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Infection Control Response to the Intentional Use of a Biothreat Agent

I. Description

Describes the policies and procedures for management of biothreat acts

II. Rationale

A rapid and appropriate response to a potential biothreat act is critical to provide effective and safe patient management and to limit the potential spread of highly communicable infectious disease. This policy provides information on potential agents of biothreat and a framework for management.

III. Policy

A. Detection of Outbreaks Caused by Biothreat Agents

Rapid response to a biothreat-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 may be necessary to initiate a response based upon the recognition of high-risk syndromes. Each of the agent-specific case definitions in Attachment 4 includes a syndrome description (i.e., typical combination of clinical features of the illness at presentation) that should alert health care practitioners to the possibility of a biothreat-related outbreak.

Healthcare personnel (HCP) should contact Infection Prevention (984-974-7500) and the House Supervisor (984-974-5402) immediately if they detect an outbreak or suspected outbreak related to a biothreat agent. After hours and weekends, the Infection Preventionist may be reached via pager (919-216-2935).

A biothreat event may be recognized in the following ways:

1. Covert event: Persons are unknowingly exposed and an outbreak is suspected only upon recognition of unusual disease clusters or symptoms.
2. Announced event: Persons are warned that an exposure has occurred. The Emergency Department (ED) would likely be notified by Emergency Management or Hospitals Police. In the

event a biothreat event is suspected, UNC Medical Center personnel will follow the Emergency Operations Plan: High Consequence Pathogen Response.

B. Potential Agents

1. Key diseases with recognized biothreat potential (e.g., anthrax, botulism, plague, and smallpox) and the agents responsible for them are described in Attachment 2 of this document. This attachment contain brief descriptions of certain agents, modes of transmission and risks of human-to-human transmission.
2. 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 biothreat-related outbreak may include:
 - a. A rapidly increasing disease incidence (e.g., within hours or days) in a normally healthy population.
 - b. An epidemic curve that rises and falls during a short period of time.
 - c. An unusual increase in the number of people seeking care, especially with fever, respiratory, or gastrointestinal complaints (see Attachment 4 for syndromic case definitions). In addition, people seeking care with lesions consistent with plague, anthrax, or smallpox.
 - d. An endemic disease rapidly emerging at an uncharacteristic time or in an unusual pattern.
 - e. 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.
 - f. Clusters of patients arriving from a single locale.
 - g. Large numbers of rapidly fatal cases.
 - h. Any patient presenting with a disease that is relatively uncommon and has biothreat potential (e.g., pulmonary anthrax, tularemia, viral hemorrhagic fever, smallpox, botulism or plague).
3. For management of a suspicious letter/package/container as a biothreat, call UNC Hospital Police to initiate the UNC Health Care policy on suspicious letters/packages/containers. In addition, in situations involving suspicious substances, including liquids or powders, the statewide [Suspicious Substance Response Guidelines](#) must also be followed. Do not touch or move the suspicious letter/package/container. Evacuate the immediate area but remain in the vicinity until Hospital Police arrive. If there is suspicion of an explosive device, follow the staff emergency response guide for potential explosives: [Bomb Threat](#).

C. Infection Control Practices for Patient Management

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

1. Isolation Precautions
 - a. All patients in healthcare facilities, including symptomatic patients with suspected or confirmed biothreat-related illnesses, should be managed utilizing Standard Precautions.

Standard Precautions are designed to reduce transmission from both recognized and unrecognized sources of infection in health care facilities, and are recommended for all patients receiving care, regardless of their diagnosis or presumed infection status. For certain diseases or syndromes (e.g., smallpox and pneumonic plague), additional transmission-based precautions may be needed to reduce the likelihood for transmission. See Attachment 2 for specific diseases and requirements for additional isolation precautions. Additional information can be found in the [Infection Prevention: Isolation Precautions policy](#).

