Ministry of Health

Ontario Public Health Standards:
Requirements for Programs, Services and Accountability

Infectious Diseases Protocol

Appendix 1: Case Definitions and Disease-Specific Information

Disease: Viral Hemorrhagic Fevers caused by i) Ebola virus, ii) Marburg virus, iii) Lassa virus, or (iv) Other viral agents including arenaviruses, bunyaviruses, filoviruses, and flaviviruses

Effective: September 2025

Ontario

Viral Hemorrhagic Fevers caused by: i) Ebola virus, ii) Marburg virus, iii) Lassa virus, or (iv) other pathogenic viral agents including arenaviruses, bunyaviruses, filoviruses, and flaviviruses

☒ Communicable

☒ Virulent

Health Protection and Promotion Act (HPPA)[1]
Ontario Regulation (O. Reg.) 135/18 (Designation of Diseases)[2]

Provincial Reporting Requirements

☒ Confirmed case

☒ Probable case

As per Requirement #3 of the "Reporting of Infectious Diseases" section of the *Infectious Diseases Protocol, 2023* (or as current), the minimum data elements to be reported for each case are specified in the following:[3]

- O. Reg. 569 (Reports) under the *HPPA*[18];
- The iPHIS User Guides published by Public Health Ontario (PHO); and
- Bulletins and directives issued by Ministry of Health (MOH) and PHO.

Type of Surveillance

Case-by-case

Case Definition

Confirmed Case

Confirmed VHF with Risk of Person-to-Person Transmission (e.g., Ebola, Marburg, Lassa, Chapare, Machupo, Lujo, Crimean-Congo hemorrhagic fever)

1. Laboratory confirmation of infection **(See Laboratory Confirmation section)**

Confirmed VHF without Risk of Person-to-Person Transmission (e.g., Hemorrhagic Fever with Renal Syndrome, Rift Valley fever, Dengue hemorrhagic fever, yellow fever)

1. At least **two (2)** hemorrhagic manifestations **(See Clinical Evidence section)**

AND

2. Laboratory confirmation of infection **(See Laboratory Confirmation section)**

Probable Case

Probable VHF with Risk of Person-to-Person Transmission (e.g., Ebola, Marburg, Lassa, Chapare, Machupo, Lujo, Crimean-Congo hemorrhagic fever)

1. At least **one (1)** hemorrhagic manifestation **(See Clinical Evidence section)**

AND

2. Within 21 days of onset of clinically compatible signs or symptoms consistent with VHF, a history of at least **one (1)** of the following:
   - Travel to a VHF endemic area or to an area where active transmission of a VHF-causing virus has been reported (e.g., VHF outbreak has been declared and is actively occurring).

   OR

   - A direct epidemiological link with a confirmed case of VHF

   OR

   - Direct contact with blood or other bodily fluids of a confirmed case of VHF

   OR

- Sexual contact through exposure to semen from a confirmed case or clinically recovered case of VHF

OR

- Direct contact with and/or exposure to infectious respiratory particles or bodily fluids from VHF virus specimens or animals with VHF (e.g., exposure through work in a laboratory that handles VHF-causing virus specimens or a facility that handles animals with VHF).

AND

3. Confirmatory VHF laboratory results for specimens collected are pending

   OR

   A decision was made to collect specimens for VHF laboratory testing; however, testing was not possible.

Probable VHF without Risk of Person-to-Person Transmission (e.g., Hemorrhagic Fever with Renal Syndrome, Rift Valley fever, Dengue hemorrhagic fever, yellow fever)

1. Clinically compatible signs and symptoms consistent with VHF **(See Clinical Evidence section)**

AND

2. At least **two (2)** hemorrhagic manifestation (See Clinical Evidence section)

AND

3. Within 28 days of onset of clinically compatible signs or symptoms consistent with VHF, a history of at least **one (1)** of the following:

   - Travel to a VHF endemic area or to an area where active transmission of a VHF-causing virus has been reported (e.g., VHF outbreak has been declared and is actively occurring).

   OR

   - Direct contact with and/or exposure to infectious respiratory particles or bodily fluids from VHF virus specimens or animals with VHF (e.g., exposure through work in a laboratory that handles VHF-causing virus specimens or a facility that handles animals with VHF).

AND

4. Confirmatory VHF laboratory results for specimens collected are pending

   OR

   A decision was made to collect specimens for laboratory testing; however, testing was not possible.

