



Public Health
Agency of Canada

Agence de santé
publique du Canada



Bacterial & Viral AGENTS OF CONCERN

Canada

Anthrax

General Information

Prevalence in Canada:

No human disease in Canada (sporadic in animals)

Systems Affected:

- Skin or cutaneous (most common)
- Respiratory tract or inhalation (rare)
- Gastrointestinal (GI) tract (rare)
- Oropharyngeal form (least common)

Transmission

Cutaneous:

Direct skin contact with spores through a cut or abrasion; in nature, contact with infected animals or animal products (usually related to occupational exposure)

Inhalation:

Inhalation of aerosolized spores

GI:

Consumption of infected meat or dairy products

No person-to-person transmission of inhalation or GI anthrax

Incubation Period, Typical Signs & Symptoms

Cutaneous:

Incubation period up to 1 day. Small sore that develops into a blister then a skin ulcer with a black area in the centre; no pain.

Inhalation:

Incubation period usually less than 1 week (may be prolonged for up to 2 months). Cold or flu symptoms can include sore throat, mild fever and muscle ache; later symptoms include cough, chest discomfort, shortness of breath, lethargy, muscle aches.

GI:

Incubation period usually 1 to 7 days. Nausea, loss of appetite, bloody diarrhea and fever, followed by severe abdominal pain.

Cutaneous Anthrax - Vesicle Development

CDC Image



Cutaneous anthrax lesion on the volar surface of the right forearm.

CDC Image



Cutaneous anthrax lesion on the neck.

Potential for Weaponization

Most likely bioterrorism event involves aerosolized spores.



(*Bacillus anthracis*)

Precautions/Personal Protective Equipment

Precautions:

Standard contact precautions. Avoid direct contact with wound or wound drainage.

Recommended Personal Protective Equipment:

Air Purifying Respirator (APR). Personal Hygiene. Gloves.

Recommended Specimens

Cutaneous:

Vesicle swabs or aspirates; eschar swabs; punch biopsy tissue

Inhalation:

Sputum; tracheal aspirates; bronchial washes

GI:

Stool; rectal swab

Recommended Shipping Guidelines

Clinical Specimens (ie. tissue, eye swabs, stool etc.):

Ship in a 1A container. Label as either *Diagnostic Specimen* or *Clinical Specimen*

Environmental Specimens (ie. dirt, powder etc.):

Ship in a 1A container. Label as *Test sample*

Culture:

Ship in a 1A container. Label as an *Infectious Substance affecting Humans* with a Shippers' Declaration

Laboratory Information

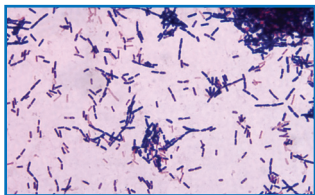
Encapsulated, aerobic, gram-positive, spore-forming, non-motile, rod-shaped (bacillus) bacterium.

Key Laboratory Findings

Gram Stain: large gram-positive rod; may contain oval, central to subterminal spores.

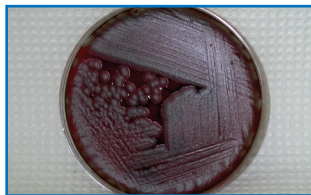
Colony: (24h, Sheep Blood Agar, air) good growth, large grey "ground glass", no haemolysis.

NML Image



B. anthracis TS, 24h, SBA, gram

NML Image



B. anthracis, SBA, lacks Beta haemolysis

Referral Centre

Tier 2 Laboratory





Brucella

General Information

Any of the species may cause infection. *B. abortus*, *B. melitensis*, *B. ovis*, and *B. suis* are the most common, with *B. canis* rarely causing disease in humans.

Prevalence in Canada:

Rare human disease in Canada.

Systems Affected:

Severe infections of the central nervous system or lining of the heart may occur.

Transmission

Zoonotic. Commonly transmitted through abrasions of the skin from handling infected mammals or consumption of unpasteurized dairy products.

No person-to-person transmission.

Incubation Period, Typical Signs & Symptoms

Acute form (<8 weeks from illness onset): nonspecific and “flu-like” symptoms including fever, sweats, malaise, anorexia, headache, myalgia, and back pain.

Undulant form (<1 year from illness onset): symptoms include undulant fevers, arthritis, and epididymo-orchitis in males. Neurologic symptoms may occur acutely in up to 5% of cases.

