California Hospital Bioterrorism Response Planning Guide

Copyright 2001

DRAFT: Revised 10/05/2001

California Hospital Bioterrorism Response Planning Guide

Review and Comments

The Hospital Bioterrorism Response Planning Guide is being released as a draft document. We are encouraging review and comments for both accuracy of content as well as the inclusion of any additional information that may be useful to hospitals. All comments should be forwarded by email no later than November 30, 2001 to: Ray F. Nikkel, R.N., Emergency Preparedness Coordinator, Department of Health Services, Licensing and Certification Program at rnikkel@dhs.ca.gov.

Table of Contents

Acknowledgements

The California Hospital Bioterrorism Response Planning Guide was developed by the Department of Health Services (DHS), Licensing and Certification (L&C) Program in consultation with the Emergency Medical Services Authority (EMSA), the Governor's Office of Emergency Services (OES), and the DHS Division of Communicable Disease Control (DCDC). The Department of Health Services would like to thank the project leaders who contributed their time and expertise to developing this Planning Guide.

Christine K. Cahill MS, BS, RN, CIC
Infection Control Consultant
California Department of Health Services, Licensing and Certification Program

Ray Nikkel, RN
Emergency Preparedness Coordinator
California Department of Health Services, Licensing and Certification Program

A special thanks to the following persons who edited selected sections of the Plan:

David Abbott, Coordinator
Department of Health Services, Emergency Preparedness Office

Cindy Fine MSN, RN, CIC
Infection Control Consultant
Catholic Healthcare West

Jon Rosenberg, MD
Public Health Medical Officer
California Department Health Services

The Department also appreciates the contributions of the following persons:

Donald Cheu, MD
Commander, DMAT, CA – 6, Retired

Enid Eck MPH, RN
HIV and Infectious Disease Coordinator, Kaiser Permanente

Marian McDonald MS, RN, CIC
Infection Control Practitioner

Helen McDonnell RN
Infection Control Consultant

Introduction

Purpose

The California Hospital Bioterrorism Response Planning Guide was developed by the Department of Health Services (DHS) to assist hospitals in preparing for a possible bioterrorism event. Reducing the incidence of transmission of infectious agents such as plague, smallpox and viral hemorrhagic fevers to staff, patients, and the community will depend on how rapidly victims, including the worried-well, can be triaged, diagnosed, isolated when necessary, and treated. Early verbal and/or electronic communication with local health departments will be essential in controlling or preventing, not only disease transmission, but also to provide public assurance.

This bioterrorism-planning guide should be modified to fit each hospital's structure, function, and patient population and should be integrated into the hospital's existing emergency management plan. As information related to recognizing, diagnosing, treating, and preventing bioterrorism is updated at the federal and state level, hospitals should revise existing response plans accordingly.

Disclaimer

The recommendations contained in this document were developed by the Department of Health Services, Licensing and Certification Program and are intended to be advisory only. Hospital Infection Control Committees should review these recommendations and use them as a template for developing facility specific policies and procedures to guide activities during a possible bioterrorism event or outbreak of an infectious disease such as influenza. Facility Infection Control Committees should review the literature as it is published and revise their bioterrorism response plan as needed. Questions related to the information contained in this document should be directed to Chris Cahill Ms, RN, CIC, at ccahill@dhs.ca.gov or Ray Nikkel, RN at rnikkel@dhs.ca.gov.

Organization of the Planning Guide

The planning guide is organized in three primary sections as follows:

- Section 1 provides an overview of bioterrorism, including the role of various hospital departments, government agency response roles, disease reporting, the systems used to manage emergency response, working with the media, and similar topics.

- Section 2 provides detailed information on bioterrorism agents. This section is organized by the current Centers for Disease Control and Prevention *Guideline for Isolation Precautions in Hospitals*, 1996. Additionally special isolation recommendations have been developed for smallpox and late-stage viral hemorrhagic fevers. In the event that a bioterrorist disease is suspected, the specific section on that disease can be removed and copied.

The sections on each bioterrorism agent have five (5) subsections:

- Disease Overview;
- Quick Reference;
- Frequently Asked Questions;
- Disease Screening Form; and,
- Home Care Instructions.

The section on smallpox contains additional information related to smallpox vaccination and includes

- Smallpox specimen collection;
- Instructions of administering smallpox vaccine; and
- Sample smallpox vaccination consent form

- Section 3 contains the attachments to the planning guide, including a Communication Plan with internal and external contact flow charts, a form for Medical Record review, a chart listing bioterrorism disease syndromes, and a summary listing of text and internet references on bioterrorism.

California Hospital Bioterrorism Response Planning Guide

Section 1 – Bioterrorism Response Overview

What is Bioterrorism?

Bioterrorism is the deliberate release of pathogenic microorganisms (bacteria, viruses, fungi or toxins) into a community. The most likely diseases associated with bioterrorism include smallpox, anthrax, botulism, plague, and tularemia. Additionally viral hemorrhagic fever (VHF) viruses such as Lassa, Marburg, and Ebola rarely, if ever, identified in North America, may be deliberately introduced. Other potential agents include brucellosis, western and eastern equine viruses that cause encephalitis, Q fever, glanders, and toxin-producing *Staphylococcus aureus*. With the exception of small pox, VHF, and the encephalitis viruses, all bioterrorism agents can be treated with antibiotics or toxin antagonists if promptly diagnosed. Persons who received one or more smallpox vaccinations before the disease was declared eradicated worldwide have little or no immunity and virtually every living person in the world is now susceptible to the disease. There is no treatment for smallpox and, to date, there is a limited supply of vaccine available in the U.S. The above-mentioned diseases are not meant to be all-inclusive since there are many food- or water-borne agents that could potentially be used in a bioterrorist event.

Recognizing a Bioterrorist Event

The key to rapid intervention and prevention is to maintain a high level of vigilance. To minimize the number of casualties, early identification that an outbreak is from an unnatural source is essential. A bioterrorist event may be suspected when increasing numbers of otherwise healthy persons with similar symptoms seek treatment in hospital emergency departments, physician's offices, or clinics over a period of several hours, days, or weeks. The early clinical symptoms of infection for most bioterrorism agents may be similar to common diseases seen by health care professionals every day. The principles of epidemiology should be used to assess whether the patient's symptoms are typical of an endemic disease (influenza) currently circulating in the community or an unusual event. The most common features of an outbreak caused by bioterrorist agents include:

- A rapid increase (hours to days) in the number of previously healthy persons with similar symptoms seeking medical treatment;
- A cluster of previously healthy persons with similar symptoms who live, work, or recreate in a common geographical area;
- An unusual clinical presentation;
- An increase in reports of dead animals;
- Lower incident rates in those persons who are protected (e.g., confined to home; no exposure to large crowds);

- An increase number of patients who expire within 72 hours after admission to the hospital;
- Any person with a history of recent (within the past 2-4 weeks) travel to a foreign country who presents with symptoms of high fever, rigors, delirium, rash (not characteristic of measles or chick pox), extreme myalgias, prostration, shock, diffuse hemorrhagic lesions or petechiae; and/or extreme dehydration due to vomiting or diarrhea with or without blood loss.

Federal Response to Bioterrorism

At the Federal level there are many government agencies charged with developing a coordinated bioterrorism response plan. The Department of Health and Human Services (HHS) is the primary agency responsible for the nation's health and medical response. Within HHS the Office of Emergency Preparedness (OEP) coordinates activities and works with other federal agencies including the Federal Emergency Management Agency (FEMA) and the Departments of Justice (DoJ) and Defense (DOD). Other agencies within HHS that play a key role in bioterrorism preparedness include the Centers for Disease Control and Prevention (CDC), the Food and Drug Administration (FDA) and the National Institutes of Health (NIH).

The DoJ, acting through the Federal Bureau of Investigation (FBI), is the lead federal agency for coordinating the federal response to a terrorist incident or threat, and is tasked with the responsibility for the crisis management phase during a terrorist event or credible threat to public safety. Crisis management is primarily a law enforcement function that focuses on measures to identify and plan for the resources necessary to anticipate, prevent, and or resolve a terrorist threat or incident. FEMA is the lead federal agency in charge of consequence management. Consequence management includes measures to protect public health, rescue and medical treatment of casualties, evacuation of people at risk, protection of first responders, and preventing the transmission of infection. It also focuses on restoring essential government services and providing relief to governments, businesses, and individuals affected by the consequences of terrorism.

The Centers for Disease Control and Prevention (CDC) has established the National Pharmaceutical Stockpile (NPS**)** program as a national repository of antibiotics, chemical antidotes, life support medications, IV administration and airway maintenance supplies, and medical/surgical items. The California Department of Health Services and the Governor's Office of Emergency Services are the lead state agencies for planning and access to the NPS. The NPS is designed to re-supply state and local public health and medical response entities in the event of a biological and/or chemical terrorism incident anywhere, at anytime within the United States. The NPS will back up first response efforts with a general re-supply package followed by larger quantities of the medical materiel specific to the health consequences associated with the agent used.

There are 2 phases within the NPS program. First, there are 8 separate, yet identical pre-packaged caches of medical materiel called 12-hour Push Packages that are fully stocked, positioned in environmentally controlled and secured warehouses, and ready for immediate deployment to reach any affected area within 12 hours of the federal decision to release the assets. These Push Packages have been pre-positioned regionally throughout the United States. Each Push Package includes: oral and intravenous drugs to therapeutically and prophylactically treat persons exposed to anthrax, plague, or tularemia. Each package also contains chemical antidotes and additional medical material necessary to treat victims of chemical agents and trauma. Beyond these medications, each Push Package includes: catheters, administration sets, antiseptics, and other supplies needed to provide IV therapy; emergency medications to treat anaphylactic reactions; and certain medical/surgical supplies to care for those with other emergency medical needs (i.e. ventilators).

Second, if the incident requires a larger or multi-phased response, Vendor Managed Inventories known as VMI packages will be shipped to arrive within 24 to 36 hours after the initial Push package. The VMI packages will be comprised of pharmaceuticals and supplies that can be "tailored" to provide pharmaceuticals, supplies and/or products specific to the type of suspected or confirmed agent or combination of agents. CDC has contractual agreements with manufacturers and vendors, throughout the United States, for each of the items in the VMI formulary. Should an event occur which exceeds the demands of any one or all eight of the 12 hour Push Packages, CDC will immediately notify its designated contract manufacturers to begin pulling stock and stand ready to transport VMI re-supply packages.

Currently, the NPS is activated through the normal Medical and Health Mutual Aid system. Initially, the NPS Push Package is received by CDHS and OES at an air terminal near an affected community. Distribution of the Push Package to affected communities involves coordination with local, state and federal agencies. CDHS and OES are charged with developing an NPS response plan to deliver NPS assets to local operational area, staging facilities. Local government is responsible to coordinate the distribution of NPS resources to clinical sites.

The response to an announced bioterrorism threat would be coordinated by the FBI and local law enforcement agencies. If the FBI believes the threat to be credible and has obtained information about the time, place, mode and/or contents of the release, the information would be communicated to local health departments or DHS. Public health personnel will be responsible for:

- Defining the population at risk for exposure;
- Locating the persons at risk for exposure as soon as possible to assess for illness and provide appropriate preventive therapy;
- Monitoring the persons who have received preventive treatment for symptoms or signs of the disease;

- Implementing enhanced surveillance for the suspected disease at health care facilities, laboratories and emergency medical services.

In budget year 2002 the President has requested that $ 350 million be allocated to prepare the nation for a possible bioterrorism event. Of this amount $182 million is for the CDC, $ 51 million is for the office of Emergency Preparedness, and $93 million of for research. This money is directed to:

- Disease surveillance and public health network;
- Medical consequence management;
- Development of the national pharmaceutical stockpile;
- Research and development; and
- Deterrence.

Role of the California Department of Health Services (DHS)

The Department of Health Services (DHS) is the lead state agency for the public health response to a bioterrorist incident or threat. The primary objective of DHS is to determine the etiology and source of the outbreak and identify the most effective and efficient interventions to protect public safety. In order to meet this objective, DHS has drafted a Bioterrorism Surveillance and Epidemiologic Response Plan. The roles and responsibilities of DHS in bioterrorism surveillance include:

- Supporting local health departments to increase awareness of clinicians and laboratorians about bioterrorism threat agents and diseases;
- Strengthening existing disease surveillance systems;
- Utilizing and/or developing surveillance systems that might be useful in detecting illnesses resulting from bioterrorist threat agents;
- Providing technical assistance to local health jurisdictions
- Implementing pilot surveillance systems for detecting bioterrorist events; and
- Coordinating expanded surveillance in the affected jurisdictions in the event of a suspected bioterrorist event or other biologic disaster.

DHS activities to enhance bioterrorism surveillance include:

- The revision of state disease reporting regulations to make all suspected and confirmed cases of bioterrorism diseases immediately reportable;
- The implementation of a rapid electronic laboratory disease reporting and alert system;
- The development of educational tools for increasing awareness about bioterrorism;
- The implementation of informal inter- and intra- departmental notification of unusual health events detected by existing surveillance systems (e.g., veterinary surveillance, botulinum antitoxin requests, influenza surveillance project);

- The provision of technical assistance to local health departments piloting systems or mechanisms that could be useful in the detection of a bioterrorist event including surrogate measures for monitoring (e.g., hospital admission diagnosis, 911 calls) and clinical syndrome reporting.

The DHS role and responsibilities in bioterrorism response include:

- Confirmation, by consensus agreement, that the disease scenario is moderately or strongly suggestive of a bioterrorism event;
- Notification of local, state, and federal bioterrorism response partners and, when deemed necessary, activation of the Bioterrorism Surveillance and Epidemiologic Response Team;
- Coordination with local, state, and federal public health leaders;
- Communication with other bioterrorism response partners such as the office of Emergency Services (OES) and the Emergency Medical Services Authority (EMSA).
- Epidemiologic investigation to include developing a case definition, case finding, case interviews, data collection and analysis;
- Contact tracing;
- Surveillance for non-human diseases;
- Developing recommendations for treatment and post-exposure prophylaxis;
- Support and technical assistance for local immunization, prophylactic distribution, or quarantine efforts;
- Provide assistance for laboratory surveillance of biological agents;

Additionally, in accordance with the Standardized Emergency Management System, during a suspected or confirmed biological terrorism event, DHS staffs its Joint Emergency Operations Center (JEOC) along with EMSA staff. The JEOC responsibilities are as follows:

- Acquire public health and medical personnel upon request of an affected region;
- Acquiring medical supplies, pharmaceuticals, and equipment upon request of an affected region;
- Ensure coordination and information flow with local health departments, emergency management organizations, and providers of medical care, facilities, and supplies.

Role of Local Health Departments

The local health department has the lead role in the early detection and identification of a bioterrorist event. In a multi-jurisdictional bioterrorist event, local, state, and federal public health leaders would participate in the epidemiologic investigation under a joint command structure.

Several counties in California have developed bioterrorist response plans and could implement these plans on very short notice. It is highly recommended that hospital

infection control practitioners, epidemiologists, and safety officers participate in local bioterrorism response planning.

Disease Reporting

Existing disease reporting systems in California are neither sensitive nor timely enough to allow for a rapid response to a bioterrorist event. Current estimates are that only about 20% of some reportable diseases are reported in the counties. All health care providers, including physicians, surgeons, veterinarians, podiatrists, physician assistants, registered nurses, nurse midwives, school nurses, infection control practitioners, medical examiners, coroners and dentists, are required by law to report the diseases and conditions identified in statute and regulations as reportable.

Under current regulations, some potential bioterrorist diseases require immediate reporting (e.g., anthrax, botulism, plague [human or animal], viral hemorrhagic fevers, and outbreaks of any disease.)

Other diseases (e.g., brucellosis, tularemia, and occurrences of any unusual disease) are currently reportable within 7 days. Reporting of smallpox was eliminated after eradication was achieved. Diagnostic laboratories are required to report 18 different communicable diseases to the local health department within 24 hours of providing results to the physician.

The only high priority bioterrorism diseases that currently require immediate reporting from the local health department to DHS are anthrax, botulism, and plague. DHS is proposing that the reporting regulations be revised to make those diseases that pose a significant bioterrorism threat immediately reportable. .

The proposed regulatory changes would mandate immediate reporting by:

- Health care providers to the local health department of brucellosis, tularemia, smallpox, unusual diseases (e.g., a rare disease or a newly apparent or emerging disease or syndrome of uncertain etiology for which a health care provider has reason to believe could possibly be caused by a transmissible agent or by a microbial toxin) and varicella deaths;
- Laboratories upon receipt of specimens from suspected cases of anthrax, botulism, brucellosis, plague (animal or human), smallpox, tularemia, and viral hemorrhagic fever; and
- Local health departments to DHS of any suspected or confirmed cases of brucellosis, tularemia, viral hemorrhagic fevers, smallpox, varicella death and unusual diseases.

When implemented, monitoring electronic reports and requests for laboratory tests and test results could provide the earliest recognition of a bioterrorist event. DHS is

currently developing the California Electronic Laboratory Disease Alert and Reporting (CELDAR) system to improve laboratory surveillance and provide electronic reporting.

Title 22, Section 70737(a) of the California Code of Regulation requires that "[a]…any occurrence such as epidemic outbreak, poisoning, fire, major accident, disaster, other catastrophic or unusual occurrence which threatens the welfare, safety or health of patients, personnel or visitors shall be reported as soon as reasonably practical, either by telephone or by telegraph, to the local health officer and to the Department. The hospital shall furnish such other pertinent information related to such occurrences that the local health officer or the Department may require.

How rapidly local and state health departments can respond to the crisis will depend on how rapidly they are notified of a possible outbreak. DHS has proposed monitoring several surrogate markers that may indicate a bioterrorist event. The proposed markers include:

- Emergency department diversions;
- Emergency department visits and diagnosis;
- Nurse advise call centers;
- Over-the-counter pharmacy sales;
- Hospital admissions, diagnoses, and deaths;
- Critical care unit admissions (CCU) and diagnoses; and
- Clinical syndrome reporting.

Role of the Infection Control Practitioner

The hospital infection control practitioner (ICP) is going to play a significant role in the rapid identification of an outbreak of community-acquired infection and the notification of local health departments. The ICP is responsible for managing the day-to-day activities of the hospital-wide infection surveillance, prevention, and control program. Because the role is highly visible in the hospital and surveillance for infections is a primary function, the ICP is in a unique position to detect rapid or subtle increases in patients admitted with unusual clinical presentations, increases in emergency room visits, and Critical Care Units (CCU) admissions.

Frequent surveillance in CCU, the emergency room, and other patient care units is vital to the early recognition of a bioterrorism event. The medical record of all new patients admitted with unusual infectious disease symptoms that go undiagnosed for more then 48 hours should be reviewed. The ICP should, at a minimum, review all admission diagnoses, microbiology reports, emergency room admission and discharge diagnoses several times each week. The emergency department and CCU should communicate any unusual infectious disease patterns to the ICP as soon as possible. It is essential that the ICP develop a clinical syndrome monitoring system for those departments that are likely to be the first affected by a bioterrorism event, such as the emergency

department. A clinical syndrome monitoring system could include a method of alerting the ICP when a threshold of the following events is exceeded:

- Emergency room diversions due to increased visits to the emergency department or CCU bed unavailability;
- Increase in the number of patients with influenza-like illness, rash with fever, gastroenteritis (vomiting and/or diarrhea), and acute asthma attack;
- Unexplained deaths occurring in otherwise healthy persons, especially if there is clinical evidence suggestive of an infectious disease process; and
- Increase in the number of persons with sepsis or septic shock.

The ICP should be specifically educated in the epidemiology, diagnosis, and treatment of all potential bioterrorism related diseases. Additionally the ICP should receive training in the hospital's emergency management plan and the local health department's response plan and should be prepared to assume a leadership role in the hospital's response to the outbreak. The ICP should always have a backup professional trained in the event they are absent from the facility someone will be available to assume the role and responsibilities of the ICP.

The Hospital Emergency Incident Command System

The Incident Command System (ICS) was developed in the early 1970's by the fire service in order to allow fire agencies to respond to emergencies in an efficient, coordinated manner. Since its development, ICS has evolved into an "all-risk" system that can be utilized for all types of fire and non-fire emergencies. The Hospital Emergency Incident Command System (HEICS) is based on ICS, and over the years, HEICS has been adapted for use by many health care facilities. A feature of this system is the task-oriented Job Action Sheets (job descriptions) that inform those who participate in an emergency what they should do, when they should do it, and whom they will report to after the job is complete. On review of the defined job descriptions included in the HEICS, there is no Job Action Sheet for the ICP or the Hospital Epidemiologist (HE). It is essential that these two positions be identified in HEICS if the bioterrorism response plan is to be successfully integrated into the existing emergency management plan.

Some of the tasks that may be assigned to the ICP or HE include:

- Providing initial notification of the local health department;
- Communicating with the local health department as the number of victims increase or the number of patients exceed the number of available resources (staffing and beds);
- Estimating the number of victims likely to require health care in a bioterrorist event;
- Coordinating hospital admissions of patients who require isolation (smallpox, plague, and viral hemorrhagic fever);

- Coordinating hospital discharge of patients currently in negative pressure rooms with non-bioterrorist related infectious diseases such as tuberculosis;
- Determining the need for additional personal protective equipment including N-95 respirators;
- Communicating information to staff, visitors, current patients, and the media;
- Coordinating the procurement of additional life support equipment such as adult, pediatric, and neonate respirators;
- Coordinating the procurement of antibiotics and antitoxins;
- Briefing the Incident Commander;
- Developing the incident status report; and
- Participating in scheduled meetings.

Training and Education

Physicians, nurses, technicians, and administrative personnel should be trained in all aspects of the hospital bioterrorism response plan during new employee orientation and at least annually. Drills and exercises should be conducted periodically to assess the level of staff preparation. Hospitals should participate in city, county and/or state bioterrorist drills as these events are scheduled. The hospital bioterrorism response plan should be evaluated and revised annually, based on the results of internal and external drills and as information becomes available. Infection control practitioners should be well informed of and participate in state and local bioterrorism preparedness planning and exercises.

Decontamination of Patients and Environment

In most cases, patient decontamination will not be necessary. The incubation period of biological agents makes it unlikely that victims of a bioterrorist event will present immediately following the exposure event. The one exception may be an announced release of a bioterrorist agent, with gross surface contamination of victims with a confirmed agent or material such as raw sewage. In the rare cases where decontamination may be warranted, simple washing with soap and water is sufficient. If necessary, environmental surfaces can be decontaminated with a U.S. Environmental Protection Agency (EPA) registered sporicidal disinfectant or with a 0.5% hypochlorite solution (1 part household bleach added to 9 parts water). Bleach solution should NOT be used to decontaminate patients or pets.

Evidence Collection

In some cases, the FBI may require collection of exposed clothing and other potential evidence. The hospital ICP should develop procedures for evidence collection in consultation with the FBI field office.

The primary goal in any bioterrorist event is protecting public safety, and all else is secondary. By the time the first patients seek treatment and a bioterrorist event is

suspected, there may be no evidence to collect. However, hospitals do need to prepare for the possibility that they may be responsible for evidence collection and there should be policies and procedures in place to collect patient's clothing and other personal effects. In the event that the bioterrorist event is announced, it will become even more important that an orderly procedure is in place for the collection of evidence.

In collaboration with local law enforcement and regional FBI representatives, hospitals should establish lines of authority about who will be responsible for evidence collection. Procedures should include how weapons brought in by patients (e.g., guns, knives, and syringes) will be retrieved, secured and handed over to law enforcement officials.

At a minimum, hospitals should have a supply of plastic bags, marking pens, and ties to secure the bags. Each individual bag should be labeled with the patient's name, medical record number, and date of collection. Forms should be developed to inventory valuables and provide documentation of the person responsible for the valuables. If valuables are to be transported to the FBI or local law enforcement agency, the facility should document who received them, where they were taken, and how the valuables will be returned to the owner.

Preparing for a Large Influx of Patients

No hospital is ever fully prepared for an immediate large influx of patients requiring critical life support systems. This is the primary reason why hospitals should be represented in local and county emergency preparedness planning. Decisions will have to be made as to whether one hospital in the city or county will be designated as a bioterrorist hospital or if all hospitals will share equally in the influx of patients. When the number of patients exceeds the number of available beds and staffing, decisions will have to be made as to whether alternative, off-site facilities will be opened, who will staff these facilities, and how to they will be supplied. At the hospital level, major decisions will have to made and implemented quickly.

Some of these decisions will include:

- Implementing the hospital emergency management plan and bioterrorism response plan;
- Canceling non-emergency surgeries and other elective procedures;
- Developing discharge instructions for non-contagious patients;
- Discharging patients to other acute care facilities out of the affected geographical area, or to long-term care or home care and assuring that the level of care required by these patients can be met;
- Increasing stock supplies of personal protective equipment including N-95 respirators, if required;
- Increasing stock supplies of antibiotics (oral and parenteral);
- Determining the availability and sources of additional medical equipment such as ventilators and IV pumps and other equipment normally rented.

- Deciding when it is safe to discharge patients with communicable diseases and developing specific discharge instructions including recommendations for care-giver protection, handwashing; disinfection of the environment, and post-mortem care;
- Deciding the maximum capacity of the morgue.

