



# Guidelines for the Infection Control Management of Viral Haemorrhagic Fevers

Version Number	4	Version Date	February 2016
Guidelines Owner	Director of Infection Prevention and Control		
Author	Nurse Consultant, Infection Prevention and Control		
Staff/Groups Consulted	Adapted from the Policy in use at Taunton & Somerset NHS Foundation Trust and discussed at YDH with:  Infection Prevention & Control Committee Infection Prevention & Control Team		
Approved by IPCC	February 2016		
Next Review Due	February 2018		
Equality Impact Assessment Completed	Yes		

## 1. RATIONALE

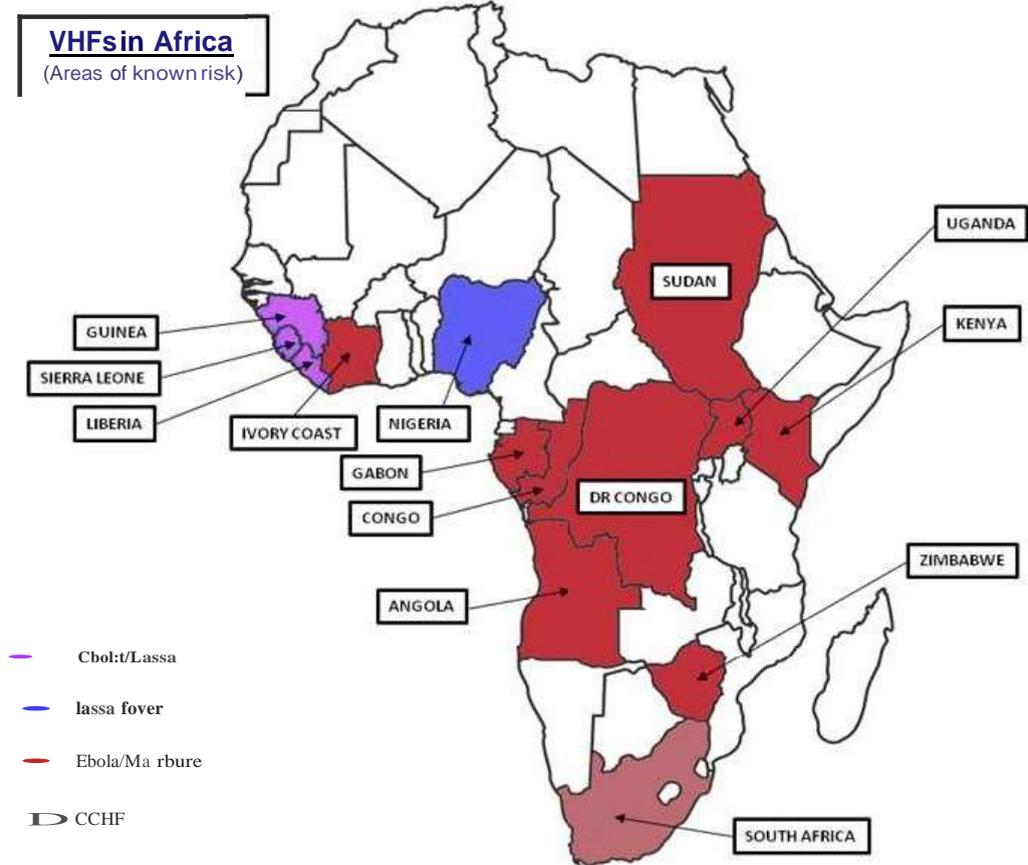
- 1.1. Viral Haemorrhagic Fever (VHF) is a term used to describe a severe, multi-organ disease in which the overall vascular system is damaged and the body's ability to regulate itself is impaired. Disease is often accompanied by varying degrees of haemorrhage which can add greatly to the difficulties of patient management and be life-threatening for the patient.
- 1.2. VHFs are severe and life threatening diseases that have been reported in areas of Africa, Asia, South America, the Middle East and Eastern Europe. Environmental conditions in the UK do not support the natural reservoirs or vectors of the diseases. **All recorded cases of VHF in the UK have been acquired abroad, with one exception of a laboratory worker who sustained a needle-stick injury.** There have been no cases of person-to-person transmission of VHF in the UK to date of publication of this policy.
- 1.3. VHF should be considered in febrile patients who have recently returned (up to 21 days) from an endemic area, although in most cases VHF can be dismissed on epidemiological grounds.
- 1.4. Symptoms of VHF usually include fever, headache, and myalgia. Diarrhoea, vomiting and haemorrhage can occur in the later stages of illness. VHF's are difficult to recognize and detect rapidly and there is no effective treatment.
- 1.5. Person to person transmission of VHF can occur though **direct contact** (through broken skin or mucous membrane) with blood or body fluids, and **indirect contact** with environments contaminated with splashes or droplets of blood or body fluids. Experts agree that there is no circumstantial or epidemiological evidence of an aerosol transmission risk from VHF patients.
- 1.6. Communication with staff about potential infection risks is paramount. Staff must be informed of the infection control precautions required when caring for the patient.
- 1.7. These guidelines aim to assist staff in the risk assessment of a potential case of VHF and to guide the infection control management required to reduce the risk of transmission within the hospital
- 1.8. These guidelines only cover those VHFs that are classified as Hazard Group 4 pathogens (Appendix J). More information Hazard Group 4 pathogens is contained in 14.1 - [Management of Hazard Group 4 viral haemorrhagic fevers and similar human infectious diseases of high consequence, Advisory Committee on Dangerous Pathogens.](#)

## 2. VIRAL HAEMORRHAGIC FEVERS/KNOWN ENDEMIC AREAS

- 2.1. In Africa, the high risk areas for Viral Haemorrhagic Fevers (VHF) are those countries indicated on this map. CCHF virus is endemic in many countries in Africa, the Middle East, Eastern Europe and Asia. Infections seen outside Africa are noted below.
- 2.2. Other possible causes of viral haemorrhagic fever include:
  - South American arenaviruses found in Argentina, Bolivia, Brazil and Venezuela (infection in travellers is very rare)
  - Kyasanur Forest Disease - India (Karnataka State only)
  - Alkhurma Haemorrhagic Fever - Saudi Arabia

- Omsk Haemorrhagic Fever- Russian Federation (Siberia)

### 2.3. Map of VHF Regions



2.4. Further details on specific countries, viruses or risk areas can be found at the following links:

- [Lassa Fever](#)
- [Ebola/Marburg](#)
- CCHF ([Crimean-Congo haemorrhagic fever](#))

### 3. AIM

3.1. The aims of these guidelines are to highlight:

- the immediate actions to be taken once the possibility of VHF has been raised;
- the infection control precautions that **MUST** be taken by all healthcare staff to prevent the person to person spread of a VHF.

3.2. The contents of these guidelines are summarised in a flow chart, Annex A.

### 4. DEFINITION OF TERMS

- **Aerosol generating procedure (AGP)** – a procedure that stimulates coughing and promotes the generation of aerosols.

