

## **APIC Bioterrorism Working Group**

### **April 2002 Interim Bioterrorism Readiness Planning Suggestions**

*APIC Bioterrorism Planning Template for Healthcare Facilities currently under review by CDC. Will soon be available at [www.apic.org](http://www.apic.org), [www.bioterrorism.slu.edu](http://www.bioterrorism.slu.edu), and [www.cdc.gov/ncidod](http://www.cdc.gov/ncidod) . Comments should be forwarded to Judy English at: <mailto:J.English@apic.org>*

*APIC's Bioterrorism Readiness Working Group (BTWG) has been working to compile suggestions from our many APIC Advisors, the general membership, and numerous agency liaisons as the original Bioterrorism Readiness Plan: A Template for Healthcare Facilities is being reviewed/ revised by various individuals at the Centers for Disease Control and Prevention (CDC). This compilation represents a summary containing comments from the original Template as well as suggestions concerning additional agents of bioterrorism including Tularemia, Viral Hemorrhagic Fevers, and supplemental information on Smallpox and Anthrax. We value the many comments and suggestions that have come from professionals across the United States of America, freely sharing them via this document for your use in individual facility and regional planning.*

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# Suggestions for Bioterrorism Readiness Planning

Healthcare facilities must be prepared to respond to bioterrorism (BT) attacks and threats. The Bioterrorism Readiness Working Group (BTWG) of the Association for Professionals in Infection Control and Epidemiology (APIC) offers this document as a summary of suggestions by APIC BT Advisors, ICPs, our members, and agency liaisons to facilitate preparation of BT readiness plans for individual and regional institutions.

These suggestions are not intended to provide an exhaustive reference on the topic of bioterrorism. Rather it is intended to serve as a tool for infection control (IC) professionals and healthcare epidemiologists to guide the development of practical and realistic response plans for their institutions in preparation for a real or suspected BT attack. In order for this document to serve its intended purpose, it must be adapted to fit your individual facility. Institution-specific response-plans should be prepared in partnership with local, state, and regional resources including health departments, emergency management, and first responders. Many of the facility BT planning components may be incorporated into existing disaster preparedness and other emergency management plans. These components also are useful for identifying and responding to other infectious disease outbreaks in the community. Individual facilities should determine the extent of their bioterrorism readiness needs, which may range from notification of local emergency networks (i.e., calling 911) and transfer of affected patients to appropriate acute care facilities, to activation of large, comprehensive communication and management networks.

Hospitals and clinics may have the first opportunity to recognize and initiate a response to a bioterrorism-related outbreak. Healthcare facilities should have IC policies in place authorizing the hospital epidemiologist, IC committee chairman, or designee to rapidly implement prevention and control measures in response to a suspected outbreak. If a bioterrorism event is suspected, a network of communication must be activated to involve emergency department (ED), emergency medical service (EMS) and IC personnel, hospital administration, local and state health departments, the Federal Bureau of Investigation (FBI) field office, local, state and federal emergency management and CDC (see Reporting Requirements and Contact Information below). Existing local emergency plans should be reviewed, and a multidisciplinary approach outlined that includes local EMS, police and fire departments, and media relations in addition to healthcare administrators and providers, and IC professionals.

In order to maximize the efficacy of your facility plan, annual disaster preparedness drills should incorporate a bioterrorism scenario to test and refine Bioterrorism Readiness Plans at each individual facility. An annual drill such as this would serve to meet the Joint Commission on Accreditation of Healthcare Organizations' (JCAHO) Environment of Care Standard EC. 2.9.1, which requires facilities to execute their disaster management plan by conducting emergency management drills.

An integral part of any mass casualty disaster plan includes the ability to dovetail with other civilian and military plans. One example of such an emergency management system is the Hospital Emergency Incident Command System (HEICS). HEICS is an emergency management system that employs a logical management structure, defined responsibilities, clear reporting channels, and a common nomenclature to help unify hospitals with other emergency responders. There are clear advantages to all hospitals using this particular emergency management system<sup>25</sup>.

Assessing your facility is a first step in developing a disaster response plan. One tool for such an assessment is the APIC Facility Mass Casualty Disaster Plan Checklist (see Appendix 7). This tool is designed to assist in the assessment process while encouraging dialogue with community resources.

## General Categorical Recommendations for Any Suspected Bioterrorism Event

### A. Reporting Requirements and Contact Information

Healthcare facilities may be the initial site of recognition and response to bioterrorism attacks. If a bioterrorism attack is suspected, local emergency response systems should be activated. Notification should be immediate and include ED and infection control personnel, and the healthcare facility administration. There should be prompt communication with the local health department and FBI field office. This notification network includes local, state and regional health departments, FBI field office, local police, EMS, CDC, and the Federal Emergency Management Agency (FEMA). (In an overt BT

event, the FBI is declared the lead agency, except in the situation of smallpox where FEMA becomes the lead agency.) **It is important to note that given the best of communication, it is important to note that most cities/states will have to provide their own response for the first 48-72 hours. Each health care facility should include a list containing the following telephone notification numbers in its readiness plan:**

**INTERNAL CONTACTS:**

INFECTION CONTROL \_\_\_-\_\_\_\_  
EPIDEMIOLOGIST \_\_\_-\_\_\_\_  
INFECTIOUS DISEASES DEPARTMENT \_\_\_-\_\_\_\_  
EMERGENCY DEPARTMENT \_\_\_-\_\_\_\_  
ADMINISTRATION \_\_\_\_\_  
PUBLIC AFFAIRS \_\_\_-\_\_\_\_

**EXTERNAL CONTACTS:**

LOCAL HEALTH DEPARTMENT (communicable disease epidemiologist) \_\_\_-\_\_\_\_  
STATE HEALTH DEPARTMENT (communicable disease epidemiologist) 1-\_\_\_/\_\_\_-\_\_\_\_ \*  
FBI FIELD OFFICE 1-\_\_\_/\_\_\_-\_\_\_\_ \*  
BIOTERRORISM EMERGENCY NUMBER, CDC Emergency Response Office 770/488-7100  
CDC DIVISION OF HEALTHCARE QUALITY PROMOTION 1-800-893-0485  
US Army Medical Research Institute of Infectious Diseases (USAMRIID) Emergency Response Hotline 888/872-7443

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\* Telephone numbers for FBI field offices and State health departments are listed in Appendix 1 and 2.

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**B. Potential Agents**

There are potentially thousands of agents that could be used in a BT attack. The CDC categorizes the agents of greatest threat into categories A, B and C. See Appendix 3. These agents are categorized based on the following criteria: ease of dissemination, potential for public health impact, and potential for public panic and social disruption. Recognizing this, six diseases with BT potential (anthrax, botulism, plague, smallpox, tularemia, and viral hemorrhagic fever [VHF]) and the agents responsible for them are described in Section II of this document. The CDC does not prioritize these agents in any order of importance or likelihood of use.

Subsequent revisions of this document may address additional agents with bioterrorism potential, including those that cause brucellosis, Q fever, viral encephalitis, and disease associated with staphylococcal enterotoxin B.

**C. Detection of Outbreaks Caused by Agents of Bioterrorism**

Bioterrorism may occur as covert events, in which persons are unknowingly exposed and an outbreak is suspected only upon recognition of unusual disease clusters or symptoms. Bioterrorism may also occur as announced events, in which persons are warned that an exposure has occurred. A number of announced BT events have occurred in the United States from 1998-2000, but these were determined to have been hoaxes; that is, there were no true exposures to BT agents<sup>1</sup>. However, in 2001, bioterrorism events resulted in deaths due to inhalation of *Bacillus anthracis* spores sent through the US Postal Service.

As previously stated, JCAHO requires that every healthcare facility have a disaster plan that includes BT preparedness. A healthcare facility's Bioterrorism Readiness Plan should include details for management of both types of scenarios: suspicion of a BT outbreak possibly associated with a covert event and announced BT events or threats. Concerns about a suspected BT event should be evaluated with the assistance of the FBI and state health officials and emergency management agencies, including FEMA as previously indicated.

**1. Syndrome-based criteria**

Rapid response to a BT-related outbreak requires prompt identification of its onset. Because of the rapid progression to illness and potential for dissemination of some of these agents, it may not be practical to await diagnostic laboratory confirmation. Instead, it will be necessary to initiate a response based on the recognition of high-risk syndromes. Each of the agent-specific plans in Section II includes a

syndrome description (i.e., typical combination of clinical features of the illness at presentation) that should alert healthcare practitioners to the possibility of a BT-related outbreak.

## 2. Epidemiologic features

Epidemiologic principles must be used to assess whether a patient's presentation is typical of an endemic disease or is an unusual event that should raise concern. Features that should alert healthcare providers to the possibility of a bioterrorism-related outbreak include:

- A rapidly increasing disease incidence (e.g., within hours or days) in a normally healthy population.
- An epidemic curve that rises and falls during a short period of time.
- An unusual increase in the number of people seeking care, especially with fever, respiratory, or gastrointestinal complaints.
- An endemic disease rapidly emerging at an uncharacteristic time or in an unusual pattern.
- Lower attack rates among people who had been indoors, especially in areas with filtered air or closed ventilation systems, compared with people who had been outdoors.
- Clusters of patients arriving from a single locale.
- Large numbers of rapidly fatal cases<sup>2</sup>
- Any patient presenting with a disease that is relatively uncommon and has bioterrorism potential (e.g., pulmonary anthrax, tularemia, or plague)<sup>3</sup>.

### D. Infection Control Practices for Patient Management

The management of patients following suspected or confirmed bioterrorism events must be well organized and rehearsed. Strong leadership and effective communication are paramount.

## 1. Isolation precautions

Many of the agents likely to be used in a BT attack are not transmitted from person to person and re-aerosolization of these agents is unlikely<sup>4</sup>. **All** patients in healthcare facilities, including symptomatic patients with suspected or confirmed BT-related illnesses, should be managed utilizing **Standard Precautions**. Standard Precautions are designed to reduce transmission from both recognized and unrecognized sources of infection in healthcare facilities, and are recommended for all patients receiving care, regardless of their diagnosis or presumed infection status<sup>5</sup>. **For certain diseases or syndromes (e.g., smallpox and pneumonic plague), additional precautions may be needed to reduce the likelihood for transmission.** See Section II for specific diseases and requirements for additional isolation precautions.

Standard Precautions prevent direct contact with all body fluids (including blood), secretions, excretions, nonintact skin (including rashes), and mucous membranes. Standard Precautions routinely practiced by healthcare providers include:

- **Handwashing / Hand Hygiene**

Hands are washed after touching blood, body fluids, excretions, secretions, or items contaminated with such body fluids, whether or not gloves are worn. Hands are washed immediately after gloves are removed, between patient contacts, and as appropriate to avoid transfer of microorganisms to other patients and the environment. Either plain or antimicrobial-containing soaps may be used according to facility policy. Alcohol based hand sanitizers are acceptable for all hand hygiene except when hands are visibly/grossly soiled or if the organisms contaminating the hands are hardy pathogens such as the spores of *Bacillus anthracis*. In the absence of running water, hand sanitizers may serve as an interim measure of hand hygiene.

- **Gloves**

Clean, non-sterile gloves are worn when touching blood, body fluids, excretions, secretions, or items contaminated with such body fluids. Clean gloves are put on just before touching mucous membranes and nonintact skin. Gloves are changed between tasks and between procedures on the same patient if contact occurs with contaminated material. Hands are washed promptly after removing gloves and before leaving a patient care area.

- **Masks/Eye Protection or Face Shields**

A mask and eye protection (or face shield) are worn to protect mucous membranes of the eyes, nose, and mouth while performing procedures and patient care activities that may cause splashes of blood, body fluids, excretions, or secretions.

- **Gowns**

A gown is worn to protect skin and prevent soiling of clothing during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, excretions, or secretions. Selection of gowns and gown materials should be suitable for the activity and amount of body fluid likely to be encountered. Soiled gowns are removed promptly and hands are washed to avoid transfer of microorganisms to other patients and environments.

Policies for the prevention of occupational injury and exposure to bloodborne pathogens (in accordance with Standard Precautions) should be in place within each healthcare facility<sup>5</sup>. In the event a healthcare worker or other responder has an exposure to blood or other potentially infectious body fluids, post exposure management should be consistent with current Public Health Service recommendations. For additional post-exposure management guidelines for specific agents associated with bioterrorism, see Section II.

## **2. Patient placement**

In small-scale events, routine facility patient placement and infection control practices should be followed. However, when the number of patients presenting to a healthcare facility is too large to allow routine triage and isolation strategies (if required), it will be necessary to apply practical alternatives. These may include cohorting patients who present with similar syndromes, i.e., grouping affected patients into a designated section of a clinic or emergency department, or a designated ward or floor of a facility, or even setting up a response center at a separate building. Designated internal cohorting sites should be chosen in advance by the IC Committee (or other appropriate decision-making body), in consultation with ED and EMS personnel, and facility engineering staff; and should be based on patient arrival sites, patterns of airflow and ventilation, availability of adequate plumbing and waste disposal, and capacity to safely hold potentially large numbers of patients. Designated external cohorting sites should be coordinated through local, state and regional planning efforts. Any triage or cohort site should have controlled entry to minimize the possibility for transmission. At the same time, reasonable access to vital diagnostic services, e.g., radiography departments, should be maintained.

## **3. Patient transport**

Most infections associated with BT agents cannot be transmitted from person-to-person. Patient transport requirements for specific BT agents are listed in Section II. In general, the transport and movement of patients with BT-related infections, as for patients with any epidemiologically important infections (e.g., pulmonary tuberculosis, chickenpox, measles), should be limited to movement that is essential to provide patient care, thus reducing the opportunities for transmission of microorganisms within healthcare facilities.

## **4. Cleaning, disinfection, and sterilization of equipment and environment**

Principles of Standard Precautions should be generally applied for the management of durable medical equipment and environmental infection control.

- Each facility should have in place adequate procedures for the routine care, cleaning, and disinfection of environmental surfaces, beds, bedrails, bedside equipment, and other frequently touched surfaces and equipment, and should ensure that these procedures are being followed.
- EPA-registered facility-approved germicidal cleaning agents should be available in patient care areas to use for cleaning spills of contaminated material and disinfecting non-critical equipment.
- Used durable medical equipment soiled or potentially contaminated with blood, body fluids, secretions, or excretions should be handled in a manner that prevents exposures to skin and mucous membranes, avoids contamination of clothing, and minimizes the likelihood of transfer of microbes to other patients and environments.
- Policies should be in place to ensure that reusable equipment is not used for the care of another patient until it has been appropriately cleaned and reprocessed, and to ensure that single-use patient items are appropriately discarded.
- Sterilization is required for all instruments or equipment that enter normally sterile tissues or through which blood flows.

- Rooms and bedside equipment of patients with bioterrorism-related infections should be cleaned using the same procedures that are used for all patients as a component of Standard Precautions, unless the infecting microorganism and the amount of environmental contamination indicates special cleaning. In addition to adequate cleaning, thorough disinfection of bedside equipment and environmental surfaces may be indicated for certain organisms that can survive in the inanimate environment for extended periods of time. The methods and frequency of cleaning and the products used are determined by facility policy. It is essential to select an EPA-approved hospital grade germicidal product that is appropriate for the specific agent identified or suspected.
- With the exception of linens used on patients with actual or suspected smallpox and VHF, patient linens should be handled in accordance with Standard Precautions. Although linens may be contaminated, the risk of disease transmission is negligible if it is handled, transported, and laundered in a manner that avoids transfer of microorganisms to other patients, personnel and environments<sup>37</sup>. Facility policy and local/state regulations should determine the methods for handling, transporting, and laundering soiled linen. It is important to include contract laundry facilities in the organization's BT response plan. *See smallpox and VHF sections below.*
- Contaminated waste should be sorted and discarded in accordance with federal, state and local regulations. *See smallpox and VHF sections below.*

## 5. Discharge management

Under most circumstances, patients with BT-related infections will not be discharged from the facility until they are deemed noninfectious. However, consideration should be given to developing home-care instructions and fact sheets in the event that large numbers of persons exposed may preclude admission of all infected patients. Depending on the exposure and illness, home care instructions may include recommendations for the use of appropriate barrier precautions, handwashing, waste management, and cleaning and disinfection of the environment and patient-care items.

## 6. Post-mortem care

Pathology departments and clinical laboratories should be informed of a potentially infectious outbreak prior to submitting any specimens for examination or disposal. All autopsies should be performed using all personal protective equipment and standards of practice in accordance with Standard Precautions, including the use of masks and eye protection whenever the splashes or splatter of body fluids are anticipated. Practices that generate fine aerosols, e.g., use of oscillating saws, should be undertaken using appropriate protective measures, including respirators and biosafety hoods. Instructions for funeral directors should be developed and incorporated into the Bioterrorism Readiness Plan for communication<sup>5</sup>. In the event a large number of casualties has resulted from the BT event it is important to consider alternative morgue facilities within a healthcare organization, or even a community. Some possible solutions may include the use of refrigerated trucks or storage areas. Additionally, note suppliers of body bags and have alternate sources available. It is important to consider that a BT event could quickly overwhelm a community and for management/Public Health reasons, mass graves or cremation may have to be utilized. The State Public Health Department, CDC, and Mortuary Association will offer guidance in this event.

