

Marburg Virus Disease Preparation for Frontline Facilities

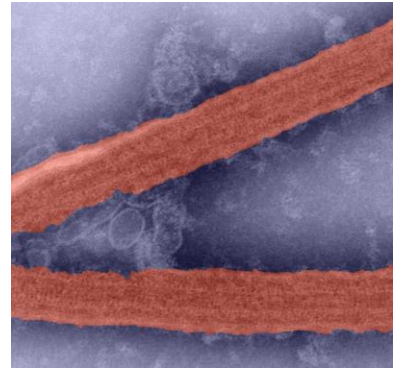
November 12, 2024

Agenda

- Background on Marburg Virus Disease (MVD)
- Situation summary in Rwanda
- What VDH is doing
- Your role as a frontline facility
 - *Patient screening and infection prevention & control measures*
- Resources

MVD Fast Facts

- Rare, severe disease that affects people and other primates
- Caused by Marburg virus and Ravn virus (filovirus, like Ebola)
- Spread by contact with body fluids from infected people or animals, contaminated objects, and semen from men who have recovered
- Symptoms start 2–21 days after exposure
 - Person is not infectious until symptoms start
 - Abrupt onset of fever, headache, and malaise
 - Severe diarrhea, abdominal pain and cramping, nausea, and vomiting can begin on Day 3
 - Hemorrhagic symptoms (if present) can begin on Day 5–7
- Testing (BioFire Film Array NGDS Warrior Panel) available in Virginia at DCLS
- No FDA-approved treatments or vaccines



2024 Rwanda Outbreak Summary

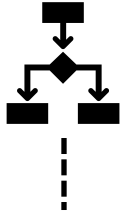
- On Sep. 27, 2024, Republic of Rwanda's Ministry of Health declared outbreak
- As of Nov. 8, 66 cases, including 15 deaths
 - Most cases in healthcare personnel (HCP) working at 2 healthcare facilities in Kigali
- Public health officials are tracing contacts, vaccinating contacts and HCP with investigational vaccine, and conducting exit screening
- **Currently, no cases in United States and risk is considered low**



U.S. Preparedness and Response

- **Sep. 30:** CDC issued Level 2 Travel Health Notice for Rwanda
- **Oct. 3:** CDC issued [Health Alert Network](#) advisory with [interim recommendations](#) for public health management of U.S.-based HCP who were present in a healthcare facility in Rwanda during the previous 21 days and are returning home
- **Oct. 7:** CDC upgraded to [Level 3 Travel Health Notice](#) and began posting messages at international arrival areas in 3 airports receiving travelers
- **Oct. 11:** CDC updated its [Interim Recommendations for Public Health Management of U.S.-based HCP returning from Rwanda](#)
- **Oct. 15:** CDC posted [Interim Recommendations for Post-Arrival Public Health Management of Travelers from Rwanda](#)
- **Oct. 16:** Department of Homeland Security begins redirecting travelers who have been in Rwanda in past 21 days, CDC begins screening
- **Oct. 23, Oct. 25, Oct. 30, Nov. 4:** Given latest outbreak information, CDC updated public health guidance for returning U.S. HCP and travelers

VDH Preparedness and Response



Established ICS on Oct. 8

- Includes Clinical Consult Group to support LHDs



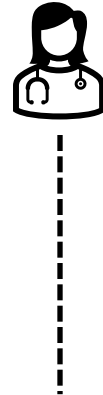
Sharing info with providers and public

- Issued [Clinician Letter](#) on Oct. 8
- Launched [Marburg Outbreak in Rwanda website](#) on Oct. 21
- Presented to VHHA members on Oct. 23
- Providing Infection Prevention and Control webinar for frontline facilities on Nov. 12
- Planning Designated Infection Control Officer Training for EMS Infection Control Officers



Started traveler monitoring on Oct. 16

- Developed guidance for VDH staff and provided training on Oct. 17 and Oct. 25
- Developed handout for travelers arriving at Dulles who are staying in Virginia



Engaging partners and updating plans and tools

- Pre-positioned DCLS test kits at select hospitals and 35 LHDs
- Issued [Declaration of MVD as a Communicable Disease of Public Health Threat](#) for Virginia on Oct. 14

