

**LAC+USC MEDICAL CENTER
DEPARTMENT OF INFECTION PREVENTION AND CONTROL
POLICIES AND PROCEDURES**

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Policy No. IPC-18	

Subject: Ebola & Viral Hemorrhagic Fevers Control Plan		Original Issue Date: July 2017	Effective Date: Feb 2023
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<u>Departments Consulted:</u> Infection Prevention & Control Nursing Department Laboratory Facilities Management	<u>Reviewed & Administratively Approved By:</u> Paul Holtom MD, Hospital Epidemiologist Noah Wald-Dickler MD, Associate Hospital Epidemiologist Chair and Vice-Chair, Infection Control Committee		

PURPOSE

The purpose of this policy is to provide guidance for the temporary management of patients presenting with signs and symptoms of highly contagious and pathogenic Viral Hemorrhagic Fever (VHF) diseases, including Ebola. These guidelines are based on current scientific knowledge and accepted practice guidelines. Notably, LAC+USC Medical Center is ***NOT*** a designated regional “Ebola and Other Special Pathogen Treatment Center” as defined by the US Department of Health and Human Services. As such, our primary objectives in the management of patients with suspected Viral Hemorrhagic Fevers, including Ebola, are 1) the provision of *safe, primarily **supportive, care*** of such patients, 2) preventing transmission of any infectious pathogens to staff, and 3) triaging and arranging transfer to a dedicated Special Pathogens center, including (but not limited to) for example, Cedars-Sinai Medical Center or UCLA.

I. BACKGROUND & CONTEXT

Viral Hemorrhagic Fevers (VHFs) such as Ebola, Marburg, Lassa, and Hantavirus are pathogens of global concern with high mortality rates. VHFs are caused by viruses from four primary families: *Arenaviridae*, *Bunyaviridae*, *Filoviridae*, and *Flaviviridae*. Many are highly transmissible from person to person, and as such, though these diseases are sporadic - they can be highly impactful. VHF infections may involve severe, sometimes life-threatening effects to multiple organ systems.

MODES OF TRANSMISSION: many VHFs, including Ebola, are primarily transmitted via direct contact with bodily fluids (through broken skin or mucous membranes) from an infected patient. Such body fluids include primarily blood, but also potentially vomitus, sweat, saliva, urine, feces, sputum, and semen. Ebola disease transmission is also possible via contact with contaminated objects including needles, syringes, thermometers, and glucose monitoring devices. Handling of certain animals - including bats, rodents, and primates in endemic areas - has also been implicated in the transmission of certain VHFs including Ebola and Lassa. Although evidence for respiratory transmission of Ebola by either droplet or airborne means is limited, given their potential high morbidity, the use of enhanced contact & airborne precautions is recommended during the care of a suspected VHF patient.

Due to their potential transmissibility, these diseases pose significant challenges in Infection Prevention & Control, laboratory testing, as well as the safe delivery of patient care and medical waste disposal.

HISTORIC CONTEXT: The 2014-2016 Ebola Virus Disease outbreak in West Africa had considerable impact on VHF awareness and preparedness. Declared a WHO Public Health Emergency, the outbreak involved over 28,000 cases and over 11,000 reported deaths. Although unlikely, concerns about VHF outbreaks in the United States arose -- particularly in healthcare settings -- when healthcare workers from the 2014-2016 West African Ebola outbreak were flown to the US for medical treatment and further amplified by a confirmed Ebola case in a Liberian man treated in Dallas, Texas which resulted in two nurses contracting the disease. Although the patient died, both nurses recovered. In another 2014 event, a physician who'd been treating patients in Guinea developed Ebola virus disease shortly after returning to New York. The physician survived, but the case emphasized the risk of such disease to healthcare staff.

Collectively, these imported cases - as well as ongoing sporadic cases in Uganda and Democratic Republic of the Congo prompted the entire US healthcare system to rapidly prepare for additional and unsuspected VHF cases. LAC+USC Medical Center has developed a VHF algorithm to guide steps in the management of patients with suspected Viral Hemorrhagic Fevers, including Ebola, as outlined in this policy.

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II. INFECTION PREVENTION & CONTROL MEASURES FOR VIRAL HEMORRHAGIC FEVERS

During the 2014-2016 Ebola outbreak, the CDC emphasized the “i3 Strategy” which highlights the importance of *I*dentification, *I*solation, and *I*nforming in the prevention of transmission of VHF. This strategy encompasses screening, isolation, and communication efforts to ensure Infection Prevention & Control measures and Public Health collaboration efforts are effective and timely.

