Notification Timeline:

Exposures to Infected Animals

The Ministry of Agriculture to Ministry of Health[1]: Within 1 business day

Ministry of Health to Local Medical Health Officer: Within 1 business day

Public Health may receive notification of potential exposures from members of the public or health care providers.

Human Cases of Anthrax

From Lab/Practitioner to Public Health: Immediate

From Public Health to Ministry of Health: Routinely, within 24-48 hours. Immediate if bioterrorism is suspected.

Public Health Follow-up Timeline: Initiate within 24-48 hours; if bioterrorism is suspected, initiation must be immediate**.**

Public Health Purpose for Notification of Anthrax (adapted from Public Health Ontario, 2016)

- To monitor epidemiology of Anthrax in Saskatchewan including risk factors and geographic distribution;
- To monitor disease burden and outcomes of Anthrax in Saskatchewan;
- To inform the public, occupational and health care provider communities about this disease and how to prevent it;
- To work collaboratively with the Ministry of Agriculture and agricultural partners to reduce the risk of Anthrax;
- To identify locations where increased transmission of Anthrax may be occurring in order to inform other interventions; and
- To support identification of threats or acts of bioterrorism.

Information

Table 1. Surveillance Case Definition[2] (Public Health Agency of Canada, 2008)

Confirmed Case	Clinical illness* with laboratory confirmation of infection: • isolation of *Bacillus anthracis* from a clinical specimen OR

[1] Via confidential fax or mailbox 306-787-9576 or cdc@health.gov.sk.ca

[2] Surveillance case definitions ensure uniform reporting to allow comparability of surveillance data. The definition is not intended to be used for clinical or laboratory diagnosis or management of cases.

	• demonstration of *B. anthracis* in a clinical specimen by immunofluorescence
Probable Case	• suspected case with detection of *B. anthracis* DNA in a clinical specimen
Suspected Case	• clinical illness in a person who is epidemiologically linked to a confirmed or suspected animal case or contaminated animal product
***Refer to Table 2 for clinical illnesses of different presentations**	

Table 2. Presentation

Cutaneous (Public Health Agency of Canada, 2008)	Clinical illness is characterized by the appearance of small, painless but often pruritic papules. As the papule enlarges, it becomes vesicular and, within two to six days, ulcerates to form a distinctive black eschar, with surrounding edema.
Inhalation (Public Health Agency of Canada, 2008)	Clinical illness is characterized by an upper-respiratory flu-like syndrome that, after a few days, takes a fulminant course, manifested by dyspnea, cough, chills and a high-grade bacteremia.
Gastrointestinal (Public Health Agency of Canada, 2008)	Clinical illness is characterized by abdominal pain, fever and signs of septicemia.
Injection Site	Similar to cutaneous anthrax. A group of small blisters or bumps that may itch, appearing where the drug was injected. A painless skin sore with a black center that appears after the blisters or bumps. Swelling around the sore. Abscesses deep under the skin or in the muscle where the drug was injected (US Center for Disease Control and Prevention, 2020). Serious soft tissue edema presenting like necrotizing fasciitis, cellulitis or abscess (Heymann, 2022).

Epidemiology and Occurrence

Anthrax in humans remains extremely rare in Canada with no reported cases since 2007 https://dsol-smed.phac-aspc.gc.ca/notifiable/charts?c=pl .

The following table is a list of anthrax outbreaks occurring in animals Saskatchewan, dating back to the introduction of the provincial Anthrax Response Program in 2014 (Government of Saskatchewan).

