



Viral Hemorrhagic Fever (VHF) Guideline

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Revision History:

Date	Replaced	Comments
10/2014	08/2014	Reviewed and updated to assure agreement with Ebola Response Plan. Removed references to Viral Hemorrhagic Form as it is no longer supported by CDC.
08/2014	02/2012	Added table of contents. Minor wording edits to Case Definition and Epidemiology section. Removed Yellow Fever and Dengue from the Disease Overview's VHF's tables. Updated Laboratory Analysis, Isolation, Work and Daycare Restrictions, Data Management, and Management of Special Situations – Intentional Contamination. Reformatted Fact Sheet. Removed references for Skin Snip Biopsy that would only be used in rare instances for death investigations. Removed reference to “Interim Guidance of Managing Patients with Suspected Viral Hemorrhagic Fever in U.S. Hospitals (2005) and referred user to more recent infection control guidance. Replace references to “endemic” areas throughout with the statement “areas of VHF outbreaks or known disease occurrence.”
02/2012	09/2011	Removed references to KS-EDSS.
09/2011	07/2010	BEPHI replaced BSE throughout. Updated to CDC 2011 Case Definition. Updated web links. Addition of notification section.

Viral Hemorrhagic Fever

Disease Management and Investigation Guidelines

CASE DEFINITION (CDC 2011)

Note: This is a general definition for the surveillance of Viral Hemorrhagic Fever, due to Ebola virus, Marburg virus, Crimean-Congo hemorrhagic fever viruses, Lassa virus, Lujo virus, or New world arenaviruses (Guanarito, Machupo, Junin, Sabia) . During active response efforts more specific definitions may need to be referenced and applied.

Clinical Description for Public Health Surveillance:

An illness with acute onset with ALL of the following clinical findings:

A fever > 38°C (100.4°F)

- One or more of the following clinical findings:
 - Severe headache
 - Muscle pain
 - Erythematous maculopapular rash on the trunk with fine desquamation 3-4 days after rash onset
 - Vomiting
 - Diarrhea
 - Pharyngitis (arenavirus only)
 - Abdominal pain
 - Bleeding not related to injury
 - Retrosternal chest pain (arenavirus only)
 - Proteinuria (arenavirus only)
 - Thrombocytopenia

Laboratory Criteria for Case Classification:

One or more of the following laboratory findings:

- Detection of VHF viral antigens in blood by enzyme-linked immunosorbent assay (ELISA) antigen detection
- VHF viral isolation in cell culture for blood or tissues
- Detection of VHF-specific viral genes using reverse transcriptase with polymerase chain reaction amplification (RT-PCR) from blood or tissues
- Detection of VHF viral antigens in tissues by immunohistochemistry.

Epidemiologic Linkage:

One or more of the following exposures within the three weeks before onset of symptoms:

- Contact with blood or other body fluids of a patient with VHF
- Residence in, or travel to, a VHF endemic area
- Work in a laboratory that handles VHF specimens
- Work in a laboratory that handles bats, rodents, or primates from endemic areas

OR

- Exposure to semen from a confirmed acute or convalescent case of VHF within the 10 weeks after that person's onset of symptoms

Case Classification:

Confirmed: Case meets the clinical and laboratory criteria.

Suspected: Case meets the clinical and epidemiologic linkage criteria.

Note: The above VHF case definition is used for routine surveillance for reporting cases to the National Notifiable Diseases Surveillance System (NNDSS).

During heightened response a more sensitive and less specific definition of a “Person under Investigation” allows a physician to immediately assess risk independent of the epidemiologic case classification. Medical providers and local health department investigators should refer to the most recent guidance to identify the criteria for a **Person under Investigation (PUI)**.

LABORATORY ANALYSIS

Warning: A telephone report to 1-877-427-7317 within 4 hours of suspect case is required by law. These are among the most highly pathogenic viruses known. Strict adherence to infection prevention recommendations will reduce the risk of transmission.

