

EAST CAROLINA UNIVERSITY

INFECTION CONTROL POLICY

Biological Terrorism Readiness Plan
Brody School of Medicine

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Approved by:

Vice Chancellor for Health Services

Director, Prospective Health

Chairman, Infection Control Committee

Chairman, Biological Safety
Committee



Please note: This document will be updated to reflect public health guidelines and new information as they become available.

Purpose

Hospitals and clinics may have the first opportunity to recognize and initiate a response to a bioterrorism-related outbreak. Infection Control at ECU recognizes the importance of awareness and preparation for bioterrorism on the part of healthcare facilities. This Bioterrorism Readiness Plan will to serve as a reference document and is intended to serve as a tool in preparation for a real or suspected bioterrorism attack. The ECU Bioterrorism Readiness Plan has been prepared to reflect partnership with the Pitt County Health Department and the North Carolina Department Health & Human Services and Office of Public Health in conjunction with the Centers for Disease Control and Prevention (CDC). ECU will determine the extent of it's bioterrorism readiness needs, which may range from notification of local emergency networks (i.e. calling 911) and transfer of affected patients to appropriate acute care facilities, to activation of large, comprehensive communication and management networks. This plan authorizes the Chairman of the ECU Infection Control Committee, the Infection Control Nurse, and the Director of Prospective Health or designee to rapidly implement prevention and control measures in response to a suspected outbreak. Should a bioterrorism event be suspected, a network of communication must be activated to involve IC personnel, administration, Health and Safety, police, the local and state health departments possible up to, the Federal Bureau of Investigation (FBI) field office, and CDC (see Reporting Requirements and Contact Information below).

Section I: General Categorical Recommendations for Any Suspected Bioterrorism Event

A. Reporting Requirements and Contact Information

ECU may be the initial site of recognition and response to a bioterrorism event. If a bioterrorism event is suspected, local emergency response systems should be activated. The ECU police will be notified for any suspicious environmental event on campus. Based upon their assessment, the ECU police may contact Biological Safety or Office of Environmental Health and Safety for infectious or chemical investigations respectively. If a high-risk condition is verified, ECU Police will contact the Pitt County Sheriff Department for expanded law enforcement investigation. (Appendix- C)

At that time, the Pitt County Health Director will also be contacted by Prospective Health or Environmental Health and Safety. For example, if an environmental event occurs in the Brody clinics or is recognized there, Group Practice Administration (GPA) will be notified after or coincident with an investigation by Prospective Health or Environmental Health and Safety. Call 744.2322 for the appropriate GPA administrator, if outside agencies are to be involved. Specific recommendations regarding occupational health or patient handling recommendations will be made as needed by Prospective Health or Occupational Environmental Health and Safety to GPA or Student Health Services. These recommendations are disseminated to clinical facilities and staff. If a clinical case, suspicious clinical presentation or other clinical issue arises in the patient care process, ECU Infection Control will be notified. Infection Control will contact Pitt County Health Department to report verified or suspect cases during office hours. If a suspicious clinical case presents to ECU during evening or weekend hours, the ECU

physician should contact the Pitt County Health Department directly, especially, if the situation suggests an urgent need for public health involvement, or Public Health Laboratory Testing Services.

Contact with either the Pitt County Sheriff or Pitt County Health Department can trigger a cascade of contacts with state or national agencies such as the State Health Department, FBI or CDC.

INTERNAL CONTACTS:

Access ECU police for Biological Safety Issues after hours: **744.2246; 911**

Infection Control: **744.3202**

Biological Safety: **744-2237, 744-3437**

Radiation Safety: **744-2418**

BSOM Main Entrance Front Desk: **744-2286**

EXTERNAL CONTACTS:

Local Health Department, Dr. John Morrow, Pitt County Health Director **252.902.2443** to page health director; 902-2300-4 emergency page.

Region 1: Pitt County Greenville Public Health Preparedness Response Team, Dr. Kim McDonald **252-902-2339 office, 252-717-7291 cell.**

*Urgent need during evening or weekend Pitt County Health Director may be called directly 252.830.4619.

NC Office of Public Health Medical Evaluation and Risk Assessment: **919-733-3410**

State Health Department, Dr. Jeffrey Engel **919.733.3419**

FBI Field Office: **704.377.9200** (Contact local law enforcement agency or local health department; they will contact FBI if needed)

Bioterrorism Emergency Number, CDC Emergency Response Office **770.488.7100**

CDC Division of Healthcare Quality Promotion: **1.800.893.0485**

Federal Emergency Management Agency: **770.220.5200**

North Carolina Emergency Agency: **1.800.858.0368**

Environmental/Suspicious Event

Environmental/suspicious event → Call 911 → ECU Police 744.2246

(initial investigation) → Biological Safety/Radiation Safety/Office of Environmental Health and Safety → If high risk → Sheriff's office and Pitt County Health Department will be notified. Sheriff will contact FBI if needed. Pitt County Health Department or NC Office of Public Health will contact CDC if needed.

Clinical Case/Suspicious Clinical Presentation/Clinical Issue

Clinical case/suspicious clinical presentation/clinical issue → Call ECU Infection Control 744.3202 or an Infectious Disease Physician 744-2550 → if suspect or high risk case Pitt County Health Department will be notified.

B. Potential Agents

Four diseases with recognized bioterrorism potential (anthrax, botulism, plague,

and smallpox) and the agents responsible for them are described in Section II of this document (see Readiness Plan)

also Appendices 4 and 5 for agent specific fact sheets). The CDC does not prioritize these agents in any order of importance or likelihood of use.

C. Detection of Outbreaks Caused by Agents of Bioterrorism

Bioterrorism may occur as covert events, in which persons are unknowingly exposed and an outbreak is suspected only upon recognition of unusual disease clusters or symptoms. Bioterrorism may also occur as announced events, in which persons are warned that an exposure has occurred. Biological Disaster

Syndrome-based criteria

Rapid response to a bioterrorism-related outbreak requires prompt identification of its onset. Because of the rapid progression to illness and potential for dissemination of some of these agents, it may not be practical to await diagnostic laboratory confirmation. Instead, it will be necessary to initiate a response based on the recognition of high-risk syndromes. Each of the agent-specific plans in Section II includes a syndrome description (i.e., typical combination of clinical features of the illness at presentation), that should alert healthcare practitioners to the possibility of a bioterrorism-related outbreak.

Epidemiologic features

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

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

D. Infection Control Practices for Patient Management

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

1. Isolation precautions

All patients in healthcare facilities, including symptomatic patients with suspected or confirmed bioterrorism-related illnesses, should be managed utilizing **Standard Precautions at minimum**. Standard Precautions are designed to reduce transmission from both recognized and unrecognized sources of infection in healthcare facilities, and are recommended for all patients receiving care, regardless of their diagnosis or presumed infection status⁵ **For certain diseases or syndromes (e.g., smallpox and pneumonic plague), additional precautions may be needed to reduce the likelihood for transmission via airborne & droplet precautions**. See Section II for specific diseases and requirements for additional isolation precautions.

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

- **Handwashing**
- **Gloves**
- **Masks/Eye Protection or Face Shields**
- **Gowns**

Droplet & Airborne precautions utilize respiratory protection and mask.