## E. Post Exposure Management

### 1. Decontamination of Patients and Environment

The need for decontamination depends on the suspected exposure and in most cases will not be necessary. The goal of decontamination after a potential exposure to a BT agent is to reduce the extent of external contamination of the patient and contain the contamination to prevent further spread. Decisions regarding the need for decontamination should be made in consultation with local, state and regional health departments. Decontamination of exposed individuals prior to receiving them in the healthcare facility may be necessary to ensure the safety of patients and staff while providing care. When developing Bioterrorism Readiness Plans, facilities should consider available locations and procedures for patient decontamination prior to facility entry. Unlike the sequestering of run-off from chemical decontamination, containment of run-off from biological agent decontamination is usually not an emergent issue. This issue should be handled on a case-by-case basis.

According to the EPA, first responders are protected under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) when undertaking necessary emergency actions to save lives and protect the public and themselves during a hazardous materials incident, including a bioterrorism attack<sup>33</sup>. This applies to containment of contaminated runoff during the response to a crisis such as a bioterrorism attack. However, once the imminent threat to human health and life are addressed, all reasonable efforts should be made to contain the contamination and avoid or mitigate environmental consequences. It should be noted that CERCLA does not protect against intentional contamination such as washing hazardous materials down a storm-sewer as an alternative to a more costly and problematic disposal in order to save money or avoid extra effort.

Depending on the agent, the likelihood for re-aerosolization, or a risk associated with cutaneous exposure, clothing of exposed persons may need to be removed. After removal of contaminated clothing, patients should be instructed (or assisted, if necessary) to immediately shower with soap and water, to include the shampooing of hair. **Potentially harmful practices, such as bathing patients with bleach solutions, are unnecessary and should be avoided.** Clean water, saline solution, or commercial ophthalmic solutions are recommended for rinsing eyes. If removal is indicated, patient clothing should be handled only by personnel wearing appropriate personal protective equipment, and placed in an impervious bag to prevent further environmental contamination. Decontamination requirements for specific potential agents of bioterrorism are listed in Section II<sup>6</sup>.

Development of Bioterrorism Readiness Plans should include coordination with the FBI field office and FEMA, as previously indicated. The FBI may require collection of exposed clothing and other potential evidence for submission to FBI or Department of Defense laboratories to assist in potential criminal investigations. Chain of custody documentation must accompany the specimen from the moment of collection.

## **2. Prophylaxis and post-exposure immunization**

Recommendations for prophylaxis are subject to change. Current recommendations for post-exposure prophylaxis and immunization are provided in Section II for relevant potential bioterrorism agents. However, up-to-date recommendations should be obtained in consultation with local, state and regional health departments and CDC. Facilities should ensure that policies are in place to identify and manage health care workers exposed to infectious patients. In general, maintenance of accurate occupational health records will facilitate identification, contact, assessment, and delivery of post-exposure care to potentially exposed healthcare workers.

Consideration must be given to the facility's role in mass prophylaxis. This would include provisions for prophylaxis and/or immunization of healthcare workers and potentially, their household contacts. This is in addition to the role of the facility in community prophylaxis and/or immunization.

## **3. Triage and management of large scale exposures and suspected exposures**

Each healthcare facility, with the involvement of the IC committee, administration, building engineering staff, and ED, laboratory, and nursing directors, should clarify in advance how they will best be able to deliver care in the event of a large scale exposure. Facilities should incorporate into their Bioterrorism Readiness Plan processes for triage and safe housing and care for potentially large numbers of affected individuals. Facility needs will vary with the size of the regional population served and the proximity to other healthcare facilities and external assistance. Triage and management planning for large-scale events may include:

- Establishing networks of communication and lines of authority required to coordinate on-site care.
- Planning for cancellation of non-emergency services and procedures.
- Identifying sources able to supply available vaccines, immune globulin, antibiotics, and anti-toxin (with assistance from local, state and regional health departments).
- Planning for the efficient evaluation and discharge of patients.
- Developing discharge instructions for patients determined to be non-contagious or in need of additional on-site care, including medical follow-up.
- Determining availability and sources for additional medical equipment and supplies (e.g., ventilators) that may be needed for urgent large-scale care.
- Planning for the allocation or re-allocation of scarce equipment in the event of a large-scale event (e.g., duration of ventilator support of terminally ill individuals).

- With assistance from the Pathology service, identifying the institution's ability to manage a sudden increase in the number of cadavers on site<sup>3,7</sup>.

#### 4. Psychological aspects of bioterrorism

Following a BT-related event, fear and panic can be expected from both patients and healthcare providers. Psychological responses following a bioterrorism event may include horror, anger, panic, unrealistic concerns about infection, fear of contagion, paranoia, social isolation, or demoralization. IC professionals should develop prior working relationships with mental health support personnel (e.g., psychiatrists, psychologists, social workers, clergy, and volunteer groups) and assist in their collaboration with emergency response agencies and the media.

When developing the facility Bioterrorism Readiness Plan, consider the following to address patient and general public fears:

- Minimize panic by clearly explaining risks, offering careful but rapid medical evaluation/treatment, and avoiding unnecessary isolation or quarantine.
- Make available educational materials for the general public. These materials should be obtained *before* an incident and kept on hand for quick distribution following a known or suspected BT attack.
- Provisions for medical intervention in unexposed persons who are experiencing somatic symptoms (e.g., with reassurance, or medication as indicated for acute relief of those who do not respond to reassurance).

Consider the following to address healthcare worker fears:

- Provide bioterrorism readiness education, including frank discussions of potential risks and plans for protecting healthcare providers.
- Invite active, voluntary involvement in the bioterrorism readiness planning process.
- Encourage participation in disaster drills.

Fearful or anxious healthcare workers may benefit from their usual sources of social support, or by being asked to fulfill a useful role (e.g., as a volunteer at the triage site)<sup>8</sup>.

#### F. Laboratory Support and Confirmation

This part of the document is subject to updates due to current work underway to improve the diagnostic capacity of laboratories to isolate and identify these agents. Facilities should work with local, state and federal public health services to tailor diagnostic strategies to specific events. Currently the **Bioterrorism Emergency Number at CDC is at the Emergency Response Office, National Center for Environmental Health (NCEH), 770/488-7100.**

The Laboratory Response Network (LRN) is also available to assist with support of the laboratory. The LRN is a product of the CDC with the goals being to provide an organized approach to the detection, recovery, and identification of suspected/suspicious biological agents. The LRN is divided into four levels (A, B, C, D). All non-public health laboratories are regarded as Level A. These laboratories have the primary responsibility of ruling out suspected agents and referring suspicious agents to the next Level (B, C, D) depending upon the nature of the agent. Laboratories that are designated as Levels B, C, or D all have unique diagnostic testing capabilities in addition to incremental safety levels. For example, Levels B and C have Biosafety Level 3 containment facilities. Level D has Biosafety Level 4 capabilities. **Level A laboratories are not to handle or examine non-human specimens (i.e., environmental and animal specimens) but are to refer them to the next level following consultation with their state health laboratory. Level B and above, are responsible for “ruling in”, performing genetic characterization, and archiving these agents.**

##### 1. Obtaining diagnostic samples

See specific recommendations for diagnostic sampling for each agent. Sampling should be performed in accordance with Standard Precautions. In all cases of suspected BT, collect an acute phase serum sample to be analyzed, aliquotted, and saved for comparison to a later convalescent serum sample. Because samples may be considered evidence, it is important to have a protocol in place to address a chain of custody for any sample being used to diagnose a potential BT patient. As a general rule, these samples should not be sent through automated tube systems; samples should be hand carried to the lab

## 2. Laboratory criteria for processing potential bioterrorism agents

To evaluate laboratory capacity in the United States, laboratories were grouped into one of four levels, according to their ability to support the diagnostic needs presented by an event. The laboratory levels are:

- Level A: Clinical laboratories – minimal identification, e.g., “rule-out” testing of Agents. Level A testing protocols are available via the site [www.bt.cdc.gov](http://www.bt.cdc.gov) and the American Society for Microbiology (ASM) site [www.asmtusa.org](http://www.asmtusa.org)
- Level B: County/ State/ other laboratories – identification, confirmation, susceptibility testing
- Level C: State and other large facility laboratories with advanced capacity for testing – some molecular technologies
- Level D: CDC or select Department of Defense laboratories, such as U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) – Bio Safety Level (BSL) 3 and 4 labs with special surge capacity and advanced molecular typing techniques.

## 3. Transport requirements

Specimen packaging and transport must be coordinated with local, state and regional health departments, and the FBI. Chain of custody documents should accompany a specimen only if directed by the local or federal law enforcement agency. Chain of Custody does not apply to Level A laboratories because the Level A labs should not accept or analyze non-human specimens. Chain of Custody is appropriate for non-human specimens or items that are followed and examined for evidentiary purposes. Human specimens will not meet this requirement. Level A laboratories should, therefore, maintain a suspicious isolate or specimen until an event is deemed as credible. Further direction may be given by the local, state, or federal lead agency.

For specific instructions, contact the **Bioterrorism Emergency Number at the CDC Emergency Response Office, 770/488-7100**. Advance planning may include identification of appropriate packaging materials and transport media in collaboration with the clinical laboratory at individual facilities. When sending specimens or microbial isolates to the next level of testing, Level A laboratories must be compliant with current federal and/or International Air Transport Association (IATA) packaging and shipping guidelines. Only laboratory personnel specially trained in packaging and shipping are permitted to package and ship specimens to the next level laboratory.

### G. Patient, Visitor, and Public Information

Clear, consistent, understandable information should be provided (e.g., via fact sheets) to patients, visitors, and the general public. During bioterrorism-related outbreaks, visitors may be strictly limited.

A well-designed healthcare facility Bioterrorism Readiness Plan should clarify the lines of authority and flow of communication. To minimize the anticipated responses of fear, confusion and anger, healthcare facilities should plan in advance the methods and channels of communications to be used to inform the public. IC professionals working with the IC committee and administration should coordinate in advance with local, state and regional health agencies, local emergency services, and local broadcast media systems to decide how communication and action across agencies will be accomplished. Failure to provide a public forum for information exchange may increase anxiety and misunderstanding, increasing fear among individuals who attribute non-specific symptoms to exposure to the BT agent.

## Agent-Specific Recommendations

### A. Anthrax

#### 1. Description of Agent / Syndrome

##### a. Etiology

Anthrax is an acute infectious disease caused by *Bacillus anthracis*, a spore forming, gram-positive bacillus. Associated disease occurs most frequently in sheep, goats, and cattle, which acquire spores

through ingestion of contaminated soil. Humans can become infected through contact with non-intact skin, ingestion, or inhalation of *B. anthracis* spores from infected animals or animal products (as in “wool sorter’s disease” from exposure to goat hair). Person-to-person transmission of inhalational disease does not occur. Due to vesicular secretions of cutaneous anthrax lesions<sup>24</sup>, Standard Precautions should be followed.

b. Clinical features

Human anthrax infection can occur in three forms: inhalational, cutaneous, or gastrointestinal, depending on the route of exposure. Of these forms, inhalational anthrax is associated with BT exposure to aerosolized spores<sup>9</sup>. Clinical features for each form of anthrax include:

Inhalational

- Non-specific prodrome of **flu-like symptoms, specifically fever**, follows inhalation of infectious spores.
- Possible brief interim improvement.
- Two to four days after initial symptoms, **abrupt onset of respiratory failure** and hemodynamic collapse, possibly accompanied by thoracic edema and a **widened mediastinum on chest radiograph** suggestive of mediastinal lymphadenopathy and hemorrhagic mediastinitis. **The 2001 cases of inhalational anthrax demonstrated the usefulness of chest CAT scan instead of the standard chest x-ray alone.**
- Gram-positive bacilli on blood culture, usually after the first two or three days of illness. Alert the lab that the sample may contain anthrax as gram-positive bacilli are generally considered to be contaminants. Confirmatory testing for *Bacillus anthracis* is usually available at state health department reference laboratories or other level B laboratory, although initial testing may have been performed using your facility’s routine lab.
- Treatable in early prodromal stage. Mortality remains extremely high despite antibiotic treatment if it is initiated after onset of respiratory symptoms.

Cutaneous

- Local skin involvement after direct contact with spores or bacilli.
- Commonly seen on the head, forearms or hands.
- Localized itching followed by a papular lesion that turns vesicular, and within 2-6 days develops into a depressed black eschar.
- Oftentimes, *Bacillus anthracis* may be cultured from lesion drainage. Confirmatory testing must be obtained from the state health department reference laboratory or other level B laboratory.
- Usually non-fatal if treated with antibiotics.

Gastrointestinal

- Abdominal pain, nausea, vomiting, and fever following ingestion of contaminated food, usually meat.
- Bloody diarrhea, hematemesis.
- Gram-positive bacilli on blood culture, usually after the first two or three days of illness.
- Usually fatal after progression to toxemia and sepsis<sup>10</sup>.

c. Modes of transmission

The spore form of *B. anthracis* is durable. As a bioterrorism agent, it could be delivered as an aerosol. The modes of transmission for anthrax include:

- Inhalation of spores.
- Cutaneous contact with spores or spore-contaminated materials.
- Ingestion of contaminated food<sup>1</sup>.

d. Incubation period

Based on limited scientific data, the incubation period following exposure to *B. anthracis* is estimated to range from 1 day to 8 weeks (average 5 days), depending on the exposure route and dose:

- 1-5 days (may be as long as 60 days) following inhalational exposure.
- 1-7 days (may be up to 15 days) following cutaneous exposure.
- 2-7 days following ingestion.

e. Period of communicability

Transmission of anthrax infections from person to person is unlikely. Airborne transmission does not occur, but direct contact with skin lesions may result in cutaneous infection<sup>6</sup>.

## 2. Preventive Measures

### a. Vaccine availability

Inactivated, cell-free anthrax vaccine (Bioport Corporation 517/327-1500, formerly Michigan Biologic Products Institute\*) – limited availability.

### b. Immunization recommendations

Routine vaccination of civilian populations is not currently recommended<sup>1,10-12</sup>.

## 3. Infection Control Practices for Patient Management

Symptomatic patients with suspected or confirmed infections with *B. anthracis* should be managed according to current guidelines specific to their disease state. Recommendations for chemotherapy are beyond the scope of this document. CDC documents should be consulted for the most current information and recommendations for therapy.

### a. Isolation precautions

Standard Precautions are used for the care of patients with infections associated with *B. anthracis*. Standard Precautions include the routine use of gloves for contact with non-intact skin, including rashes and skin lesions.

### b. Patient placement

Private room placement for patients with anthrax is not necessary. Airborne transmission of anthrax does not occur. Skin lesions may be infectious, but requires direct skin contact. Patient room selection and care should be consistent with facility policy.

### c. Patient transport

Standard Precautions should be used for transport and movement of patients with *B. anthracis* infections.

### d. Cleaning, disinfection, and sterilization of equipment and environment

Principles of Standard Precautions should be generally applied for the management of patient-care equipment and for environmental control. Equipment and environmental surfaces that may have come into contact with drainage or secretions of a patient with cutaneous anthrax must be thoroughly cleaned and disinfected as soon as possible and prior to contact with other healthcare workers or patients (see Section I for more detail). Decontaminate environmental surfaces using an EPA-registered, healthcare facility-approved disinfectant or 0.5% hypochlorite solution (one part household bleach added to nine parts water)<sup>5,6</sup>.

### e. Discharge management

No special discharge instructions are indicated. Home care providers should be taught to use Standard Precautions for all patient care (e.g., dressing changes). If clothing was bagged at time of decontamination or admission and there is reasonable certainty that the clothing does not represent a risk for agent transmission, the following process can be used for laundering: wash in hot water (in a separate load from other clothing) with 1 cup bleach added, then dry in hot dryer. If it cannot be determined that clothing is without risk of agent transmission, follow instructions provided by public health authority.

### f. Post-mortem care

Standard Precautions should be used for post-mortem care. Standard Precautions include wearing appropriate personal protective equipment, including masks and eye protection, when splashes or splatter of body fluids is anticipated<sup>5</sup>. Procedures that generate fine aerosols, e.g., using oscillating saws, should be avoided or performed using appropriate safety devices, e.g., biosafety cabinets. If autopsies are performed, all related instruments and materials should be autoclaved or incinerated<sup>20</sup>. Care should be taken to prevent cuts or other percutaneous injuries during post mortem evaluation. Spills or splashes during post mortem evaluation should be cleaned promptly. In a mass casualty situation, consideration should be given to cremation.