Because of the hazard associated with handling specimens, **TESTING IS DONE ONLY WITH PRIOR CONSULTATION.**

- Hospitals should contact KDHE Epidemiology Hotline: 877-427-7317 for consultation for VHF testing requests before contacting the CDC.
- Consultation will occur after the KDHE Epidemiologist-on-call reports the case information to the CDC Emergency Operations Center (EOC) and arranges a conference call.
- Consultation will include instructions on specimen collection and transport.
 - Persons responsible for packing and shipping any specimen for VHF testing should be trained to ship Category A infectious substances.
- Additional guidance on laboratory testing for VHF viruses is found in attachments – Annex [11 – Laboratory Testing](#).
- ***Always wear protective clothing when handling suspect VHF specimens. Routine laboratory testing for patient care in house can occur following precautions listed below.***
 - Follow established standards compliant with the OSHA bloodborne pathogens standard. This includes proper use of appropriate personal protective equipment (PPE) and adhering to engineered safeguards, for all specimens regardless of whether they are identified as being infectious.
 - For specimen collection: Full face shield or goggles, masks to cover all of nose and mouth, gloves, water-resistant gowns are recommended. **Additional PPE may be required in certain situations.**
 - For laboratory testing: Full face shield or goggles, masks to cover all of nose and mouth, gloves, water-resistant gowns AND use of a certified class II Biosafety cabinet or Plexiglass splash guard All manufacturer-installed safety features for laboratory instruments should be used.

EPIDEMIOLOGY

Viral hemorrhagic fevers (VHFs) refer to a severe multisystem syndrome with overall vascular system damage and impairment of the body's regulatory system. The illness, caused by four distinct families: arenaviruses, filoviruses, bunyaviruses, and flaviviruses, can be mild, but many of these viruses cause severe, life-threatening disease. The viruses depend on animal or insect hosts and are geographically restricted to the areas where the host species live. However, there is potential for imported, travel-associated cases. Humans are first infected by contact with infected hosts in their natural habitat or after they are exported from that habitat. The first outbreaks of Marburg HF in Germany and Yugoslavia occurred when laboratory workers handled imported monkeys. If the virus can be transmitted further by person-to-person contact, a person infected in an outbreak area can travel outside of the area and infect others. Person-to-person transmission of Lassa, Ebola, Marburg and CCHF viruses can occur through direct contact with VHF-infected material. The transmission risk of VHFs in the health care and laboratory setting is well documented. During a 1995 Ebola outbreak, one-fourth of the cases were in health care workers; but, after barrier nursing practices were implemented, further transmission was controlled. Because of increasing global travel, outbreaks of VHF are an increasing threat to non-endemic areas. With the exception of arenavirus in California, there are no identified VHF reservoirs in the United States or Canada.

DISEASE OVERVIEW

Information has been extracted from [Infection Control for Viral Haemorrhagic Fevers in the African Health Care Setting](#).

Geographical and epidemiological characteristics of VHFs			
Disease	Geography	Vector/Reservoir	Human Transmission
New World Arenaviruses	Guanarito virus - Venezuela Junin virus - Argentina Machupo virus -Bolivia Sabia virus – Brazil	Rodents	Aerosols or direct contact with infected rodents or their droppings, urine, or saliva. Person to person transmission is possible but uncommon.
Crimean Congo HF	Africa Balkans China (Western) Former Soviet Union (Southern) Middle East	Ticks Tick-mammal-tick cycle	Tick bites and squashing ticks. Exposure to aerosols or fomites from slaughtered cattle and sheep (domestic animals do not show evidence of illness). Nosocomial epidemics through contaminated equipment.
Ebola HF and Marburg HF	Africa	Unknown	Direct contact with the blood or secretions of an infected person. Exposure to objects (such as needles) that have been contaminated with infected secretions.

