IMMEDIATELY NOTIFIABLE TO DOH: 206-418-5500 or 1-877-539-4344

Viral Hemorrhagic Fevers

Signs and symptoms	Fever (often) AND additional symptoms: severe headache, muscle pain, nausea, vomiting, diarrhea, abdominal pain, unexplained hemorrhage/bruising, other (rash, chest pain)	
Incubation	Ebola/Marburg: 2-21 days (typically 3-10) with very low infectious dose; other agents vary	
Case classification	**Clinical criteria**: Fever > 100.4°F/38.0°C AND other symptom(s): Severe headache, muscle pain, vomiting, diarrhea, abdominal pain, unexplained hemorrhage; for some agents low platelets, rash, pharyngitis, chest pain, proteinuria. **Exposure criteria**: Direct contact with body fluids (may include semen for some pathogens), soiled patient materials, deceased bodies; Time in outbreak area/environmental setting; Handled risky laboratory specimens/animals; Exposure to animals, insects, mosquitoes	
	Confirmed: Clinical and exposure criteria AND any diagnostic test from a reference laboratory (PCR, ELISA, viral culture, IgM, IgG, immunohistochemistry)	**Suspect (person under investigation):** Consistent clinical and exposure criteria
Differential diagnosis	Any infectious encephalitis, transverse myelitis, psychosis, brain tumor, atropine poisoning; rule out malaria, influenza, enteric infection, arboviral infection, sepsis, leukemia, toxins/medication	
Treatment	Supportive (IV fluids, balance electrolytes, maintain oxygen status and blood pressure, dialysis etc. as needed); Licensed vaccines + Treatments for some strains of Ebola; experimental vaccines and therapeutics may be available for other VHFs via FDA EUA	
Duration	Varies per pathogen. Ebola/Marburg: Duration of illness 7 to 21 days; Death generally around 10 days of illness; Survivors can have long term sequelae for months or years	
Exposure	Varies by pathogen/outbreak characteristics, but in general **high-risk exposures include:** Direct contact with a symptomatic patient (or body) in any setting without PPE; percutaneous or mucous membrane exposure; laboratory processing without PPE; household contact, possibly sexual contacts. Healthcare workers and burial/funeral participants often at highest risk; Additional environmental or epi-link factors may be identified by CDC depending on pathogen.	

Laboratory testing
 	
EMERGENCY
	LHJ and CDE arrange testing if suspected symptomatic person presents to clinical care–**URGENT SITUATION.** Test if exposure/epi link (outbreak region or contact of case) and consistent symptom(s).
	• Institute infection control measures immediately for all staff: PPE and patient isolation
	• **Best specimens (Ebola/Marburg):** Two samples each 4mL whole blood in lavender-top EDTA *plastic* tubes; preferably taken 3 days or later into illness; do not transfer from original collection tubes.
	  ○ Specimens shipped to DOH/PHL: Store at 2-8° C, ship cold; if arrival at PHL will take more than 72 hours, specimen should be frozen at -70° C and shipped on dry ice.
	  ○ Second specimen can ship frozen on dry ice to CDC for confirmatory testing (with prior approval from CDC, arranged by DOH). PHL can pass through second specimen.
	• Other VHFs: Follow CDC and DOH specimen collection and shipping guidelines
	• Pack and ship as Suspected Category A according to USDOT and ICAO/IATA regulations
	Specimen shipping (Section 4):
	https://www.medialab.com/dv/dl.aspx?d=1794920&dh=63774&u=69790&uh=0e2a1
	• Keep all specimens **cold, ship cold (or on dry ice if already frozen)** and ship according to PHL requirements: https://doh.wa.gov/public-health-provider-resources/public-health-laboratories/lab-test-menu	

Public Health Actions **EMERGENCY**	• **Immediately notifiable to LHJ/DOH** (24/7) Call DOH/CDE 206-418-5500 for consultation about testing, isolation, assessment, and patient movement - If symptoms, advise patient to seek care, ideally at PREARRANGED ER or hospital and arrange testing/eval • Coordinate contact tracing (shared case exposure or exposed to case) with DOH and CDC • Monitor person under investigation x21 d; restrict travel/public contact (quarantine) for any close contacts with high risk exposures *Infection Control:* Immediate standard, contact, and droplet precautions; single room with toilet; monitor and log entries PPE use; minimize testing and aerosol-generating procedures.