Chronic form (>1 year from onset), symptoms may include chronic fatigue syndrome, depression, and arthritis.

Potential for Weaponization

Highly infectious via aerosolization, inhalation of 10 to 100 bacteria enough to cause disease.



(*Brucella sp.*)

Precautions/Personal Protective Equipment

Precautions:

Handling cultures warrants Biosafety Level 3 precautions.

Recommended Personal Protective Equipment:

Air Purifying Respirator (APR). Personal Hygiene.
Gloves.

Recommended Specimens

Blood culture;
Bone marrow;
Spleen.

Recommended Shipping Guidelines

Clinical Specimens (ie. tissue, eye swabs, stool etc.):

Ship in a 1A container. Label as either *Diagnostic Specimen* or *Clinical Specimen*

Environmental Specimens (ie. dirt, powder etc.):

Ship in a 1A container. Label as *Test sample*

Culture:

Ship in a 1A container. Label as an *Infectious Substance affecting Humans* with a Shippers' Declaration

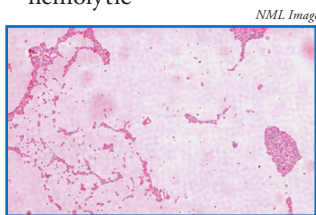
Laboratory Information

Non motile, catalase positive, oxidase variable, urea positive (rapidly 15-20 min or in 24 h – species specific).

Key Laboratory Findings:

Gram Stain: “tiny” Gram-negative cocci/coccobacilli

Colony: (Sheep Blood Agar, air or CO₂) moderate growth at 72 h; small, raised, glistening, white to cream and non-hemolytic



Brucella Gram stain:
TINY Gram neg coccobacilli



Brucella spp. Colony Characteristics:
Fastidious, usually not visible at 24h. Pinpoint, smooth, entire translucent, non-hemolytic at 48h.

Referral Centre

Tier 2 Laboratory





Tularemia

General Information

Hardy, non-spore-forming organism that survives for weeks at low temperatures in water, moist soil, hay, straw, and decaying animal carcasses

Prevalence in Canada:

Rare human disease in Canada

Systems Affected:

- Ulceroglandular infection
- Glandular infection
- Oculoglandular infection
- Oropharyngeal infection
- Pneumonic Infection

Transmission

Bite of infected insects (most commonly, ticks and deerflies);
Handling infected sick or dead animals;
Eating or drinking contaminated food or water, or by inhaling airborne bacteria.

No person-to-person transmission.

Incubation Period, Typical Signs & Symptoms



Incubation Period is typically 3 to 5 days, but can range from 1 to 14 days. Typical Signs and symptoms include: sudden fever, chills, headaches, progressive weakness, joint pain.

Typhoidal: occurs mostly after inhalation of infectious aerosols therefore this is the most likely form of the disease to be seen after a BT attack. Also known as septicemic tularemia. Non-specific syndrome with fever, headache, malaise, and weight loss. Unlike other forms of tularemia, there are no swollen lymph nodes. Pneumonia may be present as well. Severe atypical pneumonia with a non productive cough.

Ulceroglandular: most often acquired, inoculation of skin or mucous membrane, by blood or tissue fluids of infected animals. Swollen lymph nodes, fever, chills, headache, malaise and possibly a cutaneous ulcer. Pneumonia may occur.

CDC Image



CDC Image



Tularemia is caused by the bacterium, *Francisella tularensis*. Symptoms vary depending on how the person was exposed to the disease, and as is shown here, can include skin ulcers.

Potential for Weaponization

Aerosol release would likely have the greatest adverse medical and public health consequences.

Small infective dose (10-50 organisms) makes it an extremely effective biological weapon



(*Francisella tularensis*)

Precautions/Personal Protective Equipment

Precautions:

Isolation is not recommended for tularemia patients.
Standard precautions are recommended.

Recommended Personal Protective Equipment:

Air Purifying Respirator (APR). Personal Hygiene. Gloves.

Recommended Specimens

Ulcer swab;
eye swab;
respiratory site specimens;
liver culture;
blood culture.