Traveler Screening and Monitoring

VDH Traveler Monitoring Program

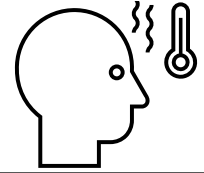


CDC sends VDH daily list of travelers recommended for monitoring in VA



VDH calls traveler:

- Assess exposures and symptoms
- Describe 21-day monitoring and what to do if symptoms begin
- Answer questions



If traveler develops symptoms: LHD staff coordinate with facility and refer for evaluation

VDH is currently monitoring one traveler in the Northern Region

Risk Assessment and Recommendations

	High Reported high-risk exposure	Medium: HCP HCP in any area of a Rwandan healthcare facility (HCF) with known transmission risk	Medium: Non-HCP Non-HCP in patient care areas of Rwandan HCF with known transmission risk	Some Present in outbreak area and had other potential exposures	Low Present in affected country or area, but had no other exposures
Movement restrictions	Quarantine at home (virtual work/school)	<ul style="list-style-type: none"> No commercial travel restrictions, but notify VDH before travel Avoid non-essential visits to U.S. HCF 		No commercial travel restrictions, but notify VDH before travel	None
Exclude HCP from work duties in U.S. HCF?	Yes, quarantine at home	Yes, excluded from work duties (both clinical and non-clinical) in a U.S. healthcare facility until 21 days after last presence in a HCF with known transmission risk	Does not apply	Does not apply	Does not apply
Frequency of public health monitoring	Daily	Daily	Daily	Weekly	Not applicable (self-monitoring)

Information Sharing

- VDH plans to share aggregate numbers of monitored travelers by region with partners including hospitals, local health districts, and EMS agencies.
 - To protect traveler's confidentiality, consistent with the Virginia Code, Board of Health Regulations, and VDH's Confidentiality Policy, VDH does **not** plan to share *individual* details of travelers under monitoring in Virginia
 - VDH **will** communicate with healthcare partners if or when a traveler develops symptoms and medical evaluation is needed.

A pyramid diagram with four horizontal levels, colored in shades of blue. The top level is the darkest blue, and the levels become progressively lighter as they descend. Each level is labeled with its corresponding number in bold black text.

Level 1

Level 1 facilities, or Regional Emerging Special Pathogen Treatment Centers (RESPTCs), are regional resources hubs which provide highly specialized care. *Level 1s care for patients for their duration of illness.*

Level 2

Level 2 facilities, or Special Pathogen Treatment Centers (SPTCs), have the capacity to deliver specialized care to clusters of patients and serve as primary patient care delivery centers. *Level 2s can care for patients for their duration of illness.*

Level 3

Level 3 facilities, or Assessment Centers, are widely accessible care delivery facilities, able to conduct limited basic laboratory testing, stabilize patients, and coordinate rapid patient transfer. *Level 3s can care for patients for 12-36 hours.*

Level 4

Level 4 facilities, or All Other Healthcare Facilities, can identify, isolate, inform, & initiate stabilizing medical care; protect staff; and arrange timely patient transport to minimize impact to normal facility operations.

High-Level Minimum Capabilities Comparison



The table is intended to provide a high-level sample of quantifiable difference across levels and does not include all minimum capabilities.

Capabilities	Level 1	Level 2	Level 3
Care Duration	Duration of illness	Duration of illness	12-36 Hours
Capacity for VHF, airborne	2 VHFs 10 airborne	1-2 VHFs 4 airborne	1+ isolation space
PPE Supply	2 VHF cases for at least 7 days onsite (with plans to support 21 days of care)	1-2 VHF cases for at least 7 days onsite (with plans to support 21 days of care)	3 VHF cases for 12-36 hours (before resupply)
Exercises	Quarterly	At least twice annually	At least once annually for mystery patient exercise
PPE Training	Quarterly	At least twice annually	At least once annually
Skills Training	Quarterly	At least annually	--
Lab Testing Ability	Clinical lab testing	Clinical lab testing	Point-of-care onsite clinical lab testing

