

Guide C

Isolation and Quarantine Guidelines

Guide C - Guidelines for Isolation and Quarantine

The state epidemiologist, state health officer, or other authorized state official should designate a person or persons to coordinate with federal authorities all activities related to isolation or quarantine and care of the specific groups listed below.

Local or state legal statutes regarding public health authorities for isolation of infectious persons and quarantine of potentially infected and incubating persons should be followed in implementing the control measures described below. If existing local or state public health statutes do not allow for implementation and enforcement of appropriate isolation and quarantine measures, Federal public health statutes for the control of infectious diseases may be enacted to assist local and state authorities in implementing the necessary outbreak control measures.

Rationale for these Guidelines: Prevention of the spread of smallpox virus from patients to others is a critical part of the control strategy. Smallpox patients usually transmit infection by expelled droplets to close contacts (those within 6-7 feet). Although smallpox patients generally are infectious from the time of first development of rash, the earliest stages of the rash may be difficult to recognize. However, preceding the development of rash, the patient will run a high fever for 2 to 3 days. Isolation of a possible case from the time of onset of fever will provide a sufficient time to assure appropriate isolation measures are in place at the onset of their infectious period (rash). This isolation strategy in addition to vaccination of all of the close contacts to the case should sharply limit the spread of smallpox.

Note: Very severe cases of smallpox (e.g. hemorrhagic and malignant) may generate aerosols spread the virus more widely than what is usually seen. Additional special measures (described below) may be needed in facilities where patients with hemorrhagic or severe (malignant) smallpox are seen.

In addition to the isolation and quarantine guidelines listed below, public health authorities should evaluate the potential need to implement additional early transmission control measures such as suspension of large public gatherings until other outbreak activities and control measures (surveillance, vaccination, isolation of cases, etc.) have been established. See *Quarantine Measures at the end of this section*.

Suggested Pre-Event Activities Associated with Isolation/Quarantine Procedures

1. Assure local and/or state legal statutes are in place to allow public health intervention and implementation of the isolation and quarantine measures outlined in this section

2. Identify personnel responsible for local/state coordination of isolation and quarantine activities
3. Identify appropriate facilities to be utilized for isolation and care of smallpox patients and febrile contacts as outlined and establish procedures for activating them
4. Identify appropriate law enforcement entities to enforce isolation and quarantine orders.
5. Identify appropriate personnel (medical, maintenance, etc.) to maintain/staff facilities
6. Establish procedures for monitoring and controlling access to facilities
7. Establish procedures for appropriate disposal of medical waste when using a non-medical facility.
8. Establish laundry service arrangements (on-site if possible) and appropriate disposal of medical waste
9. Arrange for food service support for facility occupants
10. Establish procedures for monitoring health status of facility staff and plans for referral to appropriate care.

SECTION 1: ISOLATION MEASURES AS PART OF THE RESPONSE TO A SMALLPOX EMERGENCY

Isolation is defined as the separation of a **person or group of persons** from other people to prevent the spread of infection.

Each of the following groups has specific isolation considerations:

I. Known or Presumed Infectious Individuals (Type C = Contagious Facility)

- a) Persons with a compatible illness and laboratory confirmation of smallpox (Confirmed case)
- b) Persons with a compatible illness following suspected/known exposure with pending laboratory confirmation (Probable case)
- c) Persons referred by a consultant as suspected cases of smallpox but who do not have a typical clinical presentation

II. Febrile Contacts without Rash (Type C or Type X Facility)

- a) Vaccinated contacts under surveillance who become febrile with oral temperatures $\geq 101^{\circ}$ F (38°C) on two successive readings (but **do not** have a rash)

III. Asymptomatic Contacts (Type R = Residential Facility)

- a) Afebrile vaccinated contacts
- b) Afebrile vaccinated individuals who were with a smallpox patient 10-18 days before the onset of the patient's rash (possible common exposure)
- c) Contacts who refuse vaccination

TYPES OF FACILITIES FOR USE IN A SMALLPOX EMERGENCY

The following sections describe the types of facilities that should be utilized for housing selected groups of individuals during a smallpox emergency. **Although isolation of a limited number of smallpox cases may be initially accomplished in a hospital setting, local and state health authorities should be prepared to activate and utilize alternative facilities for larger community outbreaks of smallpox. Until that time, should a suspect case of smallpox be identified in a hospital, strict standard, airborne, and isolation precautions will be followed. These are similar to those used in dealing with varicella cases.**

