Emergency Preparedness and Response

First Marburg Virus Disease Outbreak in the Republic of Rwanda

HEALTH ALERT NETWORK

This is an official CDC HEALTH ADVISORY

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Summary

The Centers for Disease Control and Prevention (CDC) is issuing this Health Alert Network (HAN) Health Advisory to inform clinicians and health departments about the Republic of Rwanda's first confirmed outbreak of Marburg virus disease (MVD) with 36 laboratory confirmed cases and 11 deaths reported as of October 2, 2024, including at least 19 cases in healthcare workers. This report summarizes CDC's recommendations for public health departments and clinicians in the United States on case identification and testing and clinical laboratory biosafety considerations. **No confirmed cases of MVD related to this outbreak have been reported in the United States or other countries outside of the Republic of Rwanda to date.** Currently, the risk of MVD in the United States is low; however, clinicians should be aware of the potential for imported cases.

Background

MVD is a rare but highly fatal viral hemorrhagic fever (VHF) caused by infection with one of two zoonotic viruses, Marburg virus or Ravn virus. Both Marburg virus and Ravn virus are within the virus family *Filoviridae,* which also includes Ebola viruses. A person infected with the Marburg virus is not contagious before symptoms appear. Symptoms may include fever, headache, muscle and joint pain, fatigue, loss of appetite, gastrointestinal symptoms, or unexplained bleeding. Marburg virus is spread through **direct contact** with broken skin or mucous membranes with the body fluids of someone who is sick with MVD, or who recently died from their infection. These body fluids include blood, urine, saliva, sweat, feces, vomit, breast milk, amniotic fluid, or semen. People can also contract MVD if they have contact with infected animals, or with needles, or with other objects or surfaces contaminated with the virus. Marburg virus is **not** spread through airborne transmission.

On September 27, 2024, the Ministry of Health of the Republic of Rwanda reported cases of MVD in health facilities in the country. These are the first known cases of MVD in Rwanda. As of October 2, 2024, Rwanda has recorded 36 laboratory confirmed cases, including 11 deaths (31% case fatality rate) from MVD. At least 19 cases are in healthcare workers, the majority of whom work in intensive care units. There are also several cases unlinked to known transmission chains, suggesting additional cases may have been undetected or unreported. Cases have been reported from seven of the 30 districts in Rwanda, with three districts (Gasabo, Kicukiro, Nyarugenge) in Kigali Province reporting the highest number of

cases. Other districts reporting cases include Nyagatare, Gatsibo, Kamonyi, and Rubavu. Approximately 300 contacts to cases are being monitored in Rwanda. Investigations are ongoing to determine timeline, transmission chains, and potential source of the outbreak.

CDC has reached out to U.S.-based nongovernmental organizations and medical centers with staff working in the affected areas to provide guidance on education and how to conduct health assessments of U.S.-based staff before, during, and after their deployment. On October 3, 2024, CDC issued interim recommendations for public health management of U.S.-based healthcare personnel who were present in a healthcare facility in Rwanda in the previous 21 days.

There is currently no Food and Drug Administration (FDA)-approved vaccine or treatment for MVD. In the absence of early diagnosis and appropriate supportive care, MVD has a high mortality rate of 23%–90%, depending on the virus strain and the level of case management. With early intensive supportive care and fluid replacement, mortality rates might be lower.

Recommendations for Clinicians

- Systematically assess patients with exposure risk and compatible symptoms for the possibility of viral hemorrhagic fevers including MVD through a triage and evaluation process including a travel history. Early identification of MVD or other viral hemorrhagic fevers is important for providing appropriate and prompt patient care and preventing the spread of infection.
- Include MVD in the differential diagnosis for an ill person who has been to an area with an active MVD outbreak in the past 21 days, AND who has compatible symptoms (e.g., fever, headache, muscle and joint pain, fatigue, loss of appetite, gastrointestinal symptoms, or unexplained bleeding), AND has reported epidemiologically compatible risk factors like any one or more of the below, within the 21 days before symptom onset:
    - Had direct contact with a symptomatic person with suspected or confirmed MVD, or with any objects contaminated by their body fluids.
    - Experienced 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.
    - 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 with 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.
- Consider more common diagnoses such as malaria, COVID-19, influenza, or common causes of gastrointestinal and febrile illnesses in an ill patient with recent international travel, and evaluate and manage appropriately.
- Know that patients with a Marburg virus infection may present with concurrent infections (e.g., co-infection with malaria), and the possibility of a concurrent infection should be considered if a patient has a clinical and epidemiologic history compatible with MVD. Travel to or from Rwanda in the past 21 days **should not be a reason to defer routine laboratory testing or other measures necessary for standard patient care.**
- **Isolate and manage patients with exposure risks and symptoms compatible with MVD in a healthcare facility until receiving a negative Marburg virus test result on a sample collected ≥ 72 hours after symptom onset.** If a sample collected is <72 hours after symptom onset and is negative, the patient should remain in the healthcare facility and another test should be performed on a new sample taken ≥ 72 hours after initial symptom onset. Routine laboratory testing to monitor the patient's clinical status and diagnostic testing for other potential causes of the patient's illness should be pursued while Marburg virus testing is underway. Marburg virus diagnostic testing should not be delayed while awaiting results of other diagnostic testing.
    - Patients should be held in isolation at their presenting medical facility and cared for by personnel wearing appropriate PPE, pending test results.
    - If a patient tests positive, they would be transferred to a Regional Emerging Special Pathogens Treatment Center or a state-designated special pathogens treatment center. depending on the jurisdiction.
- Contact your state, territorial, local or Tribal (STLT) health department immediately (via 24-hour Epi-on-Call contact list) if MVD is suspected and follow jurisdictional protocols for patient assessment. If a diagnosis of MVD is