Viral Hemorrhagic Fevers

1. DISEASE REPORTING

A. Purpose of Reporting and Surveillance

1. To assist in the diagnosis and treatment of cases.
2. If applicable, to identify potentially exposed close contacts, healthcare workers, and laboratory personnel and to provide counseling.
3. To identify sources of transmission and to prevent further transmission.
4. To raise the index of suspicion of a possible bioterrorism event if no natural exposure source is identified

B. Legal Reporting Requirements

1. Health care providers and facilities: *immediately* notifiable to **local health jurisdiction**
2. Laboratories: *immediately* notifiable to **local health jurisdiction**; specimen submission requested – positive specimens (2 business days) (Sections 3 and 4).
3. Local health jurisdictions: **immediately notifiable to Washington State Department of Health (DOH) Office of Communicable Disease Epidemiology (CDE)**.

C. Local Health Jurisdiction Investigation Responsibilities

1. **Immediately recommend infection control measures if agent is transmissible.**
2. **Immediately report all cases, potential cases, and exposed persons to CDE: 1-877-539-4344 or 206-418-5500.** Conduct a rapid assessment to determine whether bioterrorism is a possibility or if there is potential healthcare facility transmission.
3. Facilitate the transport of specimens for reference testing.
4. Determine the source of infection.
5. Identify other persons exposed and recommend monitoring as indicated.
6. Complete the case report form: https://www.doh.wa.gov/Portals/1/Documents/5100/420-128-ReportForm-VHF.pdf, enter into Washington Disease Reporting System (WDRS).

2. THE DISEASE AND ITS EPIDEMIOLOGY

A. Etiologic Agents:

Agents of viral hemorrhagic fever include four main viral families (filoviruses, arenaviruses, bunyaviruses, flaviviruses). Clinically significant pathogens include: Ebola virus (EBOV) and Sudan virus (SUDV), Marburg virus (MARV), Lassa Fever virus, Crimean-Congo hemorrhagic fever virus (CCHF), Nipah virus, Hendra virus, Guanarito virus, Junin virus, Lujo virus, Machupo virus, and Sabia virus. Also see separate Dengue, Hantavirus and Yellow fever guidelines for other agents that can cause hemorrhagic illnesses.

B. Description of Illness

General symptoms of Ebola and Marburg: Abrupt onset of nonspecific symptoms of fever, headache, muscle or joint aches, and anorexia ("dry" symptoms"). After approx. 3 days, disease progresses to copious watery diarrhea, abdominal pain, nausea, and excessive vomiting; there may be sore throat, desquamating rash, chest pain, miscarriage, seizures, confusion, or hiccups. Damage to liver, adrenal glands or spleen results in coagulopathy, hypotension, and impaired steroid synthesis. Hemorrhage (petechiae, bruising, bleeding from mucous membranes or small injuries) occurs in 5-10% of Ebola cases (varies by strain). Case fatality rate, due to multi-organ failure and shock, can range from 25-90%, higher in pregnancy. Most deaths occur by 10 days. Convalescence can be extensive, and replication-competent virus can persist in semen and other body fluids for several months after recovery. Supportive laboratory findings include thrombocytopenia (platelets < 150,000) and elevated hepatic transaminases (AST > ALT). With disseminated intravascular coagulation, prothrombin (PT) and partial thromboplastin (PTT) times are prolonged. Leukopenia, elevated amylase, and proteinuria may occur. Differential diagnoses include malaria, dengue, typhoid, arboviral diseases, influenza, sepsis, Coumadin use, and leukemia.

C. Ebola/Marburg Virus Disease in Washington

Washington has had no cases of Ebola or Marburg identified. September 2014 a traveler from an Ebola-affected region of West Africa was diagnosed in Texas with Ebola and two healthcare workers were infected during care of that patient. Except for 2014, rare cases of Ebola, Lassa and Marburg fever acquired elsewhere have been imported into this country without subsequent transmission.

D. Reservoirs

All viral hemorrhagic fevers are zoonotic diseases with one or more animal or insect reservoirs. Reservoirs for some of the hemorrhagic fevers responsible for the most significant outbreaks in humans are listed below.