## 4. Post Exposure Management

### a. Decontamination of patients / environment

The risk for re-aerosolization of *B. anthracis* spores appears to be extremely low in settings where spores were released intentionally or occurred naturally. In situations of possible gross exposure to *B. anthracis* spores, cleansing of skin and potentially contaminated fomites (e.g. clothing or environmental surfaces) may be considered to reduce the risk for cutaneous and gastrointestinal forms of disease. The plan for decontaminating patients exposed to anthrax should include the following:

- Instructing patients to remove contaminated clothing and store in labeled, plastic bags. Clothing may be considered to be evidence and should be safely stored for investigative purposes with an associated chain of custody document. (This document can be obtained from the FBI. See Appendix 4 for an example)
- Handling clothing minimally to avoid agitation.
- Instructing personnel regarding Standard Precautions and wearing appropriate barriers (e.g. gloves, gown, and respiratory protection) when handling contaminated clothing or other contaminated fomites.
- Instructing patients to shower thoroughly with soap and water to include the shampooing of hair (and providing assistance if necessary).
- Decontaminating environmental surfaces using an EPA-registered, healthcare facility-approved disinfectant or 0.5% hypochlorite solution (one part household bleach added to nine parts water)<sup>5,6</sup>.

b. Prophylaxis and post-exposure immunization

Recommendations for prophylaxis are subject to change. Up-to-date recommendations should be obtained in consultation with local, state and regional health departments and CDC. Prophylaxis should be initiated upon confirmation of an anthrax exposure or while a highly suspect exposure is being confirmed (Table 1).

**Table 1. Interim recommendations for post-exposure prophylaxis (PEP) for prevention of infection after exposure to *Bacillus anthracis***

Category	Initial therapy	Duration
Adults	Ciprofloxacin 500mg po BID or Doxycycline 100mg po BID	≥60 days**
Children	Ciprofloxacin 10-15 mg/kg po Q12hrs* or Doxycycline >8yrs and >45kg: 100mg po BID >8yrs and ≤ 45kg: 2.2mg/kg po BID ≤ 8yrs: 2.2mg/kg po BID	≥60 days**
Pregnant Women	Same for non-pregnant adults	

\*Ciprofloxacin dose should not exceed 1 gram per day in children.

\*\* Source: *MMWR 2001;50:893*

Following the events of 2001, new treatment regimens, including medications, length of treatment, and vaccination, and prophylactic therapy regimens are being re-evaluated. The CDC should be consulted for direction regarding continued prophylaxis, discontinuation of prophylaxis and immunization<sup>35 36</sup>.

c. Triage and management of large scale exposures / potential exposures

Advance planning should include identification of:

- Sources of bulk prophylactic antibiotics and planning for acquisition on short notice.
- Locations, personnel needs and protocols for administering and monitoring prophylactic post-exposure care to large numbers of potentially exposed individuals.
- Means for providing telephone follow-up information and other public communications services.

Intensive care unit managers will need to consider in advance:

- How limited numbers of ventilators will be distributed in the event of a large number of patients arriving with abrupt pulmonary decompensation.

- How additional ventilators can be obtained. Note: Only Standard Precautions are needed for ventilated patients with inhalational anthrax. Therefore, special filters, maintenance of closed systems or other special handling and decontamination of equipment is not necessary.
- In the event of severely limited ventilator availability, whether and when ventilator support will be discontinued for a terminally ill individual<sup>3,10,11</sup>.

See Section I for additional general details regarding planning for large-scale patient management.

## 5. Laboratory Support and Confirmation

Diagnosis of anthrax is confirmed by aerobic culture performed in a BSL -2 laboratory<sup>1</sup>.

### a. Diagnostic samples

Diagnostic samples to obtain include:

- Blood cultures.
- Cerebrospinal fluid culture if meningeal involvement is suspected.
- Pleural fluid for culture.
- Non-cotton (Dacron) swab culture of exudates, vesicle fluid or unroofed eschar if skin lesions are present.
- Nasal swabs to test for the presence of anthrax are not to be used for diagnostic purposes, but may be used within the first 48 hours of exposure to determine possible exposure. NOTE: the absence of a positive anthrax nasal swab does not indicate the person was not exposed. The nasal swab should only be used as an epidemiology tool.

### b. Laboratory selection

Handling of clinical specimens should be coordinated with local, state and regional health departments, and undertaken in BSL -2 or -3 laboratories. Isolates are submitted to the laboratory response network (LRN) for confirmatory testing. The FBI will coordinate collection of evidence and delivery of forensic specimens to FBI or Department of Defense laboratories.

### c. Transport requirements

Specimen packaging and transport must be coordinated with local, state and regional health departments, and the FBI. A chain of custody document should accompany the specimen from the time of collection. For specific instructions, contact the **Bioterrorism Emergency Number at the CDC Emergency Response Office, 770/488-7100**. Advance planning may include identification of appropriate packaging materials and transport media in collaboration with the clinical laboratory at individual facilities.

## 6. Patient, Visitor, and Public Information

Fact sheets for distribution should be prepared, including explanation that people recently exposed to *B. anthracis* are not contagious, and antibiotics are available for prophylactic therapy along with the anthrax vaccine. Dosing information and potential side effects should be explained clearly. Decontamination procedures, i.e., showering thoroughly with soap and water to include shampooing hair; and environmental cleaning, i.e., with 0.5% hypochlorite solution (one part household bleach added to nine parts water), can be described.

## B. Botulism

### 1. Description of Agent / Syndrome

#### a. Etiology

*Clostridium botulinum* is an anaerobic gram-positive bacillus that produces a potent neurotoxin, botulinum toxin. In humans, botulinum toxin inhibits the release of acetylcholine, resulting in characteristic flaccid paralysis. *C. botulinum* produces spores that are present in soil and marine sediment throughout the world. Foodborne botulism is the most common form of disease in adults. An inhalational form of botulism is also possible<sup>13</sup>. Botulinum toxin exposure may occur in both forms as agents of bioterrorism.

#### b. Clinical features

Foodborne botulism is accompanied by gastrointestinal symptoms. Inhalational botulism and foodborne botulism are likely to share other symptoms including:

- Responsive patient with absence of fever.
  - **Symmetric cranial neuropathies (drooping eyelids, weakened jaw clench, difficulty swallowing or speaking).**
  - **Blurred vision** and diplopia due to extra-ocular muscle palsies.
  - **Symmetric descending weakness in a proximal to distal pattern** (paralysis of arms first, followed by respiratory muscles, then legs).
  - **Respiratory dysfunction** from respiratory muscle paralysis or upper airway obstruction due to weakened glottis.
  - No sensory deficits.
- c. Mode of transmission  
Botulinum toxin is generally transmitted by ingestion of toxin-contaminated food<sup>6</sup>. Aerosolization of botulinum toxin has been described and may be a mechanism for bioterrorism exposure<sup>11</sup>.
- d. Incubation period
- Neurologic symptoms of foodborne botulism begin 12 – 36 hours after ingestion.
  - Neurologic symptoms of inhalational botulism begin 24- 72 hours after aerosol exposure.
- e. Period of communicability  
Botulism is not transmitted from person to person<sup>10</sup>. NOTE: While patients with suspected botulism are not infectious, those with flaccid paralysis from suspected meningitis require droplet precautions until meningitis has been ruled-out<sup>21</sup>.

## 2. Preventive Measures

- a. Vaccine availability  
A pentavalent toxoid vaccine has been developed by the Department of Defense (DoD). This vaccine is available as an investigational new drug (contact USAMRIID, 301/619-2833). Completion of a recommended schedule (0, 2, 12 weeks) has been shown to induce protective antitoxin levels detectable at 1-year post vaccination.
- b. Immunization recommendations  
Routine vaccination of civilian populations not currently recommended<sup>11</sup>

## 3. Infection Control Practices for Patient Management

Symptomatic patients with suspected or confirmed botulism should be managed according to current guidelines<sup>14</sup>. Recommendations for therapy are beyond the scope of this document. For up-to-date information and recommendations for therapy, contact CDC or state health department.

- a. Isolation precautions  
Standard Precautions are used for the care of patients with botulism. NOTE: While patients with suspected botulism do not need to be isolated, those with flaccid paralysis from suspected meningitis require droplet precautions until meningitis has been ruled-out<sup>21</sup>.
- b. Patient placement  
Patient-to-patient transmission of botulism does not occur; private room placement is not necessary. Patient room selection and care should be consistent with facility policy.
- c. Patient transport  
Standard Precautions should be used for transport and movement of patients with botulism.
- d. Cleaning, disinfection, and sterilization of equipment and environment  
Principles of Standard Precautions should be generally applied for the management of patient-care equipment and for environmental control (see Section I for more detail). Decontaminate environmental surfaces using an EPA-registered, healthcare facility-approved disinfectant or 0.5% hypochlorite solution (one part household bleach added to nine parts water).
- e. Discharge management  
Since patients are not infectious, no special discharge instructions related to infection prevention and control are indicated.
- f. Post-mortem care  
Standard Precautions should be used for post-mortem care. Standard Precautions include wearing appropriate personal protective equipment, including masks and eye protection, when splashes or splatter of body fluids is anticipated<sup>5</sup>.

#### 4. Post Exposure Management

Suspicion of even single cases of botulism should immediately raise concerns of an outbreak potentially associated with shared contaminated food. In collaboration with CDC and local, state and regional health departments, attempts should be made to locate the contaminated food source and identify other persons who may have been exposed<sup>14,21</sup>. Any individuals suspected to have been exposed to botulinum toxin should be carefully monitored for evidence of respiratory compromise<sup>14,21</sup>.

##### a. Decontamination of patients / environment

Contamination with botulinum toxin does not place persons at risk for dermal exposure or risk associated with re-aerosolization. Therefore, decontamination of patients is not required. If exposure is known, the patient should shower with soap and water. Clothing worn by patient during the time of suspected exposure may be laundered using usual household procedures<sup>21</sup>.

##### b. Prophylaxis and post-exposure immunization

Trivalent botulinum antitoxin is available by contacting state health departments or by contacting CDC (404/639-2206 during office hours, 404/639-2888 after hours). This horse serum product has a <9% percent rate of hypersensitivity reactions. Skin testing should be performed according to the package insert prior to administration<sup>14,21</sup>.

##### c. Triage and management of large scale exposures / potential exposures

Patients affected by botulinum toxin are at risk for respiratory dysfunction that may necessitate mechanical ventilation. Ventilatory support is required, on average, for 2 to 3 months before neuromuscular recovery allows unassisted breathing. Large-scale exposures to botulinum toxin may overwhelm an institution's available resources for mechanical ventilation. Sources of auxiliary support and means to transport patients to auxiliary sites, if necessary should be planned in advance with coordination among neighboring facilities<sup>6,10</sup>.

Advance planning should include identification of:

- Means for providing telephone follow-up information and other public communications services.

Intensive care unit managers will need to consider in advance:

- How limited numbers of ventilators will be distributed in the event of a large number of patients arriving with abrupt pulmonary decompensation.
- How additional ventilators can be obtained. Note: Only Standard Precautions are needed for ventilated patients with botulism. Therefore, special filters, maintenance of closed systems or other special handling and decontamination of equipment is not necessary.
- In the event of severely limited ventilator availability, whether and when ventilator support will be discontinued for a terminally ill individual.

See Section I for additional general details regarding planning for large-scale patient management.

#### 5. Laboratory Support and Confirmation

##### a. Obtaining diagnostic samples

Routine laboratory tests are of limited value in the diagnosis of botulism. Detection of toxin is possible from serum, stool samples, or gastric secretions. For advice regarding the appropriate diagnostic specimens to obtain, contact state health authorities or CDC (Foodborne and Diarrheal Diseases Branch, 404/639-2888).

##### b. Laboratory selection

Handling of clinical specimens should be coordinated with local, state and regional health departments. The FBI will coordinate collection of evidence and delivery of forensic specimens to FBI or Department of Defense laboratories. Specimens for the detection of botulism toxin are to be sent to the designated Level B laboratory. The Laboratory should contact their state health department to identify the closest Level B laboratory that tests for botulinum toxin. Not all state health department laboratories test for this toxin.

##### c. Transport requirements

Specimen packaging and transport must be coordinated with local, state and regional health departments, and the FBI. A chain of custody document should accompany the specimen from the moment of collection. For specific instructions, contact the **Bioterrorism Emergency Number at the CDC Emergency Response Office, 770/488-7100**. Advance planning may include identification of appropriate packaging materials and transport media in collaboration with the clinical laboratory at individual facilities.

## 6. Patient, Visitor, and Public Information

Fact sheets for distribution should be prepared, including explanation that people exposed to botulinum toxin are not contagious. A clear description of symptoms including blurred vision, drooping eyelids, and shortness of breath should be provided with instructions to report for evaluation and care if such symptoms develop.

### C. Plague

#### 1. Description of Agent / Syndrome

##### a. Etiology

Plague is an acute bacterial disease caused by the gram-negative bacillus *Yersinia pestis*, which is usually transmitted by infected fleas, resulting in lymphatic and blood infections (bubonic and septicemic plague). A BT-related outbreak may be expected to be airborne, causing a pulmonary variant, pneumonic plague<sup>3,10</sup>, although an outbreak of bubonic plague could be encountered following the release of infected fleas.

##### b. Clinical features of pneumonic plague

- Fever, cough, chest pain.
- Hemoptysis.
- Muco-purulent or watery sputum with gram-negative rods on gram stain.
- Radiographic evidence of bronchopneumonia<sup>10</sup>.

##### c. Modes of transmission

- Plague is normally transmitted from an infected rodent to man by infected fleas.
- Bioterrorism-related outbreaks are likely to be transmitted through dispersion of an aerosol.
- Person-to-person transmission of pneumonic plague is possible via large aerosol droplets<sup>6</sup>

##### d. Incubation period

The incubation period for plague is normally 2 – 8 days if due to fleaborne transmission. The incubation period may be shorter for pulmonary exposure (1-3 days)<sup>10</sup>.

##### e. Period of communicability

Patients with pneumonic plague may have coughs productive of infectious particle droplets. Droplet precautions, including the use of a mask for patient care, should be implemented until the patient has completed 72 hours of appropriate antimicrobial therapy<sup>3,6</sup>.

#### 2. Preventive Measures

##### a. Vaccine availability

Formalin-killed vaccine exists for bubonic plague, but has not been proven to be effective for pneumonic plague. It is not currently available in the United States.

##### b. Immunization recommendations

Vaccination requires multiple doses given over several weeks. Routine vaccination of civilian populations is not currently recommended. Post-exposure immunization has no utility.

#### 3. Infection Control Practices for Patient Management

Symptomatic patients with suspected or confirmed plague should be managed according to current guidelines. Recommendations for specific therapy are beyond the scope of this document. For up-to-date information and recommendations for therapy, contact CDC or state health department.

##### a. Isolation precautions

For pneumonic plague, Droplet Precautions should be used in addition to Standard Precautions.

- Droplet Precautions are used for patients known or suspected to be infected with microorganisms transmitted by large particle droplets, generally larger than 5 $\mu$  in size, that can be generated by the infected patient during coughing, sneezing, talking, or during respiratory-care procedures.
- Droplet Precautions require healthcare providers and others to wear a surgical-type mask when within 3 feet of the infected patient. Based on local policy, some healthcare facilities require a mask be worn to enter the room of a patient on Droplet Precautions.
- Droplet Precautions should be maintained until patient has completed 72 hours of appropriate antimicrobial therapy<sup>3,6</sup>. Susceptibility patterns should be confirmed to ensure adequate antibiotic

coverage before discontinuation of isolation due to the risk of a genetically altered strain being used in a BT attack.

b. Patient placement

Patients suspected or confirmed to have pneumonic plague require Droplet Precautions. Patient placement recommendations for Droplet Precautions include:

- Placing infected patient in a private room.
- Cohort symptomatic patients with similar symptoms and the same presumptive diagnosis (i.e. pneumonic plague) when private rooms are not available.
- Maintaining spatial separation of at least 3 feet between infected patients and others when cohorting is not achievable.
- Avoiding placement of patient requiring Droplet Precautions in the same room with an immunocompromised patient.
- Staff needs to wear a surgical mask when caring for infected patients.
- Special air handling is not necessary and doors may remain open.

c. Patient transport

- Limit the movement and transport of patients on Droplet Precautions to essential medical purposes only.
- Minimize dispersal of droplets by placing a surgical-type mask on the patient when transport is necessary<sup>5,6</sup>.

d. Cleaning, disinfection, and sterilization of equipment and environment

Principles of Standard Precautions should be generally applied to the management of patient-care equipment and for environmental control (see Section I for more detail)<sup>5</sup>. Decontaminate environmental surfaces using an EPA-registered, healthcare facility-approved disinfectant or 0.5% hypochlorite solution (one part household bleach added to nine parts water).

e. Discharge management

Ideally, patients with pneumonic plague would not be discharged from a healthcare facility until no longer infectious (completion of 72 hours of appropriate antimicrobial therapy) and would require no special discharge instructions. In the event of a large bioterrorism exposure with patients receiving care in their homes, home care providers should be taught to use Standard and Droplet Precautions for all patient care.

f. Post-mortem care

Standard Precautions and Droplet Precautions should be used for post-mortem care<sup>5</sup>. Aerosol generating procedures, such as surgery or autopsies, are not recommended due to the risk of secondary transmission. If such aerosol generating procedures are necessary, airborne precautions are required (HEPA-filters for recirculated air, N-95 masks and negative pressure room)<sup>22</sup>.