Examples given include;

- Endotracheal intubation
- Bronchoscopy
- Airway suctioning
- Positive pressure ventilation via face mask
- High frequency oscillatory ventilation
- Diagnostic sputum induction
- Central line insertion
- **Ambulance Category 4 Infectious Disease** – Diseases that require a special (Category 4) infection control measure for ambulance transfer. Currently, these diseases include plague, rabies, Lassa fever, Marburg, Ebola, and Crimean-Congo haemorrhagic fever.
- **Category A Infection** - Waste that is known or suspected to be contaminated with pathogens presenting the most severe risk
- **Category A Waste** – Waste that is known or suspected to be contaminated with pathogens presenting the most severe risk
- **Category B Waste** – clinical waste that is known or suspected to be contaminated with pathogens not listed for inclusion into category A waste
- **Fever** – temperature > 38°C
- **HLIU** – High Level Isolation Unit

- **Notifiable Disease** - disease notifiable (to Local Authority Proper Officers) under the Health Protection (Notification) Regulations 2010 by Lead Clinician (see section 3).
- **Patient Contact** – a person who has been exposed to an infected person or their blood and body fluids, excretions or tissues following the onset of their fever.
- **Unlikely to have VHF infection** – the patient does not have a fever >38°C, currently or within the last 24 hours, has not returned from a VHF endemic country within the last 21 days, and has not had contact with body fluids or clinical specimens from an individual or laboratory animal known or strongly suspected of having VHF.
- **Low Possibility of VHF** – fever of >38°C, currently or within the last 24 hours, has returned from a VHF endemic or outbreak area within the last 21 days, but has no extensive bruising or active bleeding.
- **High Possibility of VHF** – fever of >38°C, currently or within the last 24 hours, has returned from a VHF endemic or outbreak area within the last 21 days **and** has either had contact with body fluids or clinical specimens from an individual or laboratory animal known or strongly suspected of having VHF, or meets the criteria in the most current version of the DOH Risk Assessment tool.
- **Confirmed VHF** – Patient has a positive VHF screen.

## 5. ROLES AND RESPONSIBILITIES

### 5.1. **The Assessing/Treating Clinician** of any patient presenting to the hospital, who is suspected to be suffering from VHF:

- Should be the Lead Clinician. This is a senior member of the medical team who is responsible for the acute care of the patient, for example the emergency care physician, emergency department consultant or admitting team consultant. Out of hours, they should be of at least Registrar grade.
- Must ensure that a risk assessment is completed immediately, using Annex A VHF Risk Assessment.
- Must discuss and formally notify the Consultant Medical Microbiologist (CMM). The CMM must be kept up-to-date with any change in risk assessment. (See Appendix D for contact details).
- Inform the Essential Services Laboratory in hours or the Laboratory Duty manager out of hours prior to requesting laboratory tests (see Appendix D for contact details).
- Must formally notify the Consultant for Disease Control (CCDC) of a patient with a 'high possibility of', or 'confirmed' VHF (see Appendix D for contact details). **A patient categorised as 'possibility of VHF' or below does not need to be notified.**

- **If laboratory test results refute the clinical diagnosis later, the Lead Clinician is not required to de-notify the case.**
- Is responsible for requesting investigations (Appendix C) in order to prevent unnecessary tests being sent to the laboratory.
- Is responsible for discussing the patient with the nearest HSIDU if the patient deteriorates and needs transfer (Annex A VHF Risk Assessment).
- **The Reference Laboratory (Porton Down or Colindale):** Will notify Public Health England (PHE) if VHF is confirmed on laboratory investigations, even if the case has already been notified by the Lead Clinician. (See Appendix D for contact details).

## 5.2. The Consultant for Disease Control (CCDC)

Once informed of a case of ‘high possibility of’ or “confirmed” VHF the CCDC will:

- convene an incident/outbreak control group;
- ensure that all the necessary control measures are implemented correctly; and
- ensure that all close contacts are identified and surveillance undertaken as necessary.

## 5.3. The Consultant Medical Microbiologist

The Consultant Medical Microbiologist, in cases of a “low possibility of VHF” or ‘high possibility of VHF’ when the malarial screen is negative and VHF is still clinically suspected, must:

- Contact and discuss the case with the Imported Fever Service **which is on call 24 hours**. An alternative number is the switchboard at Porton Down (also 24 hours) (See Appendix D for contact details).
- Liaise with the medical teams regarding the management of patients who have, or who are suspected of having VHF.

In cases of “low possibility”, “high possibility” or “confirmed” VHF the CMM must:

- Inform the Essential Services Laboratory in hours or the Laboratory Duty manager in and out of hours regarding initial risk assessment and provide further updates to risk assessment. (See Appendix D for contact details).
- In cases of “high possibility” of VHF where the malarial screen is negative and VHF is suspected clinically, or in “confirmed” VHF, the CMM will liaise with the CCDC.
- Provide out of hours Infection Control advice.

## 5.4. The Infection Control Doctor will

- be responsible for local infection control risk assessment and procedures of a patient with “confirmed” VHF if they cannot be transferred to the HLIU. Discussions with the Health and Safety Executive and experts at the HLIU are also necessary

### 5.5. **The Infection Prevention and Control Team**

The Infection, Prevention and Control Team are responsible for:

- Provide specialist advice on the Infection Control precautions necessary as detailed in these guidelines.
- Liaise with the Clinical Site Managers to ensure that the patient is not transferred out of the ward/department to which they present, unless the patient presents to ED.
- To liaise with the Clinical Site Managers to identify a negative pressure room to transfer any patient who presents to ED with a possibility, high possibility or confirmed VHF.
- Liaise with the nurse in charge of the ward to ensure that patients or staff who have had close contact (as defined in section 11) with a person with suspected VHF are identified and appropriate action taken.

### 5.6. **The Clinical Site Management Team**

The Clinical Site Managers are responsible for:

- ensuring that a single room is made available in the ward or department to which the patient presented; and
- ensuring that the patient is not transferred out of the ward/department to which they present until advised by the Infection Prevention and Control Team or Medical Microbiologist. If transfer from ED is required, to make available the negative pressure isolation room (situated on ICU).

### 5.7. **The Nurse in Charge of the Ward/Department** must:

- When a patient is suspected of having VHF, ensure that all staff are aware of and carry out the Infection Control precautions detailed in these guidelines.
- Inform the IPCT immediately.
- Provide a list of patients who have had close contact with the patient suspected of VHF (section 11) and inform the Infection Prevention and Control Team.
- Maintain a list of all staff who have had contact with the patient (section 11) and inform Occupational Health.

### 5.8. **Occupational Health** is responsible for:

- Liaising with the nurse in charge of the ward to ensure that staff who have had close contact (as defined in section 11) with a person with suspected VHF are identified.
- Advising staff exposed to VHF about following health monitoring (see Appendix H Management of staff accidentally exposed to potentially infectious material).
- Liaising with the CCDC for the management of exposed staff.

5.9. **Housekeeping** are responsible for:

- The timely removal and safe transport and disposal of Category A waste.
- Providing disposable cutlery, crockery and bed linen for use in the isolation room.

5.10. **All Staff**

- All staff are responsible for ensuring that infection control precautions are followed when a patient is suspected, or confirmed, as having a VHF.

## 6. **MODE OF TRANSMISSION**

6.1. Within the hospital environment VHF can spread via direct contact with broken skin or mucous membranes, blood, body fluids, secretions and excretions of an infected individual or indirect contact with environments contaminated with splashes or droplets of blood or body fluids. VHF viruses have been known to survive for anywhere between 2 weeks and 2 months on contaminated fabrics and equipment.

6.2. The virus may be present:

- in blood
- in bodily fluids, including urine
- on contaminated instruments and equipment
- in waste
- on contaminated clothing
- on contaminated surfaces

6.3. Exposure can occur:

- Directly, through exposure (via broken skin or mucous membranes) to blood and/or body fluids during invasive, aerosolising or splash procedures.
- Indirectly, through exposure (via broken skin or mucous membranes) to environments, surfaces, equipment or clothing contaminated with splashes or droplets of blood or body fluids.

N.B. Healthcare and laboratory staff are at risk of contamination via accidental inoculation with contaminated needles.