Lassa Fever	West Africa	Mice (<i>Mastomys</i> genus)	Aerosols or direct contact with infected rodents or their droppings, urine, or saliva. Person-to-person contact. Note: The reservoir rodent is very common in Africa and the disease is a major cause of severe febrile illness in West Africa.
Lujo Virus	South Africa	Rodents	Aerosols or direct contact with infected rodents or their droppings, urine, or saliva. Person-to-person transmission
Rift Valley Fever	Sub-Saharan Africa	Floodwater mosquitoes. Maintained between mosquitoes and domestic animals, particularly sheep and cattle.	Mosquito bite. Contact with blood of infected sheep, cattle, or goats. Aerosols generated from infected domestic animal blood. No person-to-person transmission.

Common Clinical Features of VHF

Disease	Incubation	Communicability	Case Fatality	Clinical
New World Arenaviruses	7-14 days	Rarely transmitted person to person		Range in severity from mild, acute, febrile infections to severe illnesses Vascular leak, shock, and multiorgan dysfunction are prominent features in severe illness. Fever, headache, myalgia, conjunctival suffusion, bleeding, and abdominal pain are common early symptoms in all infections.
Crimean Congo HF	3-12 days	As long as blood and secretions contain virus.	15-30%	Most severe bleeding and ecchymoses (a purplish patch caused by blood coming from a vessel into the skin) of all the HF.
Ebola HF and Marburg HF	2-21 days	Not before febrile phase, and increasing with stages of illness, as long as blood and secretions contain virus. (Ebola isolated in semen on day 61 but not day 76 after onset in a laboratory-acquired case. Objects (such as needles) that have been contaminated with infected secretions may serve as source of infection as long as viruses are present.	25-90%	Most fatal of all HF. Weight loss. Exhaustion and loss of strength. A maculopapular (a lesion with a broad base) rash is common Post infection events have included hepatitis, uveitis and orchitis.

Lassa Fever	5-16 days	Theoretically, during acute febrile phase. Virus in urine 3-9 weeks from onset and in semen for up to 3 months.	~15%	Exhaustion and loss of strength. Shock. Deafness develops during recovery in 20% of cases.
Rift Valley Fever	2-5 days (non-HF disease; incubation for HF may differ)	Bites from infected mosquitoes. Exposure to blood, body fluids, or tissues of infected animals. Aerosol transmission in laboratory environment. No human-to-human transmission documented.	50% of severe cases (about 1.5% of all infections)	Shock. Bleeding. Reduced or no urine production. Jaundice. Inflammation of the brain and blood vessels in the retina of the eye.

Period of Communicability:

Varies. See disease-specific information above.

Susceptibility and Resistance:

Susceptibility is universal.

Summary of Prevention and Treatment of VHF's

Disease	Prevention	Clinical Treatment
Crimean Congo HF	Tick avoidance. Avoid contact with acutely infected animals, especially slaughtering. Use VHF Isolation Precautions when a case is suspected.	Ribavirin is effective in reducing mortality. Ribavirin should be used based on in vitro sensitivity and of limited South African experience
Ebola HF and Marburg HF	Standard, contact, and droplet precautions. Airborne precautions when conducting aerosol generating procedures. Avoid unprotected contact with suspected patients or infectious body fluids.	None other than supportive care, which may be of limited utility.
Lassa Fever	Rodent control. Use VHF Isolation Precautions when a case is suspected.	Ribavirin is effective in reducing mortality. Use Ribavirin in higher risk patients, e.g. if aspartate aminotransferase (AST) is greater than 150.
Rift Valley Fever	Implement measures to reduce risk of contact with blood, body fluids, or tissues of infected animals. Reduce exposure to bites from mosquitoes and other blood-sucking insects, such as use of mosquito repellents and bednets.	Supportive care. Use of Ribavirin in hemorrhagic fever patients is based on studies in experimental animals.

NOTIFICATION TO PUBLIC HEALTH AUTHORITIES

All confirmed or **suspected** viral hemorrhagic fever cases shall be reported to KDHE-BEPHI within **4 hours by phone**:

**Kansas Department of Health and Environment (KDHE)
Bureau of Epidemiology and Public Health Informatics (BEPHI)
Phone: 1-877-427-7317**

As a nationally notifiable condition, [confirmed](#) and [suspected](#) viral hemorrhagic fever cases that are suspected as [intentional](#) require an IMMEDIATE, EXTREMELY URGENT report to the Centers for Disease Control and Prevention (CDC).