2. Standard Precautions prevent direct contact with all body fluids (except sweat), including blood, secretions, excretions, non-intact skin (including rashes), and mucous membranes. Standard Precautions routinely practiced by healthcare personnel include:
 - a. Hand Hygiene
 - i. Hand hygiene is performed after touching blood, body fluids, excretions, secretions, or items contaminated with such body fluids, whether or not gloves are worn. Hand hygiene is performed immediately after gloves are removed, between patient contacts, and as appropriate to avoid transfer of microorganisms to other patients and the environment. Soap and water should be used if contamination with anthrax spores is possible. An antiseptic hand-wash or a waterless alcohol-containing agent may be used for other potential biothreat pathogens.
 - b. Gloves
 - i. Clean nitrile gloves are worn when touching blood, body fluids, excretions, secretions, or items contaminated with such body fluids (except sweat). Clean gloves are put on before touching mucous membranes and non-intact skin. Gloves are changed between tasks and between procedures on the same patient if contact occurs with contaminated material. Hand hygiene is performed promptly after removing gloves and before leaving a patient care area.
 - c. Masks/Eye Protection or Face Shields
 - i. A mask and eye protection (or face shield) are worn to protect mucous membranes of the eyes, nose, and mouth while performing procedures and patient care activities that may cause splashes of blood, body fluids, excretions, or secretions. For some airborne transmitted agents (e.g., viral hemorrhagic fever agents, smallpox, monkeypox) a respirator meeting OSHA recommended performance criteria (e.g., N-95 or powered air-purifying respirator (PAPR)) should be worn. Fit testing must be performed prior to wearing an N-95 respirator.
 - d. Gowns
 - i. A fluid resistant gown is worn to protect skin and prevent soiling of clothing during procedures and patient-care activities that are likely to generate splashes or sprays of blood, body fluids, excretions, or secretions. Selection of gowns and gown materials should be suitable for the activity and amount of body fluid likely to be encountered. Soiled gowns are removed promptly and hand hygiene is performed to avoid transfer of microorganisms to other patients and environments.
 - e. Patient Placement

- i. In small-scale events, routine facility patient placement and infection control practices should be followed. However, when the number of patients presenting to a health care facility is too large to allow routine triage and isolation strategies (if required), it will be necessary to apply practical alternatives. These may include cohorting patients who present with similar syndromes, i.e., grouping affected patients into a designated section of a clinic or emergency department, or a designated ward or floor of a facility, or even setting up a response center at a separate building. Designated cohorting sites should be chosen in advance by the Incident Management Team (or other appropriate decision-making body), in consultation with Plant Engineering staff, based on patterns of airflow and ventilation, availability of adequate plumbing and 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.
- f. Patient Transport
 - i. Most infections associated with biothreat agents *cannot* be transmitted from patient-to-patient. Patient isolation requirements for specific potential biothreat agents are listed in Attachment 2. In general, the transport and movement of patients with biothreat-related infections that have the potential for person-to-person transmission, 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 health care facilities.
- g. 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.

 - i. Refer to the [Infection Prevention: Environmental Services policy](#) for procedures for the routine care, cleaning, and disinfection of environmental 'high touch' surfaces (e.g. beds, bedrails, bedside equipment, etc.) and ensure that these procedures are being followed.
 - ii. EPA registered hospital disinfectants are available in patient care areas to use for cleaning spills of contaminated material and disinfecting non-critical equipment.
 - iii. 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.
 - iv. Policies ([Infection Prevention: Cleaning, Disinfection and Sterilization of Patient-Care Items policy](#)) are in place to ensure that reusable equipment is not used for the care of another patient until it has been appropriately cleaned and reprocessed, and to ensure that single-use patient items are appropriately discarded.
 - v. Rooms and bedside equipment of patients with biothreat-related infections should be cleaned using the same procedures that are used for all patients as a component of

Standard Precautions, unless the infecting microorganism and the amount of environmental contamination indicates special cleaning. In addition to adequate cleaning, thorough disinfection of bedside equipment and environmental surfaces may be indicated, for certain organisms that can survive in the inanimate environment for extended periods of time. The methods and frequency of cleaning and the products used will be determined by Infection Prevention.