IDENTIFY

- Travel history, exposures and symptoms
- If exposure + symptoms, then isolate and inform
- Consider alternate dx, evaluate appropriately

ISOLATE

- Private room w/ private bathroom
- Appropriate PPE, limit HCP in the room
- Only necessary tests; avoid aerosol-generating procedures
- Follow guidelines for Category A waste management

INFORM

- Notify facility IP and infectious diseases staff
- Contact local health department
- Consult with state and local public health and CDC about testing

INITIATE

- Initiate stabilizing medical care

Healthcare Facility Patient Screening and Infection Prevention & Control

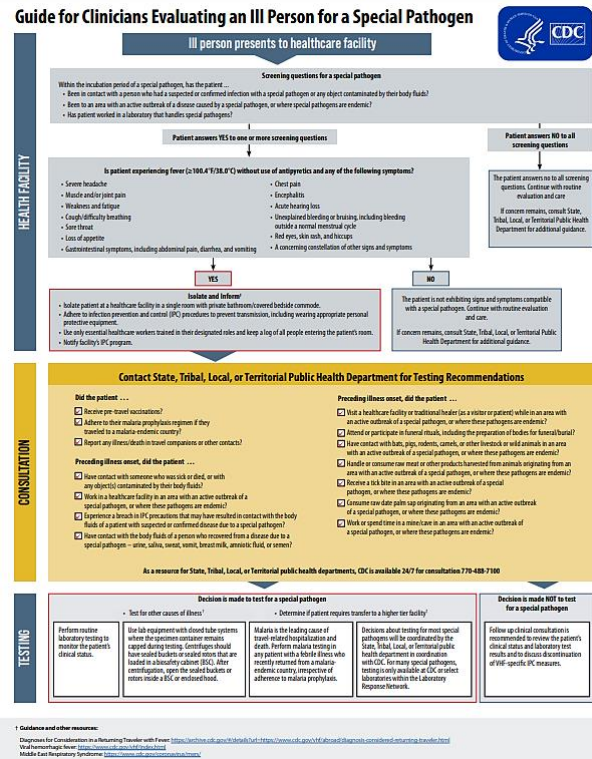
Healthcare Facility Patient Screening

- Ensure triage and evaluation processes are in place to identify patients with possible viral hemorrhagic fevers (VHF) including MVD:
 - Exposure risks and compatible symptoms
 - Relevant travel history
- If exposure risks and symptoms are present, immediately isolate the patient
 - Maintain precautions until receiving a negative MVD test result on a sample collected **≥ 72 hours after symptom onset**
- **Notify the infection prevention program and [local health department \(LHD\)](#) immediately**

Travel History and Exposures in 21 Days Before Symptom Onset

- Have you been to a country with [an active MVD virus outbreak](#) in the past 21 days?
- Have you had direct contact with a symptomatic person with suspected or confirmed MVD, or with any objects contaminated by their body fluids?
- Did you experience a breach in infection prevention and control precautions that resulted in the potential for contact with body fluids of a patient with suspected or confirmed MVD?
- Have you had contact with semen from a person who has recovered from MVD?
- Have you participated in any of the following activities while in [an area with an active MVD outbreak](#):
 - Contact with someone who was sick or died, or any objects contaminated by their body fluids?
 - Attended or participated in funeral rituals, including preparing bodies for funeral or burial?
 - Visited or worked in a healthcare facility or laboratory?
 - Contact with cave-dwelling bats or non-human primates?
 - Worked or spent time in a mine or cave?

CDC Triage and Evaluation Algorithm



Isolation Precautions

- Isolate patient in single room with private bathroom and keep door closed
 - Dedicate medical equipment (preferably disposables) and point of care devices
- Monitor the patient care area **at all times**
 - Maintain a log of people entering and exiting the room
 - Limit room entry to healthcare workers essential to the patient's care
 - Observe HCP providing care to identify lapses or near misses
 - Establish an [exposure management plan](#) for any potential exposures