Outbreak Case Definition

The outbreak case definition varies with the infectious disease agent causing the outbreak under investigation. Please refer to the *Infectious Diseases Protocol, 2023* (or as current) for guidance in developing an outbreak case definition.[3]

Outbreak case definitions are established to reflect the disease and the circumstances of the outbreak under investigation. The outbreak case definition should be developed for each individual outbreak based on its characteristics. It should be reviewed during the outbreak, and modified, if necessary, to ensure that most cases are captured by the definition. The case definition should be created with consideration of the outbreak definition.

Outbreak cases may be classified by levels of probability (i.e., confirmed, or probable). Given the severity and rarity of viral hemorrhagic fevers, **one (1)** confirmed case constitutes an outbreak.

Clinical Information

Clinical Presentation

Viral hemorrhagic fevers are associated with an acute onset of fever, severe illness, and hemorrhagic symptoms.[5]

A clinical consultation is necessary for diagnosis.

Signs and symptoms should be consistent with the following:

Fever in a severely ill patient **AND** any **two (2)** of the following hemorrhagic manifestations (adapted from WHO recommended surveillance standards, 1999):[4]

- hemorrhagic or purpuric rash (blood pooling under the skin)
- hemorrhagic epistaxis (severe bleeding from the nose)
- hemorrhagic hematemesis (severe bleeding from the upper GI tract resulting in vomiting blood)

- hemorrhagic hemoptysis (bleeding from the airways resulting in coughing up blood)
- hemorrhagic rectal bleeding (severe bleeding from the lower GI tract resulting in blood in stool)
- other hemorrhagic symptoms (e.g., conjunctival injection or blood shot eyes, severe vaginal bleeding) and no known predisposing host factors for hemorrhagic manifestations.[5,8]

Note: VHF symptom(s) onset may be gradual (i.e., mild symptoms may present before more severe symptoms) or acute (i.e., presentation begins with severe symptoms) depending on the type of virus causing the VHF. Common symptoms seen with VHFs include fever, headache, malaise, sore throat, cough, nausea, vomiting, diarrhea, myalgia, bleeding not related to injury, chest, and abdominal pain. Fever is either persistent or spikes intermittently. In more severe disease presentation, inflammation and seepage in the pharynx, and conjunctivae are commonly observed.[5,8]

Also note: An individual presenting with only non-severe bleeding due to an alternative cause does not meet the threshold for the case definition for a VHF. For consultation prior to entering a case into iPHIS, contact PHO.

Clinical Evidence

Arenaviruses

- Chapare, Lassa, Lujo, Junin, Machupo, Sabia, Guanarito.

Clinical evidence includes an acute viral illness lasting one (1) to four (4) weeks. There is a gradual onset of symptoms, which includes fever, headache, generalized weakness, malaise, sore throat, cough, nausea, vomiting, diarrhea, myalgia, chest and abdominal pain, and fever. Fever may be persistent or intermittent. Inflammation and seepage in the pharynx, and conjunctivae are commonly observed.[5,8]

Many cases are mild or asymptomatic. Severe cases may result in hypotension, shock, pleural effusion, hemorrhage, seizures, encephalopathy, and proteinuria, resulting in edema of the face and neck.[5]

With **Lassa fever** about 80% of human infections are mild or asymptomatic and the remaining have severe multisystem disease. Patients present with malaise, fever, headache, sore throat, cough, nausea, vomiting, diarrhea, myalgia, chest, and abdominal pain.[5,8]

Bunyaviruses

- Crimean Congo hemorrhagic fever, Hemorrhagic Fever with Renal Syndrome caused by Hantavirus, Rift Valley fever.

Human infections with **Rift Valley** fever are usually associated with a brief, self-limited febrile illness. Most patients experience sudden onset of fever, malaise, severe myalgias with lower back pain, chills, headache, retro-orbital pain, photophobia, and anorexia. Fever usually lasts for four (4) days. Rarely, fever plus all other symptoms return as well as a flushed face, nausea, vomiting, and injected conjunctivae. Severe disease is associated with bleeding, shock, anuria, and icterus. Encephalitis and retinal vasculitis can also occur.[4,5,8]

Crimean Congo VHF: Human infections present as an acute viral illness consisting of sudden onset of fever, malaise, generalized weakness, anorexia, irritability, confusion, headache, and pain in the limbs and groin. Fever lasts 5-12 days and is followed by a prolonged convalescent phase. Acute symptoms are usually accompanied by flushing, conjunctival injection and petechial or purpuric rash involving mucosal surfaces, chest, and abdomen. Vomiting, abdominal pain, and diarrhea can also occur with this infection, as well as bleeding from the gums, nose, lungs, uterus, and GI tract. Further, thrombocytopenia, mild hematuria and proteinuria, and evidence of hepatic involvement can present as symptoms. As a result, severe cases can result in liver failure.[5,8]