Table 3. Anthrax Outbreaks in Saskatchewan (2014-2022)

Year	Location of Outbreak	Species Affected
2014	RM of Preeceville No. 334	Bovine
2015	RM of Harris No. 316	Bovine
2015	RM of Harris No. 316	Bovine
2015	RM of Paynton No. 470	Bison
2019	RM of Chester No. 125	Bison
2021	RM of Qu'Appelle No. 157	Sheep
2022	RM of Piapot No. 110	Bison

Additional Background Information

Causative Agent

- *Bacillus anthracis* is an aerobic, gram-positive, encapsulated, spore-forming, non-motile, non-hemolytic rod shaped bacterium.
- *B. anthracis* produce three major virulence factors: an antiphagocytic capsule and two exotoxins, called lethal and edema toxins.
- The toxins are responsible for the significant morbidity and clinical manifestations of haemorrhage, edema, and necrosis (American Academy of Pediatrics, 2018)

Table 4. Symptoms and Complications (Heymann, 2022)

Presentation	Symptoms	Complications
Cutaneous	• Initial itching of exposed skin followed by a lesion (papular rash) that becomes vesicular and develops into a depressed black eschar in 2-6 days. • Moderate to severe edema usually surround the eschar and may have small secondary vesicles. • Pain is uncommon, however if present, is usually due to the edema or secondary infection of the soft tissues. • Site of cutaneous infection is most commonly the head, forearms and hands.	• Spread of infection into the bloodstream causing septicemia. • Edema associated with lesions of the head and neck can compress the trachea resulting in respiratory compromise. • The case-fatality rate of untreated cutaneous anthrax is between 5-20%.
Inhalation	• Symptoms initially are mild and non-specific (fever, chills, malaise, mild cough, chest pain) and progress to respiratory distress, stridor, dyspnea, shock and cyanosis over 3-4 days. • X-ray evidence of mediastinal widening with pulmonary infiltrates and pleural effusion are common.	• Hemorrhagic meningitis • Swelling of lymph nodes in the chest (mediastinal adenopathy) • Fluid build-up in the chest (pleural effusion) • Shock

		• The maximum case fatality rate is estimated to be >85%; early diagnosis, aggressive combination antimicrobial therapy and supportive care can reduce this (Heymann, 2022).
Gastrointestinal	• Rare and more difficult to recognize. • Presents as oropharyngeal (pharyngitis [sore throat], difficulty swallowing, swelling of the neck) or gastrointestinal symptoms (abdominal pain, nausea, vomiting, diarrhea, abdominal swelling) depending where the spores germinate. • Occurs in outbreaks following consumption of meat from anthrax-infected animals.	• Severe bleeding (hemorrhage) • Shock • The case fatality rate is approximately 40% • Death
Injection	• Fever is not prominent. • A group of small blisters or bumps that may itch. • Serious localized soft tissue infection along with significant soft tissue edema. • Compartment syndrome may be present. • May not involve local injection-related lesions; rather systemic symptoms such as hemorrhagic meningitis and multi-organ failure and coagulopathy.	• Hemorrhagic meningitis • Multi-organ failure • The case fatality rate of injection anthrax is 20%.

Reservoir/Source

- Infected animals shed the bacteria in terminal hemorrhages at death. Most human infections result from handling infected animals, carcasses, meat, hides, or wool.
- The cells sporulate when exposed to the air. The spores are resistant to environmental conditions and disinfection and remain viable in the soil for years.
- The spores from the soil may contaminate food or water and be consumed by a grazing animal.
- Environmental events such as floods can disturb the soil over previous burial sites and result in epizootics.
- Dried or otherwise processed skins and hides, bones, etc. from infected animals may harbour spores for years and are the fomites by which disease is spread worldwide (Heymann, 2022).

- Animals generally acquire the disease from a contaminated environment. Humans usually acquire this disease directly from infected animals or via occupational exposure to contaminated animal products (Government of Canada, 2019) https://inspection.canada.ca/animal-health/terrestrial-animals/diseases/reportable/anthrax/eng/1330045348336/1330045807153

Incubation Period (Heymann, 2022)
Cutaneous – generally 5-7 days with a range from 1-12 days
Inhalation – ranges from 1-43 days but instances of up to 60 days are possible
Gastrointestinal – ranges from 1-6 days
Injection – ranges from 1-10 days or more

Period of Communicability (Heymann, 2022)
Person-to-person transmission of cutaneous anthrax is rare and requires direct contact with cutaneous lesions. Articles and soils contaminated with the spores may remain infective for years.