Disease	**Known or suspected viral reservoir(s)**
Ebola (including EBOV and SUDV)	Possibly fruit bats
Marburg	Egyptian Fruit Bat
Crimean Congo Hemorrhagic Fever	Hard ticks, livestock, birds
Hantavirus (Old World)	Varies by virus, but primarily rodents
Lassa Fever	Multimammate mouse (possibly other rodents)
Nipah Virus	Multiple bats in *Pteropus* genus

E. Modes of Transmission

Direct transmission occurs from reservoir animals or insects, including direct contact with animal saliva, excrement (such as contact with bat guano or rodent feces), or blood (through processing animals being prepared for food). Transmission of filoviruses (e.g.,

Ebola, Marburg) from patients or corpses occurs by percutaneous or mucous membrane contact with body fluids/excreta (blood, diarrhea, vomit, urine, semen, milk) or contaminated items (e.g., medical equipment or bedding). Airborne (aerosol) spread has not been seen in outbreaks, although VHFs with droplet-producing symptoms such as coughing or vomiting can spread through droplet transmission. As enveloped viruses, Ebola and Marburg are susceptible to hospital-grade disinfectants but may remain viable for several days in organic matter (e.g., dried blood) on surfaces, bedding, equipment, or bodies https://wwwnc.cdc.gov/eid/article/21/5/15-0041_article. Flaviviruses (e.g., dengue, yellow fever) are mainly vector-borne. Lassa virus, in the arenavirus family, can be spread through direct contact with infected rodents or through food contaminated through rodent droppings. At least one Nipah virus outbreak has been traced to consumption of date palm wine contaminated with bat guano. Crimean-Congo Hemorrhagic Fever can be spread through tick bites, through slaughter of livestock, and through person-to-person transmission. For most VHFs (with the lone exception of Hantavirus), healthcare workers of VHF patients are at the highest risk

F. Incubation period

Incubation for Ebola or Marburg is 2-21 days, typically 3-10 days.

G. Period of Communicability

All body fluids and excreta are infected from symptom onset with filoviruses such as Ebola or Marburg. Infectious dose is very low and viral concentration in diarrhea, vomit, blood, and amniotic fluid is high; virus remains present even after death, making funeral and burial activities very dangerous. In survivors of Ebola and Marburg Disease, urine remain infectious for weeks and semen for a year after recovery.

H. Treatment

Supportive care to maintain volume, electrolytes, blood pressure, and oxygenation. Antiviral and experimental medications may be used when available (Section 5C).

3. CASE DEFINITIONS

See: https://www.cdc.gov/viral-hemorrhagic-fevers/hcp/diagnosis-testing/evaluating-an-ill-person-for-vhf.html and https://ndc.services.cdc.gov/conditions/ebola-virus/

A. Clinical description

- Fever over 38^{o} C (100.4^{o} F) AND
- One or more additional finding(s): severe headache, muscle pain, erythematous maculopapular rash truncal with fine desquamation 3–4 days after rash onset, vomiting, diarrhea, abdominal pain, thrombocytopenia, bleeding not related to injury; only Arenaviruses: also pharyngitis, proteinuria, or retrosternal chest pain.

B. Laboratory criteria for diagnosis of Ebola or viral hemorrhagic fever (VHF)

Any of the following:

- Detection of VHF* viral antigens in blood by enzyme-linked immunosorbent assay (ELISA).
- VHF viral isolation in cell culture for blood or tissues.
- Detection of VHF-specific genetic sequence by reverse transcription polymerase

chain reaction (RT-PCR) from blood or tissues.
- Detection of VHF viral antigens in tissues by immunohistochemistry.

* Refers to viral hemorrhagic fever caused by filoviruses (Ebola and Marburg virus), Old World arenaviruses (Lassa and Lujo viruses), New World arenaviruses (Guanarito, Machupo, Junin, Sabia, and Chapare viruses), or viruses in the Bunyaviridae family (Rift valley fever and Crimean-Congo Hemorrhagic Fever viruses).

C. Epidemiologic risk factors for Ebola or VHF

One or more exposures **within three weeks before onset of symptoms**:
- Contact with blood or other body fluids of a patient with VHF
- Residence in—or travel to—a VHF endemic area or area with active transmission
- Work in a healthcare facility where suspect or confirmed
- Work in a laboratory that handles VHF specimens
- Work in a laboratory that handles bats, rodents, or primates from VHF endemic area or area with active transmission
- Sexual exposure to semen from confirmed acute or clinically recovered VHF case

Note that a new case of VHF should be enumerated only if not previously counted as a case of VHF caused by the same virus as determined by laboratory evidence.

