INFLUENZA PANDEMIC RESPONSE PLAN

CALIFORNIA DEPARTMENT OF HEALTH SERVICES

Health experts agree that an influenza pandemic is inevitable. How can we minimize illness, loss of life and social disruption?

DEPARTMENT OF HEALTH SERVICES

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EXECUTIVE SUMMARY

In California, an influenza pandemic (worldwide epidemic) could result in nine million persons ill with influenza. The number of persons hospitalized would probably be about 97,000 persons (compared with about 3,000 in a normal year) and 21,000 deaths (compared with about 200 in a normal year). In order to lessen the impact of a pandemic, the Department of Health Services (DHS) has written this *Influenza Pandemic Response Plan* to promote an orderly and effective response, from the first novel virus alert through the conclusion of the last wave of the pandemic.

This plan is intended to be an Annex to the *DHS Emergency Response Plan and Procedures*. Under the direction of the Director of DHS, the Division of Communicable Disease Control (DCDC) will have primary responsibility for planning and coordinating the DHS response to the pandemic. The response activities will be carried out in collaboration with the Emergency Medical Services Authority (EMSA), the Health and Human Services Agency, and the Governor's Office of Emergency Services (OES).

Essential functions that are covered by the influenza pandemic response plan are: surveillance of influenza disease and viruses, vaccine and pharmaceutical delivery, and emergency response and communications. DCDC, Viral and Rickettsial Disease Laboratory (VRDL) and the Immunization Branch (IB) are the lead organizational units for the surveillance function. For the vaccine and antiviral delivery function, IB is the lead group. Emergency response and communications are to be carried out by DHS in coordination with the OES.

Responsibilities at Stages of the Pandemic

As the pandemic develops, the World Health Organization (WHO) will notify the Centers for Disease Control and Prevention (CDC) and other national health agencies of progress of the pandemic from one stage to the next. CDC will communicate with California DHS and other state agencies about pandemic stages, vaccine availability, virus laboratory findings, and national response coordination.

At the state level, response to the pandemic will require coordination between DCDC & OES. These responsibilities increase and change as the pandemic moves through successive stages.

Novel Virus Alert Stage. *Detection in one or more humans of a novel virus for which there is no immunity in the general population. Potential, but not inevitable, precursor to a pandemic.*

> During this stage, DCDC activities will be limited to monitoring reports of progress of the disease and surveillance to detect the arrival of disease caused by the novel virus in California. Novel virus detection will be carried out by WHO and CDC.

Pandemic Alert Stage. *Novel virus demonstrates person-to-person transmission and causes multiple cases in the same geographic area.*

During this stage, DCDC will monitor reports of disease spread and meet with surveillance partners to activate and augment surveillance systems. VRDL will increase laboratory surveillance. IB will maintain close contact with CDC and the Food and Drug Administration to obtain information on plans for vaccine delivery. IB will work with local health departments (LHDs) and representatives of the private medical sector to plan delivery and administration of vaccines when they are available. DCDC will meet with the California Medical Association and the California Pharmacists Association to plan for vaccine administration and for antiviral and antimicrobial supplies. IB will prepare training materials for vaccine administrators.

DCDC will provide technical information, public information, and press releases to be released by the DHS Office of Public Affairs (OPA). Public information will include travel alerts, guidelines on limiting the spread of the disease, and information about when and where to obtain medical care. The CDC's Epidemiology Program Office (EPO) and the California DCDC will ensure communication among epidemiology efforts, laboratory surveillance, and emergency management agencies (EMAs). EPO and the EMAs will address personnel and equipment shortfalls.

Pandemic Imminent Stage. *Novel virus causing unusually high rates of morbidity and mortality in widespread geographic areas.*

In the *pandemic imminent stage*, the *pandemic alert* activities will continue at an intensified level. Surveillance efforts will be increased for both influenza illness and the circulation of the influenza virus. If vaccine is available, the distribution system will be implemented and security measures will be put in place to ensure that vaccine will be given first to groups with highest priority for receiving them. DCDC and OPA will step up information flow to LHDs, medical providers and all other stakeholders. DCDC and OPA will provide translations of all public information messages into Spanish and the 14 other major languages in California. The emergency response system will be activated by the State OES, local Emergency Management Agencies, DHS, and hospitals. Local coroners and funeral directors will be advised to prepare for increases in the number of dead they will have to handle.

Pandemic Stage. *Further spread of influenza disease with involvement of multiple continents.*

Surveillance efforts will be overwhelmed. Emphasis will be shifted from detecting cases caused by the influenza virus to monitoring demographic characteristics that may indicate a need to revise priority groups for receiving vaccine and antiviral medications if available supplies are limited. Vaccine delivery will be at its highest level, and the

system to detect possible adverse reactions to the vaccine will be closely monitored. EMAs will establish alternative treatment sites since hospitals will be overwhelmed.

Second Wave. *After the number of cases of influenza falls and the pandemic appears to be ending, typically a second wave of cases occurs within several months.*

All agencies and health care providers must make use of the interim period to prepare for a resurgence of disease. This includes addressing shortfalls in supplies and personnel.

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I. INTRODUCTION

Background

The worst natural disaster in modern times was the infamous "Spanish flu" of 1918-1919, which caused 20 million deaths worldwide and over 500,000 deaths in the U.S. Although the Asian influenza pandemic of 1957 and the Hong Kong influenza pandemic of 1968 were not as deadly as the Spanish influenza pandemic, both were associated with high rates of illness and social disruption.

Influenza is a highly contagious viral disease. Pandemics occur because of the ability of the influenza virus to change into new types, or strains. People may be immune to some strains of the disease either because they have had that strain of influenza in the past or because they have recently received influenza vaccine. However, depending on how much the virus has changed, people may have little or no immunity to the new strain. Small changes can result in localized epidemics. But, if a novel and highly contagious strain of the influenza virus emerges, an influenza pandemic can occur and affect populations around the world.