Managing the Psychological Aspects of Bioterrorism

Following a bioterrorism event, anxiety and alarm can be expected from infected patients, their families, healthcare workers, and the worried well. Psychological responses may include anger, fear, panic, unrealistic concerns about infection, fear of contagion, paranoia, and social isolation. Infection control practitioners should include mental health workers (psychiatrists, psychologists, social workers, and clergy) when developing facility-specific bioterrorism response plans. The following are some points to consider:

- Communicate clear, concise information about the infection, how it is transmitted, what treatment and preventive options are currently available, when prophylactic antibiotics, antitoxin serum or vaccines will be available, and how prophylaxis will be distributed;
- Provide counseling and possible anxiety-reducing medications to the worried well and the victims' family members;
- Provide educational materials in the form of frequently asked questions;
- Provide home care instructions;
- Provide information on quarantine and isolation;
- Information released to the public should be coordinated with local and stated health officials.

The Media

The media should be informed about bioterrorism and the potential disease agents. Following the identification of a bioterrorist event the local or state health department should assume responsibility for contacting the media. Hospitals should prepare a statement (See Communication Plan) that details the number of victims, the symptoms, and where to obtain further information.

Laboratory Support

With the possible exception of *Yersinia pestis* (plague) and some food- or water-borne disease agents, most hospital clinical laboratories are not equipped to identify bioterrorist pathogens. These laboratories will primarily be responsible for collection, packaging, and transportation of specimens to the county or state laboratories. Each clinical laboratory should develop specific policies and procedures for collection, packaging, and transporting specimens to the next level of expertise. Infection control practitioners should consult with local law enforcement and the FBI to determine what

information should be included in chain-of-custody documents. Laboratories collecting blood specimens for serology testing should retain an aliquot for a short time to accommodate lost specimens. The retained blood specimens should be kept in a secure, locked cabinet.

During a bioterrorist event, laboratory personnel should take maximum precautions when handling specimens. Laboratory personnel should wear appropriate personal protective equipment when handling all clinical specimens, and all specimens should be opened, plated, or aliquotted in a biosafety hood.

There is a national proposal that laboratories be grouped according to their ability to support the diagnostic needs associated with a bioterrorist event.

- Level A: This level consists of hospital laboratories, clinical laboratories, and most small health department labs. The role of the level-A laboratory is to conduct initial procedures to rule out critical biological agents, and refer samples to higher level laboratories.

- Level B: Consists of county or small state laboratories with special diagnostic testing capability. The role of the level-B laboratory is to provide the first level of agent confirmation and transportation to the next level.

- Level C: Large state health department laboratories and other labs with advanced testing capabilities such as molecular technology. Level-C laboratories provide agent confirmation and reference-laboratory capabilities.

- Level D: CDC or select Department of Defense laboratories such as the U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID). These laboratories provide the highest level of agent characterization, and conduct research and development on laboratory methods for enhanced bioterrorism agent identification.

The Pharmacy

The pharmacy should maintain a reasonable, daily inventory of antibiotics currently recommended in the treatment of patients with suspected or diagnosed bacterial bioterrorist agents. These antibiotics include, but are not limited to, gentamicin, ciprofloxacin and doxycycline. The CDC has made significant progress in building emergency stockpiles of antibiotics as well as other emergency medical supplies (intravenous therapy supplies and other emergency medications), that can be available within 12 hours after the federal government confirms that a bioterrorist event is in progress. Hospitals should develop criteria for stopping the non-essential use of prophylactic and therapeutic antibiotics until the stockpile arrives at the local destination and preparations are made to distribute the stockpile resources.

Discharge Planning

In all probability, patients in the hospital at the time that a bioterrorist event is evolving will have to be evaluated for quick discharge. If patients require continued acute care, hospitals may have to make arrangements for transfers to other hospitals, or if stable, to skilled nursing facilities in different geographical areas.

Patients with bioterrorist-related infections should not be discharged until they are deemed non-infectious (plague, smallpox, and viral hemorrhagic fever). For each bioterrorist disease included in the Planning Guide, there are home care instructions. These were developed primarily for caring for patients who could not be admitted to the hospital because maximum bed capacity and staffing levels had been reached or exceeded. These instructions can be modified to provide information for patients recuperating from an infectious disease. The question of regulated waste in the home has also been discussed. Most bioterrorist agents are rendered non-infectious by exposure to air and sun. Therefore, no specific recommendations for packaging and removing medical waste from the home are necessary. However, the ICP should consult with local waste management companies and the local or state government medical waste program for recommendations related to removing regulated medical wastes from the home.

Post-mortem Care

Hospitals should assess the maximum number of cadavers that can be stored in the facility morgue at any one time. In the event that many people expire within a short period, the local or state government will assume responsibility for providing adequate refrigeration and disposal of deceased victims through the coroner's mutual aid system. Deceased persons should not be released to funeral homes until the local health department authorizes the disposition. Autopsies should not be performed by hospital pathologists unless the local health department explicitly authorizes the procedure.

Section 2 – BIOTERRORISM (BT) AGENTS BY CENTERS FOR DISEASE CONTROL AND PREVENTION RECOMMENDATIONS FOR ISOLATION PRECAUTIONS

Section 2A – STANDARD AND CONTACT PRECAUTIONS*

STANDARD PRECAUTIONS

Standard Precautions, as defined by the Centers for Disease Control and Prevention (CDC), are designed to reduce the risk of transmission of most disease causing microorganisms in any type of health care setting regardless of the patient's presumed or diagnosed infectious status. With the exception of smallpox, viral hemorrhagic fevers, and pneumonic plague, most infectious diseases caused by bioterrorism agents are rarely, if ever, transmitted from person-to-person. Standard Precautions should be integrated into all healthcare worker/patient care interactions that include contact with:

- Blood
- Non-intact skin
- Body fluids regardless of the presence or absence of visible blood (urine, feces, vomitus, wound and lesion drainage, pulmonary secretions including nasal and salivary secretions and tears)
- Skin soiled with visible blood or other body fluids
- Mucous membranes

The following diseases require Standard Precautions to reduce the risk of transmission to health care workers.

Bioterrorism Diseases

- *Bacillus anthracis* – Anthrax (See contact Precautions)
- *Brucellae* species – Brucellosis
- *Clostridium Botulinum* - Botulism
- *Coxiella burnetii* - Q fever
- *Francisella tularensis* – Tularemia (See Contact Precautions)

OSHA Bloodborne Pathogens Standard

Healthcare workers should follow facility specific policies and procedures related to reducing the risk of occupational exposure to blood and other potentially infectious materials as required by the California Occupational Safety and Health Administration's (CAL-OSHA) Bloodborne Pathogens Standard.

* This guideline is not intended to replace facility specific policies and procedures.

Patient Placement

Place patients in any available bed on any nursing unit. Patients with similar syndromes may also be cohorted (grouped) in semi-private or multiple-bed rooms. Special ventilation is not required. Consider placing patients who frequently contaminate the immediate environment with blood or body fluids (e.g., incontinence, wound drainage not contained by a dressing or poor hygienic habits) in a private room.

Visitors

Limit visitors to immediate family members and significant others. Instruct visitors to wash their hands before and after patient contact and before leaving the patient's room.

Personal Protective Equipment (PPE)

Gloves

Wear disposable gloves when contact with blood and body fluids is anticipated. Gloves should also be worn when touching environmental surfaces and patient care articles likely to be contaminated or soiled with blood or body fluids. Gloves should be put on just prior to performing a patient care task that involves contact with blood or body fluids and removed immediately, without touching non-contaminated surfaces, when the task is complete. When performing multiple procedures on the same patient, gloves should be changed after contact with blood and body fluids that contain high concentrations of microorganisms (e.g., feces, wound drainage or oropharyngeal secretions) and before contact with a clean body site such as non-intact skin and vascular access sites.

Facial Protection

Wear disposable, fluid-resistant masks and eye shields (goggles with side-shields) or a face shield when performing patient care tasks likely to generate splashing or spraying of blood and body fluids onto the mucous membranes of the face.

Gowns

Wear disposable fluid-repelling gowns to protect skin and clothing when performing procedures likely to generate splashing or spraying of blood and body fluids. Plastic aprons may be worn for procedures likely to soil clothing but are unlikely to generate splashing or spraying of blood or body fluids (e.g., cleaning incontinent patients). The material composition of the gown should be appropriate to the amount of fluid penetration likely to be encountered. Remove soiled gowns after patient contact.

Handwashing

Wash hands promptly after contact with blood and other body fluids or with articles and surfaces contaminated or soiled with blood and body fluids regardless of whether gloves

are worn. HCW should wash their hands when otherwise indicated to prevent transfer of microorganisms from one patient to another. Plain soap is sufficient for handwashing however, an antimicrobial soap should be available. Alcohol foams or gels can be used when handwashing facilities are not immediately accessible and if hands are not visibly soiled with blood and body fluids.

Transporting Patients

Transport patients to diagnostic services to according to facility procedure.

Laboratory Specimens

Transport specimens to the laboratory according to facility procedure.

Dietary Trays

Transport dishes and utensils to the kitchen for routine dishwashing. Disposable equipment is not necessary.

Patient Care Equipment

Equipment such as bedpans, urinals, and emesis basins should be cleaned in a manner that prevents splashing and spraying of blood and body fluids onto the healthcare workers clothing, skin and mucous membrane. Reusable equipment that requires cleaning and disinfection or sterilization should be sent to central service in covered containers for reprocessing. Disposable equipment not intended for reuse should be discarded.

Housekeeping

Clean environmental surfaces daily, when visibly soiled, and when the patient is discharged with an Environmental Protection Agency (EPA) registered disinfectant.

Soiled Linen

Place soiled linen in leak-proof bags and seal. Transport and process according to facility procedure.

Patient's Clothing

Bag patient's clothing if soiled with blood or body fluids and send home with a family member with instructions to use warm water and a commercial laundry product. If no family member is available, follow the facility procedure for washing and drying patient's clothes.

Biohazardous waste

Follow facility specific biohazardous waste management procedures.

Deceased Patient

Place the deceased patient in a leak-proof body bag and transfer to the facility morgue.

CONTACT PRECAUTIONS*

Cutaneous anthrax and tularemia, although rare, can be transmitted to healthcare workers by contact with the infected patient's wound or lesion drainage. In addition to Contact Precautions, Standard Precautions should be followed.

Patient Placement

Place the patient in a private room, if available. Patients with the same diagnosis may be cohorted (grouped) in semi-private rooms. When a private room or cohorting is not achievable, separate infected patients at least three (3) feet away from non-infected patients.

Visitors

Limit visitors to immediate family members or significant others. Instruct visitors to wash their hands their hands before and after patient contact and before leaving the patient's room.

Patient's Clothing

Bag patient's clothing and send home with a family member. Instruct family members to wear gloves when handling clothes soiled with wound or lesion drainage. Clothes should be washed in warm or hot water using a commercial laundry product. If no family member is available, follow the facility procedure for washing and drying patient's clothes.

* This guideline is not intended to replace facility specific policies and procedures.

Section 2-A-1 – Anthrax (*Bacillus anthracis*)

ANTHRAX – OVERVIEW

Any suspected case of anthrax (*Bacillus anthracis*) MUST BE TREATED AS A PUBLIC HEALTH EMERGENCY and reported to the infection control practitioner [*insert telephone number*] and the local health department [*insert telephone number*] immediately.

Naturally Occurring Anthrax

Anthrax, a gram-positive spore-forming rod, is a zoonotic disease rarely seen in the United States. In humans, anthrax has three somewhat clinically distinct syndromes: cutaneous, inhalation and gastrointestinal. The cutaneous form occurs most frequently on the hands, forearms, neck and face of persons working with infected livestock (cattle, sheep, goats and horses). Gastrointestinal anthrax is transmitted to humans by ingesting insufficiently cooked meat from infected animals. Inhalation anthrax, also known as Woolsorter's disease, results from the inhalation of spores and occurs primarily in persons who handle contaminated hides, wool, and furs. No case of inhalation anthrax has been reported in the United States since 1978 making even a single case a cause for alarm today.

Bioterrorism Epidemiology

Anthrax bacteria are easy to cultivate and spore formation is readily induced. The spores are highly resistant to sunlight heat and disinfectants. As a bioterrorism agent, anthrax can be delivered as a bio-aerosol. Anthrax is not transmitted from person to person. If anthrax spores are released intentionally as a bio-aerosol, there will be a sudden influx of many persons with severe flu-like symptoms seeking treatment in the hospital's emergency rooms. Most likely, these persons will require assisted ventilation and immediate antibiotic support. The mortality rate will be high even in the setting of modern medical technology.

Incubation Period

The incubation period for inhalation anthrax is normally 1 – 6 days but may be as long as 60 days after spores are released. During an outbreak of inhalation anthrax in the Soviet Union in 1979, exposed persons became ill up to six weeks after the aerosol release.

Clinical Presentation

Cutaneous Anthrax

Infections of the skin, commonly exposed hands, forearms and head, occur when the spore enters a cut or abrasion on the skin. This form of anthrax is seen in persons handling wool, hides, leather and hair products from contaminated animals. Skin infection begins as a raised, pruritic bump or papule that resembles an insect bite. Within 1-2 days, the bump fills with fluid and then ruptures to form a painless ulcer (eschar) with a characteristic black necrotic area in the center. After about 1 – 2 weeks, the lesion dries and the eschar separates from the skin leaving a permanent scar. There is pronounced edema associated with the ulcer due to the release of edema toxin by *B. anthracis* resulting in swelling of the lymph glands in the adjacent area. Approximately 20% of the untreated cases result in death, either because the disease becomes systemic or because of respiratory distress caused by edema in the cervical or upper thoracic region.

Gastrointestinal Anthrax

The gastrointestinal form of the disease is generally caused by consumption of contaminated meat. There are two possible clinical presentations: abdominal and oropharyngeal. Abdominal symptoms include nausea, loss of appetite, vomiting and fever followed by abdominal pain, vomiting of blood and possibly severe, bloody diarrhea. Lesions may be seen in the colon.

The oropharyngeal form generally presents with edema and tissue necrosis in the cervical area. The primary clinical presentation would be sore throat, dysphagia, fever, and regional lympadenopathy in the neck and toxemia.

Inhalation Anthrax

Initially the disease onset is insidious with non-specific flu-like symptoms including fever, dyspnea, malaise, fatigue, headache, vomiting, chills, and abdominal discomfort. The person may also develop a non-productive cough and mild chest discomfort. These initial symptoms may be followed by a short period (several hours to 2 – 3 days) of improvement followed by an abrupt onset of severe respiratory distress with dyspnea, diaphoresis, stridor (high-pitched whistling respirations) and cyanosis. Septicemia, shock and death occur within 24-36 hours after the onset of respiratory distress and mortality approaches 100%. Approximately 50% of cases will develop hemorrhagic meningitis.

Diagnosis

Radiological

Mediastinal widening is classic for the inhalation form of the disease. Pleural effusion may occur late in the disease process in about 55% of the cases, however infiltrates are rare.

Laboratory

Only vegetative encapsulated bacilli are present during infection. Spores are not found in the body unless exposed to ambient air. Pneumonia generally does not occur; therefore, organisms may not be identified on Gram stain or culture of the sputum. Late in the course of disease, Gram stain of the blood and blood cultures may be positive. The WBC becomes elevated early in the course of the disease and remains elevated.

Autopsy

On autopsy hemorrhagic necrotizing mediastinitis, thoracic hemorrhagic necrotizing lymphadenitis, and hemorrhagic meningitis may be observed.

Treatment (See tables 1 and 2)

Penicillin-resistant strains of anthrax exist naturally. Induced antibiotic resistance by laboratory manipulation may be possible. To be effective, antibiotic therapy must be started as soon as the diagnosis is suspected.

Vaccination

An anthrax vaccine is available; however, it is currently limited to military personnel. Should vaccination be recommended following the release of anthrax, the United States Public Health Service may change the recommendations to allow vaccination of the civilian population.

Post Exposure Decontamination

Covert (unannounced) attack

In a covert bioterrorism event, by the time the first case is identified, anthrax spores would be dispersed and decontamination of patients would not yield any benefit.

Isolation

Standard Precautions are recommended. In addition to Standard Precautions, Contact Precautions are recommended for cutaneous and gastrointestinal anthrax if diarrhea is not controlled.

Table 1: Anthrax – Antibiotic Therapy for Contained Casualty Settings

Contained casualty setting: assumes a limited number of persons seeking treatment. Start IV therapy as soon as diagnosis suspected.		
Patient Category	**Antibiotic**	**Comment**
Adults: In vitro studies suggest that ofloxacin 400 mg IV q 12 hours or levofloxacin 500 mg IV q 24 hours can be substituted for ciprofloxacin however these antibiotics will, most likely not be included in the National Pharmaceutical Stockpile.	**Preferred Therapy:** *Ciprofloxacin [1] 400 mg IV q 12 hours *Doxycycline 200 mg IV loading, then 100 mg IV q 12 hours, or Erythromycin 15 – 20 mg/kg/day in divided doses **Therapy if stain is susceptible:** *Penicillin [2] G 20 MU/day IV in divided doses (if susceptible)	Give IV antibiotics until clinically stable then switch to an oral antibiotic to complete 60 days of treatment. Switch IV penicillin to Amoxicillin 500 mg PO q 8 hours when clinically stable to complete 60 days treatment.
Children: The use of tetracyclines and fluoroquinolones in children has well known adverse effects. These risks must be weighed carefully against the risk of developing life-threatening disease. If a release of *B anthracis* is confirmed, children should be treated initially with ciprofloxacin or doxycycline but therapy should be changed to penicillin as soon as penicillin susceptibility is confirmed.	**Preferred Therapy:** *Ciprofloxacin [1, 3] 15 mg/kg q 12 hours, or *Doxycycline [4] ➢ **If >8 years and > 45 kg:** give 200 mg loading dose, then 100 mg q 12 hours; ➢ **If > 8 years and = 45 kg:** give 4.4mg/kg loading dose then 2.2 – 4.4 mg/kg/day in 2 divided doses; ➢ **If = 8 years:** same as > 8 years and = 45 kg, **Therapy if stain is susceptible:** *Penicillin G [2] 400,000 units/kg/day in divided doses (if susceptible)	Give IV antibiotics until clinically stable then switch to an oral antibiotic to complete 60 days of treatment. Switch IV penicillin to PO Amoxicillin: ➢ **If = 20 kg:** give 500 mg PO q 8 hour; or ➢ **If < 20 kg**: give 40 mg/kg divided into 3 doses to be taken q 8 hours To complete 60 days of treatment.
Pregnancy: [5] High mortality rate from the infection outweighs the risk posed by antibiotics.	Same as for non-pregnant adults Oral doxycycline not recommended for more than 14 days	
Immunocompromised	Same as adults and children	

* Antibiotics supplied as part of the National Pharmaceutical Stockpile (NPS)

1. Therapy with ciprofloxacin may be initiated either as intravenous or oral dosage. The pharmacokinetics are such that oral ciprofloxacin is rapidly absorbed in the GI tract with no substantial loss by first-pass metabolism. Maximum serum concentrations are attained 1 – 2 hours after oral dosing.
2. If tested for susceptibility, therapy should be changed to IV penicillin.
3. Ciprofloxacin dose should not exceed 1 gram/day in children.
4. In 1991 the American Academy of Pediatrics amended their recommendation to allow treatment of young children with tetracyclines for serious infections such as Rocky Mountain Spotted Fever for which doxycycline may be indicated. Doxycycline is preferred for its twice-a-day dosing and low incidence of gastrointestinal side effects.
5. Although tetracyclines are not recommended during pregnancy, its use may be indicated for life-threatening infections. Adverse affects on developing teeth and bone are dose related, therefore, doxycycline might be used for short course therapy (7 – 14 days) prior to the 6th month of gestation. After the 6th month, professional consultation should be obtained.

Table 2: Anthrax – Antibiotic Therapy for Mass Casualty Settings or Post-Exposure Prophylaxis

Mass Casualty Setting or Post-Exposure Prophylaxis		
Patient Category	**Antibiotic**	**Comment**
Adults, including pregnant women and immunocompromised	**Preferred treatment:** *Ciprofloxacin 500 mg PO q 12 hours, or *Doxycycline[1] 100 mg PO q 12 hours **Therapy if strain is susceptible:** Amoxicillin 500 mg PO q 8 hours	Duration of therapy is 60 days
Children The use of tetracyclines and fluoroquinolones in children has well known adverse effects. These risks must be weighed carefully against the risk of developing life-threatening disease. If a release of *B anthracis* is confirmed, children should be prophylaxed initially with ciprofloxacin or doxycycline but therapy should be changed to amoxicillin as soon as penicillin susceptibility is confirmed.	**Preferred treatment:** *Ciprofloxacin 15 – 20 mg/kg PO q 12 hours (not to exceed 1 gm/day), or *Doxycycline [2] ➢ **>8 years and > 45 kg**: give 200 mg loading dose, the 100 mg q 12 hours; ➢ **< 8 years and = 45 kg**: give 4.4mg/kg loading dose then 2.2 – 4.4 mg/kg/day in 2 divided doses; ➢ **= 8 years:** same as > 8 years and = 45 kg, **Therapy if strain is susceptible:** Amoxicillin ➢ If = 20 kg: give 500 mg PO q 8 hour; or ➢ If < 20 kg: give 40 mg/kg divided into 3 doses to be taken q 8 hours	Duration of therapy is 60 days

* Antibiotics supplied as part of the National Pharmaceutical Stockpile (NPS)

1. Although tetracyclines are not recommended during pregnancy, its use may be indicated for life-threatening infections. Adverse affects on developing teeth and bone are dose related, therefore, doxycycline might be used for short course therapy (7 – 14 days) prior to the 6th month of gestation. After the 6th month, professional consultation should be obtained.
2. In 1991, the American Academy of Pediatrics amended their recommendation to allow treatment of young children with tetracyclines for serious infections for which doxycycline may be indicated such as Rocky Mountain Spotted Fever. Doxycycline is preferred for its twice-a-day dosing and low incidence of gastrointestinal side effects.

ANTHRAX – QUICK REFERENCE

Any suspected case of anthrax (*Bacillus anthracis*) MUST BE TREATED AS A PUBLIC HEALTH EMERGENCY and reported to the infection control practitioner [*insert telephone number*] and the local health department [*insert telephone number*] immediately.

Bioterrorism Epidemiology:
- Inhalation anthrax: most likely disease presentation if bacilli intentionally aerosolized
- Person to person transmission does NOT occur

Incubation Period:
- Average 1 – 6 days
- Up to 6 weeks following a bio-aerosol release

Clinical Disease:
- Gastrointestinal: abdominal pain, bloody diarrhea, hematemesis
- Cutaneous: pruritic skin lesion with black eschar and tissue edema,
- Inhalation: Bi-phasic illness
  Initial phase: flu-like symptoms, low grade fever, non-productive cough, malaise, fatigue, myalgias, mild chest discomfort followed by a short period (several hours to days) of improvement
  Acute phase: abrupt onset of respiratory distress with dyspnea, stridor, cyanosis, high fever, shock and death within 24 – 36 hours.

Diagnosis:
- Presumptive diagnosis based on characteristic skin lesion (cutaneous), intestinal bleeding (gastrointestinal) and respiratory failure with widening mediastinum (inhalation).

Treatment: (See overview)
Early antibiotic treatment is critical to survival
- Ciprofloxacin, Penicillin G (if susceptible), Doxycycline

Prophylaxis: (See overview)
Early antibiotic prophylaxis is critical to preventing disease
- Ciprofloxacin, Doxycycline

Isolation:
- Inhalation: Standard Precautions
- Cutaneous and gastrointestinal: Standard and Contact Precautions

ANTHRAX – FREQUENTLY ASKED QUESTIONS (FAQ)

What is anthrax?

Anthrax is a bacterium (germ) that may intentionally be released into the air (bioterrorism) and breathed (inhaled) into people's lungs causing severe respiratory distress. The germ can also get into open sores on the skin. Rarely the germ can be eaten and cause stomachache, vomiting and diarrhea.

Is anthrax spread from person to person?

The infection is NOT spread from person to person.

How will I know if I was exposed to the germ?

It will depend on how the germ is released, where it was released, and where you were in relation to the release site. The further away you were from the release site the less likely it will be that you were exposed.

How soon will symptoms develop (incubation period)?

Symptoms may start from 1 – 6 days after exposure to the germ. Since the germ can live for a long time in the environment, symptoms may not start for up to 60 or more days after the germ was released into the air.

What are the symptoms of infection?

If the germ invades your lungs, you will have a fever, possibly a non-productive cough, and severe shortness of breath. If the skin is contaminated, an itchy, black spot with swelling may appear. If the germ is eaten, you may develop a stomachache, vomiting, and diarrhea that may be bloody.

How is the infection treated?

If you have the infection, your health care provider (doctor or nurse) will give you an antibiotic.

How is the infection prevented?

If the local health officer determines that you were exposed to the germ, you will be offered an antibiotic. Even if you take the antibiotic, you may develop the infection. If you develop symptoms such as fever or shortness of breath while you are taking the antibiotic, you should go to the nearest emergency service center or hospital immediately.

How long should I take the antibiotic?

You may have to take the antibiotic for a long time. The local health officer will make frequent announcements to give you the most current information.

What should I do if I DO NOT have symptoms?