D. CDC Case classification (2022 VHF criteria)

Suspect: Meets clinical criteria AND epidemiologic linkage criteria

Confirmed: Meets laboratory criteria

4. DIAGNOSIS AND LABORATORY SERVICES

A. Laboratory Diagnosis

Diagnosis depends on clinical suspicion based on symptoms and risk of exposure. Hemorrhage may not occur and a nonspecific initial presentation may resemble other tropical illnesses, so testing for malaria, dengue, or other conditions should be considered. Commercial testing is available for arboviruses such as dengue and chikungunya virus.

Appropriate diagnostic tests in early Ebola disease are polymerase chain reaction (PCR), antigen-capture enzyme-linked immunosorbent assay (ELISA), IgM ELISA, and viral isolation. Later in the disease IgM and IgG antibodies can be tested. Autopsy tissue can be tested by immunohistochemistry, PCR, or virus isolation.

Ebola and Marburg: A negative RT-PCR test result from a blood specimen collected less than 72 hours after onset of symptoms **does not necessarily rule out EBOV/MARV infection**. If the patient is still symptomatic after 72 hours, repeat the test. If the patient has recovered, a repeat test is not required. A negative RT-PCR result from a blood specimen collected **more than 72 hours after symptom onset rules out Ebola virus infection**.

Ebola laboratory testing must be performed by a reference laboratory such as the Washington State Public Health Laboratories (PHL) or Centers for Disease Control and Prevention (CDC). PHL will test for Ebola or Marburg **only** with prior approval from the Local Health Jurisdiction and the Washington State Department of Health.

B. Tests Available at the Washington State Public Health Laboratories (PHL)

PHL Emergency Response Laboratory has capacity to test for EBOV, SUDV, and MARV via rRT-PCR. These results are considered presumptive, and require confirmatory testing at CDC. Other VFHs can be submitted to PHL for pass-through to the CDC. **Prior to submitting specimens, local health jurisdictions should consult with DOH to make testing arrangements** with the Office of Communicable Disease Epidemiology (206-418-5500). Testing approval also must be acquired in advance when submitting specimens to CDC.

Note that PHL requires all clinical specimens have two patient identifiers (e.g., name **and** date of birth) on both the specimen label and submission form. Also include specimen source and collection date. After January 1, 2024, specimens should be submitted via the Lab Web Portal.
PHL Lab Test Menu: https://doh.wa.gov/public-health-provider-resources/public-health-laboratories/lab-test-menu

PHL Ebola/Marburg submission form:
https://www.medialab.com/dv/dl.aspx?d=1565493&dh=d0a9c&u=69790&uh=0e2a1
Form for CDC Pass-Through testing:
https://www.medialab.com/dv/dl.aspx?d=2669409&dh=46b9b&u=69790&uh=0e2a1

C. Specimen Collection

Using personal protection and only safety needles, follow CDC guidance to collect and transport specimens for Ebola virus testing: https://www.cdc.gov/viral-hemorrhagic-fevers/php/laboratories/?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/laboratory-personnel/index.html. For testing guidance and safe handling of specimens, see: https://www.cdc.gov/viral-hemorrhagic-fevers/php/laboratories/guidance-on-performing-routine-diagnostic-testing-for-patients-with-suspected-vhfs-or-other.html?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/laboratory-personnel/safe-specimen-management.html.

If symptom onset is within 3 days, repeat testing may be needed. Specimens taken 3 days or later into illness are preferred.

The following specimen types are acceptable for Ebola virus testing at PHL:

- **Two duplicate** samples **each** a minimum volume of 4mL whole blood in lavender-top EDTA (not heparinized) **plastic** collection tubes OR two duplicate samples of plasma immediately spun down in blood in lavender-top EDTA (not heparinized) **plastic** collection tubes OR centrifuged serum in red or tiger top **plastic** tubes.
    - One specimen shipped to PHL: Store and ship at 2-8° C; if arrival at PHL will be delayed over 72 hours, freeze specimen at -70° C and ship on dry ice.
    - One specimen shipped directly to CDC (with prior approval) OR shipped to PHL for pass-through shipping to CDC: Freeze specimen at -70° C and ship on dry ice.
    - For suspected EBOV: Separated serum can be sent but whole blood is preferred.

- For suspected SUDV or MARV: Only send whole blood in EDTA specimen tube.
- **Do not use glass containers or heparin tubes.**

Additional specimen types such as tissue (e.g., autopsy or frozen specimens from affected organs) **may** be submitted, but prior consultation with CDC is required.