Filoviruses

- Ebola, Marburg

Ebola and Marburg VHF: Severe acute viral illness consisting of sudden onset of fever, malaise, myalgia, headache, conjunctival injection, pharyngitis, vomiting and diarrhea that can be bloody. It is often accompanied by a maculopapular or petechial rash that may progress to purpura. Bleeding from gums, nose, injection sites and GI tract occurs in about 50% of patients. Dehydration and significant wasting occur as the disease progresses. In severe cases, the hemorrhagic presentation of the infection may be accompanied by leucopenia; thrombocytopenia; hepatic, renal and central nervous system involvement; or shock with multi-organ dysfunction.[5,7]

Flaviviruses

- Dengue fever, yellow fever, Omsk hemorrhagic fever, Kyasanur Forest Disease.

Cases of flavivirus infections are often clinically asymptomatic; however, symptoms of fever, headache, skin rash, and nausea can occur without clinical consequences in symptomatic cases, except when the symptoms are the first stage of severe hemorrhagic fever or neurological damage.[4,5]

In the case of **dengue fever**, clinical presentation is mild in comparison to **dengue hemorrhagic fever**. Warning signs of progression to severe dengue (of which dengue hemorrhagic fever is classified as a subset) include vomiting, severe abdominal pain, mucosal bleeding, difficulty breathing, signs of hypovolemic shock, and rapid decline in platelet count with an increase in hemoconcentration.[3] Cases of dengue hemorrhagic fever are reportable, cases of dengue fever without identified hemorrhagic manifestations are not reportable.[4,5,8]

Laboratory Evidence

Laboratory Confirmation

Any of the following will constitute laboratory confirmation:

- Isolation of the virus in cell culture 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 (2) independent targets, or two (2) independent samples **AND** results confirmed by the National Microbiology Laboratory by nucleic acid testing;[*†]
- Demonstration of specific IgM **AND** IgG antibody by enzyme immunoassay (EIA), immunofluorescent assay or Western Blot testing by the National Microbiology Laboratory or an approved WHO collaboration centre;[‡]
- Demonstration of a fourfold (4-fold) rise in IgG titre by EIA, immunofluorescent assay from an acute vs. a convalescent serum sample performed at the National Microbiology Laboratory).

---

[*]Confirmation by the National Microbiology Laboratory is not required if validated testing is available at Public Health Ontario 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.

[‡] Serological methods vary across different VHF pathogens and may include methods not listed above.

Approved/Validated Tests

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

Indications and Limitations

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

For further information about human diagnostic testing, contact the Public Health Ontario Laboratories.

Disease Characteristics

Several viruses from distinct families (i.e., **arenaviruses**, **bunyaviruses**, **filoviruses**, **flaviviruses**) can cause viral hemorrhagic fever (VHF). Disease characteristics for each VHF family are below.

VHF with Risk of Person-to-Person Transmission

Arenaviruses with Risk of Person-to-Person Transmission

Aetiologic Agent:

- Chapare, Lassa, Lujo, Junin, Machupo, Sabia, Guanarito viruses

Modes of Transmission:

- Spread primarily through the respiratory route via particles from rodent excreta that have been disturbed (e.g., with cleaning) or direct contact with excreta of infected rodents deposited on surfaces (e.g., floors, walls, or in food/water).
- Person-to-person spread can occur through sexual contact; nosocomial spread contact with infected persons' pharyngeal secretions, blood, or urine or from contaminated needles; or, in laboratory accidents.[4,5,8]

Incubation Period:

- **Chapare:** On average 4-21 days.[5]
- **Lassa**: On average 6-21 days.[5]
- **Lujo:** On average 7-13 days.[5]

Period of Communicability:

- **Lassa fever**: Person-to-person spread may occur during the acute febrile phase when virus is present in blood and bodily fluids. Virus can be excreted in urine for 3-9 weeks from symptom onset and can be spread via sexual contact through semen for up to 3 months after infection.[4,5]
- **Other arenaviruses**: Person-to-person spread may occur as infected persons remain communicable if blood and bodily fluids contain the virus, even after symptoms have resolved.[5]

Reservoir:

- **Lassa fever:** Rodents in the genus *Mastomys* in affected Africa countries.[4]
- **Chapare and Lujo viruses**: Unknown, although a rodent host is suspected, like the other arenaviruses.[4]

Host Susceptibility and Resistance:

- All ages are susceptible.[4]

Bunyaviruses with Risk of Person-to-Person Transmission

Aetiologic Agent:

- Crimean Congo hemorrhagic fever virus

Modes of Transmission:

- **Crimean-Congo hemorrhagic fever**:
  - Virus is spread to humans from the bite of an infected tick or through direct contact with an infected animal's tissues during and immediately post-slaughter.[4]
  - Person-to-person transmission can occur through direct contact with infectious blood or bodily fluids and contact with infectious materials.[5]

Incubation Period:

- **Crimean-Congo hemorrhagic fever:** Following infection from a tick bite, on average 1-3 days with a maximum of 9 days. Following contact with infected blood or tissues it is on average 5–6 days, with a maximum of 13 days.[5]

Period of Communicability:

- **Crimean-Congo hemorrhagic fever**: Infected persons are considered communicable until the antigen, viral RNA, and virus are no longer present and

detectable in blood and bodily fluids.[5]

Reservoir:

- **Crimean-Congo hemorrhagic fever**: *Hyalomma* species of ticks are the reservoir and domestic animals (sheep, cattle, ostriches, and goats), wild herbivores, hedgehogs, and hares function as amplifying hosts.[4]

Host Susceptibility and Resistance:

- All ages are susceptible.[4,5]

Filoviruses with Risk of Person-to-Person Transmission

Aetiologic Agent:

- The virus family includes 3 genera: Ebola, Marburg, and Cueva viruses; however, Cueva viruses are only known to infect bats and are currently not considered to be a public health risk.[5,6]
- In affected countries in Africa, four (4) distinct species of the Ebola virus are known to cause disease in humans (i.e., Zaire, Bundibugyo, Sudan, and Taï Forest).[5]

Modes of Transmission:

- Fruit bats of the *Pteropodidae* family are thought to be the natural host for Ebola and Marburg viruses. Introduction of the virus to the human population can occur through direct contact with blood, body fluids and tissues of infected animals.[4,5,6]
- Nonhuman primates, especially gorillas and chimpanzees, and other wild animals may become infected from close contact with bats and serve as intermediate hosts. These intermediate hosts can transmit filoviruses to humans through direct contact with their infected blood and bodily fluids, usually through hunting and butchering activities.[7]
- Person-to-person transmission occurs by direct contact (through broken skin or mucous membranes) with blood or bodily fluids or indirect contact with objects that have been contaminated with blood or bodily fluids, of an individual who has been infected, or has subsequently died from Ebola or Marburg disease.
    - The highest risk of transmission is during the late stages of the illness when the infected person is experiencing haemorrhaging, vomiting, and diarrhea where direct contact with blood and bodily fluids is high as well as, during post-mortem contact with bodily fluids.

    - The lowest risk of transmission is during the asymptomatic incubation period.[4]
- Filoviruses are not known to be spread through the air or water.[7]
- Nosocomial infections have been frequent. There is a high morbidity rate among those who have acquired an infection from a needle stick injury or contaminated syringe.[4]

Incubation Period:

- **Ebola**: 2-21 days (on average 3-13 days).[5]
- **Marburg:** 2-21 days (on average 5-9 days).[5]

Period of Communicability:

- The disease is communicable if blood and bodily fluids contain the virus.
- **Ebola virus:** Viable Ebola virus has been detected in semen up to 82 days post symptom onsent.[6,7,9] (In a cohort study from May 2015 to April 2017 in Sierra Leone, the researchers' findings showed probabilities of semen persistence of Ebola virus RNA in less than 10% of the 220 study participants at one (1)-year post-hospital discharge.)[9]
- **Marburg virus:** Viable Marburg virus has been detected in semen up to seven (7) weeks after recovery.[9]

Reservoir:

- **Ebola:** Forest-dwelling fruit bats in affected African countries (multiple species) are believed to be the reservoir.[4]
- **Marburg:** Cave-dwelling fruit bats in affected African countries (specifically the *Rousettus aegyptiacus* species) are believed to be the reservoir.[4]

Host Susceptibility and Resistance:

- All ages are susceptible.[4]

VHF without the Risk of Person-to-Person Transmission

Bunyaviruses without Risk of Person-to-Person Transmission

Aetiologic Agents:

- Hantaviruses, Rift Valley fever virus
- **Note:** Hantaviruses are separated into two (2) groups:

1. Old World hantaviruses (primarily found in Europe and Asia) causing Hemorrhagic Fever with Renal Syndrome (discussed in this document).
2. New World hantaviruses (primarily found in North, Central, and South America) causing Hantavirus Pulmonary Syndrome.
    - For additional information on Hantavirus Pulmonary Syndrome, see the Ministry of Health's Ontario Public Health Standards: Programs and Requirements for Programs, Services and Accountability Infectious Diseases Protocol- Appendix 1: Case Definitions and Disease Specific Information – Disease: Hantavirus Pulmonary Syndrome.[15]