California, with its West Coast location and several major ports of entry for flights and shipping from Asia (a likely location for the development of a novel virus), would likely be among the first U.S. locations for an influenza pandemic to establish a foothold. The California Department of Health Services (DHS) estimates* that the impact of an influenza pandemic on California's population of 35 million would include:

8.8 million persons ill with influenza (estimated range: 5.3 million to 12.3 million);
4.7 million outpatient visits (estimated range: 2.8 million to 6.6 million);
97,200 persons hospitalized (estimated range: 58,300 to 136,000);
21, 500 deaths (estimated range: 12,900 to 30,200).

These estimates underscore the need for advance planning to lessen the impact of a pandemic.

Most Californians are aware of the need to plan for a disaster at an unknown time in the future because of their familiarity with earthquakes. Many of the planning principles for mitigating both types of natural disasters are the same, yet there are also important differences. First, in a pandemic there will be some warning, which could range from weeks to five to six months while there is no warning for earthquakes. Second, the duration of a pandemic would range from months to a year or more, while earthquakes last only days. Third, in a pandemic there would be little or no outside assistance; in the early stages, those not affected would be reluctant to be exposed to the disease and later in the development of the pandemic the entire nation and world

*These estimates are based on (1) population data provided by the California Department of Finance, Demographic Unit, and (2) rates for hospitalizations, outpatient visits, and deaths from Meltzer MI, Kownaski M, Crosby, R. 1999. FluAid 1.0: Software and manual to aid state and local-level public health officials plan, prepare and practice for the next influenza pandemic (Beta test version). Centers for Disease Control and Prevention, US Department of Health and Human Services. Attack rates of 15%, 25%, and 35% suggested by Meltzer, et al.

would be affected. There would be no "outside." In contrast, neighboring cities, counties, and states can be counted on to assist with earthquake response. Furthermore, earthquakes are most likely to cause property damage and acute injuries, while a pandemic will result in increased need for long-term care.

A number of State agencies have emergency response plans (see Appendix iii). The Office of Emergency Services (OES) is responsible for the *California Emergency Plan*, a general plan that encompasses all State agencies and any disaster. The *DHS Emergency Response Plan and Procedures* of 1994 is currently being revised, and the Division of Communicable Disease Control (DCDC) is in the process of drafting a bioterrorism emergency response plan. The influenza pandemic plan presented here will be integrated as an annex to the *DHS Emergency Response Plan* and is based on the existing emergency response structure, authorities, and responsibilities identified in that plan.

Purpose

The purpose of this *Influenza Pandemic Response Plan* is to provide a guide for the California DHS on how to detect and respond to an influenza pandemic. The plan describes the emergency management concepts and structure under which DHS will operate and the roles and responsibilities of federal, state, and local agencies. The plan lists the responsibilities and activities that apply to the Director, the executive staff, the Deputy Director for Prevention Services, and the divisions, branches, and the laboratories that have a role in an influenza pandemic emergency response.

The Influenza Pandemic Response Plan should be read and understood prior to an influenza pandemic. It is a dynamic document that will be updated to reflect new developments in the understanding of the influenza virus, its spread, treatment, and prevention. The plan will also incorporate changes in response roles and improvements in response capability developed through ongoing planning efforts.

Plan Organization

The plan is divided into the following major sections:

I. Introduction

Provides an overview of the background and purpose of the plan.

II. Authorities and References

Identifies the legal authorities and references that allow pandemic response activities.

III. Emergency Management Organization

Describes the emergency management structure that will be implemented for the DHS response to an influenza pandemic.

IV. Concept of Operations

Describes the emergency response procedures that will be implemented and the responsible DHS organizational units. This section also identifies the relationship of the DHS response activities to those of federal, state, and local government, health care providers, and others.

The section is divided into the five influenza pandemic stages listed in *Pandemic Influenza: a Planning Guide for State and Local Officials, Version 2.1, January 1999*. This document is available at www.cdc.gov/od/nvpo/pandemicflu.htm. (Hereafter, this guide will be referred to as the Federal *Planning Guide.*)

Stages of Pandemic Influenza

- **Novel virus alert.** Novel virus detected in one or more humans. Little or no immunity in the general population. Potential, but not inevitable precursor to a pandemic.

- **Pandemic alert.** Novel virus demonstrates sustained person-to-person transmission and causes multiple cases in the same geographic area.

- **Pandemic imminent.** Novel virus causing unusually high rates of morbidity and mortality in multiple, widespread geographic areas.

- **Pandemic.** Further spread with involvement of multiple continents; formal declaration made.

- **Second wave.** Recurrence of epidemic activity within several months following the initial wave of infection.

Within each pandemic stage, this plan presents the concepts of statewide operation for the following essential functions, which are adapted from those described in the Federal *Planning Guide*:

- **Surveillance**

- **Vaccine and Pharmaceutical Delivery**

- **Emergency Response and Communications**

V. Appendices

Includes supporting documents: Federal responsibilities, a list of organizational abbreviations, lists of other State plans that apply to epidemics, and a telephone roster.