Key points for specimen collection:

- Collect specimens using appropriate infection control procedures to protect staff.
- Label vial/container (must use plastic) with patient's name and a second identifier (e.g., date of birth), and specimen source/type and date obtained.

PHL can receive Ebola specimens 24/7 – arrange **before** shipping (206-418-5500):

Washington State Public Health Laboratories
Attn: Emergency Response Lab
1610 NE 150th Street
Shoreline, WA 98155

It is the shipper's responsibility to correctly package and label specimens. Anybody shipping packages containing medical specimens must have documented shipping training (USDOT and USPS Regulations for Packaging and Labeling Infectious Substances).

- Ensure patient's name and second identifier are on the specimen tube and **match** information on the Lab Web Portal submission form.
- **Specimens will not be processed until ALL following information is known:**
  - Patient name, second identifier, and county of residence
  - Specimen type, date of collection, and test requested
  - Submitter name, address, and telephone/FAX numbers
- Keep all specimens cold, ship cold (or on dry ice if already frozen) and ship according to PHL requirements: https://doh.wa.gov/public-health-provider-resources/public-health-laboratories/lab-test-menu
- Put completed forms in the **outer** pouch of biohazard bag (one specimen and one submission form per bag). Do not put any papers in the inner specimen pouch.
- Follow packing and shipping directions: https://www.cdc.gov/viral-hemorrhagic-fevers/php/laboratories/specimen-packing.html and https://doh.wa.gov/sites/default/files/legacy/Documents/Pubs/302-025-CategoryAShipping.pdf

Currently, there are two options for shipping suspect Ebola specimens to the PHL:

- Transport for noncommercial purposes is permissible by federal, state or local government employees including but not limited to staff from: local health jurisdictions (LHJ), State Department of Health, Washington State Patrol (WSP), or local police or sheriff offices. All **category A** shipping regulations still apply to government couriers.
- MedEx Courier: All **Category A** shipping regulations still apply to couriers. The Declaration for Dangerous Goods "Proper Shipping Name" is: suspected Category A infectious substance". The Authorization code is A140.

D. PHL testing procedures

Test results turnaround time: Results will be phoned within 8-12 hours of testing initiation at PHL. PHL finalizes all negative results, UNLESS there is a concern with specimen quality OR the specimen was collected less than 72 hours after initial symptom onset. **Positive Ebola or Marburg virus RT-PCR results are presumptive until confirmed by CDC; however, public health action should be taken immediately upon presumptive positive result.** These results will be reported in coordination with CDC up to five business days from specimen receipt.

5. ROUTINE CASE INVESTIGATION

Viral hemorrhagic fever (VHF) agents are potential agents of bioterrorism. Immediately report any suspect VHF cases to Office of Communicable Disease Epidemiology (206-418-5500 or 877-539-4344). Also notify CDE of potentially exposed persons, such as travelers from an affected region or contacts of a case.

For the most recent information from Centers for Disease Control and Prevention about the diseases see: (Ebola) https://www.cdc.gov/vhf/ebola/index.html and (Marburg) https://www.cdc.gov/marburg/about/index.html. Planning tips for public health are at: https://www.cdc.gov/viral-hemorrhagic-fevers/php/public-health-strategy/vhf-response-planning.html?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/outbreaks/preparedness/planning-tips-top10.html and https://www.cdc.gov/mmwr/volumes/65/su/su6503a2.htm.

Immediately interview the suspect or confirmed case, and others such as family, friends, coworkers, or employer who may be able to provide pertinent information.

A. General Approach to Patient Assessment

Early recognition is key. Always use standard precautions. If there are concerns the patient could meet the criteria for VHF, immediately separate the patient from others and notify the local health jurisdiction or Washington State Department of Health (206-418-5500). For clinical guidance see: https://www.cdc.gov/ebola/hcp/clinical-guidance/index.html

During an outbreak of Ebola or Marburg, national or state guidance will be developed to assess risk and provide health education to all returning travelers from regions with active Ebola or Marburg virus disease outbreak. Response may include:

- Travelers may be requested to self-monitor for symptoms for 21 days (for fever, headache, body aches, sore muscles, vomiting, diarrhea, stomachache, fatigue, unexplained bleeding or bruising).
- Screening for any **high risk exposure** (such as percutaneous, mucous membrane or skin contact with blood or body fluids of a known or suspected Ebola Virus Disease (EVD) or Marburg Virus Disease (MVD) case; provided healthcare to a known or suspected EVD/MVD case; had direct contact with a dead body in an outbreak area or with a known or suspected EVD/MVD case; or lived in the household with a known or suspected EVD/MVD case). Persons with high risk exposures MAY be recommended to do one or more of the following:
    - quarantine for 21 days from last exposure to case or last day of travel in an outbreak-effected country,

  - have a daily symptom monitoring check-in with public health for up to 21 days,
  - be restricted from any commercial transport,
  - be restricted from certain employment activities, such as working in a healthcare setting,
  - be instructed to immediately contact their local or state health department if they develop symptoms,
  - be directed to a specific and pre-determined healthcare facility for evaluation and specimen collection.