Isolate Readiness Items		
#	Item	Status Yes or No
1.	Masks are available at all points of entry for patients entering the facility to quickly apply if indicated.	Yes <input type="checkbox"/> No <input type="checkbox"/>
2.	An isolation space has been identified and:	Yes <input type="checkbox"/> No <input type="checkbox"/>
2a.	Staff are oriented to its location, use, and limitations.	Yes <input type="checkbox"/> No <input type="checkbox"/>
2b.	The process for using the space has been developed and assessed (e.g., moving out other patients or extra equipment, initiating and validating negative pressure).	Yes <input type="checkbox"/> No <input type="checkbox"/>
2c.	A written checklist has been developed to direct the preparation of the isolation space(s) and staff know where and how to access it.	Yes <input type="checkbox"/> No <input type="checkbox"/>
2d.	There is a private restroom or bedside commode available for the patient to use in accordance with facility and jurisdictional regulations for human waste management.	Yes <input type="checkbox"/> No <input type="checkbox"/>

[NETEC Healthcare Facility VHF Preparedness Checklist](#)

Personal Protective Equipment (PPE)

Basic Principles

- Select PPE combinations that provide recommended protection
 - Must fully cover skin, mucous membranes, and clothing
- Provide comprehensive training and have HCP demonstrate competency *before* caring for suspect or confirmed patients
 - [CDC training videos](#) (refer to videos for specific PPE combinations used)
- Have onsite supervision and trained observer to supervise HCP providing care and oversee PPE donning/doffing
 - [Video - How to Serve as The Trained Observer](#)
- Dedicate adequate space for putting on and taking off PPE

Resources: [Donning and Doffing PPE During Management of Patients with Selected VHF in U.S. Hospitals](#); [PPE FAQs](#)

PPE: Suspected and Clinically Stable

Patient Status	Recommended PPE
<p>Suspected to have MVD (VHF) and is clinically stable with no bleeding, vomiting, or diarrhea and does not need invasive or aerosol-generating procedures</p>	<p>At minimum wear single-use (disposable):</p> <ul style="list-style-type: none">• Fluid-resistant gown¹ that extends to at least mid-calf OR fluid-resistant¹ coveralls without integrated hood• Full face shield• Facemask• Two pairs of gloves<ul style="list-style-type: none">• At a minimum, outer gloves should have extended cuffs <p>¹ See Table 1. Specifications for fluid-resistant gowns and coveralls</p>

Resources: [PPE: Clinically Stable Patients Suspected to have VHF](#); [PPE FAQs](#)