Recommended Shipping Guidelines

Clinical Specimens (ie. tissue, eye swabs, stool etc.):

Ship in a 1A container. Label as either *Diagnostic Specimen* or *Clinical Specimen*

Environmental Specimens (ie. dirt, powder etc.):

Ship in a 1A container. Label as *Test sample*

Culture:

Ship in a 1A container. Label as an *Infectious Substance affecting Humans* with a Shippers' Declaration

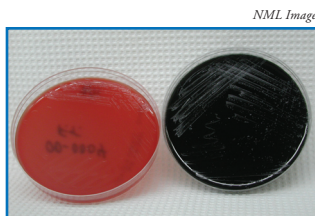
Laboratory Information

Small, nonmotile, aerobic, catalase negative or weak positive, oxidase negative, beta lactamase positive but not reactive in usual biochemical tests, gram-negative coccobacillus

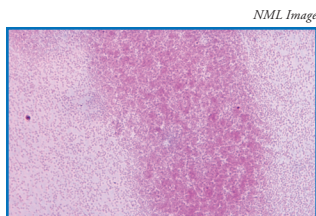
Key Laboratory Findings:

Gram Stain: tiny, poorly staining gram-negative cocci / coccobacilli

Colony: (Sheep Blood Agar, air or CO₂ - may grow poorly or not at all; better on cysteine-containing media; grows 48-72h+; opaque, raised, small



F. tularensis: poor growth on SBA. Better on BCYE with cysteine, other cysteine enriched agars.



F. tularensis, 24h, SBA, Gram stain

Referral Centre

Tier 2 Laboratory



Plague

General Information

Prevalence in Canada:

No confirmed human disease

Systems Affected:

Bubonic – lymph nodes (most common)

Septicemic – blood

Pneumonic – lungs (rarest)

Transmission

Bubonic: animal to animal and from animal to human by the bites of infective fleas; exposure to infected material through break in skin.

Pneumonic: close contact; inhaling infected droplets expelled by coughing (by a person or animal)

Incubation Period, Typical Signs & Symptoms

Bubonic: Incubation period 2 to 6 days. Symptoms include enlarged, tender lymph nodes; fever; chills; malaise; headache.

Septicemic: fever, chills, malaise, headache, abdominal pain, shock and bleeding into skin and other organs

Pneumonic: Incubation period 1 to 3 days. Symptoms include fever; chills; cough; bloody sputum and difficulty breathing; rapid shock and death within 24 hours if not treated early



After the incubation period of 2-6 days, symptoms of the plague appear including severe malaise, headache, shaking chills, fever, and pain and swelling, or adenopathy, in the affected regional lymph nodes, also known as buboes.

Potential for Weaponization

Pneumonic plague is the most likely form following an intentional release of aerosolized agent in a bioterror event.





(*Yersinia pestis*)

Precautions/Personal Protective Equipment

Precautions:

Isolate all infected individuals; standard precautions for exposure to bubonic plague; droplet precautions for exposure to pneumonic plague

Heat and exposure to sunlight renders bacteria harmless

Disinfectant: 1:10 dilution of household bleach, contact time 10 min, followed by wash with 70% alcohol; 70% ethanol; 2% glutaraldehyde; 5% formalin

Recommended Personal Protective Equipment:

Air Purifying Respirator (APR). Personal Hygiene. Gloves.

Recommended Specimens

Bubonic: Bubo aspirate, liver, blood

Septicemic: Blood

Pneumonic: sputum, tracheal aspirates, bronchial washings, blood

Post mortem: lymph and lung tissue, bone marrow

Recommended Shipping Guidelines

Clinical Specimens (ie. tissue, eye swabs, stool etc.):

Ship in a 1A container. Label as either *Diagnostic Specimen* or *Clinical Specimen*

Environmental Specimens (ie. dirt, powder etc.):

Ship in a 1A container. Label as *Test sample*

Culture:

Ship in a 1A container. Label as an *Infectious Substance affecting Humans* with a Shippers' Declaration

Laboratory Information

Rod-shaped, non-motile, non-sporulating, gram-negative, catalase positive, oxidase positive, urea negative, bipolar staining, facultative anaerobic bacterium.

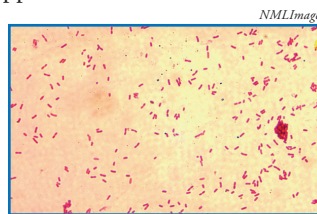
Key Laboratory Findings:

Gram Stain: Gram-negative rod, may see “bipolar forms”

Colony: Sheep Blood Agar, 37°C (may grow better at 28°C) – pinpoint, grey-white, translucent at 24 hours; moderate/good growth, grey-white yellowish at 48 hours; older colonies have fried egg appearance.