2. Patient placement

In small-scale events, routine facility patient placement and infection control practices should be followed. However, when the number of patients presenting to a healthcare facility is too large to allow routine triage and isolation strategies (if required), it will be necessary to apply practical alternatives. These may include cohorting patients who present with similar syndromes, i.e., grouping affected patients into a designated section of a clinic or setting up a response center at a separate building. Designated cohorting sites will be chosen by Infection Control in consultation with Group Practice Administration or Student Health Administration, based on patterns of airflow and ventilation, availability of adequate plumbing, waste disposal, and capacity to safely hold potentially large numbers of patients. The triage or cohort site should have controlled entry to minimize the possibility for transmission to other patients at the facility and to staff members not directly involved in managing the outbreak. At the same time, reasonable access to vital diagnostic services, e.g., radiography departments, should be maintained.

3. Patient transport

Patient transport requirements for specific potential agents of bioterrorism are listed in Section II. In general, the transport and movement of patients with bioterrorism-related infections, as for patients with any epidemiologically important infections (e.g., pulmonary tuberculosis, chickenpox, measles), should be limited to movement that is essential to provide

patient care, thus reducing the opportunities for transmission of microorganisms within healthcare facilities. The receiving area should be notified prior to patient-transport.

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

- Principles of Standard Precautions should be generally applied for the management of patient-care equipment and environmental control.
- Standard procedures for the routine care, cleaning, and disinfection of environmental surfaces, beds, bed rails, bedside equipment, and other frequently touched surfaces and
- Hospital-approved germicidal cleaning agents will be available in patient care areas to use for cleaning spills of contaminated material and disinfecting non-critical equipment.
- Used patient-care equipment soiled or potentially contaminated with blood, body fluids, secretions, or excretions should be handled in a manner that prevents exposures to skin and mucous membranes, avoids contamination of clothing, and minimizes the likelihood of transfer of microbes to other patients and environments. See Isolation/Precaution Policy and Guidelines in appendix A .
- All reusable equipment must be appropriately cleaned and reprocessed prior to use on another patient. Dedicated or single use items will be used when possible. Single-use patient items must be appropriately discarded after use.
- Sterilization is required for all instruments or equipment that enter normally sterile tissues or through which blood flows.
- Rooms and bedside equipment of patients with bioterrorism-related infections should be cleaned using the same procedures that are used for all patients as a component of Standard Precautions, unless the infecting microorganism and the amount of environmental contamination indicates special cleaning. In addition to adequate cleaning, thorough disinfection of bedside equipment and environmental surfaces must be done as certain organisms can survive in the inanimate environment for extended periods of time.
- Patient linen should be handled in accordance with Standard Precautions.
- All waste will be handled as regulated medical waste and placed in a red biohazard bags.
- Policies for the prevention of occupational injury and exposure to bloodborne pathogens will be in accordance with Bloodborne Pathogens Exposure Control Plan in the Infection Control manual.

5. Discharge management

Patients with bioterrorism-related infections are assessed for the necessity of inpatient or outpatient treatment based on the severity of illness. However, home-care instructions are provided in this Plan in the event that large numbers of persons exposed may preclude admission of all infected patients. Home care instructions fact sheets include recommendations for the use of appropriate barrier precautions, handwashing, waste management, and cleaning and disinfection of the environment and patient-care items

(see Disease specific information pp. 11-26). Additional instructions maybe needed based on the specific diagnosis.

6. Pathology Specimens

Pathology departments and clinical laboratories must be informed of a potentially infectious patient prior to submitting any specimens for examination or disposal. Contact the pathologist

E. Post Exposure Management

1. Decontamination of Patients and Environment

The need for decontamination depends on the suspected exposure's route of infection. The goal of decontamination after a potential exposure to a bioterrorism agent is to reduce the extent of external contamination of the patient and contain the contamination to prevent further spread. Decontamination should only be considered in instances of gross contamination. Decontamination of exposed individuals prior to receiving them in the healthcare facility may be necessary to ensure the safety of patients and staff while providing care. Facilities should consider available locations and procedures for

patient decontamination prior to facility entry.

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

Facility decontamination procedures must be coordinated with the FBI field office or local law enforcement. The FBI may require collection of exposed clothing and other potential evidence for submission to FBI or Department of Defense laboratories to assist in exposure investigations.

2. Prophylaxis and post-exposure immunization

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

1. Triage and management of large scale exposures and suspected exposures

A Bioterrorism Response Team will consist of representatives from Infection Control, Biological Safety, Environmental Health and Safety, Nurse Leadership Council, and Group Practice Administration at BSOM, and comparable representative from Student Health Services. The processes for triage and safe care for potentially large numbers of affected individuals will be developed by the Bioterrorism Response Team. Triage and management planning for large-scale events may include:

- Establishing networks of communication and lines of authority required to coordinate on-site care.
- Planning for cancellation of non-emergency services and procedures.
- Identifying sources able to supply available vaccines, immune globulin, antibiotics, and botulinum anti-toxin (with assistance from local and state health departments).
- Planning for the efficient evaluation of patients.
- Developing discharge instructions for patients determined to be non-contagious or in need of additional on-site care, including details regarding if and when they should return for care or if they should seek medical follow-up.
- Determining availability and sources for additional medical equipment and supplies that may be needed for urgent large-scale care.
- Planning for the allocation or re-allocation of scarce equipment in the event of a large-scale event.
- If patient expires on site, transfer to hospital morgue.

4. Psychological aspects of bioterrorism

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

Consider the following to address patient and general public fears:

- Minimize panic by clearly explaining risks, offering careful but rapid medical evaluation/treatment, and avoiding unnecessary isolation or quarantine.
- Treat anxiety in unexposed persons who are experiencing somatic symptoms (e.g., with reassurance, or diazepam-like anxiolytics as indicated for acute relief of those who do not respond to reassurance).

Consider the following to address healthcare worker fears:

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

Fearful or anxious healthcare workers may benefit from their usual sources of social

support, or by being asked to fulfill a useful role (e.g., as a volunteer at the triage site).

- Involvement of the ECU News and Information Services may be requested by ECU/ BSOM administration.

F. Laboratory Support and Confirmation

. ECU/BSOM patient specimens are sent to PCMH laboratory. PCMH will work with local, state and federal public health services to isolate and identify these agents to tailor diagnostic strategies to specific events/needs.

1. Obtaining diagnostic samples

See specific recommendations for diagnostic sampling for each agent. Sampling should be performed in accordance with Standard Precautions. In all cases of suspected bioterrorism, collect an acute phase serum sample to be analyzed, aliquotted, and saved for comparison to a later convalescent serum sample.

2. Laboratory criteria for processing potential bioterrorism agents

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

- Level A: Clinical laboratories – minimal identification of agents
- Level B: County/ State/ other laboratories – identification, confirmation, susceptibility testing
- Level C: State and other large facility laboratories with advanced capacity for testing – some molecular technologies
- Level D: CDC or select Department of Defense laboratories, such as U.S. Army

Medical Research Institute of Infectious Diseases (USAMRIID) – Bio Safety Level (BSL) 3 and 4 labs with special surge capacity and advanced molecular typing techniques.

3. Transport requirements

BSOM Clinical specimens will be sent to the PCMH laboratory using appropriate handling and transport techniques.

If a suspicious clinical case generates laboratory specimens, notify the laboratory regarding special handling for specimens.

Suspicious specimens may be forwarded from the PCMH laboratory to a level B or C laboratory. In this case, specimen packaging and transport must be coordinated with local and state health departments, and the FBI. A chain of custody document should accompany the specimen from the moment of collection. For specific instructions, contact the PCMH Pathology Department, or NC Office of Public Health regarding packing and shipping diagnostic specimens. Advance planning may include identification of appropriate packaging materials and transport media in collaboration with the clinical laboratory at individual facilities.