PPE: Confirmed or Clinically Unstable

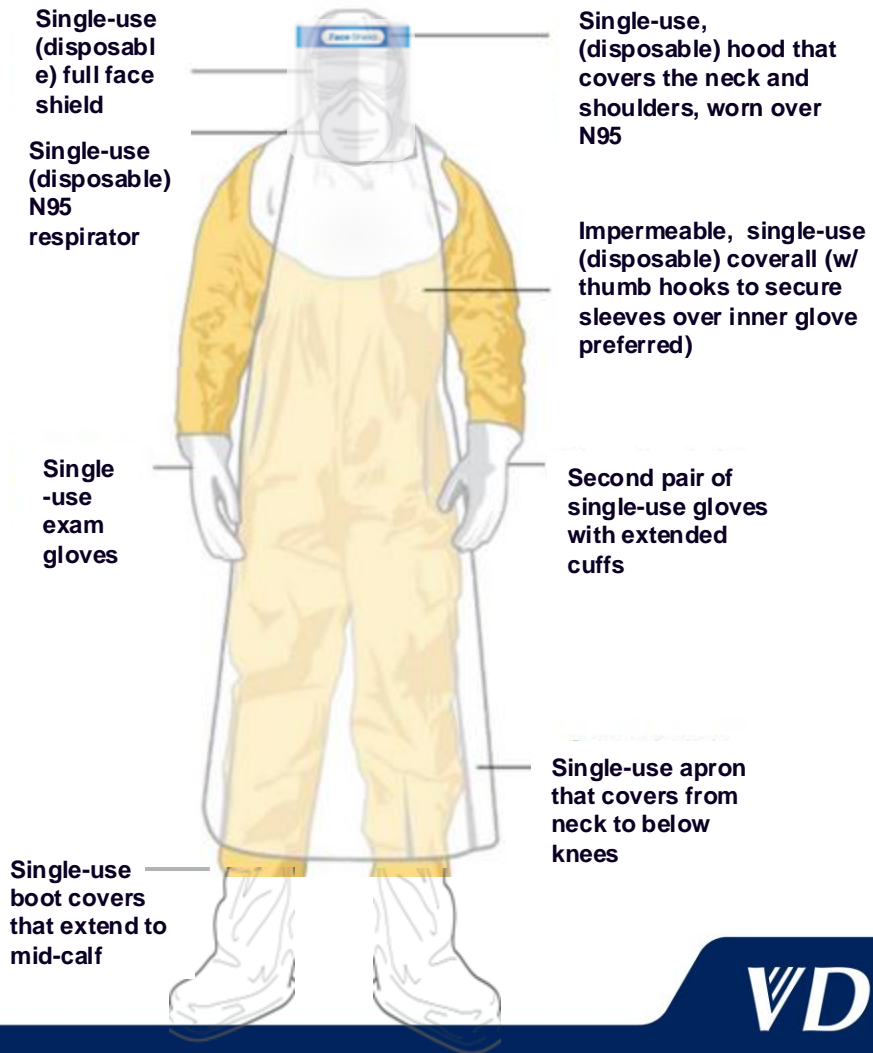
Patient Status	Recommended PPE
<ul style="list-style-type: none">• Suspected to have MVD and<ul style="list-style-type: none">○ Has obvious bleeding, vomiting, or diarrhea OR○ <u>Is clinically unstable</u> and/or needs invasive or aerosol-generating procedures	<ul style="list-style-type: none">• Single-use (disposable) impermeable garment (gown or coverall)• Respiratory, head, and face protection<ul style="list-style-type: none">○ PAPR or○ N95 respirator with single-use (disposable) surgical hood and full face shield• Single-use (disposable)<ul style="list-style-type: none">○ Inner and outer pair of examination gloves (at min. outer gloves with extended cuffs)○ Boot covers○ Apron• Trained observers and doffing assistants also have recommended PPE
<ul style="list-style-type: none">• Confirmed to have MVD	

Resources: [PPE: Confirmed Patients and Clinically Unstable Patients Suspected to have VHF](#); [PPE FAQs](#)

PPE in Practice

Example of what PPE for a **clinically unstable** patient with suspected MVD might look like

Resources: [PPE: Confirmed Patients and Clinically Unstable Patients Suspected to have VHF](#); [PPE FAQs](#)



PPE DO's and DON'Ts

DO

- ✓ Have a trained observer to observe donning/doffing
- ✓ Change PPE that is heavily contaminated with blood or other body fluids
- ✓ Change PPE if it gets damaged (e.g., glove tears, gown rips)
- ✓ Remove PPE correctly and carefully, even when you're tired

DON'T

- ▲ Wear PPE that doesn't fully cover your skin, mucous membranes, or clothes
- ▲ Touch or adjust PPE once it's on
- ▲ Touch your face
- ▲ Touch unnecessary objects, such as cell phones, pens, patient charts
- ▲ Touch surfaces such as bed rails, counters unless absolutely necessary

Hand Hygiene

- Ensure availability of supplies
- Perform hand hygiene frequently
 - Before putting on PPE
 - During care of the patient
 - Disinfect outer gloves frequently, especially after contact with body fluids
 - After removing PPE
- During doffing process: Inspect and disinfect outer and inner gloves
 - Follow specified steps in the PPE doffing processes
 - Use EPA-registered disinfectant wipe ([List Q](#)) or alcohol-based hand rub

Clinical Management

- During notification and testing process, **clinical management and stabilization of person with suspected MVD should proceed** as indicated
- Early symptoms are nonspecific and seen in patients with other more common diseases (e.g., **malaria**, flu, COVID-19, meningococemia, typhoid fever)
 - Evaluate for other diseases while waiting on MVD test results
- Consider evaluation and treatment for **malaria**
 - Leading cause of undifferentiated fever after travel to sub-Saharan Africa
 - CDC has information on modifying thick and thin smears
 - Assistance with diagnosis or management of suspected malaria is available by calling CDC Emergency Operations Center (770-488-7100) and speaking with CDC malaria clinician