1. IMMEDIATE, EXTREMELY URGENT reporting requires a KDHE epidemiologist to call the CDC EOC at 770-488-7100 within 4 hours of a being notified of a case that is potentially intentional, followed by submission of an electronic case notification to CDC by the next business day.
 - KDHE-BEPHI will notify the CDC immediately by phone of all confirmed or suspected viral hemorrhagic cases that are potentially intentional.
 - KDHE-BEPHI will file an electronic case report the next business day.
2. KDHE-BEPHI will notify the local public health jurisdiction immediately to coordinate for report information needed to ensure that the electronic form is completed before the next business day of receiving a notification.

[Confirmed](#) and [suspected](#) viral hemorrhagic fever cases that are not suspected as intentional require an IMMEDIATE, URGENT report to CDC.

1. IMMEDIATE, URGENT reporting requires a KDHE epidemiologist to call the CDC EOC at 770-488-7100 within 24 hours of a case meeting the [confirmed](#) or [suspected](#) criteria, followed by submission of an electronic case notification in the next regularly scheduled electronic transmission.
 - KDHE-BEPHI will notify the CDC immediately by phone of all confirmed or suspected cases and will file electronic reports weekly with CDC.
2. **Local public health jurisdiction** will report information requested on the supplemental form as soon as possible, completing the form within 7 days of receiving a notification of a VHF report.

INVESTIGATOR RESPONSIBILITIES

The local health department, as a resource for medical providers, ensures that:

- 1) Medical providers are aware of resources available to assist with the evaluation and risk assessment of suspect VHF patients.
- 2) Appropriate infection control practices, including isolation measures, are implemented in facilities evaluating the risk of VHF illness in a patient.
- 3) Resources are available or obtainable to assist with laboratory specimen collection.
- 4) Immediate notification occurs to KDHE-BEPHI for any person under investigation for VHF.

After a confirmed case of VHF is identified, the local health department investigator will work with KDHE to:

- 1) Assist in epidemiological investigation.
 - Conduct [contact investigation](#), tracing and surveillance to identify additional cases or contacts.
 - Conduct a [case investigation](#) to identify potential source of infection.
 - Conduct active surveillance to identify additional cases that are classified and reported with the current case definition
- 2) Assist in formulating and implementing disease control and prevention activities ([Case Management](#) and [Contact Management](#)):
 - Identify and isolate VHF cases to prevent disease spread.
 - Identify and monitor contacts of cases.
- 3) Complete and [report](#) all information requested in the Kansas electronic surveillance system and any additional forms requested by the CDC.

The local health department may also be involved in the implementation of additional measures in response to a VHF incident. These activities may be covered in the Kansas Biological Incident Annex (BIA) and the local health department standard operating guides (SOGs), or additional response plans from the KDHE.

The activities described below only outline the activities of a local investigator and KDHE during the investigation of initial cases of VHF. Refer to the above mentioned resources for additional implementation measures and responsibilities.

STANDARD CASE INVESTIGATION AND CONTROL METHODS

Case Investigation

- 1) Contact the medical provider who diagnosed or ordered testing of the case and obtain the following information. This includes copies of hospital records.
 - Identify if the patient was ill with symptoms of viral hemorrhagic fever.
 - Record specific symptoms.
 - Record onset date of symptoms.
 - Examine any laboratory testing that was done; if not yet reported:
 - Record date serum specimen(s) and/or tissue (specify) were collected.
 - Record or obtain copies of any serology results, virus isolation, and PCR tests, if done.
 - Collect case's demographic data and contact information (Full name, birth date, county, sex, race/ethnicity, home address, occupation and work address, phone number(s))
 - Record hospitalizations: location, admission and discharge dates
 - Record outcomes: recovered or date of death; complications, mental status changes
- 2) Interview the case or proxy to determine source and risk factors; focus on incubation period usually 3 weeks prior to illness onset (but apply specific incubation period and risk factors if the agent is known).