If you do not have symptoms of the infection, you should continue with your routine daily activities. Please DO NOT go to the hospital emergency room unless you have a fever or you develop shortness of breath.

How can I get more information?

The local health department will make frequent public announcements about who should receive the antibiotic, how to take the antibiotic, and where you can obtain the antibiotic. It is important that you listen to the radio or television for more information.

ANTHRAX – HOME CARE INSTRUCTIONS

In the event of an intentional release of the germ that causes anthrax, many people may require hospitalization within a few days. Hospitals may become overcrowded and it may become necessary for many sick people to be cared for in their home by relatives or friends. The following information may be helpful in providing care to sick persons at home.

- Wash your hands with soap and water before you eat or drink, after using the bathroom and after contact with the sick person.
- Wear gloves (vinyl or latex) when you have contact with the sick person's blood and other body fluids (urine, feces, vomit, wound drainage, mucous or saliva). Wash your hands after removing the gloves. If gloves are not available, wash your hands with soap and water after contact with the sick person's blood and other body fluids.
- Wash the sick person's hands after using the bathroom, before eating or drinking and after contact with pets.
- If an antibiotic is recommended, give it exactly as prescribed by the doctor or nurse. If an allergic reaction develops, seek medical advice immediately.
- Take the person's temperature at least twice a day. If the temperature goes above 100° F, give Tylenol® (if not allergic) or other medicine such as Motrin® or Advil®. Follow the instructions on the package insert. If the temperature is not controlled by the medicine, call your health care provider (doctor or nurse) or take the person to the nearest designated emergency center or hospital.
- If the person is having trouble breathing, go immediately to the nearest designated emergency center or hospital.
- Give the person plenty of fluids such as water or juice. Allow the person to eat solid food as tolerated.
- Change the sick person's clothes and bed linens frequently especially if soiled with blood or other body fluids.
- Wash soiled clothes and bed linens in warm water using any commercial laundry product.
- Disinfect the bathroom and kitchen with a disinfectant such as Lysol® every day or when surfaces become soiled with blood or other body fluids.
- As a caregiver, you must take care of yourself. Get plenty of rest, drink fluids frequently, and eat a healthy diet. Even if you are not taking an antibiotic, take your temperature in the morning and afternoon for 3 weeks. If you develop a fever above 100° F or if have shortness or breath, seek medical attention immediately.

ANTHRAX – SCREENING FORM

Current Date: _____/_____/_____ Medical Record Number: _____

Last Name: _____First Name: _____MI: _____

Street Address: _____ City: _____ State: _____ Zip Code: _____

Home Phone Number: (____) _____ Occupation: _____

Work Address: _____ City: _____ State: _____ Zip Code: _____

Age: ___Date of Birth: ____/____/____ Sex: ____ Date Symptoms Started: _____/____/_____

In the past 6 weeks, have you traveled to other USA cities? If yes, identify city(s):

_____

In the past 6 weeks, have you traveled to a foreign country(s)? If yes, identify city(s)/country(s)?

_____

Have you been camping in past 6 weeks?	**NO**	**YES**
Have you had any insect bites in the past 6 weeks?	**NO**	**YES**
Have you had contact with sick animals within the past 6 weeks?	**NO**	**YES**

Are you currently taking any medicine(s)? (Identify all prescription/over-the-counter medicines)

_____

Are you allergic to any medicine(s)? **NO** **YES** If yes, what medicine(s) are you allergic to?

_____

Over the past 6 weeks, have you had any of the following symptoms or ailments? (Check all that apply).

Symptoms	Yes	Symptoms	Yes
Fever		Trouble breathing	
Upset stomach (nausea)		Sweating excessively	
Headache		Pain or tightness in the chest	
Dry cough		Very tired	
Sore muscles		Pain in the stomach	
Bloody diarrhea		Vomiting blood	
Pain in stomach		Black scab on skin	
Itchy skin		Sore throat	
Trouble swallowing		Pain in the neck	

Section 2-A-2 – Brucellosis (*Brucellae* Species)

BRUCELLOSIS – OVERVIEW

Any suspected or confirmed case of brucellosis (*Brucellae* species) must be reported to the infection control practitioner [*insert telephone number*] and the local health department [*insert telephone number*] immediately.

Naturally Occurring Brucellosis

Brucellosis, also known as "undulant fever", is a common veterinary disease caused by one of six *Brucellae species.* Four species (*B abortis*, *B melitensis*, *B suis*, and *B canis*) are pathogenic to humans. In the United States, most cases of human brucellosis are associated with the ingestion of unpasteurized dairy products. Infections are primarily limited to abattoirs and laboratory workers. In animals, the disease primarily involves the reproductive tract causing septic abortion and orchitis.

Bioterrorism Epidemiology

Exposure to as few as 10 – 100 organisms may result in clinical infection. Person to person transmission does not occur. Large numbers of temporally clustered persons presenting to a clinic or an emergency room with similar symptoms should be reported to the local health department immediately.

Incubation Period

The incubation period ranges from 5 to 60 days.

Clinical Manifestations

The person generally presents with non-specific complaints resembling influenza. The onset of disease may be acute or insidious over several weeks. Fever, headache, myalgias, arthralgias, back pain, sweats, chills, generalized weakness and malaise are the most common complaints. Cough and pleuritic chest pain may occur in about 20% of the cases. Gastrointestinal symptoms include anorexia, nausea, vomiting, diarrhea and constipation.

Complications

Persons infected with Brucellae species have a low mortality rate but the disease can be relatively prolonged and incapacitating. The disease is systemic and may affect many organs and tissues. Ileitis, colitis, and granulomatous or mononuclear infiltrative hepatitis may occur in 45 - 65% of cases. Lumbar pain and tenderness can occur in up to 60% of cases and may be due to various osteoarticular infections of the axial skeleton. Vertebral osteomyelitis, intervertebral disc space infection, paravertebral

abscess and sacroiliac infection occur in a minority of cases. Joint involvement may vary from pain to immobility and effusion. Although the sacroiliac joints are most commonly involved, the peripheral joints of the hips, knees, and ankles may be affected. Meningitis, encephalitis, peripheral neuropathy, radiculoneuropathy and meningovascular syndromes have been observed in rare instances. Behavioral disturbances and psychoses appear out of proportion to fever elevation or central nervous system disease. Endocarditis occurs in about 2% of the cases and accounts for the majority of brucellosis-related deaths.

Diagnosis

Radiological

The chest x-ray is generally normal but may show lung abscesses, single or military nodules, bronchopneumonia, enlarged hilar lymphadenopathy and pleural effusions.

Laboratory

The leukocyte count may be low to normal and anemia and thrombocytopenia are common. Brucella may be recovered from blood, bone marrow, or other tissue cultures. Rapid isolation methods (Bactec) may identify Brucella from the blood if the culture is maintained for a long period (≥ 30 days). The biphasic culture method for blood (Castaneda bottle) may increase the chance of recovering the microorganism. A serum agglutination test (SAT) is available to detect both IgM and IgG antibodies. A titer of 1:160 or greater is indicative of infection.

Treatment

Oral antibiotic therapy is sufficient in treating most cases of brucellosis.

- Doxycycline 200 mg/day PO plus rifampin 600 mg/day PO is generally recommended for at least six weeks.
- Doxycycline 200 mg/day PO plus gentamicin 3–5 gm/kg/day IV or IM (3 divided doses) is an acceptable alternative.

Other treatments include TMP/SMX plus gentamicin, and ofloxacin plus rifampin. Long-term, triple-drug therapy with rifampin, a tetracycline, and an aminoglycocide is recommended by some experts for patients with meningoencephalitis or endocarditis.

Prophylaxis

A three to six week course of prophylactic therapy with one of the oral regimes discussed above should be considered following a bio-aerosol exposure.

Isolation

Standard Precautions are recommended.

BRUCELLOSIS – QUICK REFERENCE

Any suspected or confirmed case of brucellosis (*Brucellae* species) must be reported to the infection control practitioner (*insert telephone number*] and the local health department [*insert telephone number*] immediately.

Bioterrorism Epidemiology:
- Exposure to 10 – 100 organisms can result in clinical disease
- Brucellosis is **NOT** transmitted from person to person
- If Brucellosis is suspected, alert the laboratory

Incubation Period:
- Average 5 – 60 days

Clinical Disease:
Symptoms are generally non-specific flu-like symptoms including fever (undulant pattern if untreated), headache, myalgias, arthralgias, back pain, sweats, chills, malaise, cough, pleuritic chest pain, anorexia, nausea, vomiting and diarrhea. Some patients may complain of malodorous sweat and a peculiar taste in mouth.

Diagnosis:
Routine laboratory tests are generally not suggestive of an infectious process.

Treatment: (See overview)
- Doxycycline 200 mg/day plus rifampin 600 mg/day PO for six weeks (recommended).
- Doxycycline 200 mg/day plus gentamicin 3 – 5 mg/kg/day IV or IM (3 divided doses) (alternative).

Prophylaxis: (See overview)

Isolation:
- Standard Precautions

BRUCELLOSIS –FREQUENTLY ASKED QUESTIONS (FAQ)

What is Brucellosis?

The bacterium (germ) that causes brucellosis infection is generally transmitted (spread) to humans by contact with infected animals (cows and sheep) or drinking unpasteurized (contaminated) milk products.

Is brucellosis spread from person to person?

The infection is **NOT** spread from person to person.

How will I know if I was exposed to the germ?

It will depend on how the germ was released, where it was released and where you were in relation to the release site. The further away you were from the release site the less likely it will be that you were exposed.

How soon will the symptoms develop (incubation period)?

The symptoms may start from 5 - 60 days after you were exposed to the germ.

What are the symptoms of infection?

Not all persons exposed to the germ will get sick. The symptoms may include fever, headache, back pain, tiredness, chills, sweats, sore muscles, cough, pain in the lungs when you take a deep breath, loss of appetite, nausea, vomiting and diarrhea.

How is the infection treated?

If you have symptoms of the infection, your health care provider (doctor or nurse) will give you an antibiotic.

How is the infection prevented?

If the local health department determines that you were exposed to the germ, you will be offered an antibiotic. Even if you take the antibiotic, you may develop the infection. If any symptoms of the infection develop while you are taking the antibiotic, you should see your health care provider (doctor or nurse) immediately.

How long should I take the antibiotic?

It is important that you take the antibiotic exactly as directed. The dose and the number of treatment days will differ depending on the antibiotic prescribed. If you develop side effects (reaction) to the antibiotic, call your health care provider (doctor or nurse) immediately. Do not give your antibiotic to another person.

What should I do if I DO NOT have symptoms?

If you do not have any symptoms of the infection, you should continue with your routine daily activities. Please **DO NOT** go to the hospital emergency room unless you are feeling sick.

How can I get more information?

The local health department will make frequent public announcements about who should receive an antibiotic, how to take the antibiotic and where you can obtain the antibiotic. It is important that you listen to the radio or television for more information.

BRUCELLOSIS – HOME CARE INSTRUCTIONS

In the event of an intentional release of the germ that causes brucellosis, many people may require hospitalization within a few days. Hospitals may soon become overwhelmed and unable to care for every person who seeks treatment. It may become necessary for many sick people to be cared for in their home by relatives or friends. The following information may be helpful in providing care to sick persons at home.

- Wash your hands with soap and water before you eat or drink, after using the bathroom and after contact with the sick person.
- Wear gloves (vinyl or latex) when you have contact with the sick person's blood and other body fluids (urine, feces, vomit, wound drainage, mucous or saliva). Wash your hands after removing the gloves. If gloves are not available, wash your hands with soap and water after contact with the sick person's blood and other body fluids.
- Wash the sick person's hands after using the bathroom, before eating or drinking, and after contact with pets.
- If an antibiotic is recommended, give it exactly as prescribed by the doctor or nurse. If an allergic reaction develops, seek medical advice immediately.
- Take the person's temperature at least twice a day. If the temperature goes above 100° F, give Tylenol® (if not allergic) or other medicine such as Motrin® or Advil®. Follow the instructions on the package insert. If the temperature is not controlled by the medicine, call your health care provider (doctor or nurse) or take the person to the nearest designated emergency center or hospital.
- If the person is having trouble breathing, go immediately to the nearest designated emergency center or hospital.
- Give the person plenty of fluids such as water or juice. Allow the person to eat solid food as tolerated.
- Change the sick person's clothes and bed linens frequently especially if soiled with blood or other body fluids.
- Wash soiled clothes and bed linens in warm water using any commercial laundry product.
- Disinfect the bathroom and kitchen with a disinfectant such as Lysol® every day or when surfaces become soiled with blood or other body fluids.
- As a caregiver, you must take care of yourself. Get plenty of rest, drink fluids frequently, and eat a healthy diet. Even if you are not taking an antibiotic, take your temperature in the morning and afternoon for 4 weeks. If you develop a fever above 100° F or if you have flu-like symptoms, seek medical attention immediately.

BRUCELLOSIS – SCREENING FORM

Current Date: _____/_____/_____ Medical Record Number: _____

Last Name: _____First Name: _____MI: _____

Street Address: _____ City: _____ State: _____ Zip Code: _____

Home Phone Number: (____) _____ Occupation: _____

Work Address: _____ City: _____ State: _____ Zip Code: _____

Age: ___Date of Birth: ____/____/____ Sex: ____ Date Symptoms Started: _____/____/_____

In the past 3 weeks, have you traveled to other USA cities? If yes, identify city(s):

_____

In the past 3 weeks, have you traveled to a foreign country(s)? If yes, identify city(s)/country(s)?

_____

Have you been camping in past 3 weeks? **NO** **YES**

Have you had any insect bites in the past 3 weeks? **NO** **YES**

Have you had contact with sick animals within the past 3 weeks? **NO** **YES**

Are you currently taking any medicine(s)? (Identify all prescription/over-the-counter medicines)

_____

Are you allergic to any medicine(s)? **NO** **YES** If Yes, what medicine(s) are you allergic to?

_____

Over the past 3 weeks, have you had any of the following symptoms or ailments? (Check all that apply).

Symptoms	Yes	Symptoms	Yes
Fever		Pain or tightness in the chest	
Headache		Feel cold all over or shiver/shake	
Cough		Pain in the joints	
Sore muscles		Very tired	
Diarrhea (loose or runny stool)		Vomiting	
Diarrhea		Upset stomach (nausea)	
Pain in stomach		Lost of appetite	
Constipation		Bad taste in the mouth	
Short of breath		Stiff neck	
Pain in the lumbar area			

Section 2-A-3 – Botulism (*Clostridium botulinum*)

BOTULISM – OVERVIEW

Any suspected case of botulism (*Clostridium botulinum*) MUST BE TREATED AS A PUBLIC HEALTH EMERGENCY and reported to the infection control practitioner [*insert telephone number*] and the local health department [*insert telephone number*] immediately.

Naturally Occurring Botulism

Clostridium botulinum is an anaerobic, spore-forming bacterium that produces seven (7) different, but related, toxins (A through G). Only toxins A, B, E and F cause disease in humans. The spores are ubiquitous and are found throughout the world in soil and marine sediments.

Botulism is generally a foodborne disease and is ingested with improperly prepared foods. The toxin is absorbed in the small bowel and carried through the blood stream to the peripheral cholinergic synapses preventing the release of acetylocholine. Over recent years, wound botulism has increased in persons who are injecting drug users. In this form of the disease, the spores germinate in the wound. The exact cause of infant and adult botulism is not known but prior colonization of the bowel with subsequent overgrowth due to the administration of antibiotics may be associated with this form of the disease.

Bioterrorism Epidemiology

Botulinum toxin is one of the most potent toxins in nature and is 100,000 times more toxic than sarin gas. As a bioterrorist agent the most likely route of exposure would be in the form of a bio-aerosol. The symptoms would be very similar to those caused by ingesting the toxin however the incubation period might be longer. Intentional contamination of food and water is another possible concern. Botulism is not transmitted from person to person. All materials initially contaminated by the toxin must be handled with extreme care. The toxins are detoxified in the air within 12 hours. Sunlight inactivates the toxins with 1 - 3 hours. Heat destroys the toxins in 30 minutes at 80° C and in several minutes at 100° C. Any material containing botulinum toxin must be handled with care as exposure to minute quantities may cause disease.

Incubation Period

The normal incubation period following the ingestion of contaminated food is 12 – 36 hours but may be as short as 6 hours or as long as 10 days depending on the size of

the inoculum ingested. Recent primate studies indicate the symptoms may not appear for several days when a low dose of toxin is inhaled.

Clinical Presentation

Cranial nerve palsies are prominent early, with eye symptoms such as blurred vision due to mydriasis, diplopia, ptosis, and photophobia. Other cranial nerve symptoms include dysarthria, dysphonia, and dysphagia. Flaccid skeletal muscle paralysis follows in a symmetrical, descending, and progressive manner. Collapse of the upper airway may occur due to weakness of the oropharyngeal muscles. As the descending motor weakness progresses, the diaphragm and accessory muscles lead to respiratory failure.

The autonomic effects of botulism are manifested by the typical anticholinergic signs and symptoms. These include dry mouth, ileus, constipation, and urinary retention. Nausea and vomiting may occur as nonspecific sequelae of an ileus. Dilated pupils (mydriasis) are seen in approximately 50% of cases.

Sensory symptoms usually do not occur. The toxins do not cross the blood/brain barrier and do not cause central nervous system disease. However, the psychological sequelae of botulism may be severe and require specific intervention.

On physical examination, the patient is generally afebrile, alert, and oriented. Postural hypotension may be present. The mucous membranes may be dry and crusted and the patient may complain of a sore throat, difficulty swallowing and speaking. The gag reflex may be absent and the pupils may be dilated and even fixed. Ptosis and extraocular muscle palsies may be present. Variable degrees of skeletal muscle weakness may be observed depending on the degree of progression in the individual patient. Deep reflexes may be present or absent. Cyanosis or narcosis from CO_2 retention may be evident as the respiratory muscles become paralyzed.

Individual cases might be confused clinically with other neuromuscular disorders such as Guillian-Barré syndrome, myasthenia gravis, or tick paralysis. The edrophonium or Tensilon® test may be transiently positive in botulism so it may not distinguish botulism intoxication from myasthenia. The cerebrospinal fluid in botulism is normal and the paralysis is generally symmetrical, which distinguishes it from enteroviral myelitis. Mental status changes are generally seen in viral encephalitis but not generally with botulinum intoxication. Other diseases to consider would be stroke, chemical intoxication (e.g., carbon monoxide, barium carbonate, methyl chloride, organic phosphorus compound or atropine), mushroom poisoning, medication reactions (e.g., neomycin, streptomycin, kanamycin and gentamicin), and poliomyelitis.

Diagnosis

Routine laboratory studies are of little diagnostic value. The occurrence of several afebrile patients with progressing symmetrical descending flaccid paralysis strongly

suggests botulinum intoxication. Foodborne outbreaks tend to occur in small clusters. An unusual number of cases within a defined geographical area should alert hospital emergency department and the infection control personnel that a bioterrorist event could be evolving.

Serum specimens should be drawn and sent to the laboratory capable of performing mouse neutralization bioassay. Tests to rule other diseases include spinal fluid protein, Tensilon® test, electromyography and computerized tomographic scans.

Treatment

Respiratory failure due to paralysis of the respiratory muscles is the most serious complication of botulinum intoxication and is generally the cause of death. Prolonged ventilator assistance is almost always required for survival. Intensive and prolonged nursing care is required for most patients. It may be as long as three months before there are any signs of improvement, and up to one year for complete resolution of symptoms.

Early administration of botulinum antitoxin is critical to survival. Antitoxin can only neutralize circulating toxin in patients with symptoms that continue to progress. When symptom progression ceases, no circulating toxin remains and the antitoxin is no longer effective. Antitoxin may be effective in foodborne cases where presumably toxin continues to be absorbed through the gut wall. Animal studies show that after aerosol exposure, botulinum antitoxin is very effective if given before the onset of symptoms. If antitoxin is delayed until after the onset of symptoms, it does not protect against respiratory failure.

A licensed trivalent antitoxin (types A, B, and E) is available for cases of foodborne botulism. This product is a horse serum product and the risks of administration include anaphylaxis and serum sickness. This antitoxin requires skin testing for horse serum sensitivity prior to administration. Skin testing is performed by injecting 0.1 ml of a 1:10 dilution (in sterile physiologic saline) of antitoxin intradermally in the patient's forearm with a 26 or 27-gauge needle. The injection site is observed for 20 minutes. The test is positive if any of these allergic reactions occur: hyperemic areola at the site of injection of > 0.5 cm, fever or chills, hypotension (> 20 mm Hg drop in systolic or diastolic pressures), skin rash, respiratory difficulty, nausea or vomiting, or generalized itching. If no allergic reaction is observed, 10 ml of the antitoxin should be administered as a single dose intravenously in a normal saline solution over a period of 20 minutes. With a positive skin test desensitization can be attempted by administering 0.01 – 0.1 ml of antitoxin subcutaneously, doubling the previous dose every 20 minutes until 1.0 – 2.0 ml can be sustained without any marked reaction. It is recommended that desensitization be performed by an experienced allergist. Medical personnel administering the antitoxin should be prepared to treat anaphylaxis with epinephrine, intubation and vascular access.

Isolation

Standard Precautions are recommended.

BOTULISM – QUICK REFERENCE

Any suspected case of botulism (*Clostridium botulinum*) MUST BE TREATED AS A PUBLIC HEALTH EMERGENCY and reported to the infection control practitioner [*insert telephone number*] and local health department [*insert telephone number*] immediately.

Bioterrorism Epidemiology:
- Botulinum toxins are considered the most lethal substances known to man.
- Intentional exposure could occur through contaminated food or water or by bio-aerosol.
- Person to person transmission does **NOT** occur.

Incubation Period:
12 – 36 hours following exposure, may be as long as several days, depending on the size of the inoculum and route of exposure.

Clinical Disease:
Foodborne: Acute bilateral cranial nerve impairment, blurred or double vision, ptosis, dysphagia, dry mouth, slurred speech, afebrile, alert and oriented
- Cranial nerve palsies, dilated pupils (50%), urinary retention
- Symptoms may progress to a symmetrical flaccid paralysis in which sensation is completely preserved and result in respiratory failure

Inhalation: Symptoms would be similar to foodborne illness

Diagnosis:
- Presumptive - based on symptoms
- Tensilon test may be slightly positive
- Brain imaging (CT or MRI), lumbar puncture and edrophonium chloride tests normal
- Electromyography may show decreased amplitude of action potentials in involved muscle group

Treatment: (See overview)
- Botulism antitoxin – must be obtained through the local health department
- Most effective if administered early in disease
- Mechanical ventilation

Isolation:
Standard Precautions

BOTULISM – FREQUENTLY ASKED QUESTIONS (FAQ)

What is botulism?

The bacterium (germ) that causes botulism releases a powerful toxin that causes the muscles to become paralyzed. The germ is normally found in the soil and in ocean or lake-water sediment or silt. Most people get botulism from eating (ingesting) improperly cooked or preserved food. Airborne botulism does not occur naturally. However, if the toxin is intentionally released (bioterrorism) into the air it could be absorbed into the skin and lungs and cause the same symptoms as ingested botulism.

Is botulism spread from person-to-person?

Neither the germ nor the poisonous toxin released by the germ is spread from person to person.

How will I know if I was exposed to the germ that causes botulism?

It will depend on how the toxin was released, where it was released, and where you were in relation to the release site. The toxin could be released into the air or in food or water.

How soon will symptoms of botulism develop (incubation period)?

Normally the symptoms start within 12 – 36 hours but the incubation period may be as short a 6 hours or as long as 10 days depending on how the toxin was released.

What are the symptoms of botulism?

The early symptoms include blurred vision, double vision, and dry mouth. As the toxin spreads in the body, the symptoms become more intense and include sore throat, trouble speaking and swallowing, droopy eyelids, muscle weakness, and trouble breathing.

How is botulism treated?

There is no medicine to treat botulism. It may become necessary to put a tube in your throat that is attached to a breathing machine (ventilator) to help you breath. You may be paralyzed and require hospitalization for a long time. As time passes, most persons with botulism recover full use of their muscles.

How is botulism prevented?

The local health department will provide you with information about food and water contamination. If the toxin is released into the air, the local health department may tell you to stay inside and close all the windows and doors for a short time.

What should I do if I have symptoms of botulism?

If you have any symptoms such as difficulty eating or drinking, blurred or double vision, dry mouth, or difficult breathing you SHOULD GO TO THE NEAREST EMERGENCY ROOM IMMEDIATELY. If you do not have any symptoms, you should continue with your routine daily activities. Please DO NOT go to the hospital emergency room unless you are feeling sick.

How can I get more information?

The local health department will make frequent public announcements. It is important that you listen to the radio or television for more information.

BOTULISM – HOME CARE INSTRUCTIONS

In the event of an intentional release of the germ that causes botulism, many people may be exposed and require hospitalization. Do not attempt to care for anyone at home who shows symptoms of botulism. If you or any member of your family has any of the following symptoms, go to the nearest hospital emergency room immediately:

- Blurred vision
- Double vision
- Trouble swallowing food or liquids
- Dry mouth
- Trouble speaking
- Trouble breathing

If you do not have any symptoms, you should practice good personal hygiene as follows:

- Wash your hands with soap and water before you eat or drink, after using the bathroom, and after contact with any sick person.
- Wash soiled clothes and bed linens in warm water using any commercial laundry product.
- Disinfect the bathroom and kitchen with a disinfectant every day or when surfaces become soiled.
- If you are a caregiver, you must take care of yourself. Get plenty of rest, drink fluids frequently, and eat a healthy diet.

