UCSF VIRAL HEMORRHAGIC FEVER (VHF) CONTROL PLAN

Table of content:

I. Purpose

The purpose of this control plan is to provide infection prevention guidance for the emergency department and hospital management of patients with suspected or confirmed viral hemorrhagic fever.

II. Program administration

Hospital Epidemiology and Infection Prevention (HEIP) is coordinated by the Director, Medical Directors, and Associate and Assistant Medical Directors who are responsible for designing, implementing, evaluating, and maintaining the UCSF VHF Control Plan. HEIP collaborates with representatives from Occupational Health Services, Nursing, Hospital Administration, Emergency Services, Environmental Health and Safety, Medical Center Facilities Management, Patient Placement Services, Hospitality Services,

and Clinical Laboratory Services. Input from other departments/individuals with required expertise is sought as needed.

III. Background

Viral hemorrhagic fever refers to a condition caused by several groups of viruses that cause systemic disease including injury to the blood vessels leading to bleeding. These viruses include but are not limited to: Ebola virus, Marburg virus, Lassa fever virus, and Nipah virus. Spread in the healthcare setting can occur primarily through contact with bodily fluids from an infected person.

IV. Contacts for guidance

	Parnassus, Mission Bay, Mount Zion	Benioff Children's Hospital Oakland
Hospital Epidemiology and Infection Prevention (HEIP)	Mon-Fri: 8AM-4PM • Tel: (415) 353-4343 (main line) • Adult Voalte: (415) 353-1964 • Pediatric Voalte: (415) 502-0728 After Hours: hospital supervisor • Parnassus Hospital Supervisor: (415) 353-8036, (415) 353-1964 • Mission Bay Adult Resource Nurse: (415) 502-0562 • BCH-SF: (415) 502-0728	Mon-Fri: 8AM-4PM: • Tel: (510) 419-7590 • Voalte: Amanda Lucas, Ann Petru, Katherine Eng, Victoria Chu After Hours: Amanda Lucas: (510) 459-3702 Victoria Chu: (408) 857-6948
ID consult service 24/7	Voalte ID consultation service Voalte MB Pediatrics ID service	Voalte Oak Pediatrics ID service
Clinical Laboratory	(415) 353-1268	(510) 428-3536
Hospital Supervisor	Moffit-Long: (415) 353-8036 or Voalte (Hospital supervisor Parn) MB Adult Clinical Resource Nurse: (415) 502-0562 or Voalte (Adult MB CRN) BCH-SF: (415) 502-0728	BCH-Oak (510) 428-3885 ext 120-6997 or Voalte
Occupational Health	(415) 885-7580	BCH-Oak (510) 428-3620 option #4
Public Health Departments	San Francisco Department of Public Health • (415) 554-2830 • During non-business hours call (415) 554-3613 to reach the SFDPH on-call physician	Alameda County Department of Public Health • (510) 267-3250 • During non-business hours call (925) 422-7595

V. VHF Case definition

A. Possible VHF case: patients with clinician concern for VHF infection, prior to detailed ascertainment of clinical symptoms and epidemiologic linkage.
B. Suspect VHF case: patients who endorse an epidemiological risk factor AND have onset of signs and symptoms compatible with a VHFwithin the incubation period of the virus pending VHF laboratory testing confirmation.
C. Confirmed VHF case: meets laboratory criteria.
D. See Viral Hemorrhagic Fever (VHF) 2022 Case Definition for CDC's case criteria for suspect and confirmed VHF case, including details on the clinical criteria (fever AND at least one compatible symptom), epidemiologic linkage, and laboratory criteria.

Part 1: Identification and isolation of possible VHF patients

VI. Ambulatory and urgent care locations

A. Locations outside of the Emergency Departments rely on passive screening (patient self-assessment) for possible VHF infection when presenting for care.
B. For patients presenting with symptoms and travel history concerning for possible VHF infection:
    a. Immediately mask the patient and all accompanying caregivers/family members.
    b. Avoiding direct contact with the patient, direct the patient and all accompanying caregivers/family members to an AIIR (if available) or private room. Do not place the patient in the waiting room.
    c. Exit the room and close the door.
    d. Place the patient on Airborne, Droplet, and Contact Precautions.
    e. Contact clinic leadership, the Hospital Supervisor, Attending physician assigned to the patient and Hospital Epidemiology & Infection Prevention (HEIP) immediately.
C. Patients should remain in Airborne, Droplet and Contact isolation until risk assessment is completed by HEIP and the Attending physician to determine next steps of care.

