response plan
- Develop a system to rapidly vaccinate staff within respective agencies, and their families.
- 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.

Actions for Pre-Vaccine Availability

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

Actions for Post-Vaccine Availability

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

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 a person identified as having pandemic influenza), 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 shall consult with ADHS prior to taking such actions.

Actions for CDC Investigation Interval

- Identify and engage traditional partners (e.g., public heath 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
- 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
- Identify potential isolation and quarantine facilities
- Establish procedures, in conjunction with ADHS, for medical evaluation and isolation of quarantined persons who exhibit signs of influenza-like illness (ILI)
- 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
- 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 functional and/or access needs

- Develop protocols for monitoring and enforcing quarantine measures
- Ensure legal authorities and procedures exist for various levels of movement restrictions

Actions for CDC Recognition Interval

- 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
- Monitor contacts who are quarantined at least once a day—by phone or in person—to assess symptoms and address any needs

Actions for CDC Initiation, Acceleration, Deceleration, and Preparation Intervals

- During the early stages of these phases, 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
- Monitor contacts who are quarantined at least once a day—by phone or in person—to assess symptoms and address any needs
- Note: As disease progresses throughout the community, use of quarantine may become less valuable outside of closed settings. Local health authority should be ready to enact community- wide containment measures (as detailed in Supplement 8)
- Promote community containment strategies, as appropriate, and in consultation with ADHS. These measures may include:
    - Promotion of community-wide infection control measures (e.g., respiratory hygiene/ cough etiquette)
    - Declare voluntary “Stay Home Days”
    - Encourage “self-isolation”
    - Closure of office buildings, shopping malls, schools, public transportation and large community events
- Identify strategies to determine impact of containment measures on both disease and society. Use this information to better focus containment measures.
- Stand down measures as quickly as possible without risk of prolonging pandemic

Addressing Travel-Related Risk

Travel-related risk in regards to pandemic planning primarily refers to health effects 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 if often best addressed at the local level, although many situations may also involve guidance from ADHS and the federal government, due to the nature of 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 measures that address travel-related risk.

Actions for CDC Investigation Interval

- Ensure readiness to implement travel-related disease containment measures
- Engage appropriate community partners (such as embassies and cultural groups) to develop and exercise appropriate plans
- Assist ADHS in providing public health information to travelers who visit countries where influenza strains that can infect humans or human strains with pandemic potential have been reported.
- Evaluate and manage arriving symptomatic passengers who might be infected with animal influenza strains or human strains with pandemic potential.

Actions for CDC Recognition, Initiation, Acceleration, Deceleration, and Preparation Intervals

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

Public Information

During the early phases of a pandemic, 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 later pandemic phases, communication efforts will focus on coordinated health messaging to support public health interventions designed to 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 will ensure the unified messages reach Arizona residents at the community level (see Supplement 10).The ADHS Crisis Emergency Risk Communication (CERC) Plan describes the steps for establishing a Joint Information System (JIS) in coordination with state emergency management (DEMA) for public health emergencies. The JIS will be used to develop and disseminate public health messaging to partners across the state.

Actions for CDC Investigation Interval: Identification of novel influenza A infection in humans or animals anywhere in the world with potential implications for human health.

- Assess and monitor readiness to meet communications needs in preparation for an influenza pandemic, including regular review and update of communications plans.
- Participate in regional and statewide emergency communication activities with ADHS, other response agencies, 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 exercises and other collaborative preparations to assess readiness by testing plans, training, equipment and staff specific to the response.
- Confirm any contingency contracts needed for communications resources during a pandemic.
- Begin disseminating messages and materials to increase the knowledge and understanding of the public, healthcare 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.
- Address concerns, rumors and false reports regarding pandemic influenza threats.

Actions for CDC Recognition, Initiation, Acceleration, Deceleration, and Preparation Intervals

- Contact key community partners and implement frequent update briefings.
- As appropriate, implement and maintain community resources, such as hotlines, websites and social media to respond to local questions from the public and professional groups.
- Tailor communications services and key messages to specific local audiences and additionally 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 all pandemic influenza media messages with ADHS to ensure consistency with statewide and national messages
- Promptly respond to concerns, rumors and inaccurate information to minimize concern, social disruption, and stigmatization.

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).

Actions for CDC Investigation Interval

- Encouraging the use of tools and techniques for supporting staff and their families during times of crisis
- Establish partnerships and participate in any Regional Behavioral Health Agency (RBHA)/ Tribal Behavioral Health Agency (TRBHA) or outreach activities to the pandemic responder community. The 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
- 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.
- 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

Actions for CDC Recognition, Initiation, Acceleration, Deceleration, and Preparation Intervals

- 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)
- 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
- 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).

Information Management

For pandemic planning and response public health information management 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.