BOTULISM - SCREENING FORM

Current Date: _____/_____/_____ Medical Record Number: _____

Last Name: _____First Name: _____MI: _____

Street Address: _____ City: _____ State: _____ Zip Code: _____

Home Phone Number: (____) _____ Occupation: _____

Work Address: _____ City: _____ State: _____ Zip Code: _____

Age: ___Date of Birth: ____/____/____ Sex: ____ Date Symptoms Started: _____/____/_____

In the past 2 weeks, have you traveled to other USA cities? If yes, identify city(s):

_____

In the past 2 weeks, have you traveled to a foreign country(s)? If yes, identify city(s)/country(s)?

_____

Have you been camping in past 2 weeks? **NO** **YES**

Have you had any insect bites in the past 2 weeks? **NO** **YES**

Have you had contact with sick animals within the past 2 weeks? **NO** **YES**

Are you currently taking any medicine(s)? (Identify all prescription/over-the-counter medicines)

_____

Are you allergic to any medicine(s)? **NO** **YES** If Yes, what medicine(s) are you allergic to?

_____

Over the past 2 weeks, have you had any of the following symptoms or ailments? (Check all that apply).

Symptoms	Yes	Symptoms	Yes
Fever		Droopy eyelids	
Blurred vision		Double vision	
Dry mouth		Sore throat	
Trouble swallowing		Trouble breathing	
Constipation		Vomiting	
Diarrhea			

Section 2-A-4 – Q Fever (*Coxiella burnetii*)

Q FEVER – OVERVIEW

Naturally Occurring Q Fever

Q fever is caused by the rickettsia, *Coxiella burnetii,* and is common to animals such as cattle, sheep, and goats. Animals do not develop clinical disease but can shed large numbers of organisms in placental tissue and in body fluids including milk, urine, and feces. Humans normally acquire the disease by inhalation of *C burnetii* that have been aerosolized from contaminated environmental reservoirs such hay, straw, manure, dust, or dirt.

Bioterrorism Epidemiology

As a bioterrorism agent, Q fever would cause symptoms similar to naturally occurring disease. A single inhaled organism may produce clinical illness in some persons. Following a bio-aerosol release, air samples may be positive for up to two weeks and viable organisms may be re-aerosolized into the environment from contaminated soil for up to 150 days. Significant numbers of persons who present to a clinic or an emergency room with a non-specific febrile illness associated with pulmonary symptoms should be reported to the local health officer immediately.

Incubation Period

The incubation period is from 2 – 14 days.

Clinical Manifestations

Q fever is generally a self-limiting, febrile disease lasting 2 – 14 days. Prominent symptoms include fever and severe headache. Other symptoms may include fatigue, chills, sweats, myalgias, nausea, vomiting, diarrhea, and pleuritic chest pain. Pneumonia occurs in about one half of persons infected with Q fever however fewer than 30% of persons with pneumonia will have a productive cough or rales. Pneumonia can be atypical, rapidly progressive or present with fever but no pulmonary symptoms. Physical examination of the chest may be normal. About 33% of persons infected with Q fever may develop acute hepatitis with jaundice. Splenomegaly may also be present.

Complications

Complications may include acute hepatitis in the absence of pulmonary symptoms, culture-negative endocarditis, aseptic meningitis, encephalitis, and osteomyelitis.

Differential Diagnosis

Other organisms to consider include *Mycoplasma pneumoniae*, *Legionella pneumophila*, *Chlamydia psittaci*, and *Chlamydia pneumoniae*. More progressive forms of pneumonia may resemble bacterial pneumonia, tularemia, or plague.

Diagnosis

Radiological

Chest x-ray abnormalities may include pleural effusions, consolidation, atelectesis, hilar adenopathy, non-segmental and segmental pleural-based opacities, and multiple rounded opacities.

Laboratory Diagnosis

A leukocytosis is present in about one third of infected persons. Routine bacterial cultures of the blood and sputum are generally negative. The hepatic transaminase levels may be elevated 2–3 times normal however the bilirubin is generally normal. The compliment fixation (CF) test is diagnostic if there is a fourfold rise in titer between the acute and convalescent serum samples.

Treatment

Although most cases of Q fever may resolve without antibiotic treatment, all cases of infection should be treated for at least 5 – 7 days to reduce the risk of complications such as endocarditis. The antibiotics of choice include:

- Tetracycline 500 mg q 6 hours for 5 – 7 days
- Doxycycline 100 mg q 12 hours for 5 – 7 days
- A quinolone such as ciprofloxacin may be given in place of tetracycline or doxycycline if the former antibiotics are not tolerated.

Prophylaxis

If prophylaxis is recommended, antibiotic therapy with tetracycline, doxycycline or a quinolone should be started 8 – 12 days following initial exposure.

Isolation

Standard Precautions are recommended.

Q FEVER – QUICK REFERENCE

Any suspected or confirmed case of Q fever (*Coxiella burnetii*) must be reported to the infection control practitioner [*insert telephone number*] and the local health department [*insert telephone number*] immediately.

Bioterrorism Epidemiology:
- Exposure to a single inhaled organism can result in clinical disease.
- Person to person transmission does NOT occur.

Incubation Period:
- Average 2 –14 days.

Clinical Disease:
Symptoms may include fever, non-productive cough, severe headache, fatigue, and myalgias. Less prominent symptoms include chills, sweats, nausea, vomiting, diarrhea and pleuritic chest pain and neurological manifestations. Pneumonia may be rapidly progressive especially in persons who are immunosuppressed.

Diagnosis:
Laboratory tests are generally unremarkable. The WBC and hepatic transaminase levels may be elevated. The bilirubin is generally normal.

Treatment: (See overview)
- Tetracycline 500 mg q 12 hours for 5 –7 days
- Doxycycline 100 mg q 12 hours for 5 – 7 days.

Prophylaxis: (See overview)
Antibiotics, if given too early following exposure, may delay but not prevent the onset of symptoms.
- Tetracycline
- Doxycycline

Isolation:
Standard Precautions

Q FEVER – FREQUENTLY ASKED QUESTIONS (FAQ)

What is Q fever?

The bacterium (germ) that causes Q fever is generally transmitted (spread) to humans by:

- Contact with infected animals (cows, ducks, turkeys)
- Contact with contaminated straw or manure
- Inhaling (breathing) airborne dust or soil contaminated with the germ
- Ingesting (drinking) raw milk, or
- Skinning wild rabbits

If the germ were intentionally released into the air (bioterrorism), it would most likely be inhaled (breathed) into you lungs causing an infection (pneumonia).

Is Q fever spread from person to person?

The infection is **NOT** spread from person to person.

How will I know if I was exposed to the germ?

It will depend on how the germ was released, where it was released, and where you were in relation to the release site. The further away you were from the release site the less likely it will be that you were exposed.

How soon will the symptoms develop (incubation period)?

The symptoms may start from 2 – 14 days after you were exposed.

What are the symptoms of infection?

Not all persons exposed to the germ will get sick. The symptoms may include fever, dry cough, severe headache, tiredness, chills, sweats, sore muscles, nausea, vomiting, diarrhea, and pain when taking a deep breath.

How is the infection treated?

If you have symptoms of the infection, your health care provider (doctor or nurse) will give you an antibiotic.

How is the infection prevented?

If the local health officer determines that you were exposed to the germ, you will be offered an antibiotic. Even if you take the antibiotic, you may develop the infection. If any symptoms of the infection develop while you are taking the antibiotic, you should see your health care provider (doctor or nurse) immediately.

How long should I take the antibiotic?

It is extremely important that you take the antibiotic exactly as directed. The dose and number of treatment days will differ depending on the antibiotic prescribed. If you develop side effects (reaction) to the antibiotic, call your health care provider (doctor or nurse) immediately. Do not give your antibiotic to another person.

What should I do if I DO NOT have symptoms?

If you do not have symptoms of the infection, you should continue with your routine daily activities. Please **NO NOT** go to the hospital emergency room unless you are feeling sick.

How can I get more information?

The local health officer will make frequent public announcements about who should receive an antibiotic, how to take the antibiotic and where you can obtain the antibiotic. It is important that you listen to the radio or television for more information.

Q FEVER – HOME CARE INSTRUCTIONS

In the event of an intentional release of the germ that causes Q fever, many people may require hospitalization within a few days. Hospitals may become overcrowded and it may become necessary for many sick people to be cared for in their home by relatives or friends. The following information may be helpful in providing care to sick persons at home.

- Wash your hands with soap and water before you eat or drink, after using the bathroom, and after contact with the sick person.
- Wear gloves (vinyl or latex) when you have contact with the sick person's blood and other body fluids (urine, feces, vomit, wound drainage, mucous, or saliva). Wash your hands after removing the gloves. If gloves are not available, wash your hands with soap and water after contact with the sick person's blood and other body fluids.
- Wash the sick person's hands after using the bathroom, before eating or drinking, and after contact with pets.
- If an antibiotic is recommended, give it exactly as prescribed by the doctor or nurse. If an allergic reaction develops, seek medical advice immediately.
- Take the person's temperature at least twice a day. If the temperature goes above 100°F, give Tylenol® (if not allergic) or other medicine such as Motrin® or Advil®. Follow the instructions on the package insert. If the temperature is not controlled by the medicine, call your health care provider (doctor or nurse) or take the person to the nearest designated emergency center or hospital.
- If the person is having trouble breathing, go immediately to the nearest designated emergency center or hospital.
- Give the person plenty of fluids such as water or juice. Allow the person to eat solid food as tolerated.
- Change the sick person's clothes and bed linens frequently especially if soiled with blood or other body fluids.
- Wash soiled clothes and bed linens in warm water using any commercial laundry product.
- Disinfect the bathroom and kitchen with a disinfectant such as Lysol® every day or when surfaces become soiled with blood or other body fluids.
- As a caregiver, you must take care of yourself. Get plenty of rest, drink fluids frequently and eat a healthy diet. Even if you are not taking an antibiotic, take your temperature in the morning and afternoon for 2 weeks. If you develop a temperature above 100°F or if you have flu-like symptoms, seek medical attention immediately.

Q FEVER – SCREENING

Current Date: _____/_____/_____ Medical Record Number: _____

Last Name: _____First Name: _____MI: _____

Street Address: _____ City: _____ State: _____ Zip Code: _____

Home Phone Number: (____) _____ Occupation: _____

Work Address: _____ City: _____ State: _____ Zip Code: _____

Age: ___Date of Birth: ____/____/____ Sex: ____ Date Symptoms Started: _____/____/_____

In the past 2 weeks, have you traveled to other USA cities? If yes, identify city(s):

_____

In the past 2 weeks, have you traveled to a foreign country(s)? If yes, identify city(s)/country(s)?

_____

Have you been camping in past 2 weeks? **NO** **YES**

Have you had any insect bites in the past 2 weeks? **NO** **YES**

Have you had contact with sick animals within the past 2 weeks? **NO** **YES**

Are you currently taking any medicine(s)? (Identify all prescription/over-the-counter medicines)

_____

Are you allergic to any medicine(s)? **NO** **YES** If Yes, what medicine(s) are you allergic to?

_____

Over the past 2 weeks, have you had any of the following symptoms or ailments? (Check all that apply).

Symptoms	Yes	Symptoms	Yes
Fever		Sore throat	
Headache		Feel cold all over or shiver/shake	
Dry cough		Short of breath	
Sweating		Pain or tightness in the chest	
Sore muscles		Very tired	
Diarrhea		Vomiting	
Swollen fingers		Upset stomach (nausea)	
Lost of appetite		Rash on the skin	
Change in mental status		Confusion	

Section 2-A-5 – Tularemia (*Francisella tularensis*)

TULAREMIA – OVERVIEW

Any suspected or confirmed case of tularemia (*Francisella tularensis*) must be reported to the infection control practitioner [*insert telephone number*] and the local health department [*insert telephone number*] immediately.

Naturally Occurring Tularemia

Tularemia, also know as rabbit fever and deer fly fever, is a zoonotic disease typically acquired by humans after skin or mucous membrane contact with infected animals. Ticks, deer flies and mosquitoes can also transmit the infection. Less commonly, inhalation of contaminated dust or ingestion of contaminated food or water may result in clinical disease.

Bioterrorism Epidemiology

Exposure to as few as 10 – 50 aerosolized organisms may result in clinical disease. Person to person transmission does not occur. Large numbers of temporally clustered persons presenting to a clinic or an emergency room with similar symptoms should be reported to the local health officer immediately.

Incubation Period

The average incubation period is 3 – 5 days (range 1 – 21 days).

Clinical Presentation

Tularemia may present as one of six indistinct, overlapping clinical syndromes: pneumonic, systemic, ulceroglandular, glandular, oculoglandular, and oropharyngeal. The symptoms range from asymptomatic to acute sepsis leading to rapid death.

Pneumonic tularemia

Pneumonic tularemia would presumably be the most likely clinical presentation of an intentional bio-aerosol release of *F. tularensis*. The onset of symptoms may be abrupt and include:

- Fever, non- to minimally productive cough, sub-sternal tightness, pleuritic chest pain, occasional hemoptysis (rare), chills, headache, malaise, anorexia, and fatigue
- Chest x-ray (CXR) may show infiltrates without symptoms. Other CXR findings may include subsegmental/lobar infiltrates, hilar adenopathy, pleural effusion, or miliary infiltrates (may mimic tuberculosis)
- Pleural fluid is usually exudative with more than 1000 leukocytes/mm^3

- Granulomas may develop and occasionally caseate and may be confused with tuberculosis
- Secondary skin rashes can occur within the first two weeks of illness in up to 35% of cases

Systemic tularemia

- Febrile illness without typical clinical features of other forms of tularemia,
- Non descript symptoms also include fever, chills, headache, myalgias, cough, sore throat, nausea, vomiting, watery diarrhea (rarely bloody), and abdominal pain,
- More common in persons with chronic diseases and may lead to rapid death or protracted illness.

Oropharyngeal, Ulceroglandular, Glandular, and Oculoglandular Tularemia (unlikely bio-aerosol release presentations)

- Oropharyngeal tularemia results from the direct invasion of the oropharynx (contaminated food and water) causing a sore throat with exudative tonsillitis and pharyngitis with the formation of ulcer(s); also may involve cervical, preparotid, and retropharyngeal lymph nodes with possible abscess formation.
- Ulceroglandular and glandular tularemia generally present with enlarged, local tender lymph nodes. Skin lesions can appear before, simultaneously, or after lymphadenopathy. The ulcers start as red, painful papule(s) that progress to necrotic draining ulcers with raised borders.
- Glandular tularemia is the same as ulceroglandular without the skin lesions.
- Oculoglandular tularemia results from the inoculation of bacteria onto the eye resulting in photophobia and excessive lacrimation, swollen eyes, painful infected conjunctiva and yellowish conjunctival ulcers.

Laboratory

Initial laboratory findings are generally nonspecific. Peripheral white blood cell count ranges from 5,000 – 22, 000 cells per microliter with a normal differential count. Lymphocytosis may occur late in the disease. Hematocrit, hemoglobin, and platelet counts are generally normal. Mild elevations in lactic dehydrogenase, serum transaminases and alkaline phosphatase are common. Rhabdomyolysis may be associated with elevations in serum creatine kinase and urinary myloglobin levels. Cerebral spinal fluid is generally normal although mild abnormalities in protein, glucose and blood cell count may be seen.

Tularemia can be diagnosed by recovery of the organism from blood, ulcers, conjunctival exudates, sputum, gastric washings, and pharyngeal exudates. The organism grows poorly on standard culture media and requires cysteine-enriched media. Most diagnoses of tularemia are made serologically.

Complications

Complications include dehydration, hypotension, renal failure, DIC, jaundice, hepatitis, meningitis, encephalitis, pericarditis, peritonitis, splenic rupture, rhabdomyolysis, suppuration of lymph nodes, and pleural effusion. Treatment delay and pre-existing medical conditions may contribute to death.

Differential Diagnosis

Other organisms to consider include *Mycoplasma pneumoniae*, *Legionella pneumophila*, *Chlamydia psittaci*, *Chlamydia pneumoniae* and *Mycobacterium tuberculosis*.

Treatment (See Tables 1 and 2)

Prophylaxis

Antibiotic prophylaxis is not commonly used to prevent naturally acquired tularemia.

Isolation

Standard Precautions are recommended. In addition to Standard Precautions, Contact precautions are recommended for patients with ulceroglandular or oculoglandular tularemia, if lesion drainage is not contained with a dressing.

Recommendations[1] for the treatment of patients with tularemia in contained and mass casualty settings and for post-exposure prophylaxis[2] are as follows:

Table 1: Tularemia – Antibiotic Therapy for Contained Casualty Settings

Contained Casualty Setting: assumes a limited number of persons seeking treatment. Start IV antibiotic therapy as soon as diagnosis is suspected.	
Patient Category	**Recommended Therapy**
Adults	**Preferred Therapy** *Gentamicin 5 mg/kg IM or IV 1 time daily[3] or *Gentamicin 2 mg/kg loading dose followed by 1.7 mg/kg IM or IV 3 times daily[3] **Alternative Choices** *Doxycycline 100 mg IV 2 times daily *Ciprofloxacin 400 mg IV 2 times daily[4] Chloramphenicol 25 mg/kg IV 4 times daily[5]
Children[6]	**Preferred Therapy** *Gentamicin 2.5 mg/kg IM or IV 3 times daily[3] **Alternative Choices** *Doxycycline = 45 kg give adult dose < 45 kg give 2.2 mg/kg IV 2 times daily *Ciprofloxacin 15 mg/kg 2 times daily[4] Chloramphenicol 15 mg/kg IV 4 times daily[5]
Pregnant Women[7]	**Preferred Therapy** *Gentamicin 5mg/kg IM or IV 1 time daily[3] or *Gentamicin 2 mg/kg loading dose followed by 1.7 mg/kg IM or IV 3 times daily[3] **Alternative Choices** *Doxycycline 100 mg IV 2 times daily *Ciprofloxacin 400 mg IV 2 times daily[5]

*Antibiotic supplied as part of the National Pharmaceutical Stockpile (NPS)

Table 2: Tularemia – Antibiotic Therapy for Mass Casualty Settings and Post-exposure Prophylaxis

Mass Casualty Setting and Post-exposure Prophylaxis[8]	
Adults	**Preferred Choices** *Doxycycline 100 mg orally 2 times daily[9] *Ciprofloxacin 500 mg orally 2 times daily[4]
Children[6]	**Preferred Choices** *Doxycycline[9] If = 45 kg give adult oral dose If < 45 kg give 2.2 mg/kg orally 2 times daily Ciprofloxacin 15 mg/gm orally 2 times daily[4]
Pregnant Women[7]	**Preferred Choices** *Ciprofloxacin 500 mg orally 2 times daily[4] *Doxycycline 100 mg orally 2 times daily[9]

*Antibiotic supplied as part of the National Pharmaceutical Stockpile (NPS)

1. These recommendations are adapted from the consensus recommendations of the Working Group on Civilian Biodefense and are not necessarily approved by the Food and Drug Administration. In non-bioterrorism response situations, routine treatment guidelines should be followed. Refer to the

original publication (Dennis DT, Inglesby TV, Henderson DA, et al. Tularemia as a biological weapon: Medical and public health management, JAMA, in press) for explanations and further discussion.

2. One antimicrobial agent should be selected. Therapy with gentamicin or ciprofloxacin should be continued for 10 days. Treatment with doxycycline or chloramphenicol should be continued for 14 – 21 days. Persons beginning treatment with parenteral doxycycline, ciprofloxacin or chloramphenicol can be switched to oral antibiotics when clinically indicated.
3. Aminoglycosides must be adjusted according to renal function. Neonates up to 1 week of age and premature infants should receive gentamicin 2.5 mg/kg 2 times daily.
4. Other fluoroquinolones can be substituted at doses appropriate for age. Ciprofloxacin dosage should not exceed 1 g daily in children.
5. Concentration should be maintained between 5 and 20 ug/mL. Concentrations greater than 25 ug/mL can cause reversible bone marrow suppression. Children younger than 2 years should not receive chloramphenicol.
6. In children, ciprofloxacin does should not exceed 1 g daily, chloramphenicol should not exceed 4 g daily. Children younger than 2 years should not received chloramphenicol. In neonates, gentamicin-loading dose of 4 mg/kg should be given initially.
7. Alternatives to breastfeeding may be required while the mother is taking certain antibiotics. Consult specific antibiotic package insert for information on breastfeeding.
8. One antibiotic, appropriate for the patient's age, should be chosen among the alternatives. Duration of prophylaxis in mass casualty situations is 14 days. Duration of treatment with doxycycline or chloramphenicol is 14 – 21 days.
9. Tetracycline may be substituted for doxycycline.

TULAREMIA – QUICK REFERENCE

Any suspected or confirmed case of tularemia *(Francisella tularensis)* must be reported to the infection control practitioner [*insert telephone number]* and the local health department [*insert telephone number*] immediately.

Bioterrorism Epidemiology:

- Exposure to 10 – 50 organisms can result in clinical disease.
- Pneumonic tularemia is **NOT** transmitted from person to person.
- Laboratory personnel are at high risk for infection.

Incubation Period:

- Average 3 to 5 days (range 1 to 21 days).

Clinical Disease: (Six classic forms of tularemia that may overlap)

- Pneumonic (most likely presentation): abrupt onset of fever, chills, headache, malaise, anorexia, cough (little or no sputum production), myalgias, pleuritic chest pain, substernal tightness, and rarely hemoptysis. Pneumonia may be primary or secondary to bacteremic dissemination from other tularemia syndromes.
- Systemic: fever, chills, myalgias, sore throat, nausea, anorexia, vomiting, abdominal pain, and loose or watery diarrhea.
- Oropharyngeal, ulceroglandular, oculoglandular or glandular – (See tularemia overview).

Diagnosis:

- Laboratory: elevated WBC, lactic acid dehydrogenase, serum transaminase, alkaline phosphatase, and possibly serum creatine kinase and urinary myoglobin levels. Pleural fluid generally exudative with >1000 leukocytes/$mm^{3.}$
- Radiology: Chest x-ray may show infiltrates without symptoms; subsegmental/lobar infiltrates, hilar adenopathy, pleural effusion, granulomas, or miliary infiltrates (may mimic tuberculosis).

Treatment: (See overview)

- Gentamicin, Ciprofloxacin, or Doxycycline

Prophylaxis: (See overview)

- Doxycycline (may substitute tetracycline) or Ciprofloxacin

Isolation:

- Standard Precautions

TULAREMIA – FREQUENTLY ASKED QUESTIONS (FAQ)

What is tularemia?

The bacterium (germ) that causes tularemia infection is normally transmitted (spread) from insects such as flies and ticks to other animals such as rabbits, squirrels, and birds. Humans can get the infection by:

- Contact with dead, infected animals,
- Flea and tick bites,
- Inhaling (breathing) airborne dust and soil contaminated with the germ,
- Drinking contaminated water and eating undercooked meat.

If the germ is intentionally released (bioterrorism) into the air, it would most likely be inhaled (breathed) into your lungs causing a severe infection (pneumonia).

Is tularemia spread from person-to-person?

The infection is **NOT** spread from person to person.

How will I know if I was exposed to the germ?

It will depend on how the germ was released, where it was released, and where you were in relation to the release site. The further away you were from the release site the less likely it will be that you were exposed.

How soon will symptoms develop (incubation period)?

Normally the symptoms start 3 - 5 days after exposure to the germ, but the incubation period may be as short a 1 day or as long as 21 days depending on how close you were to the site where the germ was released into the air. Not all persons exposed to the germ will develop symptoms.

What are the symptoms of infection?

The symptoms of pneumonia are generally flu-like and may include a sudden onset of fever, chills, headache, tiredness, sore muscles, loss of appetite, cough, and chest pain. You may also develop vomiting, stomach pain, and watery diarrhea. Although rare, you may develop a sore throat with painful, swollen glands or an ulcer on your face, neck or arms with painful, swollen glands.

How is the infection treated?

If you have symptoms of the infection, your health care provider (doctor or nurse) will give you an antibiotic.

How is the infection prevented?

If the local health officer determines that you were exposed to the germ, you will be offered an antibiotic. Even if you take the antibiotic, you may develop the infection. If any of the following symptoms develop while you are taking the antibiotic, you should see your health care provider (doctor or nurse) immediately:

How long should I take the antibiotic?

It is important that you take the antibiotic exactly as directed. The dose and number of treatment days will differ depending on the antibiotic prescribed. If you develop side effects (reaction) to the antibiotic, call your health care provider (doctor or nurse) immediately. Do not give your antibiotic to another person.

What should I do if I DO NOT have symptoms?

If you do not have any symptoms of the infection, you should continue with your routine daily activities. Please **DO NOT** go to the hospital emergency room unless you have a fever or other symptoms of the infection.

How can I get more information?

The local health department will make frequent public announcements about who should receive an antibiotic, how to take the antibiotic, and where you can obtain the antibiotic. It is important that you listen to the radio or television for more information.