I. TYPE C FACILITY - Isolation - Infectious Individuals (confirmed, probable, and suspected smallpox cases)

A. Isolation in Dedicated Type C (C= Contagious) Facility

The purpose of a Type C Facility is to house cases of smallpox and thus minimize the exposure of susceptible individuals to contagious individuals. Contacts who develop a fever and rash during their surveillance period should also be housed in this type of facility (if vaccinated prior to facility admission) while the diagnosis of smallpox is being confirmed or ruled-out in order to minimize the chance of exposure to susceptible persons. **All persons entering or admitted to a Type C facility must be vaccinated. Including those who are considered to be smallpox cases, as errors in diagnosis are possible.**

Examples of potential Type C facilities include any empty facility or facility that is not used for other purposes (e.g. motel, dedicated hospital, separate building of hospital, college dormitory, etc.) that meets the requirements listed below. Once designated for the care of smallpox patients, this facility should not be utilized for any other purpose. The facility should not have ventilation systems shared with any other facility and must have controllable access (e.g. fence around building or monitored entries) to prevent entrance by non-vaccinated individuals.

A Type C facility is an isolation facility that meets the following requirements:

1. A structure with non-shared air conditioning, heating, and ventilating systems that exhausts 100% of air to the outside through HEPA filter **OR** is located at least 100 yards from any other occupied building or area.

Although smallpox virus is most commonly transmitted by large -droplets that generally do not remain airborne for more than 3 meters (6-7 feet), there have been several reports of more wide-spread aerosol disseminations in hospital settings via shared ventilation systems. In an outbreak in Meschede, Germany in 1970, 17 people were apparently infected by virus particles that were transmitted by droplet nuclei aerosol to various parts of a hospital.

2. Adequate water, electricity, heating, cooling, and closed-window ventilation to maintain activities of daily living and tertiary medical care of residents.
3. A communication system that allows for dependable communication within and outside of the facility (e.g. telephone or intercom system)
4. Ability to provide the following level of medical care within the facilities:
 - a) Supportive care with IV fluids, antibiotics, etc.
 - b) Skin care
 - c) Oxygen monitoring (pulse ox) and oxygen (in-line or portable)
 - d) Medical vital signs monitoring
 - e) Cardiac and respiratory resuscitation
 - f) Ventilatory support

- g) Suctioning equipment
- h) Basic laboratory evaluations (blood chemistries, CBC)
- i) Radiology (portable chest x-ray)
- j) Staffing resources (to be determined by severity of illness)

B. Isolation of Infectious Individuals in a Hospital Facility Initially Utilized for Non-Smallpox Medical Purposes

It is expected that once a large outbreak of smallpox is confirmed, all confirmed or suspected smallpox patients will be isolated in a Type C facility that has been designated solely for the isolation of such patients. Until vaccine take is confirmed in facility staff at day 7, airborne and contact isolation precautions will be followed in the care of patients. These are similar to those used in dealing with varicella cases (see: Garner JS, Hospital Infection Control Practices Advisory Committee. Guideline for isolation precautions in hospitals. Infect Control Hosp Epidemiol 1996;17:53-80, and Am J Infect Control 1996;24:24-52.)

However, prior to the confirmation of a smallpox outbreak or activation of the designated Type C facility, admission of confirmed or otherwise suspected smallpox patients into a hospital facility that is not designated for the sole purpose of isolating smallpox patients may be unavoidable.

A confirmed or suspected case of smallpox should only be admitted to a hospital where non-smallpox patients are present, under the following conditions:

1. The facility has negative pressure isolation room(s) for housing confirmed or suspected case(s) that meet the following criteria:
 - a. Negative air pressure in relation to the corridor and surrounding areas with all exhaust externally vented away from air intakes or where people may pass. If possible the air should be externally vented after passing through a filter with an efficiency of at least 95% based on the DOP (dioctyo-phthalate) test method. The filters should be disposed of in an appropriate manner (discarded in biohazard bags and autoclaved or incinerated). Air exhaust should also be separated by > 25 feet from the air intake.
 - b. A toilet, sink, and bath, or shower for the patient
2. Unless the number of smallpox patients is sufficiently low (i.e. 1-2) to allow for appropriate strict isolation precautions in the hospital facility, or the facility is designated only for the care of smallpox patients, transfer to a designated Type C facility should be arranged as soon as possible.