## 7. **ASSESSMENT**

7.1. The patient risk assessment should be led by a senior member of the medical team responsible for the acute care of patients, for example the emergency care physician, emergency department consultant or admitting team consultant. For the purposes of this document they will be referred to as the "Lead Clinician". The consultant microbiologist may also need to be involved. A risk category must be assigned by the senior member of the medical team to any patient who has a fever, or history of fever in the previous 24 hours, **and** a travel history to an area which is endemic for VHF within 21 days following the risk assessment algorithm in Annex A VHF Risk

Assessment. This will determine the subsequent management of the patient and the level of staff protection required.

7.2. Standard infection control precautions should already be in place. If these measures are not already in place, they must be introduced immediately when dealing with a patient in whom VHF is being considered. A patient's risk category can change depending on symptoms and/or results of diagnostic tests, and it is important to note that a patient with a VHF infection can deteriorate rapidly. Use the risk assessment algorithm in Annex A VHF Risk Assessment.

7.3. Following risk assessment the patient should be assigned to one of the following 4 categories:

- Unlikely to have a VHF
- Low Possibility of VHF
- High possibility of VHF
- Confirmed VHF

## **8. PATIENT PLACEMENT**

8.1. Refer to [Annex B – Admission Flowchart](#)

## **9. MANAGEMENT**

9.1. See [Annex A VHF Risk Assessment](#).

9.2. See [Appendix A](#) for infection control precautions.

9.3. **Management of a patient categorised as 'unlikely to have a VHF'**

A patient with a fever of > 38°C is unlikely to have VHF if;

- They have not visited a VHF endemic area within 21 days of becoming ill
- They have become unwell more than 21 days after caring for or coming into contact with the bodily fluids of/handling clinical specimens from a live or dead individual or animal known or strongly suspected to have a VHF
- Their malaria screen is negative and subsequently their fever resolves for >24 hours
- Their malaria screen is positive and they respond appropriately to malaria treatment
- If they have a confirmed alternative diagnosis and are responding appropriately.

However, the patient's condition should be reassessed if, in the absence of any other diagnosis, any of the following develop

- Nose bleed
- Bloody diarrhoea
- Sudden rise in aspartate transaminase (AST)
- Sudden fall in platelets

- Clinical shock
- Rapidly increasing O2 requirements in the absence of other diagnosis
- Infection control; standard infection control precautions apply for patients in this category (Appendix A). Laboratory specimens can be sent in the normal way (Appendix C).

#### 9.4. Management of a patient categorized as ‘low possibility of VHF’

- A senior member of the medical team responsible for the acute care of the patient should be the Lead Clinician.
- It is recommended that, if a patient is bruised or bleeding, the Lead Clinician should have an urgent discussion with the nearest High Security Infectious Disease Unit (HSIDU) in the Royal Free Hospital, London (See Appendix D for contact details).
- Inform all staff caring for the patient and reinforce the need to take the appropriate infection control precautions (see Appendix A).
- Send urgent malaria screen
- If malaria screen negative and has continuing fever, relevant travel history and no alternative diagnosis send VHF screen and consult with HSIDU in Newcastle or the Royal Free Hospital, London. (See Appendix D for contact details).
- **Other investigations should include blood cultures. Urine, stool, and chest X-ray (CXR) may also be considered. However, the CMM must be informed, particularly if the patient has bruising or bleeding.**
- **Laboratory staff must be notified by the Lead Clinician (see Appendices C and D) prior to sending the samples. Samples should be treated according to the regulations in Appendix C. Designated containers for VHF (found in ED, ICU and EAU) should be taken in person or by porter. Do not send any specimens via the pneumatic air tube system.**
- A list of all staff contacts should be given to the Occupational Health in all cases of “possibility of VHF” with bruising or bleeding (Appendix H) by the Nurse in Charge of the Ward/Department.
- **Healthcare waste generated as a result of specimen collection must be treated as Category B infectious waste.**

#### 9.5. Management of a patient categorized as ‘high possibility of VHF’

- A senior member of the medical team responsible for the acute care of the patient should be the Lead Clinician.
- See Appendix J for information and web links to the VHF viruses on the Public Health England website.
- It is recommended that, if a patient is bruised or bleeding, or has uncontrolled diarrhoea or vomiting, the Lead Clinician should have an urgent discussion with the HSIDU (the Royal Free Hospital, London) concerning patient management and consider early transfer to the HSIDU. See Appendix D for contact details and Appendix B for transfer information

- Send urgent malaria and VHF screen. Other investigations should include blood cultures. Urine, stool, and chest X-ray (CXR) may also be considered. However, the CMM must be informed, particularly if the patient has bruising or bleeding.
- Specimens should be discussed in advance between clinicians and the appropriate specialist for each laboratory area before they are sent.
- Laboratory staff must be notified by the Lead Clinician (see Appendices C and D) prior to sending the samples. Samples should be treated according to the regulations in Appendix C. Designated containers for VHF (found in A/E, MAU and SAU) should be taken in person or by porter. Do not send any specimens via the pneumatic air tube system.
- The case must be notified immediately by the Lead Clinician to the CCDC, who will effect forward notification of Public Health England (PHE) (Appendix D).
- Inform all staff caring for the patient and reinforce the need to observe enhanced infection control precautions appropriate to patient's symptoms (see Appendix A)
- Restrict, and maintain a record of the names of, staff attending to the patient. Healthcare worker contacts should be identified (see section 11) and referred to Occupational Health.
- Provide a list of patient contacts and inform the Infection and Prevention Control Team.
- Healthcare waste generated as a result of specimen collection must be treated as Category A infectious waste.
- If the VHF screen is positive, a number of urgent actions are required – (see Section 9.6).
- If the VHF screen is negative, a VHF infection in the patient should still be considered as a possibility until either the patient has been afebrile for over 24 hours or an alternative diagnosis is confirmed. The patient should therefore remain isolated in a single side room and the infection control measures continued until VHF infection is no longer being considered.

#### 9.6. Management of a patient with 'confirmed VHF'

- See Appendix J for information and web links to the VHF viruses on the Public Health England Website.
- The Lead Clinician should urgently discuss with the nearest HSIDU to arrange for the immediate transfer of the patient to the HSIDU. See Appendix E for contact details and Appendix B for transfer information.
- Inform those in contact with the patient of the positive test and emphasise the infection control precautions required.
- Any further specimens must be discussed in advance between clinicians and the appropriate specialist for each laboratory area before they are sent.
- Laboratory staff must be notified by the Lead Clinician (see Appendices C and D) prior to sending the samples. Samples should be treated according to the regulations in Appendix C. Designated containers for VHF (*found in A/E, MAU*

and SAU) should be taken in person or by porter. Do not send any specimens via the pneumatic air tube system.

- The case must be notified immediately by the Lead Clinician to the CCDC, who will effect forward notification of Public Health England (PHE) (Appendix D).
- Restrict, and maintain a record of the names of, staff attending to the patient. Contacts should be identified (see *section 9*) and referred to Occupational Health.
- Provide a list of patient contacts and inform the Infection Prevention and Control Team.
- Healthcare waste generated as a result of specimen collection must be treated as Category A infectious waste.

#### 9.7. Antivirals

- Antivirals, specifically ribavirin, have been shown to be effective in the treatment of early-stage arenavirus infections, particularly Lassa fever. There is however evidence to suggest that ribavirin may prolong the incubation period for Lassa fever. **Antivirals are not generally recommended for contacts due to the absence of evidence of their proven effectiveness for prophylaxis.** However, antivirals may be considered for those direct contacts at highest risk, subject to individual risk assessment. Liaison with the local Microbiologist/Virologist is advised if antivirals are being considered.