PCMH laboratory will accept clinical specimens only. Local laboratories are not

responsible for testing environmental samples for spores; environmental samples are sent to the State lab. Nasopharyngeal swabs are only done at the direction of the State Health Department or CDC as part of an epidemiologic investigation for anthrax.

G. Patient, Visitor, and Public Information

Fact sheets will be developed for patients and families (Appendix 5A.)

Group practice Administration will be notified when either a clinical case or an environmental situation in a clinic results in a full-scale investigation. Public information and news media contacts shall be the responsibility of Group Practice Administration and/or the ECU Office of News and Public Information. During bioterrorism outbreaks, visitors may be limited, access to clinical areas may be limited to designated entry points, or a triage program may be implemented, as needed, working with or through the Bioterrorism Response Team.

Section II: Agent-Specific Recommendations

A. Anthrax

1. Description of Agent / Syndrome

a. Etiology

Anthrax is an acute infectious disease caused by *Bacillus anthracis*, a spore forming, gram-positive bacillus. Associated disease occurs most frequently in sheep, goats, and cattle, which acquire spores through ingestion of contaminated soil. Humans can become infected

through skin contact, ingestion, or inhalation of *B. anthracis* spores from infected animals or animal products (as in “wool sorter’s disease” from exposure to goat hair). Person-to-person transmission of inhalational disease does not occur. Direct exposure to vesicle secretions of cutaneous anthrax lesions may result in secondary cutaneous infection.

b. Clinical features

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

Pulmonary

- Non-specific prodrome of **flu-like symptoms** follows inhalation of infectious spores.
- Possible brief interim improvement.
- Two to four days after initial symptoms, **abrupt onset of respiratory failure** and hemodynamic collapse, possibly accompanied by thoracic edema and a **widened mediastinum on chest radiograph** suggestive of mediastinal lymphadenopathy and hemorrhagic mediastinitis.
- Gram-positive bacilli on blood culture, usually after the first two or three days of illness.
- Treatable in early prodromal stage. Mortality remains extremely high despite antibiotic treatment if it is initiated after onset of respiratory symptoms.

Cutaneous

- Local skin involvement after direct contact with spores or bacilli.
- Commonly seen on the head, forearms or hands.
- Localized itching, followed by a papular lesion that turns vesicular, and within 2-6 days develops into a depressed black eschar.
- Usually non-fatal if treated with antibiotics.

Gastro-intestinal

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

c. Modes of transmission

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

-
- Inhalation of spores.
- Cutaneous contact with spores or spore-contaminated materials.
- Ingestion of contaminated food.

d. Incubation period

The incubation period following exposure to *B. anthracis* ranges from 1 day to 8 weeks (average 5 days), depending on the exposure route and dose:

- 2-60 days following pulmonary exposure.
- 1-7 days following cutaneous exposure.
- 1-7 days following ingestion.

e. Period of communicability

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

2. Preventive Measures

a. Vaccine availability

- Inactivated, cell-free anthrax vaccine (Bioport Corporation 517.327.1500, formerly Michigan Biologic Products Institute*) – limited availability.

*Use of trade names and commercial sources is for identification only and does not constitute endorsement by CDC or the U.S. Department of Health and Human Services

b. Immunization recommendations

- Routinely administered to military personnel. Routine vaccination of civilian populations not recommended.

3. Infection Control Practices for Patient Management

Symptomatic patients with suspected or confirmed infections with *B. anthracis* should be managed according to current guidelines specific to their disease state. Recommendations for chemotherapy are beyond the scope of this document. For up-to-

date information and recommendations for therapy, contact the local and state health department.

a. Isolation precautions

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

b. Patient placement

Private room placement for patients with anthrax is not necessary. Airborne transmission of anthrax does not occur. Skin lesions may be infectious, but requires direct skin contact only.

c. Patient transport

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

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

Principles of Standard Precautions should be generally applied for the management of patient-care equipment and for environmental control (see Section I for more detail).

e. Discharge management

No special discharge instructions are indicated. Home care providers should be taught to use Standard Precautions for all patient care (e.g., dressing changes).

f. Post-mortem care

Standard Precautions should be used for post-mortem care. Standard Precautions include wearing appropriate personal protective equipment, including masks and eye protection, when generation of aerosols or splatter of body fluids is anticipated.

4. Post Exposure Management

a. Decontamination of patients / environment

The risk for re-aerosolization of *B. anthracis* spores appears to be extremely low in settings where spores were released intentionally or were present at low or high levels. In situations where the threat of gross exposure to *B. anthracis* spores exists, cleansing of skin and

potentially contaminated fomites (e.g. clothing or environmental surfaces) may be considered to reduce the risk for cutaneous and gastrointestinal forms of disease. The plan for decontaminating patients exposed to anthrax may include the following:

- Instructing patients to remove contaminated clothing and store in labeled, plastic bags.
- Handling clothing minimally to avoid agitation.
- Instructing patients to shower thoroughly with soap and water (and providing assistance if necessary).
- Instructing personnel regarding Standard Precautions and wearing appropriate barriers (e.g. gloves, gown, and respiratory protection) when handling contaminated clothing or other contaminated fomites.
- Decontaminating environmental surfaces using an EPA-registered, facility-approved sporicidal/germicidal agent or 0.5% hypochlorite solution (one part household bleach added to nine parts water).

b. Prophylaxis and post-exposure immunization

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

Prophylaxis should be initiated upon confirmation of an anthrax exposure (Table 1).

Table 1. Recommended post-exposure prophylaxis for exposure to *Bacillus anthracis*, 2001

Antimicrobial agent	Adults	Children §
Oral Fluoroquinolones		
One of the following:		
Ciprofloxacin	500 mg twice daily	15-20 mg per kg of body mass daily, divided into two doses
Levofloxacin	500 mg once daily	Not recommended
Ofloxacin	400 mg twice daily	Not recommended
If fluoroquinolones are not available or are contraindicated		
Doxycycline	100 mg twice daily	>8 yrs. & >45kg: 100mg PO BID >8 yrs. & ≤45kg: 2.2mg 1 kg PO BID ≤8 yrs.: (same as >8 yrs. & ≤45 kg)

§ Pediatric use of fluoroquinolones and tetracyclines is associated with adverse effects that must be weighed against the risk of developing a lethal disease. If *B. anthracis* exposure is confirmed, the organism must be tested for penicillin susceptibility. If susceptible, exposed children may be treated with oral amoxicillin 40mg per kg of body mass per day divided every 8 hours (not to exceed 500mg, three times daily).

Prophylaxis should continue until *B. anthracis* exposure has been excluded. If exposure is confirmed, prophylaxis should continue for 8 weeks. In addition to prophylaxis, post-exposure immunization with an inactivated, cell-free anthrax vaccine is also indicated following anthrax exposure. If available, post-exposure vaccination consists of three doses of vaccine at 0, 2 and 4 weeks after exposure. With vaccination, post-exposure antimicrobial prophylaxis can be reduced to 4 weeks.

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

Advance planning should include identification of:

- Sources of prophylactic antibiotics and planning for acquisition on short notice.

- Locations, personnel needs and protocols for administering prophylactic post-exposure care to large numbers of potentially exposed individuals.
- Means for providing telephone follow-up information and other public communications services.

