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STANDARD OF CARE	Manual: Clinical	Section: Infection Prevention and Control	Code No.: IC 3-V005	Old Code No.: IC 3-E005
Title: Viral Haemorrhagic Fever (VHF) - Suspected or Confirmed Cases			Original Effective Date: Oct 21, 2014	
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Expected Outcome(s):

[VHF Precautions](#), in addition to Routine Practices, must be followed for patients who have had contact with confirmed VHF (person/animal/lab specimen) or are an Ebola Virus Disease survivor. Consultation with the Infectious Disease (ID) Physician and Infection Prevention and Control (IPAC) must occur.

In these cases, VHF test **HAS BEEN ORDERED** by the ID Physician and the patient is clinically unstable (experiencing high volume or uncontrolled fluid loss due to uncontrolled vomiting, diarrhea or bleeding).

Background and Symptoms:

Viral Haemorrhagic fevers are caused by a wide range of viruses from four distinct taxonomic families:

- Filoviridae (includes Ebola, Marburg)
- Arenaviridae (includes Lassa, Machupo)
- Bunyaviridae (includes hantaviruses, Crimean Congo haemorrhagic fever, Rift Valley fever)
- Flaviviridae (includes Yellow Fever, Dengue)

Each of these viral families share similar features:

- They are all RNA viruses and are covered or enveloped in a lipid coating.
- Their natural reservoirs are animals or insect hosts.
- The viruses are geographically restricted to the area in which their host species lives.

Humans may become infected when they come into contact with infected hosts. Further person to person transmission may occur with some viruses (Ebola, Marburg, Lassa and Crimean-Congo are examples) through close contact with the body fluids of the infected person or indirectly, through contaminated objects such as syringes and needles.

Human cases or outbreaks occur sporadically and irregularly due to introduction of the virus from an animal host, followed by human-to-human transmission in home and health care settings.

In general, these viruses are able to cause a severe multisystem syndrome in which the vascular system is damaged and the body is unable to regulate itself. Outbreaks with human-to-human transmission chains require concerted public health efforts to contain and control spread.

- VHFs are diseases of public health significance due to:
 - A low infectious dose required for infection.
 - High morbidity and mortality in human cases for many of the agents.
 - Effective vaccines or treatments are unavailable for most of the agents.

All of the VHF agents cause a febrile prodrome (preliminary symptoms) with fatigue, muscle aches, weakness and dizziness.

Responsibility:

- All Staff – refers to employees, physicians, midwives, dentists, extended class nurse practitioners (non-employees), volunteers, students and all others who have a working relationship with Southlake.

Action:

Patient Management:

Note – the following actions should occur concurrently – i.e. the duties should be fanned out to expedite the process wherever possible.

- Patients must remain in a functioning [negative pressure room](#).
- Post a [Sign In/Out Log](#) Sheet outside of the anteroom door.
- Post the [PPE checklist](#) in the anteroom and outside the room.
- Contact Security who will monitor the patient area at all times as directed by the charge nurse and/or IPAC.
- Limit the number of HCWs with access to the patient. **Only staff who have received VHF Personal Protective Equipment (PPE) training may access the negative pressure room.**
- Two Registered Nurses must be assigned to the patient at all times. These nurses must have no other duties. Note: the PPE donning/doffing partner must be another HCW trained in PPE (i.e. not one of the 2 RNs assigned to the patient).
- Admit to ICU in a functioning negative pressure room (prefer #14) if the patient requires admission.

IPAC will:

- Notify Admin On Call via phone.
- Direct Central Communications (Locating) to initiate the email fan-out list [Admin On Call, CSMs, Corporate Communications, Manager of Distribution, Director and Safety Officer from Occupational Health, Safety and Wellness (OHSW), and the members of the Joint Health and Safety Committee. Upon notification, the Admin On Call will activate the Emergency Operations Centre (EOC).
- Notify York Region Public Health (Medical Officer of Health) 905-830-4444.
- Notify the ID Physician who will consult with Public Health Ontario Laboratory (PHOL) microbiologist available, PHOL Customer Service Centre at 1-416-235-6556 or toll free at 1-877-604-4567.