Mode of Transmission (Heymann, 2022)
Infection occurs through contact with infected animals, their carcasses, or tissues or parts including contaminated hair, wool, hides or products made from them (e.g. drums, brushes and rugs), or contact with soil associated with infected animals or contaminated bone meal used in gardening.

- Cutaneous anthrax occurs almost exclusively at the site of a pre-existing lesion.
- Inhalation anthrax results from the inhalation of spores. This may occur in risky industrial processes (tanning hides) or bio warfare events. Exposure to *B. anthracis* spores in soil is not considered a substantial risk for human inhalation anthrax.
- Gastrointestinal anthrax may occur from ingestion of undercooked meat.
- Injection anthrax has been associated with injection or snorting of heroin contaminated with anthrax spores.

Lab Reports and Interpretation

If testing is occurring following an anthrax exposure, clinicians must let their laboratory know so appropriate biosafety precautions can be taken.

Table 5. Interpretation of Test Results (RRPL, personal communication, Sept 2022)

Results	Interpretation as per Case Definition	Test details
Isolate identified as *B. anthracis*, by PCR	Confirmed	The identification of *B. anthracis*, after it is cultured from a patient specimen, is performed by PCR at RRPL
PCR positive for *B. anthracis*	Probable	PCR for B*. anthracis* is not usually performed on direct patient specimens, but may be considered in specific situations through consultation with the RRPL Microbiologist on-call
Culture or PCR negative, or not yet reported, for *B. anthracis*	Suspect	If *B. anthracis* is suspected, please notify the local Microbiology laboratory before submitting specimens so appropriate precautions can be taken
n/a	"not a case"	

Treatment/Supportive Therapy

The primary care provider is responsible for the treatment and clinical management of cases in consultation with an infectious disease specialist and local Medical Health Officer (MHO). The following serves as a reference for the public health investigator:

- *The Infectious Diseases Society of America (IDSA) published guidelines for the treatment of both naturally acquired and bioterrorism-related cases of cutaneous anthrax (see Practice Guidelines for the Diagnosis and Management of Skin and Soft Tissue Infections: 2014 Update by the Infectious Diseases Society of America).*
- *Human anthrax immune globulin (Anthrasil) is approved by Health Canada as Extraordinary Use New Drug and is indicated for treatment of* ***toxemia associated with inhalational anthrax***[1] *(Government of Canada, 2021) in adults and children in combination with antibiotic therapy.*
  - Anthrasil may be accessed through the National Emergency Strategic Stockpile and requires local MHO consultation with the Ministry of Health Chief Medical Health Officer.

[1] Inhalation anthrax results from the inhalation of spores. This may occur in risky industrial processes (tanning hides) or bio warfare events. Exposure to *B. anthracis* spores in soil is not considered a substantial risk for human inhalation anthrax.

Public Health Investigation

I. Case

History

Classify case in consultation with the attending physician, the presentation and the case definitions. Refer to Attachment – Anthrax Data Collection Worksheet to assist in the investigation.

- Investigate for the possible source of exposure – consult with the Ministry of Agriculture to enquire about known sources, whether other cases may have been exposed to an identified source and to determine whether bioterrorism is possible. Clinical manifestation and onset dates can help identify exposure timelines.
- Considerations[3] include the following and the associated timelines:
  - Animal exposure - contact with animals known to be infected;
  - Animal exposure – farms
  - Occupational exposure – Farmer
  - Occupational exposure – Veterinarian or related worker (e.g. necropsy), including adequacy of preventive measures;
  - Other Occupational exposures, for example to animal products such as meats, hides and hair (e.g. tanneries and meat packing plants), inquire for adequacy of preventive measures.
  - recent history of travel within Saskatchewan, outside of Saskatchewan or outside of Canada; and
  - Substance use – Injection Drug Use
- Specify where the exposure occurred.
- When source of exposure is not obvious, deliberate use of anthrax should be considered and investigated accordingly.