5. Laboratory Support and Confirmation

Diagnosis of anthrax is confirmed by aerobic culture performed in a BSL -2 laboratory.

a. Diagnostic samples

Diagnostic samples to obtain include:

- Blood cultures.
- Acute serum for frozen storage.
- Stool culture if gastrointestinal disease is suspected.

b. Laboratory selection

Handling of clinical specimens should be coordinated with local and state health departments, and undertaken in BSL -2 or -3 laboratories. The FBI will coordinate collection of evidence and delivery of forensic specimens to FBI or Department of Defense laboratories.

c. Transport requirements

Specimen packaging and transport must be coordinated with local and state health departments, and the FBI. A chain of custody document should accompany the specimen from the moment of collection. For Advance planning may include identification of appropriate packaging materials and transport media in collaboration with the clinical laboratory at individual facilities.

6. Staff, Patient, Visitor, and Public Information

Fact sheets for distribution are available in the Bioterrorism Readiness Plan, including explanation that people recently exposed to *B. anthracis* are not contagious, and antibiotics are available for prophylactic therapy along with the anthrax vaccine (see Appendix A).

Dosing information and potential side effects are explained clearly. Decontamination procedures, i.e., showering thoroughly with soap and water; and environmental cleaning, i.e., with 0.5% hypochlorite solution (one part household bleach added to nine parts water), are also included.

B. Botulism

1. Description of Agent / Syndrome

a. Etiology

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

b. Clinical features

Foodborne botulism is accompanied by gastrointestinal symptoms. Inhalational botulism and foodborne botulism are likely to share other symptoms including:
Responsive patient with absence of fever.

- Symmetric cranial neuropathies (drooping eyelids, weakened jaw clench, difficulty swallowing or speaking).
- Blurred vision and diplopia due to extra-ocular muscle palsies.
- Symmetric descending weakness in a proximal to distal pattern (paralysis of arms first, followed by respiratory muscles, then legs).
- Respiratory dysfunction from respiratory muscle paralysis or upper airway obstruction due to weakened glottis.
- No sensory deficits.

c. Mode of transmission

Botulinum toxin is generally transmitted by ingestion of toxin-contaminated food⁶. Aerosolization of botulinum toxin has been described and may be a mechanism for bioterrorism exposure¹¹.

d. Incubation period

- Neurologic symptoms of foodborne botulism begin 12 – 36 hours after ingestion.
- Neurologic symptoms of inhalational botulism begin 24- 72 hours after aerosol exposure.

e. Period of communicability

Botulism is not transmitted from person to person.

2. Preventive Measures

a. Vaccine availability

A pentavalent toxoid vaccine has been developed by the Department of Defense. This vaccine is available as an investigational new drug (contact USAMRIID, 301.619.2833). Completion of a recommended schedule (0, 2, 12 weeks) has been shown to induce protective antitoxin levels detectable at 1-year post vaccination.

b. Immunization recommendations

Routine immunization of the public, including healthcare workers, is not recommended.

3. Infection Control Practices for Patient Management

Symptomatic patients with suspected or confirmed botulism should be managed according to current guidelines. Recommendations for therapy are beyond the scope of this

document. For up-to-date information and recommendations for therapy, contact CDC or state health department.

a. Isolation precautions

Standard Precautions are used for the care of patients with botulism.

b. Patient placement

Patient-to-patient transmission of botulism does not occur. Patient room selection and care should be consistent with hospital policy.

c. Patient transport

Standard Precautions should be used for transport and movement of patients with botulism.

- d. Cleaning, disinfection, and sterilization of equipment and environment
Principles of Standard Precautions should be generally applied to the management of patient-care equipment and environmental control (see Section I for more detail).
- e. Discharge management
No special discharge instructions are indicated.
- f. Post-mortem care
Standard Precautions should be used for post-mortem care.

4. Post Exposure Management

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

- a. Decontamination of patients / environment

Contamination with botulinum toxin does not place persons at risk for dermal exposure or risk associated with re-aerosolization. Therefore, decontamination of patients is not required.

- b. Prophylaxis and post-exposure immunization

Trivalent botulinum antitoxin is available by contacting NC State Health Departments, Pitt Co. PHRST Team or by contacting CDC (404.639.2206 during office hours, 404.639.2888 after hours). This horse serum

product has a <9% percent rate of hypersensitivity reactions. Skin testing should be performed according to the package insert prior to administration.

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

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

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

5. Laboratory Support and Confirmation

- a. Obtaining diagnostic samples

Routine laboratory tests are of limited value in the diagnosis of botulism. Detection of toxin is possible from serum, stool samples, or gastric secretions. For advice regarding the appropriate diagnostic specimens to obtain, contact Pitt Co. PHRST team, state health authorities or CDC (Foodborne and Diarrheal Diseases Branch, 404.639.2888).

- b. Laboratory selection

Handling of clinical specimens should be coordinated with local and state health departments. The FBI will coordinate collection of evidence and delivery of forensic specimens to FBI or Department of Defense laboratories.

c. Transport requirements

Specimen packaging and transport must be coordinated with local and state health departments, and the FBI. A chain of custody document should accompany the specimen from the moment of collection. For specific instructions, contact the Pitt County Health Department, State Health Department, or **Bioterrorism Emergency Number at the CDC Emergency Response Office, 770.488.7100**. Advance planning may include identification of appropriate packaging materials and transport media in collaboration with the clinical laboratory at individual facilities.

6. Staff, Patient, Visitor, and Public Information

Fact sheets for distribution are attached, including explanation that people exposed to botulinum toxin are not contagious (see Appendices 4 and 5). A clear description of symptoms including blurred vision, drooping eyelids, and shortness of breath are provided with instructions to report for evaluation and care if such symptoms develop.

C. Plague

1. Description of Agent / Syndrome

a. Etiology

Plague is an acute bacterial disease caused by the gram-negative bacillus *Yersinia pestis*, which is usually transmitted by infected fleas, resulting in lymphatic and blood infections (bubonic and septicemia plague). A bioterrorism-related outbreak may be expected to be airborne, causing a pulmonary variant, pneumonic plague.

b. Clinical features

Clinical features of pneumonic plague include:

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

c. Modes of transmission

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

d. Incubation period

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

e. Period of communicability

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

2. Preventive Measures

a. Vaccine availability

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

b. Immunization recommendations

Routine vaccination requires multiple doses given over several weeks and is not recommended for the general population. Post-exposure immunization has no utility.

3. Infection Control Practices for Patient Management

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

a. Isolation precautions

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

- Droplet Precautions are used for patients known or suspected to be infected with microorganisms transmitted by large particle droplets, generally larger than 5 μ in size, that can be generated by the infected patient during coughing, sneezing, talking, or during respiratory-care procedures.
- Droplet Precautions require healthcare providers and others to wear a surgical-type mask when within 3 feet of the infected patient.
- Droplet Precautions should be maintained until patient has completed 72 hours of antimicrobial therapy.

b. Patient placement

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

- Placing infected patient in a private room.
- Cohort in symptomatic patients with similar symptoms and the same presumptive diagnosis (i.e. pneumonic plague) when private rooms are not available.
- Maintaining spatial separation of at least 3 feet between infected patients and others when cohorting is not achievable.
- Avoiding placement of patient requiring Droplet Precautions in the same room with an immunocompromised patient.

Special air handling is not necessary and doors may remain open.

c. Patient transport

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

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

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

e. Discharge management

Generally, patients with pneumonic plague would not be discharged from a healthcare facility until no longer infectious (completion of 72 hours of antimicrobial

therapy) and would require no special discharge instructions. In the event of a large bioterrorism exposure with patients receiving care in their homes, home care providers should be taught to use Standard and Droplet Precautions for all patient care.

f. Post-mortem care Standard Precautions and Droplet Precautions should be used for post-mortem care.