A). Initial Emergency Department Screening:

A critical first step is initial screening to identify individuals at high risk for VHF. At LAC+USC, the following steps will be taken during initial screening in the Emergency Department.

- The ED router nurse will assess for VHF symptoms such as: fever, fatigue, myalgias, vomiting, diarrhea, abdominal pain, unexplained hemorrhage, **AND** an epidemiologic risk factor for VHF within the 21 days prior to symptom onset.
- Epidemiologic risk factors include primarily recent travel to an area with active Ebola or other VHF outbreak or contact with a confirmed or suspected VHF patient or their potentially infected bodily fluids without using proper Personal Protective Equipment (PPE).
- If VHF symptoms **AND** a VHF epidemiologic risk factor is present, the following initial VHF Response Plan elements should be implemented immediately in the ED:

B). Initial Viral Hemorrhagic Fever Response Plan

- Place a mask and gown on the suspected VHF patient and transfer to designated area in the Emergency Department (ED) for placement in appropriate Isolation room (if unable to isolate in the ED, immediately transfer patient to the 4th floor IPT Room 4M126).
- Staff caring for patients with suspected VHF will wear enhanced PPE. See Section II.C below.
- Notify the following individuals immediately of the suspected case:
 - ED Supervisor
 - Physician Hospital Epidemiologist on-call (listed on AMION)
 - Administration Nursing Office (ANO)
 - Nurse Manager from 4th floor IPT 4M
 - Pathology Resident on-call (listed on AMION)
- Place the patient in a Contact/Droplet precaution room while in the ED; if aerosolizing procedures will be used, place the patient in airborne precautions.
- Notify the Department of Infection Prevention & Control at (323) 409-6645 and the Infection Prevention Nurse on call (call the hospital operator at ext. 98000 for contact information).
- Public Health
- Equipment, supplies, and waste generated will stay in the room and will be disposed appropriately once the patient is discharged or transferred.
- Blood draws on patient with suspected or confirmed VHF **WILL NOT** be performed or sent to laboratory without prior authorization from ID Physician/physician Hospital Epidemiologist, Public Health ACDC and the Pathology Resident.

Note: A dedicated group of volunteer healthcare workers - consisting primarily of Infectious Disease & ICU physicians as well as nurses - will receive training in the management of VHF patients prior to provision of care. This initial training will be followed with just-in-time training if a patient with suspected VHF requires temporary admission prior to transfer to a CDC-designated Special Pathogens unit.

C). Personal Protective Equipment to be Used During the Care of Suspected or Confirmed VHF

• TWO pairs of extended-cuff gloves	
• Impermeable gown or coverall	• Surgical hood
• Fitted N95 respirator or CAPR	• Face shield
• Apron	• Boot covers

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D) Donning and Doffing of PPE for Viral Hemorrhagic Fever Patient Care

The complex donning and doffing procedures for this enhanced PPE must be followed with meticulous vigilance. A trained observer should be present for donning and doffing, which should take place in a specified room or anteroom prior to room entry to avoid contamination. At LAC+USC, the designated rooms for such donning and doffing will occur in the IPT Room 4M126 adjacent to the specified room for isolation of such patients in IPT Room 4M 128. The trained observer will help ensure the proper PPE is used, any rips/tears are rapidly identified, and that the donning or doffing process is done correctly.

Doffing of PPE after patient contact with a patient suspected of VHF is a high-risk process and should be done slowly to ensure safety and avoid self-inoculation.

For further information on this intricate process, refer to the CDC's online guidance on the correct steps for the donning and doffing of PPE for patients with confirmed or suspected VHF here:

<https://www.cdc.gov/vhf/ebola/healthcare-us/ppe/guidance.html>

An additionally helpful video aid on VHF PPE donning and doffing is available from the *New England Journal of Medicine* website here: <https://www.nejm.org/doi/full/10.1056/NEJMvcm1412105> .

E). Inpatient Admission & Patient Care

If hospitalization is required for the care of a **single** patient with suspected or confirmed VHF, contact the physician Hospital Epidemiologist on-call (listed on AMION) immediately and notify the ICU Director and ICU manager. The ICU Medical Director and physician Hospital Epidemiologist will coordinate patient transfer to the designated 4M room following the assigned route of least exposure risk to other staff, visitors, and patients. The following are additional elements to be considered and implemented in the temporary care of inpatients with suspected or confirmed VHF.