Note: *Travel to an area where a VHF outbreak is occurring or an area where VHF is known to occur or some connection to a VHF area is a **crucial** element. With no travel to areas where VHF outbreaks or disease are occurring or other obvious risk factors, [refer to Managing Special Situations – Unusual Circumstances](#).*

- Travel history:
 - Travel outside of KS; list states visited; dates visited
 - Travel outside of U.S.; list country; date of departure and return to U.S.
 - Case's occupation – note laboratory or blood and body fluid exposures
 - Exposure to mosquitoes, ticks, rodents, bats, primates or livestock of African origin: include dates and places.
 - Household members or close contacts with recent travel to endemic or outbreak areas in the last 3 months.
 - Collect information from case for the [Contact Investigation](#). (See below).
- 3) Investigate epi-links among cases (clusters, household, co-workers, etc).
 - For suspected [outbreaks](#) refer to Managing Special Situations section.

Contact Investigation

- 1) Contacts are those who have exposure. Exposure is defined as:
 - Contact with blood or other body fluids of a patient with VHF
 - Residence in – or travel to – an area where VHF has occurred or an outbreak is occurring
 - Laboratory work handling VHF specimens
 - Contact with primates associated with VHF transmission
 - Exposure within the past 3 weeks to semen from a confirmed acute or convalescent case of VHF within the 10 weeks of case's onset of symptoms
- 2) Identify all contacts and manage as instructed in [Contact Management](#).
- 3) If case's travel occurred in a travel group, investigate travel companions.
- 4) If a blood transfusion or organ transplant is suspected, coordinate with BEPHI.

Isolation, Work, and Daycare Restrictions

- 1) There are no specific Kansas regulations related to Isolation and Quarantine of VHF patients or persons exposed to VHF. Therefore, the provisions of K.A.R. 28-1-5, which specifies that the secretary of KDHE or the local health officer shall order and enforce isolation and quarantine based on current medical knowledge of the particular infectious agent.
 - Measures that may be taken include:
 - Active monitoring – Individuals identified as having had high-risk or some risk or exposure to VHF would undergo active monitoring for a period of time following the last exposure. Active monitoring requires asymptomatic contacts to self-monitor for predetermined symptoms, to share the information with the local health department staff verbally daily, to immediately contact KDHE if symptoms consistent with VHF develop, and to contact their health care facility or provider in advance to arrange for health care.
 - Restricted movement – Persons must remain at their residence or other living location as determined by KDHE or the local health officer for a period following their last potential exposure; any movement outside the residence or other living location or visitors to the location must be approved in advance by KDHE or the local health officer
 - Failure to comply with the provisions of active monitoring or restricted movement may result in the issuance of more restrictive quarantine orders pursuant to K.S.A. 65-119, K.S.A. 65-128, and K.A.R. 28-1-5
- 2) A patient in a Kansas health care facility suspected or known to have VHF should be managed with enhanced standard, contact, and droplet precautions, including the following recommendations:
 - Isolate the patient: Patients should be isolated in a single patient room (containing a private bathroom whenever possible) with the door closed.
 - Wear appropriate PPE: Health care providers entering the patient's room should wear gloves, gown (fluid resistant or impermeable), eye protection (goggles or face shield), and a face mask. Additional protective equipment might be required in certain situations, including but not limited to double gloving, disposable shoe covers, and leg coverings.

- Restrict visitors. Exceptions may be considered on a case-by-case basis, but such visitors must be monitored, managed and trained in and use proper PPE. A logbook should be kept to document all persons entering the patient room.
- Patients with respiratory symptoms should wear a face mask to contain respiratory droplets prior to placement in their hospital or examination room and during transport, if tolerated and not medically contraindicated.
- Avoid aerosol-generating procedures: If performing these procedures, PPE should include respiratory protection (N95 or higher filtering face-piece respirator) and should be performed in an airborne infection isolation room.
- Implement environmental infection control measures: Use diligent environmental cleaning and disinfection and safe handling of potentially contaminated materials. Handle all potentially infectious materials following hospital protocols.
- For further guidance on prevention and control measures, refer to the most current guidelines issued from CDC and KDHE, including:
 - Current CDC guidelines for the VHF agent under investigation: www.cdc.gov/vhf/abroad/index.html
 - Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007: www.cdc.gov/hicpac/2007IP/2007ip_part2.html#e