Outcome

- Did the patient require:
  - Hospitalization
  - ICU admission or intensive medical care
  - Was the outcome fatal?

[3] Anthrax in humans is traditionally classified: (1) based on how the occupation of the individual led to exposure, as **non-industrial anthrax**, occurring in farmers, butchers, knackers/renderers, veterinarians, etc., or **industrial anthrax**, occurring in those employed in the processing of bones, hides, wool and other animal products; OR (2) based on the route of infection. Non-industrial anthrax, resulting from handling infected carcasses, usually manifests itself as the (a) **cutaneous** form; it tends to be seasonal and parallels the seasonal incidence in the animals from which it is contracted. Industrial anthrax also usually takes the cutaneous form but has a far higher probability than non-industrial anthrax of taking the (b) **inhalational** form as a result of exposure to spore-laden dust. (World Health Organization, 2008)

Public Health Interventions

Assessment

- Assess for contacts paying particular attention individuals that have had exposure to the same source.

Communication

- Individuals should be notified directly. A follow-up letter can be used to reinforce the need to symptom monitoring and when to seek medical attention (see Sample letter).

Education

- All cases should be provided disease information as well as information on prevention and control measures including the proper disposal of materials from draining lesions (i.e. either incinerated or managed as biohazard waste).

Environmental Health

- When acquisition is linked to a public facility, public health inspection may be warranted.
- When acquisition is linked to an agricultural setting, the Ministry of Agriculture will inform the owner of proper management and disposal of carcasses.
- If suspected that an exposure is related to criminal activity (e.g., tampering, sabotage, terrorism), law enforcement agencies (local police, provincial police, or the Royal Canadian Mounted Police) assume the responsibility for the criminal investigation and law enforcement response of the investigation.

Immunoprophylaxis

- None

Referrals

- Refer to Infectious Disease Specialist to confirm treatment and medical management.
- The Ministry of Health will notify the Ministry of Agriculture of human cases of cutaneous anthrax where livestock is the suspected or known source.
- When a case of anthrax is associated with an occupational exposure, Section 9 of *The Disease Control Regulations*[4] stipulates that the medical health officer (MHO) shall notify the director (as defined in *The Occupational Health and Safety Act, 1993*[5]). In order to fulfill this obligation, they must complete and send the form in Appendix L – Notification of Occupational Health and Safety within 14 days.

[4] http://www.qp.gov.sk.ca/documents/english/Regulations/Regulations/p37-1r11.pdf.
[5] http://www.qp.gov.sk.ca/documents/English/Statutes/Statutes/P37-1.pdf.

Exclusion

- Standard Precautions are considered adequate for patients with inhalational and gastrointestinal anthrax, since person-to-person transmission for these forms of disease has not been reported.
- Contact Precautions should be followed for patients who have draining cutaneous lesions and soiled dressings should be incinerated or autoclaved.

II. Contact

Contact Definition

- Human-to-human transmission of anthrax is very rare.
- Contacts include individuals who have had direct contact with cutaneous lesions of a human case, infected animals or exposure to a common source.
- Human contacts of cases do not require investigation unless a common exposure is suspected. (Manitoba Health, 2015).

Table 6. Exposure Definitions

Cutaneous	**High Risk** • Exposure of non-intact skin with contaminated animal products (hair, wool, blood, etc.) from an anthrax-infected animal.
	Low Risk • Exposure of intact skin with contaminated animal products (hair, wool, blood, etc.) from an anthrax-infected animal.
	No Risk • Appropriate use of personal protective equipment (PPE) while handling contaminated animals products of infected with anthrax (hair, wool, blood, etc.) from an anthrax-infected animal. • Human contacts of human anthrax cases.
Inhalation	• Inhalation of spores that have been aerosolized during the industrial processing of contaminated materials such as wool, hides or hair. • Indoor or outdoor anthrax attack, with spores aerosolized by a disseminating device or by handling of an agent-containing package (e.g., in processing of mail).
Gatrointestinal	• Consuming meat from an infected animal.
Injection	• Injecting or snorting drugs contaminated with anthrax spores.