- vi. Patient linens are handled in accordance with Standard Precautions, unless the infecting microorganism (e.g. smallpox virus) indicates special handling, transporting, and laundering. In most cases, although linen may be contaminated, the risk of disease transmission is negligible if it is handled, transported, and laundered in a manner that avoids transfer of microorganisms to other patients, personnel and environments. If special handling, transporting, and laundering is indicated, specific procedures will be determined by Infection Prevention. In all other cases, facility policy and local/state regulations should determine the methods for handling, transporting, and laundering soiled linen.
- vii. Contaminated waste is sorted and discarded in accordance with the [Infection Prevention: Guidelines for Disposal of Regulated Medical Waste policy](#), which complies with federal, state and local regulations.
- viii. Follow [Infection Prevention: Exposure Control Plan for Bloodborne Pathogens policy](#) to prevent occupational injury and exposure to bloodborne pathogens.
 - Any patient with a suspected or known exposure to or infection from a biothreat agent must be reported immediately to the NC State Health Department, as well as the local health department of the patient's county of residence. Specific instructions for reporting can be found in the [Infection Prevention: Reporting of Communicable Disease policy](#). For questions regarding reporting, contact Infection Prevention at 984-974-7500 or use on-call pager at 919-216-2935.
- h. Discharge Management
 - i. Ideally, patients with biothreat-related infections will not be discharged from the facility until they are deemed noninfectious. However, consideration should be given to developing home care instructions in the event that large numbers of persons exposed may preclude admission of all infected patients. Depending on the exposure and illness, home care instructions may include recommendations for the use of appropriate barrier precautions, hand hygiene, waste management, and cleaning and disinfection of the environment and patient-care items. Discharge of any patient infected with a biothreat agent who remains potentially communicable should be coordinated with the local health department of the patient's county of residence or discharge location.
- i. Post-Mortem Care
 - i. McLendon Labs and the Department of Pathology must be informed of a potentially infectious outbreak prior to submitting any specimens for examination or disposal. All autopsies must be performed carefully using all personal protective equipment and standards of practice in accordance with Standard Precautions, including the use of masks and eye protection whenever the generation of aerosols or splatter of body fluids is anticipated. If the agent is suspected or known to be spread by the airborne route,

personnel should follow Airborne Precautions.

D. Post-Exposure Management

1. Decontamination of Patients and Environment

- a. The need for decontamination depends on the suspected exposure and in most cases may not be necessary. The goal of decontamination after a potential exposure to a biothreat 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. Decisions regarding the need for decontamination should be made in consultation with state and local health departments. Decontamination of exposed individuals prior to receiving them in the health care facility may be necessary to ensure the safety of patients and staff while providing care. If decontamination is required, Emergency Management is responsible for contacting the appropriate outside agencies (e.g. the Chapel Hill Fire Department) to place a resource request and directing the patient to the appropriate designated place for removal of clothing and showering. Decontamination will likely occur in the ambulance bay.
- b. 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. 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 trained personnel wearing appropriate personal protective equipment, and placed in an impervious bag (e.g., sealed plastic patient clothing bag) to prevent further environmental contamination. The SBI or FBI may require collection of exposed clothing and other potential evidence for submission to SBI, FBI or Department of Defense laboratories to assist in criminal investigations.

2. Prophylaxis and Post-Exposure Immunization

- a. Recommendations for prophylaxis are subject to change. Current recommendations for post-exposure prophylaxis and immunization are provided in Attachment 3 for relevant potential biothreat agents. However, up-to-date recommendations should be obtained in consultation with Orange County Health Department, North Carolina State Health Department and CDC. Facilities should ensure that policies are in place to identify and manage healthcare personnel exposed to infectious patients. In general, maintenance of accurate occupational health records will facilitate identification, contact, assessment, and delivery of post-exposure care to potentially exposed healthcare personnel.

3. Triage and Management of Large Scale Exposures and Suspected Exposures

Triage and management of large-scale exposures and suspected exposure events will be coordinated by the Incident Management Team (IMT) in consultation with Infection Prevention and in accordance with the Emergency Operations Plan. Actions may include:

- a. Establishing networks of communication and lines of authority required to coordinate on-site care.
- b. Planning for cancellation of non-emergency services and procedures.