Modes of Transmission:

- **Hantaviruses causing Hemorrhagic Fever with Renal Syndrome**:
    - Hantaviruses are rodent-borne viruses transmitted to humans via the respiratory particles generated from disturbing infected rodent excreta and saliva.[4]
    - No person-to-person transmission has been recorded to date.[4]
- **Rift Valley fever**:
    - The virus is transmitted to humans through the bite of an infected mosquito or blood-feeding fly, or by direct or indirect contact from exposure to the blood or tissue of infected animals (e.g., slaughtering of animals, assisting with animal births, conducting veterinary procedures and disposal of carcasses or fetuses). Transmission can occur through inoculation or inhalation of respiratory particles produced during the slaughter of infected animals. There has been evidence of transmission through ingestion of unpasteurized milk of infected animals.[4,5]
    - No person-to-person transmission has been reported to date.[4]

Incubation Period:

- **Hemorrhagic Fever with Renal Syndrome:** On average from 1-2 weeks up to 2 months (on average 2-4 weeks).[5]
- **Rift Valley fever:** Usually 2-7 days.[5]

Reservoir:

- **Hemorrhagic Fever with Renal Syndrome:** Each hantavirus serotype has a specific rodent species.[4,5]
- **Rift Valley fever:** *Aedes* and *Culex* mosquitoes maintain the virus in nature.[4]

Host Susceptibility and Resistance:

- All ages are susceptible.[4,5]

Flaviviruses without Risk of Person-to-Person Transmission

Aetiologic Agents:

- Dengue virus, yellow fever virus, Kyasanur Forest disease virus, Omsk hemorrhagic fever virus

Modes of Transmission:

- **Dengue fever:**
  - Transmission of the virus causing Dengue through the bite of an infected mosquito, primarily *Aedes aegypti and Albopictus* species.[5]
  - Vertical transmission can occur from an infected pregnant individual to their child.[5]
  - Rarely, transmission can through blood transfusion, organ transplant or needle stick injury.[5]
- **Yellow fever**:
  - Transmission of the virus causing yellow fever occurs through the bite of the *Aedes* and *Haemogogus* species of mosquito.[5]
  - No person-to-person transmission has been reported to date.[5]
- **Omsk hemorrhagic fever:**
  - Transmission of the virus causing Omsk hemorrhagic fever occurs through the bite of a tick, mostly the *Dermacentor reticulatus*, *Dermacentor marginatus*, and *Ixodes persulcatus* species.[5]
  - Transmission can occur through direct contact with blood or excreta of an infected animal, most commonly rodents.[5]
  - Transmission can also occur with indirect exposure through contact with the virus in the environment. It is known to be stable in the environment.[5]
  - No person-to-person transmission has been reported.[4,5]
- **Kyasanur Forest Disease:**
  - Transmission of the virus causing Kyansanur Forest Disease occurs through the bite of a tick, mainly the *Hemaphysalis* species.
  - Transmission can also occur through close contact with an infected animal.[5]

- No person-to-person transmission has been reported.[4]

Incubation Periods (Disease Specific):

- **Dengue**: From 3-14 days (on average 4-7 days).[4]
- **Yellow fever**: From 3-6 days.[4]
- **Kyasanur Forest Disease**: From 3-8 days.[5]
- **Omsk hemorrhagic fever**: From 3-8 days.[5]

Period of Communicability:

- **Dengue fever:** Infected people are infective for mosquitoes during their period of viremia: 2 days before symptom onset until the end of the febrile period. The mosquito becomes infective 8-12 days after a viremic blood-meal and remains infective for life.[4]
- **Yellow fever:** Infected people are infective for mosquitoes shortly before the onset of fever and on average for first 3-5 days of illness (rarely, up to 17 days).[4] The mosquito becomes infective 9-12 days after a viremic blood-meal and remains infective for life.[4]

Reservoir:

- **Dengue fever**: In endemic urban centres there is a cycle of the virus between humans and the *Aedes* species of mosquito. There is a sylvatic cycle of the virus in endemic forest areas between non-human primates and the *Aedes* species of mosquito.[4]
- **Yellow fever**: In endemic urban centres there is a cycle of the virus between in humans and the *Aedes* species of mosquito. There is a sylvatic cycle of the virus in endemic forest areas between non-human primates (possibly marsupials) and the *Aedes* species of mosquito.[4]
- **Kyasanur Forest Disease**: In endemic areas, the *Hemaphysalis spinigera* ticks are the reservoir with rodents, shrews, and monkeys the common hosts once bitten by an infected tick.[4]
- **Omsk hemorrhagic fever**: In endemic areas, *Dermacentor* and *Ixodes spp.* of ticks are the reservoir, with vector rodents such as muskrats (*Ondatra zibethica*) and voles (*Arvicola terrestris* and *Microtus gregalis*) the common hosts once bitten by an infected tick.[4]