Clinical Management: Level 3 & 4 Facilities

- All healthcare facilities are expected to identify, isolate, inform, and stabilize patients for transfer or transport
 - Level 3 Facilities or Assessment Centers
 - Can care for patients for 12-36 hrs and conduct limited basic laboratory testing, stabilize patients, and coordinate rapid patient transfer.
 - Level 4 Facilities or All Other Healthcare Facilities
 - Can **identify, isolate, inform, & initiate stabilizing medical care**; protect staff; and coordinate timely patient transport to minimize impact to normal facility operations.

Environmental Cleaning and Disinfection

- Ensure cleaning personnel
 - Have been trained and evaluated in all recommended protocols prior to entering patient care area
 - Wear [recommended PPE](#)
- Follow CDC's [environmental cleaning](#) guidance
 - Use an EPA-registered disinfectant from [List Q](#) (Disinfectants for Emerging Viral Pathogens)
 - Regularly clean and disinfect surfaces, even if not visibly soiled, in the:
 - Patient care area
 - PPE doffing area
 - Discard all cloth products (linens, nonfluid-impermeable pillows or mattresses, and textile privacy curtains) [appropriately](#)
 - Note: Cleaning byproducts can be considered Category A waste

Waste Management

- Marburg virus is a Category A infectious substance that requires special [waste management](#)
 - Category A: material or substance capable of causing permanent disability or life-threatening or fatal disease
- Handling of Category A waste requires specific PPE, bagging, storage, and transport protocols, and should be physically separate from other solid waste.
- The safest and best options for treating Category A waste so that it is no longer infectious is through a process of inactivation at the location where generated.
 - Waste that cannot be treated on-site, must be sent off-site to special facilities for proper treatment and disposal.
- Prior to transport, entities responsible for generating infectious waste must classify it appropriately as Category A waste when required by EPA/state.

Waste Management

- Packaging, storing, transporting and final disposition of Category A waste is the responsibility of the generating site, along with any associated expenses.
- VDH does not maintain a contractual relationship with any Category A waste inactivation, transportation, or final disposition services.

Resources:

- [CDC: VHF-associated waste management](#) guidance
- [NETEC: Basic Guidance for Category A Waste Management in Special Pathogen Isolation](#)
- [Managing Solid Waste Contaminated with a Category A Infectious Substance](#)

Waste Management Checklist

Waste Management and Cleaning and disinfection Items

#	Item	Status	Notes
1.	There is a written plan for the management of waste generated during the care of a person suspected or confirmed to have a pathogen, and it includes the following:	Yes <input type="checkbox"/> No <input type="checkbox"/>	Click here to enter facility notes.
1a.	A designated secured waste holding area where waste can be separated from the department and facility's normal waste holding area.	Yes <input type="checkbox"/> No <input type="checkbox"/>	Click here to enter facility notes.
1b.	Staff training on high-risk biohazard waste management process including proper handling of human biological waste, used and unused medical equipment, used and unused disposable supplies, patient linen and clothing, and terminal cleaning of patient room.	Yes <input type="checkbox"/> No <input type="checkbox"/>	Click here to enter facility notes.
1c.	Secure packaging/ containment of waste to include proper closure of biohazard bags and approved hard sided transport containers.	Yes <input type="checkbox"/> No <input type="checkbox"/>	Click here to enter facility notes.
1d.	If required, a vendor licensed to transport category A infectious substance will transport the waste for off-site inactivation.	Yes <input type="checkbox"/> No <input type="checkbox"/>	Click here to enter facility notes.

