

British Columbia Ebola Virus Disease (EVD) Case and Contact Investigation and Management Guidelines

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Introduction

The purpose of this guideline is to provide B.C. public health practitioners with evidence-based guidance to identify and manage people who have been in contact with confirmed¹ Ebola virus disease (EVD) cases.²

Contacts of confirmed EVD cases should be systematically identified and monitored for 21 days from their last exposure. While contact investigation may begin with a person under investigation³ (PUI), contact management for contacts of a PUI is not initiated until EVD has been confirmed. The level of monitoring and public health intervention will be based on a risk assessment of the nature and likelihood of exposure to a case of EVD. Contacts who develop symptoms consistent with EVD during their incubation period must be referred for evaluation of their symptoms.

Case Identification and Management

Case Definition

BCCDC will be adhering to the PHAC case definition for Ebola Virus Disease. Regional public health authorities can utilize the following case report form for confirmed cases of EVD.

Person Under Investigation (PUI)

- A person with EVD-compatible symptoms (Table 1) AND
- A travel history to an Ebola affected area⁴ within 21 days of symptom onset OR exposure to one or more of the epidemiological risk factors (Table 1) within 21 days of symptom onset,
- With or without pending laboratory results for EVD.

¹ Anyone with laboratory confirmation of EVD infection.

² This guideline is aligned with the Public Health Agency of Canada's *Management of cases and contacts of human illness associated with Ebola Virus Disease Interim Guidance*, available at: <https://www.canada.ca/en/public-health/services/diseases/ebola/health-professionals-ebola/interim-guidance-public-health-management-cases-contacts-ebola-community-setting-canada.html>

³ Anyone with a potential exposure to Ebola virus, any symptoms compatible with EVD

⁴ Ebola affected areas are those where there has been a confirmed locally acquired case of EVD or where an individual with an infectious case of EVD has resided (PHAC: www.canada.ca/en/public-health/services/catmat/ebola-virus-disease-preventive-measures-monitoring-surveillance-travellers.html)

Confirmed Case

- A person with laboratory confirmation of EVD infection using at least one of the methods below:
 - Isolation and identification of virus from an appropriate clinical specimen (e.g., blood, serum, tissue, urine specimens or throat secretions) (performed at the National Microbiology Laboratory) OR
 - Detection of virus-specific RNA by reverse-transcriptase PCR from an appropriate clinical specimen (e.g., blood, serum, tissue) using two independent targets or two independent samples AND confirmed by the National Microbiology Laboratory by nucleic acid testing or serology OR
 - Demonstration of virus antigen in tissue (e.g., skin, liver or spleen) by immunohistochemical or immunofluorescent techniques AND another test (e.g., PCR) OR
 - Demonstration of specific IgM AND IgG antibody by EIA, immunofluorescent assay or Western Blot by the National Microbiology Laboratory or an approved WHO collaboration centre OR
 - Demonstration of a fourfold rise in IgG titre by EIA, immunofluorescent assay from an acute vs. a convalescent serum sample (performed at the National Microbiology Laboratory).

Table 1. Ebola Virus Disease (EVD) Compatible Symptoms and Epidemiological Risk Factors

EVD Compatible Symptoms	Epidemiological Risk Factors
<ul style="list-style-type: none"> • Fever (temperature \geq 38.0 degrees Celsius)* • Subjective fever* • Myalgia* • Fatigue* • Vomiting* • Diarrhoea* (that can be bloody) • Cough** • Conjunctival redness** • Confusion*** • Dysphagia*** • Jaundice+ ** • Malaise • Headache • Arthralgia • Loss of appetite • Sore throat • Chest pain • Abdominal pain • Nausea • Haemorrhage • Erythematous maculopapular rash on the trunk 	<ul style="list-style-type: none"> • Individual who cared for a case of EVD • Laboratory worker handling Ebola virus or processing body fluids from a case of EVD • Individual who spent time in a healthcare facility in an Ebola affected area where cases of EVD are being treated • Sexual contact with an EVD case • Close contact in households, healthcare facilities, or community settings with a person with Ebola while the person was symptomatic - close contact is defined as being for a prolonged period of time within approximately 2 meters (6 feet) of a person with Ebola without appropriate personal protective equipment (PPE) • Contact with any human remains of a case of EVD OR contact with human remains in an Ebola affected area • Contact with bats, primates or wild animal bush meat from Ebola affected areas • A travel history to an Ebola affected area within 21 days

*symptoms more likely to present early in illness with EVD ⁵

** symptoms more likely to present late in illness with EVD ⁴

+ symptoms not listed in PHAC case definition but may be predictive of EVD⁴

Transmission⁶

The first patient tends to become infected through contact with the blood, secretions, organs or other bodily fluids of an infected animal.