II. TYPE X FACILITY – Isolation of persons with uncertain diagnoses - Vaccinated febrile contacts without rash – (2 successive temperatures \geq 101°F (38C))

If the number of vaccinated febrile contacts is small, they may be housed in a Type C Facility with smallpox cases. If the number is large, additional facilities must be utilized (Type X Facility) to house these individuals.

The purpose of a Type X Facility (X= Uncertain diagnosis) is to house a febrile contact during the observation period for further development of symptoms of smallpox (rash). It is expected that there will be a number of individuals who will experience fever during this interval. Some will be experiencing the prodrome of smallpox while most will probably be experiencing fever associated with vaccination or from some other cause. Because transmission of virus begins at the early onset of rash when lesions may be difficult to define, it is best to treat all such individuals as being potentially contagious.

If rash develops during the observation period, the individual should be moved to a Type C Facility for further evaluation and isolation to minimize the risk of exposing others in the event the individual has developed smallpox. If rash does not develop within 5 days and the fever is diagnosed as being a result of vaccination or some other non-smallpox related cause, the contact may be release to complete their fever surveillance at home.

A Type X Facility should meet the same isolation and general supply requirements as a Type C Facility. However, Type X Facilities need to supply only basic medical care functions such as monitoring vital signs.

III. **Type R Facility** – **Asymptomatic contacts (not infectious)**

A Type R Facility (R = residential) may be the person's own home.

Asymptomatic contacts must be placed under fever surveillance for 18 days after their last exposure or until 14 days following successful vaccination (whichever comes first).

Asymptomatic contacts may continue routine daily activities but must remain within 20 miles of their city of residence and must monitor their temperatures twice daily. In addition, they must maintain daily telephone contact with designated health department personnel. If resources permit, closer monitoring is desirable such as daily visits by public health personnel.

If an asymptomatic contact under fever surveillance develops 2 successive fevers $\geq 101^{\circ}$ F (38C) they should notify health department personnel and remain in their home until transportation to a Type X (or Type C) Facility for further evaluation can be arranged.

If asymptomatic contacts cannot be housed in their own residences due to logistical difficulties or potential societal unacceptance, alternative Type R facilities to house the contacts during their period of surveillance must be

established. Potentially acceptable facilities include designated motels, hotels, or other facilities that have sleeping accommodations, heating and air conditioning systems, running water, and toilet facilities.

PROCEDURES FOR ISOLATION OF INDIVIDUALS

The following sections describe the procedures to follow when establishing isolation of the groups described above during a smallpox emergency.

I. Procedures for Isolating Known or Presumed Infectious Individuals (confirmed, probable, and suspected smallpox cases)

- A. Prepare dedicated Type C Facility for occupation by smallpox patients

The facility should be clean; bedding, linens, food service, medical supplies and equipment should be provided; and the utilities (water, electrical, and telephone services) should be turned on.

- B. Vaccinate and confirm vaccine take in the following individuals associated with dedicated Type C Facilities:
1. Personnel who will transport smallpox cases to Type C Facilities
 2. ALL personnel who are authorized to enter the facility (medical staff, support personnel, selected visitors, etc.)
 3. Personnel who will handle laundry and waste associated with the facility
 4. ALL patients (confirmed, probable, and suspected smallpox cases) who are admitted to facility. Vaccinating all patients entering facility is the most practical method to protect patients who may have been misclassified as a smallpox case.

Only individuals who have no contraindications to vaccination should be selected to staff and/or enter a Type C Facility as they will require vaccination prior to entry.

- C. If transportation of a case(s) to a designated Type C facility via ambulance is required, the following guidelines should be followed:
1. Remove unnecessary items from the ambulance(s) to avoid contamination and facilitate decontamination. The ambulance should be equipped with a working 2-way communication device (e.g. two-way radio, cellular telephone, etc.).
 2. Vaccinate ambulance personnel prior to transportation or within 24 hours following transportation
 3. Equip ambulance with all necessary equipment to permit adherence to appropriate isolation precautions. (N95 masks, disposable latex and/or vinyl gloves, gowns, shoe covers, and a supply of impervious biohazard plastic bags).

