






Anthrax Investigation Guideline

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Attachments can be accessed through the Adobe Reader's navigation panel for attachments. Throughout this document attachment links are indicated by this symbol ; when the link is activated in Adobe Reader it will open the attachments navigation panel. The link may not work when using PDF readers other than Adobe.

Revision History:

| Date | Replaced | Comments |
|-------------|-----------------|---|
| 04/2010 | 03/2010 | Typographical corrections in Investigation Protocol |
| 02/2012 | 04/2010 | BEPHI replaced BSE throughout. Updated web links. Addition of notification section and select agent information. |
| 09/2017 | 02/2012 | Updated web links, phone numbers, and treatment section. Added surveillance indicators to responsibilities. Added link to CDC Anthrax Investigation Form and removed references to the anthrax worksheet. |
| 05/2018 | 09/2017 | Updated case definition. |
| 12/2021 | 05/2018 | Laboratory Analysis: minor changes to clarify KHEL's ability to test clinical specimens. Disease Overview: updated incubation period with separate listing for different disease presentations and added EUI factsheets to treatment. Removed Rule-Out Anthrax section and incorporated it into Laboratory Analysis. Updated web links. [01/03/2022 Updated KDHE web links] |

Anthrax

Disease Management and Investigation Guidelines

CASE DEFINITION (CDC 2018)

Clinical Criteria for Public Health Surveillance:

- For surveillance purposes, an illness with at least one specific OR two [non-specific symptoms and signs](#) that are compatible with cutaneous, ingestion, inhalation, or injection anthrax; systemic involvement; or anthrax meningitis; **OR**
- A death of unknown cause AND organ involvement consistent with anthrax

Laboratory Criteria for Diagnosis

Presumptive laboratory criteria for *Bacillus anthracis* or *Bacillus cereus* expressing anthrax toxins:

- Gram stain demonstrating Gram-positive rods, square-ended, in pairs or short chains;
- Positive result on a test with established performance in a CLIA-accredited laboratory;

Confirmatory laboratory criteria for *Bacillus anthracis* or *Bacillus cereus* expressing anthrax toxins:

- Culture and identification from clinical specimens by Laboratory Response Network (LRN);
- Demonstration of *B. anthracis* antigens in tissues by immunohistochemical staining using both *B. anthracis* cell wall and capsule monoclonal antibodies;
- Evidence of a four-fold rise in antibodies to protective antigen between acute and convalescent sera or a fourfold change in antibodies to protective antigen in paired convalescent sera using Centers for Disease Control and Prevention (CDC) quantitative anti-PA immunoglobulin G (IgG) ELISA testing in an unvaccinated person;
- Detection of *B. anthracis* or anthrax toxin genes by the LRN-validated polymerase chain reaction and/ or sequencing in clinical specimens collected from a normally sterile site (such as blood or CSF) or lesion of other affected tissue (skin, pulmonary, reticuloendothelial, or gastrointestinal);
- Detection of lethal factor (LF) in clinical serum specimens by LF mass spectrometry

Epidemiologic Linkage

- Exposure to environment, food, animal, materials, or objects that is suspect or confirmed to be contaminated with *B. anthracis*;
- Exposure to the same environment, food, animal, materials, or objects as another person who has laboratory-confirmed anthrax;
- Consumption of the same food as another person who has laboratory-confirmed anthrax.

Refer to CDC website for additional references supporting the clinical and laboratory criteria: <https://ndc.services.cdc.gov/conditions/anthrax/>

Case Classification:

Suspected:

- A case that meets the clinical criteria **AND** for whom an anthrax test was ordered, but with no epidemiologic evidence relating it to anthrax.

Probable:

- A case that meets the clinical criteria **AND** has presumptive laboratory test results, **OR**
- A case that meets the clinical criteria **AND** has an epidemiologic evidence relating it to anthrax.

Confirmed:

- A case that meets the laboratory criteria **AND** has confirmatory laboratory test results.

LABORATORY ANALYSIS:

KDHE must be contacted at 877-427-7317 before sending in specimens to the Kansas Health and Environment Laboratory (KHEL). KHEL is equipped to test specimens, isolates and environmental samples by polymerase chain reaction and culture.

1) Routine Clinical Specimen Scenario where anthrax is not initially suspected:

- Private laboratory identifies an organism from a clinical specimen that is reported as “*Bacillus species, unable to rule out Anthrax.*”
- After KHEL is contacted at kdhe.SelectAgent@ks.gov, the isolate can be forwarded to KHEL for further testing.