### 10. NOTIFICATION

- 10.1. In England, VHF is a notifiable disease under Schedule 1 of the Health Protection (Notifications) Regulations 2010, and notification of VHFs is classified as urgent. The Lead Clinician must therefore notify the 'highly possible' or 'confirmed' case of VHF by telephone to the CCDC immediately (see Appendix D for contact details).

### 11. CONTACTS

- 11.1. **Definition:** A contact is defined as a person who has been exposed to an infected person or their blood and body fluids, excretions or tissues following the onset of their fever.
- 11.2. **Patient Contacts:** Each potential contact should be individually assessed for risk of exposure and categorised according to categories listed in Appendix G.
- 11.3. **Healthcare worker contacts:** A list of all staff contacts should be given by the Nurse in Charge of the Ward/Department to the Occupational Health in all cases of "possibility of VHF" with bruising or bleeding, "high possibility of VHF" or "confirmed VHF" (see Appendix H).

### 12. APPLICABILITY

- 12.1. These guidelines apply to staff employed by the Trust. Patients, visitors and the general public will be made aware of these guidelines as required.

### **13. IMPLEMENTATION, MONITORING AND EVALUATION**

- 13.1. Responsibility for implementation, monitoring and evaluation is identified in the Trust's Policy on Procedural Documents. This guideline will be monitored via a robust review following identification and management of each individual case

### **14. REFERENCES**

- 14.1. Department of Health (2014), [Management of Hazard Group 4 viral haemorrhagic fevers and similar human infectious diseases of high consequence, Advisory Committee on Dangerous Pathogens.](#)
- 14.2. World Health Organisation website: [www.who.int](http://www.who.int)
- 14.3. Trust Policy: [Waste Management with Summary Policy and Procedure](#)
- 14.4. Useful website: Centres for Disease Control and Prevention, information on VHF at: <http://www.cdc.gov/vhf/virus-families/index.html>
- 14.5. [United Nations Economic Commission for Europe; European Agreement concerning the International Carriage of Dangerous Goods by Road](#)

### **15. ANNEXES & APPENDICES**

- 15.1. [Annex A – VHF Risk Assessment](#)
- 15.2. [Annex B – Admission Flowchart](#)
- 15.3. [Appendix A - Summary of Infection Control Precautions for Patient with 'Low Possibility Of VHF', A 'High Possibility Of VHF', Or 'Confirmed VHF'](#)
- 15.4. [Appendix B - Transfer of a Patient with High Possibility or Confirmed VHF Within The UK](#)
- 15.5. [Appendix C - Safe Collection and Transport of Specimens](#)
- 15.6. [Appendix D - Useful Numbers and Contacts](#)
- 15.7. [Appendix E - Management of Waste](#)
- 15.8. [Appendix F - Spillages of Blood or Body Fluids](#)
- 15.9. [Appendix G - Categorisation and Management Of Contacts](#)
- 15.10. [Appendix H - Management of Staff Accidentally Exposed to Potentially Infectious Material](#)
- 15.11. [Appendix I - Care After Death](#)
- 15.12. [Appendix J - Hazard Group 4 Viruses](#)



## Equality Impact Assessment Tool

To be completed and attached to any procedural document when submitted to the appropriate committee for consideration and approval.

Name of Document: Guidelines for the Infection Control Management of Viral Haemorrhagic Fevers

		Yes/No	Comments
1.	Does the policy/guidance affect one group less or more favourably than another on the basis of:		
	Race	No	
	Ethnic origins (including gypsies and travellers)	No	
	Nationality	No	
	Gender	No	
	Culture	No	
	Religion or belief	No	
	Sexual orientation including lesbian, gay and bisexual people	No	
	Age	No	
	Disability	No	
2.	Is there any evidence that some groups are affected differently?	No	
3.	If you have identified potential discrimination, are any exceptions valid, legal and/or justifiable?	N/A	
4.	Is the impact of the policy/guidance likely to be negative?	No	
5.	If so can the impact be avoided?	N/A	
6.	What alternatives are there to achieving the policy/guidance without the impact?	N/A	
7.	Can we reduce the impact by taking different action?	N/A	

For advice or if you have identified a potential discriminatory impact of this procedural document, please refer it to The Equality & Diversity Lead, Yeovil Academy, together with any suggestions as to the action required to avoid/reduce this impact.

Signed **Lisa Eastmead-Hoare**

Date: Feb 2016

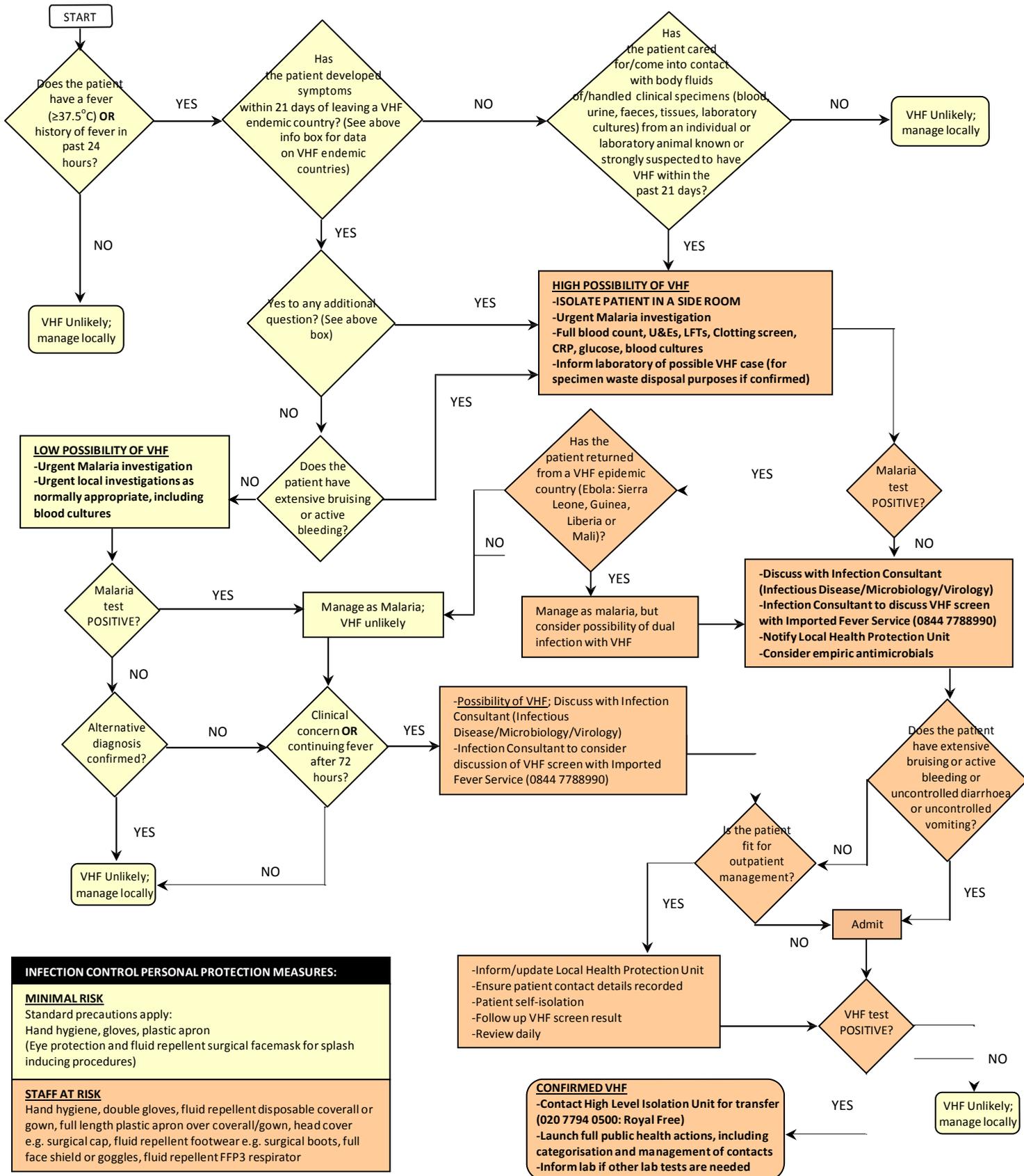
# 15.1 VIRAL HAEMORRHAGIC FEVERS RISK ASSESSMENT (Version 5: 06.11.2014)