4. The ambulance driver and attendant should wear protective clothing to include a gown, shoe covers, disposable latex or vinyl gloves.

The ambulance(s) should not be used to transport non-smallpox cases after transportation of a smallpox case until a full decontamination has been completed (see Guide F - Decontamination Guidelines).

D. Transporting confirmed cases to a Type C facility

The patient should be covered in a linen sheet (to prevent contact with and potential contamination of objects in the area) and his nose and mouth should be covered with a disposable surgical mask (to decrease potential for droplet exposure of other individuals).

The ambulance driver and attendant(s) should remove their gloves and place them in impervious biohazard plastic bags as soon as the patient is placed in the ambulance and the doors are closed.

E. Admit the patient to the dedicated Type C facility

The driver and attendant should remove and place all protective clothing (gowns, gloves, masks, etc.) in biohazard bags while in the ambulance and replace them with clean protective clothing (gowns, gloves, masks, etc. The bagged materials should be autoclaved or incinerated with other medical waste collected from the facility.

F. Establish a list of those who may enter the Type C facility

This list should include the smallest possible number of people required for patient care, investigation, and facility maintenance (physicians, nurses or aides, laboratory personnel, housekeeping and laundry personnel, and maintenance personnel, etc.) This list should be kept by the nurse on duty or other personnel responsible for monitoring access to the facility.

G. Implement a monitoring system for the facility to:

1. Ensure that all personnel who enter the facility have been recently vaccinated.
2. Monitor above personnel for symptoms (fever).

This monitoring system should include a log/register of all persons who enter and leave the facility (including staff members) and should also include a notation of each person's vaccination status. *(see Annex 3 – Forms, for form to be utilized for facility access monitoring)*

Until successful vaccination has been confirmed, all personnel working in the Type C facility should check their temperature every 12 hours. At the beginning

of each shift, they are to present to the person responsible for coordinating employee illness surveillance or their designee to report any temperatures or any illness. On days they are not at the facility, they are required to be in telephone contact each morning to report their temperatures. Once successful vaccination has been confirmed, personnel are not required to routinely check their temperatures, however, they are still required to report any illness to the person(s) assigned to coordinate employee illness surveillance.

- H. Use Standard Precautions for all patient care. In addition, use Contact and Airborne Precautions (i.e., disposable gowns and gloves to enter the contaminated area, disposal of used gowns and gloves before leaving the area, and fit -tested N95 masks) for patient care until a vaccine take has been confirmed in the care provider. Following the vaccine take, the care provider is no longer required to wear an N95 mask. Standard Precautions and Contact Precautions should be maintained.
- I. Instruct all personnel who are involved in patient care activities in the necessary precautions they must take:
 - 1. Instruct personnel in the meaning of Standard Precautions, Contact Precautions, and Airborne Precautions, and how to use each one.
 - 2. Report immediately any symptoms they develop to the person(s) assigned to coordinate employee illness surveillance.
 - 3. Dispose of all non-sharps waste in biohazard bags and have it autoclaved before it is disposed of or incinerate it on the premises.
 - 4. Place all laundry and linens (towels, protective clothing, etc.) in biohazard bags and launder on the premises using vaccinated personnel. If the laundry is to be done by non-vaccinated personnel, it should be autoclaved first. Laundry will need to be taken out of biohazard bags to be autoclaved. Bags are used to permit safe transportation to the autoclave site.
 - 5. Use disposable items whenever possible.
- J. Arrange to have food prepared on the premises or brought into the facility in disposable containers, if possible. Otherwise, all serving ware, plates, cups, and utensils should be sterilized in a standard dishwasher.
- K. Confirm laboratory diagnosis for probable and suspected smallpox cases admitted to facility:
 - 1. If smallpox diagnosis is confirmed, release from facility when all scabs have separated and they are no longer considered infectious (3-4 weeks).
 - 2. If another diagnosis is confirmed, the patient may be released from the Type C Facility once a vaccine take is confirmed
- L. Release confirmed smallpox patients when all scabs have separated and they are no longer considered infectious (3-4 weeks).
- M. If febrile contacts are also isolated at a Type C facility, they may be released to home if no rash develops after 5 days and the fever is diagnosed as being caused by recent vaccination or some other non-smallpox etiology. They should maintain fever surveillance for 18 days following their last contact with a case or 14 days following successful vaccination.