Host Susceptibility and Resistance:

- All ages are susceptible.[4]

- **Note:** Recovery from an infection with one (1) of the four (4) known **dengue virus** serotypes provides lifelong homologous immunity; however, protection against other serotypes following the recovery is short term. Subsequent infection from an unprotected serotype and upon subsequent infections could exacerbate the presentation of the disease potentially leading to **dengue hemorrhagic fever**.[4,8]

Please refer to PHO's Reportable Disease Trends in Ontario reporting tool for the most up-to-date information on infectious disease trends in Ontario.[16]

For additional national and international epidemiological information, please refer to the Public Health Agency of Canada and the World Health Organization.

Case Management

In addition to the requirements set out in the Requirement #2 of the "Management of Infectious Diseases – Sporadic Cases" and "Investigation and Management of Infectious Diseases Outbreaks" sections of the *Infectious Diseases Protocol, 2023* (or as current), the board of health shall investigate cases to determine the cause of the disease transmission.[3] Refer to Provincial Reporting Requirements above for the relevant data to be collected during the case investigation.

Clinical management of VHF patients would be the responsibility of medical specialists such as an infectious disease specialist.

For more information on case management of VHF with risk of person-to-person transmission, refer to the Viral Hemorrhagic Fevers: Case and Contact Management Reference (2025, or as current).

The purpose of case management of VHF without risk of person-to-person transmission is surveillance.

Bioterrorism: Viruses that can cause VHF can be used for bioterrorism.

A potential bioterrorism incident, investigation, and follow-up will involve notification of law enforcement. If tampering, sabotage, or bioterrorism is suspected, the health unit shall immediately notify their local police service and the Ministry of Health's Health System Emergency Management Branch (HSEMB) Health Care Provider Hotline at 1-866-212-2272.

A bioterrorism event would trigger the involvement of additional local, provincial, and federal partners with responsibilities for health, security, law enforcement and other relevant areas of concern to support, coordinate and/or direct the response.

Contact Management

VHF with Risk of Person-to-Person Transmission

Filoviruses (e.g., Ebola, Marburg), arenaviruses (e.g., Chapare, Lassa, Lujo), and Crimean-Congo hemorrhagic fever have a risk of person-to-person transmission. Contacts should be considered after the case's onset of symptoms and include the following:[4,5]

- People living with the case
- People having close/intimate contact with the case
- People caring for the case without adhering to appropriate IPAC precautions, including health care workers
- Individuals testing laboratory specimens without adhering to appropriate IPAC precautions

Establish close surveillance of contacts (depending on level of risk of exposure) for the maximum incubation period of the virus and advise on seeking medical attention if symptoms develop while following infection prevention and control measures (see the Prevention and Control Measures section below).

For more information on management of contacts of VHF with risk of person-to-person transmission), refer to the Viral Hemorrhagic Fevers: Case and Contact Management Reference (2025, or as current)

VHF without Risk of Person-to-Person Transmission

Flaviviruses that can cause VHF (e.g., yellow fever) and most bunyaviruses (e.g., Rift Valley fever, hantaviruses causing Hemorrhagic Fever with Renal Syndrome) except for Crimean-Congo hemorrhagic fever are generally not at-risk of person-to-person transmission and do not require contact management.

Contacts of **dengue hemorrhagic fever** are not at-risk of person-to-person transmission as progression to severe dengue occurs in the late febrile stage, around the time of defervesence.[4]

To identify unreported or undiagnosed cases of dengue at the same residence or in neighbouring households, determine the case's place of residence during the two (2) weeks prior to onset of illness.[4]

In rare cases, **bloodborne transmission** of **dengue** is possible, through blood transfusion, organ, or other tissue donation if the transfusion or donation takes place within the viremic period of infected persons. **Vertical transmission** is possible if the birthing parent is acutely ill at the time of delivery.[4,8]

Outbreak Management

Please see the *Infectious Diseases Protocol, 2023* (or as current) for the public health management of outbreaks or clusters to identify the source of illness, to manage the outbreak, and limit secondary spread.[3]

For more information on enhanced monitoring, extraordinary measures, and situational awareness based on the context of an Ebola disease outbreak that is declared outside of Canada refer to the Viral Hemorrhagic Fevers: Case and Contact Management Reference (2025, or as current).