2) Non-routine Clinical Specimen Scenario, where anthrax is highly suspected:

- KDHE is contacted through the EpiHotline at 877-427-7317.
- Clinical specimen is sent directly to a [Laboratory Response Network \(LRN\) laboratory](#), such as KHEL, that will perform a rapid method to rule out *B. anthracis*. KHEL will only accept clinical specimens after approval from KDHE-BEPHI.
- Specimens that can be tested include: blood, body fluids (spinal fluid, sputum, and skins sore swabs)
- Methods of testing will include culture and PCR.

3) Environmental Specimen Scenario:

- Refer to [Managing Special Situations – Intentional Contamination.](#)

4) Using KHEL for testing after approval has been granted from KDHE:

- Test method: Culture and PCR
- Specimens: 1) clinical specimens or pure culture isolates from clinical specimens or 2) environmental specimens from approved situations only.

Public Health Role During Testing:

- 1) KDHE-BEPHI will immediately notify the LHD of any situations where anthrax is highly suspected, but further actions will depend on preliminary testing results.
- 2) Preliminary laboratory testing at the KHEL can take up to 24 hours to complete.
- 3) If any test is positive or inconclusive, the LHD and CDC will be notified.
- 4) KDHE will coordinate any additional notifications to state and federal level emergency management and law enforcement officials, if needed.
- 5) Significant findings suggesting anthrax, including the positive or inconclusive laboratory testing, will result in immediate epidemiological investigation in conjunction with BEPHI.

- KHEL Shipping Kit: [Category A, Infectious Substances Shipping](#)
 - For additional information and/or questions concerning isolate collection, sample transport and laboratory kits call (785) 296-1620.
- 5) Further information on specimen collection:
- To determine what specimens should be collected when evaluating any patient for *B. anthracis* infection, refer to online CDC guidance at www.cdc.gov anthrax/lab-testing/recommended-specimens/index.html.
 - Culturing *B. anthracis* from clinical specimens remains the gold standard.
 - If anthrax is suspected, diagnostic specimens including blood cultures should be obtained prior to starting antimicrobial therapy.

IMPORTANT: Upon verification of *B. anthracis*, the laboratory handling specimens/isolates must report the identification or verification of the select agent or related toxins and the final disposition of that identified agent or toxin and any specimens that were presented for diagnosis, verification, or proficiency testing, as well as the seizure of the select agents or toxins by federal law enforcement agencies. Refer to: www.selectagents.gov/Forms.html

EPIDEMIOLOGY

Anthrax is primarily a disease of herbivorous; humans are accidental hosts. In the developed countries, anthrax is infrequent and sporadic, and is primarily an occupational hazard of workers who process hides, wool, hair, bone and bone products imported from endemic regions and of veterinarians and agriculture and wildlife workers who handle infected animals. Human anthrax is endemic in the agricultural regions of the world, such as sub-Saharan Africa and Asia, south and central America, and southern and eastern Europe. Livestock are at risk of infection from animal feed containing contaminated bone meal. Disruption of soil over previous burial sites of infected carcasses may provoke epizootics. Anthrax has been used deliberately to cause harm. Outbreaks and incidents in the U.S. have been associated with spread of spores through the postal system and the import of hides or products from the hides from endemic countries.

DISEASE OVERVIEW

A. Agent:

Bacillus anthracis, a gram-positive, encapsulated, spore-forming, nonmotile rod. Specifically, the anthrax spores of *B. anthracis* are the infectious agent.

B. Clinical Description:

An illness or post-mortem examination characterized into several distinct clinical types, including:

Cutaneous Anthrax: It usually begins as a small, painless, pruritic papule on an exposed surface, which progresses through a vesicular stage into a depressed black eschar; the eschar is often surrounded by edema or erythema and may be accompanied by lymphadenopathy. Fever is also common.

Ingestion anthrax: presents as two sub-types:

Oropharyngeal: When anthrax spores germinate in the oropharynx, a mucosal lesion may be observed in the oral cavity or oropharynx. Symptoms include sore throat, difficulty swallowing, and swelling of the neck. Less specific symptoms include fever, fatigue, shortness of breath, abdominal pain, and nausea/vomiting; the symptoms may resemble a viral respiratory illness.

Cervical lymphadenopathy, ascites, and altered mental status may develop.

Gastrointestinal: When anthrax spores germinate in the lower gastrointestinal tract, symptoms include abdominal pain, nausea, vomiting or diarrhea (either of which may contain blood), and abdominal swelling. Less specific symptoms such as fever, fatigue, and headache are also common. Altered mental status and ascites may be observed.