Y. pestis. Note adherent colony



Y. pestis, 24h, SBA gram stain

Referral Centre

Tier 2 Laboratory





Ricin

General Information

Prevalence in Canada:

Castor beans can be found growing in Canada.

Systems Affected:

Gastrointestinal

Respiratory

Cutaneous

Transmission

Gastrointestinal: contaminated water or food.

Respiratory: a fine powder or mist.

Cutaneous: liquid or pellets.

No person-to-person transmission

Incubation Period, Typical Signs & Symptoms

Gastrointestinal: Incubation period less than 10 hours.

Symptoms include persistent vomiting, voluminous diarrhea (bloody or non-bloody).

Respiratory: Symptoms include fever, chest tightness, cough, dyspnea, nausea, arthralgia, diaphoresis, pulmonary edema and hemorrhage, hypotension, respiratory failure, death within 36-72 hours

Cutaneous: Symptoms include flu-like symptoms, fatigue, myalgia

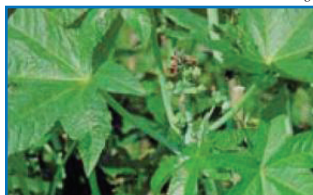
Injection: Immediate pain; weakness within 5 hours; fever; vomiting; shock; multi-organ failure; death in 3 days.

CDC Image



Castor beans

CDC Image



Castor bean plant.

Potential for Weaponization

Can be prepared in a liquid, crystalline, or dry powder form. Is water soluble, odorless, tasteless, and stable under ambient conditions.

Inhalation and intravenous injection are the most lethal routes. Not well absorbed orally or cutaneously.

Would need to be aerosolized, added to food, beverage or consumer products.





(*Ricinus Communis*)

Precautions/Personal Protective Equipment

Precautions:

Cut away/remove all suspected contaminated clothing; wash off obvious contamination with soap and copious amounts of water; clean environmental surfaces with soap and water or 0.1% sodium hypochlorite solution.

Recommended Personal Protective Equipment:

Air Purifying Respirator (APR). Personal Hygiene. Gloves.

Recommended Specimens

Early Exposure:

Serum; respiratory secretions; nasal swabs

Post-Mortem:

Tissues; spleen; lung; kidney; stool .

Recommended Shipping Guidelines

Ship in a 1A container. Label as *Toxic 6.1*.



Laboratory Information

Toxin derived from castor beans. Castor bean plants are found world-wide. Diagnosis usually made based on clinical signs and symptoms.

Available in Canada:

RT-PCR detects castor bean DNA.

Referral Centre

National Microbiology Laboratory



Botulinum Toxin

General Information

Prevalence in Canada:

Small number of cases occur in Canada annually

Systems Affected:

Gastrointestinal
Respiratory
Cutaneous

Transmission

Consumption of contaminated raw, or inadequately sterilized foodstuffs.

Can acquire through direct contact.

Inhalational botulism does not naturally occur.

No person-to-person transmission

Incubation Period, Typical Signs & Symptoms

Incubation period is 1 to 6 days

Symptoms include dry mouth; double vision; droopy eyelids; dilated pupils; progressive descending muscle weakness and paralysis; respiratory weakness and ultimately death.



CDC Image

Wound botulism involvement of compound fracture of right arm.

Potential for Weaponization

Inhalational botulism is associated with inhalation of aerosolized neurotoxin.

Bioterror event must be considered if multiple cases.

Possibly used to sabotage food supplies.



(*Clostridium botulinum*)

Precautions/Personal Protective Equipment

Precautions:

Disinfectant: 1:10 dilution of household bleach, contact time 30 min.

Recommended Personal Protective Equipment:

Air Purifying Respirator (APR). Personal Hygiene. Gloves.

Recommended Specimens

Stool;
gastric contents;
vomitus; serum;
suspect foods.
wound tissue;
nasal swabs;
respiratory secretions (early exposure).

Recommended Shipping Guidelines

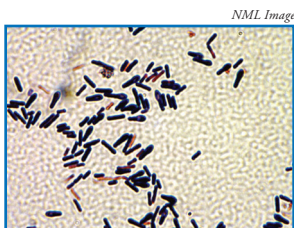
Ship in a 1A container. Label as *Toxic 6.1*.