Prepare for Transport

- EMS agencies will work with their Emergency Physician and their Designated Infection Control Officer (DICO) to establish protocols on handling patients with suspected or confirmed highly infectious pathogens.
- Standard precautions will be used by all EMS providers and additional PPE will be added when history or exam indicates the need.
- Placing a mask on the patient (if tolerated) is recommended
- Based on the patient's condition, EMS will determine the most appropriate hospital to transport to and will notify that hospital of the patient's signs, symptoms, and if there is a concern for a high consequence illness. They will provide the receiving hospital with an ETA and receive any instructions the hospital may provide.
- Resource – [ASPR Tracie EMS Infectious Disease Playbook](#)

Managing a Suspect Case

Managing a Suspect Case

1. VDH receives initial notification

2. Assess if [suspect case criteria](#) are met
(symptoms and epidemiologic risk factor)

3. VDH contacts CDC to approve testing

4. If CDC approves testing, VDH coordinates call
with HCF, DCLS about testing, +/- transfer

5. DCLS facilitates specimen collection and
transport (courier), conducts testing

6. Subsequent work based on test result

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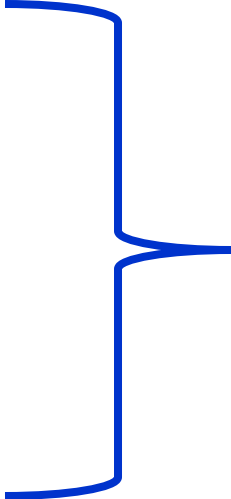
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Most likely will occur
at Level 1 or 2 facility

Recommended Steps to Take Now

- Ensure staff know how to contact infection control and the [local health department](#)
- During triage, assess compatible symptoms and travel history
- Review infection prevention and control procedures to align with CDC guidance
 - Isolation precautions
 - PPE donning and doffing
 - Ensure availability of appropriate PPE and other infection control supplies ([PPE Calculator Tool](#))
 - Environmental cleaning and waste management
 - Staff training
- Assign internal points of contact and subject matter experts
- Reach out to VDH for questions or training needs (hai@vdh.virginia.gov)

Take Home Messages

- MVD is rare, but severe disease that is clinically similar to Ebola Virus Disease
- Ongoing work is being done to contain the current outbreak in Rwanda
- Currently no cases in U.S. and risk of infection is considered low
- People entering the U.S. who have been in Rwanda in past 21 days are being redirected to 1 of 3 U.S. airports, including Dulles
- VDH is monitoring certain travelers who have been in Rwanda in past 21 days
- Virginia clinicians should be prepared to promptly **identify**, **isolate**, rapidly **inform** infection prevention and control staff and LHD of a suspected case, and **initiate stabilizing medical care**
 - A detailed travel history is critical in identifying MVD

Key Resources

- **CDC**
 - [Environmental Infection Control Guidance for Patients with Selected VHF](#)s
 - [Guide for Clinicians Evaluating an Ill Person for VHF or Other High-Consequence Disease](#)
 - [Guidance for Emergency Services](#)
 - [Guidance on Performing Routine Diagnostic Testing for Patients with Suspected VHF](#)s or Other High-Consequence Disease
 - [Handling VHF-Associated Waste](#)
 - [Health Advisory Network: First Marburg Virus Disease Outbreak in the Republic of Rwanda](#)
 - [Infection Prevention and Control Guidance for Patients Suspected or Confirmed to Have Viral Hemorrhagic Fevers](#)
 - [Marburg](#) website
 - [Personal Protective Equipment Guidance for Patients with Selected VHF](#)s (includes training videos)
 - [PPE for Confirmed or Clinically Unstable Patients](#); [PPE for Clinically Stable Patients](#); [PPE FAQs](#)
- **WHO:** [Disease Outbreak News](#) and [Marburg](#)
- **Rwanda Biomedical Center:** [Data Dashboard](#)

Key Resources

- Stay connected by enrolling in [CDC's Health Alert Network](#) and [VDH's monthly Healthcare Professional Newsletter](#)
- **VDH**
 - [VDH Marburg Outbreak](#)
 - [Health Department Locator](#)
 - [Clinician Letter: Marburg Virus Disease Update](#)
- [DCLS Ebola and Marburg Testing and Shipping Instructions](#)
- **National Emerging Special Pathogen Training and Education Center (NETEC):** [Marburg resources](#)
 - [Basic Guidance for Category A Waste Management in Special Pathogen Isolation](#)
 - [Healthcare Facility VHF Preparedness Checklist](#)

Thank You!

Questions?

VDH Healthcare-Associated Infections and Antimicrobial
Resistance Program

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