Inhalation Anthrax: Often described as a biphasic illness. Early nonspecific symptoms of inhalation anthrax include fever and fatigue. Localized thoracic symptoms such as cough, chest pain, and shortness of breath follow, as may non-thoracic symptoms such as nausea, vomiting, abdominal pain, headache, diaphoresis, and altered mental status. Lung sounds are often abnormal, and imaging often shows pleural effusion or mediastinal widening.

Injection anthrax: Usually presents as a severe soft tissue infection manifested as significant edema or bruising after an injection. No eschar is apparent, and pain is often not described. Nonspecific symptoms such as fever, shortness of breath, or nausea are sometimes the first indication of illness. Occasionally patients present with meningeal or abdominal involvement.

Additional considerations:

1. Signs of systemic involvement from the dissemination of either the bacteria and / or its toxins can occur with all types of anthrax and include fever or hypothermia, tachycardia, tachypnea, hypotension, and leukocytosis. One or more of these signs are usually present in patients with ingestion anthrax, inhalation anthrax, and injection anthrax and may be present in up to a third of patients with cutaneous anthrax.
2. Anthrax meningitis: may complicate any form of anthrax and may also be a primary manifestation. Primary symptoms include fever, headache (which is often described as severe), nausea, vomiting, and fatigue. Meningeal signs (e.g., meningismus), altered mental status, and other neurological signs such as seizures or focal signs are usually present. Most patients with anthrax meningitis have cerebral spinal fluid (CSF) abnormalities consistent with bacterial meningitis, and the CSF is often described as hemorrhagic.

C. Reservoirs:

Animals, usually hoofed herbivores. Vegetative *B. anthracis* produces spores on exposure to air. Resistant to disinfection and adverse environmental conditions, the spores may remain viable in contaminated soil for years. Dried and/or processed skins and hides of infected animals may harbor the spores.

D. Mode(s) of Transmission:

Contact with the tissues or any parts of livestock or wild animal with the disease or from the animal's infected hair, wool, hides or bone; possibly also through biting flies that have fed on such animals; or contact with contaminated bone meal. Cutaneous anthrax requires a pre-existing lesion. Gastrointestinal and oropharyngeal anthrax may arise from the ingestion of inadequately cooked meat from infected animals; there is no evidence that milk from infected animals transmits anthrax. Inhalation anthrax results from inhalation of spores in risky industrial processes where spores are generated in enclosed poorly-ventilated area. Cutaneous and inhalation anthrax has been reported among drum makers. Disease transmitted to animals by contaminated soil, feed, and maybe biting flies.

E. Incubation Period:

- Cutaneous and ingestion anthrax: Usually less than a week, rare cases seen more than 2 weeks from exposure.
- Inhalation anthrax: 2 days – 6 weeks. (Two months in experimental nonhuman primates).

F. Period of Communicability:

Person-to-person transmission is rare and only documented with cutaneous anthrax via direct contact with lesions. Products and soil contaminated with *B. anthracis* spores may remain infectious for decades.

G. Susceptibility and Resistance:

Circumstantial evidence indicates humans are moderately resistant to anthrax infection. Some evidence exists of inapparent infection among those in frequent contact with the agent. Second attacks can occur but are rare.

H. Treatment

Antimicrobial therapy along with access to critical care support is essential. Antitoxins are available but must be used with other treatment options.

Refer to [CDC Expert Panel Meetings on Prevention and Treatment of Anthrax in Adults - Volume 20, Number 2—February 2014](#), including the appendix wwwnc.cdc.gov/eid/article/20/2/13-0687-techapp1.pdf).

Additional resources:

- Pediatrics: (<http://pediatrics.aappublications.org/content/early/2014/04/22/peds.2014-0564>)
- Pregnant/postpartum women: (wwwnc.cdc.gov/eid/article/20/2/13-0611_intro).
- Mass causality incidents may result in need to alter recommendations. Refer to: www.cdc.gov/mmwr/pdf/rr/rr6404.pdf (CDC 2015)
- [Anthrax Information for Healthcare Professionals | CDC](#)
- Antibiotic Emergency Use Instructions (EUIs) located at: www.cdc.gov/anthrax/public-health/index.html
 - [Doxycycline Fact Sheet for Healthcare Providers](#)
 - [Doxycycline Fact Sheet for Recipients](#)
 - [Doxycycline Preparation Instructions](#)
 - [Ciprofloxacin Fact Sheet for Healthcare Providers](#)
 - [Ciprofloxacin Fact Sheet for Recipients](#)