The final approval to release a patient from a Type C Facility will be made by the State Epidemiologist, Health Officer, or their designee.

- N. Once the facility is no longer in use for smallpox patient isolation, all areas of the facility must be decontaminated before reuse. (See *Guide F – Decontamination Guidelines*).

II. Procedures for Isolation of an Infectious Individual in Hospital Facility Utilized for Care of Non-smallpox patients

Infectious individuals include any individuals who are suspected of being infectious smallpox cases.

- A. Select route for transportation of patient through hospital to isolation room.

All people should be cleared from route. Criteria for selecting route include: directness to room, ease of decontamination if required, and isolation from other people. If an elevator is required, a non-public elevator should be utilized.

- B. Transport the patient to the isolation room.

Patient should be covered with a linen sheet and wear at least a surgical mask when being transported through the hospital to the isolation room. The surgical mask is utilized to decrease the chance for droplet spread of smallpox to other individuals.

- C. Use Standard Precautions for all patient care. In addition, use Contact and Airborne Precautions (i.e., disposable gowns and gloves to enter the contaminated area, disposal of used gowns and gloves before leaving the area, and fit -tested N95 masks) for patient care until a vaccine take has been confirmed in the care provider. Following vaccine take, continued Airborne Precautions for patient isolation serve to prevent airborne spread within the facility, but the care provider is no longer required to wear an N95 mask. Standard Precautions and Contact Precautions should be maintained.

- D. All protective clothing (including sheet covering patient) should be disposed of in plastic biohazard bags prior to leaving the isolation room where the patient is admitted.

- E. Follow airborne and contact isolation precautions while patient is isolated in hospital facility to prevent nosocomial transmission to other patients

- F. Follow steps G-N above.

III. **Procedure for Isolating Febrile Contacts**

- a. Prepare Type X Facility for occupation of febrile contacts.
- b. Arrange for transportation of febrile contacts to facility.
Assure that all persons admitted to or entering the facility have been recently vaccinated. (*see Annex 3 – Forms, for form to be utilized for facility access monitoring*)
- c. Follow steps F and G above under “Procedures for Isolating Known or Presumed Infectious Individuals (confirmed, probable, and suspected smallpox cases)”
- d. Establish close monitoring for rash development
- e. If rash develops, transfer patient to Type C facility utilizing precautions for the transportation of suspected smallpox patients outlined above.
- f. If no rash develops after 5 days and the fever is diagnosed as being caused by recent vaccination or some other non-smallpox etiology, the contact may be released to home to continue fever surveillance for 18 days following their last contact with a case or 14 days following successful vaccination.

The final approval to release a patient from a Type X Facility will be made by the State Officer or their designee.

- g. Once the facility is no longer in use for patient isolation, the facility must be cleaned before reuse. (*See Guide F – Decontamination Guidelines*).

IV. **Procedures for Monitoring and/or Isolating Not Yet Infectious Contacts (exposed individuals without rash)**

- a. Vaccinate contact and household members who do not have contraindications to vaccination.

Arrangements should be made for household members with contraindications to vaccination, to stay outside of the home, without direct contact with the people being monitored, during the period of surveillance for the contact.

- b. Place contact under fever surveillance for 18 days from the last contact or 14 days from successful vaccination (whichever comes first). The contact is required to monitor and record his/her temperature twice daily (morning and evening) during the period of surveillance and report via telephone once daily to designated health department personnel. If resources are available, more active, closer supervision is desirable. This could include visiting asymptomatic close contacts one or more times a day.
- c. Asymptomatic contacts may continue routine daily activities but must remain within 20 miles of their city of residence.
- d. Contacts who do not develop fever during the surveillance period may be released from surveillance 18 days following the last contact with a smallpox patient or 14 days following successful vaccination, whichever comes first.