#### 4. Post Exposure Management

a. Decontamination of patients / environment

The risk for re-aerosolization of *Y. pestis* from the contaminated clothing of exposed persons is low. In situations where there may have been gross exposure to *Y. pestis*, decontamination of skin and potentially contaminated fomites (e.g. clothing or environmental surfaces) may be considered to reduce the risk for cutaneous or bubonic forms of the disease<sup>3</sup>. The plan for decontaminating patients may include:

- Instructing patients to remove contaminated clothing and store in labeled, plastic bags. Clothing may be considered to be evidence and should be safely stored for investigative purposes with an associated chain of custody document. (This document can be obtained from the FBI. See Appendix 4 for an example)
- Handling clothing minimally to avoid agitation.
- Instructing personnel regarding Standard Precautions and wearing appropriate barriers (e.g. gloves, gown, and respiratory protection) when handling contaminated clothing or other contaminated fomites.
- Instructing patients to shower thoroughly with soap and water to include the shampooing of hair (and providing assistance if necessary).

- Decontaminating environmental surfaces using an EPA-registered, healthcare facility-approved disinfectant or 0.5% hypochlorite solution (one part household bleach added to nine parts water)<sup>5,6</sup>

b. Prophylaxis and post exposure immunization

Recommendations for prophylaxis are subject to change. Up-to-date recommendations should be obtained in consultation with local, state and regional health departments and CDC.

Post-exposure prophylaxis should be initiated following confirmed or suspected bioterrorism *Y. pestis* exposure, and for post-exposure management of healthcare workers and others who had unprotected face-to-face contact with symptomatic patients (Table 2).

**Table 2. Recommended post-exposure prophylaxis for exposure to *Yersinia pestis*.**

Antimicrobial agent	Adults	Children §
<b>First choice</b> Doxycycline	100 mg twice daily	5 mg per kg of body mass per day divided into two doses
<b>2<sup>nd</sup> choice</b> Ciprofloxacin	500 mg twice daily	20-30 mg per kg of body mass daily, divided into two doses

§ Pediatric use of tetracyclines and flouroquinolones is associated with adverse effects that must be weighed against the risk of developing a lethal disease.

Prophylaxis should continue for 7 days after last known or suspected *Y. pestis* exposure, or until exposure has been excluded<sup>10</sup>.

Facilities should ensure that policies are in place to identify and manage health care workers exposed to infectious patients. In general, maintenance of accurate occupational health records will facilitate identification, contact, assessment, and delivery of post-exposure care to potentially exposed healthcare workers<sup>3,11,12</sup>.

c. Triage and management of large scale exposures / potential exposures

Advance planning should include identification of sources for appropriate masks to facilitate adherence to Droplet Precautions for potentially large numbers of patients and staff. Instruction and reiteration of requirements for Droplet Precautions (as opposed to Airborne Precautions) will be necessary to promote compliance and minimize fear and panic related to an aerosol exposure.

Advance planning should also include identification of:

- Sources of bulk prophylactic antibiotics and planning for acquisition on short notice.
- Locations, personnel needs and protocols for administering and monitoring prophylactic post-exposure care to large numbers of potentially exposed individuals.
- Means for providing telephone follow-up information and other public communications services.

See Section I for additional general details regarding planning for large-scale patient management.

## 5. Laboratory Support and Confirmation

Laboratory confirmation of plague is by standard microbiologic culture, but slow growth and misidentification in automated systems are likely to delay diagnosis. For decisions regarding obtaining and processing diagnostic specimens, contact state laboratory authorities or CDC.

a. Diagnostic samples

Diagnostic samples to obtain depend on the form of illness encountered (bubonic, pneumonic or septicemic) and should be handled in an evidentiary manner and accompanied by the chain of command documentation. Samples to be collected include:

- Serum for capsular antigen testing.
- Blood or bubo cultures.
- Sputum or tracheal aspirates for Gram's, Wayson's, and fluorescent antibody staining.
- Sputum or tracheal aspirates for culture.

b. Laboratory selection

Handling of clinical specimens should be coordinated with local, state and regional health departments, and undertaken in BSL -2 or -3 laboratories<sup>3</sup>. Isolates are submitted to the laboratory

response network (LRN) for confirmatory testing. The FBI will coordinate collection of evidence and delivery of forensic specimens to FBI or Department of Defense laboratories.

c. Transport requirements

Specimen packaging and transport must be coordinated with local, state and regional health departments, and the FBI. A chain of custody document should accompany the specimen from the moment of collection. For specific instructions, contact the **Bioterrorism Emergency Number at the CDC Emergency Response Office, 770/488-7100**. Advance planning may include identification of appropriate packaging materials and transport media in collaboration with the clinical laboratory at individual facilities.

## 6. Patient, Visitor, and Public Information

Fact sheets for distribution should be prepared, including a clear description of Droplet Precautions, symptoms of plague, and instructions to report for evaluation and care if such symptoms are recognized. The difference between prophylactic antimicrobial therapy and treatment of an actual infection should be clarified. Decontamination by showering thoroughly with soap and water can be recommended.

### D. Smallpox

#### 1. Description of Agent / Syndrome

a. Etiology

Smallpox is an acute viral illness caused by the variola virus<sup>11</sup>. Smallpox is a BT threat due to its potential to cause severe morbidity in a non-immune population and because it can be transmitted via the airborne route<sup>10</sup>. A single case is considered a public health emergency.

b. Clinical features

Acute clinical symptoms of smallpox resemble other acute viral illnesses, such as influenza. Skin lesions appear, quickly progressing from macules to papules to vesicles. Other clinical symptoms to aid in identification of smallpox include:

- 2-4 day, non-specific prodrome of fever, **prostration and lower back pain**.
- **Rash most prominent on face and extremities** (including palms and soles) in contrast to the truncal distribution of varicella.
- **Rash scabs over in 1-2 weeks**.
- In contrast to the rash of varicella, which arises in “crops,” **variola rash has a synchronous onset**<sup>10</sup>.

c. Modes of transmission

Smallpox is transmitted via large and small respiratory droplets as well as from contact with skin lesions and items contaminated with drainage from lesions. In addition, scabs contain viral particles and may be contagious<sup>23</sup>. Patients are considered more infectious if coughing or if they have a hemorrhagic form of smallpox.

d. Incubation period

The incubation period for smallpox is 7-17 days; the average is 12 days.

e. Period of communicability

Unlike varicella, which is contagious before the rash is apparent, patients with smallpox become infectious at the onset of the rash and remain infectious until their scabs separate (approximately 3 weeks). The period of communicability begins with the onset of the first lesion. However, the initial lesions may not be readily apparent (i.e., inside the mouth or other less visible location)<sup>6,10</sup>.

#### 2. Preventive Measures

a. Vaccine availability

A live-virus intradermal vaccination for the prevention of smallpox exists, but is not currently available to the general public without authorized release from the CDC<sup>12</sup>. Routine vaccination and production of vaccine was discontinued in the US in 1972 following worldwide eradication of smallpox<sup>23</sup>. Due to the threat of smallpox as a biological weapon, production of new vaccine has been initiated as well as research studies examining methods of diluting current vaccine stocks.

b. Immunization recommendations

Routine vaccination of civilian populations is not currently recommended<sup>3</sup>. Length of immunity following vaccination is not known. Therefore, even previously vaccinated persons should be considered susceptible to smallpox. All personnel working directly with patients with confirmed smallpox must be vaccinated. Individuals with contraindications to smallpox vaccination, e.g., persons with altered immune states, pregnant women or those with a history of eczema or other forms of chronic dermatitis, should not be selected to provide care to smallpox patients<sup>29</sup>.

Vaccinations will be provided first to individuals who have never been vaccinated followed by those individuals who have been immunized previously.

c. Immunization Procedure

See Appendix 5.

d. Ring Vaccination Strategy

Ring vaccination involves isolation of confirmed and suspected smallpox cases with tracing, vaccination, and close surveillance of contacts to these cases as well as vaccination of the household contacts of the contacts<sup>34</sup>. Vaccinating and monitoring a “ring” of people around each case and contact is designed to help protect those at greatest risk for contracting the disease as well as form a buffer of immune individuals to prevent the spread of disease. This strategy is more desirable than indiscriminate mass vaccination.

### 3. Infection Control Practices for Patient Management

Symptomatic patients with suspected or confirmed smallpox should be managed according to current guidelines. Recommendations for specific therapy are beyond the scope of this document. For up-to-date information and recommendations for therapy, contact the CDC or state health department.

a. Isolation precautions

For patients with suspected or confirmed smallpox, both Airborne and Contact Precautions should be used in addition to Standard Precautions.

- Airborne Precautions are used for patients known or suspected to be infected with microorganisms transmitted by airborne droplet nuclei (small particle residue, 5 $\mu$  or smaller in size) of evaporated droplets containing microorganisms that can remain suspended in air and can be widely dispersed by air currents.
- Airborne Precautions require healthcare providers and others to wear respiratory protection when entering the patient room. (Appropriate respiratory protection must meet the minimal NIOSH standards for particulate respirators, e.g., N95)<sup>5,15</sup>.
- Contact Precautions are used for patients known or suspected to be infected or colonized with epidemiologically important organisms that can be transmitted by direct contact with the patient or indirect contact with potentially contaminated surfaces in the patient's care area.
- Contact precautions require healthcare providers and others to:
  - Wear clean gloves upon entry into patient room.
  - Wear gown for all patient contact and for all contact with the patient's environment. Based on local policy, some healthcare facilities require a gown be worn to enter the room of a patient on Contact Precautions. Gown must be removed before leaving the patient's room.
  - Wash hands using an antimicrobial agent.

b. Patient placement

Patient placement depends upon clinical presentation and physical plant capabilities of the facility. Each of the following groups of patients has specific isolation considerations<sup>25</sup>.

- Known or Presumed Infectious Individuals (Type C = Contagious Facility):
- Persons with a compatible illness and laboratory confirmation of smallpox (Confirmed case)
- Persons with a compatible illness following suspected/known exposure with pending laboratory confirmation (Probable case)
- Persons referred by a consultant as suspected cases of smallpox but who do not have a typical clinical presentation

Febrile Contacts without Rash (Type C or Type X Facility):

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

#### Asymptomatic Contacts (Type R = Residential Facility):

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

Specific types of facilities may be used for housing patients during a smallpox emergency. These include:

- Type C Facility to house cases of smallpox and minimize the exposure of susceptible individuals to contagious individuals. All persons admitted to or entering a Type C facility must be vaccinated including those that are considered to be smallpox cases, as errors in diagnosis are possible.
- Type X Facility to house febrile contacts during the observation period for further development of symptoms of smallpox (rash).
- Type R Facility may be the person's own home. This is for asymptomatic (noninfectious) contacts.

In order to limit the number of Type C Facilities, it is important to consider methods for triaging patients in a location outside of a healthcare facility that is not already designated as a Type C Facility. This can be accomplished by triaging suspected smallpox patients outside of the facility (i.e., decontamination areas or vehicles).

Hospitalized smallpox patients require placement in rooms that meet the ventilation and engineering requirements for Airborne Precautions, which include:

- Monitored negative air pressure relative to the corridor and surrounding areas.
- 6 – 12 air exchanges per hour.
- Appropriate discharge of air to the outdoors, or use of monitored high-efficiency particulate air (HEPA) filtration prior to circulation to other areas in the healthcare facility.
- A door that must remain closed.
- Working knowledge of facility heat, ventilation and air conditioning system (HVAC) is critical to determining airflow within a facility. Therefore, proper functioning of HVAC systems, including negative air flow and proper maintenance of HEPA filters, is essential to prevention of transmission of smallpox. Circumstances that will alter the balance of supply and exhausted air will disrupt continuous negative airflow. Examples of altered airflow and balance include activation of the fire alarm systems, elevator shaft work, changes in ventilation dampers, changing of large bag filters and shutting down portions of a ventilation system. These factors must be integral to your facility plan.

**Healthcare facilities without patient rooms appropriate for Airborne Precautions should have a plan for transfer of suspected or confirmed smallpox patients to other facilities with appropriate isolation environments.**

Patient placement in a private room is preferred. However, in the event of a large outbreak, patients who have active infections with the same disease (i.e., smallpox) may be cohorted in rooms that meet appropriate ventilation and airflow requirements for Airborne Precautions<sup>5,6</sup>.

#### c. Patient transport

- Limit the movement and transport of patients with suspected or confirmed smallpox to essential medical purposes only.
- When transport is necessary, minimize the dispersal of respiratory droplets by placing a mask on the patient, if possible<sup>5</sup>.

#### d. Cleaning, disinfection, and sterilization of equipment and environment

A component of Contact Precautions is careful management of potentially contaminated equipment and environmental surfaces.

- When possible, noncritical patient care equipment should be dedicated to a single patient (or cohort of patients with the same illness).

- If use of common items is unavoidable, all potentially contaminated, reusable equipment should not be used for the care of another patient until it has been appropriately cleaned and reprocessed. Policies should be in place and monitored for compliance<sup>5</sup>.
- EPA-approved hospital grade germicides easily kill variola virus.

#### Linen and Regulated Medical Waste

All bodily fluids are safely disposed of via the sanitary sewer. It is anticipated that the US Public Health Service will determine handling procedures for linens and definitions of regulated medical waste.

##### e. Discharge management

In general, patients with smallpox will not be discharged from a healthcare facility until determined they are no longer infectious or are sent to another designated facility. Therefore, no special discharge instructions are required.

##### f. Post-mortem care

Airborne and Contact Precautions should be used for post-mortem care<sup>5</sup>. Cremation is preferable for the remains of smallpox victims. Provisions for immunization of mortuary employees should be considered in the prioritization of those receiving vaccination<sup>23</sup>.

#### **4. Post Exposure Management**

##### a. Decontamination of patients / environment

Patient decontamination after exposure to smallpox is not indicated unless there is evidence of a recent overt release. If an overt release is suspected or known, the plan for decontaminating patients exposed to smallpox should include the following:

- Instructing patients to remove contaminated clothing and store in labeled, plastic bags. Clothing may be considered to be evidence and should be safely stored for investigative purposes with an associated chain of custody document. (This document can be obtained from the FBI. See Appendix 4 for an example)
- Handling clothing minimally to avoid agitation.
- Instructing personnel regarding Contact Precautions and wearing appropriate barriers (e.g. gloves, gown, and respiratory protection) when handling contaminated clothing or other contaminated fomites<sup>6</sup>.
- Instructing patients to shower thoroughly with soap and water to include the shampooing of hair (and providing assistance if necessary).
- Decontaminating environmental surfaces using an EPA-registered, healthcare facility-approved disinfectant or 0.5% hypochlorite solution (one part household bleach added to nine parts water)<sup>5,6</sup>.

##### b. Prophylaxis and post-exposure immunization

Recommendations for prophylaxis are subject to change. Up-to-date recommendations should be obtained in consultation with local, state and regional health departments and CDC.

Post-exposure immunization with smallpox vaccine (vaccinia virus) is effective, but is not currently available to the general public without authorized release from the CDC<sup>12</sup>. Vaccination alone is recommended if given within 3 - 5 days of exposure. Passive immunization is also available in the form of vaccinia immune-globulin (VIG) (0.6ml/kg IM). VIG is maintained at USAMRIID: (301)619-2833<sup>10,11</sup>. Vaccination is generally contraindicated in pregnant women, and persons with immunosuppression, HIV-infection, and eczema, who are at risk for disseminated vaccinia disease. However, the risk of smallpox vaccination should be weighed against the likelihood for developing smallpox following a known exposure. VIG should be given concomitantly with vaccination in these patients<sup>11</sup>.

##### High-risk groups prioritized for vaccination

- Persons exposed to the initial release of the virus.
- Persons with face-to-face, household, or close proximity contact (within 3 feet), with a confirmed or suspected smallpox patient after the patient developed fever and until all scabs have separated.
- Personnel selected for direct medical or public health evaluation, care, or transportation of confirmed, probable or suspected smallpox patients.