VII. Emergency Departments: Identification

A. Early identification of patients with possible VHF infection is conducted using the point-of-entry Epic symptom and travel history screening tool in the Emergency Departments.
    a. Point-of-entry symptom and travel history screening tool is completed by the triage nurse
    b. Selection of specific symptoms and travel to countries with existing travel advisories for VHF will result in a best practice advisory (BPA) alert for VHF.

VIII. Emergency Departments: Isolation

A. The triage RN should immediately don a surgical face mask.
B. Immediately mask the patient (if not contraindicated based on clinical condition or age) and all accompanying caregivers/family members. Avoid direct contact with the patient.
    a. For pediatric suspect patients under age of 2 years, place a blanket over the pediatric patient assuming no clinical contraindications
C. Do not place the patient in the waiting room.

D. Immediately notify the charge nurse, who will alert:
    a. ED attending assigned to the patient
    b. ED Manager
    c. Hospital Supervisor
    d. Hospital Epidemiology & Infection Prevention (HEIP)
E. Preferred patient placement is a designated Airborne Infection Isolation Room (AIIR). Designated AIIR rooms include:
    a. Parnassus: Room 11 (vacate adjacent ED rooms to be used for donning and doffing areas)
    b. Mission Bay: Room 3 or 4 (use the adjacent room as the anteroom)
    c. Oakland: Room 39/40
F. Prior to patient escort, the triage RN will don:
    a. Fit-tested N95 respirator or PAPR
    b. Face shield
    c. Gown
    d. Gloves
G. If the patient is clinically stable:
    a. Direct the patient and accompanying caregivers/family members to the pre-determined waiting area outside the Emergency Department while the designated room is being rapidly prepared using the Isolation Room Setup for PUI Checklist.
    b. Ensure the room has a bedside commode lined with a biohazard bag with an absorbent pad insert placed within.
H. If the patient is clinically unstable:
    a. Escort the patient immediately to the first available private room, preferably a designated AIIR, while wearing the appropriate PPE. Room setup may continue after patient placement using the Isolation Room Setup for PUI Checklist.
    b. Ensure the room has a bedside commode lined with a biohazard bag with an absorbent pad insert placed within.
I. Ensure the transport pathway is cleared of unnecessary personnel. Escort the patient and accompanying caregivers/family members to the designated room using the Emergency Department's pre-determined safe pathway.
J. Exit the room, close the door, and place the patient on Airborne, Droplet, and Contact Precautions.
K. Patients should remain in Airborne, Droplet and Contact isolation until risk assessment is completed by HEIP and the Attending physician to determine next steps of care.

IX. Role of security

A. Security supervisor is notified by the ED and hospital supervisor when a patient (and possibly visitors) has been identified as a suspect VHF case.
B. Supervisor will immediately send 1-2 security personnel to:
    a. Secure the perimeter and redirect patients/visitors to an alternate path of travel.
    b. Monitor the entrance to the patient room. Security personnel will be responsible for restricting access to patient – only VHF responders are to enter room.
C. Security should not enter the patient room.
D. If patient attempts to leave, security will:
    a. Wear a surgical mask.

b. No physical contact unless the officer has been trained in appropriate donning and doffing procedures and is wearing full PPE.
c. Verbally engage patient and attempt to persuade the patient to stay.
d. Advise nursing staff and request clinicians to speak to patient (RNs, MDs).
e. If patient leaves, immediately contact the medical team and HEIP.