## VHF ENDEMIC COUNTRIES:

Information on VHF endemic countries can be found at <https://www.gov.uk/viral-haemorrhagic-fevers-origins-reservoirs-transmission-and-guidelines> or see VHF in Africa map at [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/365845/VHF\\_Africa\\_960\\_640.png](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/365845/VHF_Africa_960_640.png)

## ADDITIONAL QUESTIONS:

- Has the patient travelled to any area where there is a current VHF outbreak? (<http://www.who.int/csr/don/en/> and <http://www.promedmail.org/>) OR
- Has the patient lived or worked in basic rural conditions in an area where Lassa Fever is endemic? (<https://www.gov.uk/lassa-fever-origins-reservoirs-transmission-and-guidelines>) OR
- Has the patient visited caves / mines, or had contact with or eaten primates, antelopes or bats in a Marburg / Ebola endemic area? (<https://www.gov.uk/ebola-and-marburg-haemorrhagic-fevers-outbreaks-and-case-locations>) OR
- Has the patient travelled in an area where Crimean-Congo Haemorrhagic Fever is endemic ([http://www.who.int/csr/disease/crimean\\_congoHF/Global\\_CCHFRisk\\_20080918.png?ua=1](http://www.who.int/csr/disease/crimean_congoHF/Global_CCHFRisk_20080918.png?ua=1)) AND sustained a tick bite\* or crushed a tick with their bare hands OR had close involvement with animal slaughter? (\*If an obvious alternative diagnosis has been made e.g. tick typhus, then manage locally)



## INFECTION CONTROL PERSONAL PROTECTION MEASURES:

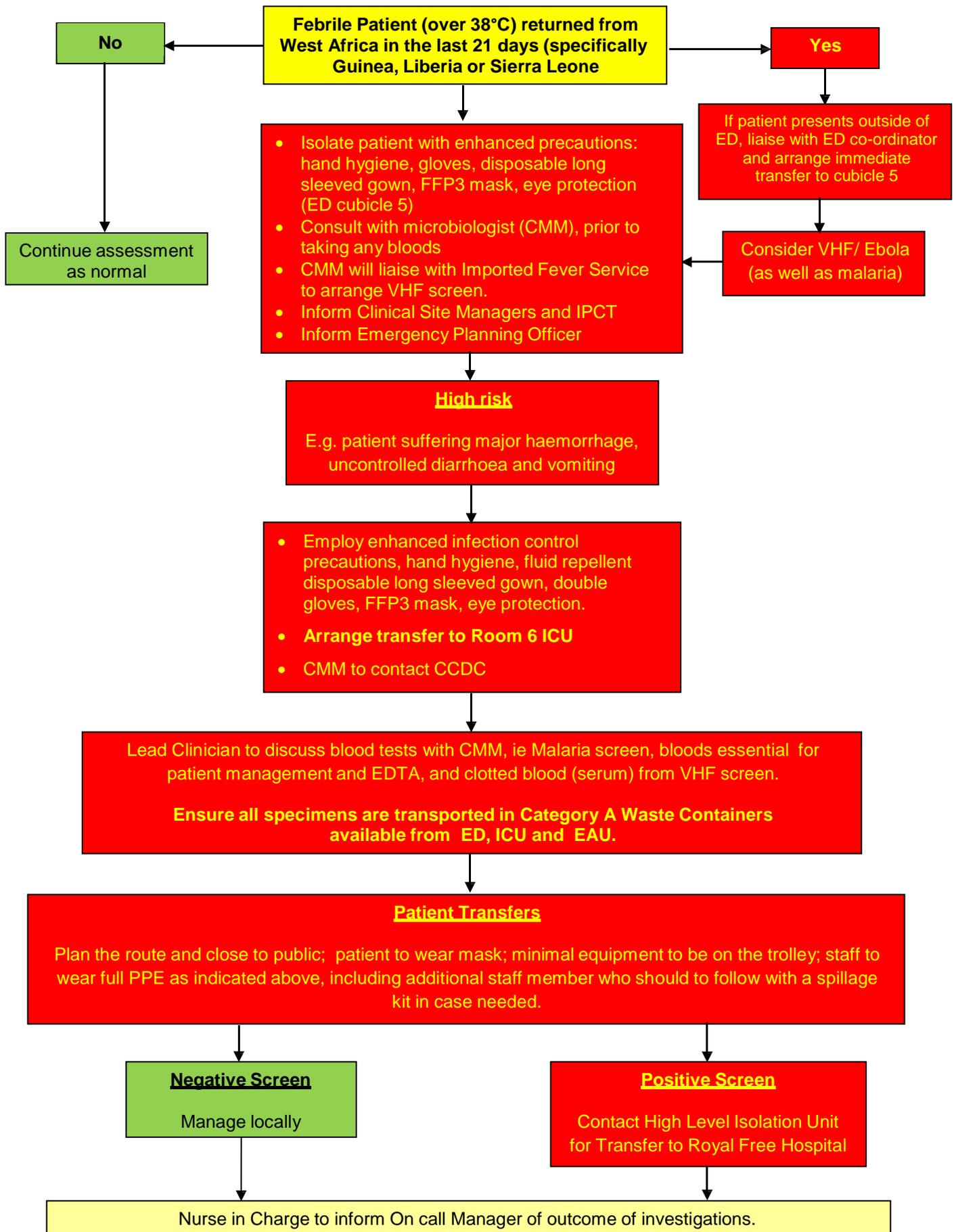
### MINIMAL RISK

Standard precautions apply:  
Hand hygiene, gloves, plastic apron  
(Eye protection and fluid repellent surgical facemask for splash inducing procedures)

### STAFF AT RISK

Hand hygiene, double gloves, fluid repellent disposable coverall or gown, full length plastic apron over coverall/gown, head cover e.g. surgical cap, fluid repellent footwear e.g. surgical boots, full face shield or goggles, fluid repellent FFP3 respirator

**MANAGEMENT OF PATIENTS WITH UNEXPLAINED FEVER  
RECENTLY RETURNED FROM OVERSEAS**



## APPENDIX A

### Summary of Infection Control Precautions for patient with ‘possibility of VHF’, a ‘high possibility of VHF’, or ‘confirmed VHF’

The following actions and enhanced infection control precautions must be taken for all patients with ‘possibility of VHF’, a ‘highly possibility of VHF’, or ‘confirmed VHF’.

If the patient is categorised as ‘unlikely to have VHF’ standard infection control precautions should be applied.