- Laboratory personnel selected for the collection or processing of clinical specimens from confirmed, probable or suspected smallpox cases.
- Other persons with increased likelihood of contact with infectious materials from a smallpox patient such as laundry or medical waste handlers for a facility where smallpox patients are admitted.
- Other groups whose unhindered function is deemed essential to the support of response activities and who are not otherwise involved in patient care activities but who have a reasonable probability of contact with smallpox patients or infectious materials, e.g., law enforcement, EMS, military.
- Because of the potential for the greater spread of smallpox in a hospital setting due to aerosolization of the virus from a severely ill patient, consideration should be given to vaccination of all individuals present in the hospital during the time a case was present and not isolated in an appropriate manner in a room with ventilation separate from other areas of the hospital.

Indications for VIG use:

- The recommended dosage of VIG for treatment of complications due to vaccinia vaccination is 0.6 mL/kg of body weight. VIG must be administered intramuscularly (IM) and should be administered as early as possible after the onset of symptoms.
- Because the therapeutic dose of VIG may be large (e.g., 42mL for a 70 kg person), the product should be given in divided doses over a 24-36 hour period. Doses may be repeated at 2-3 day intervals until no new lesions

Post-vaccination complications for which VIG may be indicated include:

- Eczema vaccinatum
- Progressive vaccinia (vaccinia necrosum)
- Severe generalized vaccinia if the patient has a toxic condition or serious
- Underlying illness.
- Inadvertent inoculation of the eye or eyelid without vaccinia keratitis

**\*VIG is not indicated for the treatment of post-vaccination encephalitis and is contraindicated for vaccinia keratitis.**

The currently limited supplies of VIG do not allow for its concomitant administration with vaccine for the prevention of potential complications. VIG use should be reserved for treatment of the most serious or life-threatening complications.

Following prophylactic care, exposed individuals should be instructed to monitor themselves for development of flu-like symptoms (most notably, fever) or rash during the incubation period (i.e., for 17 days after exposure) and immediately report to designated care sites selected to minimize the risk of exposure to others.

Facilities should ensure that policies are in place to identify and manage health care workers exposed to infectious patients. In general, maintenance of accurate occupational health records will facilitate identification, contact, assessment, and delivery of post-exposure care to potentially exposed healthcare workers. Occupational health records should include smallpox immunization history for all employees. Note: Routine childhood vaccination for smallpox ceased in approximately 1972 in the USA<sup>23</sup>.

c. Triage and management of large scale exposures / potential exposures

Advance planning must involve IC professionals in cooperation with building engineering staff, to identify sites within the facility that can provide necessary parameters for Airborne Precautions. See Section I for additional general details regarding planning for large-scale patient management.

## 5. Laboratory Support and Confirmation

a. Diagnostic samples

For decisions regarding obtaining and processing diagnostic specimens, contact state laboratory authorities or CDC.

b. Laboratory selection

Handling of clinical specimens must be coordinated with state health departments, CDC, and USAMRIID. Testing can be performed only in BSL - 4 laboratories<sup>11</sup>. The FBI will coordinate collection of evidence and delivery of forensic specimens to FBI or Department of Defense laboratories.

c. Transport requirements

Specimen packaging and transport must be coordinated with local, state and regional health departments, and the FBI. A chain of custody document should accompany the specimen from the moment of collection. For specific instructions, contact the **Bioterrorism Emergency Number at the CDC Emergency Response Office, 770/488-7100**. Advance planning may include identification of appropriate packaging materials and transport media in collaboration with the clinical laboratory at individual facilities.

## 6. Patient, Visitor, and Public Information

Fact sheets for distribution should be prepared, including a clear description of symptoms and where to report for evaluation and care if such symptoms are recognized. Details about the type and duration of isolation should be provided. Vaccination information that details who should receive the vaccine and possible side effects should be provided. Extreme measures such as burning or boiling potentially exposed materials should be discouraged.

## E. Tularemia

### 1. Description of Agent / Syndrome

a. Etiology

Tularemia is an acute infectious disease caused by *Francisella tularensis*, small aerobic non-motile, catalase-positive gram-negative coccobacilli. The organism is naturally occurring in a wide range of animal hosts, and can be recovered from contaminated water, soil and vegetation. *F. tularensis* are very infectious pathogenic bacteria, requiring inhalation or inoculation of as few as 10 organisms to cause infection.

Also referred to as rabbit fever or deerfly fever, tularemia primarily causes disease in many animals, most commonly rabbits, beaver, and squirrels. The disease does occur in humans, primarily through tick bites and exposure due to handling infected animals. There is a peak of cases in the summer months when outdoor activity is most common, and another peak in winter reflecting hunting-associated cases. Inhalational tularemia infections have occurred only in rural areas; cases occurring in urban dwellers or in those with no other risk factors should alert healthcare personnel to the possibility of a BT attack.

b. Clinical features

Clinical manifestations of tularemia are varied depending on the portal of entry, immune status of the human host, and the virulence of the strain. Diagnosis is difficult and relies on clinical suspicion.

Tularemia starts abruptly with onset of fever, chills, headache, malaise, anorexia, and fatigue. Other symptoms may include cough, myalgias, chest discomfort, sore throat, vomiting, abdominal pain, and diarrhea.

There are six forms of tularemia:

1. Ulceroglandular – 21% to 87% of naturally occurring cases; generally starts as a red painful papule which necroses, resulting in a tender ulcer with raised border; often associated with localized lymphadenopathy.
2. Glandular – 3- 20% of cases; presentation as tender regional lymphadenopathy, but without cutaneous lesion.
3. Oculoglandular – up to 5% of cases occurs when organism gains entry through conjunctiva from contaminated fingers or direct splashes into eye. Presents as painful conjunctivitis with lid edema and often associated with local tender lymphadenopathy.
4. Pharyngeal – up to 12% of case, occurs as a result of entry into the oropharynx such as through eating contaminated foods or water; presents with severe throat pain accompanied by exudative, sometimes ulcerative, pharyngitis or tonsillitis.
5. Pneumonic – 7 –20% of all naturally occurring cases, but may be the most common presentation associated with a BT attack due to an aerosol release. Occurs as a result of direct inhalation of

organism or secondary hematogenous spread to the lungs. Enlargement of hilar nodes is the principle finding on chest x-ray.

6. Typhoidal – 5 to 30% of cases occurs as a result of any mode of transmission and presents as acute febrile illness, and is the most difficult to diagnose. Loose watery diarrhea often accompanies typhoidal tularemia. Some sources combine typhoidal and pneumonic tularemia into the same category with chest X-ray changes being the differentiating criteria between the two.

Within 2 weeks of initial symptoms, up to 35% of tularemia infections result in secondary skin rashes appearing as diffuse maculopapular or vesiculopapular eruptions.

c. Modes of transmission

- Tularemia is normally transmitted through the bite of an insect, most commonly ticks in the U.S.; or by direct contact with a contaminated animal during skinning or dressing.
- Bioterrorism-related outbreaks are likely to be transmitted through dispersion and inhalation of aerosol droplets resulting in typhoidal or pneumonic tularemia.
- Person-to-person transmission does not occur, although secondary transmission has been known to occur in the laboratory setting.

d. Incubation period

The incubation period for tularemia averages 3 – 5 days (ranges from 1-14 days).

e. Period of communicability

Tularemia is not transmitted from person to person.

## 2. Preventive Measures

a. Vaccine availability

A live attenuated vaccine was developed that provided partial protection against some strains of tularemia, and has been used to immunize laboratory workers routinely handling *F. tularensis*. This vaccine is currently under review by the US Food and Drug Administration but is not currently available to the general public.

b. Immunization recommendations

Routine vaccination of civilian populations is not currently recommended. Post-exposure immunization has no utility.

## 3. Infection Control Practices for Patient Management

Symptomatic patients with suspected or confirmed tularemia should be managed according to current guidelines. Recommendations for specific therapy are beyond the scope of this document. For up-to-date information and recommendations for therapy, contact CDC or state health department.

a. Isolation precautions

Standard Precautions are used for the care of patients with tularemia. Standard Precautions include the routine use of gloves for contact with non-intact skin, including rashes and skin lesions.

Although special isolation precautions are not indicated for patient care, infection prevention strategies in the laboratory (e.g. opening cultures only in BSL-2 safety cabinets) are crucial to protect laboratory personnel from infection. The lab must be notified if tularemia is suspected since cultures of *F. tularensis* are highly infectious and represent a laboratory hazard if not contained. Examination of cultures suspected as *F. tularensis* should be done in an appropriate biosafety cabinet (see Section 5 Laboratory Support and Confirmation for details).

b. Patient placement

Patient-to-patient transmission of tularemia does not occur; private room placement is not necessary. Patient room selection and care should be consistent with facility policy.

c. Patient transport

Standard Precautions should be used for the transport and movement of patients with *F. tularensis* infections.

d. Cleaning, disinfection, and sterilization of equipment and environment

Principles of Standard Precautions should be generally applied for the management of patient-care equipment and for environmental control (see Section I for more detail). Decontaminate environmental surfaces using an EPA-registered, healthcare facility-approved disinfectant or 0.5% hypochlorite solution (one part household bleach added to nine parts water).

e. Discharge management

Since patients are not infectious, no special discharge instructions related to infection prevention and control are indicated. Home care providers should be taught to use Standard Precautions for all patient care (e.g., dressing changes).

f. Post-mortem care

Standard Precautions should be used for post-mortem care. Standard Precautions include wearing appropriate personal protective equipment, including masks and eye protection, when splashes or splatter of body fluids is anticipated<sup>5</sup>.

**4. Post Exposure Management**

a. Decontamination of patients / environment

There is no risk for re-aerosolization of *F. tularensis* from contaminated clothing of exposed persons. In situations where there may have been gross exposure to *F. tularensis*, decontamination of skin and potentially contaminated fomites (e.g. clothing or environmental surfaces) may be considered to reduce the risk for ulceroglandular, glandular or ocular forms of the disease<sup>3</sup>. The plan for decontaminating patients may include:

- Instructing patients to avoid touching eyes; handwashing should be done as soon as possible, and after touching potentially contaminated items.
- Instructing patients to remove contaminated clothing and store in labeled, plastic bags. Clothing may be considered to be evidence and should be safely stored for investigative purposes with an associated chain of custody document (This document can be obtained from the FBI. See Appendix 4 for an example)
- Handling clothing minimally to avoid agitation.
- Instructing personnel regarding Standard Precautions and wearing appropriate barriers (e.g. gloves, gown, and respiratory protection) when handling contaminated clothing or other contaminated fomites.
- Instructing patients to shower thoroughly with soap and water to include the shampooing of hair (and providing assistance if necessary).
- Decontaminating environmental surfaces using an EPA-registered, healthcare facility-approved disinfectant or 0.5% hypochlorite solution (one part household bleach added to nine parts water)<sup>5,6</sup>.

b. Prophylaxis and post-exposure immunization

Recommendations for prophylaxis are subject to change. Up-to-date recommendations should be obtained in consultation with local, state and regional health departments and CDC. Post-exposure prophylaxis should be initiated following confirmed or suspected bioterrorism exposure, and for post-exposure management of healthcare workers and others who had unprotected face-to-face contact with symptomatic patients (Table #3).

**Table #3. Recommended post-exposure prophylaxis for exposure to *F. tularensis***

Antimicrobial agent	Adults	Children §
Ciprofloxacin	500 mg twice daily for 14 days	20-30 mg per kg of body mass daily, divided into 2 doses
- OR -		
Doxycycline	100 mg twice daily for 14 days	5 mg per kg of body mass daily, divided into 2 doses

§ Pediatric use of tetracyclines and flouroquinolones is associated with adverse effects that must be weighed against the risk of developing a lethal disease.

c. Triage and management of large scale exposures / potential exposures

Since rapid diagnosis for tularemia is not widely available, a cluster of persons presenting with atypical pneumonia, pleuritis, and hilar lymphadenopathy should alert personnel to potential BT attack due to *F. tularensis*.

Advance planning should include identification of:

- Sources of bulk prophylactic antibiotics and planning for acquisition on short notice.
- Locations, personnel needs and protocols for administering and monitoring prophylactic post-exposure care to large numbers of potentially exposed individuals.
- Means for providing telephone follow-up information and other public communications services.

See Section I for additional general details regarding planning for large-scale patient management.

## 5. Laboratory Support and Confirmation

Because only a small inhaled dose is sufficient to cause infection, laboratory personnel must be notified if tularemia infection is suspected. Laboratory workers are especially vulnerable to infection through inhalation or accidental inoculation. Examination of open culture plates can cause infection.

The organism *F. tularensis* is rarely seen on Gram stained smears or in tissue biopsies, and does not grow on routine cultures. Using supportive media (e.g. cysteine enriched broth, cysteine heart blood agar), *F. tularensis* can be recovered from pleural fluid, lymph nodes, wounds, pharyngeal washings, and sputum. It is only occasionally isolated from blood. Laboratory confirmation of tularemia is by culture.

For decisions regarding obtaining and processing diagnostic specimens, contact state laboratory authorities or CDC.

### a. Diagnostic samples

Clinical suspicion of tularemia should prompt the physician to notify the laboratory and obtain specimens of:

- Respiratory secretions for culture
- Blood cultures
- Sputum or other secretions or biopsy specimens for direct fluorescent antibody staining.

### b. Laboratory selection

Handling of clinical specimens should be coordinated with local, state and regional health departments, and undertaken in BSL -2 or -3 laboratories<sup>3</sup>. Isolates are submitted to the laboratory response network (LRN) for confirmatory testing. The FBI will coordinate collection of evidence and delivery of forensic specimens to FBI or Department of Defense laboratories.

### c. Transport requirements

Specimen packaging and transport must be coordinated with local, state and regional health departments, and the FBI. A chain of custody document should accompany the specimen from the moment of collection. For specific instructions, contact the **Bioterrorism Emergency Number at the CDC Emergency Response Office, 770/488-7100**. Advance planning may include identification of appropriate packaging materials and transport media in collaboration with the clinical laboratory at individual facilities.

## 6. Patient, Visitor, and Public Information

Fact sheets for distribution should be prepared, including a clear description of symptoms of tularemia, and instructions to report for evaluation and care if such symptoms are recognized. The difference between prophylactic antimicrobial therapy and treatment of an actual infection should be clarified. Decontamination by showering thoroughly with soap and water for persons with a known exposure can be recommended.

## F. Viral hemorrhagic fevers

### 1) Description of Agents / Syndrome

#### a. Etiology

Viral hemorrhagic fevers (VHF) are a mixed group of syndromes caused by viruses including representatives of the families Filoviridae (e.g., ebola and marburg), Arenaviridae (e.g., Lassa fever), and Bunyviridae (e.g., Crimean-Congo hemorrhagic fever). Each causes a febrile syndrome characterized by hemorrhagic complications, but mortality rates, incubation periods and susceptibility to antiviral therapy vary depending on the etiologic agent. These organisms pose a BT threat due to their potential to cause severe morbidity and because transmission can occur from person to person<sup>17 18 19</sup>.

- b. Clinical features  
Acute clinical symptoms of VHF resemble other acute viral illnesses, such as influenza, with headache, myalgia, and fever. Affected patients develop petechiae, mucosal bleeding (epistaxis, gingival bleeding, gastrointestinal bleeding), capillary leakage and hypovolemic shock<sup>17</sup>.
- c. Modes of transmission  
VHF is transmitted by percutaneous or mucosal exposure to infectious body substances. Potentially infectious body substances include respiratory secretions, saliva, blood, vomitus, stool, semen, and sweat. Transmission is mostly due to direct contact and droplet exposures, though limited animal studies have shown that airborne transmission can be engineered using a fine aerosol<sup>17 18</sup>.
- d. Incubation period  
The incubation period varies by virus type and ranges from 2-21 days<sup>17</sup>.
- e. Period of communicability  
VHF patients are most communicable during late stage disease, when individuals are most likely to manifest hemorrhagic complications.

## 2. Preventive Measures

- a. Vaccine availability  
Neither vaccines nor post exposure prophylaxis are currently available for VHF<sup>18</sup>.
- b. Immunization recommendations  
Vaccination does not currently exist for VHF.

## 3. Infection Control Practices for Patient Management

Patients with suspected or confirmed VHF should be managed according to current guidelines. Recommendations for specific therapy are beyond the scope of this document. For up-to-date information and recommendations for therapy, contact the CDC or state health department.

### a. Isolation precautions

VHF is transmitted by percutaneous or mucosal exposure to infectious body substances. Potentially infectious body substances include respiratory secretions, saliva, blood, vomitus, stool, semen, and sweat. Transmission is mostly due to direct contact and droplet exposures, though limited animal studies have shown that airborne transmission can be engineered using a fine aerosol<sup>17 18</sup>.