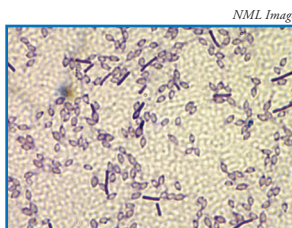
Laboratory Information

Toxin derived from *Clostridium botulinum*.

Toxin testing - mouse assay still Gold Standard (available at the Botulinum Reference Centre - Ottawa)



C. botulinum toxin type A gram stain 1000x
48 hour culture.



C. botulinum toxin type A gram stain 1000x
96 hour culture.

Referral Centre

Send specimens to Botulinum Reference Centre (Ottawa) for toxin assay.





SEB

General Information

Pyrogenic toxin that commonly causes food poisoning in humans . This toxin causes a markedly different clinical syndrome when inhaled than it characteristically produces when ingested.

Prevalence in Canada:

Small number of cases occur in Canada annually

Systems Affected:

Aerosol - respiratory and gastrointestina

Foodborne - Gastrointestinal

Transmission

Ingestion

Inhalational

No person-to-person transmission



Incubation Period, Typical Signs & Symptoms

Incubation period is 3-12 hours after aerosol exposure.

Symptoms include sudden onset of fever; chills; headache; myalgia; and nonproductive cough.

Some may develop shortness of breath and retrosternal chest pain.

Fever may last 2-5 days, cough may persist for up to 4 weeks.

(May also present with nausea, vomiting, and diarrhea if toxin swallowed.)

Potential for Weaponization

Most likely aerosolized but could be used to contaminate food supplies or small volume water supplies.





(*Staphylococcus Enterotoxin B*)

Precautions/Personal Protective Equipment

Precautions:

Standard precautions; hypochlorite 0.5% for 10-15 minutes and/or soap and water. Destroy any food that may have been contaminated

Recommended Personal Protective Equipment:

Air Purifying Respirator (APR). Personal Hygiene. Gloves.

Recommended Specimens

Early Exposure:

Blood;
urine;
nasal swabs;
respiratory secretions.

Post-Mortem:

Tissue;
lungs;
kidneys.



Recommended Shipping Guidelines

Ship in a 1A container. Label as *Toxic 6.1*.

Laboratory Information

An exotoxin produced by *Staphylococcus aureus*. Commonly associated with food poisoning outbreaks.

Key Laboratory Findings:

Antigen detection on environmental and clinical samples.
PCR useful for detection of bacteria specific DNA in environmental samples.

Available in Canada:

Time-resolved fluorescence.

Referral Centre

National Microbiology Laboratory





Small Pox

General Information

The acute clinical symptoms of smallpox resemble other acute viral illnesses, such as influenza, beginning with a 2-4 day non-specific prodrome of fever and myalgias before rash onset. Several clinical features can help clinicians differentiate varicella (chickenpox) from smallpox. The rash of varicella is most prominent on the trunk and develops in successive groups of lesions over several days, resulting in lesions in various stages of development and resolution. In comparison, the vesicular/pustular rash of smallpox is typically most prominent on the face and extremities, and lesions develop at the same time.

Prevalence in Canada:

This disease was eradicated in 1980. There have been no naturally occurring cases since the disease was declared eradicated. The discovery of a single suspected case of smallpox must be treated as an international health emergency and be brought immediately to the attention of national officials through local and provincial health authorities.

Systems Affected:

Primarily infects skin and mucous membranes.
Causes focal cell death at those sites.
Organism death from inflammatory response and its complications.

Transmission

Smallpox normally spreads from contact with infected persons. Generally, direct and fairly prolonged face-to-face contact is required to spread smallpox from one person to another. Smallpox also can be spread through direct contact with infected bodily fluids or contaminated objects such as bedding or clothing. Indirect spread is less common. Rarely, smallpox has been spread by virus carried in the air in enclosed settings such as buildings, buses, and trains. Smallpox is not known to be transmitted by insects or animals.

Incubation Period, Typical Signs & Symptoms

High fever, head and body aches, and sometimes vomiting.
A rash follows that spreads and progresses to raised bumps and pus-filled blisters that crust, scab, and fall off after about three weeks, leaving a pitted scar.
After exposure, it takes between 7 and 17 days for symptoms of smallpox to appear (average incubation time is 12 to 14 days). During this time, the infected person feels fine and is not contagious.

Potential for Weaponization

Successful use of contaminated objects. Reports that Russia has successfully weaponized smallpox for use in bombs and inter-continental ballistic missiles.