4. Post Exposure Management

a. Decontamination of patients / environment

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

- Instructing patients to remove contaminated clothing and storing in labeled, plastic bags.
- Handling clothing minimally to avoid agitation.
- Instructing to patients to shower thoroughly with soap and water (and providing assistance if necessary).
- Instructing personnel regarding Standard Precautions and wearing appropriate barriers (e.g. gloves, gown, face shield) when handling contaminated clothing or other contaminated fomites.
- Performing environmental surface decontamination using an EPA-registered, facility-approved sporicidal/germicidal agent or 0.5% hypochlorite solution (one part household bleach added to nine parts water).

b. Prophylaxis

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

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

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

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

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

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

In general, maintenance of accurate occupational health records will facilitate identification, contact, assessment, and delivery of post-exposure care to potentially exposed healthcare workers.

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

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

Advance planning should also include identification of:

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

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

5. Laboratory Support and Confirmation

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

a. Diagnostic samples

Diagnostic samples to obtain include:

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

b. Laboratory selection

Handling of clinical specimens should be coordinated with local and state health departments, and undertaken in Bio-Safety Level (BSL) -2 or -3 laboratories. The FBI will coordinate collection of evidence and delivery of forensic specimens to FBI or Department of Defense laboratories.

c. Transport requirements

Specimen packaging and transport must be coordinated with local and state health departments, and the FBI. A chain of custody document should accompany the specimen from the moment of collection. Advance planning may include identification of appropriate packaging materials and transport media in collaboration with the clinical

laboratory at individual facilities.

6. Staff, Patient, Visitor, and Public Information

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

D. Smallpox

1. Description of Agent / Syndrome

a. Etiology

Smallpox is an acute viral illness caused by the variola virus. Smallpox is a bioterrorism threat due to its potential to cause severe morbidity in a nonimmune population and because it can be transmitted via the airborne route. **A single case is considered a public health emergency.**

b. Clinical features

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

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

c. Mode of transmission

Smallpox is transmitted via both large and small respiratory droplets. Patient-to-patient transmission is likely from airborne and droplet exposure, and by contact with skin lesions or secretions. Patients are considered more infectious if coughing or if they have a hemorrhagic form of smallpox.

d. Incubation period

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

e. Period of communicability

Unlike varicella, which is contagious before the rash is apparent, patients with smallpox become infectious at the onset of the rash and remain infectious until their scabs separate (approximately 3 weeks).

2. Preventive Measures

a. Vaccine availability

A live-virus intradermal vaccination is available for the prevention of smallpox.

b. Immunization recommendations

Since the last naturally acquired case of smallpox in the world occurred more than 20 years ago, routine public vaccination has not been recommended. **Vaccination against**

smallpox does not reliably confer lifelong immunity. Even previously vaccinated persons should be considered susceptible to smallpox.

3. Infection Control Practices for Patient Management

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

a. Isolation precautions

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

- Airborne Precautions are used for patients known or suspected to be infected with microorganisms transmitted by airborne droplet nuclei (small particle residue, 5 μ or smaller in size) of evaporated droplets containing microorganisms that can remain suspended in air and can be widely dispersed by air currents.
- Airborne Precautions require healthcare providers and others to wear respiratory protection (N95) when entering the patient room.
- Contact Precautions are used for patients known or suspected to be infected or colonized with epidemiologically important organisms that can be transmitted by direct contact with the patient or indirect contact with potentially contaminated surfaces in the patient's care area.
- Contact precautions require healthcare providers and others to:
 - Wear clean gloves upon entry into patient room.
 - Wear gown for all patient contact and for all contact with the patient's environment. Gown must be removed before leaving the patient's room.
 - Wash hands using an antimicrobial agent.

b. Patient placement

Patients suspected or confirmed with smallpox require placement in rooms that meet the ventilation and engineering requirements for Airborne Precautions, which include:

- Monitored negative air pressure in relation to the corridor and surrounding areas.
- 6 – 12 air exchanges per hour.
- Appropriate discharge of air to the outdoors, or monitored high efficiency filtration of air prior to circulation to other areas in the healthcare facility.
- A door that must remain closed.

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

c. Patient transport

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

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

- A component of Contact Precautions is careful management of potentially contaminated equipment and environmental surfaces.
 - When possible, noncritical patient care equipment should be dedicated to a single patient (or cohort of patients with the same illness).
 - If use of common items is unavoidable, all potentially contaminated, reusable equipment should not be used for the care of another patient until it has been appropriately cleaned and reprocessed. Policies should be in place and monitored for compliance.
- e. Discharge management
- In general, patients with smallpox will not be discharged from a healthcare facility until determined they are no longer infectious. Therefore, no special discharge instructions are required.
- f. Post-mortem care
- Airborne and Contact Precautions should be used for post-mortem care.

4. Post Exposure Management

- a. Decontamination of patients / environment
- Patient decontamination after exposure to smallpox is not indicated.
 - Items potentially contaminated by infectious lesions should be handled using Contact Precautions.
- b. Prophylaxis and post-exposure immunization

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

Post-exposure immunization with smallpox vaccine (vaccinia virus) is available and effective. Vaccination alone is recommended if given within 3 days of exposure. Passive immunization is also available in the form of vaccinia immune-globulin (VIG) (0.6ml/kg IM). If greater than 3 days has elapsed since exposure, both vaccination and VIG are recommended. VIG is maintained at USAMRIID, 301.619.2833. Contact the local health department, Public Health Preparedness Response Team or state health department to access.

Vaccination is generally contraindicated in pregnant women, and persons with immunosuppression, HIV-infection, and eczema, who are at risk for disseminated vaccinia disease. However, the risk of smallpox vaccination should be weighed against the likelihood for developing smallpox following a known exposure. VIG should be given concomitantly with vaccination in these patients.

Following prophylactic care, exposed individuals should be instructed to monitor themselves for development of flu-like symptoms or rash during the incubation period (i.e., for 7 to 17 days after exposure) and immediately report to designated care sites selected to minimize the risk of exposure to others.

In general, maintenance of accurate occupational health records will facilitate identification, contact, assessment, and delivery of post-exposure care to potentially exposed healthcare workers.

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

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

5. Laboratory Support and Confirmation

a. Diagnostic samples to obtain

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

b. Laboratory selection

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

c. Transport requirements

Specimen packaging and transport must be coordinated with local and state health departments, and the FBI. A chain of custody document should accompany the specimen from the moment of collection. Advance planning may include identification of appropriate packaging materials and transport media in collaboration with the clinical laboratory at individual facilities.

6. Staff, Patient, Visitor, and Public Information

Fact sheets for distribution are attached, including a clear description of symptoms and where to report for evaluation and care if such symptoms are recognized (see Appendix 4 and 5). Details about the type and duration of isolation are provided. Vaccination information that details who should receive the vaccine and possible side effects is also provided. Extreme measures such as burning or boiling potentially exposed materials should be discouraged.

Appendix A – Anthrax (*Bacillus anthracis*) Fact Sheet

1. **WHAT IS ANTHRAX?** Anthrax is an acute, infectious disease caused by the bacterium *Bacillus anthracis*. In the past, humans would become infected through skin contact, ingestion or inhalation of the organism from infected animals (most frequently sheep, goats and cattle) or animal products (as in “wool sorter’s disease” from exposure to goat hair). Person-to person transmission of inhalational disease DOES NOT occur. Direct exposure to fluids from skin lesions may result in a secondary cutaneous (skin) infection. In a bioterrorism situation, the organism would most likely be aerosolized to deliver the organism through the inhalation route.