⁵ Jain V, Charlett A, Brown CS. Meta-analysis of predictive symptoms for Ebola virus disease. PLoS neglected tropical diseases. 2020 Oct 23;14(10):e0008799.

⁶ <https://www.canada.ca/en/public-health/services/diseases/ebola/health-professionals-ebola.html# Transmission>

Further transmission can occur via: (1) person-to-person transmission, via direct contact with blood, secretions, organs or other bodily fluid of infected people; (2) indirect contact, via objects (e.g., needles) that have been contaminated with infected secretions; or (3) burial ceremonies, where there has been direct contact with the body or bodily fluid of the deceased infected person.

Incubation Period:

Symptoms can appear 2 to 21 days after exposure, with most cases presenting 4-10 days after exposure.

Period of Communicability:

The period of communicability is the time during which an infectious agent may spread directly or indirectly from an infected person to another person; it is also known as the 'infectious period'.

Cases are not considered to be communicable before onset of symptoms. Communicability increases as the severity of illness progresses, and remains as long as blood and/or bodily fluids contain the virus, including during the post-mortem period.

Recovery

A confirmed case of EVD is no longer considered infectious when:

- They have been symptom free for > 72 hours **AND**
- They have two confirmed negative plasma Ebola RT PCR tests 24 hours apart, with at least one test \geq 3 days from symptom onset

Ebola virus can also persist in immunologically protected sites (i.e. semen, urine and breast milk) for prolonged periods of time (weeks to months).

For male convalescent cases, it is recommended that individuals either:

- Abstain from sexual contact^{7,8}, **OR**
- Observe safe sex practices through correct and consistent condom use for 12 months after symptom onset, **OR** until they have 2 negative semen PCR results, separated by 1 month, and starting at 3 months from symptom onset.

⁷ Thorson AE, Deen GF, Bernstein KT, Liu WJ, Yamba F, Habib N, Sesay FR, Gaillard P, Massaquoi TA, McDonald SL, Zhang Y. Persistence of Ebola virus in semen among Ebola virus disease survivors in Sierra Leone: A cohort study of frequency, duration, and risk factors. PLoS medicine. 2021 Feb 10;18(2):e1003273.

⁸ [International meeting on persistence of Ebola virus RNA in semen and implications for public health \(who.int\)](#)

For female convalescent cases, it is recommended that breastfeeding is discontinued until the breast milk is confirmed negative for Ebola virus through PCR testing.

Contact Classification, Definitions and Risk

This B.C. Contact Management Guideline defines a contact as someone without Ebola-like symptoms who:

- Has returned to B.C. from working or living in a country with widespread and intense Ebola virus transmission⁹, or from an area where Ebola is emerging as a concern.
- Has been exposed to a person with EVD in British Columbia.

Table 2 aims to classify exposures into higher risk, at risk, and at low risk categories. MHOs may exercise their discretion based on unique circumstances of a situation that may change the risk category described below.

Table 2. Contact risk levels and characteristics

Exposure Risk Level	Characteristics
Higher Risk	<p>A person who had unprotected exposure to the Ebola virus (i.e. known EVD exposure or unprotected direct contact), such as:</p> <ul style="list-style-type: none"> • Direct or close contact with a PUI or confirmed case while they were ill; • Percutaneous or mucous membrane exposure or direct skin contact with body fluids of a confirmed or PUI case of EVD; • Sexual contact with a PUI or confirmed EVD case; • Direct exposure to human remains of an EVD case without appropriate PPE. • A breach of PPE (of any kind) including not wearing PPE and/or not adhering to appropriate infection prevention and control precautions, who directly or indirectly cared for a PUI or confirmed case of EVD (e.g., direct patient care, contact with environment or fomites of a case, inadvertent exposure through PPE doffing); • Laboratory worker processing body fluids of PUI or confirmed EVD cases without appropriate PPE or standard biosafety precautions;
At Risk	<ul style="list-style-type: none"> • People who interacted with a PUI or confirmed EVD case, but without direct or close contact (i.e., did not touch the person or their bodily fluids and did not come within two meters of the person, except for just walking by them) • Direct exposure to human remains (e.g. through participation in funeral or burial rites) in the geographic area where the outbreak is occurring with appropriate PPE • Health care workers and laboratory staff (including returning travelers) who

⁹ World Health Organization (2015) Ebola Virus Disease. www.who.int/csr/disease/ebola/en/

	<p>have had direct contact with EVD patients or sources of the virus, but with no breaches in PPE and consistent use of infection control precautions.</p> <ul style="list-style-type: none"> • Returning health care workers and aid workers who were working in clinical or non-clinical roles and had no direct contact with EVD patients or other sources of Ebola virus.
At Low Risk	<ul style="list-style-type: none"> • A person who has been in an EVD affected area within the past 21 days and has had no known exposures. • A person who has worn appropriate PPE without a breach and without direct patient contact (i.e. terminal cleaning of a hospital room used by an EVD patient, cleaning a contaminated space in the community).