Case Management

- 1) Because blood and secretions may contain virus for an undetermined amount of time after illness, recovering cases should be monitored for infectiousness (specific monitoring will be determined by an infectious disease specialist).
- 2) Recovering VHF cases should refrain from sexual activity until considered no longer infectious.
 - The Control of Communicable Disease Manual suggests that those who have recovered from Ebola or Marburg use protection during sexual intercourse for three months or until semen can be shown to be free of virus.
- 3) Patients with Lassa infections are at risk of deafness and hearing loss and should be monitored during recovery.

Contact Management

- 1) Establish active monitoring of asymptomatic contacts.
 - Contacts should measure their temperatures twice daily during the surveillance period which is dependent upon the maximum incubation period for the specific agent.
 - The local health department should conduct telephone or video conferencing to follow-up with exposed persons to ensure compliance with self-monitoring, assess symptoms, and discuss potential concerns. Home visits for symptom monitoring should occur only if other methods are not available.
- 2) Health care workers potentially exposed to VHF may be excluded from direct patient care for a period up to 21 days since last exposure, as determined by

- the local health officer or the secretary of KDHE based on the incubation period of the virus, circumstances of exposure, and other pertinent factors.
- 3) If a person under medical monitoring develops a temperature $\geq 100.4^{\circ}\text{F}$ [38.0°C] or subjective history of fever or other symptoms of VHF, the person shall immediately contact the KDHE Epidemiology Hotline at 877-427-7317.
 - If such persons contact a health care provider or local health department worker first, then the health care provider or local health department worker shall have the responsibility of contacting KDHE.
 - Such a person who presents to a medical facility should be placed in isolation under standard, contact, and droplet precautions while the situation is assessed and/or testing occurs.
 - 4) The restricted movement of asymptomatic contacts will depend on the extent of exposure and agent involved. Decisions must be made on whether a contact is allowed to continue their routine daily activities or is restricted from certain activities or travel, or is ultimately restricted to their residence or other living location during the surveillance period.
 - Local health departments and other agencies should develop local plans to ensure basic needs of those persons whose movement is restricted are met.

Environmental Measures

- 1) Environmental surfaces or inanimate objects contaminated with blood, other body fluids, secretions, or excretions should be cleaned and disinfected using standard procedures.
 - Disinfection can be accomplished using a U.S. Environmental Protection Agency (EPA)-registered hospital disinfectant with a label claim for a non-enveloped virus or a 9:1 (water:bleach) solution.
- 2) Waste generated through the care of a patient with known or suspected VHF disease can include but is not limited to medical equipment, sharps, linens, and used health care products, used PPE and all absorbent or uncleanable items contaminated or potentially contaminated by a suspected VHF patient.
 - Such waste is considered contaminated or suspected of being contaminated with a Category A infectious substance and must be packaged and transported in accordance with the Hazardous Materials Regulations (HMR, 49 C.F.F., Parts 171-180)
 - Category A agent contaminated waste that has been treated (sterilized) by the generator using effective (autoclaving) procedures may be managed as other Category B Regulated Medical Waste in accordance with state and federal transportation and disposal requirements.
- 3) When discarding solid medical waste (e.g., needles, syringes, and tubing) contaminated with blood or other body fluids from VHF patients:
 - Package the waste with minimal agitation during handling.
 - Manage according to existing local and state regulations for medical waste treatment and disposal.
- 4) Liquid medical waste such as feces and vomitus can be disposed of in the sanitary sewer by following local sewage disposal requirements and these recommendations:

- Toilet bowls should be primed with a 9:1 (water:bleach) solution prior to introduction of any wastes to ensure wastes discharged during toilet equilibrium actions are appropriately treated.
 - Collect the body fluid waste for disposal and treat with 1 part household bleach to 9 parts water for at least 10 minutes or longer prior to discharge to the sanitary sewer.
 - Body fluids expelled directly from the patient into a toilet must be treated with the 1 part of household bleach to 9 parts water for at least 10 minutes prior to discharge to the sanitary sewer; this will require consideration of the toilet bowl water volume to ensure a 9:1 (water:bleach) solution is achieved.
 - Facilities should discuss preferred concentrations and treatment time for body fluid wastes utilizing these methods with their Public Waste Water Treatment facility director and local emergency manager.
 - Avoid splashing when disposing of these materials.
- 4) Local health departments and other local agencies are advised to discuss and plan for how local resources will be utilized to address potential needs for environmental decontamination of a confirmed case-patient's residence or other structures.
- 5) Refer to the following publications for further guidance:
- Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007:
www.cdc.gov/hicpac/2007IP/2007ip_part2.html#i
 - CDC 2008 Guideline for Disinfection and Sterilization in Healthcare Facilities located at: www.cdc.gov/hicpac/pubs.html

Education

- 1) Households where VHF cases have been identified must receive specific information on personal hygiene, waste disposal, and limiting exposure to possibly infected materials or animals. Instructions will be specific to the agent involved. Consult with an infectious disease specialist or KDHE-BEPHI for specific instructions
- 2) Instruct travelers to VHF outbreak areas on the risks and to minimize contact with potential exposures.
- 3) Information for travelers to outbreak areas can be found at the CDC Traveler's Health website. (wwwn.cdc.gov/travel/)

MANAGING SPECIAL SITUATIONS

A. Post-mortem Practices:

If the patient dies, handling of the body should be minimized. Mortuaries need to be alerted to any suspect or confirmed VHF case. The remains should not be embalmed. Remains should be wrapped in sealed leak-proof material and cremated or buried promptly in a sealed casket. If an autopsy is necessary, the state health department and CDC should be consulted regarding appropriate precautions.

B. Outbreaks and Unusual Occurrences:

One or more cases for which a known risk factor (e.g., recent travel) cannot be identified should be considered a potential outbreak and adequate resources applied to the investigation. A locally acquired case of VHF would be an unusual occurrence in the continental United States.

- Report and investigate a single diagnosed or suspected case of VHF with no travel history or occupational risk immediately.
- Contact KDHE (877-427-7317).
- It may be necessary to:
 - Inquire about potential medical exposures: blood transfusions and organ transplantations.
 - Investigate febrile illness reports or unexplained deaths in the area.
- Review recommendations for [intentional contamination](#) situations.

C. Intentional Contamination

VHF viruses are considered Category A bioterrorism agents. If a natural etiology cannot be established by a prompt, vigorous investigation; the situation is considered a bioterrorist act until proven otherwise.

- Contact KDHE (877-427-7317) immediately.
- Implement “[Chain of Custody](#)” procedures for all samples collected, as they will be considered evidence in a criminal investigation.
- Work to define population at risk which is essential to guide response activities. Public health authorities will play the lead role in this effort, but must consult with law enforcement, emergency response and other professionals in the process. The definition may have to be re-evaluated and redefined at various steps in the investigation and response.
- Once the mechanism and scope of delivery has been defined, the identification of the symptomatic and asymptomatic exposed individuals can be completed and recommendations for the treatment made.
- Establish and maintain a detailed line listing of all cases and contacts with accurate identifying and locating information.

Safety Considerations:

- Strict adherence to standard, contact, and droplet precautions including: the use of gowns, gloves, masks and needle precautions is mandatory.
- Persons with percutaneous or mucocutaneous exposures to blood, body fluids, secretions, or excretions from a patient with suspected VHF should immediately wash the affected skin surfaces with soap and water. Mucous membranes (e.g., conjunctiva) should be irrigated with copious amounts of water or eyewash solution. Exposed persons should receive medical evaluation and follow-up care, including fever monitoring.