I. Vaccine:

- Pre-exposure: 5 doses of a cell-free vaccine containing protective antigen (US trade name: Biothrax) is recommended for the following persons:
 - Certain laboratory workers who work with anthrax
 - Some people who handle animals or animal products
 - Some members of the United States military
- Post-exposure: 3-doses in combination with 60 days appropriate antimicrobial prophylaxis may be recommended after exposure to aerosolized *Bacillus anthracis* spores.
- Additional guidance is at: [Anthrax Vaccination Recommendations | CDC](#)

NOTIFICATION TO PUBLIC HEALTH AUTHORITIES

All confirmed or **suspected** anthrax cases shall be reported within **4 hours by phone**:

1. Health care providers and hospitals: report to the local public health jurisdiction or KDHE-BEPHI (see below)
2. Local public health jurisdiction: report to KDHE-BEPHI (see below)
3. Laboratories: report to KDHE-BEPHI and report, as needed, with select agents protocol. (see below)
4. KDHE-BEPHI will contact the local public health jurisdiction by phone within one hour of receiving any suspected anthrax report.


**Kansas Department of Health and Environment (KDHE)
Bureau of Epidemiology and Public Health Informatics (BEPHI)
Phone: 1-877-427-7317**

Further reporting responsibilities:

As a nationally notifiable condition, anthrax cases require an IMMEDIATE, EXTREMELY URGENT or IMMEDIATE, URGENT report to the Center of Disease Control and Prevention (CDC) depending on the circumstances.

1. Anthrax cases whose source of infection is unknown or is BT exposure/potential mass exposure or an anthrax case represents a serious illness of naturally occurring anthrax requires **IMMEDIATE, EXTREMELY URGENT** reporting.
 - KDHE epidemiologist must call the CDC EOC at 770-488-7100 **within 4 hours** of a being notified of the [confirmed](#) or [probable](#) case.
 - KDHE-BEPHI will notify the **Local public health jurisdiction** immediately to coordinate on follow-up for the report information needed to complete the electronic form before the next business day.
 - KDHE-BEPHI will file an electronic case report the next business day.
2. An anthrax case that is naturally-occurring or occupational and is responding to treatment requires IMMEDIATE, URGENT reporting.
 - KDHE epidemiologist to call the CDC EOC at 770-488-7100 within 24 hours of a case meeting the [confirmed](#) or [probable](#) criteria.
 - **Local public health jurisdiction** will report information requested on the disease reporting forms as soon as possible, completing the forms within 3 days of receiving a notification of an anthrax report.
 - KDHE-BEPHI will file an electronic case report the next regularly scheduled electronic transmission.
(KDHE-BEPHI files electronic reports weekly with CDC.)
3. Following Immediate (Urgent or Extremely Urgent) notification:
 - For subsequent epidemiologically linked cases: KDHE will directly notify the CDC staff who responded to the initial notification, rather than CDC EOC.
4. Laboratories, upon verification of *B. anthracis*:
 - Any laboratory handling any specimens or isolates must use appropriate forms to report the identification of the select agent and of the final disposition of that agent and specimens, as well as any seizure of the select agents or toxins by federal law enforcement agencies.
 - Refer to: www.selectagents.gov/Forms.html

INVESTIGATOR RESPONSIBILITIES

- 1) [Report](#) all anthrax cases to the KDHE-BEPHI.
- 2) Contact medical provider to collect additional information and confirm diagnosis using current [case definition](#). For all diagnosed cases:
 - Collect all information requested in [Step 1](#) of case investigation.
 - Ensure that case/proxy is aware of the diagnosis.
- 3) Conduct a [case investigation](#) within a day of notification of a report
 - Evaluate the case's risk for exposure to anthrax (i.e. occupational)
 - Identify whether the source of infection is major public health concern.
 - Source is unknown, or bioterrorism or mass exposure is indicated
 - Serious illness not responding to treatment
 - Complete the case investigation within 3 days of notification.
- 4) Conduct [contact investigation](#) to identify additional cases, as needed.
- 5) Initiate any needed control and prevention measures.
- 6) [Record](#) data, collected during the investigation, in the KS EpiTrax system under the data's associated [\[tab\]](#) in the case morbidity report (CMR).
- 7) As appropriate, use the disease [fact sheet](#)  to notify the case, contacts and other individuals or groups.