2. **WHAT ARE THE SYMPTOMS OF ANTHRAX?** There are three forms of Anthrax: pulmonary, cutaneous (skin), or gastrointestinal, depending on the route of exposure. The symptoms of each are:
 - a. **Pulmonary** –
 - 2-60 day incubation period
 - Non-specific flu-like symptoms with brief interim improvement
 - 2-4 days after initial symptoms, abrupt onset of respiratory failure and circulatory collapse
 - Treatable in early stage. Mortality high if treatment initiated after onset of respiratory collapse.

 - b. **Cutaneous (skin)** –
 - 1-7 day incubation period
 - Local skin involvement after direct contact with organism.
 - Commonly seen on head, forearm or hands
 - Localized itching, followed by papular lesion that turn vesicular and within 2-6 days develop into a depressed black eschar
 - Usually non-fatal if treated with antibiotics

 - c. **Gastrointestinal** –
 - 1-7 day incubation period
 - Abdominal pain, nausea, vomiting and fever following ingestion of contaminated food, usually meat.
 - Bloody diarrhea, vomiting blood
 - Usually fatal after progression to toxemia and sepsis

3. **HOW IS ANTHRAX DIAGNOSED?** Physical findings are typically non-specific. A widened mediastinum may be seen on CXR in later stages of illness. Pneumonia generally does not occur. *Bacillus anthracis* is detectable by Gram stain of blood and blood culture late in the course of illness. Hemorrhagic meningitis may occur in up to 50% of cases, and the organism may also be found in CSF.

4. **CAN ANTHRAX BE SPREAD FROM PERSON TO PERSON?** Transmission of Anthrax from person to person is unlikely. Airborne transmission does NOT occur, but direct contact with skin lesions may result in a cutaneous infection. Special precautions should be taken to avoid aerosolization of spores during laboratory procedures and autopsy. Needlestick injuries from a bacteremic person would require treatment.

5. **WHAT MEDICAL TREATMENT WOULD BE GIVEN TO A PATIENT WITH ANTHRAX?**

Antibiotics

(Ciprofloxacin, Doxycycline) would be given for 4-8 weeks along with the Anthrax vaccine, if available, at 0, 2 and 4 weeks after exposure.

1. **DO YOU NEED TO ISOLATE A PATIENT WITH ANTHRAX?** No, a patient with Anthrax will be treated with Standard Precautions. Standard Precautions include wearing gloves for contact with non-intact skin, including rashes and skin lesions.

7. **IF A PATIENT IS DISCHARGED WITH A DIAGNOSIS OF ANTHRAX, SPECIAL PRECAUTIONS**

NEEDED TO KEEP OTHER FAMILY MEMBERS SAFE? If the patient was involved in a gross exposure to the bacterium, cleansing of the skin and potentially contaminated objects (clothes, environmental surfaces) should be undertaken.

Decontamination would include:

- Remove contaminated clothing and store in labeled, plastic bag. Handle clothes minimally to avoid agitation.
- Shower thoroughly with soap and water.
- Wear gloves and appropriate barriers (e.g., gowns, masks) when handling contaminated clothing or environmental objects.
- Decontaminate environmental surfaces using an EPA registered sporicidal/germicidal agent or 10% hypochlorite solution (one part household bleach to 9 parts water). Do not bleach on skin or hair.

8. **WHAT OTHER INSTRUCTIONS DO I NEED TO KNOW ABOUT AN ANTHRAX EXPOSURE?**

- Make sure you understand the dosage and side effects of any medications that are prescribed for you or your family members.
- People recently exposed to Anthrax are not contagious to others.

FACT SHEET ON PLAGUE

WHAT IS PLAGUE? Plague is a zoonotic disease of rats, mice, and ground squirrels caused by the Gram negative bacterium *Yersinia pestis*. Fleas can become infected by feeding on the rodents and can transmit the node or “bubo”. The bubonic form may progress to the bloodstream (septicemic plague) or the lungs (Pneumonic plague). An intentional aerosol dissemination of *Yersinia pestis* would produce an outbreak of primary pneumonic plague.

WHAT IS THE INCUBATION PERIOD? The time from exposure to aerosolized plague bacilli until development of the first symptoms is 1-6 days and most often, 2-4 days.

WHAT ARE THE SYMPTOMS OF PNEUMONIC PLAGUE? Acute onset of high fever, chills, headache and malaise, followed within 24 hours by chest pain and a cough with blood sputum. Gastrointestinal symptoms, including nausea, vomiting, abdominal pain, and diarrhea might be present. Rarely, a cervical bubo might result from inhalational exposure. A chest x-ray would reveal bilateral infiltrates, which may be patchy or consolidated. The pneumonia progresses rapidly, resulting in dyspnea, stridor and cyanosis. Death results from respiratory failure and circulatory collapse.

HOW WOULD YOU DIAGNOSE PNEUMONIC PLAGUE? Suspect plague if large numbers of previously health individuals develop fulminant, Gram-negative pneumonia, especially if **hemoptysis** is present. Presumptive identification can be made by Gram, Wright, Giemsa, or Wayson stain of blood, sputum, CSF, or lymph node aspirates. Definitive diagnosis requires culture of the organism from those sites.

IS SOMEONE WITH PLAGUE ABLE TO GIVE IT TO ANOTHER PERSON? Bubonic and septicemic plague does not spread person to person. Pneumonic plague is transmitted by large respiratory droplets. You can breathe the tiny particles into your lungs if you have close contact with somebody with the disease.

DO YOU NEED TO ISOLATE A PATIENT WITH PLAGUE? Bubonic plague does not require isolation, but suspected cases of pneumonic plague require **Droplet Precautions** for at least 48 hours of antibiotic therapy, or until sputum cultures are negative in confirmed cases. Patients with pneumonic plague may be co-horted while receiving antibiotic therapy. Healthcare workers and visitors must wear a surgical mask when entering the patient’s room. Patients being transported should also wear a surgical mask. Routine cleaning and disinfection of environmental surfaces and equipment should be followed. No special linen management is required. All microbiology specimens should be processed in the biological safety cabinet and special precautions will be necessary for surgeries and autopsies likely to generate aerosols.

WHAT MEDICAL TREATMENT WOULD BE GIVEN TO A PATIENT WITH PLAGUE? Early administration of antibiotics is critical, as pneumonic plague is inevitably fatal if therapy is not begun within 24 hours of the onset of symptoms. Streptomycin, Gentamicin, Doxycycline, or Ciprofloxacin should be given for 10-14 days. Chloramphenicol is the drug of choice for plague meningitis.

IF A PERSON IS EXPOSED TO PLAGUE, WHAT SHOULD THEY DO? Face to face contacts (within 2 meters) of persons with pneumonic plague should be given antibiotic prophylaxis for 7 days. The choice of antibiotic for prophylaxis is

Doxycycline. Contacts who develop fever or cough during the 7 days following exposure should seek prompt medical attention and begin antibiotic treatment.

FACT SHEET ON SMALLPOX

WHAT IS SMALLPOX? Smallpox is an acute, viral illness caused by the Orthopox virus, Variola. It was declared eradicated from the World in 1980 but both the U.S. and Russia have repositories of the virus. It is an agent of choice for a bioterrorist since the World's population is considered non-immune, and it is easily transmitted by the airborne route.