	Possibility of VHF	High possibility of VHF	Confirmed VHF
<b>Isolation</b>	<p>Single room with en-suite facilities or dedicated commode/toilet</p> <p>Do not transfer patient off the ward without discussion with IPC</p>	<p>Negative pressure isolation room with en-suite facilities as soon as possible. Until this is available, patients can be nursed in a side-room with en-suite facilities</p> <p>Do not transfer patient off the ward without discussion with IPC</p>	<p>Immediate isolation in a negative pressure isolation room on ICU and arrange for urgent transfer to HSIDU (refer to <b>Appendix D</b> for contact details and <b>Appendix B</b> for transfer information )</p>
<b>Personal Protective Equipment (PPE)</b>	<b>Remove all PPE before leaving patient’s room and dispose of in clinical waste bin. Avoid touching face when removing eye and face protection. Clean hands after PPE removal.</b>		
	<p><b>If bruising/bleeding present;</b></p> <ul style="list-style-type: none"> <li>• Gloves</li> <li>• Plastic apron</li> <li>• Fluid repellent surgical facemask</li> <li>• Disposable visor</li> </ul> <p><b>In addition, for potential aerosol or splash inducing procedures;</b> FFP3 face mask*</p> <p><b>If none of the above,</b> standard precautions apply</p>	<p><b>If bruising or bleeding or uncontrolled diarrhea or vomiting;</b></p> <ul style="list-style-type: none"> <li>• Double gloves</li> <li>• Long sleeved fluid-repellent disposable gown</li> <li>• Disposable visor</li> <li>• FFP3 face mask*</li> </ul> <p><b>If none of the above;</b></p> <ul style="list-style-type: none"> <li>• Gloves</li> <li>• Plastic apron</li> <li>• Fluid repellent surgical facemask</li> <li>• Disposable visor</li> </ul> <p><b>In addition, for potential</b></p>	<p>Before entry to room;</p> <ul style="list-style-type: none"> <li>• Double gloves</li> <li>• Long sleeved fluid repellent disposable gown</li> <li>• Disposable visor</li> <li>• FFP3 facemask*</li> </ul>

		<b>aerosol or splash inducing procedures;</b> FFP3 respirator face mask*	
<b>Hand Hygiene</b>	<ul style="list-style-type: none"> <li>• Clean hands with soap and water or alcohol gel before and after removal of PPE</li> <li>• Clean hands with soap and water or alcohol gel prior to leaving room</li> </ul>		
<b>Disposal of waste</b>	All waste to be disposed of as Category B waste (i.e. clinical waste)	<p>Treat all waste as Category A waste (<b>Appendix E</b>)</p> <ul style="list-style-type: none"> <li>• All waste generated should be put into clinical waste bags</li> <li>• Quarantine all waste inside patient's room</li> <li>• Notify Housekeeping that Category A waste if being generated</li> <li>• If the malaria screen is positive and VHF is excluded then clinical waste can be disposed of in the normal way</li> <li>• Any waste generated prior to VHF being suspected should be retrieved if possible and quarantined in patient's room</li> </ul>	<p>Treat all waste as Category A waste (<b>Appendix E</b>)</p> <ul style="list-style-type: none"> <li>• All waste generated should be put into clinical waste bags</li> <li>• Quarantine all waste inside patient's room <ul style="list-style-type: none"> <li>• Notify Housekeeping that Category A waste is being generated</li> <li>• Any waste generated prior to VHF being suspected should be retrieved if possible and quarantined in patient's room</li> </ul> </li> </ul>
<b>Specimens</b>	Standard precautions	<ul style="list-style-type: none"> <li>• Essential specimens only</li> <li>• PPE, as above</li> <li>• Waste, as above</li> <li>• Do not use POD system for specimen transport</li> <li>• Transport specimens in sealed, designated, metal container</li> <li>• Treat all specimen waste</li> </ul>	<ul style="list-style-type: none"> <li>• Essential specimens only</li> <li>• PPE, as above</li> <li>• Waste, as above</li> <li>• Do not use POD system for specimen transport</li> <li>• Transport specimens in sealed, designated, metal container</li> <li>• Treat all specimen waste as Category A infectious waste (see above)</li> </ul>

		<p>as Category A infectious waste (see above)</p> <ul style="list-style-type: none"> <li>• See Appendix C for further information</li> </ul>	<ul style="list-style-type: none"> <li>• See Appendix C for further information</li> </ul>
<b>Disposal of Bodily Fluids</b>	Standard precautions	<ul style="list-style-type: none"> <li>• An ambulant and self-caring, patient can use a toilet designated for their sole use</li> <li>• Absorbent gel granules should be used to solidify liquid waste</li> <li>• If using commode, bedpan or urinal then solid waste should be double bagged in clinical waste bags</li> <li>• Bed pans must be disposed of as clinical waste (do not macerate)</li> </ul>	<ul style="list-style-type: none"> <li>• An ambulant and self-caring, patient can use a toilet designated for their sole use</li> <li>• Absorbent gel granules should be used to solidify liquid waste. If using commode, bedpan or urinal then solid waste should be double bagged in clinical waste bags</li> <li>• Bed pans must be disposed of as clinical waste (do not macerate)</li> </ul>
<b>Handling Linen</b>	Standard precautions	<ul style="list-style-type: none"> <li>• All linen to be disposed of as Category A waste (Consider using disposable Linen)</li> </ul>	<ul style="list-style-type: none"> <li>• All linen to be disposed of as Category A waste (Consider using disposable linen)</li> </ul>
<b>Blood/ Bodily Fluid Spillage</b>	Standard precautions	<ul style="list-style-type: none"> <li>• Wearing personal protective equipment as detailed above, the spillage should be covered with a hypochlorite powder and left for 2 minutes.</li> <li>• Then wipe up the spillage using paper towels and discard as clinical waste (double bag).</li> </ul>	<ul style="list-style-type: none"> <li>• Wearing personal protective equipment as detailed above, the spillage should be covered with a hypochlorite powder and left for 2 minutes.</li> <li>• Then wipe up the spillage using paper towels and discard as clinical waste (double bag).</li> <li>• Clean the surface with a chlorine dioxide solution (e.g. Actichlor Plus).</li> </ul>

		<ul style="list-style-type: none"> <li>• Clean the surface with a chlorine dioxide solution (e.g. Actichlor Plus).</li> </ul>	
<b>Equipment</b>	Standard precautions	<ul style="list-style-type: none"> <li>• Single use (disposable) equipment and supplies should be used.</li> <li>• Disposable crockery and cutlery</li> <li>• All used disposable equipment should be treated as Category A waste</li> <li>• Non disposable equipment should be designated for the patient's use only (e.g. commode)</li> </ul>	<ul style="list-style-type: none"> <li>• Single use (disposable) equipment and supplies should be used.</li> <li>• Disposable crockery and cutlery</li> <li>• All used disposable equipment should be treated as Category A waste</li> <li>• Non disposable equipment should be designated for the patient's use only (e.g. commode).</li> </ul>
<b>Visitors</b>	As per ward guidance	<ul style="list-style-type: none"> <li>• Essential visitors only</li> <li>• Any visitor should wear personal protective equipment as detailed above and a list of visitors entering the room should be kept.</li> </ul>	<ul style="list-style-type: none"> <li>• Essential visitors only</li> <li>• Any visitor should wear personal protective equipment as detailed above and a list of visitors entering the room should be kept.</li> </ul>
<b>Last Offices</b>	Standard precautions	If VHF remains unconfirmed follow guidelines as if confirmed	<ul style="list-style-type: none"> <li>• Staff wearing gloves, long sleeved fluid repellent gowns, fluid repellent masks and goggles or visor and rubber boots should place the body in a body bag, seal the bag and clean the outside of the bag with a chlorine dioxide solution (e.g. Actichlor Plus).</li> </ul>