For patients with suspected or confirmed VHF, both Droplet and Contact Precautions should be used in addition to Standard Precautions.

- Droplet Precautions require healthcare providers and others to wear a surgical-type mask when within 3 feet of the infected patient. Based on local policy, some healthcare facilities require a mask be worn to enter the room of a patient on Droplet Precautions.
  - Contact precautions require healthcare providers and others to:
    - Wear clean gloves upon entry into patient room.
    - Wear gown for all patient contact and for all contact with the patient's environment. Based on local policy, some healthcare facilities require a gown be worn to enter the room of a patient on Contact Precautions. Gown must be removed before leaving the patient's room.
    - Wash hands using an antimicrobial agent<sup>5</sup>.
- b. Patient placement  
Patient placement recommendations for Droplet and Contact Precautions include:
- Placing infected patient in a private room.
  - Cohort symptomatic patients with similar symptoms and the same presumptive diagnosis (i.e. VHF) when private rooms are not available.
  - Maintaining spatial separation of at least 3 feet between infected patients and others when cohorting is not achievable.
  - Avoiding placement of patient requiring Droplet Precautions in the same room with an immunocompromised patient.
- Special air handling is not necessary and doors may remain open.
- c. Patient transport
- Limit the movement and transport of patients to essential medical purposes only.
  - Minimize dispersal of droplets by placing a surgical-type mask on the patient when transport is necessary<sup>5,6</sup>.

d. Cleaning, disinfection, and sterilization of equipment and environment

Principles of Standard Precautions should be generally applied to the management of patient-care equipment and for environmental control (see Section I for more detail)<sup>5</sup>

The germicidal agents of choice when VHF is known or suspected include chlorine-based or phenolics<sup>11</sup>.

e. Discharge management

Patients with VHF may be discharged home when clinically able following appropriate consultation with public health authorities. However, depending on the etiologic agent, some patients may shed virus in semen for a protracted time after clinical recovery.

f. Post-mortem care

Droplet and Contact Precautions should be used for post-mortem care<sup>5</sup>. Post mortem examinations should not be done unless epidemiologically indicated. If done, special precautions should be performed to prevent exposure to patient body fluids. Cremation is preferable for the remains of VHF victims.

#### 4. Post Exposure Management

a. Decontamination of patients / environment

Following an intentional exposure, the risk for contracting of VHF from the contaminated clothing of exposed persons is unknown. Items soiled with infectious body substances, e.g., vomitus, may pose a transmission risk and should be handled appropriately. The plan for decontaminating patients may include:

- Instructing patients to remove contaminated clothing and store in labeled, plastic bags. Clothing may be considered to be evidence and should be safely stored for investigative purposes with an associated chain of custody document. (This document can be obtained from the FBI. See Appendix 4 for an example)
- Handling clothing minimally to avoid agitation.
- Instructing personnel regarding Standard Precautions and wearing appropriate barriers (e.g. gloves, gown, and respiratory protection) when handling contaminated clothing or other contaminated fomites.
- Instructing patients to shower thoroughly with soap and water to include the shampooing of hair (and providing assistance if necessary).
- The germicidal agents of choice for decontamination of environmental surfaces when VHF is known or suspected include EPA-registered, healthcare-facility-approved chlorine based products or phenolics<sup>11</sup>.

b. Prophylaxis and post-exposure immunization

Following suspected exposure, individuals should be instructed to monitor themselves for development of flu-like symptoms or fever during the incubation period (i.e., for 21 days after exposure) and immediately report to designated care sites selected to minimize the risk of exposure to others<sup>18</sup>.

Facilities should ensure that policies are in place to identify and manage health care workers exposed to infectious patients.

c. Triage and management of large scale exposures / potential exposures

Advance planning must involve ED, ICU and nursing staff, and IC to identify sites within the facility best suited to providing appropriate infection control capability. See Section I for additional general details regarding planning for large-scale patient management.

#### 5. Laboratory Support and Confirmation

a. Diagnostic samples to obtain

For decisions regarding obtaining and processing diagnostic specimens, contact local, state, and regional laboratory authorities or CDC.

b. Laboratory selection

Handling of clinical specimens must be coordinated with state health departments and CDC. Testing can be performed only in BSL - 4 laboratories<sup>11</sup>. The FBI will coordinate collection of evidence and delivery of forensic specimens to FBI or Department of Defense laboratories.

c. Transport requirements

Specimen packaging and transport must be coordinated with local, state and regional health departments, and the FBI. A chain of custody document should accompany the specimen from the

moment of collection. For specific instructions, contact the **Bioterrorism Emergency Number at the CDC Emergency Response Office, 770/488-7100**. Advance planning may include identification of appropriate packaging materials and transport media in collaboration with the clinical laboratory at individual facilities.

**6. Patient, Visitor, and Public Information**

Fact sheets for distribution should be prepared, including a clear description of symptoms and where to report for evaluation and care if such symptoms are recognized. Details about the type and duration of isolation should be provided. Extreme measures such as burning or boiling potentially exposed materials should be discouraged.

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37. CDC. Guidelines for laundry in healthcare facilities. February 5, 2002.  
[www.cdc.gov/od/ohs/biosfty/laundry.htm](http://www.cdc.gov/od/ohs/biosfty/laundry.htm)

## Appendix 1: Federal Bureau of Investigation (FBI) Field Offices

Revised FBI 2/7/02

FIELD OFFICE	STREET ADDRESS	ZIP CODE	TELEPHONE No.
Albany, NY	200 McCarty Avenue	12209	518/465-7551
Albuquerque, NM	415 Silver Avenue, SW, Suite 300	87102	505/224-2000
Anchorage, AK	101 East 6 <sup>th</sup> Avenue	99501	907/258-5322
Atlanta, GA	2635 Century Parkway, NE; Suite 400	30345	404/679-9000
Baltimore, MD	7142 Ambassador Road	21244	410/265-8080
Birmingham, AL	2121 8 <sup>th</sup> Avenue, N., Room 1400	35203	205/326-6166
Boston, MA	One Center Plaza, Suite 600	02108	617/742-5533
Buffalo, NY	One FBI Plaza	14202	716-856-7800
Charlotte, NC	400 S. Tryon Street, Suite 900 Wachovia Blvd	28285	704/377-9200
Chicago, IL	219 S. Dearborn Street, Room 905	60604	312/431-1333
Cincinnati, OH	550 Main Street, Room 9000	45202	513/421-4310
Cleveland, OH	1240 East 9 <sup>th</sup> Street, Room 3005	44199	216/522-1400
Columbia, SC	151 Westpark Blvd.	29210	803/551-4200
Dallas, TX	1801 N. Lamar, Suite 300	75202	214/720-2200
Denver, CO	1961 Stout Street, Room 1823, FOB	80294	303/629-7171
Detroit, MI	477 Michigan Avenue, P.V. McNamara FOB, 26 <sup>th</sup> Floor	48226	313/965-2323
El Paso, TX	Suite 3000, 660 South Mesa Hills Drive	79912	915/832-5000
Honolulu, HI	300 Ala Moana Blvd., Room 4-230, Kalaniana'ole FOB	96850	808/512-4300
Houston, TX	2500 East T.C. Jester	77008	713/693-5000
Indianapolis, IN	575 N. Pennsylvania St., Room 679, FOB	46204	317/639-3301
Jackson, MS	100 W. Capitol Street, Suite 1553, FOB	39269	601/948-5000
Jacksonville, FL	7820 Arlington Expy, Suite 200	32211	904/721-1211
Kansas City, MO	1300 Summit Street	64105	816/221-6100 816/512-8200
Knoxville, TN	710 Locust Street, Suite 600	37902	423/544-0751
Las Vegas, NV	John Lawrence Bailey Bldg., 700 E. Charleston Blvd.	89104	702/385-1281
Little Rock, AR	24 Shackelford West Blvd	72211	501/221-9100
Los Angeles, CA	11000 Wilshire Blvd., Suite 1700 FOB	90024	310/477-6565
Louisville, KY	600 Martin Luther King Jr. Pl., Room 500	40202	502/583-3941
Memphis, TN	225 North Humphreys Blvd., Suite 3000, Eagle Crest Bldg.	38120	901/747-4300
Miami, FL	16320 NW 2 <sup>nd</sup> Avenue, N. Miami Beach	33169	305/944-9101
Milwaukee, WI	330 E. Kilbourn Avenue, Suite 600	53202	414/276-4684
Minneapolis, MN	111 Washington Avenue South, Suite 1100	55401	612/376-3200
Mobile, AL	One St. Louis Street, 3 <sup>rd</sup> Floor, One St. Louis Centre	36602	334/438-3674
New Haven, CT	600 State Street	06511	203/777-6311
New Orleans, LA	2901 Leon C. Simon Dr	70126	504/522-4671
New York City, NY	26 Federal Plaza, 23 <sup>rd</sup> Floor	10278	212/384-1000
Newark, NJ	One Gateway Center, 22 <sup>nd</sup> Floor	07102	973/792-3000
Norfolk, VA	150 Corporate Blvd.	23502	757/455-0100
Oklahoma City, OK	3301 West Memorial Dr	73134	405/290-7770
Omaha, NE	10755 Burt Street	68114	402/493-8688
Philadelphia, PA	600 Arch Street, 8 <sup>th</sup> Floor; William J. Green, Jr., FOB	19106	215/418-4000
Phoenix, AZ	201 E. Indianola Avenue, Suite 400	85012	602/279-5511
Pittsburgh, PA	3311 East Carson St	15203	412/432-4000
Portland, OR	1500 S.W. 1 <sup>st</sup> Avenue, Suite 400; Crown Plaza Bldg.	97201	503/224-4181
Richmond, VA	1970 E. Parham Rd	23228	804/261-1044
Sacramento, CA	4500 Orange Grove Avenue	95841	916/481-9110
Salt Lake City, UT	257 East 200 South, Suite 1200	84111	801/579-1400
San Antonio, TX	615 E. Houston Street, Suite 200; US Post Office & Courthouse Bldg.	78205	210/225-6741
San Diego, CA	9797 Aero Drive	92123	619/565-1255
San Francisco, CA	450 Golden Gate Avenue, 13 <sup>th</sup> Floor	94102	415/553-7400
San Juan, PR	150 Carlos Chardon, Room 526; U.S. Federal Building, Hato Rey, PR	00918	787/754-6000
Seattle, WA	1110 Third Avenue	98174	206/622-0460
Springfield, IL	400 W. Monroe Street, Suite 400	62704	217/522-9675
St. Louis, Mo	2222 Market Street	63103	314/231-4324
Tampa, FL	500 E. Zack Street, Suite 610 FOB	33602	813/273-4566
Washington, D.C.	601 4 <sup>th</sup> Street, NW	20535	202/278-2000

Appendix 2: **Telephone Directory of State and Territorial Public Health Directors**  
Revised February 2002

**Alabama**

Alabama Department of Public Health  
State Health Officer  
Phone No. (334) 206-5200  
Fax No. (334) 206-2008

**Alaska**

Alaska Department of Health and Social  
Services  
Division of Public Health  
State Epidemiologist  
Phone No. (907) 269-8000  
Fax No. (907) 562-7802

**American Samoa**

Department of Health  
American Samoa Government  
Director  
Phone No. (684) 633-4606  
Fax No. (684) 633-5379

**Arizona**

Arizona Department of Health Services  
State Epidemiologist  
Phone No. (602) 230-5876  
Fax No. (602) 230-5959

**Arkansas**

Arkansas Department of Health  
State Epidemiologist  
Phone No. (501) 661-2597  
Fax No. (501) 280-4090

**California**

California Department of Health Services  
State Health Officer-Director  
Phone No. (916) 657-1425  
Fax No. (916) 657-5183

**Colorado**

Colorado Department of Public Health &  
Environment  
State Epidemiologist  
Phone No. (303) 692-2662  
Fax No. (303) 691-7702

**Connecticut**

Connecticut Department of Public Health  
State Epidemiologist  
Phone No. (860) 509-7995  
Fax No. (860) 509-7910

**Delaware**

Division of Public Health  
Delaware Department of Health and Social  
Services  
State Epidemiologist  
Phone No. (302) 739-5617  
Fax No. (302) 739-6617

**District of Columbia**

DC Department of Health  
State Epidemiologist  
Phone No. (202) 442-9366  
Fax No. (202) 442-8060

**Florida**

Florida Department of Health  
State Epidemiologist  
Phone No. (850) 245-4401  
Fax No. (850) 922-9299

**Georgia**

Division of Public Health  
Georgia Department of Human Resources  
State Epidemiologist  
Phone No. (404) 657-2588  
Fax No. (404) 657-7517

**Guam**

Department of Public Health & Social  
Services  
Government of Guam  
Director of Health  
Phone No. (671) 735-7102  
Fax No. (671) 734-5910

**Hawaii**

Hawaii Department of Health  
State Epidemiologist  
Phone No. (808) 586-8357  
Fax No. (808) 586-8347

**Idaho**

Division of Health  
Idaho Department of Health and Welfare  
State Epidemiologist  
Phone No. (208) 334-5939  
Fax No. (208) 332--7307

**Illinois**

Illinois Department of Public Health  
State Epidemiologist  
Phone No. (217) 785-7165  
Fax No. (217) 557-4049

**Indiana**

Indiana State Department of Health  
State Epidemiologist  
Phone No. (317) 233-7807  
Fax No. (317) 233-7378

**Iowa**

Iowa Department of Public Health  
State Epidemiologist  
Phone No. (515) 281-4941  
Fax No. (515) 281-4958

**Kansas**

Kansas Department of Health and  
Environment  
State Epidemiologist  
Phone No. (785) 296-6536  
Fax No. (785) 296-3775

**Kentucky**

Kentucky Cabinet for Health Services  
Department for Public Health  
State Epidemiologist  
Phone No. (502) 564-7243  
Fax No. (502) 564-0542

**Louisiana**

Louisiana Department of Health and  
Hospitals  
State Epidemiologist  
Phone No. (504) 568-5005  
Fax No. (504) 568-5006

**Maine**

Maine Department of Human Services  
Bureau of Health  
State Epidemiologist  
Phone No. (207) 287-5301  
Fax No. (207) 287-8186

**Mariana Islands**

Department of Public Health &  
Environmental Services  
Commonwealth of the Northern Mariana  
Islands  
Secretary of Health and Environmental  
Services  
Phone No. (670) 234-8950  
Fax No. (670) 234-8930

**Marshall Islands**

Republic of the Marshall Islands  
Majuro Hospital  
Minister of Health & Environmental  
Services  
Phone No. (692) 625-3355  
Fax No. (692) 625-3432

**Maryland**

Maryland Dept of Health and Mental  
Hygiene  
State Epidemiologist  
Phone No. (410) 767-6031  
Fax No. (410) 669-4215

**Massachusetts**

Massachusetts Department of Public Health  
State Epidemiologist  
Phone No. (617) 983-6880  
Fax No. (617) 983-6840

**Michigan**

Michigan Department of Community Health  
State Epidemiologist  
Phone No. (517) 335-8900  
Fax No. (517) 335-9476

**Micronesia**

Department of Health Services  
FSM National Government  
Secretary of Health  
Phone No. (691) 320-2619  
Fax No. (691) 320-5263

**Minnesota**

Minnesota Department of Health  
State Epidemiologist  
Phone No. (612) 676-5414  
Fax No. (612) 676-5743

**Mississippi**

Mississippi State Department of Health  
State Epidemiologist  
Phone No. (601) 576-7725  
Fax No. (601) 576-7497

**Missouri**

Missouri Department of Health  
State Epidemiologist  
Phone No. (573) 751-6128  
Fax No. (573) 526-4102

**Montana**

Montana Department of Public Health &  
Human Services  
State Epidemiologist  
Phone No. (406) 444-0273  
Fax No. (406) 444-2606

**Nebraska**

Nebraska Health and Human Services  
System  
State Epidemiologist  
Phone No. (402) 471-0550  
Fax No. (402) 471-6346

**Nevada**

Nevada State Department of Human  
Resources  
State Health Division  
State Epidemiologist  
Phone No. (702) 687-4800  
Fax No. (702) 687-3859

**New Hampshire**

New Hampshire Department of Health &  
Human Services  
State Epidemiologist  
Phone No. (603) 271-4477  
Fax No. (603) 271-0545

**New Jersey**

New Jersey Department of Health & Senior  
Services  
State Epidemiologist  
Phone No. (609) 588-7463  
Fax No. (609) 588-7431

**New Mexico**

New Mexico Department of Health  
State Epidemiologist  
Phone No. (505) 827-0006  
Fax No. (505) 827-2530