STANDARD CASE INVESTIGATION AND CONTROL METHODS

Case Investigation

The [Anthrax Case Investigation Form](#) can be used to collect data.

- 1) Contact the medical provider who ordered testing of the case and obtain the following information. (This includes medical records for hospitalized patients.)
 - Using the [Anthrax Case Investigation Form](#), identify any symptoms:
 - Record earliest onset date, noting the first symptom.
 - Record any other symptoms experienced.
 - Examine the laboratory testing that was done to ensure all testing that could confirm the case has been reported in state surveillance system.
 - Examine and record the therapy that the case received.
 - Record [hospitalizations](#): location and duration of stay.
 - Record outcomes: survived or [date of death](#).
 - Record pregnancy status for women.
 - Collect patient's demographics ([address](#), [birth date](#), [gender](#), [race/ethnicity](#), [primary language](#), and [phone number\(s\)](#)).
- 2) Interview the case or proxy to determine source and risk factors; focus on a 6-week incubation period prior to illness onset.
 - Patient's occupation; note specific job duties, industry type and location.
 - At risk occupations could include farmers, dairyman, veterinarian, wool processor, weaver, butcher, slaughterhouse employee, tanner, taxidermist, hunter, or laboratory worker.

- Travel to out of the county during incubation period.
 - Contact with animals and/or animal products, especially imported items.
 - Ingestion of undercooked meat.
 - If no other risk factors are identified, start to consider intentional contamination or bioterrorism situations
- 3) Examining the epidemiological information, record where the infection was most likely imported from. (Indigenous or out-of-county, state, or U.S.).
- Investigate epi-links among cases (clusters).
 - For suspected [outbreak](#) to Managing Special Situations section

Contact Investigation

- 1) Review the patient's occupation and activities that were collected during the case investigation and recorded on the [\[Epidemiological\]](#) and [\[Investigation-Exposure\]](#) tab, especially during the period 6 weeks prior to symptom onset.
- 2) Evaluate the potential source of infection to determine who may be a contact. A contact will be a person exposed to the potential source. This may include physical touching an infected animal or a contaminated product, ingestion of contaminated food, or inhalation of aerosolized spores.
- 3) Investigate the clinical laboratory that handled the *B. anthracis isolate* to ensure standard procedures were in place to minimize the risk of transmission.
- 4) After identifying all potential exposures based on the possible source and potential modes of transmission to define who may be at-risk. Identify those who participated in at-risk activities.
- 5) After identifying potential contacts, evaluate whether a risk of transmission exists. ONLY if a risk of transmission exists, create a line listing of contacts at-risk of developing disease.
- 6) Follow-up with at-risk contacts as instructed in [Contact Management](#).

Isolation, Work and Daycare Restrictions

- 1) Hospitals: Standard precautions (contact precautions for wound care); no isolation required.
- 2) No restrictions are indicated for outpatient management. Home care providers should be informed of standard precautions (i.e., proper wound care).

Case Management

Report on any changes in patient status (i.e., discharge, death).

Contact Management

- 1) Symptomatic acquaintances, household members, associates, or co-workers should be strongly urged to contact their physician for a medical evaluation and are followed-up as suspect cases.
- 2) Contact Monitoring:
 - Depending on type of exposure, asymptomatic persons who were potentially exposed should continue to monitor themselves for:
 - Any flu-like illness for a 60-day period or
 - Any new skin lesions/GI symptoms for a 14-day period following exposure.
 - A medical provider should be consulted immediately if symptoms develop.
 - After 60 days, report the final disposition of each contact investigated.
- 3) Laboratory Testing of Contacts:
 - Nasal swabs and serology may be used as epidemiologic tools but are not appropriate for medical surveillance of potentially exposed individuals.
Exposure circumstances determine prophylaxis decisions, not test results.
- 4) Prophylaxis recommendations:
(Source: [Centers for Disease Control and Prevention Expert Panel Meetings on Prevention and Treatment of Anthrax in Adults](#), 2014)
 - The following is recommended for unvaccinated persons **at risk for inhalation anthrax** based on possible exposure to aerosolized spores, whether naturally occurring, occupationally related, or intentional.
 - Unvaccinated contacts should receive 60 days of selected oral antibiotics in conjunction with a 3-dose regimen (0, 2 weeks, 4 weeks) of anthrax vaccine (BioThrax, formerly known as AVA).
 - Oral ciprofloxacin and doxycycline are recommended as first-line antimicrobial drugs for PEP.
 - Alternative antimicrobial drugs that might be used for PEP if first-line agents are not tolerated or available include levofloxacin and moxifloxacin; amoxicillin and penicillin VK (**if** the isolate is penicillin susceptible); and clindamycin.
 - As soon as the organism is determined to be penicillin sensitive, amoxicillin can be used to finish the 60-day course in children.
 - The risks for these adverse effects must be weighed carefully against the risk for developing life-threatening disease.
 - The vaccine is not FDA approved for PEP but could be made available under an Investigational New Drug (IND) or potentially under an emergency use authorization (EUA).
 - Prophylaxis is not indicated for the prevention of cutaneous anthrax, for hospital personnel caring for patients with anthrax, or for persons who routinely open or handle mail if there has not been a credible threat.
- 5) Recommendations may change with additional CDC guidance.