Specifics of symptom screening at departure and arrival airports, recommendations for symptom monitoring, and additional public health interventions vary from outbreak to outbreak. DOH will work with LHJs to implement CDC recommendations.

If a person under self-monitoring develops symptoms, they should be isolated, not permitted to travel by commercial transport (e.g., but, taxi, rideshare, train, airline flight), and assessed. See the CDC guidance for assessing a symptomatic returning traveler: https://www.cdc.gov/viral-hemorrhagic-fevers/hcp/diagnosis-testing/evaluating-an-ill-person-for-vhf.html

Consider risk factors with a complete exposure history. If there are no risk factors, continue with usual triage and assess for other causes of fever in a returning traveler. The assessment facility should consider and test for likely alternate diagnoses (e.g., malaria, dengue, bacterial or viral diarrhea, influenza).

- General provider guidance: https://www.cdc.gov/ebola/hcp/clinical-guidance/?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/clinicians/index.html

If the patient requires in-hospital management, base decisions regarding infection control precautions on the patient's clinical situation with consultation from the hospital infection prevention office and the local health jurisdiction's policy. When Ebola virus disease is a concern, implement isolation and staff use of personal protective equipment:

- Infection prevention in hospitalized patients: https://www.cdc.gov/viral-hemorrhagic-fevers/hcp/infection-control/?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/clinicians/evd/infection-control.html
- Personal protective equipment: https://www.cdc.gov/viral-hemorrhagic-fevers/hcp/guidance/ppe-clinically-unstable.html?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/healthcare-us/ppe/guidance.html
- Guidance for laboratories testing routine clinical specimens: https://www.cdc.gov/viral-hemorrhagic-fevers/php/laboratories/guidance-on-performing-routine-diagnostic-testing-for-patients-with-suspected-vhfs-or-other.html?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/laboratory-personnel/safe-specimen-management.html
- Environmental control: https://www.cdc.gov/viral-hemorrhagic-fevers/hcp/infection-control/environmental-infection-control-hospitals.html
- Safe handling of waste: https://www.cdc.gov/viral-hemorrhagic-fevers/hcp/infection-control/handling-vhf-associated-

waste.html?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/clinicians/cleaning/handling-waste.html

The healthcare facility and public health agencies (DOH and LHJ) will jointly decide need for testing and possible transport of a suspect case.

The provider should consider alternative diagnoses to provide timely appropriate patient care, particularly for potentially serious conditions, such as malaria or dengue. See: https://www.cdc.gov/viral-hemorrhagic-fevers/php/laboratories/guidance-on-performing-routine-diagnostic-testing-for-patients-with-suspected-vhfs-or-other.html.

It may be appropriate to empirically treat with hydration, antipyretics, anti-emetics, an antibiotic (covering suspect conditions such as meningococcal disease or typhoid) or anti-malarial medications.

A Person Under Investigation (PUI) may be discharged by a joint decision from the healthcare provider, the local health jurisdiction, the Health Officer, and the State Epidemiologist considering these criteria, as clinically indicated:

- The medical team determines the illness no longer appears consistent with EVD/MVD/VHF, and/or another more likely diagnosis is made (e.g., malaria).
- The PUI is afebrile off antipyretics for 24 hours.
- Consistent symptoms (for example, fever, diarrhea or vomiting) have either resolved or can be accounted for by an alternative diagnosis.
- There are no clinical laboratory results consistent with EVD/MVD. Note that a negative RT-PCR collected within 72 hours of onset is not definitive.
- The PUI understand the plan for accessing medical care if symptoms recur.

B. Evaluate for Testing

Compatible symptoms are fever, severe headache, muscle pain, enteral symptoms (vomiting, diarrhea), abdominal pain, impaired kidney or liver function, internal or external bleeding, (5-10% of patients have unexplained hemorrhage such as petechiae, bruising, oozing from cuts, mucosal bleeding), or other symptom a healthcare provider considers consistent). Enteral symptoms start around day 5.