Managers or designates of high risk VHF areas (Emergency Department, ICU, Laboratory Services, Diagnostic Imaging, Respiratory Therapy and Environmental Services) are responsible to ensure that **there are 2 staff on each shift** who are certified and trained in VHF PPE donning/doffing in accordance with this standard of care.

Staff caring for the patient will:

- Before entering the patient's room, complete the [Sign In/Out Log Sheet](#) posted outside of the anteroom.
- Using the PPE checklist posted in the anteroom, don and doff PPE under the supervision of

another PPE-trained HCW (the “donning/doffing partner”) to ensure the inadvertent contamination of eyes, mucous membranes, skin or clothing does not occur. The partner must be someone who is NOT entering the patient's room. The partner will check off and sign the PPE checklist during every step of the donning and doffing.

- Upon exiting, complete the [Sign In/Out Log Sheet](#) posted outside of the anteroom.

Containment/Monitoring of HCWs working with suspect VHF cases or Potentially Exposed HCWs:

- Wherever possible, HCWs should be restricted to working on the unit to which the suspect VHF patient is admitted. For HCWs who cannot be restricted to one unit (e.g. Allied Health, Physicians), the number of units they cover should be limited as much as possible.
- HCWs are expected to self-monitor for fever and symptoms suggestive of VHF twice daily while caring for the patient and for 21 days after the last known date of caring for patients.
- [Self-Monitoring Log](#) of temperature readings and symptoms (if any), must be submitted to OHSW on a daily basis in order to permit continuance of working. This log can be emailed to the Occupational Health Nurses at OccupationalHealthNurses@southlakeregional.org or faxed to 905-830-5816.
- Any staff experiencing symptoms should seek medical assessment, exclude self from work and notify the OHSW immediately.
- Any HCW planning to travel to affected areas must notify OHSW prior to their departure AND upon their return to work, by calling 905-895-4521 ext 2383. Clearance through OHSW is required prior to their return to work (refer to [Management of Potential Worker Exposure to Viral Haemorrhagic Virus Disease \(VHF\)](#) procedure).
- HCWs who have had an unprotected exposure shall follow the [Management of Potential Worker Exposure to Viral Haemorrhagic Fever \(VHF\)](#) procedure.
- HCWs identified as at risk for exposure will be managed as per the [Management of Potential Worker Exposure to VHF](#) procedure.

PPE Training

HCWs must demonstrate proficiency in donning and doffing PPE prior to any exposure to the patient or their environment or waste.

- HCWs must be tested by a competent trainer to assess, verify and document their competency in donning and doffing PPE.
- Training will include simulation of patient care and/or other methodology.
- If HCWs have concerns regarding the proper fit of the PPE (including size and adequate coverage, i.e., gowns must extend to at least mid-calf); HCWs should indicate these concerns in accordance with the Internal Responsibility System (IRS).
 - HCWs who have difficulty finding the proper fit must not enter the patient room or be involved in the care of the patient.
- [Donning/Doffing instructional video](#) is available for review as needed, after competency has been established by a competent trainer.
- Refer to [VHF Precautions](#).

Reporting a Breach to the PPE Process:

If any HCW in the room/anteroom notices a breach to the PPE process, they are to immediately report it to their Manager or delegate and complete a Safepoint incident report. The Manager/delegate will notify IPAC and OHSW. The exposed staff member will be followed up as per the [Management of Potential Worker Exposure to Viral Haemorrhagic Fevers \(VHF\)](#) procedure.

Testing for Viral Haemorrhagic Fevers or Other Conditions:

- It is important that in all suspect cases of VHF, other more common potentially treatable diseases such as malaria are eliminated from the differential diagnosis.
- Before the collection of specimens to be submitted to PHO Laboratory (PHOL), contact PHOL Customer Service Centre at 416-235-6556 or 1-877-604-4567.
- The following five principles should be observed in the collection of all patient specimens:
 - Only specimens essential for diagnosis or monitoring should be obtained.
 - Specimens should be obtained by staff experienced in the required techniques.