Public Health Interventions

NOTE: Consultation with the Ministry of Agriculture may be required to assist in the assessment of exposures when an anthrax-positive animal has been identified.

Assessment

- Assess for symptoms.

Education

- All contacts of the animals and the environment should be provided with information on the disease, what symptoms to monitor for, and what to do if symptoms develop.

Symptom Monitoring

- *Active* - Individuals with high-risk cutaneous exposures should be monitored for development of cutaneous anthrax for three weeks (BCCDC, 2019).
  - Maintain continuing medical care of all suspicious skin lesions.
- *Passive* - Individuals with low-risk cutaneous exposures should self-monitor for development of cutaneous anthrax for three weeks; at the first sign of symptoms (itching, rash), contact public health and the health care provider.

Prophylaxis

- Chemoprophylaxis (ciprofloxacin or doxycycline [preferred] or amoxicillin [as an alternate if susceptible]) is recommended[6] for:
  - **high-risk cutaneous** exposures (10-14 days) (Heymann, 2022)
  - **gastrointestinal** exposures (10-14 days) (Heymann, 2022)
  - **inhalation exposures** (60 days) (Heymann, 2022; Bower et al, 2021)
- The indication for anthrax vaccine adsorbed (BioThrax) was expanded in November 2015 to include post-exposure use following inhalation exposure during an anthrax mass-casualty incident where medical treatment is unavailable or limited such as a *bioterrorism attack*. In these circumstances, Biothrax[7] may be given at 0, 2 and 4 weeks in addition to chemoprophylaxis. Refer to Tables 3 and 4 in the original article[6]. (Bower et al, 2019).

Referral

- Symptomatic contacts should be referred to their primary care provider for assessment.

Testing

- Symptomatic contacts should be tested based on clinical assessment of the practitioner.

[6] Use of Anthrax Vaccine in the United States: Recommendations of the Advisory Committee on Immunization Practices, 2019 | MMWR (cdc.gov). Antimicrobial choices and dosages are the same, regardless of exposure route. Post-exposure prophylaxis should start as soon as possible following exposure and ideally within 48 hours, because its effectiveness decreases with delay in administration. Vaccination is not recommended following either cutaneous or gastrointestinal exposure.

[7] Biothrax is only available through the NESS and must be requested by the Ministry of Health Office of the Chief Medical Health Officer.

III. Environment

The Saskatchewan Ministry of Agriculture has established a provincial Anthrax Response Plan to assist affected producers so that animal and public health are protected. Elements of the plan include:

- anthrax testing (either in lab or via a veterinarian conducting carcass side-testing);
- quarantining the affected pasture and exposed animals;
- investigating to determine the source of the anthrax and to trace animal movement on and off the farm in the risk period;
- providing information on anthrax prevention and management and oversight of proper carcass disposal, cleaning and disinfecting; and
- recommending treatment and vaccination of animals as indicated.

Anthrax is a federally reportable disease and more information from the Canadian Food Inspection Agency (CFIA) can be found at the following link: https://inspection.canada.ca/animal-health/terrestrial-animals/diseases/reportable/anthrax/eng/1330045348336/1330045807153

Prevention Measures

Refer to the Vector Borne and Zoonotic Diseases – Introduction and General Considerations section of the manual that highlights topics for client education that should be considered and provides further information on high-risk groups and activities.

Immunization

- Vaccine is not available for routine use in humans.
- BioThrax[8] (Anthrax Vaccine Adsorbed) is approved for active immunization for the prevention of disease caused by *Bacillus anthracis*, in individuals 18 through 65 years of age, whose occupation or other activities place them at risk of exposure, regardless of the route of exposure[9]. This vaccine is not publicly funded and may be available through occupational health programs if appropriate.
- The CFIA makes recommendations for vaccinating animals when anthrax is found in livestock.