			<ul style="list-style-type: none"> <li>• The body should be left in the isolation room until advice from the CCDC regarding removal has been obtained.</li> <li>• A post-mortem examination should not be carried out on a person known or suspected of having VHF.</li> </ul>
<b>Cleaning</b>	Standard precautions	If VHF remains unconfirmed follow guidelines as if confirmed	<ul style="list-style-type: none"> <li>• Gloves, long sleeved fluid repellent gowns, fluid repellent masks and goggles or visor must be worn.</li> <li>• All surfaces and non disposable equipment should be cleaned with a detergent and chlorine dioxide solution (e.g. Actichlor Plus).</li> </ul>
<b>Terminal Cleaning of Room</b>	Standard precautions	If VHF remains unconfirmed follow guidelines as if confirmed	<ul style="list-style-type: none"> <li>• Gloves, long sleeved fluid repellent gowns, fluid repellent masks and goggles or visor must be worn.</li> <li>• All surfaces and non disposable equipment should be cleaned with a detergent and chlorine dioxide solution (e.g. Actichlor Plus).</li> <li>• Curtains should be sealed in a clinical waste bag prior to disposal (see above for correct disposal of clinical waste)</li> <li>• Cleaning must be completed using hydrogen peroxide vapour (HPV) system before room can be used again</li> </ul>
<b>Contacts</b>	Records not necessary	<ul style="list-style-type: none"> <li>• List all staff and visitors who have contact with patient</li> </ul>	<ul style="list-style-type: none"> <li>• List all staff and visitors who have contact with patient</li> </ul>

\*FFP3 Respirator masks should be worn when undertaking aerosol generating procedures (AGPs) which are procedures that generate an aerosol from the patients' secretions.

The following procedures are considered AGPs:

- Intubation, extubation and related procedures, for example manual ventilation and open suctioning
- Cardiopulmonary resuscitation
- Bronchoscopy
- Surgery and post mortem procedures in which high-speed devices are used
- Non Invasive Ventilation (NIV) e.g. Bilevel Positive Airway Pressure Ventilation (BiPAP) and Continuous Positive Airway Pressure Ventilation (CPAP)
- High Frequency Oscillatory Ventilation (HFOV)
- Induction of sputum

The following procedures may generate an aerosol from material other than patients' secretions but are NOT considered to represent a significant infectious risk:

- Administration of pressurised humidified O<sub>2</sub>
- Administration of medication via nebulisation

### TRANSFER OF A PATIENT WITH HIGH POSSIBILITY OR CONFIRMED VHF WITHIN THE UK

- Transfer of a patient within the UK to an HSIDU will be necessary when either: the patient has been categorised as 'high possibility of VHF' and has bruising or bleeding or uncontrolled diarrhoea or uncontrolled vomiting; or the patient has had a positive VHF screen result.
- The decision to transfer a patient should be made by the Lead Clinician responsible for the patient's care, after consultation and agreement with clinicians at the HSIDU to which the patient is to be transferred.
- Transfer by road, in an ambulance, is the preferred option for all patients. VHFs are classified as Ambulance Category 4 infectious diseases across all Ambulance Trusts in England, Scotland, Wales and Northern Ireland. Thus all transfer by ambulance in the UK will need to be carried out at Ambulance Category 4.
- There are two Ambulance Trusts in the UK who will carry out transfer of a VHF patient – the North East Ambulance Service and the London Ambulance Service.
- Pregnant staff can decline to accompany the transfer of a Category 4 patient.
- Patients categorised as 'possibility of VHF' may be transported by standard means provided that there are no other high risk factors. See VHF Risk Assessment Annex A or via this link  
[http://www.hpa.org.uk/webc/HPAwebFile/HPAweb\\_C/1317135155050](http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1317135155050)
- The ambulance crew and staff must be made aware of the patient's clinical condition, the possibility of deterioration on the journey and the routes of transmission of VHF.
- In extraordinary circumstances, transfer of a patient presenting an enhanced risk to crew and staff (due to bleeding, uncontrolled diarrhoea, uncontrolled vomiting) could be requested. In such circumstances, transfer could be carried out using a transit

isolator available from the HSIDUs. Special instructions and guidance will be supplied by the HSIDU staff.

- Although road transfer is preferable, air transfer may be necessary in some circumstances. Following advice and contacts provided by the receiving HSIDU, an ambulant and continent patient may be moved by air ambulance with a crew suitably trained for this level of transport.

### SAFE COLLECTION AND TRANSPORT OF SPECIMENS

(See Appendix D for contact details)

#### Laboratory Investigations

- **Specimens should be kept to the minimum necessary for patient management and diagnostic evaluation.**
- This applies to any patient with bruising or bleeding or “possibility of VHF”, “high possibility of VHF” or “confirmed VHF”.
- The type of investigations should be discussed by the Lead Clinician with the CMM or the clinician at the nearest HSIDU before they are requested.
- Laboratory staff in and out of hours must be notified by the clinical team before the investigations are sent.
- Excluding a malarial screen and VHF screen, only specimens deemed essential to preserve life should be sent. These include a full blood count, urea and electrolytes, and clotting.
- Blood cultures will be processed.
- All other samples such as urine, stool or sputum will be kept quarantined until the risk assessment is revised and they can be safely processed.

#### Notification of laboratory staff

- Laboratory staff must be notified **immediately** prior to sending samples for testing if the patient is classified as (see Figure 2. VHF Risk Assessment);
  - ‘unlikely to have VHF’, it is not necessary to notify laboratory staff as the risk is extremely low.
  - ‘possibility of VHF’, ‘high possibility of VHF’ or ‘confirmed VHF’; Laboratory staff should be notified prior to receipt of all specimens from patients with.

#### Collection

- The following measures apply to only those patients classified as ‘possibility of VHF’, ‘high possibility of VHF’ or ‘confirmed VHF’ (see Figure 2. VHF Risk Assessment).

- Healthcare workers must select PPE in accordance with the risk category of the patient (see Figure 2. VHF Risk Assessment and Appendix A). Hands and any exposed skin must be washed thoroughly after removal of PPE.
- Blood must only be taken by a doctor or nurse experienced in phlebotomy - (unfamiliar procedures are more likely to lead to accidents and spillages). Blood collection by finger prick should not be undertaken.
- Vacuum blood sampling system must be used.
- Any sample bottles or tubes should be labelled with the patient's details before being filled. Urine specimens should only be taken by experienced staff (a 20ml syringe should be used to transfer urine from a bedpan to the specimen container).
- A dry gauze swab (not alcohol swab) should be used to apply pressure to venepuncture wound.
- All equipment used for blood taking must be placed in a dedicated sharps box for immediate sealing (see disposal of waste in Appendix E)
- Clinical waste should be double bagged into clinical waste bags (see disposal of waste in Appendix E)

#### Transport of specimens to the Laboratory (adapted from [Public Health England](#))

- If the patient is classified as (see Figure 2. VHF Risk Assessment);
  - 'unlikely to have VHF', samples can be sent in the normal way.
  - 'possibility of VHF', 'high possibility of VHF' or 'confirmed VHF';
    - Samples from patients with a 'possibility of VHF', 'high possibility of VHF' or 'confirmed VHF' should be transferred in the designated containers for VHF (found in ED, ICU and EAU) should be taken in person or by porter. **Do not send any specimens via the pneumatic air tube system.**
    - See Figure 3. Packaging items and instructions 'possibility of VHF', 'high possibility of VHF' or 'confirmed VHF'.