- The same protective clothing as described for other hospital staff should be worn by those obtaining and testing laboratory specimens.
- Glass containers should not be used.
- Disposable sharp objects, such as scalpel blades, must be placed in red puncture resistant sharps containers.
- When a possible case of VHF is suspected, the ID Physician, PHOL, IPAC and the Lab will consult to determine which tests must be done immediately. For example:
 - Blood film examination for malaria (thick and thin blood films); a smear from a second specimen must be examined 12 to 24 hours later if the first does not reveal parasites.
 - Two sets of blood cultures with a total volume per set (two bottles) of 16 to 20 ml in adults.
 - Recommended volume collection for blood cultures in children is based on body weight.
 - White blood cell and differential counts, and either haemoglobin or haematocrit urine culture, if symptoms or manual dipstick suggests infection. Other critical tests can be considered if they can be performed on closed systems, i.e. arterial blood gases, electrolytes, liver function tests, creatinine, clotting function.
- Specimen collection guidelines - refer to "Table 1: Recommended specimen collection guidelines for diagnosis/detection of specific viral aetiology of VHF" in the [Public Health Ontario Sample Collection and Submission Guide](#) for further information.

Aerosol Generating Medical Procedures (AGMP)

- Aerosol-generating medical procedures (AGMP) should be performed ONLY IF medically necessary on a patient with suspected or confirmed VHF wearing the appropriate PPE.
- Limit the number of staff to the minimum required to safely perform the procedure.
- Visitors must not be present.
- Whenever possible, the procedure should be performed by the most highly experienced staff member available.

Visitors

- No visitors allowed in patient room.
- For pediatric patients or adult patients who are cognitively impaired or language barrier: a parent or care giver may be admitted to the patient's room following informed verbal consent and training on the use of PPE and Hand Hygiene (document in patient chart).
- Case-by-case exceptions may be made when it is essential for the well-being of the patient and in consultation with local Public Health and Infection Prevention and Control teams.
- Visits should be controlled and scheduled to allow for:
 - Screening for symptoms of VHF before entering or on arrival to hospital for those persons who may have been exposed to the patient prior to or following admission
 - Evaluation of the current risk to the visitor and ability of the visitor to comply with precautions
- A [Sign In/Out Log](#) must be maintained of all visitors entering and leaving the patient room (with times documented).
- The parent/caregiver must be excluded from the room if an aerosol-generating procedure is to be performed.

Equipment Handling Requirements:

- Extensive planning must occur in consultation with IPAC and Medical Device Reprocessing Department (MDRD (SPD)) prior to removing any equipment from the patient's room.
- Only essential equipment must be taken into the patient room. Medical devices and equipment must be disposable whenever possible.
- Shared equipment must be dedicated to the patient until the diagnosis of VHF is excluded or the patient is discharged.
- Inform IPAC and MDRD of any shared medical equipment that is used on the patient PRIOR to being used.
- Semi critical and critical equipment must be reprocessed in MDRD according to Spaulding's Classification.
- Use of needles and sharps should be avoided except for medically essential procedures.
- Safety-engineered needles must be used.
- A red puncture resistant sharps container must be available at point-of-use.

- A disposable body fluid management system must be used for all body fluids (i.e. Zorbi or similar product).

Handling Linen

- Linen from VHF patients may be heavily soiled with blood and body fluids.
- All linen must be placed in leak proof red biohazard bags at the point-of-use and removed by EVS.
- The pail (containing the leak proof red biohazard bags) surfaces must be disinfected before removal from the room.
- Do not fill bags more than 3/4 full.

Food Trays

- Food trays will be delivered by healthcare providers providing care to the patient.
- Disposable food containers and utensils must be used.
- Dispose of any remaining and used items in the leak proof red biohazard bag.

Environmental Cleaning

- Blood and all body fluids including sweat from VHF patients are highly infectious.
- Safe handling of potentially infectious materials and the cleaning and disinfection of the patient's environment is paramount.
- Experienced Environmental Services (EVS) staff trained in OHS/IPAC practices and use of PPE must be assigned to perform these tasks.
- Approved hospital grade disinfectants should be available in the patient room, anteroom and outside the room.
- The frequency of cleaning must be based on the level of contamination with blood and/or body fluids on a daily basis and as per IPAC instructions.
- All used wipes/cloths of waste must be placed in leak proof red biohazard bags (double bagged) at the point-of-use.
- The pail (containing the leak proof red biohazard bags) surfaces must be disinfected before removal from the room.
- Housekeeping equipment must be disposable and must remain in the room for the duration of the patient admission.
- EVS will manage the bleach solution that needs to remain in the patient room for the disinfection of rubber boots.
- Upon discharge of the patient, EVS must consult with IPAC before conducting a terminal clean of the room.
- Before terminal cleaning of the negative pressure room, one hour must pass to allow for the appropriate number of air exchanges to occur, before any healthcare worker can enter the room.
- Remove all dirty/used items (e.g. suction container, disposable items) and discard by placing items in leak proof red biohazard bags.