- Care of patients with highly contagious disease should be performed by trained personnel to minimize exposure.
- Limit room entry to only those healthcare workers essential to the patient's care and restrict non-essential personnel and visitors from the patient care area.
- Clinical care will be directed in consultation with Infectious Diseases and ICU teams with a focus on **empiric therapies** (such as empiric antibiotics and antimalarials) that minimize or eliminate the need to obtain non-essential lab draws, bloodwork, and/or collect other clinical specimens.
- Such supportive and empiric therapy will be continued until further guidance is provided by the Hospital Epidemiologist in close collaboration with the LA County Dept. of Public Health's Division of Acute Communicable Disease Control (ACDC), including approval of disease-specific testing.
- For critically ill patients requiring basic laboratory testing, iSTAT and Hemoglobin draws may be conducted with the approval from the physician Hospital Epidemiologist and treating ICU physician.

In the unlikely scenario that **multiple VHF suspect patients** require admission, careful planning will be coordinated by Hospital Epidemiology in conjunction with Hospital Administration and Public Health, to triage such patients as quickly as possible to designated Special Pathogen Unit-capable facilities. Measures such as cohorting and closing of specific wards (namely IPT 4M) only suspect cases may be considered in such emergency scenarios.

- In such cases where multiple critically ill VHF suspects or cases must be hospitalized on the same unit, follow the above guidance, **AND** contact the ANO Office who will contact the Lab to deploy the designated Point-Of-Care Testing (POCT) cart, the automated hematology point-of-care analyzer (Sysmex poch-100i™) machine, and the VHF PPE cart to the designated patient care area where such POC testing would occur in order to minimize transport to, processing of, and potential contamination incidents for main lab personnel.

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III) LABORATORY MANAGEMENT OF VHF PATIENT SPECIMENS

Biosafety measures are vital during the collection, handling, transport, and processing of specimens for VHF testing. Healthcare workers collecting **approved** blood samples should use appropriate PPE as described above. Specimens from suspected VHF cases are considered biohazardous materials; it is imperative to follow instructions from Public Health and Hospital Epidemiology when obtaining and packaging samples and transporting them within the hospital and to the laboratory or Point-of-Care testing device.

A). General Considerations Related to VHF Patient Clinical Specimens

- Clinical specimens should **NOT** be collected, and Laboratory testing should **NOT** be performed on any specimens from patients with confirmed or suspected VHF prior to notification of the Pathology Resident on-call and approval from the physician Hospital Epidemiologist.
- All trained staff members collecting or handling clinical specimens will follow established standards compliant with the medical center's Bloodborne Pathogens Exposure Control Plan which accompanies standard procedures for the collection and handling of blood and other potentially infectious materials. This includes:
 - Wearing appropriate PPE as outlined above
 - Adhering to engineered safeguards such as deploying needle guards etc.
- Lab testing of blood or other specimens will only be performed by personnel trained on the handling and processing of VHF specimens, including training on the use of Point-of-Care testing devices.
- All clinical specimens will be collection **inside** the patient's room
- Specimens should **NOT** be sent to the Core or Microbiology Laboratories: **if** approved, Point-of-Care testing will be performed on the inpatient unit in designated rooms.
- Specific testing for specific Viral Hemorrhagic Fevers is not performed in any lab at LAC+USC Medical Center.
 - Processing and shipping of any specimens to be sent out to reference laboratories will be coordinated by the Hospital Epidemiologist and the Laboratory Director

B). Clinical Specimen Management

- i. DO NOT USE THE PNEUMATIC TUBE SYSTEM.
- ii. Lab Specimens should remain in patient's room or the designated POCT room.
- iii. Collect specimens utilizing a sealable specimen container.
- iv. Wipe the specimen tube with Bleach Germicidal Wipes.
- v. Wrap sealable specimen containers with absorbent material.
- vi. Place sealable specimen containers in a secondary container (watertight, leak-proof).
- vii. For off-site reference lab testing, Microbiology-trained staff will package specimen in a third outer shipping package and send to the approve CDC testing laboratories.

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IV) ENVIRONMENTAL SERVICES & ROOM CLEANING

A) Room Cleaning During Patient Admission

Waste developed during the course of clinical care of a suspected or confirmed case of VHF should be handled with extreme caution by trained personnel following PPE protocols. The CDC reports that environmental transmission of Ebola virus has not been established, but the virus has been detected in blood-stained gloves. Because access to the patient's room must be limited to essential healthcare workers, clinical staff will need to provide some environmental services for the room. While still admitted, environmental cleaning of the patient room will be done by the healthcare worker(s) caring for the patient, including cleaning of non-porous surfaces in the room. All needles and sharps should be handled with extreme care and disposed in puncture-proof, sealed containers by HCW caring for the patient while in the room.

- Wash hands after contact with the patient; patient equipment; and potentially contaminated fluids.
- Keep trash and used supplies in the room.
- Additional CDC recommendation on contaminated trash handling can be found [here](#).

