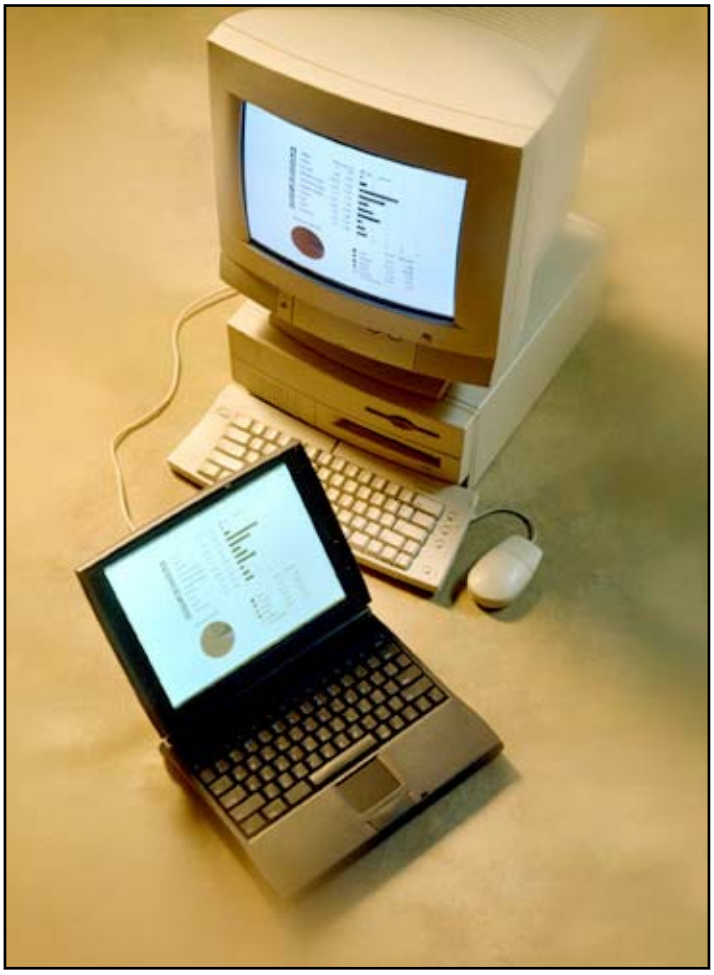
Arizona Influenza Pandemic Response Plan

Supplement 12: Influenza Pandemic Information Management



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I. Rationale/Purpose

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

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

Areas of Information Need during all phases

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

Areas of Communications Needs

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

II. Overview/Executive Summary

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

Surveillance (see also Supplement 1)


Kendall Reeves

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

Emergency Response

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

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

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

James Gatheney

Communication

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

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

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

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

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

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

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

III. Actions

A. Interpandemic

Surveillance

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

Vaccine and Pharmaceutical Delivery

- No activities

Emergency Response

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

Communications

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

B. Pandemic Alert

Surveillance

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

Vaccine and Pharmaceutical Delivery

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

Emergency Response

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

Communications

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

C. Pandemic

Surveillance

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

Vaccine and Pharmaceutical Delivery

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

Emergency Response

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

Communications

- HEOC to be in contact with SEOC
- Notify the Department Director, general counsel, legislative liaison, tribal liaison, local health liaison, border health liaison, Governor's Press Secretary, ADEM Public Affairs Director, Arizona Office of Homeland Security, county health department PIOs, and other stakeholders of Pandemic Period.
- Continue information flow to local health departments and other stakeholders. Utilize the Joint Information Center (JIC) at the State Emergency Operations Center (SEOC) to organize all public and media messages.

- Maintain information on AZ211 with accurate information on status of the event and State-wide readiness (see Supplement 10).
- Convey local information back to the CDC and other States through EPI-X.