TULAREMIA – HOME CARE INSTRUCTIONS

In the event of an intentional release of the germ that causes tularemia, many people may require hospitalization within a few days. Hospitals may become overcrowded and it may become necessary for many sick people to be cared for in their home by relatives or friends. The following information may be helpful in providing care to sick persons at home.

- Wash your hands with soap and water before you eat or drink, after using the bathroom, and after contact with the sick person.
- Wear gloves (vinyl or latex) when you have contact with the sick person's blood and other body fluids (urine, feces, vomit, wound drainage, mucous, or saliva). Wash your hands after removing the gloves. If gloves are not available, wash your hands with soap and water after contact with the sick person's blood and other body fluids.
- Wash the sick person's hands after using the bathroom, before eating or drinking, and after contact with pets.
- If an antibiotic is recommended, give it exactly as prescribed by the doctor or nurse. If an allergic reaction develops, seek medical advice immediately.
- Take the person's temperature at least twice a day. If the temperature goes above 100°F, give Tylenol® (if not allergic) or other medicine such as Motrin® or Advil®. Follow the instructions on the package insert. If the temperature is not controlled by the medicine, call your health care provider (doctor or nurse) or take the person to the nearest designated emergency center or hospital.
- If the person is having trouble breathing, go immediately to the nearest designated emergency center or hospital.
- Give the person plenty of fluids such as water or juice. Allow the person to eat solid food as tolerated.
- Change the sick person's clothes and bed linens frequently especially if soiled with blood or other body fluids.
- Wash soiled clothes and bed linens in warm water using any commercial laundry product.
- Disinfect the bathroom and kitchen with a disinfectant such as Lysol® every day or when surfaces become soiled with blood or other body fluids.
- As a caregiver, you must take care of yourself. Get plenty of rest, drink fluids frequently and eat a healthy diet. Even if you are not taking an antibiotic, take your temperature in the morning and afternoon for 3 weeks. If you develop a fever above 100°F or if you have flu-like symptoms, seek medical attention immediately.

TULAREMIA – SCREENING FORM

Current Date: _____/_____/_____ Medical Record Number: _____

Last Name: _____First Name: _____MI: _____

Street Address: _____ City: _____ State: _____ Zip Code: _____

Home Phone Number: (____) _____ Occupation: _____

Work Address: _____ City: _____ State: _____ Zip Code: _____

Age: ___Date of Birth: ____/____/____ Sex: ____ Date Symptoms Started: _____/____/_____

In the past 3 weeks, have you traveled to other USA cities? If yes, identify city(s):

_____

In the past 3 weeks, have you traveled to a foreign country(s)? If yes, identify city(s)/country(s)?

_____

Have you been camping in past 3 weeks? **NO** **YES**

Have you had any insect bites in the past 3 weeks? **NO** **YES**

Have you had contact with sick animals within the past 3 weeks? **NO** **YES**

Are you currently taking any medicine(s)? (Identify all prescription/over-the-counter medicines)

_____

Are you allergic to any medicine(s)? **NO** **YES** If yes, what medicine(s) are you allergic to?

_____

Over the past 3 weeks, have you had any of the following symptoms or ailments? (Check all that apply).

Symptoms	Yes	Symptoms	Yes
Fever		Sore throat	
Headache		Feel cold all over or shiver/shake	
Dry cough		Cough up blood	
Sore muscles		Pain or tightness in the chest	
Diarrhea (loose or runny stool)		Very tired	
Bloody diarrhea		Vomiting	
Pain in stomach		Upset stomach (nausea)	
Lost of appetite		Swollen glands	
Short of breath		Red, painful bumps on the skin	

Section 2-B – DROPLET PRECAUTIONS*

Pneumonic plague can be transmitted to healthcare workers when the infected patient coughs, sneezes, or speaks. Transmission requires close contact (within 3 feet) between the infected patient and the healthcare worker. In addition to Standard Precautions, Droplet Precautions should be followed for patients with suspect or diagnosed pneumonic plague.

Patient Placement

Place the patient in a private room, if available. Patients with the same diagnosis or similar syndrome may be cohorted (grouped) in semi-private rooms. When a private room or cohorting is not achievable, spatially separate the infected patient three (3) or more feet away from a non-infected patient. Negative pressure isolation rooms or HEPA filtration units are not required. The door to the patient's room can remain open.

Respiratory Protection

Wear a surgical mask over the nose and mouth when entering the patient's room or within 3 feet of the infected patient.

Transporting Patients

Transport infected patients only when necessary. Place a surgical mask over the patient's nose and mouth, if tolerated. If an elevator is used, all occupants should be masked.

Visitors

Limit visitors to immediate family members or significant others. Instruct visitors to wash their hands before and after patient contact and to wear a surgical mask when within three feet of the infected patient.

* This guideline is not intended to replace facility specific policy and procedure.

Section 2-B-1 – Plague *(Yersinia pestis*)

PLAGUE – OVERVIEW

Naturally Occurring Plague

The most common form of plague, bubonic, is transmitted to humans who have been bitten by plague-infested fleas. The bacteria migrate to regional lymph nodes where they rapidly multiply and form a painful bubo. Another form of the disease, septicemic plague, can also result from a fleabite and is not normally associated with a bubo. Both forms of plague can result in secondary pneumonic plague by hematogenous spread of the bacteria to the lungs. Up to 80% of persons with bubonic plague can also become septicemic and about 15% will develop pneumonic plague.

Bioterrorism Epidemiology

Pneumonic plague would be the most likely result of an intentional bio-aerosol release. Numerous, previously healthy persons would require immediate emergency care including antibiotic therapy and life support systems. Pneumonic plague is transmitted by close, face-to-face (within 3 feet) contact with infectious respiratory droplets generated when the person coughs or talks.

Incubation Period

The range of time between a bio-aerosol exposure and the development symptoms ranges from 1-6 days (average 2 - 4 days).

Clinical Presentation

The onset is generally fulminant and the person generally presents with a high fever, chills, malaise, headache, hypotension, myalgias and a productive cough. The sputum is generally bloody and, less commonly, watery or purulent. The pulmonary symptoms may progress rapidly to dyspnea, stridor, and cyanosis. Gastrointestinal symptoms may include nausea, vomiting, abdominal pain and diarrhea. Cervical buboes, although rarely seen in primary pneumonic plague, may be identified.

Complications

Plague septicemia can produce thromboses in the acral vessels, with necrosis and gangrene. Black necrotic appendages and purpuric lesions caused by endotoxemia may be present. Plague meningitis occurs in about 6% of the septicemic and pneumonic cases. If treatment is delayed beyond 18 hours, the mortality rate for bubonic plague approaches 60% and for pneumonic plague about 100%.

Diagnosis

Radiological

The chest x-ray commonly shows patchy or consolidated bronchopneumonia, mediastinitis, and/or pleural effusions.

Laboratory

The WBC is generally elevated to 20,000 cells per mm^3 or higher (leukemoid reaction) with an increased number of bands. Toxic granulations may be seen on blood smear. Blood platelets may be low to normal and coagulation abnormalities may indicate a low-grade DIC. The BUN, creatinine, ALT, AST, and bilirubin may also be elevated, consistent with multi-organ failure.

Gram, Wright, Giemsa, or Wayson-stained smears of the sputum, blood, CSF, or bubo (if present) may demonstrate coccobaccillus. Automated or semi-automated bacterial identification systems may misidentify *Y pestis*. The organism grows optimally on blood or MacConkey agar at 28°C. After 48 hours, very small colonies barely visible to the naked eye may be identified. Antibiotic testing should be performed at the state reference laboratory.

Treatment (See Tables 1 and 2)

Early administration of antibiotics is crucial to survival, as pneumonic plague is invariably fatal if therapy is delayed.

Supportive therapy includes IV crystalloids and hemodynamic monitoring. Although a low-grade DIC may occur, clinically significant hemorrhage is uncommon, as is the need for heparin. Endotoxic shock is also common, but rarely requires pressor agents. Buboes, if present, rarely require incision and drainage, and will recede with systemic antibiotic therapy. If required for diagnostic purposed, buboes should be aspirated to avoid contact with *Y pestis*

Isolation

Standard and Droplet Precautions are recommended until the patient has been on antibiotic therapy for 72 hours and is clinically improved. If buboes are draining, Contact Precautions may be necessary in addition to Standard and Droplet Precautions.

Recommendations[1] for the treatment of patients with pneumonic plague in a contained and mass casualty setting and for post-exposure prophylaxis.[2]

Table 1: Plague – Antibiotic Therapy for Contained Casualty Settings

Contained casualty setting: assumes a limited number of persons seeking treatment. Start IV therapy as soon as diagnosis is suspected	
Patient Category	**Recommended Therapy**
Adults	**Preferred Therapy** *Gentamicin 5 mg/kg IM or IV 1 time daily or *Gentamicin 2 mg/kg loading dose followed by 1.7 mg/kg IM or IV 3 times daily[3] **Alternative Choices** *Doxycycline 100 mg IV 2 times daily *Ciprofloxacin 400 mg IV 2 times daily[4] Chloramphenicol 25 mg/kg IV 4 times daily[5]
Children[6]	**Preferred Therapy** *Gentamicin 2.5 mg/kg IM or IV 3 times daily[3] **Alternative Choices** *Doxycycline = 45 kg give adult dose < 45 kg give 2.2 mg/kg IV 2 times daily (Maximum 200 mg daily) *Ciprofloxacin 15 mg/kg 2 times daily[4] Chloramphenicol 15 mg/kg IV 4 times daily[5]
Pregnant Women[7]	**Preferred Therapy** *Gentamicin 5mg/kg IM or IV 1 time daily or *Gentamicin 2 mg/kg loading dose followed by 1.7 mg/kg IM or IV 3 times daily[3] **Alternative Choices** *Doxycycline 100 mg IV 2 times daily *Ciprofloxacin 400 mg IV 2 times daily[4]

Table 2: Plague – Antibiotic Therapy for Mass Casualty Settings and Post-exposure Prophylaxis

Mass Casualty Setting and Post-exposure Prophylaxis[8]	
Adults	**Preferred Choices** *Doxycycline 100 mg orally 2 times daily[9] *Ciprofloxacin 500 mg orally 2 times daily[4] **Alternate Choice** Chloramphenicol 25 mg/kg orally 4 times daily[5]
Children[6]	**Preferred Choices** *Doxycycline[9] If = 45 kg give adult oral dose If < 45 kg give 2.2 mg/kg orally 2 times daily *Ciprofloxacin 20 mg/kg orally 2 times daily[4]
Pregnant Women[7]	**Preferred Choices** *Ciprofloxacin 500 mg orally 2 times daily[4] *Doxycycline 100 mg orally 2 times daily[9] **Alternate choice** Chloramphenicol 25 mg/kg 4 times daily[5]

* Antibiotic supplied as part of the National Pharmaceutical Stockpile (NPS)

1. These recommendations are adapted from the consensus recommendations of the Working Group on Civilian Biodefense and are not necessarily approved by the Food and Drug Administration. In non-bioterrorism response situations, routine treatment guidelines should be followed. Refer to the original publication (Inglesby TV, Dennis DT, Henderson DA, et al. Plague as a Biological Weapon: Medical and Public Health Management, JAMA. 2000;283: 2281-2289) for explanations and further discussion.
2. One antimicrobial agent should be selected. Therapy with gentamicin or ciprofloxacin should be continued for 10 days. Treatment with doxycycline or chloramphenicol should be continued for 14 – 21 days. Persons beginning treatment with parenteral doxycycline, ciprofloxacin, or chloramphenicol can be switched to oral antibiotics when clinically indicated.
3. Aminoglycosides must be adjusted according to renal function. Evidence suggests that gentamicin 5 mg/kg IM or IC one time daily would be efficacious in children, although this is not yet widely accepted in clinical practice. Neonates up to 1 week of age and premature infants should receive gentamicin 2.5 mg/kg 2 times daily.
4. Other fluoroquinolones can be substituted at doses appropriate for age. Ciprofloxacin dosage should not exceed 1 g daily in children.
5. Concentration should be maintained between 5 and 20 ug/mL. Concentrations greater than 25 ug/mL can cause reversible bone marrow suppression. Children younger than 2 years should not receive chloramphenicol.
6. In children, ciprofloxacin does should not exceed 1 g daily, chloramphenicol should not exceed 4 g daily. Children younger than 2 years should not received chloramphenicol. In neonates, gentamicin-loading dose of 4 mg/kg should be given initially.
7. Alternatives to breastfeeding may be required while the mother is taking certain antibiotics. Consult specific antibiotic package insert for information on breastfeeding.
8. Duration of treatment for plague in mass casualty situations is 10 days. Duration of post-exposure prophylaxis to prevent plague infection is 7 days.
9. Tetracycline may be substituted for doxycycline.

PLAGUE – QUICK REFERENCE

Any suspected case of plague (*Yersinia pestis*) MUST BE TREATED AS A PUBLIC HEALTH EMERGENCY and reported to the infection control practitioner [*insert telephone number*] and the local health department [*insert telephone number*] immediately.

Bioterrorism Epidemiology:
- Pneumonic plague: most likely disease presentation if bacilli intentionally aerosolized.
- Bubonic plague: most likely disease presentation if infected fleas released.

Transmission:
- Person to person exposure to respiratory droplets (within 3 feet)
- Contact with infected animals
- Contact with infected, draining buboes

Incubation Period:
- Pneumonic: 1 – 3 days.
- Bubonic: 2 – 10 days.

Clinical Disease:
- Pneumonic: acute onset high fever, chills, headache, myalgias, malaise, cough (hemoptysis) progressing rapidly to dyspnea, stridor, cyanosis, and death; gastrointestinal symptoms may be present.
- Bubonic: high fever, malaise, painful lymph nodes common in groin
- Septicemic: 80% of persons with bubonic become septic; 5 – 15% develop pneumonia.

Diagnosis:
- Presumptive diagnosis: gram-negative coccobacilli with “safety-pin” bipolar staining on Gram, Wright, Giemsa, or Wayson stain of blood, sputum, CSF, or lymph node aspirates (if present).

Treatment: (see overview)
Early antibiotic treatment is critical to survival.
- Gentamicin, Doxycycline, or Ciprofloxacin

Prophylaxis: (see overview)
Early antibiotic prophylaxis is critical to preventing disease.
- Doxycycline or Ciprofloxacin,

Isolation:

- Pneumonic: Standard and Droplet Precautions
- Bubonic: Standard and Contact Precautions. Droplet Precautions if bubonic progresses to pneumonia.

PLAGUE – FREQUENTLY ASKED QUESTIONS (FAQ)

What is plague?

Plague is a bacterium (germ) that may intentionally be released into the air (bioterrorism) and inhaled (breathed) into people's lungs causing a severe pneumonia. The infection may also be spread to humans through the bite of infected fleas.

Is plague spread from person-to-person?

The infection **IS** spread from person-to-person by close contact (with 3 feet) with the infected person who coughs the germ from the lungs into the air.

How will I know if I was exposed to the germ?

That will depend on how the germ was released into the air, where the germ was released, and where you were relative to the release site. The further away you were from the release site, the less likely it will be that you were exposed. If you have close contact with an infected person (within 3 feet), the local health department may determine that you have been exposed.

How soon will symptoms develop (incubation period)?

The symptoms may start within 1 - 6 days after you breathe the germ into your lungs.

What are the symptoms of infection?

The symptoms include sudden onset of high fever, chills, headache, extreme fatigue, muscle aches, and a cough that may be bloody.

How is the infection treated?

If you have the infection, your health care provider (doctor or nurse) will give you an antibiotic.

How is the infection prevented?

If the local health department determines that you were exposed to the germ, you will be offered an antibiotic. Even if you take the antibiotic, you may develop the infection. If you develop symptoms of the infection such as fever or bloody cough while you are taking the antibiotic, you should go to the nearest emergency service center or hospital immediately.

How long should I take the antibiotic?

It is extremely important that you take the antibiotic exactly as directed. The dose and the number of treatment days will differ depending on the antibiotic prescribed. If you develop side effects (reaction) to the antibiotic, call your health care provider (doctor or nurse) immediately. Do not give your antibiotic to another person.

What should I do if I develop symptoms of infection while I am taking the antibiotic?

Take your temperature daily. If you have a fever of greater that 100°F or if you develop flu-like symptoms (cough, fatigue, muscle aches), or a headache, go immediately to the nearest emergency medical service or hospital.

What should I do if I DO NOT have symptoms?

If you do not have symptoms of the infection, you should continue with your routine daily activities. Please DO NOT go to the hospital emergency room unless you are feeling sick. The local health officer may suggest that you wear a mask over your nose and mouth if you have to go to public places.

How can I get more information?

The local health department will make frequent public announcements about who should receive an antibiotic, how to take the antibiotic, and where you can obtain the antibiotic. It is important that you listen to the radio or television for more information.

PLAGUE – HOME CARE INSTRUCTIONS

In the event of an intentional release of the germ that causes plague, many people may require hospitalization within a few days. Hospitals may soon become overcrowded and it may become necessary for many sick people to be cared for in their home by relatives or friends. The following information may be helpful in providing care to sick persons at home.

- Listen closely to the local radio or television for special instructions.
- Advise friends and relatives not to visit until the sick person is feeling better.
- Wash your hands with soap and water before you eat or drink, after using the bathroom and after contact with the sick person.
- Wash the sick person's hands after using the bathroom, before eating or drinking and after contact with pets.
- Wear gloves (vinyl or latex) when you have contact with the sick person's blood and other body fluids (urine, feces, vomit, wound drainage, mucous or saliva). Wash your hands after removing the gloves. If gloves are not available, wash your hands with soap and water after contact with the sick person's blood, urine, feces, vomit, wound drainage, mucous or saliva.
- If the person is having trouble breathing, go immediately to the nearest designated emergency center or hospital.
- If an antibiotic is recommended, give it exactly as prescribed by the health care provider (doctor or nurse). If an allergic reaction develops, seek medical advice immediately.
- Take the person's temperature at least twice a day. If the temperature goes above 100°F, give Tylenol® (if not allergic) or other medicine such as Motrin® or Advil®. Follow the instructions on the package insert. If the temperature is not controlled by the medicine, call your health care provider (doctor or nurse) or take the person to the nearest designated emergency center or hospital.
- Give the person plenty of fluids such as water or juice. Allow the person to eat solid food as tolerated.
- Change the sick person's clothes and bed linens frequently especially if soiled with blood or other body fluids.
- Wash soiled clothes and bed linens in warm water using any commercial laundry product.
- Disinfect the bathroom and kitchen with a disinfectant such as Lysol® every day or when surfaces become soiled with blood or other body fluids.
- As a caregiver, you must take care of yourself. Get plenty of rest, drink fluids frequently and eat a healthy diet. If you are taking an antibiotic, take your temperature in the morning and afternoon for 3 weeks. If you develop a fever above 100°F or if you have flu-like symptoms see a doctor or nurse immediately.

PLAGUE – SCREENING FORM

Current Date: _____/_____/_____ Medical Record Number: _____

Last Name: _____First Name: _____MI: _____

Street Address: _____ City: _____ State: _____ Zip Code: _____

Home Phone Number: (____) _____ Occupation: _____

Work Address: _____ City: _____ State: _____ Zip Code: _____

Age: ___Date of Birth: ____/____/____ Sex: ____ Date Symptoms Started: _____/____/_____

In the past 3 weeks, have you traveled to other USA cities? If yes, identify city(s):

_____

In the past 3 weeks, have you traveled to a foreign country(s)? If yes, identify city(s)/country(s)?

_____

Have you been camping in past 3 weeks? **NO** **YES**

Have you had any insect bites in the past 3 weeks? **NO** **YES**

Have you had contact with sick animals within the past 3 weeks? **NO** **YES**

Are you currently taking any medicine(s)? (Identify all prescription/over-the-counter medicines)

_____

Are you allergic to any medicine(s)? **NO** **YES** If yes, what medicine(s) are you allergic to?

_____

Over the past 3 weeks, have you had any of the following symptoms or ailments? (Check all that apply).

Symptoms	Yes	Symptoms	Yes
Fever		Headache	
Trouble breathing		Cough	
Cough up blood		Pain or tightness in the chest	
Sore muscles		Very tired	
Lump in the groin, arm pit, or neck		Pain in the groin, arm pit or neck	
Upset stomach		Vomiting	
Diarrhea		Confusion or disorientation	

Section 2-C – Special Isolation Precautions for Smallpox and Viral Hemorrhagic Fevers

Section 2-C-1 – Smallpox (Variola)

SMALLPOX – RECOMMENDATIONS FOR ISOLATION

Any suspected or confirmed case of smallpox MUST BE TREATED AS A PUBLIC HEALTH EMERGENCY and reported to the infection control practitioner [*insert telephone number*] and the local health department [insert telephone number] immediately.

Introduction

Recommendations for smallpox isolation were developed to assist infection control practitioners (ICP) in California in developing a rational approach to reducing the risk of transmission of a highly contagious virus. Because of the small particle size, smallpox virus can be easily be dispersed by air currents or on dust particles over long distances and may be inhaled by many susceptible hosts within a short period of time. In addition to airborne transmission, smallpox can be transmitted by contact with draining skin lesions and by contact with surfaces and articles such and clothing and bed linens soiled or contaminated with the virus. In contrast, microorganisms that require Droplet Precautions such as pneumonic plague are quite large and do not travel more than three (3) feet from the infected patient and, therefore, are unlikely to be dispersed throughout the hospital.

There is some controversy about how long a facility should maintain isolation after a smallpox bioterrorist event. Some authorities recommend that isolation should be maintained until all healthcare workers in the facility have been vaccinated. However, if a bioterrorism event were to take place in the year 2002 and if multiple outbreaks were to occur throughout the United States there would be insufficient vaccine to meet the demand. Additionally if the vaccine is not administered within 3 – 4 days after the first date of exposure, it may not prevent the infection from occurring. Therefore, the current recommendation is to maintain isolation until the local health officer declares that smallpox is no longer a threat to HCW or the public.

OSHA Bloodborne Pathogens Standard

Healthcare workers should follow facility specific procedures related to reducing the risk of occupational exposure to blood and other potentially infectious materials as required by the California Occupational Safety and Health Administration's (CAL-OSHA) Bloodborne Pathogens Standard.

Training

Healthcare workers who will be expected to provide direct and indirect patient care should be specifically trained in methods to reduce the risk of exposure to patients infected with smallpox.

Isolation Recommendations

Room Placement

Although patients with smallpox should be isolated in negative pressure rooms with adjoining anterooms these facilities may be limited or, in some hospitals, non-existent. Several options for isolating patients with smallpox are presented. Plan A or B is the best approach when only a limited number of cases are anticipated. If the outbreak escalates, plan C or D may have to be implemented to accommodate increasing numbers of patients.

Plan A: - Negative Pressure Isolation Room

Place the patient in a private room that has (1) monitored negative air pressure in relation to the exterior surrounding areas, (2) 6-12 air changes per hour (ACH), and (3) appropriate venting of contaminated air to the outside. If 6 – 12 ACH cannot be achieved, place a HEPA filtration unit in the room. The windows and doors should remain closed and the patient should remain in their room.

Plan B: – No Negative Pressure Room

If no negative pressure room is available, place the patient in a private room. The room should be equipped with a HEPA filtration unit. The windows and doors should remain closed and the patient should remain in their room.

Plan C: – Designated Nursing Unit

As the number of smallpox patients requiring hospitalization and isolation increases, consider designating a wing of a nursing unit or, preferentially, an entire nursing unit. If appropriate ventilation cannot be achieved it may be necessary to create a barrier between the designated nursing unit (wing) and other areas of the hospital. Infection control practitioners should develop a plan consistent with the structure of the hospital and the ability to effectively isolate infected patients from non-infected patients. These barriers may include, but are not limited to, sealing off the existing ventilation system to prevent contaminated air from recirculating to other areas of the hospital, closing all windows and doors, including fire doors, and limiting access to the unit to trained personnel.

Plan D: – Designated Health Facility

The county or state emergency medical services agency may designate a specific facility such as a closed hospital or gymnasium to accommodate increasing numbers of cases that require medical support.

Visitors

Visitors should be limited to immediate family or significant others. Unvaccinated visitors should be encouraged to remain at home until vaccinated. If this is not an option, visitors should be instructed to wear PPE.

Personal Protective Equipment (PPE)

The physical properties of PPE should be appropriate to the degree of exposure and the task(s) to be performed by HCW. Facility infection control committees should evaluate existing PPE to determine if the physical properties maximize HCW protection.

Respirators

Disposable N-95 respirators that filter particles to 0.02 microns should be worn when entering the room and removed after leaving the room. If patients cannot be placed in negative pressure or HEPA filtered rooms, HCW should wear N-95 respirators at all times when entering a designated smallpox unit. The respirator should be changed when moist or more frequently as necessary.

Facial Shields or Eye Protectors

Face shields or eye protectors with side shields should be worn when entering the room.

Gowns

Disposable, long sleeve, ribbed or elastic-cuffed gowns or coveralls should be worn when entering the room and when contact with contaminated articles or surfaces is anticipated. The gown should be removed before leaving the patient's room. After removal, clothing should not have contact with the patient or potentially contaminated surfaces or equipment.