Laboratory testing for transmissible viral hemorrhagic fever such as Ebola or Marburg must be performed by a reference laboratory such as the Washington State Public Health Laboratories (PHL) after approval from CDC. Facilitate transport of specimens to PHL for confirmatory testing (see Section 4). Include a full travel history with a request.

Testing for Ebola or Marburg virus disease:

Ebola or Marburg testing is **recommended** for persons with fever, compatible symptoms, and exposure, but also consider testing for malaria, dengue, or other tropical infections as indicated. After approval from the local health jurisdiction and Department of Health in consultation with CDC, PHL will test cases with any risk of exposure who develop either fever **or** compatible symptoms. Optional testing for other patients may be considered after consultation.

Other testing

PHL will test any specimens for patients suspected of EVD/MVD for malaria as per standard lab protocol; any other additional testing is the responsibility of the healthcare facility to order through their standard clinical laboratory pathways. Test as indicated by symptoms and exposure history for other agent of VHF such as dengue. See Section 6 for discharging people under investigation (PUI) for Ebola or Marburg virus disease (EVD/MVD). Clinicians should also consider additional infections such as pneumonia, influenza, COVID-19, meningococcemia, cholera, typhoid fever, and other bacterial and parasitic agents.

C. Patient Management

Ebola: Two monoclonal antibody agents, Inmazeb® and Ebanga®, are approved for treating patients with EBOV. (Note: these monoclonal antibody therapies are not believed to be effective in treating SUDV or other Ebola viruses; clinical trials are underway for additional therapeutic agents and vaccines for SUDV.) ERVEBO is an FDA-approved vaccine for the prevention of EBOV; it is available in the US through the CDC Ebola Vaccine Program and may be given to Ebola responders, healthcare workers, and lab workers.

Marburg: A monoclonal antibody treatment (MBP 091) is under development, and may soon be available via Emergency Use Authorization in the US. Several vaccines to prevent MVD are in development as of late 2024. One of these vaccine candidates (chAd3-Marburg, Sabin Vaccine Institute/NIH) was provided in October 2024 to protect healthcare workers and other close contacts in Rwanda.

Medical treatment of a case includes providing intravenous fluids (IV), balancing electrolytes, maintaining oxygen status and blood pressure, addressing organ failure (e.g., providing dialysis for kidney failure) and treating any other infections. For transmissible agents, always follow strict infection control measures: https://www.cdc.gov/viral-hemorrhagic-fevers/hcp/infection-control/?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/clinicians/evd/infection-control.html

D. Identify Potentially Exposed Persons for Ebola and Transmissible VHF Agents

Contact traceback and management are key for disease control and will be done in coordination with the Centers for Disease Control and Prevention (CDC). Avoid exposure for public health personnel (i.e., conduct interviews by telephone). Immediately identify potentially exposed persons for evaluation of level of risk and appropriate public health actions. Contacts may include co-travelers, household members, friends, coworkers, persons sharing a travel vehicle, EMS staff, healthcare workers, and other patients in the same healthcare facility.

6. MANAGING SPECIAL SITUATIONS

A. Assessing travelers arrived from affected regions during a KNOWN OUTBREAK

CDC/US Government may elect to instate a returning traveler screening process when there is a known outbreak of VFH, particularly for outbreaks of Ebola and Marburg.

This may include:

- Funneling travelers to one or more US airports for entry screening
- Collecting traveler contact information with the intention to pass information on to state/local public health jurisdictions
- Temperature/symptom Monitoring
- Providing health & symptom monitoring information, ideally in multiple languages
- Conducting **risk assessments** which may include determination of the following:
  - Was the person present in a known VHF outbreak area?
  - Did they have potential exposure to VHF or people with VHF, e.g., as a caregiver, healthcare provider, laboratory worker, or burial worker?
  - Did they use personal protective equipment and other recommended infection control measures during any potential exposure?
  - Do they have any other epidemiologic risk factors including potential exposure to bats, wild animals, specific high-risk food consumption, etc?
  - Do they have any symptoms?

B. Managing people potentially exposed to VHF agents

Local health jurisdictions (LHJs) and/or DOH will manage potentially exposed persons according to available Centers for Disease Control and Prevention (CDC) recommendations.

