

Appendix B: Provincial Case Definitions for Diseases of Public Health Significance

Disease: Hemorrhagic fevers, including: i) Ebola virus and ii) Marburg virus and iii) Lassa fever, and (iv) Other viral causes

Effective: February 2019

Hemorrhagic fevers caused by: i) Ebola virus and ii) Marburg virus and iii) Lassa fever, and (iv) Other viral causes

1.0 Provincial Reporting

Confirmed and probable cases of disease

2.0 Type of Surveillance

Case-by-case

3.0 Case Classification

3.1 Confirmed Case

A case with clinically compatible signs and symptoms and at least two of the hemorrhagic manifestations (See Section 5.0 – Clinical Evidence)

AND

Laboratory confirmation of infection (See section 4.1):

3.2 Probable Case

A case with clinically compatible signs and symptoms and at least one of the hemorrhagic manifestations (See Section 5.0 – Clinical Evidence)

AND

A history within the 3 weeks before onset of fever of one of the following:

- Travel in a specific area of a country where an outbreak of viral hemorrhagic fever (VHF) has recently occurred
- OR**
- An epidemiologic link with a confirmed and/or probable case of VHF
- OR**
- Direct contact with blood or other body fluids from a confirmed or probable case of VHF
- OR**
- Work in a laboratory that handles VHF virus specimens or in a facility that handles animals with VHF

4.0 Laboratory Evidence

4.1 Laboratory Confirmation

Any of the following will constitute laboratory confirmation:

- 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);
- 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*;
- Demonstration of virus antigen in tissue (e.g., skin, liver or spleen) by immunohistochemical or immunofluorescent techniques **AND** another test (e.g., PCR);
- 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^μ
- 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).

*For certain VHF pathogens (e.g., dengue), detection of a single nucleic acid target may be sufficient for laboratory confirmation and would be decided on an individual case basis, in discussion with the testing laboratory and clinical team involved in patient care.

^μ Serological methods vary across different VHF pathogens, and may include methods not listed above.

4.2 Approved/Validated Tests

- Culture
- NAAT (RT-PCR)
- Antigen detection
- IgM and IgG serology

4.3 Indications and Limitations

- Laboratory testing for pathogens causing VHF should be conducted in a reference laboratory using assays that are validated for clinical testing.

5.0 Clinical Evidence

Any 2 of the following hemorrhagic manifestations (from WHO recommended surveillance standards, 1999):

- hemorrhagic or purpuric rash
- epistaxis
- hematemesis
- hemoptysis
- blood in stools
- other hemorrhagic symptom and no known predisposing host factors for hemorrhagic manifestations

Sign and symptoms consistent with the following: Lassa, Junin, Machupo, Sabia, Guanarito (arenaviruses); Crimean Congo, Rift Valley fever (bunyaviruses); Ebola, Marburg (filoviruses); Dengue fever, Yellow fever, Omsk hemorrhagic fever, Kyasanur Forest Disease (flaviviruses).

Onset may be gradual or acute depending on the type of VHF, with fever, headache, malaise, sore throat, cough, nausea, vomiting, diarrhea, myalgia and chest and abdominal pain. Fever is persistent or spikes intermittently. Inflammation and exudation of the pharynx and conjunctivae are commonly observed.

A clinical consultation is necessary for diagnosis.

6.0 ICD 10 Code(s)

A92.4 Rift Valley fever

A96.2 Lassa fever

A98.0 Crimean Congo hemorrhagic fever

A98.3 Marburg virus disease

A98.4 Ebola virus disease

A99 Other specified viral hemorrhagic fevers

7.0 Comments

- Contact Public Health Ontario immediately even in the event of a probable case.
- Travel history information is essential in the identification of possible cases.

8.0 Sources

Heymann DL, editor. Control of Communicable Diseases Manual. 20 ed. Washington, D.C: American Public Health Association; 2015.

Public Health Agency of Canada. Viral Hemorrhagic Fever. In: Case Definitions for Communicable Diseases under National Surveillance. Canada Communicable Disease Report. 2009;35S2.