Summary of Public Health Management of Asymptomatic Contacts

For a period of 21 days following direct exposure to a person with Ebola virus or (if no direct exposure) from exit from an Ebola-affected area, asymptomatic individuals should be prepared to self-isolate as quickly as possible if symptoms develop and be aware of how to seek advice on management of their onset of symptoms. Table 3 below provides a summary of the specific recommendations.

Table 3. Summary of Public Health Management for Contacts of EVD.

Exposure Risk Level	Recommended B.C. Public Health Measures
Higher Risk	<p>Movement</p> <ul style="list-style-type: none"> • Recommended to self-isolate¹⁰. An order to self-isolate is at the discretion of the medical health officer • Recommended to remain near a Type Three health facility¹¹ (up to two hours by land ambulance or private transport) • In home, limit direct and indirect (i.e. fomite) contact with other household members (i.e., where possible, separate bedroom) • Eliminate contact with all livestock, limit contact with companion animals <p>Monitor</p> <ul style="list-style-type: none"> • Advise to self-monitor¹² • Avoid anti-pyretic medications • Daily active monitoring¹³

¹⁰ <http://www.bccdc.ca/health-info/diseases-conditions/covid-19/self-isolation>

¹¹ Health facility designation/locations can be found at: <https://www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/hospital-designation-evd-patients.pdf>

¹² **Self-monitor** means self-assessing for symptoms of EVD, including checking and documenting oral temperature twice daily (am and pm), and immediately if they start feeling chills/feverish

¹³ **Active monitoring** means public health assumes responsibility for establishing regular communication with the contact, rather than relying solely on the individual to self-monitor and report symptoms if they develop.



	<p>Return to work</p> <ul style="list-style-type: none"> • Consideration of work that is possible from home/facility where self-isolating <p>Other prevention</p> <ul style="list-style-type: none"> • Avoid elective medical procedures • Should not donate blood/tissue • Abstain from sexual contact or use safe sex practices through correct and consistent condom use for the duration of the 21 day period
At Risk*	<p>Movement</p> <ul style="list-style-type: none"> • Should remain near a Type Two or Three health facility⁷ (up to two hours by land ambulance transport). • Recommend not to travel outside the province • Travel only on public conveyances that can be exited promptly if symptoms develop. • Avoid mass gatherings. • Report any planned travel • Eliminate contact with all livestock, limit contact with companion animals <p>Monitor</p> <ul style="list-style-type: none"> • Advise to self-monitor • Avoid anti-pyretic medications • Daily active symptom monitoring at the discretion of the MHO <p>Return to work</p> <ul style="list-style-type: none"> • Is generally acceptable if workplace is within two hours of Type Two or Three facility, but should be discussed with the medical health officer • Return to work for health care workers/contractors (both returning and those exposed in B.C.) should be discussed between the health care worker/contractor, medical health officer, director of infection control and director of workplace health <p>Other prevention</p> <ul style="list-style-type: none"> • Avoid elective medical procedures • Should not donate blood/tissue • Abstain from sexual contact or use safe sex practices through correct and consistent condom use for the duration of the 21 day post-exposure period
Low Risk	<p>Movement</p> <ul style="list-style-type: none"> • No restrictions on movement or work • Eliminate contact with all livestock, limit contact with companion animals <p>Monitor</p> <ul style="list-style-type: none"> • Advise to self-monitor. • Avoid anti-pyretic medications. <p>Other prevention</p> <ul style="list-style-type: none"> • Avoid elective medical procedures. • Should not donate blood/tissue. • Abstain from sexual contact or use safe sex practices through correct and consistent condom use for the duration of the 21 day period

* Specific guidance for At Risk category to be determined on a case-by-case basis by local public health.

Reporting and Surveillance of Contact Tracing Activities

It is important to collect standard information on all contacts to support appropriate management, as well as regional, provincial and national monitoring and risk assessment.

Reporting of contacts should follow the EVD Contact Reporting Form: www.bccdc.ca/diseases/a-z/e/Ebola/InfoHealthProfessionals/default.htm.

In addition, all health authority employee who have had a workplace exposure should be reported to the Provincial Workplace Health Contact Centre (1-866-922-9464)

Quarantine to Local Public Health Information and Decision Flow Chart for Health Authorities¹⁴