Environmental Measures

- 1) When animal or meat products are potential sources of infection:
 - Verify the location, or previous location, of the source of infection (i.e., state or country of origin of meat or animal product).
 - Implicated food items must be removed from use. If a commercial food item is implicated, Kansas Department of Agriculture (KDA) Division of Food Safety should be notified immediately (785-564-6767).
 - If any domestic animal or animals that reside in the state of Kansas is affected by anthrax, the KDA Division of Animal Health should be notified immediately (785-564-6601).
 - Importation of animal products is regulated by the United States Department of Agriculture (USDA). KDHE Epidemiological Services will assist with coordination with the USDA.
- 2) In laboratories, a 10% bleach solution is routinely used to decontaminate surfaces.
- 3) Building decontamination of weaponized *B. anthrax* requires expert advice.

Education

- 1) Educate workers who handle potentially contaminated articles about the modes of anthrax transmission and disease prevention methods, including care of skin abrasions, general hygiene and other personal protective measures.
- 2) Provide information on what persons can do to prepare for potential bioterrorism attacks from CDC: [What You Can Do to Prepare for an Anthrax Attack | CDC](#)
- 3) Use fact sheets and materials from CDC (www.cdc.gov/anthrax/index.html) to educate individuals and groups.

MANAGING SPECIAL SITUATIONS

A. Outbreak Investigation:

A single case of inhalation anthrax is so unusual that it should be reported and investigated immediately as a potential bioterrorist event. Two or more cases of cutaneous or gastrointestinal anthrax with a common source or suspected common source should be investigated as an outbreak with adequate resources applied to the investigation.

- Consider the possibility of an outbreak when there is an unusual clustering of cases in time and/or space
- Notify KDHE immediately, 1-877-427-7317.
- All epidemiologic data will be reported and managed through the Kansas outbreak module of the electronic surveillance system.

B. Intentional Contamination

Anthrax is a potential bioterrorism weapon; inhalation of aerosolized spores is of the highest concern. A single case of inhalation anthrax is so unusual that it should be reported and investigated immediately as a potential bioterrorist event. Other forms of anthrax in which the case-patient has no remarkable travel history and is not employed in an occupation that is prone to exposure, should result in an intentional event being considered. Because the laboratory confirmation could be delayed, specific epidemiological, clinical, and microbiological findings that suggest an intentional release of anthrax should result in the issue of a health alert and the proper notifications.

If a bioterrorism event is suspected:

- 1) Notify local law enforcement, the local Health Officer, the on-call epidemiologist (local) and KDHE (1-877-427-7317) immediately.
- 2) Implement "[Chain of Custody](#)" procedures for all samples collected, as they will be considered evidence in a criminal investigation.
- 3) Work to define population at risk which is essential to guide response activities. Public health authorities will play the lead role in this effort, but must consult with law enforcement, emergency response and other professionals in the process. The definition may have to be re-evaluated and redefined at various steps in the investigation and response.
- 4) Once the mechanism and scope of delivery has been defined, identify symptomatic and asymptomatic individuals among the exposed and recommend treatment and/or chemoprophylaxis.
- 5) Establish and maintain a detailed line listing of all cases and contacts with accurate identifying and locating information.