Part 2: Initial Evaluation

X. Evaluation of possible VHF patients

A. The evaluation is to be performed after the patient is appropriately isolated in the designated AIIR or private room.
B. ED attending will call into the room and obtain clinical history and confirm travel history from patient.
C. If possible, ED attending should do a visual exam of the patient from outside the room.
D. Depending on the initial assessment with the ED attending, HEIP may choose to do the following:
    a. Contact the suspect patient/caregivers directly to obtain additional history using this guide for evaluating a suspect VHF case.
    b. If the patient meets the CDC's case criteria, HEIP will report pertinent information immediately to the San Francisco Department of Public Health Communicable Disease Branch or the Alameda County Public Health Department.
        i. SFDPH Phone Number: 415-554-2830
        ii. ACPHD phone numbers:
            1. Business hours: 510-267-3250
            2. After hours: 925-422-7595
E. ED attending and HEIP will determine risk of VHF infection.
    a. **Low risk:** do not activate the remainder of the VHF protocol, proceed with usual care, and de-escalate isolation precautions to appropriate symptom-based precautions. If DPH is involved, HEIP will update DPH with diagnostic work up and alternative diagnosis identified.
    b. **High risk:** activate the VHF protocol (remainder of this control plan). DPH will collaborate with HEIP to provide continued guidance on management and testing until the patient is transferred to a Level 1 treatment center.
F. If a patient is determined to meet criteria for testing for a VHF, the patient must be managed under isolation precautions until receiving a negative test result on a specimen collected >72 hours after symptom onset and in consultation with public health authorities.

XI. Communication to stakeholders of suspect high-risk VHF patient

A. HEIP will communicate all DPH recommendations to all stakeholders listed below:
    a. Hospital supervisors
    b. ED Manager
    c. ED attending
    d. Emergency Management
    e. Infectious Diseases consult attending

f. Chief Nurse Officer
g. Materials Services – for PPE
h. Security supervisor (Section IX)
i. Clinical Laboratory Supervisor
j. Waste Management (Section XVII)

B. HEIP will document the risk assessment and immediate recommendations in the patient's medical record.
C. The hospital supervisor/AOC will activate the Hospital Incident Management Team (HIMT) and Hospital Command Center (HCC).

XII. Activation of the VHF protocol

A. Apply VHF Isolation Sign to the door of the patient's room.
B. Apply the VHF Staff Entry Room Log to the door of the patient's room.
C. Using the VHF Waiting Room Log, record the patients and visitors exposed in the waiting room.
D. Follow security workflow to ensure areas around patient room are secured.
E. Identify designated donning and doffing areas adjacent to the patient's room.
    a. All donning will take place in the designated donning area ONLY
    b. All doffing will take place in the designated doffing area ONLY
    c. Designate the adjacent empty patient room as the doffing area
F. Identify the following staff for each 8-hour shift:
    a. The ED attending
    b. Two bedside RNs
    c. A trained observer for donning/doffing process
        i. A trained observer is someone familiar with the VHF donning/doffing process having been trained or participated in a refresher training within the last 12 months.
        ii. The trained observer will be responsible for calling out steps for donning/doffing using the donning/doffing checklists.
        iii. When observing doffing protocols, the trained observer will be required to wear modified PPE (Section XIII) as described on the donning/doffing checklist.
    d. All identified personnel should be familiar with the donning and doffing processes. If the personnel are not familiar, they will need to receive just-in-time training prior to entering the patient room.
G. Based on clinical symptoms and stability, there are two different levels of PPE that may be required for staff interacting with the patient (see Section XIII. Patient Care).
H. Obtain VHF Isolation Cart from Material Services which contains the appropriate PPE for both Levels 1 and 2.
I. All visitors and non-essential personnel will be restricted and not allowed to enter the room.
    a. If necessary, for pediatric patients, one essential caregiver may be allowed to enter the room. They must be trained to don and doff PPE prior to entry and will be required to wear full PPE when in the room.
    b. For food services, disposable materials and trays should be utilized and delivered by primary RN.

c. Waste management to be handled by trained healthcare personnel (see Section XVII).

Part 3: Clinical Management

XIII. PPE recommendations

A. Recommended PPE for staff caring for the patient depends on the VHF case status, clinical symptoms, and clinical stability.
   a. **Level 1:** confirmed VHF infection OR clinically unstable OR "wet" (e.g., bleeding, vomiting, or diarrhea)
   b. **Level 2:** suspect VHF infection AND clinically stable AND "dry" (e.g., no bleeding, vomiting, or diarrhea)
   c. Use the donning and doffing checklists. For Level 2 PPE, San Francisco and Oakland use different PAPRs; staff should follow the site-specific donning and doffing protocols.
   d. A trained observer must be present for all donning and doffing activities.