B) Room Cleaning After Patient Discharge or Transfer

Diligent environmental cleaning and disinfection and safe handling of potentially contaminated materials is critical since blood, sweat, vomit, feces, urine, and other body secretions represent potentially infectious materials which should be discarded according to CDC recommendations. To that this end, Environmental Services also plays a crucial role in the management of suspected or confirmed VHF.

In the case of an admitted patient with suspected VHF, the Environmental Services (EVS) Director will be notified. Terminal cleaning, performed by EVS staff, will occur once the patient is transferred or discharged from LAC+USC Medical Center.

- EVS personnel will wear appropriate PPE needed for VHF as outlined above.
- Disinfectants that have a label claim for non-enveloped viruses such as norovirus or rotavirus on the Environmental Protection Agency's (EPA) registered hospital disinfectant [List L](#) should be used.
 - If such disinfectants are unavailable, a bleach solution with 0.5% sodium hypochlorite (1:100 dilution of household bleach) can be used.
- Use a U.S. Environmental Protection Agency (EPA)-registered hospital disinfectant to immediately clean and disinfect any visibly contaminated surfaces, equipment, and patient care surfaces once the patient is discharge or transfer.

V) WASTE MANAGEMENT FOR VHF PATIENT ROOMS

Since VHFs, including Ebola, are designated Category A diseases by the CDC, the transport of waste created during the course of care or evaluation of patients with confirmed or suspect VHF is regulated by the US Department of Transportation's Hazardous Materials regulations. Such waste includes not only medical equipment, but also soiled pads, portable toilets, PPE, and byproducts of cleaning.

Medical waste will be disposed of by EVS personnel trained in the safe management of biohazardous waste. Protocols established by Facilities Management will be implemented in the removal of waste. As per current CDC recommendations, VHF patient waste (feces, vomitus) may be disposed of safely in standard sewage systems if pre-treatment is completed.

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VI) EMPLOYEE & STAFF VHF EXPOSURES

Human-to-human filovirus transmission can occur via close contact with infectious body fluids. Ebola-causing viruses are highly virulent, and healthcare-associated transmission has occurred during medical care through a range of exposures, including contaminated syringes and medical equipment, splash injuries, and breaches in PPE. Although there has been no recorded airborne transmission of Ebola virus, some laboratory studies fueled concern during the 2014 Ebola outbreak that aerosol-generating medical procedures could create small-particle aerosols and result in HCP transmission.

A) Exposure Risk

Risk Category	Example Types of Exposures
High Risk	<ul style="list-style-type: none"> ▪ Direct contact with infected body fluids via needlestick or splash to mucous membranes ▪ Handling of body fluids, such as in a lab, without proper PPE or precautions ▪ Touching a dead body without proper PPE ▪ Living with or providing direct care for someone with symptomatic VHF (without PPE)
Some Risk	<ul style="list-style-type: none"> ▪ Close contact (within 3 feet and >1 hour) with a symptomatic person with VHF
Low Risk	<ul style="list-style-type: none"> ▪ Having been in a country with widespread VHF transmission in the previous 21 days ▪ Being in the same room for a brief period with a patient with VHF without direct contact ▪ Briefly shaking hands with a person with VHF ▪ Direct patient contact with a confirmed VHF patient with appropriate PPE
No Risk	<ul style="list-style-type: none"> ▪ Contact with an asymptomatic person who had contact with a patient with VHF

B) Employee Health Evaluation

Any potential staff exposures to VHF will be investigated in close coordination with Hospital Epidemiology and the LA County Dept. of Public Health. Any necessary quarantine or other control measures will be arranged according to recommendations and requirements of the Los Angeles County Department of Public Health's Division of Acute Communicable Disease Control (ACDC).

REFERENCES

1. Identify, isolate, inform: emergency department evaluation and management for patients under investigation (PUIs) for Ebola virus disease. CDC (2016). CDC Website link available [here](#).
2. Guidance on PPE to Be Used by Healthcare Workers During Management of Patients with Ebola. <https://www.cdc.gov/vhf/ebola/healthcare-us/ppe/guidance.html>. CDC (2022).
3. Ortega, R et al. "Putting On and Removing [Ebola] Personal Protective Equipment. *New England Journal of Medicine* Videos in Clinical Medicine. *NEJM* 2015; 372:e16. <https://www.nejm.org/doi/full/10.1056/NEJMvcm1412105>
4. Interim guidance for environmental infection control in hospitals for Ebola virus. CDC (2022). <https://www.cdc.gov/vhf/ebola/clinicians/cleaning/hospitals.html>