**New York**

New York State Department of Health  
  
State Epidemiologist  
Phone No. (518) 474-1055  
Fax No. (518) 473-0013

**North Carolina**

NC Department of Health and Human  
Services  
State Epidemiologist  
Phone No. (919) 715-6733  
Fax No. (919) 733-0195

**North Dakota**

North Dakota Department of Health  
State Epidemiologist  
Phone No. (701) 328-2378  
Fax No. (701) 328-2499

**Ohio**

Ohio Department of Health  
State Epidemiologist  
Phone No. (614) 466-0265  
Fax No. (614) 728-4279

**Oklahoma**

Oklahoma State Department of Health  
State Epidemiologist  
Phone No. (405) 271-3272  
Fax No. (405) 271-6680

**Oregon**

Oregon Health Division  
Oregon Department of Human Resources  
State Epidemiologist  
Phone No. (503) 731-4024  
Fax No. (503) 731-4082

**Palau, Republic of**

Ministry of Health  
Republic of Palau  
Minister of Health  
Phone No. (680) 488-2813  
Fax No. (680) 488-1211

**Pennsylvania**

Pennsylvania Department of Health  
State Epidemiologist  
Phone No. (717) 787-3350  
Fax No. (717) 772-6975

**Puerto Rico**

Puerto Rico Department of Health  
Secretary of Health  
Phone No. (787) 274-7602  
Fax No. (787) 250-6547

**Rhode Island**

Rhode Island Department of Health  
State Epidemiologist  
Phone No. (401) 222-2577  
Fax No. (401) 222-2488

**South Carolina**

SC Department of Health and  
Environmental Control  
State Epidemiologist  
Phone No. (803) 898-0861  
Fax No. (803) 898-0897

**South Dakota**

South Dakota State Department of Health  
State Epidemiologist  
Phone No. (605) 773-3361  
Fax No. (605) 773-5683

**Tennessee**

Tennessee Department of Health  
State Epidemiologist  
Phone No. (615) 741-7247  
Fax No. (615) 741-3857

**Texas**

Texas Department of Health  
State Epidemiologist  
Phone No. (512) 458-7268  
Fax No. (512) 458-7689

**Utah**

Utah Department of Health  
State Epidemiologist  
Phone No. (801) 538-6191  
Fax No. (801) 538-9923

**Vermont**

Vermont Department of Health  
State Epidemiologist  
Phone No. (802) 863-7240  
Fax No. (802) 865-7701

**Virgin Islands**

Virgin Islands Department of Health  
Commissioner of Health  
Phone No. (340) 774-0117  
Fax No. (340) 777-4001

**Virginia**

Virginia Health Department  
State Epidemiologist  
Phone No. (804) 786-6029  
Fax No. (804) 786-1076

**Washington**

Washington State Department of Health  
State Epidemiologist  
Phone No. (206) 361-2831  
Fax No. (206) 361-2930

**West Virginia**

West Virginia Department of Health &  
Human Resources  
Bureau for Public Health  
State Epidemiologist  
Phone No. (304) 558-5358  
Fax No. (304) 558-6335

**Wisconsin**

Wisconsin Department of Health and Family  
Services  
Division of Health State Epidemiologist  
Phone No. (608) 267-9006  
Fax No. (608) 267-9003

**Wyoming**

Wyoming Department of Health  
State Epidemiologist  
Phone No. (307) 777-5596  
Bioterrorism Phone No. (307) 777-7530  
Fax No. (307) 777-5573

## Appendix 3: CDC's Biological Diseases/Agents Listing

### Category A Diseases/Agents

The U.S. public health system and primary healthcare providers must be prepared to address varied biological agents, including pathogens that are rarely seen in the United States. High-priority agents include organisms that pose a risk to national security because they:

- Can be easily disseminated or transmitted from person to person
- Cause high mortality, and have the potential for major public health impact
- Might cause public panic and social disruption
- Require special action for public health preparedness.

### Category B Diseases/Agents

Second highest priority agents include those that are:

- Moderately easy to disseminate
- Cause moderate morbidity and low mortality
- Require specific enhancements of CDC's diagnostic capacity and enhanced disease surveillance

### Category C Diseases/Agents

Third highest priority agents include emerging pathogens that could be engineered for mass dissemination in the future because

- Availability
- Ease of production and dissemination
- Potential for high morbidity and mortality and major health impact

#### Category A Diseases/Agents

Anthrax (*Bacillus anthracis*)  
Botulism (*Clostridium botulinum* toxin)  
Plague (*Yersinia pestis*)  
Smallpox (*Variola major*)  
Tularemia (*Francisella tularensis*)  
Viral hemorrhagic fevers

#### Category B Diseases/Agents

Brucellosis (*Brucella* species)  
Epsilon toxin of *Clostridium perfringens*  
Glanders (*Burkholderia mallei*)  
Q fever (*Coxiella burnetti*)  
Ricin toxin from *Ricinus communis* (castor beans)  
*Staphylococcus enterotoxin B*

#### Category C Diseases/Agents

Hantaviruses  
Multidrug-resistant tuberculosis  
Nipah virus  
Tickborne encephalitis viruses  
Tickborne hemorrhagic fever viruses  
Yellow fever

Appendix 4: Chain of Custody Form (Example)

**LABORATORY RESPONSE NETWORK  
CHAIN OF CUSTODY**

**Case ID:** \_\_\_\_\_

Received By (print/sign):	Date:	Time:
Organization:		
Reason:		
Received By (print/sign):	Date:	Time:
Organization:		
Reason:		
Received By (print/sign):	Date:	Time:
Organization:		
Reason:		
Received By (print/sign):	Date:	Time:
Organization:		
Reason:		
Received By (print/sign):	Date:	Time:
Organization:		
Reason:		
Received By (print/sign):	Date:	Time:
Organization:		
Reason:		
Received By (print/sign):	Date:	Time:
Organization:		
Reason:		

Refer to Guidance for Proper Use of Chain of Custody Forms. Attach additional pages as required.

LRN Form: 0002

lrrn.cp.chain.100201f

10/2/01

## Appendix 5: Smallpox Immunization Procedure

The current vaccine is no longer licensed because of required changes in the diluent preparation for vaccine reconstitution. These changes in diluent do no effect the ability of the vaccine to produce immunity to smallpox. However, because the vaccine is no longer licensed it must be labeled as an Investigational New Drug (IND).

Dryvax<sup>®</sup> smallpox vaccine was manufactured as a lyophilized preparation of live vaccinia virus. The vaccine was prepared from calf lymph with a seed virus derived form the New York City Board of Health strain of vaccinia. The calf lymph is purified, concentrated and dried by lyophilization. The reconstituted vaccine contains approximately 100-million living vaccinia viruses (approximately 10<sup>8</sup> PFU) per mL. Recent testing has shown that the current vaccine has retained adequate potency during the extended storage period since its production.

### Reconstitution of vaccine with commercially packaged diluent

Diluent is required for the reconstitution of the smallpox vaccine prior to administration. The previously licensed diluent for use with smallpox vaccine is no longer available. The diluent that will be utilized in this protocol is similar in formulation to the licensed diluent. **This change in formulation does not affect the ability of the vaccine to produce immunity to smallpox.**

### Directions for reconstitution:

- 1) Remove vaccine vial from refrigerated storage, allow vial to come to room temperature.
- 2) Lift up tab of aluminum seal on vaccine vial. **DO NOT BREAK OFF OR TEAR DOWN TAB.**
- 3) Wipe off vial stopper with an alcohol pad and allow to dry.
- 4) Place vaccine vial upright on a hard, flat surface.
- 5) Remove cap from the pre-filled syringe. Take a 1.0 cc syringe (e.g., tuberculin syringe) and withdraw 0.25 mL from the opening in the pre-filled diluent syringe. Inject the 0.25 mL of the diluent in the 1.0 syringe into the vaccine vial to reconstitute the vaccine.
- 6) Withdraw the needle and syringe and discard in the appropriate biohazard sharps container.
- 7) Allow the vaccine vial to stand undisturbed for 3-5 minutes. Then, if necessary, swirl vial gently to effect complete reconstitution.
- 8) In the space provided on the vaccine vial label, record the date and time that the diluent vial was entered for the purpose of vaccine reconstitution. The vaccine is now ready for use.
- 9) **Reconstituted vaccine may be used for 3 months if stored at 2-8<sup>0</sup> C when not in actual use.**

Note: The vaccine vial, its stopper, the diluent syringe the needle used for diluent reconstitution of the vaccine, and any gauze or cotton that came in contact with the vaccine should be burned, boiled or autoclaved **before final disposal.**

### **Administration of reconstituted vaccine**

- 1) Gloves should be worn when handling opened vaccine vials, used bifurcated needles, administrating vaccine, or evaluating a vaccination site. Care should be taken to prevent

bacterial contamination of the opened vaccine vial or vaccination site, or self-inoculation of virus to other sites (see Recognition of Adverse Events, below).

- 2) Remove aluminum seal from vaccine vial by pulling down “tear off” tab.
- 3) Remove rubber stopper from vaccine vial and place in sterile container (stopper will be used to recap vials containing vaccine).
- 4) The site of vaccination should be one that is easily accessible for vaccination and evaluation of vaccine take on post-vaccination day 7. The outer aspect of the **upper right arm** over the insertion of the deltoid muscle should be used as the standard vaccine site in order to prevent confusion with the vaccination site from a previous vaccination.
- 5) **Cleaning the vaccination site is not necessary unless grossly contaminated.** If cleaning is deemed necessary, clean the site with alcohol, **let dry thoroughly.** It is **essential** the site be allowed to dry thoroughly in order to avoid inactivation of the vaccine deposited on the skin.
- 6) Dip the bifurcated point of a **sterile** bifurcated needle into the vial of reconstituted vaccine and withdraw the needle perpendicular to the floor.
- 7) Do not redip the needle into the vaccine vial if the needle has touched the skin.
- 8) Holding the skin of the upper arm taut, the vaccinator should place his/her wrist firmly on the arm. Holding the needles at a 90<sup>0</sup> angle (perpendicular) to the skin, apply **15 up-and-down (perpendicular) strokes** rapidly within a 5 mm diameter area. The strokes should be made rapidly, and be sufficiently vigorous to illicit a **trace** of blood at the vaccination site. If a trace of blood does not appear, the strokes have not been sufficiently vigorous and the procedures should be repeated.
- 9) Vaccinia virus may be recovered from the site of the vaccination beginning at the time of development of a papule (2-5 days post-vaccination) until the scab separates from the skin (14-21 days post-vaccination). The vaccination site can be covered with a porous bandage such as gauze until the scab has separated and the underlying skin has healed, in order to prevent contact transmission of the virus to unvaccinated persons (people with contraindications to vaccination) or inadvertent inoculation of another body site. The site should be kept dry, however normal bathing can occur.
- 10) Dispose of the bifurcated needle in a medical waste sharps container or re-sterilize per directions given below for sterilization and re-use of bifurcated needles.
- 11) If vaccine is to be stored for subsequent use, recap vial with the **sterile** rubber stopper and store capped vial at 2-8<sup>0</sup> C.

Note: If unsterilized needles are being used or if needles are in short supply and you have to clean and re-sterilize, please see CDC Recommendations for Handling, Cleaning, and Sterilizing Bifurcated Immunization Needles in Healthcare Settings before beginning vaccination procedures<sup>34</sup>.

## Appendix 6: **Websites Relevant to Bioterrorism Readiness**

<http://www.bt.cdc.gov>

<http://www.apic.org/bioterror>

<http://www.bioterrorism.slu.edu/index.html>

<http://www.cdc.gov/ncidod/diseases/bioterr.htm>

<http://www.cdc.gov/ncidod/dbmd/anthrax.htm>

<http://www.cdc.gov/ncidod/diseases/foodborn/botu.htm>

<http://www.cdc.gov/ncidod/srp/drugservice/immuodrugs.htm>

<http://www.nbc-med.org/SiteContent/HomePage/WhatsNew/anthraxinfo/Anthraxinfo3.htm>

<http://www.defenselink.mil/specials/Anthrax/anth.htm>

[http://www.hopkins-id.edu/bioterr/bioterr\\_1.html](http://www.hopkins-id.edu/bioterr/bioterr_1.html)

<http://www.who.int/emc-documents/zoonoses/docs/whoemczdi986.html>

<http://www.hopkins-biodefense.org>

<http://www.nfdma.com/>

<http://www.nfda.org/>

Add URL for dermatology slides

<http://www.apicelearn.org/>

<http://www.epa.gov/ceppo/pubs/onepage.pdf>

### **Other sources of information:**

USAMRIID 1-301-619-2833

AMERICAN RED CROSS 1-877-272-7337

US PUBLIC HEALTH SERVICE 1-800-872-6367

DOMESTIC PREPAREDNESS INFORMATION LINE 1-800-368-6498

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ASSOCIATION FOR PROFESSIONALS IN  
INFECTION CONTROL AND EPIDEMIOLOGY, INC.



### Appendix 7: Mass Casualty Disaster Plan Checklist: A Template for Healthcare Facilities

Emergency management for healthcare facilities includes elements of mitigation, preparedness, response, and recovery. These plans should take into account such factors as the appropriateness and adequacy of physical facilities, organizational structures, human resources, and communication systems.

The checklist is designed to provide facilities with questions that stimulate assessment and dialogue with key stakeholders both within the facilities as well as at the local level and beyond. Utilizing this checklist process, the Infection Control Practitioner can assist in identifying both thought and action leaders. Although the checklist divides the assessment into sections, many of them overlap and may be grouped in differing manners according to the organization and operation of individual facilities. Although comprehensive, the facility assessment will undoubtedly identify new questions and considerations.

Key players should include the city or community agency that deals with community emergencies. This agency may be known as the Emergency Management Agency (EMA). First responder groups are also essential and they are named Emergency Medical Services (EMS) in this document.

1. FOUNDATIONAL CONSIDERATIONS:	Assessment	Action Plan	Accountability Contact
A. Does the facility have a disaster plan?			
B. Is there a disaster planning committee? Is it multidisciplinary and include administrative members?			
C. Is there currently a collaborative relationship with the local Emergency Medical Services (EMS) Agencies, local Emergency Management Agency and the local Health Department as part of the planning operation?			
D. Does the plan detail actions to be taken for both internal and external disasters?			
E. Does the plan detail how it links with the local EMS Agencies and local Emergency Management Agency?			

	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
F. Is the plan widely distributed and readily available throughout the hospital/healthcare facility? Distribution should include hard copies of the plan or an automated method that is readily available to all staff members.			

<b>2. <u>SURVEILLANCE</u></b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Does the facility currently have a baseline established for numbers of patients seen in the facility Emergency Department, outpatient clinics, or via direct admission, stratified according to clinical symptoms?			
B. Is there currently a process to evaluate and track 100% of all microbiology results and stratify according to organism?			
C. Does a process exist to notify infection control 24 hours a day/ 7 days a week?			
D. Does the plan specify the number and location of isolation or protective environment rooms? Are their locations clearly identified in a document readily available to the disaster coordinator or command team? Are isolation facilities monitored to insure adequate airflow?			

<b>3. IDENTIFICATION OF AUTHORIZED PERSONNEL:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Is there an individual designated as a disaster coordinator on a 24-hour per day basis?			
B. Has the hospital/healthcare facility designated a physician medical commander who will be responsible for the hospital's medical responses during the time the plan is activated?			
C. Have other key position holders who have a role in disaster management been identified? This should be identified in the disaster plan. See #25 Incident Command for a guide to an Incident Command structure			

	Assessment	Action Plan	Accountability Contact
D. Is a notification system in place that can alert personnel to a potential disaster situation?			
E. Does the plan include lines of authority, role responsibilities, and provide for succession?			
F. Are those who are expected to implement and use the plan familiar with it?			
G. Have job action sheets or role cards been developed for all personnel involved in disaster response?			
H. Does the plan designate how people will be identified within the hospital (e.g., hospital staff, outside supporting medical personnel, news media, clergy, visitors)?			
I. Can staff gain access to the hospital/healthcare facility when called back on duty?			
J. Is there designation of assembly points to which all personnel report and does it change if staff are involved in patient care or have administrative responsibilities?			

<b>4. ACTIVATION OF THE PLAN:</b>		Assessment	Action Plan	Accountability Contact
A. Does the plan specify the circumstances under which the plan can be activated?				
B. Does the plan stipulate the position holder who has the authority to activate/deactivate the plan including nights, weekends, and holidays?				
C. Have activation stages been established and roles outlined with each stage?				
Alert	Disaster situation possible: there is an increased level of preparedness			
Stand by	Disaster situation probable: available for immediate deployment			
Call out	Disaster situation exists: there is deployment			
Stand down	Disaster situation is contained			

<b>5. ALERTING SYSTEM:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Does the plan provide for activation within 1-2 hours during normal as well as off hours including weekends and holidays?			
B. Does the plan specify how notification within the hospital/healthcare facility will be carried out?			
C. Does the plan specify the chain of command to notify internal staff and appropriate external personnel indicating the status of the hospital/healthcare facility?			
D. Does the plan detail responsibility to initiate a system for recalling staff back to duty?			
E. Does the plan provide for alternative systems of notification that considers people, equipment, and procedures?			
F. Does the plan provide mechanisms to ration staffing according to their skill levels and availability?			