Table. PPE Recommendations

	Healthcare provider		**Trained observer and doffing assistant** (when observing doffing)
	Level 1: Clinically stable and dry and suspected patient with VHF	**Level 2:** Confirmed or (clinically unstable or wet) suspected patient with VHF	
Scrubs	Oakland: Disposable scrubs SF: Washable scrubs (to be discarded after use during VHF patient care)		
Shoes	Cleanable shoes		
Respiratory	N95 respirator	OAK: 3M Versaflo PAPR with shroud, tubing, battery pack, and belt SF: MaxAir CAPR with shroud, battery and belt	N95 respirator
Face shields	Full face shield	---	Full face shield
Gowns	Impermeable surgical or isolation gown that meets ANSI/AAMI PB70 Level 4 requirements		
Gloves	Standard gloves (inner) and extended cuff gloves (outer)		
Aprons	Outer apron (only if wet)		
Boot covers	Boot covers (at least mid-calf)		

XIV. Just-in-time PPE training

A. Just-in-time training will be provided during a VHF response event to increase the number of personnel available to safely care for a patient with suspected or confirmed VHF infection.
B. Just-in-time training will be conducted by personnel experienced in VHF protocols, PPE use, and donning/doffing procedures.

C. Training will include:
    a. Review of the appropriate PPE level (Level 1 or Level 2)
    b. Donning and doffing procedures using the approved checklist
    c. Waste handling and specimen transport procedures, as applicable
    d. Recognition of and immediate response to PPE breaches or potential exposures, including stopping work activities, exiting the patient care area safely, notifying the trained observer, and reporting the exposure to HEIP and Occupational Health Services (OHS)
D. Personnel who receive just-in-time training must demonstrate competency with supervised donning and doffing prior to participating in patient care activities
E. Personnel without prior VHF training should initially be assigned lower-risk support roles whenever feasible until competency is confirmed.

XV. Clinical care considerations

A. Minimize laboratory testing and other diagnostic tests as clinically appropriate.
B. Avoid aerosol generating procedures (AGPs). If an AGP is urgently required:
    a. Minimize the number of staff in the room.
    b. Ensure that all staff are wearing Level 2 PPE.
C. The patient should not leave the room for patient care or diagnostic testing (e.g., imaging) without prior discussion with HEIP.
D. Portable imaging and bedside procedures should be used whenever feasible.
E. Evaluation for alternative diagnoses, such as malaria in returning travelers, should not be delayed.

XVI. Testing for VHF infection

A. Contact the local public health department (San Francisco Department of Public Health or Alameda County Department of Public Health) for pre-approval for VHF testing.
B. VHF testing is performed at CDPH (for Marburg and Ebola) and CDC. Prior approval is required before specimens are collected and deliveries to CDPH must be coordinated before shipping.
C. Inform the Clinical Laboratory that a specimen will be sent to the public health department for VHF testing.
D. Specimen collection:
    a. Primary RNs will be responsible for collecting the laboratory specimen for VHF testing.
    b. No samples should be collected and transported out of the patient room without prior arrangement with HEIP, DPH, and the clinical laboratory.
    c. For adults, collect two 4 mL tubes of whole blood in a plastic tube preserved with EDTA. For pediatric patients, collect a minimum of 1 mL whole blood in a pediatric-sized collection tube preserved with EDTA. Apply patient labels to collected specimens.
E. Specimen packaging and shipping:
    a. Packaging must comply with 29 CFR 1910.1030 and specimens should be packed in a triple packaging system:
        i. A leakproof sealed, watertight plastic primary container(s) wrapped with absorbent material.

ii. A secondary watertight, leakproof secondary container.
iii. A UN certified rigid outer shipping package. This will be obtained from DPH.

b. Inside the patient room:
   i. Sample should be packaged in the primary container inside the patient room by the Primary RN collecting the lab specimen.
   i. Disinfect the exterior surface of the primary container using the appropriate EPA-registered hospital disinfectant on List L (Ebola), or on List Q (Marburg and Lassa; for Ebola if List L not available).
      1. For SF, this includes Clorox Healthcare Bleach Germicidal Wipes
      2. For Oakland, this includes Medline Micro-Kill One Germicidal Alcohol Wipes.