- e. If a contact **has an oral temperature** $\geq 101^{\circ}\text{F}$ (38°C) on two successive readings, they should immediately notify health department personnel and remain in their home until transported to a Type X or C Facility.
- f. No unvaccinated individual should enter the home where a **febrile** contact is isolated (prior to transportation to a Type X or C Facility) until the contact is transported out of the home:

V. Procedures for Cohort Isolation of Non-Infectious Individuals in a Type R Facility

If an alternative Type R Facility is selected to cohort and monitor asymptomatic contacts during their surveillance period because of logistical problems or societal unacceptance of home monitoring for contacts, the following procedures should be followed:

- A. Prepare an Type R Facility for use by asymptomatic contacts to smallpox patients

A hotel or motel equivalent would be suitable options for housing asymptomatic contacts. The facility should be clean; bedding, linens, food service, and laundry service should be provided; and the utilities (water, electrical, and telephone services) should be turned on.

- B. Vaccinate ALL personnel entering the facility.
- C. Contacts should remain in the facility during the surveillance period.
- D. Contacts should monitor their temperatures as outlined above. Temperatures should be recorded in an individual record for each asymptomatic contact.
- E. If 2 successive fevers $\geq 101^{\circ}\text{F}$ (38C) occur, the contact should be transported to a Type X (or C) Facility for further evaluation.

SECTION 2: QUARANTINE MEASURES AS PART OF THE RESPONSE TO A SMALLPOX EMERGENCY

Quarantine is defined as the restriction of activities or limitation of freedom of movement of those presumed exposed to a communicable disease in such a manner as to prevent effective contact with those not so exposed. Although quarantine measures may be instituted and enforced for both individual persons and populations, the term is used more frequently to discuss measures undertaken at a population-wide level.

I. Quarantine Law

Tabletop exercises and simulated bioterrorism events such as the TOPOFF exercise and Dark Winter, have demonstrated a number of important vulnerabilities and challenges to be addressed to strengthen the ability of public health agencies to respond to and counter the threat of biological weapons in the future. One of the challenges is to evaluate and assure that relevant law can support appropriate and effective responses and

state and federal governments can implement legal authorities into the actions needed to respond to a bioterrorism event. Limited experience with the application and success of various quarantine measures precludes inclusion of standardized guidelines for the implementation of such measures during a bioterrorism event at this time. However, what has been learned during these exercises is that state quarantine laws are in most cases dated and varied. Each state must undertake a review of their own authorities and revise and update their laws to assure sufficient legal powers to carry out an effective response. In addition, the division of legal authority between the state and Federal governments requires rapid and efficient coordination of actions to provide a public health response, and should be recognized as an essential part of the overall smallpox response plan. Finally, in the short term, both state and federal public health officials need to develop plans for the implementation and logistics of both individual and population level quarantine measures under their current authorities.

A. State Quarantine Laws

The major source of legal authority for public health interventions is the police power, defined as the inherent authority of all sovereign governments to enact laws and promote regulations that safeguard the health, welfare, and morals of its citizens. The 10th Amendment reserves to the states all powers not expressly granted to the Federal government nor otherwise prohibited by the Constitution, including the police power. The courts have repeatedly held that state quarantine laws are a proper exercise of their police power. Such laws, for example, may be used to detain individuals within a circumscribed area and to exclude healthy persons from entering the area. Assuming that legal authorities are sufficient to allow public health officers to use personal control measures, many practical questions remain: 1) who enforces a quarantine, 2) who detains an infected or exposed person, 3) how due process is accommodated, and 4) what actions government may take if a person disobeys a quarantine order.

Current laws authorizing compulsory public health measures such as quarantine were enacted at different times, with different disease-causing agents or diseases in mind, and rely on different or inconsistent medical and legal approaches to disease control. In addition, because many of these laws are very old, in some cases enacted more than 50 years ago, they only have been judicially challenged in limited circumstances in recent years. States should take into account modern-day constitutional considerations, such as due process, freedom of movement, and bodily integrity when devising quarantine and related compulsory disease control measures.