- c. Identifying source(s) able to supply available vaccines, immune globulin, antibiotics, and botulinum anti-toxin (with assistance from local and state health departments, and local and state emergency management).
 - d. Planning for the efficient evaluation and discharge of patients.
 - e. 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.
 - f. Determining availability and sources for additional medical equipment and supplies (e.g., ventilators) that may be needed for urgent large-scale care.
 - g. Planning for the allocation or re-allocation of scarce equipment in the event of a large-scale event (e.g., duration of ventilator support of terminally afflicted individuals).
 - h. With assistance from the Department of Pathology, identifying the institution's ability to manage a sudden increase in the number of cadavers on site.
4. Exposure Reporting and Evaluation for Healthcare Personnel
- a. An occupational exposure to a biothreat agent is an exposure that occurs within the healthcare facility while the employee is on duty. Criteria for an exposure depend on the biothreat agent and will be defined by Infection Prevention using standardized CDC case definitions when available
 - b. All occupational exposures must be reported to the appropriate occupational health service provider immediately.
 - i. Occupational Health Service: UNC Medical Center healthcare personnel
 - ii. University Employee Occupational Health Clinic: UNC University employees
 - iii. Campus Health Service: UNC students
 - iv. Contract workers who are not UNC Medical Center or UNC personnel but are providing medical services within our facilities and students who are not UNC students but who are working within our facilities should notify their assigned occupational health provider and be evaluated in the UNC Emergency Department if immediate care is required. The occupational health service providers will notify the local health department of all employee exposures.
 - c. Management of asymptomatic healthcare personnel exposed to a contagious biothreat agent (e.g., pneumonic plague, smallpox, viral hemorrhagic fever).
 - i. Persons who have been exposed to a communicable biothreat agent should notify their occupational health service provider immediately. They should also be vigilant for fever, rash, respiratory symptoms, or other signs and symptoms as directed by Infection Prevention following exposure for a period of time that varies depending on the pathogen (time period to be defined by Infection Prevention using standard CDC case definitions when available). Those who develop symptoms should limit interactions outside the home and should not go to work, school, out-of-home childcare, church, or other public areas per public health recommendations and notify their respective OHS immediately.

- ii. Exposed unprotected healthcare personnel who are asymptomatic, depending upon the disease, may be furloughed at the discretion of the Medical Director of the applicable occupational health service during the incubation period of the disease (time period to be defined by Infection Prevention using standard CDC case definitions when available).
 - iii. Exposed unprotected healthcare personnel who are asymptomatic and who are allowed to work must be evaluated prior to work each day by the appropriate occupational health service.
 - iv. Such examinations will be performed for a period of time that varies depending on the pathogen following the last unprotected exposure (time-period to be defined by Infection Prevention using standard CDC case definitions when available). In addition, exposed asymptomatic healthcare personnel should take their own temperature 2x per day and report any elevated temperatures (i.e., $\geq 38.0^{\circ}\text{C}$) to their occupational health provider.
- d. Management of asymptomatic healthcare personnel with a **high-risk exposure** (e.g. appropriate PPE was not worn) to a contagious biothreat agent (e.g., pneumonic plague, smallpox, viral hemorrhagic fever).
- To manage an unprotected high-risk exposure of a [provider (i.e., healthcare provider in the same room as a patient infected with a highly communicable biothreat agent during a high-risk aerosol-generating procedure and infection control precautions are either absent or breached) with no symptomatic disease, the provider:
- i. Should be excluded from duty for a time-period that depends on the specific pathogen (time-period to be defined by Infection Prevention using standard CDC case definitions when available) following the date of the last high-risk exposure.
 - ii. Should limit activities outside the healthcare setting per public health recommendations and should be vigilant for development of fever, rash, and/or respiratory symptoms or other signs and symptoms as directed by Infection Prevention.
 - iii. Will document active surveillance for the development of symptoms and report symptoms immediately to their respective OHS. The frequency of recording health status measures will be determined by occupational health service providers.
- e. Management of **symptomatic** healthcare personnel exposed to a contagious biothreat agent (e.g., pneumonic plague, smallpox, viral hemorrhagic fever).
- i. Exposed healthcare providers who develop fever, rash and/or respiratory tract symptoms or other signs and symptoms as directed by Infection Prevention should not report to work. Rather they should immediately report by phone to their appropriate occupational health provider the development of fever, rash, respiratory tract, and/or other symptoms. An appropriate healthcare provider will evaluate symptomatic persons as medically necessary in locations as directed by the Incident Management Team. Healthcare personnel with serious symptoms should be evaluated immediately in the Emergency Department, but the ED must be notified in advance of the disease exposure and patient arrival.
 - ii. If symptoms do not progress to meet the suspect biothreat agent case definition within the time period to be determined by specific infectious agent (time period to be defined