Abbreviations

Department of Health Services Groups	
DCDC	Division of Communicable Disease Control
IB	Immunization Branch
VFC	Vaccines for Children Program
VRDL	Viral and Rickettsial Disease Laboratory
DISB	Disease Investigations and Surveillance Branch
EPO	Emergency Preparedness Office
OPA	Office of Public Affairs

Others	
CDC	Centers for Disease Control and Prevention, US Department of Health and Human Services
OES	Office of Emergency Services, Office of the Governor
EMSA	Emergency Medical Services Authority, Health and Human Services Agency
JEOC	Joint Emergency Operations Center, DHS and EMSA
RDMHC	Regional Disaster Medical/Health Coordinator, DHS and EMSA
LHDs	Local health departments
CPA	California Pharmacists Association
CMA	California Medical Association
HAN	Health Alert Network

AUTHORITIES AND REFERENCES

1. California Emergency Services Act (Government Code, Title 2, Division 1, Chapter 7, Section 8550 et seq): Grants authority to the governor and chief executives to provide for state assistance in organization and maintenance of emergency programs of counties, establishes the Office of Emergency Services, and establishes mutual aid procedures.

2. California Health and Safety (H & S) Code:
   - Sections 100170-100180: Establishes authority of state to enforce the H & S Code Regulations to address threats to the public health.

   - Sections 120125-120140: Establishes authority of state to investigate and control communicable diseases within the state.

   - Sections 120145-120150: Establishes authority of state to takes actions related to persons, animals, or property to control threats to public health, including quarantine and inspection.

3. Department of Health Services, *Emergency Response Plan and Procedures*, January 1994, which is a reference for:

    - Executive Order No. W-9-91: Establishes the Department of Health Services' responsibility to prepare for and respond to emergencies. It mandates emergency preparedness and response assignments for all state agencies and departments under the coordination of the Governor's Office of Emergency Services (OES).

    - Administrative Order No. 79-22: Details the emergency preparedness and response functions of the Department. This Administrative Order guides OES and the department in coordinating priority tasks and programs related to emergency preparedness, response, and recovery in accordance with the OES *State Emergency Plan*.

    - Memorandum of Understanding, Department of Health Services and Emergency Medical Services Authority, July 1988: Details the relationship between DHS and the Emergency Medical Services Authority in planning for and responding to a catastrophic disaster and describes the specific responsibilities of each department.

4. Emergency Medical Services Authority, *Disaster Medical Response Plan*, July 1992.

5. Office of Emergency Services, *State Emergency Plan*, May 1998: Defines the emergency management system used for all emergencies in California. The plan describes the State government's response to disasters, including the response of all levels of government and certain private sector organizations to all natural and man-made emergencies which threaten life, property, and the resources of California. It focuses on the basic requirements for disaster management and coordination under the Standardized Emergency Management System (SEMS). It is intended to be used in conjunction with city, county, operational areas, and State agency plans and associated standard operating procedures.

6. Federal Emergency Management Agency, *Federal Response Plan*, April 1999: A signed agreement among 27 Federal departments and agencies, including the American Red Cross, that provides the mechanism for coordinating delivery of Federal assistance and resources to augment efforts of State and local governments overwhelmed by a major disaster or emergency. It supports implementation of the Robert T. Stafford Disaster Relief and Emergency Assistance Act plus individual agency statutory authorities. It provides for damage assessment teams, emergency communications, medical assistance, equipment and supplies, creation of facilities such as a Disaster Field Office and Recovery Center.

7. Regional Medical/Health Coordinator Emergency Plans: These plans are prepared by each Regional Medical/Health Coordinator to describe their local disaster response roles.

III. EMERGENCY MANAGEMENT ORGANIZATION

As noted previously, this plan is intended to serve as a disaster-specific annex to the DHS *Emergency Response Plan and Procedures.* The relationship of DHS to the State emergency response structure and the roles and responsibilities of DHS Executive Staff, and the various divisions, branches, and sections of the department are described in the DHS plan. This section describes the emergency management structure that will be implemented in response to a pandemic influenza outbreak and the relationship with local, regional, state and federal response agencies.

Following a proclamation of a local emergency or state of emergency as a result of the impact of influenza in California, the DHS emergency response organization will be activated. The DHS response will be conducted in accordance with the Standardized Emergency Management System (SEMS), as described in the DHS emergency plan.

General Emergency Responsibilities:

Director

- In coordination with the Emergency Preparedness Office, activate the DHS emergency organization as appropriate.
- Ensure close coordination and communication of DHS activities with the Health and Human Services Agency, Governor's Emergency Council, and the Governor, to assure appropriate utilization of public health, medical, security, transport, and communication resources.
- Activate the DHS Disaster Policy Council* to make high-level policy decisions and ensure that all DHS organizational units implement these decisions.
- Provide policy direction to the emergency response organization.
- Ensure that all necessary DHS resources are directed to respond to the emergency.
- Ensure that continuity of DHS management and operations is maintained through a clear command authority and identification of staff to assume higher level responsibilities in the event of the absence or incapacity of key DHS leadership.

*The Disaster Policy Council is comprised of the executive staff of the department. The Council acts as an advisory body to inform the Director of the status of the Department's disaster response. The Council is also responsible to formulate the high-level policy decisions that govern the department's response and recovery activities. *Department of Health Services Emergency Plan.*

Executive Staff:

- Staff the Disaster Policy Council at the request of the Director to ensure consensus on policy decisions and carry out these decisions within assigned programs.

- Ensure that staff is provided for the Joint Emergency Operations Center or to respond to DHS, state, or local agency mutual aid needs upon request.

Chief, Division of Communicable Disease Control (DCDC):

- Implement a Division Operations Center to accomplish all program responsibilities defined in the concept of operations.

- Ensure that all primary SEMS functions (Management, Operations, Planning, Logistics, and Finance) are addressed within the Division Operations Center.

- Manage the Division Operations Center to ensure the development of an Incident Action Plan and implementation of the action plan by the various DCDC programs.

- Provide a DCDC liaison to ensure coordination of division activities with the Joint Medical/Health Emergency Operations Center (JEOC) in Sacramento.

DCDC Division Operations Center:

- Serve as the primary "field" operations location to coordinate State-level disease surveillance, prevention, and control activities to support local government and to fulfill DHS statutory responsibilities.