In recent years, while quarantine has not been widely employed by states as an infection control measure, most States should at least have current experience with quarantine through its application to limited numbers of patients with tuberculosis. To quickly respond to a smallpox outbreak, States will need to review their state quarantine and bioterrorism response authorities to identify gaps and develop procedures for informed, rapid decision making in a crisis. In particular, States should examine the logistics of quarantine to be able to adequately implement quarantine measures involving both individuals and populations. Recently (October 2001), CDC released a draft of a

model law for the states (the Model State Emergency Health Powers Act), which it commissioned to provide a template for states to respond to the release of a bioterrorism event, (<http://www.cnn.com/2001/HEALTH/10/31/cdc.bioterrorism.ap/index/html>). The law would give state officials broad powers to close buildings, take over hospitals and order quarantines during a biological attack. Whether to choose to adopt the model law is the final decision of each state legislature. A summary of the public health powers needed for adequate response to a bioterrorism event was also recently compiled by a multidisciplinary CDC conference, and is included below:

Public Health Powers Needed by a Health Officer in a Bioterrorism Event

Collection of Records and Data

- Reporting of diseases, unusual clusters, and suspicious events
- Access to hospital and provider records
- Data sharing with law enforcement agencies
- Veterinary reporting
- Reporting of workplace absenteeism
- Reporting from pharmacies

Control of Property

- Right of access to suspicious premises
- Emergency closure of facilities
- Temporary use of hospitals and ability to transfer patients
- Temporary use of hotel rooms and drive-through facilities
- Procurement or confiscation of medicines and vaccines
- Seizure of cell phones and other “walkie-talkie” type equipment
- Decontamination of buildings
- Seizure and destruction of contaminated articles

Management of Persons

- Identification of exposed persons
- Mandatory medical examinations
- Collect lab specimens and perform tests
- Rationing of medicines
- Tracking and follow-up of persons
- Isolation and quarantine
- Logistical authority for patient management
- Enforcement authority through police or National Guard
- Suspension of licensing authority for medical personnel from outside jurisdictions
- Authorization of other doctors to perform functions of medical examiner

Access to Communications and Public Relations

- Identification of public health officers, e.g. badges
- Dissemination of accurate information, rumor control, 1-800 number
- Establishment of a command center
- Access to elected officials

- Access to experts in human relations and post-traumatic stress syndrome
- Diversity in training, cultural differences, dissemination of information in multiple languages

(excerpted from: State Emergency Health Powers and the Bioterrorism Threat, Cantigny Conference, April 26-27, 2001)

B. Federal Assistance in Enforcement of State Quarantine

- Section 311 of the PHS Act

Federal assistance may be provided to state and local authorities in enforcing their quarantine and other health regulations pursuant to section 311 of the Public Health Service Act. (42 U.S.C. § 243(a)). In addition, while intrastate control of communicable diseases generally may be the purview of state and local officials, CDC's domestic quarantine regulations authorize Federal intervention "in the event of inadequate local control." See 42 CFR. § 70.2 and 21 CFR. § 1240.30.

C. Federal Intervention When State Response is Inadequate

- 42 CFR Part 70

While the Constitution reserves the police power to the States, the Federal government has extensive authority over public health by virtue of the Commerce Clause of the U.S. Constitution, which grants the Federal government the exclusive power to regulate interstate and foreign commerce.

Under the authority of section 361 of the Public Health Service Act (42 U.S.C. § 264), the Secretary of Health and Human Services may issue regulations necessary to prevent the introduction, transmission, or spread of communicable diseases from foreign countries into the United States and from one state or possession into another. The statute defines interstate movement to include authority over individuals who might expose other persons engaged in travel to other States. The current implementing regulations, found at 42 CFR Part 70, authorize:

- (a) imposition of permit requirements by the Surgeon General for interstate travel, or travel on conveyances engaged in interstate traffic, applicable to any person in the communicable period of smallpox, or who, having been exposed to smallpox, is in the incubation period (42 CFR § 70.5(a)).
- (b) Federal enforcement of State-required travel permits (42 CFR § 70.3).
- (c) imposition of disease mitigation requirements and reporting for interstate carriers transporting infected individuals or those suspected of infection (42 CFR § 70.5(b) and § 70.4)).