Waste Management

- All linen, garbage, and sharps are to be placed in leak proof red biohazard bags/containers.

Patient Transport - Internal

- Patient movement must be limited to essential purposes only AND
- Careful planning with the receiving department and transport staff must be done in consultation with IPAC **PRIOR TO** any patient movement outside patient room
- If transport is approved by IPAC, patient must wear a surgical mask

Patient Transport - External

- External patient transport must be done in consultation with IPAC, Infectious Diseases Physician, York Region Public Health (YRPH) and Public Health Ontario (PHO).

Discontinuation of Precautions:

- Discontinuation of VHF Precautions must be done by IPAC in consultation with the Infectious Diseases Physician, York Region Public Health (YRPH) and Public Health Ontario (PHO).

Management of Human Remains

1) DEATH DUE TO A TRANSMISSIBLE AGENT OF VHF

- Due to the presence of high viral loads throughout the body at the time of death, only persons who have been trained in the proper use of PPE and the process for handling the body of a patient infected with a VHF virus should handle, prepare and move the body within the patient room.
- Handling of the body should be kept to a minimum. Autopsies are not recommended and embalming is not to be done. Notification of all other areas where the body may be stored or transported is required prior to arrival of the body.
- The preparation of the body should be done within the patient room as follows:
 - Clamp and leave all intravenous lines, endotracheal tubes or other invasive devices in place to avoid additional splashes or leakage, cover any leaking tubes with absorbent material.
 - Do not wash, spray or clean the body.
 - Use the bed linens to wrap the body.
 - Immediately place the wrapped body into a leak-proof plastic body bag (ideally 150 µm thick) and close the zipper.
 - Clean the outside of the bag to remove any visible soil or leakage with an approved hospital grade disinfectant and discard the wipes or cloths and gloves.
 - Clean hands, apply new gloves and use a fresh wipe or cloth and reapply the disinfectant to the entire bag surface.
 - Allow appropriate contact time and drying according to the manufacturer's recommendations.
 - Place the bagged body into a second leak-proof body bag and close the zipper.
 - Disinfect the outside of the second bag along with the stretcher surfaces, again allowing for appropriate contact and drying time according to the manufacturer's recommendations prior to removing the body from the room.
 - As the body exits the room, have other staff outside the room assist in moving the stretcher through the anteroom or the doorway of the isolation room to allow space for the staff who have prepared the body to safely remove and discard their PPE within the allocated doffing space. Once the body has been double bagged and the outer surfaces have been disinfected with an approved hospital-grade disinfectant, the personnel providing the transportation of the body to the morgue do not need to wear PPE. Affix identification of the body and confirmation of surface disinfection to the bag and ensure that the body is kept in a secured area that cannot be accidentally accessed if there will be any delay in retrieval of the body by the designated funeral home staff.

2) DEATH DUE TO A NON-TRANSMISSIBLE AGENT OF VHF (E.G., DENGUE)

- Routine facility protocols for the preparation and management of bodies will be followed.

Special Considerations:

Not applicable.

References:

- [Public Health Ontario - Guidance for Patients with Suspect or Confirmed Viral Haemorrhagic Fever \(VHF\) in Acute Care Settings - July 2016](#)
- [Public Health Ontario - Viral Haemorrhagic Fevers \(VHFs\) - Sample Collection and Submission Guide- July 2015](#)
- [Management of Ebola virus disease \(EVD\) survivors in Ontario, July 2016](#)
- [Public Health Ontario - Routine Practices and Additional Precautions, Nov. 2012](#)

Related Documents:

- [Additional Precautions Policy \(Southlake\)](#)

- [Infection Control Screening Tool Policy \(Southlake\)](#)
- [VHF Precautions Policy \(Southlake\)](#)
- [VHF - Patient Screening and Containment in the Emergency Department procedure \(Southlake\)](#)

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