- Ensure close coordination and communication with the Joint Emergency Operations Center (JEOC) for resource assistance and to maintain information flow to the DHS Director and Executive Staff, Emergency Medical Services Authority (EMSA), Office of Emergency Services (OES), and other agencies as appropriate.

Joint Medical/Health Emergency Operations Center (JEOC):

Coordinate State-level medical and health information and resources by:

- Acquiring public health and medical personnel upon request of an affected region.

- Acquiring medical supplies, pharmaceuticals and equipment upon request of an affected region.

- Coordinating resource acquisition and support for DHS field emergency response activities.

- Ensuring coordination with the OES State Operations Center or Regional Emergency Operations Centers as appropriate.

- Ensuring information flow to DHS and EMSA management and executive staff, OES, and other agencies.

- Ensuring coordination and information flow with health management organizations and other providers of medical care, facilities, and supplies.

IV. CONCEPT OF OPERATIONS

A. Planning for Influenza Pandemic:

Prior to the occurrence of an influenza pandemic it is essential that plans for detection and response are in place at the national, state, and local levels of government. The following is a description of key planning activities:

- Meet with medical, public health, and emergency response partners to develop prioritization plan for distribution/administration of vaccines. (Supplies are likely to be insufficient to meet demand during a pandemic situation.) (DCDC)
- Ensure that each local health department has a plan in place for surveillance in an influenza pandemic. (In rural areas, regional plans may be appropriate.) The local plans must include the same components as the state plan: surveillance of influenza cases, vaccine and pharmaceutical distribution and administration, and emergency response and communication. (DCDC, EPO)
- Establish a dissemination plan for influenza surveillance information, applicable to both normal influenza seasons and pandemic situations. (OPA, DCDC)
- Establish DHS plan for committing needed resources in case of an influenza pandemic, including funding for additional laboratory staff, vaccine administration, surveillance, and communication. (DHS Office of the Director)
- Promote development of plans for committing needed resources for pandemic response by other agencies, including private providers. (DCDC, EPO)
- Establish plan to secure and utilize refrigerated depots for storage of vaccines and other influenza-related pharmaceuticals, as well as vehicles for their distribution to selected sites for administration and record system to track shipments. (IB, EPO, EMSA)
- Establish a plan for maintaining security of storage, transport, and utilization of vaccines, antivirals, and medical care sites. (DCDC, EPO)

- Adopt a California prioritization plan for delivery and administration of vaccines and antivirals in the event supplies are limited in the pandemic setting (including priorities for offering first and second doses). (DHS Director)
- Disseminate and promote the California prioritization plan for administration of vaccines and antivirals to local health departments, private medical care providers, and emergency response agencies. (DCDC, EPO)
- Establish a plan for maintenance of operations in case of increased workload and/or staff losses during a pandemic, including cross training of staff and plans for redirection of staff from related positions. (DCDC, EPO)
- Establish a plan for identifying and training the reserve and current workforce of nurses, paramedics, pharmacists, and laboratory personnel for participation in a pandemic. (DCDC, EPO)
- Maximize pneumococcal vaccine coverage of recommended groups to prevent serious complications of influenza: persons aged sixty-five years and older and persons aged two to sixty-four years who have chronic illness or compromised immune response. (IB, with immunization partners)

B. Normal (Day-to-Day) Operations:

The following is a description of influenza-related responsibilities and activities that are conducted each year. These activities form the base upon which influenza pandemic activities will be added.

1. Surveillance

Surveillance is key to recognizing a new strain of influenza at its source, determining its potential for transmission, and tracking its spread. The World Health Organization (WHO) maintains four collaborating centers for influenza located in London, Atlanta, Tokyo and Melbourne. In addition, there are 110 national collaborating laboratories in 79 countries. One of these collaborating laboratories is the Department of Health Services' (DHS) Viral and Rickettsial Disease Laboratory (VRDL), located in Richmond. The Federal government and WHO will coordinate national and international surveillance. Alerts on the various pandemic phases will come from WHO and CDC to DHS. CDC will issue travel alerts.

Influenza is not a reportable disease in California. However, DCDC collaborates with public and private institutions to obtain information about the occurrence of disease. During the influenza season (late October through late April), DCDC collects data from the following surveillance systems:

- Antigenic and genetic characterization of influenza isolates to identify novel viruses: Kaiser and local health department (LHD) laboratories collect specimens and forward isolates to VRDL for detailed characterization. (VRDL, LHDs, private providers)

- Weekly reports of influenza and other respiratory virus isolations and detections from 19 laboratories throughout the State. (VRDL)

- Inpatient hospitalization from Kaiser facilities in Northern and Southern California. This inpatient system consists of weekly reports of admitting diagnoses in which the key words "influenza," "influenza-like illness (ILI)," or "pneumonia" appear. (VRDL)

- Weekly reports of influenza antiviral prescriptions in Northern and Southern California Kaiser pharmacies. (VRDL)

- A network of sentinel physicians throughout the state that report to CDC and/or DHS the percentage of patients, by age group, with influenza like illness (ILI) on a weekly basis. (CDC, VRDL)

- Passive reporting of influenza outbreaks. (DISB)

- Receive reports of Vaccine Adverse Reporting Events, enter information into database, and forward copy to Vaccine Adverse Reporting Event System. Periodically analyze data to identify increased frequency of complaints and types of complaints. (IB)

While the sentinel physicians report directly to CDC, they are activated at the beginning of each influenza surveillance season by DCDC.

DCDC has a "flu team" consisting of representatives of the Disease Investigations and Surveillance Branch (DISB), VRDL and the Immunization Branch (IB). The team meets weekly throughout the influenza season to review surveillance data, to discuss the level of influenza disease activity, to coordinate efforts of the separate groups, to coordinate with the Office of Public Affairs (OPA) about communication with the press, and to assign tasks when action is needed.