For 'White-powder' / Suspicious Substance:

- 1) Local law enforcement will assess whether a "credible threat" exists.
 - If a credible threat does not exist, no public health response is necessary. Local law enforcement will continue with their investigation, as needed.
 - If a credible threat exists, the area will be secured:
 - Local public health and local emergency management will be notified.
 - The nearest HAZMAT team will be called to assess the situation and to perform preliminary testing.
 - Specimen collection will occur with chain of custody maintained
- 4) The local public health response for a credible threat:
 - Call KDHE via Epi-hotline at 877-427-7317 to obtain approval for testing at state laboratory (KHEL) and to relay information on (or obtain assistance with) specimen transportation and delivery.
 - Work with law enforcement to collect listing of those potential exposed.
 - Review [safety considerations](#) and [risk communication materials](#).
 - Immediately after the event, and as required for [surveillance](#), interview those potentially exposed; collecting information on:

- o Contact's specific location/activities during the event.
 - o Symptoms or ailments.
 - o Medical care and clinical status.
 - o Any treatment and/or prophylaxis.
 - o If needed, provide and ensure adequate prophylaxis to those exposed.
- 5) If the KHEL obtains a positive result:
- KHEL will immediately notify the local FBI Field Office of result.
 - Local FBI will make local notifications and notify the FBI Headquarters.
 - FBI headquarters will convene an initial conference call with local FBI, Health and Human Services (HHS) and KDHE to review the results, assess the preliminary information, and arrange for additional testing.
 - FBI Headquarters will notify Department of Homeland Security.
 - Specimens or isolates may be sent to CDC or other laboratories.
 - HHS will provide guidance on protective measures such as prophylactic treatment and continued facility operation.

Safety Considerations:

- ✓ Anthrax is not transmitted person-to-person.
- ✓ Greatest risk to human health occurs during the period or primary aerosolization in which anthrax spores remain airborne.
- ✓ Response personnel are not likely to be at risk during the investigation. A possible exception would be a mechanism designed to disseminate spores into an enclosed space over an extended time period.
- ✓ Decontamination: Rarely necessary, but any person coming in direct physical contact with a substance alleged to be anthrax should thoroughly wash exposed skin and/or hair with soap and water. Articles of clothing should be placed in a plastic bag, sealed, and labeled with the person's name and contacting information.
- ✓ For additional information on worker safety, refer to CDC guidance at: www.cdc.gov anthrax/bioterrorism/emergency-worker-safety.html

Surveillance:

- ✓ Arrange for active surveillance for 60 days for the development of signs and symptoms of anthrax among all individuals exposed.

Diagnosis of Inhalational Anthrax Infection:

- ✓ Diagnostic test findings: widened mediastinum, infiltrates, pleural effusion on chest radiograph; hyperdense hilar and mediastinal nodes, mediastinal edema, infiltrates, pleural effusion on chest computed tomographic scan; and hemorrhagic pleural effusions on thoracentesis.
- ✓ Recommended specimens by clinical presentation: www.cdc.gov anthrax/specificgroups/lab-professionals/recommended-specimen.html

Treatment:

- ✓ Drug-resistant organisms might be used as a weapon, conduct antimicrobial susceptibility testing quickly and alter treatments as needed.
- ✓ The national pharmaceutical stockpile maintained by CDC, includes antibiotics, ventilators and other equipment.
- ✓ CDC treatment resources at Treatment of Anthrax Infection | CDC.

Postexposure prophylaxis (PEP):

- ✓ Guidelines for which populations would require post-exposure prophylaxis to prevent inhalational anthrax following the release of a *B. anthracis* aerosol would be developed by public health officials and depend on epidemiological circumstances. These decisions would require estimates of the timing, location, and conditions of the exposure.
- ✓ Pharmaceuticals: In the event of an outbreak of anthrax, adequate quantities of appropriate antibiotics will be procured from the Strategic National Stockpile. Procurement, storage, and distribution will be coordinated through the Kansas Department of Health and Environment. Local and state public health officials must play a central role in determining which individuals should have priority for receipt of limited pharmaceuticals.
- ✓ PEP of close contacts of anthrax patients is not recommended because person-to-person transmission is not known to occur.
- ✓ Additional resources:
 - Clinical Framework and Medical Countermeasure Use During an Anthrax Mass-Casualty Incident: [CDC Recommendations \(2015\)](#)
 - Antitoxin Treatment of Inhalation Anthrax: [A Systematic Review \(2015\)](#)
 - Prevention and Treatment of Anthrax in Adults (2014): [Results of CDC Expert Panels](#)
 - CDC Guidance: Considerations for Anthrax Vaccine Adsorbed (AVA) Post-Exposure Prioritization (2013): www.cdc.gov/anthrax/pdf/ava-post-event-prioritization-guidance.pdf

