Michigan Department of Community Health (MDCH)
Michigan Infectious Disease Society (MIDS)

Guidelines for Health Care Providers, Hospitals, and Emergency Departments
Responding to Concerns about Exposure to Anthrax
Updated November 2003

MDCH in collaboration with MIDS (Bioterrorism Subcommittee) have issued revised guidelines to assist health care providers in evaluating patients concerned about an exposure to *Bacillus anthracis*. With the onset of influenza season, this notice provides additional information on assisting clinicians in evaluating patients with influenza and influenza-like illness (ILI). ILI is a nonspecific respiratory illness characterized by fever, fatigue, cough, and other symptoms. The majority of ILI cases are not caused by influenza but other viruses (e.g., rhinoviruses and respiratory syncytial virus [RSV], adenoviruses, and parainfluenza viruses).

Additional information can be obtained from the CDC Public Health and Preparedness website at http://www.bt.cdc.gov/agent/anthrax/index.asp

This document is separated into four scenarios with a purpose of providing detailed guidelines for your clinic. We recommend that this information be drafted into a more rapid reference guide to meet the unique needs of your facility. We encourage the sharing of this information with all staff including those providing evening, weekend, and holiday coverage.

Clinicians evaluating persons with ILI or influenza should consider a combination of epidemiological, clinical, and if indicated, laboratory and radiographic test results before concluding that inhalation anthrax is the basis for the symptoms. The following scenarios have been created to assist you in these evaluations.

Scenario 1: Patient calls Emergency Department, Physician Office, Urgent Care, or Health Center with a possible exposure to anthrax.

- If patient references a suspicious package or letter, direct them not to open
- Recommend that patient:
    - Notify their supervisor if at work.
    - Notify local law enforcement officials. Local law enforcement officials will, in conjunction with the FBI, do a risk determination and contact the state health department as necessary.
- If the letter or package has already been opened and powder spills out, advise patient not clean it up. Keep others away from the area.
    - Recommend evacuation only of immediate area until local law enforcement has conducted a risk determination

- Instruct individual to immediately wash hands with soap and water.
- As soon as possible they should shower with soap and water if exposure to powder has occurred.
- Place all clothing items that had direct contact with powder from the letter or package into plastic bags. Keep these bags open, so that the clothes are available for law enforcement officials to examine. Clothes that do not have visible evidence of gross amounts of powder do not need to be submitted for testing and can be laundered as usual.
- Recommend that the person start a list of names, addresses and telephone numbers of all persons who have handled the letter or package. Share that list with law enforcement officials if requested.
- If the patient has additional health concerns and questions, recommend that they contact their local public health department for further information.
- Advise patient not to go to a clinic or emergency room unless they have illness serious enough that it would prompt such a visit under usual circumstances.
- Reassure patient that the risk of actual exposure to anthrax through contact with a letter or package is extremely low. Please be patient, public safety and health officials will respond as quickly as possible.
- If the patient has contact with health care providers, the patient should not request testing for anthrax or treatment for anthrax (e.g., ciprofloxicin or other antibiotic) unless directed to do so by local and/or state public health officials. If laboratory testing of the suspicious package or letter is warranted by the FBI and local law enforcement, there is time after lab testing to administer effective antibiotic prophylaxis.

Scenario #2: Patient presents to the Emergency Department, Urgent Care, Physician Office, or Health Center with a chief complaint of exposure to a suspicious letter/package.

- If exposure to powder has occurred then the patient should wash hands with soap and water. All clothing exposed to powder/substance should be removed and bagged. The patient can then be instructed to take a shower with soap and water. Decontamination of skin with bleach solution is not recommended.
- ONLY patients directly exposed to powder need to undergo the above.
- Local law enforcement officials should be called immediately. They will contact FBI and public health as appropriate.
- Recommend that the patient if possible, start a list of names, addresses and telephone numbers of all persons who have handled the letter or package. Share that list with law enforcement officials if requested.
- Patients should only be given prophylactic antibiotics at the instruction of public health officials.
- Patients with suspicious exposures should be reassured that antibiotics can be deferred until risk assessments by the FBI and consequent testing (if appropriate, by public health laboratories) has been accomplished and will be recommended if this testing indicates that exposure may have occurred.

- It is important for the patient to know, that there is no screening test available for the detection of anthrax infection in an asymptomatic person. Nasal swabs are not suitable as a diagnostic tool and should only be done when directed by public health officials.
- While incubation periods of up to 43 days have been reported, a review of previous Bioterrorism related cases of anthrax show a median incubation period of 4 days (range 4-6 days).
- Most anthrax cases have been associated with packages/letters. Thus, patients presenting with exposures to powders at home or in the work place that are not associated with letters/packages should be reassured and released. If an exposure other than packages/letters is thought to be suspicious then law enforcement officials should be contacted.
- Patient's requiring/requesting further consultation should be referred to their local health department.