2. Vaccine and Pharmaceutical Delivery

Vaccine Delivery

Since 1973, the Immunization Branch (IB) has received State funding annually to purchase influenza and pneumococcal vaccine for local health departments (LHDs). The local departments in turn administer the vaccines to the identified high-risk groups, defined by the enabling legislation as persons age 60 years and older and persons with chronic medical conditions as defined by the US Public Health Service. In the 1999-2000 influenza season, the Immunization Branch (IB) distributed 730,000 doses of influenza vaccine and 31,900 doses of pneumococcal vaccine to LHDs.

The vaccine manufacturers send the vaccine to IB for distribution to LHDs except Los Angeles County, which receives its shipment directly. IB packages and ships the vaccine to LHDs using commercial shipping companies. IB estimates that State-purchased

vaccine constitutes about 10 percent of all influenza vaccine delivered in California with the remaining 90 percent purchased and administered in the private sector.

In addition to the IB delivery system, the Vaccines for Children Program (VFC) provides vaccine to children who are covered by the Child Health and Disabilities Prevention Program (CHDP) or Medi-Cal, or who do not have any medical insurance. Approximately 4,500 physicians at 3,000 sites order vaccine from VFC. About 100,000 doses of influenza vaccine were delivered to VFC providers in 1999. VFC contracts with a vaccine distributor that delivers the vaccines directly to the physicians.

Pharmaceutical Delivery

The antiviral drugs, amantadine and rimantadine, are currently used for prophylaxis and treatment of influenza. The new antiviral agents, oseltamivir and zanamivir, are currently licensed for treatment and may eventually be approved for prophylaxis.

Under non-pandemic circumstances, DHS has no role in pharmaceutical delivery.

3. Emergency Response and Communications

For normal operations of the Emergency Response System, see Section III, EMERGENCY MANAGEMENT ORGANIZATION (above).

The DHS Office of Public Affairs (OPA) has primary responsibility for dissemination of public health information. All press releases are channeled though OPA. DCDC informs LHDs of important communicable disease information using the *CD Brief*. *CD Brief* is sent by fax and by e-mail to health officers, communicable disease controllers, laboratory directors, and to a limited number of private physicians on a weekly basis.

All of the State's 62 LHDs are connected to the Internet, about 500 addresses are reached by e-mail, and an additional 100 are reached by fax.

C. Pandemic Operations:

In the early stages of a pandemic, there may be no vaccine at all. The Federal *Planning Guide* indicates that a minimum of six to eight months would elapse before the tens of millions of doses needed could be produced for distribution. When vaccine first becomes available the demand will likely exceed the supply. This will occur because there will be only limited quantities produced initially and it is likely that two doses will be needed rather than the usual single dose, with a booster following approximately 30 days after the first injection.

Pharmaceutical delivery will become an important issue during a pandemic. While antiviral agents will play a role in both prophylaxis and treatment of influenza, the existing supplies would certainly fall short of the need. As the pandemic progresses, there may not be sufficient supplies of antibiotics for treating persons with complications of influenza.

In addition to supply problems, other difficulties are associated with use of antiviral agents. Priorities for target groups and the use of limited supplies for prophylaxis versus therapy have not yet been established. Widespread use of antivirals and antibiotics could lead to emergence of drug-resistant viral strains. Adverse anti-viral reactions and liability issues will also be of concern. DHS has no role in pharmaceutical delivery in non-pandemic years. However, in a pandemic, DHS would provide its normal consultation on the handling and administration of pharmaceuticals.

Novel Virus Alert Stage

Novel virus detected in one or more humans. Little or no immunity in the general population. Potential, but not inevitable precursor to a pandemic.

At this stage personnel in all of the essential functions—surveillance, vaccine and pharmaceutical delivery and emergency response and communications—are responsible for monitoring reports from the World Health Organization (WHO), the Centers for Disease Control and Prevention (CDC) and national teams in the country in which the novel virus is detected and disseminating the information to LHDs. (DCDC, EPO)

1. Surveillance

- If the alert is given outside of the normal late October-late April influenza surveillance season:
  - Request that Kaiser surveillance system sites, collaborating laboratories and LHDs consider what steps would need to be taken to activate the system. (DCDC)
  - Request that the sentinel physicians be prepared to begin reporting to CDC. (DCDC) (During the normal influenza season, these systems will already be active.)

- Increase communication with federally operated Quarantine Stations concerning procedures for detecting novel virus importation by new arrivals from the countries where the novel virus originated and/or is spreading. (DCDC)

- Obtain appropriate reagents from CDC to detect and identify the novel strain. (VRDL)

2. Vaccine and Pharmaceutical Delivery

- Remain ready for the possibility that **novel virus alert** could progress to the **pandemic alert stage**.

- Meet with health maintenance organizations, California Medical Association, California Association of Pharmacists, California Healthcare Association, and

disaster response agencies to formulate plans for storage, transport, and administration of vaccines and antivirals. (DCDC, EPO, EMSA)

3. Emergency Response and Communications

- Ensure communication between the DCDC epidemiology and laboratory surveillance programs and the Emergency Medical Services Authority (EMSA) and the Governor's OES. (DCDC, EPO, EMSA, OES)
- Ensure communication with local Emergency Response Systems. (DCDC, OPA, EMSA, OES)
- Develop press release templates. (DCDC, OPA)
- Notify OPA, EMSA, Local Health Departments, and OES of the novel virus alert. Assist OPA to develop materials for responding to questions that may come from the media. (DCDC, EPO)

Pandemic Alert Stage

Novel virus demonstrates sustained person-to-person transmission and causes multiple cases in the same geographic area.