Prevention and Control Measures

Personal Prevention Measures

Check travel health notices for specific recommendations.[14]

The Public Health Agency of Canada (PHAC) recommends travelers in areas endemic to any of the viruses that cause VHF, with an elevated risk of person-to-person transmission, to avoid direct contact with blood or bodily fluids of a person or corpse infected with any of the VHF-causing viruses. Also, to avoid close contact by handling an animal suspected of being infected by a VHF-causing virus.[14]

Rodent control measures are recommended for viruses (e.g., arenaviruses, hantaviruses) that are associated with rodent species, especially in geographic regions where outbreaks of these VHF-causing viruses occur.[4]

Basic personal measures to **prevent mosquito bites** are strongly recommended in terms of dengue/dengue hemorrhagic fever, yellow fever, and Rift Valley fever prevention.[4]

Vaccination against yellow fever is also recommended for those who are at risk of becoming infected due to residence, occupation, or travel in endemic areas from 9 months of age and older.[4]

Vaccinations may be available through emergency use authorization from the Public Health Agency of Canada for other VHF (e.g., Ebola, Marburg). Requests for vaccine should be directed to the MOH.

Personal protection against **tick-borne viruses** (e.g., Crimean-Congo hemorrhagic fever, Kyasanur Forest Disease, and Omsk hemorrhagic fever) in endemic areas includes education about the mode of transmission and measures such as:

- Wearing closed shoes and light-coloured, long sleeve shirts and long pants, tucking pants into socks, and using DEET or icaridin insect repellents. The recommended concentration of DEET is 30% or less for adults, 10% or less for children.
- Avoiding known tick-infested areas where possible; and
- Checking for and removing ticks from people and domestic animals.[5]

Infection Prevention and Control Strategies

Refer to PHO's website for the most up-to-date information on Infection Prevention and Control (IPAC).[17]

Comments

- Immediately contact Ministry of Health through the **Health Care Provider Hotline at 1-866-212-2272** or EOCOperations.MOH@ontario.ca and Public Health Ontario when a VHF case is suspected.
- Travel history and exposure information is essential in the identification of potential VHF cases.

References

1. Health Protection and Promotion Act, R.S.O. 1990, c.H.7. Available from: https://www.ontario.ca/laws/statute/90h07#BK

2. Health Protection and Promotion Act, R.S.O. 1990, Reg. 135, Designation of Diseases, O Reg 135/18. Available from: https://www.ontario.ca/laws/regulation/180135

3. Ontario. Ministry of Health. Infectious Diseases Protocol, 2023. Toronto, ON: King's Printer for Ontario; 2023. Available from: https://files.ontario.ca/moh-infectious-disease-protocol-en-2023.pdf

4. World Health Organization, Department of Communicable Disease Surveillance and Response. WHO Recommended Surveillance Standards. 2nd ed. Geneva: World Health Organization; 1999. Available from: https://www.who.int/publications/i/item/who-recommended-surveillance-standards

5. Heymann DL, editor. Control of Communicable Diseases Manual. 21st ed. Washington, D.C: American Public Health Association; 2016.

6. Centers for Disease Control and Prevention. Viral Hemorrhagic Fevers (VHFs) [Internet]. Atlanta, GA: U.S. Department of Health & Human Services 2014 [updated January 29, 2014; cited August 10, 2018]. Available from: https://www.cdc.gov/vhf/index.html

7. World Organization for Animal Health. Technical Disease Card: Filoviruses (infection with) [Internet]. [Update 2019; cited 2023 May 24]. Available from: https://www.woah.org/app/uploads/2021/03/filoviruses-infection-with.pdf

8. American Academy of Pediatrics, Committee on Infectious Diseases; Kimberlin DW, Barnett ED, Lynfield R, Sawyer MH, editors. Red Book : 2024-2027 Report of the Committee on Infectious Diseases. 33rd ed. Itasca, IL: American Academy of Pediatrics; April 2024.

9. Thorson AE, Deen GF, Bernstein KT, Liu WJ, Yamba F, Habib N, et al; Sierra Leone Ebola Virus Persistence Study Group. Persistence of Ebola virus in semen among Ebola virus disease survivors in Sierra Leone: A cohort study of frequency, duration, and risk factors. PLoS Med. 2021 Feb 10;18(2):e1003273. Available from: https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1003273

10. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Infection prevention and control management of suspected or confirmed viral haemorrhagic fever in acute care [Internet]. Toronto, ON: Queen's Printer for Ontario; c2023 [cited 2023 Mar 21]. Available from: https://www.publichealthontario.ca/-/media/Documents/G/2019/guidance-vhf-ontario.pdf?rev=7c079e8c1ec6480da1ff746dc1ff5fe5&sc_lang=en