by Infection Prevention using standard CDC case definitions when available), the person following permission from their appropriate occupational health provider may be allowed to return to work (depending on the pathogen), school, out-of-home child-care, church or other public areas per public health recommendations, and infection control precautions may be discontinued per Infection Prevention recommendations.

5. Psychological Aspects of Biothreats

- a. Following a biothreat-related event, fear and panic can be expected from both patients and healthcare providers. Psychological responses following a biothreat event may include horror, anger, panic, unrealistic concerns about infection, fear of contagion, paranoia, social isolation, or demoralization. Mental health support personnel (e.g., psychiatrists, psychologists, social workers, clergy, Critical Incidence Stress Management Team (CISM), and volunteer groups) may be asked to assist the Director On Call and/or Public Affairs office. Local, state, and federal media experts can provide assistance with communications needs.
- b. Fearful or anxious healthcare personnel may benefit from their usual sources of social support (e.g., CISM, Occupational Health Service, Employee Relations).

E. Laboratory Support and Confirmation

The current McLendon Clinical Laboratories plan for management of potential biothreat agents should be followed (see [Lab Safety: McLendon Clinical Laboratories Emergency Preparedness Plan](#)).

1. Obtaining Diagnostic Samples

See specific recommendations for diagnostic sampling for each agent. Use Standard Precautions when obtaining samples. In all cases of suspected biothreat, collect an acute phase serum sample to be analyzed, aliquotted, and saved for comparison to a later convalescent serum sample. Send samples to McLendon Labs. When possible, provide advance notice to McLendon Labs that specimens are being sent. McLendon Labs will coordinate with state and federal authorities as needed. Refer to the McLendon Labs on-line resource, "**Laboratory Specimens for Suspected Bioterrorism Agents**," for information regarding testing procedures.

2. Transport Requirements

Specimen packaging and transport must be coordinated with McLendon Labs. Advance planning should include identification of appropriate packaging materials and transport media in collaboration with the clinical laboratory at individual facilities.

F. Patient, Visitor, and Public Information

Clear, consistent, understandable information should be provided (e.g., via fact sheets) to patients, visitors, and the general public. Visitors may be strictly limited. Failure to provide a public forum for information exchange may increase anxiety and misunderstanding, increasing fear among individuals who attribute non-specific symptoms to exposure to the biothreat agent. All communication with the public will be provided by Public Affairs (and coordinated with Infection Prevention and senior hospital management).

IV. Policy Implementation

Implementation of this policy is the responsibility of Infection Prevention, Occupational Health Services, and

the Medical Staff.

V. Related Policies

[Infection Prevention: Environmental Services policy](#)

[Infection Prevention: Cleaning, Disinfection and Sterilization of Patient-Care Items policy](#)

[Infection Prevention: Guidelines for Disposal of Regulated Medical Waste policy](#)

[Infection Prevention: Exposure Control Plan for Bloodborne Pathogens policy](#)

[Infection Prevention: Reporting of Communicable Disease policy](#)

[Lab Safety: McLendon Clinical Laboratories Emergency Preparedness Plan](#)).

Attachments:

- 1: Important Contact Information
- 2: Epidemiologic Characteristics of Key Biothreat Agents
- 3: Syndromic Surveillance Case Definitions

Approval Signatures

Step Description	Approver	Date
Policy Stat Administrator	Patricia Ness: Clin Nurse Education Spec	10/2019
	Thomas Ivester: CMO/VP Medical Affairs	10/2019
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Applicability

UNC Medical Center