Novel virus alert activities will be continued at a more advanced level, and other activities will be added.

1. Surveillance

- Outside of normal surveillance season, alert the surveillance systems listed below to activate. (DCDC) (During normal influenza season, above surveillance systems will already be active.)
  Kaiser facilities' inpatient diagnosis and pharmacy surveillance systems
  Collaborating laboratories and LHDs
  California sentinel physicians that report directly to CDC and/or DHS
- Screen travelers from influenza areas for signs of infection. (Quarantine stations)
- Meet with surveillance partners to increase amount of patient demographic information collected, in order to identify groups with increased risk. (DCDC)
- Inform surveillance partners of the need to increase specimen collection for detection of novel virus and alert laboratories to prepare for increased numbers of specimens. (VRDL)

- Implement surveillance of passengers arriving from countries of high influenza morbidity to monitor those passengers with influenza-like illness and attempt to obtain specimens for virologic characterization. (DCDC, Quarantine Stations)

- Recruit additional physicians to obtain influenza isolates and send them to VRDL. If necessary distribute specimen collection kits to LHDs and obtain cooperation to facilitate sending isolates to VRDL. (VRDL)

- Recruit additional pharmacies, such as a large pharmacy chain, to participate in reporting antiviral prescriptions filled. (DCDC)

- Maintain communication with CDC concerning laboratory surveillance findings. (VRDL)

- Assess inventory of laboratory equipment and supplies, noting what is needed. (VDRL)

- Assess inventory of medical equipment and supplies (including ventilators, ICU equipment, and oxygen saturation monitors), noting what is needed. (EPO)

- Develop contingency plans for procurement of laboratory equipment and supplies, and also for possible redirection and hiring of additional laboratory employees. (VRDL)

- Obtain authorization for special funding for additional laboratory testing personnel from DCDC, Prevention Services and the Director of DHS. (VRDL)

- Explore re-certification of non-traditional labor pool and redirection of staff with appropriate skills to alleviate need for additional laboratory personnel, both at DHS and LHDs. (DCDC)

2. Vaccine and Pharmaceutical Delivery

During the pandemic alert stage, vaccine would not yet be available, and may not be for several months.

- Maintain close contact with CDC and FDA to obtain information on plans for vaccine manufacture. (IB)

- Prepare to implement plan for storing and delivering vaccine as it becomes available to DHS (vs. private distribution), with variations by number of doses. (IB, EMSA)

- Review elements of plan for vaccine delivery with partners and stakeholders. (IB, LHDs, EMSA)

- Ensure that human resources, equipment and plans for mass immunization clinics are in place. (DCDC, LHDs)

- Ensure adequate staffing and communications for VAERS system. (IB)

- Plan for using VFC distribution system for VFC children. If appropriate, increase award to vaccine distribution company. (IB)

- Obtain latest California DHS recommendations for priority groups for vaccine allocation and modify as necessary based on current surveillance data. (DCDC Division Operations Center)

- Meet with California Pharmacists' Association and California Medical Association to discuss potential need to: (DCDC)
  increase antiviral and anti-microbial supplies
  increase role of pharmacists in vaccine delivery

- Develop a satellite broadcast script for training/refresher on vaccine administration techniques for persons who do not normally administer vaccines, but will be enlisted to do so in a pandemic. (IB, OPA)
  Broadcast to local LHD and other downlink sites
  Provide video copies of the broadcast for local training

3. Emergency Response and Communications

- Ensure communication among the epidemiology and laboratory surveillance programs and emergency management. (JEOC)

- Alert surveillance groups to increase surveillance activities (see Surveillance section above). (DCDC)

- Identify contact person for communication with WHO, CDC, national teams in countries of origin, and LHDs. (DCDC)

- Identify spokesperson (with backup person) for communication with press, public, etc. (OPA, DCDC)

- Prepare fact sheets detailing responses to questions coming from the media and the public. (CDC, DCDC, OPA)
  Include documents intended for electronic distribution on the DHS web site.
  Include telecommuting advice to employers, labor organizations.

- Respond to media inquiries regarding outbreak. (CDC, OPA/DCDC spokesperson, LHDs)

- Alert ports of entry to situation. (CDC, DCDC)

- Notify hospitals, care providers, emergency responders, coroners and mortuary organizations. (EMSA, DCDC to LHDs, local emergency management agencies, via the Health Alert Network [HAN])

- Alert LHDs to increase laboratory surveillance, disease surveillance; alert emergency responders to work with EMSs to inventory critical supplies and solve problems (EMSA, EPO, JEOC, RDMHC)

- Alert neighborhood-watch or other community-based response organizations. (local emergency management agencies, OES)

- Conduct inventory of critical equipment, supplies and personnel, including statewide availability of: hospital beds, antiviral pharmaceuticals, refrigerated depots for vaccines, and transport for delivery of vaccines. (EMSA, VRDL, IB, hospitals, pre-hospital care providers, private providers)

- Identify methods to address personnel and supply shortfalls. (EPO, local emergency management agencies, hospitals, care providers, mortuaries)

- Plan for implementation of emergency medical treatment sites and temporary infirmary locations. (EMSA, EPO, LHDS, local EMAs, healthcare system in coordination with local mass-care organizations such as Red Cross, Salvation Army)

- Send bulletins to private providers. (CDC to DCDC to LHDs, HMOs, Medi-Cal, local medical societies, Vaccines for Children [VFC] providers, et al.)

- Issue guidelines on influenza precautions for workplaces, emergency departments, airlines, schools, jails and prisons, public safety agencies, and individuals. (CDC to DHS to LHDs, local emergency management agencies)

- Issue Travel Alert. (CDC to DCDC to LHDs)

Pandemic Imminent Stage

Novel virus causing unusually high rates of morbidity and mortality in widespread geographic areas

In the pandemic imminent stage the pandemic alert activities will continue at an intensified level.