DATA MANAGEMENT AND REPORTING TO THE KDHE

- A. Accept the case assigned to the LHD and record the date the LHD investigation was started on the [\[Administrative\]](#) tab.
- B. Organize and collect data, using appropriate data collection tools including:
 - The [Anthrax Case Investigation Form](#) can be used to collect information.
 - Alternatively, investigators can collect and enter all required information directly into EpiTrax [\[Investigation\]](#), [\[Clinical\]](#), [\[Demographics\]](#), [\[Epidemiological\]](#) tabs.
 - During outbreak investigations, refer to guidance from a KDHE epidemiologist for appropriate collection tools.
- C. Report data collected during the investigation via EpiTrax.
 - Verify that all data requested on the [Anthrax Case Investigation Form](#) has been recorded on an appropriate EpiTrax [\[tab\]](#), or that actions are completed for a case lost to follow-up as outlined below.
 - Some data that cannot be reported on an EpiTrax [\[tab\]](#) may need to be recorded in [\[Notes\]](#) or scanned and attached to the record.
 - Paper report forms do not need to be sent to KDHE after the information is recorded and/or attached in EpiTrax. The forms should be handled as directed by local administrative practices.
- D. If a case is lost to follow-up, after the appropriate attempts to contact the case have been made:
 - Indicate 'lost to follow-up' on the [\[Administration\]](#) tab with the number of attempts to contact the case recorded.
 - Record at least the information that was collected from the initial reporter.
 - Record a reason for 'lost to follow-up' in [\[Notes\]](#).
- E. After the requirements listed under [Case Investigation](#) have been completed, record the "Date LHD investigation completed" field located on the [\[Administrative\]](#) tab.
 - Record the date even if the local investigator's [Case](#) or [Contact Management](#) for the contact is not "Complete".
- F. Once the entire investigation is completed, the LHD investigator will click the "Complete" button on the [\[Administrative\]](#) tab. This will trigger an alert to the LHD Administrator so they can review the case before sending to the state.
 - The LHD Administrator will then "Approve" or "Reject" the CMR.
 - Once a case is "Approved" by the LHD Administrator, BEPHI staff will review and close the case after ensuring it is complete and that the case is assigned to the correct event, based on the reported symptoms reported.
(Review the [EpiTrax User Guide, Case Routing](#) for further guidance.)

ADDITIONAL INFORMATION / REFERENCES

- A. Treatment / Differential Diagnosis:** Red Book: Report of the Committee on Infectious Diseases. 30th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2021.
- B. Epidemiology, Investigation and Control:** Heymann. D., ed., Control of Communicable Diseases Manual (CCDM), 20th Edition. Washington, DC, American Public Health Association, 2015.
- C. Case Definitions:** CDC Division of Public Health Surveillance and Informatics, Available at: www.cdc.gov/nndss/
- D. Kansas Regulations/Statutes Related to Infectious Disease:** www.kdhe.ks.gov/1517/Regulations-Related-to-Infectious-or-Con
- E. Intentional Biological Event:** Kansas Biological Incident Annex at: www.kdhe.ks.gov/845/Biological-Incident-Annex
- F. Chain of Custody:** www.kdhe.ks.gov/852/Chain-of-Custody-Laboratory-Information
- G. Medical Management:**
- Clinical Framework and Medical Countermeasure Use During an Anthrax Mass-Casualty Incident: [CDC Recommendations \(2015\)](#)
 - Antimicrobial Treatment for Systemic Anthrax: [Analysis of Cases from 1945 to 2014 Identified Through a Systematic Literature Review \(2015\)](#)
 - Antitoxin Treatment of Inhalation Anthrax: [A Systematic Review \(2015\)](#)
 - Prevention and Treatment of Anthrax in Adults (2014): Results of CDC Expert Panels (wwwnc.cdc.gov/eid/article/20/2/13-0687_intro)
 - EID Journal (2014): Special Considerations for Pregnant and Postpartum Women (wwwnc.cdc.gov/eid/article/20/2/13-0611_intro)
 - Pediatric Anthrax Management (2014):
 - Summary: <https://publications.aap.org/pediatrics/article/133/5/940/32669/Pediatric-Anthrax-Clinical-Management-Executive>
 - Clinical Report: <https://publications.aap.org/pediatrics/article/133/5/e1411/32670/Pediatric-Anthrax-Clinical-Management>
 - CDC Guidance (2013): Anthrax Vaccine Adsorbed (AVA) Post-Exposure Prioritization (<https://www.cdc.gov/anthrax/pdf/ava-post-event-prioritization-guidance.pdf>)
- H. Case Investigation Form:** <https://www.cdc.gov/anthrax/pdf/anthrax-case-investigation-form.pdf>
- I. Additional Information (CDC):** <https://www.cdc.gov/anthrax/index.html>