Risk Communication Materials:

- Factsheet for VHF: **Public Information and Communication SOG, Annex F – Public Information, Health Education Materials: Biological Hazards** located at: www.kdheks.gov/cphp/operating_guides.htm

- Communicating in the First Hours: www.bt.cdc.gov/firsthours/vhf/index.asp

Treatment:

- No specific therapy. Patients who develop severe illness may require anticonvulsant and supportive care to maintain fluid and electrolyte balance, for ventilation, and to prevent secondary bacterial infections.
- Follow recommendations in Isolation, Work and Daycare Restrictions

Postexposure prophylaxis (PEP):

- No post-exposure prophylaxis is associated with this group of diseases; however, vaccination may be an option for some of the arboviruses.

Environmental decontamination:

- Environmental surfaces or inanimate objects contaminated with blood, other body fluids, secretions, or excretions should be cleaned and disinfected using standard procedures. Refer to Environmental Measures.
- A release in areas populated with appropriate animal host and/or appropriate arthropod vectors could initiate both an epizootic and epidemic trends. Integrated pest management at the presumed infected site, including insecticide fogging, may be reasonable.

DATA MANAGEMENT AND REPORTING TO THE KDHE

- A. Accept the case assigned to the LHD and record the date the LHD investigation was started on the [Administrative] tab.
- B. Organize and collect data, using appropriate data collection tools.
- C. Report data collected during the course of the investigation via EpiTrax.
 - Verify that all data requested in EpiTrax has been recorded on an appropriate EpiTrax [tab].
 - Some data that cannot be reported on an EpiTrax [tab] may need to be recorded in [Notes] or scanned and attached to the record.
 - Paper report forms do not need to be sent to KDHE after the information is recorded in EpiTrax. The forms should be handled as directed by local administrative practices.
- D. Once the investigation is completed, the LHD investigator will click the “Complete” button. This will trigger an alert to the LHD Administrator so they can review the case before sending to the state.
 - The LHD Administrator will then “Approve” or “Reject” the CMR.
 - Once a case is “Approved” by the LHD Administrator, BEPHI staff will review the case to ensure completion before closing the case.
(Review the [EpiTrax User Guide, Case Routing](#) for further guidance.)

ADDITIONAL INFORMATION / REFERENCES

- A. Treatment / Differential Diagnosis:** Red Book: 2009 Report of the Committee on Infectious Diseases. 28th ed. Elk Grove Village, IL: American Academy of Pediatrics; 2009: 214-220.
- B. Epidemiology, Investigation and Control:** Heymann. D., ed., Control of Communicable Diseases Manual, 19th Edition. Washington, DC, American Public Health Association, 2009.
- C. Case Definitions:** CDC Division of Public Health Surveillance and Informatics, Available at: www.cdc.gov/osels/ph_surveillance/nndss/casedef/case_definitions.htm
- D. Kansas Regulations/Statutes Related to Infectious Disease:** www.kdheks.gov/epi/regulations.htm
- E. Chain of Custody:** KDHE Chain of Custody Standard Operating Guide, www.kdheks.gov/cphp/operating_guides.htm#coc
- F. Additional Information (CDC):** www.cdc.gov/health/default.htm
- **VHF Site:** www.cdc.gov/ncidod/diseases/vir/fvr/vir/fvr.htm
 - **Emergency preparedness:** www.bt.cdc.gov/agent/vhf
 - **Guideline for Isolation Precautions: Preventing Transmission of Infectious Agents in Healthcare Settings 2007:** www.cdc.gov/hicpac/2007IP/2007ip_part2.html#i
 - **Infection Control for Viral Haemorrhagic Fevers In the African Health Care Setting (1998):** www.cdc.gov/ncidod/dvrd/spb/mnpages/vhfmanual.htm
 - **Interim Guidance for Managing Patients with Suspected VHF):** <http://emergency.cdc.gov/agent/vhf/treatment-infection-control.asp>

ATTACHMENTS

- **Fact Sheet**
- **Annex 11 – Laboratory Testing**

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