1. Surveillance.

- Outside of normal surveillance season, verify that surveillance facilities have been activated and are reporting to DCDC and VRDL. (DCDC, VRDL)

- Report the data collected to all participating facilities as well as CDC, LHDs, and EPO. (DCDC, VRDL)

- Analyze the inpatient data to determine which population groups are at greatest risk and provide the information to CDC and to those determining priority groups for vaccine allocation when the supply is limited. (DCDC)

- Consider special studies: (DCDC)
  - To describe unusual clinical syndromes
  - To describe unusual pathologic features associated with fatal cases
  - To conduct efficacy studies of vaccination or chemoprophylaxis
  - To assess the effectiveness of control measures such as school and business closings

- Maintain increased laboratory surveillance and other activities outlined previously in the pandemic alert section. (VRDL)

2. Vaccine and Pharmaceutical Delivery

- Continue activities as listed in pandemic alert stage, including meetings with the California Pharmacists Association (CPA) and the California Medical Association (CMA). (DCDC)

- Increase public information effort designed to keep ill persons at home, providing translations into Spanish and 14 other languages. (LHDs, DHS-DCDC, OPA, health care providers)

- If vaccine delivery date predicted by CDC, work with LHDs to:
  - Provide date
  - Review distribution plan and update when new information is available
  - Obtain signed agreements with LHDs and private providers on priority order of groups to receive vaccine when supply is limited.
  - Alert to need for security at immunization sites (LHDs, local law enforcement)
  - Alert to need for reporting adverse events to VAERS system. (DCDC, EPO)

- If vaccine is available, fully activate the immunization program. (DCDC with LHDs)

- Obtain data on antiviral and anti-microbial supplies. (DCDC)

- Prepare or update recommendations and plans for allocation of antiviral and anti-microbial supplies. (DCDC)

3. Emergency Response and Communications

- Notify EMSA, OES of Pandemic Imminent Stage (EPO)

- Step up information flow to LHDs, medical providers, and all other stakeholders. (DCDC/EPO, OPA, EMSA)

- Update documents and fact sheets based on current surveillance information. (DCDC, OPA)

- Post information on web site (DCDC, OPA) and via Health Alert Network (HAN) to LHDs. (DCDC, OPA)

- Provide translations of all public information messages into Spanish and the 14 other major languages in California. (DCDC, EPO, OPA)

- Send notice to hospitals, care providers, emergency responders. (EMSA, DCDC to LHDs, EMS Agencies, via HAN)

- Monitor the ability of hospitals and outpatient clinics to cope with increased patient loads. (EPO, EMSA)

- Implement health education campaign with emphasis on the following: (CDC, DHS, LHD, HMOs, EMS Agencies, and medical societies, et al.)
  - Hand washing
  - Stay home rather than be exposed to/spread the influenza virus
  - Check on family, friends living alone
  - Vaccination clinic locations
  - Signs, symptoms
  - Vaccine safety and storage

- Implement a telecommuting system so more people can stay home. (employers, labor organizations)

- Activate emergency response system. (local Emergency Management Agency [EMA], OES, DHS/EMSA, EMS Agencies, hospitals)

- Implement mutual aid or other procedures to address supply and personnel shortfalls. (EMA, LHO, RDMHC, DHS, EMSA, OES)

- Conduct inventory of critical supplies/personnel and solve problems: shortage of supplies (gloves, safety needles, ventilators), personnel shortage (how to get non-traditional labor pool re-certified or alternative staff redirected). (DHS/EMSA)

- Develop plan for counseling/psychiatric services. (Department of Mental Health, private mental health agencies)

- Develop plans for children orphaned by death of parents. (Department of Social Services, private welfare agencies)

Pandemic Stage

Further spread of influenza disease with involvement of multiple continents.

1. Surveillance

Influenza morbidity and mortality surveillance systems will likely become overwhelmed.

- Continue to monitor selected vital statistics for mortality and morbidity data received from the inpatient diagnosis surveillance system to establish age- and geographic area-specific rates. (DCDC influenza team members)

- Use above data to establish priority groups for immunization as vaccine availability changes, providing data to CDC, LHDs, and private providers. (DCDC)

- Continue to monitor reports from WHO and CDC on national and worldwide morbidity and mortality data. (DCDC)

- Discontinue monitoring arrivals at California quarantine stations and deploy personnel to higher priority pandemic activities. (DCDC)

- Laboratory surveillance will focus on detection of antigenic drift variants and reassortant viruses that could limit the efficacy of vaccines produced against the original pandemic strain. Personnel who are not incapacitated by influenza will be diverted to higher priority pandemic mitigation efforts. (VRDL)

2. Vaccine and Pharmaceutical Delivery

Continue all pandemic imminent activities. Presumably vaccine would be available for a sizable proportion of the State's population.

- Monitor VAERS data for evidence of adverse reactions to the influenza vaccine. Report findings routinely to DCDC Workgroup and to CDC. (DCDC)

- Modify recommendations and agreements on priority groups for receiving the vaccine to reflect greater availability of vaccine. (DCDC)

- Review surveillance data for changes in risk factors that could require modification of recommendations for priority groups for receiving vaccine. (DCDC)

- Monitor availability of antivirals and, when appropriate, recommend changes in priority groups for receiving vaccine or antivirals. (CPA, CMA, EMSA, EPO)

Emergency Response and Communications

All of the activities of the Pandemic Imminent stage and the following:

- Notify EMSA, OES, LHDs of Pandemic Stage (EPO)

- Implement emergency medical treatment sites and temporary infirmary locations as needed. (LHD, local EMAs, healthcare system in coordination with local mass-care organizations such as Red Cross, Salvation Army)