Scenario#3: Patient presents to the Emergency Department, Physician Office, Urgent Care or Health Center with a febrile illness and the patient or physician is concerned about anthrax.

- To date, there has not been an intentional case of anthrax in Michigan; therefore, the patient can be reassured that the likelihood of anthrax is almost negligible.
- Unless there is a high suspicion for inhalation anthrax (e.g., widened mediastinum, symptoms compatible with inhalation anthrax) patients with febrile illnesses should NOT be treated for "presumed" inhalation anthrax. If patient presents as a symptomatic postal worker refer to Scenario # 4.
- Patients with fever and dyspnea should receive a chest X-ray. A good PA and lateral should be obtained in order to assess for a widened mediastinum. Radiology should be consulted if there is suspicion of a widened mediastinum. If a widened mediastinum is present the patient should be admitted and Infectious Diseases (ID) should be contacted immediately.
    1. Blood, sputum and cerebrospinal fluid (CSF) (if appropriate) cultures should be obtained prior to initiating antibiotic therapy.
    2. Blood buffy coat (purple top or heparin tube) and CSF should be sent for Gram stain. Note: Blood cultures are usually positive within 24 hours or less.
- **Inhalation and Other Systemic Presentation:** The following may help in distinguishing inhalation anthrax (IA) from other influenza-like illnesses (ILIs)

    Symptoms/Tests supporting possible Inhalation Anthrax
        - Widened mediastinum on chest X-ray (CXR) or computed tomography (CT)
        - Pleural effusions, especially large and/or bloody ones
        - Hemoconcentration (HCT>50)
        - WBC increased
        - Neutrophilia (>70%)
        - Neutrophil band forms (>5%)
        - Shortness of breath
        - Chest discomfort or pleuritic chest pain

- Drenching sweats
- Nausea or vomiting
- Abdominal pain
- Gram positive bacilli in cultures or Gram stain of blood, CSF, pleural fluid
- PaO2 <70mmHg on room air

Symptoms/ favoring ILI

- Coryza/nasal symptoms favor other ILIs
- Sore throat favors other ILIs

Rapid influenza and respiratory syncytial virus (RSV) tests may help rule in influenza or RSV. If suspicion for inhalation anthrax is low after the initial work-up, the patient should be reassured and treated as appropriate based on their non-anthrax diagnosis. They should NOT be given antibiotics for the remote possibility of inhalation anthrax.

Cutaneous Presentation: If a patient presents with a skin lesion that is suspicious for anthrax, ID should be contacted. Presumptive Cipro 500 p.o. bid or doxycycline 100 mg p.o. bid can be started in these patients while a work-up is pending (Refer to cutaneous presentation in Scenario # 4). Other quinolones are appropriate, although only ciprofloxicin has FDA approval. Skin lesions do not spread disease.

SCENARIO #4: Patient presenting with febrile illness and widened mediastinum, such as a U.S. postal worker.

- **Inhalation and Other Systemic Presentation:**
  - Based on their employment class as postal workers, medical authorities may assume an increased risk based upon employment status, regardless of identified exposure source. Persons presenting who are currently identified as being at risk, by public health officials, should also raise a clinician's suspicion.
  - Initial symptoms of inhalation anthrax are mild and non-specific. If a patient presents with a fever of 101$_{o}$F or greater and all or several of the following symptoms are present; cough, chest pain, shortness of breath, drenching sweats, abdominal pain, nausea/vomiting, or headache, then consideration should be given to the diagnosis of inhalation anthrax.
  - The following may help in distinguishing inhalation anthrax (IA) from other influenza-like illnesses (ILIs) :
    - **Symptoms/Tests supporting possible Inhalation Anthrax**
      - Widened mediastinum on chest X-Ray (CXR) or computed tomography (CT)
      - Pleural effusions, especially large and/or bloody ones
      - Hemoconcentration (HCT>50)
      - WBC increased
      - Neutrophilia (>70%)

- Neutrophil band forms (>5%)

- Shortness of breath
- Chest discomfort or pleuritic chest pain
- Drenching sweats
- Nausea or vomiting
- Abdominal pain
- Gram positive bacilli in cultures or Gram stain of blood, CSF, or pleural fluid
- PaO2 <70mmHg on room air

- **Symptoms/ favoring ILI**
  - Coryza/nasal symptoms favor other ILIs
  - Sore throat favors other ILIs

- A CXR (PA and lateral)/chest CT, CBC should be done if inhalation anthrax is suspected.
- Rapid influenza/RSV test should be considered if available.
  - A positive test essentially rules out inhalation anthrax
- If suspicion for inhalation anthrax is low after the initial work-up, the patient should be reassured and treated as appropriate based on their non-anthrax diagnosis. They should NOT be given antibiotics for the remote possibility of inhalation anthrax.
- If suspicion for inhalation anthrax remains high, an infectious disease specialist should be consulted. After the initial work-up, the patient should be admitted for a short stay (<24 hours) and started on IV antibiotics appropriate to treat inhalation anthrax. Current regimens include ciprofloxicin 400 mg IV bid or doxycycline 100 mg IV bid + one or two of the following: clindamycin, rifampin, imipenem, vancomycin, or chloroamphenicol (no clinical data on these regimens). Make every attempt to obtain appropriate cultures prior to initiating antibiotics. The work-up should then proceed as follows:
  - Note: Oral antibiotics are not adequate for treating inhalation anthrax. Thus, patients should not be treated with oral agents in the outpatient (or inpatient) setting.
  - Note: The recommendation for treating inhalation anthrax with multiple antibiotics is currently based on theoretical efficacy. No clinical data to support this approach are available.