WHAT ARE THE SYMPTOMS OF SMALLPOX? The acute, clinical symptoms are similar to influenza progressing from macules to vesicles. The rash scabs over in 1-2 weeks. The rash differs from chickenpox in that it has a synchronous onset as opposed to the "waves" of vesicles that chickenpox has. Chickenpox is also mainly distributed on the trunk.

HOW DO YOU GET THE VIRUS INTO YOUR BODY? Smallpox is transmitted by both large and small respiratory droplets. You can breathe the tiny viral particles into your lungs if you have close contact with someone with the disease. You can also get the viral particles into your body if you touch the smallpox lesions of a patient, or handle their contaminated linens.

WHAT IS THE TIME PERIOD BETWEEN EXPOSURE TO THE VIRUS AND THE SYMPTOMS OF THE DISEASE? The incubation period for smallpox is 7-17 days with the average being 12 days.

IS SOMEONE WITH SMALLPOX ABLE TO GIVE IT TO ANOTHER PERSON? Smallpox is very contagious and person to person transmission is very likely from airborne and droplet exposure and by contact with skin lesions or secretions. Patients are considered most infectious if they are coughing or have a hemorrhagic form of smallpox. Patients with smallpox become contagious at the onset of the rash and remain infectious until the scabs separate in about 3 weeks.

WHAT MEDICAL TREATMENT WOULD BE GIVEN TO A PATIENT WITH SMALLPOX? A smallpox vaccine alone is recommended if given within three days of exposure. If greater than three days since exposure, Vaccinia Immune Globulin (VIG) and vaccination are recommended.

DO YOU NEED TO ISOLATE A PATIENT WITH SMALLPOX? Yes, a patient with smallpox is very contagious. They will be placed on airborne and contact isolation in the hospital, in rooms that are under negative pressure. Any persons going in the room will wear an N-95 respirator along with gloves and gowns. Only essential personnel will enter these rooms. Transport of patients will be strictly limited. If a smallpox patient must leave a room, s/he will wear a mask, a cover gown and gloves. Patients who die of smallpox should be cremated whenever possible. Cleaning and disinfection of environmental surfaces or patient care equipment should be done with an EPA-registered hospital disinfectant (i.e., Stat III). All disposable items will be double bagged and autoclaved or incinerated. All bedding and clothing of smallpox patients will be double bagged and autoclaved prior to laundering.

IF A PERSON IS EXPOSED TO SMALLPOX, WHAT SHOULD THEY DO? After consulting a healthcare professional as to the need for vaccination and immune globulin, exposed individuals should monitor themselves daily for the development of a temperature higher than 38°C (101°F). A temperature or flu-like symptoms during the 17-day period following exposure would suggest the development of smallpox. They should immediately report to designated care sites or be isolated at home in order to minimize the risk of exposure to others.

IS VACCINATION CONTRAINDICATION IN ANY PATIENT GROUPS? Generally, vaccination with the smallpox vaccine is contraindicated in pregnant women, persons who are

immunosuppressed, have HIV disease or have eczema. However, the risk of smallpox vaccine should be weighed against the likelihood for developing smallpox following a known exposure. Vaccinia Immune Globulin should be given at the same time to these groups of patients.

Botulism Information Sheet

What is botulism?

Botulism is a serious illness caused by a toxin (or poison) produced by the *Clostridium botulinum* bacteria. This toxin can cause illness when someone swallows infected food or liquid. Breathing in the airborne bacteria can also cause the illness.

How common is botulism?

Botulism is not very common, but it does occur occasionally all over the world.

How is botulism spread?

Getting botulism from another person is very rare. You must swallow or breathe in the bacteria. You cannot “catch” botulism from people exposed to the botulism toxin or who have botulism.

What are the symptoms of botulism?

Symptoms include blurred vision, drooping eyelids, and/or shortness of breath. If you have these symptoms, you should go to your doctor or the nearest Emergency Department. If you have eaten food containing the bacteria, you may also have gastrointestinal symptoms like vomiting, pain in the abdomen, or loose, watery bowel movements.

How soon after exposure do symptoms appear?

- Infected food – 12-36 hours after eating
- Airborne bacteria – 24-72 hours after breathing it

How is botulism diagnosed?

Botulism is diagnosed by laboratory tests that can detect the toxin.

What is the treatment for botulism?

Doctors use a medicine called an antitoxin to treat botulism. The antitoxin works against the botulism poison and neutralizes it.

Do I need to disinfect myself or my belongings if exposed to airborne botulism?

No. You cannot get botulism through the skin, and it is very unlikely that the toxins will go back into the air again.

What do healthcare workers do in the hospital to prevent botulism from spreading to other people?

Botulism is not easily spread from person to person, so only regular practices like handwashing would be followed.

What special cleaning is done with equipment used on a person with botulism?

No special cleaning is required, so regular procedures for disinfecting and sterilizing are done.

What special things are done at home after a patient that had botulism is discharged?

There is nothing special to do.

For more information, contact the
Centers for Disease Control
www.cdc.gov
1-800-311-3435

Anthrax Fact Sheet

This information sheet is to provide you with information regarding the threat to you and your community should there be a bioterrorist attack with Anthrax as the agent of infection.

Anthrax is an acute infectious disease caused by a spore-forming bacillus.

This disease occurs most frequently in sheep, goats, and cattle that ingest contaminated soil. Humans can become infected through skin contact with lesions containing the bacillus, inhalation of aerosolized spores and ingestion. The most likely method used by a bioterrorist is to spray an aerosol in the air.

ANTHRAX IS NOT KNOWN TO BE TRANSMISSIBLE FROM PERSON TO PERSON except if you come in direct contact with skin lesions. Persons with Anthrax are not contagious.

Symptoms include

Pulmonary-Flu-like symptoms (headache, fever, and tiredness) possible period of improvement and then two to four days after initial symptoms, abrupt onset of respiratory failure. **THIS IS TREATABLE IN EARLY STAGES AND LESS TREATABLE AFTER ONSET OF BREATHING PROBLEMS.** Incubation (the time from exposure to symptoms) 2-60 days.

Skin contact of lesions – if you have open sores on your hands do not touch sores that someone has on their body. **WASH HANDS!** This type of exposure can be treated with antibiotics. Incubation 1-7 days.

Gastrointestinal – Abdominal pain, nausea, vomiting fever follows eating of contaminated foods, usually meat. Blood diarrhea, vomiting blood. **THIS IS TREATABLE IN EARLY STAGES AND LESS TREATABLE AFTER PROGRESSION TO SYSTEM WIDE INFECTION.** Incubation 1 to 7 days after eating contaminated food.

EXPOSURE

If you have been exposed to an aerosol. Gently remove your clothing and place in a plastic bag. Shower thoroughly using soap and water.

Clean surfaces that the aerosol may have settled on with a bleach solution one part bleach to nine parts water.

Don't panic. The local and state health departments and the CDC will be assisting you to get the antibiotics needed for treatment.

Botulism Fact Sheet

This information sheet is to provide you with information regarding the threat to you and your community should there be a bioterrorist attack with Botulism as the agent of infection.

Botulism is an acute infectious disease caused by a spore-forming bacillus. These spores are naturally present in soil and marine sediment (in soil under water) throughout the world. Humans can become infected through ingestion of contaminated food and it has been identified to infect by breathing it in.

BOTULISM IS NOT KNOWN TO BE TRANSMISSIBLE FROM PERSON TO PERSON. Persons with Botulism are not contagious.

Symptoms include

The food-borne botulism symptoms may include nausea, vomiting and diarrhea. Foodborne and inhalation exposure may share some of these same symptoms:

Many of the symptoms are related to the nervous system, drooping eyelids, weakened jaw clench, difficulty swallowing or speaking.