Gloves

Disposable gloves should be worn when entering the room and when contact with skin, mucous membranes, skin lesions, blood, and other body fluids is anticipated**.** Gloves should cover the rib or elastic cuffs of the gown. All jewelry including rings should be removed. Gloves should be removed prior to leaving the room and hands should be washed immediately.

Handwashing

Hands should be washed with an antimicrobial hand hygiene product. Sink faucets should be foot or sensor-operated or should be turned off with a paper towel. Alcohol foams and gels should not be substituted for handwashing when sinks are immediately accessible.

Transporting Patients

Patients infected with smallpox should not leave their room. If patients must be transported, place a surgical mask over patient's nose and mouth, if tolerated. Place a sheet or blanket over the patient completely covering the body from the neck to and including the feet. Cover the head and face (except the nose and mouth) with a towel. If an elevator is used to transport patients, all occupants should wear PPE including N-95 respirators. Only essential HCW should remain in the procedure room with the patient.

Laboratory Specimens

Specimens should be placed in a plastic, zip-lock bag that are tightly sealed and properly labeled.

Patient Care Equipment

Patient care equipment (e.g., thermometers, blood pressure cuffs, stethoscopes and commodes) should be kept in the patient's room. Use disposable equipment whenever possible. Reusable equipment should be placed in an appropriately labeled container, sealed and transported to central service for reprocessing.

Environmental Services

Daily Cleaning

Disinfect environmental surfaces in the patient's room and bathroom with a properly diluted, Environmental Protection Agency (EPA) approved disinfectant such as a quaternary ammonium compound or a phenolic. Allow all surfaces to air dry. The disinfecting solution and a supply of other cleaning materials should be kept in the patient's room. Privacy curtains should be changed when visibly soiled. Floors should be cleaned using a single-bucket procedure of wet mopping. The contents of the bucket should be emptied into the toilet. After each use, the mop head should be removed and disposed in the linen hamper. Disposable mop heads and cleaning cloths should be used, if available. The bucket and the mop handle should remain in the patient's bathroom.

Terminal Cleaning

Terminal cleaning should be performed using similar procedures described for daily cleaning. If the room is under negative pressure or is HEPA filtered and there are at least 6 - 12 ACH, allow the room to air for at least 2 - 12 hours (depending on the number of ACH) before admitting a non-infected patient to the room.

Soiled Linen

Soiled linen should be placed in leak proof bags. Viral aerosols may be created during the initial bagging process therefore it is essential that bags be carefully sealed to reduce expulsion of air into the environment. When removed from the room, the bag should be placed in a second leak proof bag and clearly identified as "isolation" or "contaminated". The bag should be carefully secured and removed from the nursing unit in covered carts to a designated holding area. Chutes should not be used.

Facility Operated Laundry

Soiled linen should be autoclaved prior to transport to the laundry facility. If the linen is not autoclaved, facility laundry workers should wear PPE including N-95 respirators.

Commercial Service

Infection control practitioners should consult with the commercial laundry service to determine special requirements, if any, for labeling, transporting and processing soiled linen. As an alternative, linen should be autoclaved prior to transport to a commercial laundry service.

Patient's Clothing

Place patient's clothing in a labeled, leak proof bag, and send to central service for autoclaving. Autoclaved clothing may then be sent home with the patient's family or washed, if necessary, according to facility policy.

Biohazardous Waste

Waste receptacles should be lined with red biohazard bags. Viral aerosols may be created during the initial bagging process; therefore, it is essential that the bag be carefully sealed to reduce expulsion of air. When removed from the room, biohazardous waste should be placed in a second red bag and secured. Biohazardous waste should be removed in a covered cart to a designated biohazardous-waste holding area. Infection control practitioners should consult with the contracted waste hauler service for special instructions, if any, on transporting biohazardous waste. As an alternative, biohazardous waste can be autoclaved.

Deceased Patient

Place the deceased patient in a leak-proof body bag and transfer to the facility morgue. The body should not be embalmed. If an autopsy is requested, the California Department of Health Services should be notified.

SMALLPOX – OVERVIEW

Any suspected or confirmed case of smallpox MUST BE TREATED AS A PUBLIC HEALTH EMERGENCY and reported to the infection control practitioner [*insert telephone number*] and the local health department [*insert telephone number*] immediately.

Naturally Occurring Smallpox

Smallpox was once considered the most contagious infection known to afflict man. Eradicated worldwide in 1977, the World Health Association (WHO) recommended that all countries cease vaccination programs in 1980. There is now only a limited supply of smallpox vaccine available.

Bioterrorism Epidemiology

The most likely method of introducing variola or smallpox virus is by aerosolization. The intentional release of variola virus into the non-immune population could result in multiple primary exposures with a subsequently large number of secondarily exposed persons if the disease is not recognized quickly.

The virus can survive in the environment for up to 6 hours when subjected to high temperatures (31 – 33 degrees C) with a relative humidity of 80%. Cooler temperatures and a lower humidity will increase the length of time that the virus will remain viable in the environment. Smallpox is highly infectious and person-to-person transmission occurs by the airborne route and by contact with skin lesions or articles such as clothing and bed linens soiled or contaminated with lesion drainage. About 30% of susceptible contacts will become infected.

Incubation Period

The incubation period ranges from 7-17 days (average is 12-14 days).

Transmission

Person-to-person transmission occurs by inhalation of virus that is shed in droplets of saliva during face-to-face (= 6.5 feet) contact with an infected person. At the onset of the rash, lesions appear first in the oropharynx. As the lesions ulcerate, large amounts of virus are released into saliva. Of particular concern is that smallpox virus may be shed from the oropharynx without clinical manifestation of the infection. In the absence of special ventilation, ambient air currents can disperse the viral particles into corridors, stairwells and elevator shafts exposing non-infected persons on different levels of a multi-level building such as a hospital. Viral particles are also shed from vesicles on the skin. Any contact with an infected person's skin, clothing, bed linens, or other

contaminated surfaces or articles may result in transmission. Smallpox is contagious from the onset of rash and until all scabs have separated and fallen off the skin. For isolation purposes; however, it may be safer to assume that the virus can be transmitted by oropharyngeal and respiratory secretions within 24 hours prior to the onset of the rash.

Clinical Presentation

An asymptomatic viremia occurs within 2-4 days following the first exposure date. During this phase, the virus multiplies and spreads to the bone marrow, lymph nodes, and spleen. The person is not infectious at this time.

About 5-8 days following the first exposure date, a secondary viremia occurs. The symptoms include high fever, fatigue, headache, backache, abdominal pain, vomiting, and possible delirium. As the fever pattern begins to spike (40 – 40.5°C) an erythematous, maculopapular rash appears on the mucosa of the mouth, pharynx, face, and forearms. It subsequently spreads to the truck, legs, hands, and feet, including the palms and soles. The rash is centrifugal in distribution, i.e., more dense on the face and extremities than on the trunk. On any given part of the body, the lesions are generally at the same stage of development. Within 1 - 2 days, the rash becomes vesicular and, later, pustular. The pustules are round, tense, and deeply embedded in the dermis. Crusts begin to form about the 8^{th} or 9^{th} day after the appearance of the rash. At least 90% of all cases are clinically characteristic.

Complications

Death occurs during the second week after the onset of rash in about 30-40% of those infected.

Malignant smallpox occurs in 2 - 5% of the cases due to inadequate cell-mediated immune response. The patient is generally toxic and the lesions, slow to develop, resemble flat, coalesced papules that fail to form pustules. The skin develops a fine-grained reddish color. The mortality rate is about 95% in unvaccinated persons.

Hemorrhagic smallpox occurs in less than 3% of the cases and is more common in pregnant women. Symptoms include extensive petechia, mucosal hemorrhage, and intense toxemia (high fever, headache, backache and abdominal pain). The patient generally dies before the typical smallpox rash develops. Differential diagnosis includes meningococcemia and acute leukemia.

Diagnosis

Tentative diagnosis is based on the characteristic rash and other symptoms. The usual method of diagnosis is the demonstration of characteristic virions on electronic microscopy of vesicular scrapings. Initial laboratory confirmation should **not** be attempted in clinical laboratories**. (See Specimen Collection)**

Differential Diagnosis

The differential diagnoses include chicken pox, allergic contact dermatitis, erythema multiforme with bullae, secondary syphilis, and atypical measles. Chickenpox eruptions are generally more numerous on the trunk than on the face and extremities and lesions occur in crops that are in different stages of development.

Treatment

There is no known antiviral therapy. The only therapy known to date is supportive and includes hydration and medication for fever and pain. Sedation may help the patient to rest more comfortably. Antibiotics should only be prescribed for secondary skin infections.

Vaccination

Smallpox was declared eradicated worldwide in 1980 and, with the exception of the military and persons working with smallpox virus in a controlled setting, vaccination of the general public was discontinued. Because a single vaccination does not confer life-long immunity, persons previously vaccinated are no longer considered immune to the disease. Persons vaccinated multiple times may have some residual immunity.

In the event that smallpox is intentionally released, federal, state and local health departments would coordinate vaccination programs. Vaccination is most effective if given before or within 3 - 4 days after the first exposure date. Some experts say that vaccination up to 7 days after the first exposure date may be effective in preventing or, at the vary least, ameliorating the disease.

Unless assessed by a physician, vaccination is contraindicated for persons and their household, sexual or other close physical contacts if they have any of the following conditions:

- Current or past history or eczema,
- Current burns, impetigo, atopic dermatitis, contact dermatitis, varicella zoster or other skin conditions,
- Pregnancy (all trimesters),
- Current treatment for cancer (chemo/radiation therapy), receiving large doses of corticosteroids; altered immune system,
- HIV infection or AIDS,
- Allergies to polymixin B, streptomycin, tetracycline, neomycin.

Passive immunoprophylaxis with vaccinia immune-globulin (VIG) is available in a limited supply and is generally indicated for treatment of complications related to smallpox vaccination. Limited data suggests that VIG may be of value in post-exposure prophylaxis of smallpox when given within the first week following an exposure. If greater than one week has elapsed, administration of both products, if available, may be reasonable. The dose of VIG for prophylaxis or treatment is 0.6 ml/kg of body weight given intramuscularly. Due to the large volume (42 ml in a 70 Kg person), the dose should be divided and given over a period of 24 – 36 hours. **(See Instructions for Administering Smallpox (Vaccinia) Vaccine and Smallpox (Variola) Vaccination Information)**

Isolation

Special isolation should be maintained for any suspected or confirmed smallpox cases. If hospitalized, patients should be kept in isolation from 24 hours before the onset of rash until all the scabs have separated and fallen off the skin. In the community, exposed persons should be quarantined at home, when possible. A reasonable alternative following exposure would be to require exposed contacts to check their temperature daily. Any fever above 38°C (101°F) during the 17-day period would suggest infection. The contact should be isolated immediately, preferably at home, until smallpox is either confirmed or ruled out. **(See Smallpox Isolation Recommendations)**

SMALLPOX – QUICK REFERENCE

Any suspected or confirmed case of smallpox MUST BE TREATED AS A PUBLIC HEALTH EMERGENCY and reported to the infection control practitioner [*insert telephone number*] and the local health department [insert telephone number] immediately.

Bioterrorism Epidemiology:

- Transmission: highly contagious; person-to-person contact with respiratory secretions; coughing patients most contagious; contact with lesions and fomites (clothes and bed linens).
- Persons vaccinated prior to 1972 **DO NOT** have immunity. Persons vaccinated multiple times (military prior to 1990 and foreign travelers prior to 1972) may have some residual immunity.

Incubation Period:

- Average 12 – 14 days; range 7-17 days.

Clinical Disease:
Acute onset of malaise, rigors, vomiting, headache, backache, possible delirium; high fever (up to 40.5 C) at or just prior to onset of rash, maculopapular rash predominate on face and mucous membranes of mouth, pharynx migrating to forearms, legs, palms and soles then to trunk.

Diagnosis:
Presumptive diagnosis based on signs and symptoms.

Differential Diagnosis:
Chicken pox, allergic contact dermatitis, erythema multiforme with bullae, secondary syphilis, atypical measles (Chickenpox eruptions are more numerous on trunk than on face and extremities. Lesions occur in crops in different stages of development and are superficial with rare scar formation).

Treatment:
Provide supportive care, pain and fever control, sedation for delirium; maintain hydration; antibiotics for secondary infection.

Prophylaxis:
See Smallpox Vaccination Recommendations

Isolation:
Special Isolation: See Smallpox Isolation Recommendations.

SMALLPOX – FREQUENTLY ASKED QUESTIONS (FAQ)

What is smallpox?
Smallpox is a virus (germ) that causes a high fever and a rash with draining lesions over the whole body. No person in the world has been diagnosed with smallpox since1977. For that reason, vaccination programs were discontinued in all countries including the U.S. in 1980. Adults vaccinated prior to 1980 have no immunity.

Is smallpox spread from person-to-person?
The infection is very contagious. When the infected person breathes or coughs the germ is forced out of the mouth into the air. A non-infected person gets the infection by inhaling (breathing) the virus into their lungs. The infection can also the spread by skin-to-skin contact with the rash or by contact with contaminated items such as sheets, towels, and clothes.

How will I know if I was exposed to the germ?
You may have been exposed at the location where the germ was intentionally released. The further away you were from the original release site, the less likely it is that you were exposed. You could also be exposed to a person who is infected and you could catch the germ if you had close contact with that person (within 6 feet).

How soon will the symptoms develop (incubation period)?
The symptoms may start within 7 - 17 days after exposure. Infected persons are not infectious until the rash appears.

What are the symptoms of the infection?
For about 2 - 4 days after the person breathes the infected air, there will be no symptoms. After about 4 days, the infected person will begin to feel very sick with a fever, severe tiredness, headache, backache, stomachache, and vomiting. Over the next several days, the fever may increase and the person may become confused and disoriented. As the fever increases, a rash (raised, discolored spots) may be seen on the face. The rash will then spread to the neck, arms, legs and the soles of the feet and palms of the hands. The rash will progress from fluid-filled vesicles to pus-filled pustules. Scabs will begin to form on the skin about 8 - 9 days after the onset of the rash. Smallpox is no longer infectious once all the scabs have fallen off the skin.

How is the infection treated?
There is no medicine such as an antibiotic to treat smallpox infection. The doctor may order medicine to control the fever and to keep the person calm (sedative).

How is the infection prevented?
There is a limited supply of vaccine available in the U.S. If a smallpox outbreak is confirmed the federal government will release the vaccine.

How will I know if I need to be vaccinated?
If you were in the location where the germ was originally released or if you were exposed to a person who developed the symptoms (fever and rash) of the infection, you will be offered the vaccination.

How will I know where to go to get the vaccination?
When the vaccine becomes available, the local health department will provide information about the locations of the vaccination sites in your city or county. You should listen to the radio or television for this information.

Do people get sick from the vaccination?
Complications are not common but they do occur. An information sheet has been developed that will give you information about how to care for your vaccination and what complications to expect. You will be given this information when you report to the designated vaccination location. You will also be requested to sign a consent form before you receive the vaccine.

What can I do to keep from getting infected?
In the event that a smallpox outbreak is identified, the most important thing you can do is stay at home. The local health officer may ask you to wear a mask over your nose and mouth if you have to go to the store. Listen to the local radio or television for special instructions from the local health officer. Do not go to a hospital emergency room unless you are sick.

SMALLPOX - HOME CARE INSTRUCTIONS

In the event of an intentional release of the germ that causes smallpox, many people may require hospitalization within a few days. Hospitals may become overcrowded and it may become necessary for many sick people to be cared for in their home by relatives or friends. The following information may be helpful in providing care to sick persons at home.

- Listen closely to the local radio or television for special instructions.
- Advise friends and relatives not to visit.
- Wear a mask over your nose and mouth when you are within 6 feet of the infected person.
- Wash your hands with soap and water before you eat or drink, after using the bathroom and after contact with the sick person.
- Wash the sick person's hands after using the bathroom, before eating or drinking, and after contact with pets.
- Wear gloves (vinyl or latex) when you have contact with the sick person's skin, blood, and other body fluids (urine, feces, vomit, drainage, mucous, or saliva). Wash your hands after removing the gloves. If gloves are not available, wash your hands with soap and water after contact with the sick person's blood, urine, feces, vomit, wound drainage, mucous, or saliva.
- If the person is having trouble breathing, go immediately to the nearest designated emergency center or hospital.
- Take the person's temperature at least twice a day. If the temperature goes above 100°F, give Tylenol® (if not allergic) or other medicine such as Motrin® or Advil®. Follow the instructions on the package insert. If the temperature is not controlled by the medicine, call your health care provider (doctor or nurse) or take the person to the nearest designated emergency center or hospital.
- Give the person plenty of fluids such as water or juice. Allow the person to eat solid food as tolerated.
- Change the sick person's clothes and bed linens frequently especially if soiled with blood or other body fluids.
- Wash soiled clothes and bed linens in warm water using any commercial laundry product.
- Disinfect the bathroom and kitchen with a disinfectant such as Lysol® every day or when surfaces become soiled with blood or other body fluids.
- As a caregiver, you must take care of yourself. Get plenty of rest, drink fluids frequently, and eat a healthy diet. Take your temperature in the morning and afternoon for 3 weeks. If you develop a fever above 100°F or if you have flu-like symptoms see a doctor or nurse immediately.

SMALLPOX – SCREENING FORM

Current Date: _____/_____/_____ Medical Record Number: _____

Last Name: _____First Name: _____MI: _____

Street Address: _____ City: _____ State: _____ Zip Code: _____

Home Phone Number: (____) _____ Occupation: _____

Work Address: _____ City: _____ State: _____ Zip Code: _____

Age: ___Date of Birth: ____/____/____ Sex: ____ Date Symptoms Started: _____/____/_____

In the past 3 weeks, have you had contact with any person with a high fever and a rash?

NO YES

In the past 3 weeks, have you traveled to other USA cities? If yes, identify city(s):

_____

In the past 3 weeks, have you traveled to a foreign country(s)? If yes, identify city(s)/country(s)?

_____

Are you currently taking any medicine(s)? (Identify all prescription/over-the-counter medicines)

_____

Are you allergic to any medicine(s)? **NO YES** If yes, what medicine(s) are you allergic to?

_____

Over the past 3 weeks, have you had any of the following symptoms or ailments? (Check all that apply).

Symptoms	Yes	Symptoms	Yes
Fever		Backache	
Headache		Feel cold all over or shiver/shake	
Cough		Sore muscles	
Very tired		Vomiting	
Pain in the stomach		Rash on the face	
Sore mouth/bumps in the mouth		Rash of the arms or legs	
Change in mental status		Confusion	

SMALLPOX – SPECIMEN COLLECTION

Contact the Department of Health Services, Viral and Rickettsial Disease Laboratory Branch (510 307 8611; fax 510 307 8599) prior to shipping any Biosafety Level IV specimens.

Safety recommendations

- Wear personal protective equipment
- Use safety blood-collection equipment
- Do not use glass vials or tubes
- Dispose of needles, scalpel blades, and other sharp objects in sharps disposal container
- Deposit waste in biohazard red bag
- Seal all specimens with Parafilm
- Transport all specimens in a double, sealed, plastic zip-lock bags

Pustule/vesicle specimen collection

- Open the top of a vesicle or pustule with a scalpel.
- Express fluid from the vesicle or pustule onto a clean microscope slide and allow to air dry. Place the slide into a dry, plastic slide holder and seal.
- Alternately, swab the base of the vesicle or pustule with a dry swab. Place the swab into a plastic, capped container.
- Obtain at least three (3) slides or swabs. Label each slide or swab.
- Do not place the slides from more than one patient in the same container.

Scabs specimen collection

- Remove scab with the blunt edge of a scalpel blade.
- Deposit at least 12 scab specimens in a clean, dry, plastic tube containing no preservative and label.

Blood specimens

- Place 10 cc of blood into a labeled, red or marble-topped tube.
- Allow blood to clot then separate serum from the clot.
- Remove serum from collection tube and pour into a plastic, clean, screw-topped vial.
- If a plastic serum separator tube is used, serum may be left in the tube.

Label

Label the specimen container with the patient's name, medical record number, date and time specimen was collected, physician's name and telephone number.

SMALLPOX – VACCINATION INFORMATION

The risk of smallpox occurring as a deliberate bio-aerosol release is considered low. Therefore, pre-exposure vaccination is not recommended for any group other than laboratory or medical personnel working directly with the variola virus (research laboratory personnel).

Vaccine effectiveness

Smallpox vaccine can prevent or decrease the severity of clinical disease if administered before the outbreak or within 3 – 4 days after first exposure date. The effectiveness of the vaccine in preventing disease if given more than 7 days after the first exposure date is not known.

Target populations

Healthcare workers and persons who have unprotected face-to-face contact (within 6.5 feet) with a confirmed smallpox case will probably be the first to receive the vaccine. These groups include:

- Persons exposed at the initial release site;
- Persons who have face to face, household or close proximity (6.5 feet or 2 meters) contact with a confirmed or suspect case at any time from the onset of the infected person's fever and until all the scabs have separated from the skin;
- Laboratory personnel involved in the collection and processing of clinical specimens; and
- Other persons at risk such as emergency medical services and law enforcement personnel.

Expanded vaccination programs will depend on the extent of an outbreak and the availability of vaccine.

Previous vaccination

Persons vaccinated one time prior to 1972 have no residual immunity. Persons who have had multiple (2 or more) vaccinations (military, foreign travelers) may have some residual immunity however this is unknown.

Vaccine contraindications

The risk of vaccination should be weighed against the likelihood of acquiring smallpox. Unless concurrently assessed by a physician, vaccination should **not** be administered to exposed persons **or their household contacts** if there is a history of any of the following conditions:

- Current history of eczema, impetigo, atopic dermatitis, contact dermatitis, varicella zoster, or other skin conditions

- Pregnancy (all trimesters)
- Persons with immunodeficient conditions such as current treatment for cancer (chemo/radiation therapy), receiving large doses of corticosteroids; or altered immune systems such agammaglobulinemia
- HIV infection or AIDS
- Allergies to polymixin B, streptomycin, tetracycline, neomycin

Vaccine Administration

The vaccine is administered using a special needle and multiple-skin punctures. The skin is punctured 15 times and a small amount of blood will be seen at the puncture site.

Vaccine Response

The vaccination is successful if the puncture site has a visible pimple with an area of redness surrounding the pimple within 2 – 5 days after vaccination. The pimple will become bigger over the next several days and eventually a dark colored scab will form.

Major or Primary (first) Vaccine Response

- Days 2 - 5: A red papule (pimple) is visible at the vaccination site; the papule progresses to a fluid-filled vesicle then to a pustule over the next few days;
- Days 8 -10: The pustule reaches maximum size and contains turbid (cloudy) fluid (pus) surrounded by a red area. The red area may get bigger over the next 3 days.
- Days 14 –21:The pustule dries, forms a scab, and eventually falls off.

Previously Vaccinated Response

- Revaccination is considered successful if a pustular lesion is present or an area of definite induration or congestion surrounding the scab is visible upon examination 6-8 days after revaccination. If the response peaks at 48 hours (hypersensitivity reaction), the person should be re-vaccinated.

Equivocal Reaction

- Equivocal reaction, including accelerated, modified, vacciniform, immediate, early or immune reactions are defined as all responses other than major reactions. If an equivocal reaction is observed, vaccination procedures should be checked and the vaccination repeated using vaccine from a different vial or from a different lot, if available. Difficulty in determining if the reaction was blunted could be caused by immunity, insufficient potent vaccine, or vaccination technique failure. If the repeat vaccination by using vaccine from a different vial or lot fails to elicit a major reaction providers should consult with the local health officer before attempting another vaccination.

Vaccination site care

Complications associated with smallpox vaccination can be reduced when careful site care is practiced from the time vaccination is administered until the scab falls off the vaccination site.

- Wash hands with soap and water before and after any contact with the vaccination site (e.g. dressing change, accidental scratching) or contact with any fluid or pus that might seep through the dressing. Do not touch the vaccination site (fluid or pus) with items such as cloth towels that may be used by another household member.
- Cover the vaccination site loosely with a gauze dressing at all times. Secure the gauze loosely with tape. Occlusive dressings should not be used routinely because it may cause maceration at the vaccination site.
- Soiled dressings should be sealed in a plastic bag before disposal. If the scab has fallen off the skin, the scab should also be sealed in a plastic bag.
- Keep the vaccination site dry at all times. When bathing, place a gauze dressing over the vaccination site and then cover the site with a watertight dressing. To make a watertight dressing, cut a piece of plastic (Saran (R)) wrap large enough to extend 2 -3 inches beyond the vesicle. Place the wrap over the gauze and secure with tape. Remove the plastic wrap after bathing and apply a clean, dry, gauze dressing, if necessary.
- Clothes that become soiled with fluid or pus from the drainage site should be removed and washed in hot water and bleach.
- Report all vaccination complications to a health care worker (nurse or physician).
- Monitor your temperature daily. If a fever occurs, take Tylenol (R) as directed on the package label.

Vaccinated Health Care Workers

Newly vaccinated health care workers may continue to have patient contact, including contact with immunosuppressed patients, as long as the vaccination site is covered with a water-tight seal at all times. Cover the vaccination site with a gauze dressing reinforced with a semi-permeable dressing such as Opsite (R) or Tegaderm (R) during the work shift. Remove the semi-permeable dressing at the end of the work shift. Practice meticulous handwashing before contact with all patients. Hands should be thoroughly washed after contact with fluid or pus that may accumulate under the semi-permeable dressing.