considered, health departments will work with CDC and the clinical team to coordinate care and testing for the patient and ensure appropriate precautions are taken to help prevent potential spread.

- Counsel patients with planned travel to an MVD outbreak-affected area on ways to prevent exposure during their travel. Prevention methods include:
  - Avoiding contact with blood and body fluids (or with materials possibly contaminated with blood and body fluids) of people who are sick.
  - Not participating in funeral or burial practices that involve touching the body of someone who died from suspected or confirmed MVD.
  - voiding contact with cave-dwelling fruit bats and non-human primates.
  - Refraining from entering areas known to be inhabited by cave-dwelling fruit bats, such as mines or caves.
- For this outbreak, travelers are additionally advised to avoid visiting healthcare facilities in the outbreak area for nonurgent medical care or for nonmedical reasons, and to avoid visiting traditional healers.
- Counsel healthcare workers traveling to Rwanda for work in clinical settings of their potential increased risk of exposure to Marburg virus, the importance of following recommended infection prevention and control precautions, and the symptom monitoring and work-restriction they may need to follow after their return to the United States.

Recommendations for Infection Prevention and Control Measures in Hospitals

- Employ a combination of infection prevention and control measures to prevent transmission of MVD in hospitals. These infection prevention and control measures include, but are not limited to:
  - Isolating patients in a private room with a private bathroom or covered bedside toilet if MVD is suspected. Dedicated medical equipment (preferably disposable, when possible) should be used for the provision of patient care.
  - Following separate PPE guidance for managing clinically stable and clinically unstable patients.
  - Ensuring that healthcare workers caring for patients with VHFs have received comprehensive training and demonstrated competency in performing VHF-related infection control practices and procedures.
  - Following the infection prevention and control measures as recommended for VHFs including using recommended PPE and limiting the number of personnel who enter the room for clinical evaluation and management.
  - Having an onsite manager supervise personnel providing care to these patients at all times. A trained observer must also supervise each step of every PPE donning/doffing procedure to ensure established PPE protocols are completed correctly.
  - Excluding individuals unable or unwilling to adhere to infection control and PPE use procedures from providing care for patients with VHFs.
- Know that healthcare personnel can be exposed through contact with a patient's body fluids, contaminated medical supplies and equipment, or contaminated environmental surfaces. Splashes to unprotected mucous membranes (e.g., the eyes, nose, or mouth) are particularly hazardous.
- Minimize procedures that can increase environmental contamination with infectious material, involve handling of potentially contaminated needles or other sharps, or create aerosols.

Recommendations for Public Health Departments

- Follow your established jurisdictional protocols regarding patient assessment to determine if testing for Marburg virus is warranted for a patient with concerning clinical and epidemiologic history for MVD is identified in your jurisdiction.
  - Coordinate patient management, sample referral, and Marburg virus testing with State, Territorial, Local and Tribal health departments, CDC, and the clinical team.
  - **Contact CDC's Viral Special Pathogens Branch (VSPB) 24/7 for consultations about Marburg virus disease or other viral hemorrhagic fevers. Call CDC Emergency Operations Center at 770-488-7100 and request VSPB's on-call epidemiologist. For non-emergency inquiries, email spather@cdc.gov.**
  - For suspect cases, request testing for Marburg virus and other viral hemorrhagic fevers from CDC (Atlanta, Georgia) or the Laboratory Response Network (LRN).

        - To date, 37 geographically diverse LRN laboratories and 13 Regional Emerging Special Pathogen Treatment Centers can test using the Biofire FilmArray NGDS Warrior Panel , with several more LRN laboratories working toward building testing capability.
        - The Warrior Panel can detect orthomarburgviruses (Marburg and Ravn viruses) and orthoebolaviruses (Ebola, Sudan, Tai Forest, Bundibugyo, and Reston viruses) in addition to other high-consequence pathogens.
        - Per manufacturers' recommendations, results from the Biofire FilmArray NGDS Warrior Panel are presumptive, and results require confirmatory testing which can be performed in CDC laboratories.
- Follow CDC travel guidance for Rwanda and consider engaging travel health clinics or other clinical and public health partners to increase awareness on MVD.
- Review CDC's new interim recommendations for public health management of U.S.-based healthcare personnel who were present in a healthcare facility in Rwanda during the previous 21 days.
    - These interim recommendations include post-arrival monitoring by health departments and exclusion from work duties in a U.S. healthcare facility until 21 days after their last presence in a healthcare facility in Rwanda.