Blurred vision, weakness in arms, shortness of breath and weakness in legs.

Incubation (the time from exposure to symptoms) – 12-36 hours for foodborne illness, and 24-72 hours for inhalation illness.

EXPOSURE

Decontamination of your body is not needed, there is no risk of infection with skin exposure.

If you experience symptoms such as drooping eyelids, blurred vision and shortness of breath seek medical attention.

Don't panic. The local and state health departments and the CDC will be assisting you to get the necessary treatment. (antitoxin available from CDC)

Plague Fact Sheet

This information sheet is to provide you with information regarding the threat to you and your community should there be a bioterrorist attack with Plague as the agent of infection.

Plague is a disease caused by a bacteria named *Yersinia pestis*. This disease is usually transmitted by fleas (bubonic plague), resulting in blood and lymph system infections. The more likely bioterrorism related outbreak would be airborne in nature. (Pneumonic Plague).

PNEUMONIC PLAGUE TRANSFER IS POSSIBLE FROM PERSON TO PERSON VIA SPRAYS OF AEROSOL DROPLETS FROM COUGHING, SNEEZING, TALKING. Plague is normally transmitted from infected rodents to man via fleas.

Symptoms include:

Fever cough chest pain, coughing up of blood and chest x-ray with evidence of pneumonia. Incubation period is 1-3 days.

How to protect yourself-large droplet sprays are transmitted by coughing, have anyone coughing cover their mouth, wear a mask to protect yourself, the aerosols are heavy enough that they will drop if you are greater than 3 feet away from the person.

EXPOSURE

If you have been exposed to a spray gently remove your clothing, place in a plastic bag and shower with soap and water. The risk from your clothing is very small. Protect others by covering your mouth when you cough and stay greater than three feet away from others.

Don't panic, the local and state health departments and the federal government (CDC) will be assisting you with the antibiotics you would need.

Smallpox Fact Sheet

This sheet contains information you need to know if there is a bio-terrorist attack involving Smallpox.

Smallpox outbreaks have been eliminated since 1979. This viral disease is transmitted by breathing in the virus or coming in contact with skin sores. The most likely method used by a bio-terrorist would be to spray an aerosol in the air.

Symptoms Include:

Symptoms resemble other viral illnesses like flu and may include fever, muscle aches and pains. Skin rash appears and quickly progresses from red spots to blisters. This rash is more likely to appear on the face and extremities (including palms of hands and soles of feet). The incubation period is 7-17 days.

Transmission: Person to person transmission occurs by coming in contact with the skin sores or secretions or by exposure to respiratory secretions from other persons (coughing, sneezing, nasal discharge, close talking distance).

SMALLPOX BECOMES CONTAGIOUS ONCE THE RASH SHOWS UP AND REMAINS INFECTIOUS UNTIL THE SCABS FALL OFF (USUALLY ABOUT 3 WEEKS). Should you develop symptoms of fever, flu-like symptoms or a rash 7-17 days after exposure, avoid contact with others and report to a designated care site to minimize risk of exposure to others.

EXPOSURE

Removing exposed clothing is not necessary. Extreme measures of burning or boiling exposed materials is not necessary.

A vaccine is available. **IF YOU HAD VACCINE AS A CHILD, YOU ARE NOT PROTECTED NOW.** You do not have a lifelong immunity if you had the vaccination as a child. The vaccine alone is recommended if given within 3 days of exposure. Vaccinia immune globulin (VIG) would be given if the time span were greater than 3 days. The vaccine is not recommended for pregnant women, HIV and immunosuppressed persons.

If you have contracted the disease, symptoms will occur between 7-17 days. Monitor any symptoms to prevent the spread to others.

Don't panic. The local and state health departments and the federal government (CDC) will assist you to get the necessary treatment and antitoxin available.ⁱ

Isolation Guidelines

Appendix B

Patient Management Negative Pressure Rooms are: IMPORTANT PHONE NUMBERS Infectious Diseases 744-2550 Infection Control 744-3202 ER Triage 744-4942 USAMRIID 301-619-2833 Office of Bioterrorism Coordinator NC Division of Public Health 919-733-3421 Pitt County Health Department 413-1300	BACTERIAL AGENTS									VIRUSES					BIOLOGICAL TOXINS				
	Anthrax	Brucellosis	Cholera	Glanders	Bubonic Plague	Pneumonia Plague	Tularemia	Q Fever	Small pox	Venez. Equine Encephalitis	Viral Encephalitis	Viral Hemorrhagic Fever	Botulism	Ricin	T-2 Mycotoxins	Staph. Enterotoxin B			
Isolation Precautions																			
Standard Precautions for all aspects of patient care	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Contact Precautions (gown & gloves; wash hands after each pt encounter)			X***	X*	X*					X		X					X*		
Airborne Precautions (negative pressure room & n95 masks for all individuals entering the room)									X			X**							
Droplet Precautions (surgical mask)						X						X**							
Patient Placement																			
No restrictions	X	X	X	X			X	X		X	X		X	X	X	X	X	X	X
Cohort 'like' patients when private room unavailable			X***	X*	X*	X			X			X					X*		
Private Room			X***	X*	X*	X			X			X					X*		
Negative Pressure									X			X**							
Door closed at all times									X			X**							
Patient Transport																			
No restrictions	X	X	X	X	X		X	X		X	X		X	X	X	X	X	X	X
Limit movement to essential medical purposes only			X***	X*	X*	X			X			X					X*		
Place mask on patient to minimize dispersal of droplets						X			X			X**							
Cleaning and Disinfection																			
Routine cleaning of room with hospital approved disinfectant	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X
Disinfect surfaces with 10% bleach solution or phenolic disinfectant												X							
Dedicated equipment (disinfect prior to leaving room)			X***	X*	X*				X			X					X*		
Linen management as with all other patients	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X
Linens autoclaved before laundering in hot water with bleach added									X										
Post-mortem Care																			

Follow principles of standard precautions		X	X	X	X	X	X	X	X		X	X	X	X		X	X	X	X
Droplet Precautions (surgical mask)								X											
Contact Precautions (gown & gloves)					X*	X*					X			X					X*
Avoid autopsy or use Airborne Precautions & HEPA filter							X				X			X**					
Routine terminal cleaning of room with hospital approved disinfectant		X	X	X	X	X	X	X	X		X	X	X			X	X	X	X
Disinfect surfaces with 10% bleach solution or phenolic disinfectant														X					
Minimal handling of body; seal body in leak-proof material														X					
Cremate body when ever possible										X									
Discontinuation of Isolation																			
48 hours of appropriate antibiotic and clinical improvement							X												
Until all scabs separate											X								
Until skin decontamination completed (1 hr contact time)																		X	
Duration of illness				X***	X*	X*								X					
STANDARD PRECAUTIONS – Standard Precautions prevent direct contact with all body fluids (including blood), secretions, excretions, non-intact skin (including rashes) and mucous membranes. Standard Precautions routinely practiced by healthcare providers include: splash/spray, and gowns to protect skin and clothing during procedures.																			
*Contact precautions needed only if patient has skin involvement (bubonic plague: draining bubo) or until decontamination of skin is complete (T2 Mycotoxins).																			
**A surgical mask and eye protection should be worn if you come within 3 feet of pt. Airborne precautions are needed if patient has cough, vomiting, diarrhea or hemorrhage.																			
***Contact precautions needed only if the patient is diapered or incontinent																			

Prospective Health Emergency Response Communications Tree