Complications:

- Fever
  Low-grade (100F – 102F) fever and enlarged lymph nodes; occurs most commonly in children.

- Autoinoculation
  Vaccinia virus is transferred from the site of vaccination by contaminated hands or articles such as clothes, sheets or towels. The most common sites involve the face, eyelid, nose, mouth genitalia and rectum.
- Encephalitis
  Occurs 8 - 15 days after the vaccination; symptoms include fever, headache, vomiting, drowsiness, spastic paralysis, coma, and convulsions.
- Progressive vaccinia
  Pustules fail to heal and spreads to surrounding tissue that becomes black and necrotic.
- Eczema vaccinatum
  Lesions spread to areas of skin afflicted by eczema or other chronic or exfoliative skin conditions; symptoms may be mild to severe but may be fatal.
- Generalized vaccinia
  Lesions spread to cover part or all of the body 6-9 days after vaccination.

Sample Smallpox Vaccination Consent Form

I, _____(print name) have read the Smallpox Vaccination Information provided to me. I understand that there is a risk that complications may occur as a result of receiving the smallpox vaccination.

I have had the opportunity to read and I understand the instructions for caring for the vaccination site. I understand that complications that may be associated with vaccination. I have had the opportunity to ask questions related to smallpox vaccination and have had my questions answered to my satisfaction.

By my signature below, I accept the smallpox vaccination.

Patient (Parent or Guardian) Signature: Date:
_____

Lot Number: _____ **Expiration Date:** _____

Distribution center location: _____

Date: ____/____/____

Name title of person administering vaccination:
_____

Instructions for Administering Smallpox Vaccine

Vaccine Storage
Smallpox (vaccinia) vaccine should be stored at 20 degrees C until reconstituted.

Supplies
- Vaccination Informed Consent
- Vaccination Consent
- Gloves
- Alcohol wipes
- Alcohol foam or gel (handwashing)
- Vaccinia vaccine
- Bifurcated needle (sterile)
- Gauze pads
- Tape (non-allergic)
- Waste receptacle lined with a red bag and syringe disposal container

Administrative Requirements
- Distribute smallpox vaccination information and smallpox vaccination consent.
- Collect signed consent and answer questions about vaccine administration.
- Document date vaccination given, lot number, expiration date, and person administering vaccine.

Administration of Vaccine
- Reconstitute vaccine ampules as needed, do not reconstitute ahead of time.
- Wear gloves on both hands; change gloves after vaccinating each person.
- Prepare skin with alcohol. Allow alcohol to dry. (Vaccine inactivated by wet alcohol. If vaccination skin site is clean, eliminate alcohol prep).
- Insert bifurcated needle into the reconstituted vaccine ampule and carefully withdraw the needle. A droplet of vaccine will be visible between the two prongs of the needle.
- Hold the needle at a right angle (perpendicular) to the skin over the deltoid muscle (vaccinators wrist should rest against the patient's arm).
- Administer 15 rapid needle strokes in a 5-mm diameter area of the skin over the deltoid muscle vigorously enough to draw a trace of blood at the vaccination site.
- Wipe excess vaccine from the vaccination site with dry gauze.
- Cover the site with a dry gauze (non-occlusive) dressing.
- Remove gloves and wash hands.
- Discard gauze and gloves in the biohazardous waste receptacle.
- Discard bifurcated needle and empty vaccine ampules in syringe disposal container.

Section 2-C-2 – Viral Hemorrhagic Fevers (VHF)

VIRAL HEMORRHAGIC FEVERS (VHF) – RECOMMENDATIONS FOR ISOLATION

Any suspected case of viral hemorrhagic fever MUST BE TREATED AS A PUBLIC HEALTH EMERGENCY and reported to the infection control practitioner [*insert telephone number*] and local health department [*insert telephone number*] immediately.

Introduction

The term viral hemorrhagic fever (VHF) refers to a group of diseases caused by several distinct families of viruses. The Centers for Disease Control and Prevention (CDC) has issued isolation recommendations that apply to four viruses that cause VHF: Lassa, Marburg, Ebola, and Congo-Crimean hemorrhagic fever. Health Canada has issued recommendations that also apply Junin, Sabia and Machupo viruses, found in South America.

Blood, body secretions and excretions, semen, and tissue specimens from infected patients contain the virus responsible for VHF. Evidence suggests that the risk of person-to-person transmission increase as the patient's condition deteriorates. Persons at highest risk for secondary transmission are those who are in closest contact with the blood and body fluids of the infected person toward the end of the incubation period and into the acute phase of the illness. Such persons include those with prolonged or close physical contact with infected persons such as family members, those providing direct medical and nursing care, and laboratory workers handling the patient's specimens. Healthcare workers (HCW) in Africa are at great risk of acquiring VHF due to inappropriate barriers to protect them from exposure to blood and body fluids. The risks associated with various body fluids have not been well defined as most health care workers in Africa who acquire the infection have had multiple unprotected contacts with multiple body fluids over a relatively short period.

OSHA Bloodborne Pathogens Standard

Healthcare workers should follow facility specific procedures related to reducing the risk of occupational exposure to blood and other potentially infectious materials as required by the California Occupational Safety and Health Administration's (CAL-OSHA) Bloodborne Pathogens Standard. Extreme vigilance is required to prevent needle sticks or other sharp injuries. Parenteral exposure has been associated with a high risk of transmission, a short incubation period and severe disease. Whenever possible, needleless intravenous systems, safety syringes and phlebotomy equipment should be used. If an exposure occurs, wash percutaneous exposures with copious amounts of antimicrobial soap (not bleach) and water and flush the mucous membranes of the

eyes, nose, and mouth with copious amounts of fresh water. Exposed persons should receive an immediate medical evaluation and follow-up.

Training

Health care workers expected to provide direct and indirect patient care should be specifically trained in methods to reduce the risk of exposure to VHF patients.

Isolation Recommendations

These recommendations were developed to assist infection control practitioners (ICP) in preparing for a bioterrorist event. It is assumed that most patients requiring hospitalization are at or near end-stage disease and have diarrhea, vomiting, prominent cough or hemorrhage. Given the unpredictability of VHF infection and the potential for rapid progression to end-stage disease without warning, it may be prudent to implement the following recommendations at the time of hospital admission.

Room Placement

Plan A: Negative Pressure Room

Place the patient in a private room that has (1) monitored negative air pressure in relation to the exterior surrounding areas, (2) 6-12 air changes per hour (ACH), and (3) appropriate venting of contaminated air to the outside. The windows and doors should remain closed and the patient should remain in the room.

Plan B: No Negative Pressure Room

If no negative pressure room is available, place the patient in a private room. The room should be equipped with a HEPA filtration unit. The windows and doors should remain closed and the patient should remain in the room.

Plan C: Designated Area or Unit

As the number of VHF patients requiring isolation increases, consider designating a wing of a nursing unit or, preferentially, an entire nursing unit. Infection control practitioners should develop a plan consistent with the structure of the hospital and the ability to effectively isolate infected patients from non-infected patients and the public.

Plan D: – Designated Health Facility

The county or state Emergency Medical Service may designate an alternate facility such as a closed hospital or gymnasium to accommodate increasing numbers of cases that require medical support. Infection control practitioners should be well informed of and actively participate in state, and local bioterrorism preparedness plans.

Visitors

Visitors should be limited to close family members and significant others. Family members should be instructed to wear PPE appropriate to the potential risk of blood and body fluid exposure.

Personal Protective Equipment (PPE)

The physical properties of PPE should be appropriate to the degree of exposure and the task(s) to be performed by the HCW. Facility infection control committees should evaluated existing PPE to determine if the physical properties maximize HCW safety.

Respirators

Disposable, fluid-resistant, N-95 respirators should be worn when entering the room and disposed of before leaving the room.

Face Shields

Disposable, face shields, in addition to N-95 respirators, should be worn when entering the room.

Gowns

Disposable, long sleeve, fluid-proof (impervious) gowns or coveralls with rib or elastic cuffs should be worn when entering the room. The gown should be removed before leaving the patient's room. Fluid resistant gowns or coveralls can be worn if there is little or no soiling of the environment**.**

Gloves

Disposable gloves should be worn when entering the room. All jewelry including rings should be removed. Gloves should completely cover the cuff of the gown or coverall. Reinforced or double gloves should be worn for procedures that involve handling of sharp devices (e.g. phlebotomy). Gloves should be removed before leaving the room and hands should be washed immediately.

Shoe and head covers

Fluid-proof, ankle or calf high shoe covers or rubber boots should be worn when blood or body fluids visibly soil the floor. Shoe covers should be removed before leaving the room. Boots, if worn, should be cleaned.

Head covers should be worn if spraying or splashing of blood or other body fluids onto the hair is anticipated. Head covers should be removed before leaving the room.

Handwashing

Hands should be washed with an antimicrobial hand hygiene product. Faucets should be foot or sensor-operated or should be turned off with a paper towel. Paper towels should be accessible. Alcohol foams or gels should not be substituted for handwashing when running water and soap are immediately accessible.

Transporting Patients

Patients with VHF who have a prominent cough, vomiting, diarrhea, or hemorrhage should not leave their room. If it is necessary to transport the patient, notify the receiving department and schedule the diagnostic test when there are no other patients in the department. Place a surgical mask over patient's nose and mouth, if tolerated. Confine and contain blood and body fluids that soil the environment during transport. If an elevator is used all occupants should wear PPE. Only essential HCW should remain in the procedure room with the patient.

Laboratory Specimens

Specimens should be placed in double, zip lock bags that are tightly sealed and labeled.

Patient Care Equipment

Patient care equipment (e.g., thermometers, blood pressure cuffs, stethoscopes and commodes) should be kept in the patient's room. Use disposable equipment whenever possible. Reusable equipment should be placed in an appropriately labeled container, sealed and transported to central service for reprocessing.

Environmental Services

Daily Cleaning

Disinfect environmental surfaces in the patient's room and bathroom with a properly diluted, Environmental Protection Agency (EPA) approved disinfectant such as a quaternary ammonium compound or a phenolic. Allow all surfaces to air dry. The disinfecting solution and a supply of cleaning materials should be kept in the room. Privacy curtains should be changed when visibly soiled. Floors should be cleaned using a single-bucket procedure of wet mopping. The contents of the bucket should be emptied into the toilet. After each use, the mop head should be removed from the handle and disposed in the linen hamper. Disposable mop heads and cleaning cloths should be used, if available. The bucket and the mop handle should remain in the patient's bathroom.

Terminal Cleaning

Terminal cleaning should be performed using similar procedures described for daily cleaning. If the room is under negative pressure or HEPA filtration allow the room to air for 2 hours or longer after terminal cleaning before admitting a non-infected patient.

Management of Blood and Body Fluids

Blood and Body Fluid Spills

Blood and body fluid spills should be confined and contained with a biohazard fluid solidification treatment product when possible. Following the removal of the solid waste, decontaminate the area with an EPA-approved disinfectant.

Containerized Liquid Blood and Body Fluids

Containerized liquid blood, gastric secretions, and pulmonary secretions should be treated with a biohazard fluid solidification treatment product before disposal. The contents of bedpans, urinals and emesis basins should be carefully emptied into the toilet. Several ounces of household bleach should be poured into the toilet and left standing for about 5 minutes before flushing.

Soiled Linen

Soiled linen should be placed in leak proof bags. Viral aerosols may be created during the initial bagging process therefore it is essential that bags be carefully sealed to reduce expulsion of air into the environment. When removed from the room, the bag should be placed in a second leak proof bag and clearly identified as “isolation” or “contaminated”. The bag should be carefully secured and removed from the nursing unit in covered carts to a designated holding area. Chutes should not be used.

Facility Operated Laundry

Soiled linen should be autoclaved prior to transport to the laundry facility. If the linen is not autoclaved, facility laundry workers should wear PPE including N-95 respirators.

Commercial Service

Infection control practitioners should consult with the commercial laundry service to determine special requirements, if any, for labeling, transporting and processing soiled linen. As an alternative, linen should be autoclaved prior to transport to a commercial laundry service.

Patient's Clothing

Place patient's clothing in a labeled, leak proof bag, and send to central service for autoclaving. Autoclaved clothing may then be sent home with the patient's family or washed, if necessary, according to facility policy.

Biohazardous Waste

Waste receptacles should be lined with red biohazard bags. Viral aerosols may be created during the initial bagging process therefore it is essential that bags be carefully sealed to reduce expulsion of air into the environment. When removed from the room biohazardous waste should be placed in a second red bag and secured. Biohazardous waste should be removed in a covered cart to a designated biohazardous-waste holding area. Infection control practitioners should consult with the contracted waste hauler for special instructions, if any, on removing and transporting biohazardous waste. As an alternative, biohazardous waste can be autoclaved.

Deceased Patient

Place the deceased patient in leak-proof body bag and transfer to the facility morgue. The body should not be embalmed. If an autopsy is requested, the California Department of Health Services should be notified.

Viral Hemorrhagic Fevers (VHF) – Overview

Any suspected case of viral hemorrhagic fever MUST BE TREATED AS A PUBLIC HEALTH EMERGENCY and reported to the infection control practitioner [*insert telephone number*] and the local health department [*insert telephone number*] immediately.

Naturally Occurring VHF

The viral hemorrhagic fevers are a diverse group of naturally occurring illnesses caused by viruses from four different families: *Arenaviridae, Bunyaviridae, Filoviridae,* and *Flaviviridae*.

- The arenaviruses include Argentine (Junin virus), Bolivian (Machupo virus), Brazilian (Sabia virus) and Venezuelan (Guanarito virus) and Lassa (Lassa) hemorrhagic viruses. These viruses are transmitted from rodent reservoirs to humans by inhalation of dust contaminated with rodent feces.

- The bunyaviruses include Rift Valley fever (Phlebovirus), Crimean-Congo fever (Nairovirus), and Hantaviruses (hantavirus renal syndrome [HFRS] and hantavirus pulmonary syndrome [HPS]). These viruses are transmitted to humans from a variety of reservoirs including mosquito and domestic animal slaughter (Rift Valley fever), ticks and domestic animal slaughter (Crimean-Congo fever) and rodents (Hantavirus).

- The filoviruses include Marburg and Ebola viruses. Their natural reservoir is unknown.

- The flaviviruses include yellow fever and dengue fever. Both viruses are mosquito-borne.

Each of these viral families share a number of common features:

- They are all RNA viruses covered or enveloped in a fatty (lipid) coating.
- Their survival is dependent of an animal or insect host, called a natural reservoir.
- The viruses are geographically restricted to the areas where their host species live.
- Humans are not the natural reservoir for any of these viruses. Humans are infected when they are exposed to infected hosts. However, after accidental transmission from the host, humans can transmit some of these viruses to other humans.
- Human cases or outbreaks of hemorrhagic fevers occur sporadically and irregularly and outbreaks cannot be predicted.
- With a few noteworthy exceptions, there is no cure or established drug treatment for VHF.

Bioterrorism Epidemiology

All of the VHF viruses (except dengue virus) are infectious by aerosol and could conceivably be used by an adversary as a bioterrorism agent.

Incubation Period

The incubation period for each of the VHF varies from 5 – 42 days depending on the virus.

Clinical Presentation

The VHF syndrome develops to varying degrees in persons infected with these viruses and exposure does not necessarily result in clinical disease. The target organ is the vascular bed and the dominant clinical features are generally a consequence of microvascular damage and changes in vascular permeability. Common presenting complaints include fever, myalgias, and prostration. On physical examination conjunctival injection, mild hypotension, flushing and petechial hemorrhages may be evident. The disease often progresses to shock and generalized mucous membrane hemorrhage accompanied by neurological, hematological and pulmonary manifestations. Renal insufficiency is proportional to cardiovascular compromise. Some of the clinical characteristics of the various VHF are variable as demonstrated in table 1.

Diagnosis

A detailed travel history and a high index of suspicion are essential in making the diagnosis of VHF. Patients with arenavirus and hantavirus may recall having seen rodents during the incubation period. Since these viruses are transmitted to humans by aerosolized excreta or environmental contamination, actual contact with the reservoir is not necessary. Large mosquito populations are common in areas where Rift Valley fever or flavavirus transmission occurs. Any patient presenting with VHF syndrome in the United States should be regarded as a possible bioterrorist event and reported to the local health officer immediately.

VHF should be suspected in any patient presenting with severe febrile illness and evidence of vascular involvement (subnormal blood pressure, postural hypotension, petechiae, hemorrhagic diathesis, flushing of the face and chest, and non-dependent edema. Symptoms of additional organ involvement may include headache, photophobia, pharyngitis, cough, nausea, vomiting, diarrhea, constipation, abdominal pain, hyperesthesia, dizziness, confusion and tremor.

Laboratory findings will vary from disease to disease. White blood cell counts may be normal or elevated. Thrombocytopenia is a component of most VHF, but to a varying extent. Platelet counts may be normal and platelet function tests may be required to explain the bleeding diathesis. Proteinuria and hematuria are both common in VHF and

their absence rules out Argentine and Bolivian HF and hantaviral infections. Hematocrit is generally normal or increased due to dehydration. Liver enzymes (AST) are generally elevated.

Differential Diagnoses

The major differential diagnosis is malaria. Other diagnoses include typhoid fever, rickettsial and leptospiral diseases, non-typhoidal salmonellosis, shigellosis, relapsing fever, fulminant hepatitis and meningococcemia. Conditions leading to DIC such as acute leukemia, lupus erythematosus, idiopathic or thrombic thrombocytopenia purpura and hemolytic uremic syndrome may lead to the misdiagnosis of VHF.

Definitive diagnosis is made by specific virologic testing performed at a biosafety level IV laboratory.

Medical Management

Patients with VHF syndrome require intensive supportive care. Transporting patients, especially by air, should be avoided because of the effects of changes in ambient pressure on lung water balance. Restlessness, confusion, myalgia, and hyperesthesia occur frequently and should be managed by reassurance and other supportive measures, including the judicious use of sedative, pain-relieving, and amnestic medications. Aspirin and other antiplatelet or anticlotting-factor drugs should be avoided. Secondary infections are common and should treated aggressively. Intravenous lines, catheters, and other invasive devices should be avoided unless clearly indicated for the appropriate management of the patient.

Treatment of bleeding

The management of bleeding is controversial. Uncontrolled clinical observations support vigorous administration of fresh frozen plasma, clotting factor concentrates, and platelets, as well as the early use of heparin for prophylaxis of DIC. In the absence of definitive evidence, mild bleeding manifestations should not be treated. Severe hemorrhage indicates that appropriate replacement therapy is required. When definitive laboratory evidence of DIC becomes available, heparin therapy should be initiated if appropriate laboratory support is available.

Treatment of Hypotension and Shock

Management of hypotension and shock is difficult. Patients often are modestly dehydrated due to heat, fever, anorexia, vomiting and diarrhea, in any combination. There are losses of intravascular volume through hemorrhage and increased vascular permeability. These patients often respond poorly to fluid infusions and develop pulmonary edema. Colloid or crystalloid solutions should be given cautiously. Although not evaluated, dopamine would seem to be the agent of choice for patients with shock who are unresponsive to fluid replacement. Adrenergic vasoconstricting agents,

although not clinically evaluated, may be useful in the treatment of profound hypotension. Vasodilators have not been clinically evaluated. Pharmacological doses of corticosteroids (e.g., methylprednisolone 30 mg/kg) provide another possible but untested therapeutic modality in treating shock.

Specific Antiviral Therapy

The investigational antiviral drug ribavirin is available by compassionate use protocols for treatment of Lassa fever, HFRS, Congo-Crimean HF, and Rift Valley fever. Separate Phase III efficacy trials have indicated that parenteral ribavirin reduces morbidity in HFRS and lowers both morbidity and mortality of Lassa fever. In an HFRS field trail, treatment was effective if started during the first four days of fever and continued for seven days. A compassionate-use protocol, utilizing intravenous ribavirin as a treatment for Lassa fever, is sponsored by the Centers for Disease Control and Prevention (CDC). Doses are slightly different and continued for a 10-day course. The only significant side effect of ribavirin is a modest anemia due to a reversible inhibition of erythropoiesis and mild hemolysis. Ribavirin is teratogenic in laboratory animals and the potential benefits must be weighed against the potential risks in pregnant women with serious illness due to one of the VHF. Safety in infants and children has not been established. Ribavirin has poor *in vitro* and *in vivo* activity against filoviruses (Ebola and Marburg) and flaviviruses (dengue and yellow fever).

Isolation

The viruses that cause hemorrhagic fever pose special challenges for hospital ICP. With the exception of dengue (virus present, but no secondary transmission occurs) and hantavirus (virus not present in the blood or body fluids at the time of clinical illness), VHF patients generally have significant quantities of virus in blood, excretions and secretions. Health care workers must handle all sharps with extreme safety to avoid percutaneous exposure.

Lassa, Congo-Crimean HF, Ebola and Marburg viruses may be prone to aerosol nosocomial transmission. Secondary infections among medical personnel who were not parenterally exposed are well documented in countries where these diseases occur naturally.

Recommendations for isolating patients with VHF are included in this section.

Table 1 VHF Differential Diagnostic Variables

Viral Hemorrhagic Fever (HF)	Prominent Clinical Variables
Argentine and Bolivian HF	Epigastric, retroorbital and low back pain, vesicles on palate, hyporeflexia with gait abnormalities, tremors of tongue and upper extremities, hematuria, proteinuria
Lassa fever	Retrosternal chest pain, back pain, sore throat, peripheral edema, proteinuria, hemorrhage uncommon, hearing loss, elevated AST
Rift Valley fever	Retinitis, loss of vision (delayed), jaundice, DIC
Crimean-Congo fever	DIC, thrombocytopenia, jaundice
Hantavirus HF with Renal Syndrome	Renal failure, proteinuria, hematuria, oliguria, polyuric, blanching erythemic rash
Hantavirus Pulmonary Syndrome	Pulmonary vascular permeability, ARDS, hypoxia, dyspnea, hemorrhage and renal failure rare
Marburg and Ebola HF	Photophobia, lymphadenopathy, jaundice, pancreatitis, delirium, coma, maculopapular rash on truck, DIC
Yellow fever	Jaundice

California Hospital Bioterrorism Response Plan

VIRAL HEMORRHAGIC FEVERS (VHF) - QUICK REFERENCE

Any suspected case of Viral Hemorrhagic Fevers (VHF) MUST BE TREATED AS A PUBLIC HEALTH EMERGENCY and reported to the infection control practitioner [*insert telephone number*] and the local health department [*insert telephone number*] immediately.

Bioterrorism Epidemiology:

Transmission: Except for Hantaviruses, all VHF viruses are highly contagious especially in the terminal stages of the disease; person to person contact with blood, all body fluids and tissue; coughing patients may aerosolize virus into the air may result in transmission.

Incubation Period:

Varies with each virus; range is 5 – 42 days.

Clinical Disease:

Varies slightly with each virus. The target organ is the vascular bed and the dominant clinical features are the result of microvascular damage and changes in vascular permeability. Common symptoms include fever, myalgias, prostration, conjunctival injection, hypotension, flushing, petechial hemorrhages, shock and generalized hemorrhage.

Diagnosis:

Presumptive based on clinical signs and symptoms.

Treatment:

Supportive care, pain and fever control, sedation, and hydration.

Prophylaxis:

None

Isolation:

See Recommendations for Isolation.

VIRAL HEMORRHAGIC FEVERS (VHF) – FREQUENTLY ASKED QUESTIONS (FAQ)

What are viral hemorrhagic fevers?

The viruses (germs) that cause viral hemorrhagic fevers are common in Africa and in South America but very rare in the United States.

Is VHF spread from person-to-person?

Yes. VHF are commonly spread from person to person by contact with infected blood and other infected body fluids such as urine, feces, vomitus, and droplets coughed into the air by the infected person.

How soon will symptoms develop (incubation period)?

Normally the symptoms start 5 days or longer after exposure to the germ. Not all persons exposed to the germ will develop symptoms.

What are the symptoms of infection?

The symptoms of VHF generally include high fever, sore muscles and extreme weakness. The eyes may become red and the skin may appear to be red (flushed). In the advanced stages of the infection there may be bleeding from the nose, mouth, bowel or bladder.

How is the infection treated?

There is no medication available to treat VHF infection.

What should I do if I DO NOT have symptoms?

If you do not have any symptoms of the infection, you should continue with your routine daily activities. Please DO NOT go to the hospital emergency room unless you have a fever or other symptoms of the infection.

How can I get more information?

The local health department will make frequent public announcements. It is important that you listen to the radio or television for more information.

VIRAL HEMORRHAGIC FEVERS (VHF) – HOME CARE INSTRUCTIONS

In the event of an intentional release of the germ that causes a viral hemorrhagic fever, many people may require hospitalization within a few days. Hospitals may soon become overwhelmed and unable to care for every person who seeks treatment. It may become necessary for many sick people to be cared for in their home by relatives or friends. The following information may be helpful in providing care to sick persons at home.