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

D. Post Pandemic Period

Surveillance

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

Emergency Response

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

Communications

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

Appendix A
Information Management Systems: Access Information

Surveillance Systems

- MEDSIS (Medical Electronic Disease Surveillance Intelligence System)
  Status: Operational, being rolled out to County Public Health
  Access: Secure Web-based System
  Users: State and Local Public Health, and reporting by health care providers
  System Contact: Ken Komatsu, MEDSIS Project Manager

- ELR (Electronic Laboratory Reporting)
  Status: Operational, clinical laboratories being connected
  Access: Secure Web-based System
  Users: State and Local Public Health, and reporting by clinical laboratories
  System Contact: Ken Komatsu, MEDSIS Project Manager

- EWIDS (Early Warning Infectious Disease Surveillance)
  Status: Proposed
  Access: Secure Web-based System
  Users: State and Local Public Health, and Border Partners
  System Contact: Ken Komatsu, MEDSIS Project Manager

- LIMS (Laboratory Information Management System)
  Status: Operational, new system being developed.
  Access: Secure Intranet Application
  Users: Arizona Department of Health Services' employees
  System Contact: William Slanta, Assistant Bureau Chief

- MAM (MEDSIS Arbovirus Module)
  Status: Operational
  Access: Secure Web-based System
  Users: State and Local Public Health
  System Contact: Ken Komatsu, MEDSIS Project Manager

- CDC BioSense
  Status: Operational
  Access: Secure Web-based System
  Users: State and Local Public Health
  System Contact: Ken Komatsu, MEDSIS Project Manager

- NRDMS (National Retail Data Monitoring System)
  Status: Operational
  Access: Secure Web-based System
  Users: State and Local Public Health
  System Contact: Ken Komatsu, MEDSIS Project Manager

Emergency Response

- ASIIS (Arizona State Immunization Information System)
  Status: Operational
  Access: Secure Web-based System
  Users: State and Local Public Health and health care providers
  System Contact: Kimiko Gosney, ASIIS Project Lead

- Volunteer Management/ESAR-VHP (Emergency System for the Advanced Registration of Volunteer Health Professionals)
  Status: Proposed
  Access: Secure Web-based System
  Users: State Public Health
  System Contact: John Nelson, Health Alert Network Section Chief

- Outbreak Management
  Status: Deployable
  Access: Desktop Application
  Users: State and Local Public Health
  System Contact: Ken Komatsu, MEDSIS Project Manager

- Isolation and Quarantine Tracking
  Status: Proposed
  Access: Secure Web-Based System
  Users: State and Local Public Health
  System Contact: John Nelson, Health Alert Network Section Chief

- EmSystem
  Status: Operational
  Access: Secure Web-Based System
  Users: State and Local Public Health and pre-hospital and hospital emergency departments
  System Contact: Paul Barbeau, Logistics Section Chief

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

- Inventory Management and Tracking
  Status: Proposed
  Access: Secure Web-Based System
  Users: State and Local Public Health
  System Contact: John Nelson, Health Alert Network Section Chief

- Vaccine Management System (VACMAN)
  Status: Deployable
  Access: Desktop Application with web-synchronization
  Users: Arizona Department of Health Services' employees
  System Contact: Kathy Frederickson, Office Chief for Arizona Immunization Program Office

- Flu-shot module
  Status: Proof-of-Concept
  Access: Secure Web-Based System
  Users: State and Local Public Health
  System Contact: John Nelson, Health Alert Network Section Chief

Communication

- HAN Messaging (Health Alert Network Messaging)
  Status: Operational, being rolled out to County Public Health
  Access: Secure Web-based System
  Users: State and Local Public Health
  System Contact: John Nelson, Health Alert Network Section Chief

- SIREN (Secure Integrated Response Electronic Notification System)
  Status: Operational
  Access: Secure Web-based System
  Users: State and Local Public Health
  System Contact: Paul Barbeau, Logistics Section Chief

- Az211 (Arizona 2-1-1 Online)
  Status: Operational
  Access: Public Web-based System http://www.az211.gov
  Users: Public