(*Variola major*)

Precautions/Personal Protective Equipment

Precautions:

Specimens should be collected by someone who has recently been vaccinated (or is vaccinated that day) and who wears gloves and a mask.

Recommended Personal Protective Equipment:

Level A suits with self contained breathing apparatus.

Recommended Specimens

Vesicular fluid;
Pustular fluid;
Frozen autopsy or biopsy tissue.

Recommended Shipping Guidelines

Any specimen (clinical, environmental and culture) must be shipped in a 1A container. Label as an *Infectious Substance affecting Humans* with a Shippers' Declaration. Emergency Response Assistance Plan (ERAP) should be initiated.



Laboratory Information



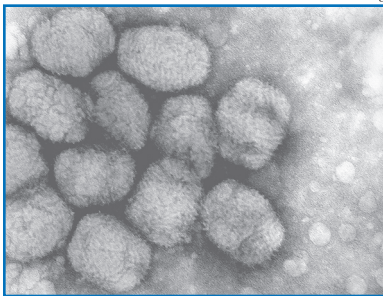
Key Laboratory Findings:

Characteristic brick shaped structure (diameter 200 nm) as seen using electron microscopy.

Available in Canada:

RT-PCR;
electron Microscope;
culture;
sequencing.

CDC Image



A transmission electron micrograph of smallpox viruses.

Referral Centre

Invoke Emergency Response Assistance Plan (ERAP).
Send specimens to NML (Winnipeg) for study/containment in CL4.





VHF

General Information

Viral hemorrhagic fevers are a group of febrile illnesses caused by several distinct families of viruses, all of which are enveloped and have RNA genomes. These groups include Ebola and Marburg viruses; Lassa fever virus, and the New World arenaviruses (Guaranito, Machupo, Junin, Sabia); and Rift Valley fever and Crimean Congo hemorrhagic fever viruses. Although some types cause relatively mild illnesses, many of these viruses can cause severe, life-threatening disease.

Systems Affected:

Severe illness is characterized by vascular damage and increased permeability, multiorgan failure, and shock.

Transmission

Their survival is dependant on an animal or insect host (natural reservoir).

Humans are not a natural reservoir.

Humans are infected when they come into contact with urine, fecal matter, saliva, or other body excretions from infected hosts.

With some viruses, humans can transmit the virus to one another through close contact or through body fluids; can occur indirectly with objects contaminated with infected body fluids

Incubation Period, Typical Signs & Symptoms

Early signs typically include fever, hypotension, relative bradycardia, tachypnea, conjunctivitis, and pharyngitis. Most diseases are associated with cutaneous flushing or a skin rash, but the specific characteristics of the rash vary with each disease. Later, patients may show signs of progressive hemorrhagic diathesis, such as petechiae, mucous membrane and conjunctival hemorrhage; hematuria; hematemesis; and melena. Disseminated intravascular coagulation and circulatory shock may ensue. Central nervous system dysfunction may be present and manifested by delirium, convulsions, cerebellar signs, or coma and imparts a poor prognosis.

Identify suspected index case using these clinical criteria:* temperature 101°F (38.3°C) of <3 weeks' duration; severe illness, and no predisposing factors for hemorrhagic manifestations; and at least 2 of the following hemorrhagic symptoms: hemorrhagic or purple rash, epistaxis, hematemesis, hemoptysis, blood in stools, other, and no established alternative diagnosis.



(*Viral Hemorrhagic Fever*)

Potential for Weaponization

Hemorrhagic fever viruses have been weaponized by the former Soviet Union, Russia, and the United States. There are reports that yellow fever may have been weaponized by North Korea. The former Soviet Union and Russia produced large quantities of Marburg, Ebola, Lassa, and New World arenaviruses (specifically, Junin and Machupo) until 1992. Soviet Union researchers quantified the aerosol infectivity of Marburg virus for monkeys, determining that no more than a few virions are required to cause infection. Yellow fever and Rift Valley fever viruses were developed as weapons by the US offensive biological weapons program prior to its termination in 1969. The Japanese terrorist cult Aum Shinrikyo unsuccessfully attempted to obtain Ebola virus as part of an effort to create biological weapons.

Precautions/Personal Protective Equipment

Precautions:

Avoid close physical contact with infected people and body fluids; isolate infected individuals.

Recommended Personal Protective Equipment:

Level A suits with self contained breathing apparatus.

Recommended Specimens

Ante-mortem: biopsy material of the lung, bone marrow aspirate or blood clot.

