

ANTHRAX

Disease Overview

A rare disease in Canada, anthrax is an acute bacterial disease caused by the spores of *Bacillus anthracis*. Primarily a disease of herbivores, man is an incidental host. Most naturally acquired cases are from skin lesions. In industrialized countries, anthrax is a sporadic infection and is usually an occupational hazard of workers handling infected animals in endemic areas and of workers who process hides, wool, hair (especially from goats), bone and bone products imported from endemic regions. Human anthrax is endemic in some agricultural regions of the world such as Africa, Asia, South and Central America, and southern and eastern Europe.

Symptoms

Symptoms depend on the entry route of bacteria into the body. The infection can occur in three forms.

- Cutaneous: skin exposures are the most common. The site of bacteria entry is initially itchy, followed by a skin lesion (develops into a painless black eschar), scabbing, and swelling.
- Inhalational: inhalational exposure results in initially mild pulmonary symptoms that include a cough and fever. More serious complications, pneumonia and pleural effusion, can develop and may lead to septic shock and death.
- Intestinal: Exposure through ingestion produces gastrointestinal symptoms that include oropharyngeal or gastrointestinal lesions, nausea and vomiting. Serious complications, for example gastro-intestinal necrotic ulcers, can also develop.

Reservoir

Infected herbivores (cattle, goats) or their products. Contaminated soil and vegetation can also be a source where spores may remain dormant.

Mode of Transmission

Usually direct contact with tissues or any parts from infected animals or animal products. Less common transmission is eating inadequately cooked meat or through respiratory exposure to spores in risky industrialization processes.

Person to person transmission is very rare and associated only with the cutaneous form.

Incubation period

Cutaneous- usually from 5 to 7 days (range 1-12), although incubation periods of up to 60 days are possible.

Inhalation- usually ranges from 1-43 days but may be up to 60 days.

Intestinal- 1-6 days.

Period of Communicability

Person to person transmission has only been reported for cutaneous anthrax and direct contact with skin lesions. Articles and soil contaminated with spores may remain infective for several years and may indirectly transmit the infection.

Risk Factors

Increased risk for acquiring/severe illness:

- Occupational exposure
- Travel to endemic areas
- Intravenous drug use

Surveillance Case Definition

Confirmed case

Clinical illness with laboratory confirmation of infection:

- Isolation of *Bacillus anthracis* in a clinical specimen

OR

- Demonstration of *B. anthracis* in a clinical specimen by immunofluorescence

Probable case

Suspected case with detection of *B. anthracis* DNA

Suspect Case

Clinical illness in a person who is epidemiologically linked to a confirmed or suspected animal case or contaminated animal product.

Cutaneous clinical illness is characterized by the appearance of small, painless but often pruritic papules. As the papule enlarges, it becomes vesicular and, within two days, ulcerates to form a distinctive black eschar with surrounding edema.

Inhalation 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 clinical illness is characterized by abdominal pain, fever and signs of septicemia.

Diagnosis and Laboratory Guidelines

Laboratory diagnosis for anthrax is based on culture, with a PCR confirmation test. The appropriate clinical specimen varies according to the form of the disease. Please contact your regional laboratory for more information on specimen collection and transport. Bacterial culture can be done in your regional laboratory, while the confirmation PCR is usually done at the National Microbiology Laboratory in Winnipeg.

Reporting

Per Policy 2.2 Disease and Event notification to PHNB and Disease and Event Reporting section

- CD Urgent Notification. For all confirmed cases, a CD Urgent Notification form should be completed and sent to PHNB.
- Routine surveillance (RDSS) for all confirmed cases.

Case Management

Education

Case or relevant caregiver should be informed about:

- Nature of infection, length of communicable period, mode of transmission and disease ecology
- Hand washing
- Food safety
- Animal handling

Investigation

In addition to relevant clinical details, investigate cases to determine the source of infection and whether other individuals may have been exposed to an identified or potential source. If the source is identified, take appropriate actions to ensure there is no ongoing risk of exposure to animals or humans.

Consider history of exposure to potentially infected animals or animal products, including animal hides. Inquire about travel history to endemic areas and occupational history.

If a bioterrorist source is suspected, refer to Management of Special Situations section for protocols for follow up.

Exclusion/Social Distancing

For cases of cutaneous anthrax with open lesions, secretion precautions should apply. Lesions should remain covered by adequate dressings at all times.

Treatment

Anthrax is treatable with antibiotics. Consultation with an infectious disease specialist is important.

Immunization

Not applicable.

Contact Management

Education

Per case management

Investigation

Contacts include those who were exposed to the same common source as the case and who were not wearing appropriate protective equipment. Contacts should be informed of symptoms and instructed to notify Public Health and seek immediate medical attention if symptoms appear.

Exclusion/Social Distancing

Not applicable

Prophylaxis

Contacts include those who were exposed to the same common source as the case, those who were not wearing appropriate protective equipment, and those who may be at risk of infection. Post exposure prophylaxis may be required depending on the type of exposure (for example, inhalation or ingestion). Consultation with the RMOH is required. Guidance from an infectious disease specialist is important.

Outbreak Management

Activate the local outbreak plan when an outbreak is declared.

Management of Special Situations

Potential Agents of Bioterrorism

Consider bioterrorism for single confirmed case of inhalational anthrax, for single confirmed case of cutaneous anthrax with no contact with animals or animal hides, or if two or more cases are linked in time and place.

If bioterrorism is suspected:

- Consult with the RMOH IMMEDIATELY
- Follow procedures as indicated in the Provincial Health Suspicious Packages Protocol to determine risk to public health.
- Ensure that relevant agencies and partners, including PHNB, local law enforcement and others (i.e., HAZMAT, local health care institutions and providers) have been informed.
- Establish if any actions to prevent further human or animal exposures are necessary.
- Determine if environmental or food samples need to be collected and analyzed.

If a threat has been assessed, the RMOH will determine if chemoprophylaxis should be considered for those that were exposed and not wearing adequate personal protective equipment, depending on the nature of the exposure. Individuals should be informed of symptoms and instructed to notify Public Health and seek immediate medical attention if symptoms appear. Refer to the fact sheets and forms included with this guideline.

For reports of potential exposure to suspicious packages incidents, contact the local law enforcement and follow protocols included with this guideline.