Recommendations for Clinical Laboratory Biosafety

- Be aware that early symptoms associated with MVD are similar to other illnesses associated with fever in recent international travelers.
- Follow Standard Precautions for All Patient Care and Universal Precautions for Preventing Transmission of Bloodborne Infections to safely perform common diagnostic testing for patients with suspected MVD.
- Have a written Exposure Control Plan in place to eliminate or minimize employees' risk of exposure to blood, body fluids or other potentially infectious materials per Occupational Safety and Health Administration's (OSHA) Bloodborne Pathogens Standard.
- Make recommended PPE available and train staff to properly put on and take off (don and doff) their PPE.
- If a facility does not have the appropriate risk mitigation capabilities, forward the specimen using appropriate packing and shipping requirements to another facility that does.

Recommendations for Healthcare Workers Returning from Work in Rwanda

- On October 3, 2024, CDC issued interim recommendations for monitoring and managing U.S. healthcare workers who have been present in any healthcare facility, including outpatient settings or traditional healers, in Rwanda within the last 21 days and are returning to the United States.
- Returning workers and sponsoring organizations should **r**eview CDC's new interim recommendations.
- These interim recommendations include post-arrival symptom monitoring by health departments and exclusion from work duties in a U.S. healthcare facility until 21 days after their last presence in a healthcare facility in Rwanda.

Recommendations for the Public

- Protect yourself and prevent the spread of MVD when living in or traveling to a region where Marburg virus is potentially present or that is currently experiencing an outbreak.
    - Take the following actions to protect yourself:
        - Avoid contact with blood and other body fluids.
        - Avoid materials possibly contaminated with blood or other body fluids of people who are sick.
        - Avoid visiting healthcare facilities in the outbreak area for nonurgent medical care or for nonmedical reasons.
        - Avoid visiting traditional healers.
        - Do not participate in funeral or burial practices that involve touching the body of someone who died from suspected or confirmed MVD.
        - Keep away from fruit bats and non-human primates and do not enter areas where fruit bats live, such as mines or caves.
    - Monitor your health for 21 days after you return from an area experiencing an MVD outbreak.

- Isolate (separate) yourself immediately from others and seek medical care immediately if you develop symptoms of MVD. Before you enter a healthcare facility, alert the healthcare providers of your recent travel to an MVD-affected area.

For More Information

General Marburg Information

- About Marburg Disease | Marburg Virus Disease | CDC
- History of Marburg Disease Outbreaks | Marburg Virus Disease | CDC
- Marburg in Rwanda | Travel Notice | Traveler's Health | CDC

Clinician Resources

- Clinical Guidance for Ebola Disease | CDC
- Recommendations for organizations sending U.S.-based healthcare or emergency response personnel to areas with viral hemorrhagic fever (VHF) outbreaks | CDC
- Viral Hemorrhagic Fevers | CDC Yellow Book 2024
- Marburg Virus Disease: Interim Recommendations for Public Health Management of U.S.-based Healthcare Personnel Returning from Rwanda

U.S. Healthcare Settings

- Interim Guidance for Preparing Frontline Healthcare Facilities for Patients Suspected to Have Ebola Virus Disease (EVD) | CDC
- Interim Guidance for Preparing Ebola Assessment Hospitals | CDC

Non-U.S. Healthcare Settings

- Preparing Your Facility for Identification of Potential MVD Patients| Marburg Virus Disease | CDC
- Preventing MVD from Entering Your Healthcare Facility | Marburg Virus Disease | CDC
- Healthcare Worker and Inpatient Monitoring| Marburg Virus Disease | CDC
- Environmental Cleaning and Waste Management | Marburg Virus Disease | CDC
- Hand Hygiene | Marburg Virus Disease | CDC
- Environmental Cleaning and Disinfection| Marburg Virus Disease | CDC
- PPE Part 1: What, When, and Why to Use PPE | Marburg Virus Disease | CDC
- PPE Part 2: Putting on and Taking Off PPE | Marburg Virus Disease | CDC
- Waste Management Part 1: The Waste Management Process | Marburg Virus Disease | CDC
- Waste Management Part 2: Final Waste Disposal | Marburg Virus Disease | CDC
- Injection Safety | Marburg Virus Disease | CDC

U.S. Public Health Departments

- Public Health Management of People with Suspected or Confirmed VHF or High-Risk Exposures | CDC

The Centers for Disease Control and Prevention (CDC) protects people's health and safety by preventing and controlling diseases and injuries; enhances health decisions by providing credible information on critical health issues; and promotes healthy living through strong partnerships with local, national and international organizations.

HAN Message Types

- **Health Alert:** Conveys the highest level of importance about a public health incident.
- **Health Advisory:** Provides important information about a public health incident.
- **Health Update:** Provides updated information about a public health incident.

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This message was distributed to state and local health officers, state and local epidemiologists, state and local laboratory directors, public information officers, HAN coordinators, and clinician organizations.

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Additional Resources

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