Post-mortem: spleen, lung, kidney, liver, lymph nodes, heart, pancreas, pituitary, brain or heart blood.

Recommended Shipping Guidelines

Any specimen (clinical, environmental and culture) must be shipped in a 1A container. Label as an *Infectious Substance affecting Humans* with a Shippers' Declaration. Emergency Response Assistance Plan (ERAP) should be initiated.

Laboratory Information

Key Laboratory Findings:

A high index of suspicion will be required to diagnose VHF among persons exposed to a covert bioterrorist attack. In naturally occurring cases, patients are likely to have risk factors such as travel to Africa or Asia, handling of animal carcasses, contact with sick animals or people, or arthropod bites within 21 days of onset of symptoms. No such risk factors would be associated with a bioterrorist attack.

Available in Canada:

Culture; RT-PCR; and ELISA for antigen detection and antibody detection.

Referral Centre

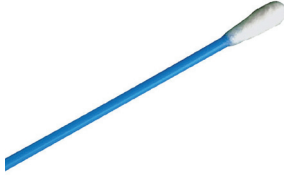
Invoke Emergency Response Assistance Plan (ERAP). Send specimens to Tier 3 facility for study/containment in CL4.



Environmental Sampling

Recommended Sampling Supplies

Recommended swabs: Dacron, cotton or macro foam (preferably non wood shaft)



Dacron swab with plastic shaft.

Recommended wipes: Rayon gauze



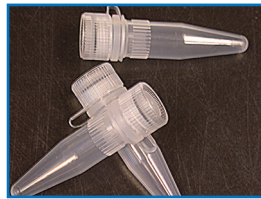
Rayon gauze.

Recommended wetting agents: Sterile phosphate buffered saline (PBS), sterile saline, sterile distilled water, sterile media (viral agents)

Recommended containers for swabs and wipes: Falcon tubes (15ml or 50 ml), microcentrifuge tubes with O ring (2 ml)



Falcon tubes (15 ml and 50 ml)



Microcentrifuge tubes with O ring.



General Comments

Use moistened swabs or wipes.

After sampling place swabs or wipes in a properly labelled sterile container.

For larger samples (i.e. soil, powder): place directly into a properly labelled sterile container.

If sample is going to required more than one type of analysis aliquot it, if possible, into more than one container.

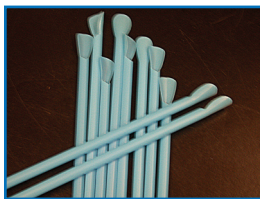
Change outer pair of gloves between each sample to prevent cross contamination.

For each event, provide the lab with an aliquot of wetting agent used. Make sure it comes from the same source as used for the samples.

Use a new source of wetting agent for each scenario.

Bag each sample individually. Label outside of bag with appropriate information. Decontaminate the outside of the bag prior to exiting contaminated area.

NOTE: The use of these sampling supplies are preferred, but, due to varying circumstances, alternate supplies may be used and favourable results still obtained.



Disposable spatulas.





Contacts

Tier 2 Laboratories

ProvLab Alberta

8440-112 Street NW
Edmonton, Alberta T6G 2J2
Tel: 780-407-8911 / Fax: 780-407-8984
<http://www2.provlab.ab.ca/bugs/>

British Columbia Centre for Disease Control, Laboratory Services

655 12th Ave W
Vancouver, BC V5Z 4R4
Tel: 604-660-6030 / Fax: 604-660-6073
<http://www.bccdc.org/division.php?item=2>

Central Public Health Laboratory

81 Resources Road
Etobicoke, ON M9P 3T1
Tel: 416-235-6132 / Fax: 416-235-6103
Toll Free: 416-235-6103

Institut national de santé publique du Québec Laboratoire de la santé publique du Québec Ministère des affaires sociales

20045, chemin Sainte-Marie Ouest
Sainte-Anne-de-Bellevue, PQ H9X 3R5
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<http://www.publichealthlab.com>

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<http://www.cdha.nshealth.ca/programsandservices/microbiology/index.html>

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Bioterrorism Response: 204-795-9269

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Websites of Interest

<http://www.bt.cdc.gov>

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5308a1.htm>

<http://www.usamriid.army.mil/education/defensetox.htm>

<http://usamriid.detrick.army.mil/education/bluebook.htm>





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Royal Canadian Mounted Police Gendarmerie royale du Canada