1. Collect a specimen for blood culture. A blood buffy coat (purple top or heparin tube) may be sent for Gram stain. This may show gram-positive rods even early in disease.
   - Note: If patient has been on antibiotics, blood cultures may not be helpful if negative.
2. If CXR is negative in a patient with respiratory symptoms consider CT imaging of the mediastinum, as this may be more sensitive for widened mediastinum.
3. Blood cultures should be checked for growth and a gram stain of the culture should be done at first detection of growth. Negative results of all

of the above tests should prompt discharge of the patient on NO antibiotics (unless other infectious diseases warrant treatment).

4. Even in the setting of negative blood cultures, the following findings warrant an extended admission and further work-up:
    a. Widened mediastinum on CXR/CT
    b. Pleural effusion, especially large and/or bloody pleural effusion
    c. Hypoxemia- PaO2 <70 mmhg on room air
5. Notify your local health department and the Michigan Department of Community Health (Business Hours: (517) 335-8150, After-Hours: (517) 335-9030) with patient information.
6. A culture result, which is positive for *Bacillus anthracis*, should be reported immediately to the local and/or state health department. In addition, cultures with Gram-positive bacilli, which are non-motile and non-hemolytic, must be forwarded immediately to the nearest Level B public health laboratory for further analysis. Contact MDCH Laboratory (517-335-8063) for instructions in submission.
    - Laboratories with biosafety level 2 (BSL 2) facilities and a biosafety cabinet can perform initial routine cultures for testing. For specific guidelines and training to perform cultures contact the Michigan Department of Community Health Laboratory (517-335-8063).

Cutaneous Presentation

Postal employees who present with a vesicular lesion or a cutaneous black eschar should first undergo a thorough medical evaluation to rule out other possible causes for the lesion**.** If a physician is not able to rule out anthrax infection they should take the following steps.

1. Swab the lesion, attempting to swab under the edges of the lesion if it has ruptured or by swabbing some of the vesicle fluid of a previously unruptured lesion.
2. A specimen should be collected by inserting one or two swabs under the edge of the eschar and collecting some of the exudate. If the swabs cannot be inserted, the edge of the eschar can be lifted with sterile forceps to collect the sample. **The eschar should not be removed**.
3. If a specimen cannot be obtained, a consultation with an Infectious Disease Specialist or dermatologist should be sought.
4. Perform a stat Gram stain and an India Ink stain for the presence of capsular material consistent with *B. anthracis* and also culture the lesion.
5. Collect a specimen for blood culture analysis.
6. Start the individual on a 5-day course of doxycycline 100 mg p.o. bid or ciprofloxicin 500 mg p.o. bid pending culture results.
7. Patients with skin lesions consistent with anthrax and severe limb or life threatening edema (i.e. from head and neck lesion) and/or signs of systemic disease (i.e., fevers, dyspnea, nausea, vomiting) or age less than 2 years old should be treated as if they have inhalation anthrax (refer to inhalation and other systemic presentation).

8. Hospitalization and an infectious disease consultation may be necessary depending upon the severity of clinical presentation
9. If the patient is not hospitalized, ensure that patients are told where to call should their symptoms become more severe or they are in need of additional follow up. Document contact information for the patient so that test results and subsequent antibiotic recommendations can be communicated with the patient.
10. Notify your local health department and the Michigan Department of Community Health (Business Hours: (517) 335-8150 After-Hours: (517) 335-9030) with patient information.
11. A patient whose culture results are negative for anthrax should be advised to discontinue antibiotics for anthrax treatment unless a high suspicion of cutaneous anthrax still exists.
12. If suspicion for cutaneous anthrax is high in the setting of a negative culture antibiotics should be continued and a biopsy of the lesion performed.
13. A culture result, which is positive for *Bacillus anthracis*, should be reported immediately to the local and/or state health department. In addition, cultures with Gram-positive bacilli, which are non-motile and non-hemolytic, must be forwarded immediately to the nearest Level B public health laboratory for further analysis. Contact MDCH Laboratory (517-335-8063) for instructions in submission.
    - Laboratories with biosafety level 2 (BSL 2) facilities and a biosafety cabinet can perform initial routine cultures for testing. For specific guidelines and training to perform cultures contact the Michigan Department of Community Health Laboratory at (517) 335-8063.