- Listen closely to the local radio or television for special instructions from the local health department.
- Advise friends and relatives not to visit.
- Wear a mask when you are in close contact with an infected person who is coughing or bleeding from any site.
- Wear disposable gloves (vinyl or latex) when you have contact with the infected person's blood and other body fluids (urine, feces, vomit, drainage, mucous or saliva). Place the gloves in a waste receptacle after each use. Do not wash or reuse gloves. If disposable gloves are not available, place plastic bags on your hands and secure with an elastic band. Wash your hands with soap and water after removing the gloves.
- Wear a plastic apron or gown to protect clothes from becoming soiled with blood or other body
- Wash your hands with soap and water before you eat or drink, after using the bathroom and after contact with the sick person.
- Wash the sick person's hands after using the bathroom, before eating or drinking and after contact with pets.
- After the sick person uses the toilet or after pouring blood or other body fluids into the toilet, pour 1-cup of household bleach into the toilet, wait for 5 minutes and then flush the toilet.
- If the person is having trouble breathing, go immediately to the nearest designated emergency center or hospital.
- Take the person's temperature at least twice a day. If the temperature goes above 100°F, give Tylenol® (if not allergic). Do not give the person aspirin. Follow the instructions on the package insert. If the temperature is not controlled by the medicine, call your health care provider (doctor or nurse) or take the person to the nearest designated emergency center or hospital.
- Give the person plenty of fluids such as water or juice. Allow the person to eat solid food as tolerated.
- Change the sick person's clothes and bed linens frequently especially if soiled with blood or other body fluids. Wear gloves and gowns if the linen is soiled with blood and body fluids.
- Wash soiled clothes and bed linens in hot water using any commercial laundry product.
- Disinfect the bathroom and kitchen with a disinfectant such as Lysol® every day and when any surface becomes soiled with blood or other body fluids.

- As a caregiver, you must take care of yourself. Get plenty of rest, drink fluids frequently and eat a healthy diet. Take your temperature in the morning and afternoon for 3 weeks. If you develop a fever above 100°F or if you begin to bleed from the mouth, bladder or bowel see a doctor or nurse immediately.

VIRAL HEMORRHAGIC FEVERS (VHF) – SCREENING FORM

Current Date: _____/_____/_____ Medical Record Number: _____

Last Name: _____First Name: _____MI: _____

Street Address: _____ City: _____ State: _____ Zip Code: _____

Home Phone Number: (____) _____ Occupation: _____

Work Address: _____ City: _____ State: _____ Zip Code: _____

Age: ___Date of Birth: ____/____/____ Sex: ____ Date Symptoms Started: _____/____/_____

In the past 3 weeks, have you traveled to other USA cities? If yes, identify city(s):

_____

In the past 3 weeks, have you traveled to a foreign country(s)? If yes, identify city(s)/country(s)?

_____

Have you been camping in past 3 weeks? **NO** **YES**

Have you had any insect bites in the past 3 weeks? **NO** **YES**

Have you had contact with sick animals within the past 3 weeks? **NO** **YES**

Are you currently taking any medicine(s)? (Identify all prescription/over-the-counter medicines)

_____

Are you allergic to any medicine(s)? **NO** **YES** If yes, what medicine(s) are you allergic to?

_____

Over the past weeks, have you had any of the following symptoms or ailments? (Check all that apply).

Symptoms	Yes	Symptoms	Yes
Fever		Bleeding from the nose or mouth	
Headache		Bleeding from the rectum or bladder	
Cough		Cough up blood	
Sore muscles		Extreme weakness	
Trouble walking		Very tired	
Bloody diarrhea		Vomiting blood	
Red eyes		Red spots of the skin	
Yellow eyes		Change in mental status	
Reduced urination		Excessive urination	
Pain in the eyes		Low back pain	
Chest pain		Loss of vision	
Difficulty breathing		Light hurts the eyes	
Swelling of legs, fingers, hands			

Section 3 – Attachments

ATTACHMENT 1: COMMUNICATION PLAN

Internal Communication

Bioterrorist (BT) Event Suspected

- ❑ Notify a department supervisor, manager or director and
- ❑ Notify a member of the Primary BT Response Team (e.g., Administrator, Infection Control Practitioner (ICP) or Chairperson, Infection Control Committee) immediately.

A bioterrorist event may be suspected by a physician, staff nurse, laboratory technologist, radiologist, ICP or other hospital personnel. During normal business hours, the first person to suspect that an event is evolving should immediately communicate their suspicion to a direct line supervisor, department manager or director and a member of the Primary Response Team (e.g., hospital administrator, ICP, Hospital Epidemiologist or Chairperson, Infection Control Committee). After normal business hours including weekends and holidays, administrative personnel such as the nursing supervisor or the administrative officer of the day (AOD) should be contacted. This person should assume responsibility for notifying the appropriate members of the Primary Response Team (See Primary Response Team Notification)

Information and notification

- ❑ Develop tentative case definition
- ❑ Review medical records (case finding)
- ❑ Designate a BT leader
- ❑ Discuss information with Primary Response Team
- ❑ Notify Local Health Department (LHD)
- ❑ Document and discuss LHD recommendations

The goal is to communicate credible information about the evolving bioterrorist event to the LHD within **two (2) hours of initial suspicion**. A tentative case definition should be developed by the ICP in consultation with the Chairperson, Infection Control Committee or Hospital Epidemiologist. The medical record of patient(s) with similar symptoms currently seeking treatment should be reviewed and the clinical information documented. (See Medical Record Review) This information may assist the LHD in determining if the event is bioterrorism-related or due to a clinical syndrome occurring concurrently in the community such a viral gastroenteritis or influenza. The clinical

information should be discussed with members of the Primary Response Team. If, at this time, a bioterrorism event is suspected, the administrator should designate a leader, preferably a physician or the ICP, to communicate with the LHD. The recommendations of the LHD should be documented and discussed with the Primary Response Team.

Internal Preparation

- ❑ Activate "Log of Events"
- ❑ Monitor Emergency Department (ED) admissions
- ❑ Report new cases to LHD
- ❑ Initiate isolation precautions, if necessary
- ❑ Review BT Response Plan and Disaster Preparedness Plan
- ❑ Inform and assure staff

Confirmation that the definition of a bioterrorism event has been met will require consultation among local, state and federal public health officials. This may take several hours. Unless the number of patients seeking treatment increases beyond the capabilities of the current staffing levels and bed availability, the hospital may want to delay implementation of the hospital disaster preparedness plan until the LHD confirms that an event is in progress.

The Primary Response Team should activate a "Log of Events". The "Log" (notebook) should document any unusual events (e.g., telephone threat, media inquiry or increase number of persons seeking medical care).

New emergency department admissions with similar clinical syndromes should be triaged as soon as possible. All new cases must be reported to the LHD. If patients require hospital admission, the ICP should work with the nursing supervisor and the admitting department to appropriately place patients, if isolation is required. The hospital disaster preparedness and BT plan should be reviewed. As the number of admissions increase staff may require physical and emotional support. Frequent communication in the form of email updates (if available) and rounds on nursing units and other affected departments may help to assess the anxiety level of the staff so that appropriate interventions can be implemented. Staff should be counseled not to communicate with the media.

BT Event Confirmed

- ❑ Notify Secondary BT Response Team members
- ❑ Activate BT Response Plan and Disaster Preparedness Plan
- ❑ Assign responsibilities
- ❑ Notify local law enforcement agency for enhanced facility security
- ❑ Notify DHS, Licensing and Certification District Office (Reportable Event)

After the LHD confirms that the disease scenario meets the definition of a credible event, the hospital should notify members of the Secondary Response Team. (See Secondary Response Team Notification) A decision must be made as to whether the Hospital Disaster Preparedness Plan should be partially of fully implemented. A meeting should be convened immediately to review current information and LHD recommendations. At this time responsibilities should be assigned and clarified. Members of the Team should plan to be briefed at least every 2 hours or more frequently as the number or patients and the intensity of the event escalates. As soon as the Hospital Disaster Preparedness Plan is partially or fully implemented, the bioterrorism leader or hospital administrator should notify local law enforcement agencies and as the situation requires, request additional security for traffic and crowd control. The Department of Health Services, Licensing and Certification District Office should be notified of this reportable event. (See External Communication).

Local Health Department Investigation

After the LHD confirms that an event is evolving, a team of public health investigators may be dispatched to the hospital to collect information from affected patients. A coordinated epidemiological investigation must be conducted by the LHD as soon as possible to determine the source of the exposure and identify and implement the most effective and efficient interventions.

External Communication

Notification of local, state and federal agencies

- LHD notifies Governor's Office of Emergency Preparedness (OES) **AND** Department of Health Services (DHS), Division of Communicable Disease Control (DCDC) Duty Officer of the Day (DOD) and/or the DHS Emergency Response Duty Officer
- LHD notifies FBI
- DHS, DCDC notifies Centers for Disease Control and Prevention (CDC)
- CDC notifies USAMRIID and other federal agencies

The hospital is responsible for notifying the law enforcement agencies in the their city and/or county and the DHS Licensing and Certification District Office.

The LHD is responsible for notifying the Governor's Office of Emergency Preparedness (OES), the Department of Health Services (DHS) Division of Communicable Disease Control (DCDC) Duty Officer of the Day, the DHS Emergency Response Duty Officer and the Federal Bureau of Investigation (FBI).

The Department of Health Services, DCDC is responsible for notifying the Centers for Disease Control and Prevention (CDC) who will assume responsibility for notifying all other federal agencies such as USAMRIID.

Communicating with the Media and the Public

Until the LHD confirms that an event is evolving, all media inquiries should be directed to the LHD. Once the event is confirmed the hospital should prepare information for the media and identify the person the media should contact with questions.

The media will play a key role in educating the public about a bioterrorism event. The dissemination of inaccurate information could impede the provision of patient care. The media should be provided with as much credible information about the event as possible.

At some point, a telephone hot line should be established to provide information to the public. The information should be updated frequently and should include changes in how the delivery of services such as canceling elective surgical procedures may affect routine patient care. If the hospital has a web site, information related to the event should be posted and updated at least daily.

Attachment 1B – External Communication Matrix

Chain of External Communication

- ❑ Hospital notifies the Local Health Department (LHD) and local law enforcement
- ❑ LHD notifies Department of Health Services (DHS), Division of Communicable Disease Control (DCDC)
- ❑ LHD notifies FBI if BT event confirmed or highly probable.
- ❑ DCDC notifies Office of Emergency Services (OES) (916.262.1621) **AND** Emergency Preparedness Office (EPO).
- ❑ DCDC notifies Centers for Disease Control and Prevention (CDC) (707.488.7100)
- ❑ CDC notifies USAMRIID (301 619 2833)

LHD (insert the telephone numbers of local health department)	**Note: Telephone numbers are subject to change**	**DCDC telephone numbers**	**Note: Telephone numbers are subject to change**
Business hours number		Business hours number	510.540.2566
LHD pager number		DOD pager number	800.590.3018
LHD cell phone number		Other emergency numbers	510.540.2308
Other emergency numbers			

If a BT Event is **suspected** during normal business hours, hospitals should first notify the LHD and then notify the Licensing and Certification (L&C) District Office by telephone.	If a BT event is **suspected** after normal business hours, hospitals should notify L&C through the DHS Emergency Response Duty Officer. Contact the Office of Emergency Services (OES) Warning Center at 916.262.1621, or via the duty officer pager at 916.328.3605.

DHS L&C Field Offices	**Telephone numbers**	**FBI California Field Offices**	**Telephone numbers**
Bakersfield Office	661.336.0543	Los Angeles	310.488.6565
Berkeley Office	510.540.2417	Sacramento	916.841.9110
Chico Office	530.895.6711	San Diego	619.565.1255
Daly City Office	670.301.9971	San Francisco	415.553.7400
Fresno Office	559.437.1500		
Los Angeles Office	323.837.1005		
Orange County Office	714.456.0630		
Sacramento Office	916.229.3400		
San Bernardino Office	909.344.2896		
Riverside Office	909.388.7170		
San Diego Office	619.688.6190		
San Jose Office	408.277.1784		
Santa Rosa Office	707.576.2380		
Ventura Office	805.654.4800		

Attachment 1C – Internal Hospital Response Team Notification Matrix

Primary BT Response Team	Name	Office Number	Cell/Beeper Number	E-mail Address
Chief Executive Officer (CEO), or				
Chief Operations Officer (COO), or				
Chief Financial Officer (CFO), or				
Chief Nursing Officer (CNO), or				
Nursing Supervisor, **AND**				
Chair, Infection Control Committee				
Infection Control Practitioner				

Secondary BT Response Team	Name	Office Number	Cell/Beeper Number	E-mail Address
Pharmacy				
Laboratory/Pathology				
Emergency				
Critical Care				
Admission, Transfer & Discharge				
Public Relations				
Materials Management				
Facilities Management				
Social Services				
Security				
Other				

ATTACHMENT 2 – MEDICAL RECORD REVIEW FORM

Actions:

- ❑ **Record age, name and medical record number**
- ❑ **Record fever at time of admission**
- ❑ **Check the number (1, 2 and/or 3) in the appropriate columns corresponding to the sign or symptom**
- ❑ **If patient returned from a foreign country within the past 3 weeks, identify country**
- ❑ **If patient was exposed to rodents, insects or animals with the past 3 weeks, identify potential place of exposure (camping, home yard, etc.) and potential source of exposure (tick, fleas, domestic or exotic animals)**
- ❑ **If patient has any of the following, call the local health department immediately:**
  Chest x-ray suspicious for anthrax e.g. widening mediastinum
  Rash suspicious for smallpox, or
  Bloody sputum suspicious for pneumonic plague

AGE	Name	Medical Record No.	Fever time of admit	Cough =1 Sore throat=2 Pneumonia=3			Rash 1= Yes	Shock 1=Shock 2=Sepsis 3=bleeding			Death 1= yes	Nausea=1 Vomit=2 and/or Diarrhea=3			Comments 1=Travel to foreign country in past 3 weeks (identify country) 2=Insect, rodent, animal exposure and source of exposure	
				1	2	3	1	1	2	3	1	1	2	3	1 (identify)	2 (identify)

ATTACHMENT 3 – SUMMARY OF POTENTIAL BIOTERRORIST DISEASE SYNDROMES

Disease	Symptoms	Physical Exam	Diagnostic Tests	Key Differential Diagnosis	Incubation Period	Duration of Illness
Inhalation Anthrax	Fever, malaise, cough, mild chest discomfort, possible short recovery phase then onset of dyspnea, diaphoresis, stridor, cyanosis, shock. Death 24-36 hours after onset of severe symptoms, Hemorrhagic meningitis in up to 50%	Non-specific physical findings.	Serology (acute & convalescent samples); gram stain & culture of the blood; polymerase chain reaction (PCR); CXR - widened mediastinum. Rarely pneumonia.	Hantavirus pulmonary syndrome (HPS), Dissecting aortic aneurysm (no fever)	1-6 days (up to 45 days)	3-5 days
Pneumonic plague	High fever, chills, headache, hemoptysis, and toxemia, rapid progression to dyspnea, stridor, and cyanosis. Death from respiratory failure, shock, and bleeding.	Rales, hemoptysis, purpura	Gram stain & culture of blood and target tissue, serum immunoassay for capsular antigen, Serology to confirm; PCR, immunohistochemical stains (IHC)	HPS, TB, community acquired pneumonia (CAP), meningococcemia, rickettsioses	2-3 days	1-6 days
Tularemia	Fever, headache, malaise, chest discomfort, anorexia, non-productive cough. Pneumonia in 30-80%. Oculoglandular from inoculation of conjunctiva with periorbital edema.	No adenopathy with typhoidal illness.	Serology; culture of blood, sputum, or skin lesions; PCR; IHC; CXR - pneumonia, mediastinal lymphadenopathy, or pleural effusion.	Atypical community acquired pneumonia, Q fever, Brucellosis	1-10 days (average 3-5 days	>2 weeks
Smallpox	Fever, back pain, vomiting, malaise, headache, rigors, delirium. Papules 2-3 days later, progressing to pustular vesicles. Abundant on face and extremities initially.	Papules, pustules, or scabs of similar stage, many on face/extremities, palm/soles.	Clinical diagnosis; Guarnieri bodies on Giemsa or modified silver stain, virons on electron microscopy, PCR, viral isolation, IHC	Varicella, vaccinia, monkeypox, cowpox, disseminated herpes zoster.	7-17 days (average 12 days)	4 weeks
Botulism	Ptosis, blurred vision, diplopia, generalized weakness, dizziness, dysarthria, dysphonia, dysphagia 24 - 36 hours after exposure followed by symmetrical descending flaccid paralysis and respiratory failure.	No fever, patient alert, postural hypotension, pupils unreactive, normal sensation, variable muscle weakness.	Diagnosis – clinical. Serology, toxin assays/ anaerobic cultures of blood/stool; electromyography studies.	Guillian-Barré, myasthenia gravis, tick paralysis, Mg++ intoxication, organophosphate poisoning, polio	1-5 days	Death 24-72 hours or ventilator support for months
Filoviruses (Marburg, Ebola)	Fever, severe headache, malaise, myalgia, maculopapular rash day 5; progression to pharyngitis, hematemesis, melena, uncontrolled bleeding; shock/death days 6-9.	Petechia, ecchymoses, conjunctivitis, uncontrolled bleeding.	Serology (antigen capture ELISA, IgM Elisa or PCR during acute phase), viral isolation (requires containment facility), IHC; leukopenia, thrombocytopenia, proteinuria.	Meningococcemia, malaria, typhus, leptospirosis, borreliosis, thrombotic thrombocytopenic purpura (TTP), rickettsiosis, hemolytic uremic syndrome (HUS), arenaviruses.	2-19 days (average 4-10 days)	Days to weeks
Arenaviruses (Lassa, Junin, Sabia, Machupo, Guanarito)	Fever, malaise, myalgia, headache, nausea, vomiting, pharyngitis, cough, retrosternal pain, bleeding, tremors of tongue and hands (Junin), shock, aseptic meningitis, coma, hearing loss in some.	Conjunctivitis, petechia, ecchymoses, flushing over head and upper torso.	Serology, viral isolation, PCR, IHC; leukopenia, thrombocytopenia, proteinuria	Leptospirosis, meningococcemia, malaria, typhus, borreliosis, rickettsiosis, TTP, HUS, filoviruses.	5-21 days Lassa; 7-16 days Sabia, Junin, Machupo, Guanarito	7-15 days

Disease	Symptoms	Physical Exam	Diagnostic Tests	Key Differential Diagnosis	Incubation Period	Duration of Illness
Brucellosis	Irregular fever, chills, sweating, myalgias, cough and arthritis lasting for weeks. Profound weakness and fatigue, depression and mental status changes.	Chest x-ray may be normal or show lung abscesses, single or military nodules, bronchopneumonia, enlarged hilar nodes & pleural effusion.	Serology, cultures of blood, liver or bone marrow.	Influenza, Infectious mononucleosis, malaria, tuberculosis, Hodgkin's disease, and lymphoblastoma	5-60 days	Undulant form < 1 yr. Chronic form > 1 year
Q-Fever	Fever, chills, headache early, pleuritic chest pain. Weight loss, myalgia and cough appearing late during course.		Abnormal liver function tests, normal WBC with thrombocytopenia. Serology – IFA or ELISA (2-3 wks after presentation. CXR consolidation	Mycoplasma pneumoniae, Legionella pneumophila, Chlamydia psittaci & Chlamydia pneumoniae.	2-14 days	2 days to 2 weeks
Venezuelan Equine Encephalitis	Generalized malaise, spiking fever, rigors, severe headache, photophobia & myalgias in the legs and lumbosacral area. Nausea, vomiting, cough, sore throat and diarrhea may follow.	Non-specific	Serum for IgM ELISA indirect FA, hemagglutination inhibition, complement fixation and neutralization. White blood count often – leukopenia & lymphopenia		1-5 days	1 – 2 weeks
Staphylococcal Enterotoxin B	Fever, myalgia, nausea, diarrhea and cough.		Clinical diagnosis. Serology and urine toxin levels are useful retrospectively.	Influenza, adenovirus, mycoplasma	3–12 hours	Days to weeks
Cholera	Vomiting, headache, intestinal cramping with little or no fever and soon painless voluminous diarrhea.	Rice water diarrhea & dehydration.	Clinical diagnosis. Darkfield or phase-contrast microscopy of the stool – darting motile vibrio	Acute bacillary dysentery, food poisoning, heat exhaustion and some forms of malaria.	4 hours – 5 days	3 – 5 days
Ricin	Weakness, fever, progressive cough, pulmonary edema, cyanosis, chest tightness, dyspnea, nausea & arthralgias.	Respiratory distress and death	Specific serum ELISA. Acute and convalescent sera should be collected.	Staphylococcal enterotoxin B, Q fever, tularemia, plague, some chemical warfare agents such as phosgene.	4 – 8 hours	Death 36 –72 hours
Mycotoxins (T-2)	Skin – burning pain, redness, tenderness, blistering. Nasal itching and pain, sneezing, epistaxis and rhinorrhea. Pulmonary/tracheobronchial – dyspnea, wheezing, and cough. Eyes – pain, tearing, redness, foreign body sensation and blurred vision may occur	Skin blisters, epistaxis, blood tinged saliva and sputum.	Blood, tissue and environmental samples – chromatography-mass spectrometry	Mustard agent, staphylococcal Enterotoxin B	Minutes to hours	Death in minutes, hours or days

Laboratory Precautions

- Use Standard or Universal Precautions when collecting clinical specimens. (Exception: See recommendations for isolation for smallpox and viral hemorrhagic fevers)
- Use biological safety cabinets to prevent the release of aerosols. Masks, gowns gloves and eye protectors should be use in addition to biological safety hoods when handling all suspected bioterrorism agents.

Packaging Requirements

1. Place biohazard label on each specimen container (culture or blood specimen).
2. Wrap specimen container with absorbent material and place in a leak proof container with a tight cover.
3. Place a biohazard label on primary container.
4. Place wrapped specimen container in the primary container.
5. Place primary container into a second leak proof container and seal tightly.
6. Place biohazard label on second container.
7. Place ice pack (not ice) in the second container if required. If the specimen is a paper or powder form, ice should be omitted.
8. Place the second container in a third container.
9. The third container should meet the state and federal regulations for shipping of hazardous materials and be properly labeled.

Transporting Requirements

Transportation of clinical specimens to the local health or state department should be coordinated with the local FBI or law enforcement agency.

ATTACHMENT 4 – TEXT REFERENCES

Inglesby TV, , Working Group on Civilian Biodefense. Anthrax as a Biological Weapon, Medical and Public Health Management. JAMA, May 12,1999:281:18

Inglesby TV,Working Group on Civilian Biodefense. Smallpox as a Biological Weapon, Medical and Public Health Management. JAMA, June 9, 1999:281:22

APIC Bioterrorism Task Force & CDC Hospital Infections Program Bioterrorism Working Group. Bioterrorism Readiness Plan: A Template for Healthcare Facilities, April 13,1999

Kaiser Permanente, Plan Development Work Group. Bioterrorism Preparation and Response Guidance: A Biological Exposure Readiness Plan, November, 1999

State of California Publications

The State of California Emergency Plan. Governor's Office of Emergency Services. May, 1998

Authority and Responsibility of Local Health Officer in Emergencies and Disasters. California Department of Health Services, Emergency Preparedness Office. September 30, 1998

The Local planning Guidance of Terrorism Response: A Supplement to the Emergency Planning Guidance for Local Government. Governor's Office of Emergency Services. December, 1998

The California Terrorism Response Plan: An Annex to the State Emergency Plan. Governor's Office of Emergency Services. March, 1999

California Influenza Pandemic Response Plan. California Department of Health Services, Division of Communicable Disease Control, Immunization Branch. May, 2000

ATTACHMENT 5 – INTERNET REFERENCES

Association for Professionals in Infection Control and Epidemiology (APIC)
Bioterrorism Working Group
http://www.apic.org/

APIC/CDC Bioterrorism Readiness Plan: A Template for Healthcare Facilities
http://www.cdc.gov/ncicoc/hip/Bio/13apr99APIC-CDCBioterrorism.PDF

Saint Louis University School of Public Health, Center for the Study of Bioterrorism and Emerging Infections
http://www.bioterrorism.slu.edu/

Centers for Disease Control and Prevention (CDC)
http://www.cdc.gov/

CDC Bioterrorism Preparedness and Response Program
http://www.bt.cdc.gov/

Biological and Chemical Terrorism: Strategic Plan for Preparedness and Response – Recommendations of the CDC Strategic Planning Work Group
ftp://ftp.cdc.gov/pub/Publications/mmwr/RR/RR2904.pdf

CDC Division of Healthcare Quality Promotion (DHQP)
http://www.cdc.gov/ncidod/hip/

CDC Morbidity and Mortality Weekly Report
http://www.cdc.gov/mmwr/

Johns Hopkins University Center for Civilian Biodefense Studies
http://www.hopkins-biodefense.org

U.S. Army Medical Research Institute of infectious Diseases (USAMRIID) Medical Management of Biological Casualties Handbook
http:ccc.apgea.army.mil/Documents/HandbookonBioCas/Handbook.htm

U.S. Army Medical Research Institute for Chemical Defense - USAMRIID
http://chemdef.apgea.army.mil

U.S. Army's Office of the Surgeon General, Medical NBC On-Line Information Server
http://www.nbc-med.org/

U.S. National Archives and Records Administration
http://www.nara.gov/