- Increase public information effort designed to keep ill persons at home, providing translations into Spanish and 14 other languages. (LHDs, DHS-DCDC, OPA, health care providers)

- If law enforcement mutual aid system is overwhelmed, request Governor to issue waiver to allow National Guard and military to act as law enforcement. (OES)

- If medical/health mutual aid system is overwhelmed, request health care workers from other states, federal government. (DHS/EMSA via OES)

- Implement emergency medical treatment sites and temporary infirmary locations as necessary to respond to overwhelming caseload. (local EMA, LHD, health care system, mass-care organizions)

Second Wave

Surveillance

Typically in a pandemic, the number of new cases of influenza peaks and then declines, giving the impression that the pandemic is over. Then within a few months, influenza incidence once again increases. State and local officials and health care providers need to remain vigilant for a return of the epidemic activity. This is especially difficult given that all personnel and supplies involved in responding to the epidemic will be exhausted by efforts to respond to the pandemic. The perceived "end of the pandemic" may be viewed as an opportunity to relax and recover. However, all essential functions should be restored to return to pandemic imminent status.

Public health personnel who provide the data to DCDC will probably still be backlogged with reports, but should be encouraged to maintain extra staffing levels.

All sources of surveillance data will need to be convinced that their contributions are still essential because of the likelihood of a second wave. If the decline in the number of

cases occurs outside the normal influenza season, it will be necessary to explain the importance of maintaining vigilance because the second wave could occur at any time.

Continue immunization efforts in lower risk groups as vaccine becomes available.

Laboratory Surveillance. This essential function should also return to pandemic imminent status while maintaining surveillance for possible antigenic drift.

V. APPENDICES

i. Federal Influenza Pandemic Responsibilities

The Federal government has assumed primary responsibility for the following influenza vaccine-related activities:

- Vaccine research and development
- Coordinating national and international surveillance
- Providing guidance on which target groups should receive vaccine, in priority order
- Devising a suitable liability program for vaccine manufacturers and persons administering the vaccine. Liability protection will likely be made available through new congressional legislation.
- Developing a national clearinghouse for vaccine availability information, vaccine distribution and redistribution
- Developing "generic" guidelines and/or information templates that can be modified and adapted as needed at the State and local levels, including: fact sheets and Q & As on influenza, influenza vaccine.
- Strategies and guidelines for interacting with the media and communicating effectively with public health and medical communities and the general public.
- Guidelines for triage and treatment of influenza patients in outpatient, inpatient and non-traditional settings.
- Developing at the national level a central surveillance system for vaccine-associated adverse events.
- In an influenza pandemic, responsibility for purchase of vaccine will likely be shared between Federal, state, and local authorities.

ii. Organizational Abbreviations

CDC	Centers for Disease Control and Prevention
CMA	California Medical Association
CPA	California Pharmacists Association
DCDC	Division of Communicable Disease Control, DHS
DHS	California Department of Health Services
DISB	Disease Investigations and Surveillance Branch, DHS
EMS	Emergency Medical Services
EPO	Emergency Preparedness Office, DHS
IB	Immunization Branch, DHS
JEOC	Joint Medical/Health Emergency Operations Center
LHDs	Local health departments
OES	Office of Emergency Services
OPA	Office of Public Affairs, DHS
RDMHC	Regional Disaster Medical/Health Coordinator
VFC	Vaccines for Children Program
VRDL	Viral and Rickettsial Disease Laboratory, DHS

iii. State of California Plans and Procedures that Apply to Epidemics

California Disaster and Civil Defense Master Mutual Aid Agreement
Disaster Assistance Procedure Manual
Disaster Medical Response Plan*
Emergency Action Plan (Cal OSHA)
Hazard Mitigation Plans
Medical/Health Mutual Aid*
Mental Health Mutual Aid*
Mutual Aid Regional Plans and Procedures
Natural Disaster Assistance Act...Eligibility Guidelines and Claiming Instructions
OASIS** Guidelines
Governor's Office of Emergency Services (OES) Operational Recovery Plan
SEMS*** Guidance (i.e., ACI, Guidelines, Regulations, Local Emergency Planning Guidance*)
State Agency Disaster Response Planning Guidelines
State Agency Emergency Plans (relating to Executive Order/Adm. Orders)
Telecommunications Plans

* Under development
** Operational Area Satellite Information System, which may be used to transfer information from counties to the state
*** State Emergency Management System

Source: California State Emergency Plan, May 1998, pp. 30-33

iv. Emergency Response Roster

FOR AFTER HOURS EMERGENCIES CONTACT DHS DUTY OFFICER
SACRAMENTO: (916) 262-1621 or (800) 421-2921 (OES WARNING CENTER)
BERKELEY: (510) 540-2308

PRIMARY CONTACTS	OFFICE PHONE	OFFICE ADDRESS
DIRECTOR, DHS Bontá, Diana M.	(916) 657-1425	714 P St., Sacramento
DEPUTY DIR, PREVENTION SERVICES. Reilly, Kevin	(916) 657-1493	714 P St., Sacramento
CHIEF, DIV. OF COMMUNICABLE DISEASE CONTROL Felten, Jim (Acting)	(916) 323-1157	601 N 7th St., Sacramento
CHIEF, EMERGENCY PREPAREDNESS OFFICE Abbott, David	(916) 323-3675	601 N 7th St., Sacramento
INFLUENZA PANDEMIC PROJECT LEAD, IMMUNIZATION BRANCH Smith, Natalie	(510) 540-2065	2151 Berkeley Way, Berkeley
CHIEF, VIRUS ISOLATION SECTION, VIRAL AND RICKETTSIAL DISEASES LABORATORY David Schnurr	(510) 307-8615	850 Marina Parkway, Richmond

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