In addition, these regulations, through section 70.2, authorize action by the Centers for Disease Control and Prevention in the event that measures taken by

local and State health authorities are insufficient to prevent the spread of smallpox to other States. The Director of the CDC is empowered to “take such measures to prevent such spread of the diseases as he/she deems reasonably necessary, including inspection, fumigation, disinfection, sanitation, pest extermination, and destruction of animals or articles believed to be sources of infection.” This section, in conjunction with other sections of the interstate quarantine regulations, authorizes the apprehension and examination of “any individual reasonably believed to be infected with a communicable disease in a communicable stage,” so long as the individual either is “moving or about the move from a State to another State,” or is “a probable source of infection to individuals who, while infected with such diseases in a communicable stage, will be moving from a State to another State.”

II. Quarantine Measures and the Public’s Health

Responding to a case of smallpox may require the use of a variety of emergency public health and containment measures, at both the individual and community or population level (see flow diagram: Quarantine Measures in Response to a Suspected Smallpox Outbreak). These measures would include: 1) active surveillance of presumed infected individuals and their contacts, 2) isolation (separation of a person or group of persons from other persons to prevent the spread of infection) and, 3) population-wide quarantine measures which restrict activities or limit movement of individuals. This may require suspension of large public gatherings, closing of public places, restriction of travel [air, rail, water, motor vehicle, and pedestrian], and/or “cordon sanitaire” [literally a “sanitary cord” or line around a quarantined area guarded to prevent spread of disease by restricting passage into and out of the area]. For smallpox, a single case of suspected or confirmed infection warrants immediate public health action including appropriate isolation of the known or presumed infected individual, and initiation of active epidemiologic investigation, contact tracing, vaccination, and enhanced surveillance. Isolation and quarantine measures can be implemented on a voluntary basis. Public health authorities should be knowledgeable of the legal authorities and statutes that exist at the local, state, and federal level for enforcing quarantine measures, and pre-event planning should include the identification of personnel who can enforce these isolation and quarantine measures, if necessary.

In pre-event planning, three issues related to quarantine measures that are essential to assuring preparedness prior to a smallpox bioterrorism attack need to be addressed. The successful implementation of individual and population level quarantine measures hinge on numerous factors, including 1) prior identification of relevant legal authorities, persons, and organizations empowered to invoke and enforce such authorities, 2) public trust and compliance with government directives, and 3) assured vaccination and other protection of personnel required to implement and enforce quarantine measures. Pre-event planning must include review of the relevant legal authorities at the local, State, and Federal levels to determine if they are sufficient to implement isolation and quarantine measures, and if not, to revise or modify the authorities as time allows.

Public health practitioners will need to educate the public and other health care providers about smallpox in general, including the potential need for utilizing population quarantine measures as a means to decrease or interrupt disease transmission. Quarantine measures will require enforcement personnel and essential service providers who are themselves vaccinated. This will require prior identification of those to be vaccinated during a smallpox emergency and implementation planning to include certain protective measures (N95 masks, gloves, etc.) for use by personnel until vaccine take can be verified.

The determinants that contribute to reaching the public health threshold for initiating population-wide quarantine measures include the number of cases and exposed persons, the projected morbidity and mortality, the expected ease and rapidity of spread of disease, current patterns of movement in and out of the community, available resources for implementing measures of treatment and control, perceived or actual need for urgent public health action, and the risk for public panic. The first approach would be to apply concentric levels of quarantine to restrict movement of individuals and conveyances between communities (“cordon sanitaire”) in an effort to control the spread of smallpox. In addition to enforcement activities, other considerations and strategies that should be taken into account when implementing quarantine measures include:

1. Communication strategies (e.g., issuing travel alerts and press releases and notification of interagency partners)
2. Movement of essential personnel (e.g., rescue workers and first responders), and requirements for their validation of movement, into and out of the quarantined area.
3. Movement of materials (e.g., food, medical supplies, and garbage) into and out of the quarantined area, and provision of essential services (e.g. utilities, water).
4. Movement of individuals out of the quarantined area for legitimate health and safety reasons (e.g. need for specialized and unavailable medical care or facility).
5. Community-wide intervention strategies (e.g., mass vaccination).

When implementing the quarantine of an individual or a community or other population, consideration of the requirements necessary to terminate quarantine measures should be undertaken. For individuals, ongoing monitoring for disease manifestations or lack of such developments during the longest usual communicable or incubation or communicable period for smallpox will determine the effectiveness of quarantine activities. At the population level, continued surveillance for lack of new cases in the quarantined area, and no demonstrated spread to contiguous areas will be important measures of containment and control activities.