c. In the antechamber room:
   i. Support personnel in Level 1 PPE will be in the antechamber room to receive and complete the remaining sample packaging process with verbal guidance on the packaging process from laboratory personnel in Level 1 PPE
   ii. With support personnel holding the secondary container open in the anteroom and the Primary RN in the patient room, place the primary container inside the secondary container.
   iii. Disinfect the exterior surface of the secondary container using the appropriate EPA-registered hospital disinfectant.
   iv. Place the securely sealed secondary bag inside the rigid outer shipping package in the doffing area.
   v. Enclose all necessary laboratory requisition forms between the secondary packaging and the outer packaging.
   vi. Package on cold packs.
   vii. Disinfect the outer surface of the rigid outer shipping package using the appropriate EPA-registered hospital disinfectant.

d. When transporting the specimen off-site:
   i. The route of transport should be pre-planned and cleared.
   ii. The personnel responsible for the specimen transport should be wearing Level 1 PPE.

e. If short-term storage is necessary, keep specimens at 2-8°C prior to shipping.

F. If the specimen test result is negative and the patient's symptoms have been present for less than 72 hours, a second sample should be collected 72 hours after symptom onset and in consultation with public health officials.

Part 4: Support Operations

XVII. Waste management

B. Healthcare personnel handling waste are trained to wear recommended PPE and follow appropriate donning and doffing procedures.

C. Supplies for handling VHF-contaminated waste include, but are not limited to:
   a. Red bags labeled with the words “Biohazard” (ASTM tested) inside the patient room Sharps container (non-reusable) inside the patient room

b. EPA-registered hospital disinfectant on List L (Ebola), or on List Q (Marburg and Lassa; for Ebola if List L not available)
    i. For SF, this includes Clorox Healthcare Bleach Germicidal Wipes
    ii. For Oakland, this includes Medline Micro-Kill One Germicidal Alcohol Wipes.
c. 55-gallon special Category A DOT waste drum placed in periphery of the doffing area and with absorbent pads (e.g., chux) placed on the inside to absorb all free liquid in the case of a packaging breach.

D. All materials must be handled as Category A medical waste. This includes items not normally considered medical waste such as medical equipment, linens, used PPE, and byproducts of cleaning.
    a. Solid waste and sharps container:
        i. Inside the patient room, place the waste and sharps container inside a biohazard plastic film bag (primary bag). Seal and securely close according to the manufacturer's instructions.
        ii. Disinfect the exterior surface of the primary bag using the appropriate EPA-registered hospital disinfectant.
        iii. Place the primary bag inside another biohazard plastic film bag (secondary bag). Seal and securely close according to the manufacturer's instructions.
        iv. Disinfect the exterior surface of the secondary bag using the appropriate EPA-registered hospital disinfectant.
        v. Place the securely sealed secondary bag inside the waste drum located in the doffing area. Waste drums should be obtained from Environmental Health and Safety for Parnassus and Mission Bay, or from Safety in BCH-Oakland.
        vi. Disinfect the outer surface of the waste drum using the appropriate EPA-registered hospital disinfectant.
    b. Liquid waste (body fluids):
        i. Toileting should be done in a bedside commode, and no bodily fluids should be flushed into the toilet. Line bedside commode with a biohazard bag prior to use.
        ii. Add solidifying agent to any liquid waste (including emesis) discarded in the patient room or the doffing area prior to disposal. Primary handling of liquid waste should occur in the patient's room and be performed by the primary healthcare workers wearing recommended PPE.
        iii. Discard cleaning cloths in biohazard bags.
E. EH&S will obtain special transport permit from the Department of Transportation (DOT).
F. All VHF-contaminated waste will be picked up by the licensed medical waste hauler and transported to their facility for incineration.

XVIII. Environmental cleaning and disinfection

A. Cleaning procedures while patient is still present
    a. Spot clean and disinfect the PPE doffing area and surfaces in the patient care area on a regular basis.
    b. Cleaning should be performed by the designated nursing and provider caring for the patient. Staff should be wearing clean PPE when cleaning.

a. All cleaning/ disinfecting procedures require the use of an EPA-registered hospital disinfectant on List L (Ebola), or on List Q (Marburg and Lassa; for Ebola if List L not available).
c. All cleaning steps must be completed in prescribed order of operations to eliminate the opportunity for cross contamination.