<b>6. RESPONSE:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Has the hospital/healthcare facility developed internal disaster plans for internal emergencies?			
B. Has the hospital/healthcare facility developed internal plans to respond to an external disaster? Does this plan indicate how the hospital will respond to an abnormally large (greater than >10% of the licensed beds) influx of patients?			
C. Has the hospital/healthcare facility developed plans indicating how the hospital will be able to supply resources and personnel in response to an external disaster? Is there an evaluation of current supply and equipment levels that are kept on hand during normal facility operation?			
D. Have provisions been made for activating a hospital disaster medical team in response to both internal and external disasters? Can this team be composed of physicians, nurses, and respiratory therapists?			

	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
E. Does the plan include procedures for incorporating and managing volunteers and unexpected medical services responders who want to help? Has risk management been involved to develop a process with the facility insurer to provide insurance, liability, and safety for volunteers?			
F. Has each department developed standard operating procedures to reflect how the department will continue to provide services in a timely and 24 hour manner? These services may include:			
1. Administrative			
2. Emergency			
3. Nursing			
4. Radiology			
5. Infection Control/Hospital Epidemiology			
6. Occupational Health			
7. Laboratory			
8. Pharmacy			
9. Critical Care			
10. Central Supply			
11. Maintenance and Engineering			
12. Biomedical Engineering			
13. Respiratory Therapy			
14. Security			
15. Food and Nutrition			
16. Housekeeping			
17. Social Services			
18. Pastoral Counseling			
19. Mortuary			
20. Physician services including Medicine and Surgery			

	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
G. In the Emergency Department section of the plan, are the following detailed?:			
1. Is there a separate entry to the Emergency Department for contaminated patients, if necessary?			
2. Is there a dedicated facility, area, or portable device for decontamination, if necessary?			
3. Is there a hot and cold water supply to the decontamination area?			
4. Can water run-off from the decontamination area be contained?			
5. Can the ventilation system in the Emergency Department be isolated from the rest of the facility, if necessary?			
6. Is a communication method established within the Emergency Department so communication can be established and maintained with the local EMS Agencies, Emergency Management Agency, Federal Bureau of Investigation, and the local Health Department?			
H. Has jurisdictional control been discussed and staff informed of the hierarchy in the event outside law enforcement assistance is requested or required?			

<b>7. HOSPITAL DISASTER CONTROL COMMAND CENTER:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Does the plan indicate where the hospital Disaster Control Command Center is to be located with preference given to an area away from the Emergency Department?			
B. Has an alternate location been determined?			
C. Have standard operating procedures been developed for the Command Center?			

	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
D. Do the procedures for the Command Center specify chain of command and communication channels for the key position holders within the Command Center? Key position holders should be determined at the initiation of the disaster plan. See Section 25 for additional help in determining roles.			
E. Is there provision for alternative communication arrangements in the event the hospital communication system fails or is overloaded?			
F. Have special communication networks been established and tested that will maintain communication between the facility and the local Emergency Management Agency?			
G. Have provisions been designated (e.g., space, equipment, communications) for extra people who may come to the hospital to provide services (e.g., volunteers and outside agencies) should assistance be requested by the local, or federal agencies responding for disaster assistance?			

<b>8. SECURITY</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Does the facility have the ability to lock down so entry and exit to all parts of the facility can be controlled? Has this process been tested?			
B. Have steps been taken to minimize and control points of access and egress in buildings and areas without utilization of lock down procedures?			
C. Is there a plan to control vehicular traffic and pedestrians?			
D. Have arrangements been made to meet and escort responding emergency service personnel?			
E. Does the facility have the ability to communicate with individuals immediately outside the facility in the event lock down is initiated?			

	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
F. Does the plan designate how people will be identified within the hospital (e.g., hospital staff, outside supporting medical personnel, news media, clergy, visitors)?			
G. Can staff gain access to the hospital/healthcare facility when called back on duty?			
H. Is there designation of assembly points to which all personnel report and does it change if staff are involved in patient care or have administrative responsibilities?			
I. Does the facility security plan recognize the extent of the security problems for the individual facility? These considerations include the uniqueness of the physical plant, geographic location, entrances, etc.			
J. Does the facility have an established process to credential healthcare workers from outside the individual network in order to facilitate safe and qualified patient care?			

<b>9. COMMUNICATIONS SYSTEMS:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Does the plan include provisions in the event that normal systems (e.g., telephone, facsimile, cellular phones, and paging) may be overloaded and rendered unserviceable during disasters?			
B. Is there provision for alternative communication arrangements in circumstances where the hospital communication system fails/overloads (e.g., unlisted numbers, pay phones, walkie-talkie sets)?			
C. Is there an organized runner, messenger system as back-up for communication system and power failures?			
D. Has a plan been developed to utilize runner personnel and have they been provided with schematic area layout maps showing key areas for disaster operations? Do these schematics currently exist and are readily available in hard copy?			

	Assessment	Action Plan	Accountability Contact
E. Has the hospital established communication networks with the local EMS Agency and Emergency Management Agency?			

<b>10. INTERNAL TRAFFIC FLOW AND CONTROL:</b>	Assessment	Action Plan	Accountability Contact
A. Have provisions been made for internal traffic that allow for movement of patients through corridors and staff movement throughout their areas?			
B. Have egress routes for patients and staff been provided for evacuation purposes?			
C. Will elevators be manned and controlled?			
D. Has elevator usage been prioritized (e.g., casualties, supplies)?			
E. Have movement routes been designated within the hospital and have traffic flow charts been prepared and posted?			

<b>11. EXTERNAL TRAFFIC FLOW AND CONTROL:</b>	Assessment	Action Plan	Accountability Contact
A. Have arrangements been made for both vehicular and people entrance to and exit from the hospital premises?			
B. Have the following been established:			
1) Uninterrupted flow of ambulances and other vehicles to casualty sorting areas or emergency room entrances			
2) Access and egress control of authorized vehicles carrying supplies and equipment to a dock area			
3) Authorized vehicle parking			
4) Direction for authorized personnel and visitors to proper entrances			
C. Have arrangements been made for police support in maintaining order in the vicinity of the facility?			
D. Does the plan include a method to impact the management of vehicle and people convergence upon the facility?			

<b>12. VISITORS:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Does the plan include mechanism to deal with anticipated increases in visitors and curious onlookers seeking to gain entrance during disasters?			
B. Has provision been made to establish waiting areas, with supportive counseling, away from the Emergency Department to minimize unwanted access to the relatives and friends of disaster victims?			
C. Has provision been made to handle medical and emotional situations resulting from the anxiety and shock of the disaster situation? This includes dealing with the worried well.			
D. Has a position holder been designated to control and take care of housekeeping issues that arise due to visitors?			

<b>13. MEDIA:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Do the media have a designated area?			
B. Has this been located as not to be in close proximity to the Emergency Department, Command Center, and waiting areas for relatives, family and friends?			
C. Has a position holder been designated to control and take care of the housekeeping needs of the media?			
D. Does the plan designate an internal spokesperson as a media contact?			
E. Does the plan determine the communication tree connecting the internal spokesperson with the external spokespersons for the Emergency Management Agency or other lead agency?			
F. Have provisions been made to identify the procedures for handling requests for information from the media? Have these provisions been made to work in concert with the State Health Department and the FBI?			
G. Have locations been identified for press briefings?			

14. RECEPTION OF CASUALTIES AND VICTIMS:	Assessment	Action Plan	Accountability Contact
A. Is there a precise plan of action whereby at short notice (within 1 hour), multiple casualties can be received and:			
1) Identified			
2) Triage			
3) Registered			
4) Treated in designated treatment areas			
5) Admitted or transferred			
6) Transported as needed			
B. In the confirmation notification of a disaster, does the plan provide for:			
1) Clearance of all non-emergency patients and visitors from the emergency department			
2) Cancellation of all elective admissions and elective surgery			
3) Determination of rapidly available or open beds			
4) Determination of space that can be converted to patient care areas			
5) Determination of number of patients who can be transferred or discharged			
C. Is the receiving and sorting area accessible and in close proximity to the areas of the hospital in which definitive care will be given?			
D. Is the reception area equipped with portable auxiliary power for illumination and other electrical equipment, or can power be supplied from hospital emergency power (generator) circuits?			
E. Does the reception area allow for retention, segregation and processing of incoming casualties?			
F. Are sufficient equipment, supplies, and apparatus available, in an organized manner, to permit prompt and efficient casualty movement?			
G. Can radiological monitors and radiation detection instruments be assigned to the area, if required?			

	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
H. Has provision been made for a large influx of casualties to include such factors as:			
1) Bed arrangements			
2) Personnel requirements			
3) Extra resources such as interpretive services, linen, pharmaceutical needs, dressings, etc?			
I. Are the medical records and admission departments organized to handle an influx of casualties			
J. Is there a system for retention and safe-keeping of personal items removed from casualties?			
K. Is there a plan to segregate/isolate disaster victims from the rest of the hospital if those victims are contaminated (e.g., hazardous materials)?			

<b>15.HOSPITAL EVACUATION:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Is there an organized discharge routine to handle large numbers of patients upon short notice?			
B. Is it detailed that a position holder is responsible for removal and control of patient records and documents?			

<b>16.RELOCATION OF PATIENTS AND STAFF:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Has provision been made for the movement of patients and staff to an immediate area of safe refuge within the hospital in the event the area must be evacuated or staff and patients relocated?			
B. Have agreements been made with other healthcare facilities for the relocation of patients should the facility be unable to support patient care?			
C. Have satellite locations been pre-determined and confirmed for the housing of patients and staff in the event of an evacuation?			

	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
D. Have transportation requirements been pre-designated for the movement of people?			
E. Have transportation resources been identified for patients that must be moved in hospital beds, on ventilators, and connected to specialized equipment?			
F. Has provision been made for the movement of patient records and documents?			
G. Is there a time sequence built into the plan designating appropriate moving times, assigned personnel including profession staff assignment, and priority of patients when moving to specific locations?			
H. Is there a sequence for patient transfers along pre-established routes?			
I. Are procedures established for the orderly disposition of patients to their homes, if applicable?			
J. Has provision been made for immediate refuge, care, and comfort for the patients and staff on the hospital grounds during inclement and winter weather?			

<b>17. HOSPITAL OUT OF COMMUNICATION OR CUT OFF FROM RESOURCES:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. In the event the hospital/healthcare facility is completely out of communication or cut off from resources, has the plan assigned position holders responsible for the following:			
1) Auxiliary power?			
2) Rationing of food and water?			
3) Waste and garbage disposal?			
4) Rest and rotation of staff?			
5) Rationing of medication and supplies			
6) Laundry			
7) Staff and patient morale			

	Assessment	Action Plan	Accountability Contact
B. Has consideration been given to utilization of patients and visitors to assist staff with duties?			

<b>18. EQUIPMENT, SERVICES, FACILITY, AND LABORATORY ASSESSMENT</b>	Assessment	Action Plan	Accountability Contact
A. Current number of the following pieces of equipment readily available within the facility:			
1) Ventilators (adult)			
2) Ventilators (pediatric)			
3) Ventilators (neonate)			
4) IV pumps			
5) IV poles			
6) Suction Machines			
7) Beds			
8) Stretchers			
9) Wheelchairs			
B. Current level of medical supplies maintained and readily available within the facility (days), particularly items that provide personal protection (i.e., masks, gloves, eye protection)			
C. Are local suppliers of medical equipment identified? Are there 24-hour contact numbers for these suppliers?			
D. Current level of linen maintained and readily available (days)			
E. Does the facility have the ability to shut down air intakes?			
F. What is the current Biosafety Level capability of the hospital microbiology laboratory?			
G. Are shipping containers readily available to safely transport specimens as requested by agencies such as the CDC, FBI?			
H. Does the plan include measures to insure the ability to provide handwashing/hand sanitizing measures?			

	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
I. Does the plan include measures to insure adequate amounts of personal protective equipment?			

<b>19. PHARMACEUTICALS:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. What is the current level of stock for the following pharmaceuticals:			
1) Ciprofloxacin, oral and intravenous			
2) Doxycycline, oral			
3) Bronchial dilators			
4) Other fluoroquinolones, oral and intravenous			
5) Bulk Atropine and Pralidoxime Chloride (2-PAM CL)?			
B. Does the pharmaceutical allocation plan make provision for prophylaxis of caregiving staff and their immediate family? Have these job categories been defined?			
C. Has the plan identified and established relationships with another hospital/healthcare facility outside the immediate region as a means to identify potential sources of needed pharmaceuticals as well as equipment, supplies, and staff.			
D. Does the plan identify pharmaceutical warehouses within the local area?			
E. Does the plan outline how pharmaceuticals can be procured, transported, and delivered to the facility while within a secure environment?			

<b>20. POST DISASTER RECOVERY:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Does the plan designate who will be in charge of recovery operations?			
B. Does the plan make provision for the following during recovery?			

	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
1) Documentation			
2) Financial matters			
3) Inventory and resupply			
4) Record preservation			
5) Cleanup			
6) Hazard removal and cleanup			
7) Salvage			
8) Garbage and waste disposal			
9) Utility and equipment servicing			
10) Physical plant restoration and renovation			
C. Does the plan address the following programs?			
1) Critical Incident Stress Debriefing Program			
2) Employee Assistance Program			
3) Group/Individual counseling services			
4) Family Support Program			

<b>21. EDUCATION AND TRAINING:</b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Does the plan specify who is responsible for the training program?			
B. Does the plan include methods for ramp up and extemporaneous training for new and altered roles?			
C. Do the hospital/healthcare facility departments have ongoing, mandatory disaster training programs?			
D. Has the hospital/healthcare facility considered adapting disaster procedures for application when dealing with routine procedures so personnel can become familiar with them?			
E. Does the program provide disaster education material at staff orientation to facilitate staff awareness?			
F. Does the program provide ongoing disaster education to facilitate staff awareness and currency of procedures?			

	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
G. Does the program have inter-organization joint training sessions that deal with common aspects of disaster response?			

<b>22. KEY INTERNAL PERSONNEL</b>	<u>TELEPHONE / BEEPER / MOBILE PHONE</u>
Facility CEO	
Administrator on call	
Emergency Department Physician, Chief	
Administrative Supervisor (House Manager)	
Director of Security	
Chief Nursing Officer	
Director of Engineering	
Director of Infection Control/Hospital Epidemiologist	
Chief of Microbiology/Laboratory Medical Director	
Chief of Medical Staff	
Risk Manager	
Public Relations	
Information Services/Communications	
Product Resources	
Director of Pharmacy	
Chaplain/Pastoral Counseling	
Social Services	
Ethics Officer	

<b>23. KEY EXTERNAL PERSONNEL/AGENCIES</b>	<b>TELEPHONE / BEEPER / MOBILE PHONE</b>
Local Emergency Management Agency	
Local EMS Agencies	
Local Health Department	
State Health Department	
Local Law Enforcement Agencies	
FBI Field Office	

	<b>TELEPHONE / BEEPER / MOBILE PHONE</b>
Metropolitan Medical Response System (MMRS) Coordinator	
National Disaster Medical System (NDMS) Contact	
CDC Emergency Response Office	
CDC Hospital Infections Program (Healthcare Quality)	
Other area hospitals	

**24. INCIDENT COMMAND SYSTEM**

If utilizing the Hospital Emergency Incident Command System (HEICS) as your framework for hierarchy in a disaster scenario, have you identified positions, not an individual(s), to fill each role?

HEICS Position	Current Position	Job Action Sheet Completed? Y or N
Incident Commander		
Public Information Officer		
Liaison Officer		
Safety and Security Officer		
Logistics Chief		
Planning Chief		
Finance Chief		
Operations Chief		
Medical Care Director		
Ancillary Services Director		
Human Services Director		
Medical Staff Director		

<b>25. <u>EXERCISING THE DISASTER PLANNING PROGRAM</u></b>	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
A. Does the hospital safety program conduct an annual exercise?			
B. Does the exercise ensure all key participants are familiar with the contents of the plan?			
C. Are specific aspects of the plan tested?			

	<b>Assessment</b>	<b>Action Plan</b>	<b>Accountability Contact</b>
D. Is a formal critique performed with results distributed to all key individuals and participating groups?			

The Center for the Study of Bioterrorism and Emerging Infections (CSB&EI) is part of Saint Louis University, School of Public Health. For further information on CSB&EI, please go to their website at: <http://www.bioterrorism.slu.edu/>.

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