World Health Organization, Department of Communicable Disease Surveillance and Response. WHO Recommended Surveillance Standards. 2nd ed. Geneva: World Health Organization; 1999. Available from:

http://www.who.int/csr/resources/publications/surveillance/WHO_CDS_CSR_ISR_99_2_EN/en/

9.0 Document History

Table 1: History of Revisions

Revision Date	Document Section	Description of Revisions
May 2014	Document Title	Document title updated from “Disease: Hemorrhagic fevers, including: i) Ebola virus disease; ii) Marburg virus disease, and iii) Other viral causes” to “Disease: Hemorrhagic fevers caused by: i) Ebola virus and ii) Marburg virus and iii) Other viral causes including bunyaviruses, arenaviruses and flaviviruses.”
May 2014	1.0 Provincial Reporting	“Confirmed, probable and suspect cases...” changed to “Confirmed and probable cases...”
May 2014	3.1 Confirmed Case	Entire section revised.
May 2014	3.2 Probable Case	<p>First paragraph changed from “A case with clinically compatible signs and symptoms and a history within the 3 weeks before onset of fever of the following:...” to “A case with clinically compatible signs and symptoms and at least two of the hemorrhagic manifestations (See Section 5.0 - Clinical Evidence) AND A history within the 3 weeks before onset of fever of one of the following:...”</p> <p>Second and third bullet point, changed from “...confirmed or probable case” to “confirmed probable case”.</p> <p>Last paragraph, “NAT” changed to “NAAT”.</p>
May 2014	3.3. Suspect Case	Entire section deleted.
May 2014	4.1 Laboratory Confirmation	<p>Second and third bullet point, changed “NAT” to “NAAT”.</p> <p>Third bullet point, changed “...positive by one confirmatory method (see below)” to “positive by one additional method (see 4.2 below)”.</p>

Revision Date	Document Section	Description of Revisions
May 2014	4.2 Approved/Validated Tests	Second bullet point, changed “NAT” to “NAAT”.
May 2014	5.0 Clinical Evidence	Entire section updated.
May 2014	6.0 ICD Code(s)	<p>Addition of: “ICD 10 Code A92.4 - Rift Valley VHF”, “ICD 10 Code A96.2 - Lassa VHF”, and ICD 10 Code A98.0 - Crimean Congo VHF”.</p> <p>“ICD 10 Code A98.4 - Ebola virus disease” changed to “ICD 10 Code A98.4 - Ebola VHF”.</p> <p>“ICD 10 Code A98.3 - Marburg virus disease” changed to “ICD 10 Code A98.3 - Marburg VHF”.</p>
May 2014	7.0 Comments	Entire section updated.
May 2014	8.0 Sources	<p>Section title changed from “8.0 References” to “8.0 Sources”.</p> <p>All sources updated.</p>
February 2019	General	Lassa Fever merged, minor revisions were made to support the regulation change to Diseases of Public Health Significance, and references were updated.
February 2019	3.2 Probable Case	<p>Deleted “a nucleic acid amplification test (NAAT) positive without laboratory confirmation by another approved or validated test (See Section 4.2)”.</p> <p>A case with clinically compatible signs and symptoms and at least two of the hemorrhagic manifestations modified to at least one of the hemorrhagic manifestations.</p>
February 2019	4.1 Laboratory Confirmation	Entire section updated to more closely align laboratory evidence of a confirmed case of VHF with criteria listed in PHAC’s Ebola case definition.

Revision Date	Document Section	Description of Revisions
February 2019	4.3 Indications and Limitations	Replaced text under limitations to clarify where testing for pathogens causing VHF should be conducted.
February 2019	5.0 Clinical Evidence	Addition of paragraph: "Onset may be gradual or acute depending on the type of VHF, with fever, headache, malaise, sore throat, cough, nausea, vomiting, diarrhea, myalgia and chest and abdominal pain. Fever is persistent or spikes intermittently. Inflammation and exudation of the pharynx and conjunctivae are commonly observed."