[8] https://www.emergentbiosolutions.com/sites/default/files/inline-files/Product%20Monograph%20BioThrax%20%28EN%29.pdf (retrieved July 27, 2021)
[9] https://www.globenewswire.com/en/news-release/2018/12/17/1668306/33240/en/Emergent-BioSolutions-Receives-Health-Canada-Approval-of-BioThrax-Anthrax-Vaccine-Adsorbed.html

Education

- Transmission to humans is primarily through contact with infected animals; livestock owners should be aware of signs of Anthrax and must immediately notify the local veterinarian regional CFIA office if Anthrax is suspected. Animals suspected of dying from anthrax should not be opened or moved as this can facilitate contamination of the environment. Refer to the Ministry of Agriculture's Website for additional information: https://www.saskatchewan.ca/business/agriculture-natural-resources-and-industry/agribusiness-farmers-and-ranchers/livestock/animal-health-and-welfare/anthrax#:~:text=The%20Saskatchewan%20Ministry%20of%20Agriculture,anthrax%20cases%20to%20the%20CFIA
- All confirmed cases of anthrax must be reported to Ministry of Agriculture, Livestock Branch.
- Educate individuals who may be exposed to contaminated materials about the modes of transmission.

Infection Prevention and Control Measures

- In Saskatchewan, the main risk for human anthrax is from contact with infected animals.
- High-risk occupational exposure is typically found in industries where people are exposed to dead animals. Wool, hides, and meat are common sources for occupational exposure. Infection prevention and control measures are the responsibility of the workplace and may include measures within the hierarchy of controls (Elimination, Substitution, Engineering Controls, Administrative Controls and PPE). Examples include:
  - Control dust and properly ventilate work areas in hazardous industries.
  - Wearing protective clothing and having access to adequate facilities for washing and changing clothes after work;
  - Eating facilities in these high-risk workplaces must be located away from places of work.
- Thoroughly wash, disinfect, or sterilize hair, wool, and bone meal or other feed of animal origin prior to processing.
- Do not sell the hides of animals exposed to anthrax or use their carcasses as food or feed supplements.

Epidemic Measures

All cases of animal anthrax are reportable to the Office of the Provincial Chief Veterinary Officer and to the CFIA.

Revisions

Date	Change
April 25, 2023	Corrected section number from 4-50 to 4-20. Listed the preferred medications for chemoprophylaxis and directed users to the link where dosages is provided (page 10).
December 27, 2022	Provided clarity that consultation with MHO is required to assist in conducting risk assessment is needed before treating patients with Anthrasil. Added footnote to provide clarification of exposure risks for inhalation anthrax.
October 11, 2022	New

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Anthrax Data Collection Worksheet

Please complete **all** sections.

Panorama QA complete: ☐ **Yes** ☐ **No**
Initials:

Panorama Client ID: _____
Panorama Investigation ID: _____

A) CLIENT INFORMATION

LHN -> SUBJECT -> CLIENT DETAILS -> PERSONAL INFORMATION

Last Name:	First Name: and Middle Name:	Alternate Name (Goes by):
DOB: YYYY / MM / DD Age: _____	Health Card Province: _____ Health Card Number (PHN):	Preferred Communication Method: (specify - i.e. home phone, text): Email Address: ☐ Work ☐ Personal
Phone #: ☐ Primary Home: ☐ Mobile contact: ☐ Workplace:		
Place of Employment/School:	Gender: ☐ Male ☐ Female ☐ Other ☐ Unknown	
Alternate Contact: _____ Relationship: _____ Alt. Contact phone: _____	Address Type: ☐ No fixed ☐ Postal Address ☐ Primary Home ☐ Temporary ☐ Legal Land Description Mailing (Postal address): Street Address or FN Community (Primary Home): Address at time of infection if not the same:	