B. Following discharge or transfer from the room
   a. The room should remain vacant with doors closed for 1 hour (>99% removal efficiency) after the patient leaves.
   b. After one hour, terminal cleaning of the room will be performed by EVS staff. The EVS staff should be trained to don and doff the appropriate PPE, following the same protocol as other staff including an observer during donning and doffing. If none is available, just-in-time training will be provided.
   c. Following terminal cleaning, the staff will page the Hospitality supervisor and HEIP to report that terminal cleaning is complete. The Hospitality supervisor in conjunction with HEIP must visually inspect the room and clear the room prior to the admission of the next patient.

C. Medical equipment
   a. Disposable dedicated medical equipment (e.g., stethoscope, blood pressure cuffs, thermometers) should be used for provision of patient care.
   b. Whenever possible, disposable equipment should be used and disposed of as Category A medical waste. Ideally, all non-disposable equipment should be removed from the room prior to the patient entering.
   c. Any non-disposable equipment that was used for patient care, will be evaluated by HEIP, Clinical Technologies and Hospitality and a decision made to discard or clean and disinfect with the appropriate hospital grade products.

Part 5: Follow-up Contact Tracing

XIX. Exposure definitions for healthcare personnel:

A. High risk exposure:
   a. Percutaneous, mucous membrane or skin contact with blood or body fluids of a person suspected or confirmed to have VHF
   b. Direct contact with person suspected or confirmed to have VHF without appropriate PPE
   c. Providing care to a patient suspected or confirmed to have VHF without use of all recommended PPE, or while experiencing a breach in recommended PPE that results in the potential for percutaneous, mucous membrane, or skin contact with the blood or body fluids of the patient
   d. Living in the same household as a person suspected or confirmed to have VHF

B. **Low risk exposure:** any potential exposure not categorized as high risk, including healthcare personnel who entered the patient's room in appropriate PPE.

XX. HEIP responsibilities for contact tracing:

A. HEIP to collaborate with Occupational Health Services (OHS), Hospital Supervisor, and ED Leadership to collate a comprehensive line list of all healthcare personnel, patients, and patient visitors who may have had an exposure to the confirmed case.

B. Inform any patients with possible UCSF healthcare-associated VHF exposures and their providers about exposures and recommendations.
C. Collaborate with OHS to send a line list of all exposed patients, patient visitors, and staff who may have been exposed to DPH.
D. Collaborate with OHS to provide daily or as needed update to the Hospital Incident Management Team (HIMT) and Hospital Command Center (HCC).

XXI. OHS responsibilities for contact tracing:

A. In collaboration with HEIP, identify all staff who meet criteria for surveillance.
B. Contact the supervisors of departments with exposed employees according to OHS processes to enhance case-finding.
C. Record all exposures, exposed employee information, and "low" or "high" risk exposure category.
    a. For low risk exposures:
        i. Defined as
        ii. Provide self-monitoring instructions.
        iii. Arrange for post-exposure education and monitoring.
        iv. Instruct exposed employees to measure their own temperatures twice daily and to monitor themselves for symptoms (e.g. cough, shortness of breath or trouble breathing) during their 21-day incubation period.
        v. Evaluate employee exposures and symptoms to determine the need for work restrictions and/or VHF testing.
    b. For high risk exposures:
        i. Should be quarantined at home and monitored daily.
        ii. Provide clear instructions on who and how to contact the appropriate groups (ED, HEIP) if they develop symptoms consistent with VHF (e.g., sudden onset of fever, fatigue, intense weakness or muscle pains, vomiting, diarrhea, or any signs of hemorrhage)
D. Employees who have had VHF infections must obtain OHS/EHS clearance prior to returning to work.

XXII. Supervisor responsibilities for contact tracing

A. Ensure all staff (including the assigned security guard) who are working with suspect or confirmed VHF patients are captured on log sheet
B. Assist OHS with identification of the services and staff/providers involved in care of patient
C. Provide OHS with names, roles, and contact information of staff/providers in their dept/service
D. If an email notification is indicated as part of the contact tracing process, will assist in dissemination to those affected providers, staff, and/or learners