11. World Health Organization. Crimean-Congo hemorrhagic fever: Symptoms [Internet]. Geneva: World Health Organization; 2023. [cited 2023 May 24]. Available from: www.who.int/health-topics/crimean-congo-haemorrhagic-fever#tab=tab_2

12. Government of Canada. Ebola virus disease: Prevention and risks [Internet]. Ottawa, ON: Her Majesty the Queen in Right of Canada [updated January 27th , 2025; cited March 28, 2025]. Available from: https://www.canada.ca/en/public-health/services/diseases/ebola/prevention-ebola.html

13. Health Canada. Case definitions for diseases under national surveillance. CCDR 2000;26(S3). Available from: http://publications.gc.ca/collections/collection_2016/aspc-phac/HP3-1-26-S3-eng.pdf

14. Public Health Agency of Canada. Travel health notices [Internet]. Ottawa, ON: Government of Canada; [2024] [modified 2024 Aug 22; cited 2025 Mar 28]. Available from: https://travel.gc.ca/travelling/health-safety/travel-health-notices

15. Ontario. Ministry of Health. Ontario public health standards: requirements for programs, services and accountability: infectious diseases protocol [Internet]. Toronto, ON: King's Printer for Ontario; 2022 [cited 2025 Mar 28]. Appendix 1: case definitions and disease-specific information: disease: hantavirus pulmonary syndrome. Available from: https://files.ontario.ca/moh-ophs-hantavirus-pulmonary-syndrome-en-2022.pdf

16. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Infectious Disease Trends in Ontario [Internet]. Toronto, ON: King's Printer for Ontario; c2025 [cited 2025 Mar 28]. Available from: https://www.publichealthontario.ca/en/Data-and-Analysis/Infectious-Disease/Reportable-Disease-Trends-Annually

17. Ontario Agency for Health Protection and Promotion (Public Health Ontario). Infection prevention and control [Internet]. Toronto, ON: King's Printer for Ontario; 2024 [cited 2025Mar 28]. Available from: https://www.publichealthontario.ca/en/Health-Topics/Infection-Prevention-Control

18. Health Protection and Promotion Act, R.S.O. 1990, Reg. 569, Reports, (2018). Available from: https://www.ontario.ca/laws/regulation/900569

Case Definition Sources

Health Canada. *Case definitions for diseases under national surveillance.* CCDR 2000;26(S3). Available from: https://www.canada.ca/en/public-health/services/diseases/viral-hemorrhagic-fever/health-professionals/national-case-definition.html

Heymann DL, editor. Control of Communicable Diseases Manual. 21st 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. Available from: https://publications.gc.ca/collections/collection_2016/aspc-phac/HP3-1-26-S3-eng.pdf

World Health Organization, Department of Communicable Disease Surveillance and Response. WHO Recommended Surveillance Standards. 2nd ed. Geneva: World Health Organization; 1999. Available from: https://www.who.int/publications/i/item/who-recommended-surveillance-standards

Document History

Revision Date	Document Section	Description of Revisions
September 2025	Full document	Revision, edit, and update.
March 2023	Case Definition	Clarified the criteria for the confirmed and probable case definitions.
February 2023	Case Management	Addition of bioterrorism guidelines.
February 2023	Contact Management	Differentiated between the contact management measures for VHF with and without risk of person-to-person transmission.
February 2023	Personal Prevention Measures	Included additional recommendations.
February 2023	Disease Characteristics	Included additional information based on the four (4) VHF family of viruses.
April 2022	Entire Document	New template. Appendix A and B merged. No material content changes.
April 2022	Epidemiology: Occurrence section	Removed.
April 2022	ICD Codes	Removed.
August 2019	Clinical Presentation	Added warning signs of progression to severe dengue/dengue hemorrhagic fever.
August 2019	Period of Communicability	Addition of “hemorrhagic fever” to dengue to clarify that statement refers to dengue hemorrhagic fever.

Revision Date	Document Section	Description of Revisions
August 2019	Management of Cases	Added: “For more information on case management of Ebola refer to the following document: • Public Health Management of Ebola Virus Disease in Ontario (2019, or as current)”
August 2019	Management of Contacts	Revised section to clarify modes of transmission and management of contacts of dengue vs. dengue hemorrhagic fever. Added: “For more information on management of contacts of a case of Ebola refer to the following document: • Public Health Management of Ebola Virus Disease in Ontario (2019, or as current)”
August 2019	Management of Outbreaks	Added: “For more information on enhanced monitoring, extraordinary measures, and situational awareness based on the context of an Ebola outbreak that is declared outside of Canada refer to the following document: • Public Health Management of Ebola Virus Disease in Ontario (2019, or as current)”