B) INVESTIGATION INFORMATION

LHN-> SUBJECT SUMMARY-> VECTOR-BORNE AND ZOONOTICS ENCOUNTER GROUP->CREATE INVESTIGATION

Disease Summary Classification: CASE:	**Date**	**Classification: CONTACT:**	**Date**	**LAB TEST INFORMATION:**
☐ Confirmed	YYYY / MMM / DD	☐ Contact	YYYY / MMM / DD	Date specimen collected: YYYY / MMM / DD
☐ Does Not Meet Case	YYYY / MMM / DD	☐ Not a Contact	YYYY / MMM / DD	
☐ Person Under Investigation	YYYY / MMM / DD	☐ Person Under Investigation	YYYY / MMM / DD	
☐ Probable	YYYY / MMM / DD			
☐ Suspect	YYYY / MMM / DD			

Disposition:
FOLLOW UP:

☐ In progress	YYYY / MMM / DD	☐ Complete	YYYY / MMM / DD
☐ Incomplete - Declined	YYYY / MMM / DD	☐ Not required	YYYY / MMM / DD
☐ Incomplete – Lost contact	YYYY / MMM / DD	☐ Referred – Out of province (Specify where)	YYYY / MMM / DD
☐ Incomplete – Unable to locate	YYYY / MMM / DD		

REPORTING NOTIFICATION Name of Attending Physician or Nurse:	Location:
Provider's Phone number:	Date Received (Public Health): YYYY / MMM / DD

Type of Reporting Source: ☐ Health Care Facility ☐ Lab Report ☐ Nurse Practitioner ☐ Physician ☐ Other_____

C) DISEASE EVENT HISTORY

INVESTIGATION->DISEASE SUMMARY (UPDATE)->DISEASE EVENT HISTORY

Site / Presentation: ☐ Cutaneous ☐ Gastrointestinal ☐ Inhalational ☐ Injection site ☐ Other

Saskatchewan

Anthrax Data Collection Worksheet

Please complete **all** sections

Panorama Client ID: _____
Panorama Investigation ID: _____

D) SIGNS & SYMPTOMS

INVESTIGATION->SIGNS & SYMPTOMS

Description	No	Yes – Date of onset	Description	No	Yes - Date of onset
Cellulitis		YYYY / MMM / DD	Meningitis		YYYY / MMM / DD
Chills		YYYY / MMM / DD	Pain - abdominal		YYYY / MMM / DD
Cough		YYYY / MMM / DD	Pain - chest		YYYY / MMM / DD
Cyanosis		YYYY / MMM / DD	Pain - cutaneous		YYYY / MMM / DD
Dyspnea - shortness of breath		YYYY / MMM / DD	Pharyngitis (sore throat)		YYYY / MMM / DD
Edema - around eschar		YYYY / MMM / DD	Pleural effusion		YYYY / MMM / DD
Edema - soft tissue		YYYY / MMM / DD	Pulmonary infiltrates		YYYY / MMM / DD
Eschar		YYYY / MMM / DD	Rash - papules		YYYY / MMM / DD
Fever		YYYY / MMM / DD	Rash - papules - pruritic		YYYY / MMM / DD
Gastrointestinal symptoms (nausea, vomiting, diarrhea, abdominal swelling)		YYYY / MMM / DD	Rash - vesicles		YYYY / MMM / DD
Infection - soft tissue		YYYY / MMM / DD	Respiratory distress		YYYY / MMM / DD
Lymphadenopathy - mediastinal		YYYY / MMM / DD	Sepsis		YYYY / MMM / DD
Malaise		YYYY / MMM / DD	Stridor		YYYY / MMM / DD
Necrotizing fasciitis		YYYY / MMM / DD			
Other Signs & Symptoms if applicable					

E) INCUBATION AND COMMUNICABILITY

INVESTIGATION->INCUBATION & COMMUNICABILITY

Incubation for Case:
Earliest Possible Exposure Date: YYYY / MMM / DD

Latest Possible Exposure Date: YYYY / MMM / DD

Exposure Calculation details:

F) RISK FACTORS

INVESTIGATION-> SUBJECT->RISK FACTORS

DESCRIPTION	YES	N – No NA – not asked U - Unknown	DESCRIPTION	YES	N – No NA – not asked U - Unknown
Animal Exposure - Farms (specify)	YYYY / MMM / DD		**Occupation** - Veterinarian or related worker	YYYY / MMM / DD	
Animal Exposure - Petting zoos/zoos/special events/other (specify)	YYYY / MMM / DD		**Substance Use** - Injection drug use (including steroids)	YYYY / MMM / DD	
Animal Exposure - Infected animal (specify)	YYYY / MMM / DD		**Travel** - Outside of Canada (specify)	YYYY / MMM / DD	
Occupation - Farmer	YYYY / MMM / DD		**Travel** - Outside of Saskatchewan, but within Canada (specify)	YYYY / MMM / DD	
Occupation - Other (specify)	YYYY / MMM / DD		**Travel** - Within Saskatchewan (Specify)	YYYY / MMM / DD	

G) MEDICATIONS

INVESTIGATION-> MEDICATIONS->MEDICATIONS SUMMARY

Medication ***(Panorama = Other Meds)*** : _____

Prescribed by:_____ Started on: YYYY / MMM / DD

H) INTERVENTIONS

INVESTIGATION->TREATMENT & INTERVENTIONS->INTERVENTION SUMMARY

Assessment:
☐ Assessed for contacts (individuals exposed to the same source)
YYYY / MM / DD
Investigator name

Immunization:
☐ Eligible Immunizations recommended YYYY / MM / DD
Investigator name

Communication:
☐ Letter (specify) YYYY/ MM /DD
☐ Other communication (specify) YYYY/ MM /DD
Investigator name

Other Investigation Findings
☐ Investigator Notes YYYY/ MM /DD
☐ See Document Management YYYY/ MM /DD

Anthrax Data Collection Worksheet

Please complete **all** sections

Panorama Client ID: _____
Panorama Investigation ID: _____

Contact Notification: ☐ Contact Notification/education YYYY/ MM /DD Investigator name	**Referral** Investigator name ☐ Consultation with MHO YYYY / MM / DD ☐ Saskatchewan Ministry of Agriculture YYYY/ MM /DD ☐ Saskatchewan Occupational Health and Safety YYYY/ MM /DD ☐ Infectious Disease Specialist YYYY/ MM /DD ☐ Primary Care Provider YYYY/ MM /DD
Education/counselling: ☐ Disease Information provided YYYY/ MM /DD ☐ Prevention/Control measures YYYY/ MM /DD Investigator name	
General ☐ Disease Information/Prevention and Control YYYY/ MM /DD Investigator name	**Symptom Monitoring** Investigator name ☐ Symptom monitoring indirect, active YYYY/ MM /DD ☐ Symptom monitoring indirect, passive YYYY/ MM /DD

Date	Intervention subtype	Comments	Next follow-up Date	Initials
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	
YYYY / MM / DD			YYYY / MM / DD	

I) OUTCOMES (if applicable)

INVESTIGATION->OUTCOMES

☐ Not yet recovered/recovering
☐ Recovered
☐ Fatal
☐ ICU/intensive medical care:
☐ Unknown _____
☐ Sequelae
☐ Hospitalization
☐ Intubation
☐ Other

Cause of Death: (if Fatal was selected) _____

J) EXPOSURES - CONSIDER THE USE OF PROTECTIVE MEASURES (EG. PPE) IN DETERMING THE RISK OF EXPOSURE

Acquisition Event

INVESTIGATION-> EXPOSURE SUMMARY-> ACQUISITION EVENT

Exposure Name (use the most appropriate and most specific Key Descriptor check box as the name)	Location City/Town	Setting type (Consider the following settings for TE; if >1 select "multiple settings" in Panorama)	Start/End Date	Most likely source
☐ Farm ☐ Animal Processing Plant		☐ Agricultural Setting ☐ Workplace	YYYY / MM / DD to YYYY / MM / DD	☐
Name of Workplace		☐ Workplace	YYYY / MM / DD to YYYY / MM / DD	☐
City, Province OR City, Country		☐ Travel		☐

Initial Report completed by:		**Date initial report completed:** YYYY / MMM / DD