- Obtain information about exposure to patients and travel to affected countries, including details of exposures (patients, healthcare settings or reservoir animals [bats]) and date of last exposure.
- Consider post-exposure vaccine if the agent is EBOV.
- People with **high-risk exposures** (e.g., needle stick, unprotected exposure to a symptomatic case in a household or healthcare setting) may be asked to quarantine until 21 days after their last high-risk exposure and self-monitor for symptoms. CDC/DOH may recommend that a public health agency should have daily contact (e.g., receive daily text/phone call/email reporting no symptoms).
- People with **low-risk exposures** may be asked to self-monitor for symptoms. A public health agency should have, at a minimum, intermittent contact, but may elect to contact the person more frequently).

C. Special healthcare situations when VHF is suspected

- Handling human remains: https://www.cdc.gov/viral-hemorrhagic-fevers/hcp/infection-control/guidance-for-safe-handling-of-human-remains-of-vhf-patients-in-u-s-hospitals-and-mortuaries.html?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/clinicians/evd/handling-human-remains.html
- Acute hemodialysis: https://www.cdc.gov/viral-hemorrhagic-fevers/hcp/clinical-care/acute-hemodialysis-us-hospitals.html?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/clinicians/evd/a

cute-hemodialysis.html

- Ebola in persons who are pregnant: https://www.cdc.gov/ebola/hcp/clinical-guidance/clinical-guidance-for-ebola-in-people-who-are-pregnant.html?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/clinicians/evd/pregnant-women.html
- Ebola in neonates: https://www.cdc.gov/ebola/hcp/clinical-guidance/clinical-guidance-for-neonates-born-to-patients-with-suspected-or-confirmed-ebola-disease.html

7. ROUTINE PREVENTION

A. Prevention Recommendations

EBOV: Approved December 2019, the FDA-Licensed EBOV vaccine (EREVBO) is available via the CDC Ebola Vaccine Program.

- There is a report of a suspected vaccine failure resulting in 91 additional cases during the 2018 DRC EBOV outbreak: https://www.nejm.org/doi/full/10.1056/NEJMoa2024670.

Other VHFs: Experimental vaccines for SUDV and MARV are under development.

Meticulous attention to personal protective equipment (PPE) and environmental cleaning during patient care are essential to avoid exposure in healthcare settings. Use particular care to avoid contamination when removing PPE.

- General prevention: https://www.cdc.gov/ebola/about/?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/prevention/index.html
- Travelers to an outbreak area: https://www.cdc.gov/ebola/about/?CDC_AAref_Val=https://www.cdc.gov/vhf/ebola/prevention/index.html and https://www.cdc.gov/marburg/index.html

ACKNOWLEDGEMENTS

This document is a revision of the Washington State Guidelines for Notifiable Condition Reporting and Surveillance published in 2002 which were originally based on the Control of Communicable Diseases Manual (CCDM), 17th Edition; James Chin, Ed. APHA 2000. We would like to acknowledge the Oregon Department of Human Services for developing the format and select content of this document.

UPDATES

Created October 6, 2014.

Updated October 29, 2014 based on new CDC recommendations for case definition, patient screening, and infection control.

Updated November 7, 2014, based on new CDC recommendations for evaluating ambulatory patients.

Updated December 23, 2014, based on updated laboratory shipping requirements and new CDC recommendations for medical waste and sewage.

Updated March 23, 2015 to include more detail about clinical laboratory handling of specimens.

Updated May 2016: front page added

Updated March 2018: revised and shortened in absence of outbreak cases.

Updated August 2019: material specific to 2014 outbreak removed

Updated March 2021: added current outbreak areas (Section 2D), updated guidance for current outbreaks (Sections 5A and

Section 6A)

Updated May 2021: link for risk related to pets (Section 5A); vaccine failure reported (Section 7A)

Updated October 2022: included new outbreak in Uganda (Section 2D); updated to 2022 case definition (Section 3), changed specimen type for PHL to EDTA whole blood (Section 4C), added vaccine and treatment information for species *Zaire ebolavirus* (Section 5).

Updated December 2022: updated testing information; updated for 2023 WAC revision combined provider and facility reporting requirement (Section 1B2), updated laboratory submission (Section 1B3).

December 2023: For 2024 WAC revision updated laboratory submission.

July 2024: Standard review; updated main agent name from species *Zaire ebolavirus* to *orthoebolavirus zairense*; CDC links updated.

October 2024: Update to make document more generalizable for all VHF agents, and for traveler monitoring related to the 2024 Marburg outbreak in Rwanda.