**Figure 3. Packaging items and instructions for 'pos sibil it y of V HF'.**

**'high pos sibili t y of V HF' or 'c onfirm e d V HF'**

Items	Instructions
 <p>VHF container in its cardboard box (each container has absorbent material and bubble wrap). Two will be kept in each of ED, ICU and EAU.</p>	<ul style="list-style-type: none"> <li>• Please place microbiology and virology samples in separate containers from haematology and biochemistry samples. Replacement containers can be sent by contacting the laboratory. The primary container (bijoux or similar) should be screwed tight, labelled and placed in an intact plastic bag.</li> <li>• A <b>"High Risk"</b> label should be affixed to both specimen and request form. The latter should include any other relevant information and include adequate clinical details to indicate level of suspicion.</li> <li>• Under no circumstances should the request form be placed in the same bag or compartment as the specimen.</li> <li>• The bag should be sealed, using tape or heat sealer. Pins, staples and metal clips should not be used. A separate bag should be used for each specimen.</li> <li>• Each specimen must be packaged individually- i.e. three specimens, three separate packages.</li> </ul>
 <p>Security seal and High Risk labels (found in container).</p>	

## APPENDIX D

### USEFUL NUMBERS AND CONTACTS

<p>Consultant Medical Microbiologist (CMM)</p>	<p>In hours; 01823 343765 Out of hours; contact the on call Consultant Medical Microbiologist via switchboard</p>
<p>Infection Prevention and Control (IPC) Team</p>	<p>In hours; ext 4401 or mobile 5401 Out of hours; contact the on call CMM via switchboard or the Clinical Site team</p>
<p>Pathology laboratory (MPH)</p>	<p>In hours; 01823 342281 Out of hours (Laboratory manager); 07747272408</p>
<p>Consultant of Communicable Disease Control (CCDC) at the Somerset Health Protection Unit</p>	<p>In hours; 0344 225 3557 Out of hours; contact switchboard and ask for the Public Health Doctor</p>
<p>Imported Fever Service</p>	<p>Tel: 0844 778 8990</p>
<p>Reference laboratories</p>	<p><u>Rare and Imported Pathogens Laboratory (RIPL)</u> <u>PHE Porton</u> Porton Down Salisbury Wiltshire SP4 0JG Tel: 01980 612100 (24 hour)</p> <p>The Imported Fever Service will usually direct samples to RIPL. In unusual circumstances samples may be directed to Colindale.</p> <p><u>Microbiology Services Division – Colindale</u> 61 Colindale Avenue Colindale London NW9 5HT Tel: 0208 200 4400 or 0208 200 6868 (24 hour)</p>

High Security Infectious Disease  
Units (HSIDU)

Royal Free Hampstead NHS Trust, London

Telephone (24 hrs, ask for infectious disease  
physician on call) 020 7794 0500 or 0844 8480700  
(local rate number when calling from outside London)  
[www.royalfree.nhs.uk](http://www.royalfree.nhs.uk)

The HLIU at the Newcastle upon Tyne Hospitals NHS  
Foundation Trust is currently closed.

**MANAGEMENT OF WASTE**

**Category A**

- This is for patients classified as 'high possibility of' or 'confirmed' VHF infection.
- Notify the Facilities Officer (5459) or Facilities Manager (5276) that Category A waste is being created. Facilities will need to be notified of the disease they are dealing with e.g. VHF. Facilities will then notify the waste contractor who will arrange safe transport and disposal.
- Ensure soft wastes are placed into class 6.2 approved packaging. This will comprise:
  - Watertight primary receptacle.
  - A watertight secondary packaging.
  - Other than for solid infectious substances, an absorbent material in sufficient quantity to absorb the entire contents placed between the primary receptacle(s) and the secondary packaging; if multiple primary receptacles are placed in a single secondary packaging, they shall be either individually wrapped or separated so as to prevent contact between them.
- All packaged Category A waste is to be placed in a yellow lidded waste cart, labelled with a 'UN2814' sticker. The waste must remain securely locked away until collection by the waste contractor.
- The waste contractor will collect the waste, and take it to a predetermined disposal facility for high temperature incineration.
- Do not attempt to dispose of Category A waste without notifying the Facilities Officer or Facilities Manager. Do not dispose of any Category A wastes in the usual clinical waste manner.

**Category B**

- Waste generated from patients classified as 'highly unlikely to have' or 'possibility of having' a VHF infection is known as Category B waste, and should be treated as normal clinical waste.

## **SPILLAGES OF BLOOD OR BODY FLUIDS**

### **Small spillages**

- Wear gloves
- Cover lesions on exposed skin with a waterproof dressing
- Cover spillage with hypochlorite and leave for 2 minutes
- Use paper towels to wipe up spillage and dispose of in double bagged clinical waste
- Clean surface with Actichlor Plus

### **Larger spillages**

As per small spills, but in addition;

- Consider whether extra PPE is required, e.g. rubber boots or plastic overshoes and face protection if splashing is possible
- Allow any potential aerosols to settle
- Use large spillage kit (available from theatres or ED)

### **DECONTAMINATION, INCLUDING TREATMENT OF LAUNDRY**

1. VHFs are enveloped viruses. This type of virus has been shown to be susceptible to a broad range of disinfectants including chlorine and alcohol and to thermal inactivation (1 hour at 58-60 ° C, or 30 minutes at 75°C). There is no evidence to suggest that they have any greater resistance to inactivation than other enveloped or blood borne viruses such as HIV. Therefore it can be assumed that decontamination methods used against blood borne viruses will be effective.
2. Survival of viruses outside the body is dependent on several factors. For example, Ebola virus survival on different surfaces is dependent on a number of environmental factors (type of surface, humidity, light concentration of virus present, etc.). It can survive for several hours when dried onto surfaces such as doorknobs and worktops, and up to several days in body fluids such as blood at room temperature. However, it is easily inactivated at higher temperatures and by soap and water.
3. For patients categorised as low possibility of VHF, standard precautions, cleaning and decontaminating procedures apply, including the treatment of laundry. All procedures should be in keeping with those used when caring for a patient with malaria.

4. The information in this appendix applies to those patients who have been categorised as high possibility of VHF or have been confirmed with VHF infection.
5. Materials or equipment requiring decontamination may be segregated and stored whilst awaiting PCR test results if facilities are available to do so safely. If results confirm patient as negative for VHF, waste can then be treated using standard precautions. However, if it is not practicable to segregate and store pending PCR results then materials from high possibility cases must be decontaminated in the same way as confirmed cases as outlined in the rest of this Appendix. If test results confirm VHF infection, procedures as in this appendix shall then be applied.
6. Staff should ensure that areas and equipment used for the care of patients who have been categorised as high possibility of VHF or have been confirmed with VHF infection are decontaminated and cleaned following the procedures in this appendix. Decontamination and cleaning must be conducted wearing appropriate PPE. (See appendix 8 for general principles and apply local rules for specific PPE and procedures). For information on decontamination or ambulance vehicles see IHCD Ambulance Service Basic Training Manual, 2008, section 17.5 Category 4 Infections.
7. It is important to ensure that products used in the decontamination procedure have been validated as effective against blood-borne viruses. Control measures against such viruses in clinical settings are described in recently updated ACDP guidance on blood-borne viruses.

## **BLEACHES, HYPOCHLORITES AND CHLORINE RELEASING AGENTS**

In various protocols and guidance, reference will be made to bleach or hypochlorite solution. To clarify:

- The active disinfectant component of bleach is sodium hypochlorite (NaOCl)
- Typical household bleach is a solution of sodium hypochlorite generally containing 50,000ppm (5%) available chlorine
- It is important to check the concentration in the formulation before use, as it is likely to require dilution
- The strength of the bleach may reduce with long-term storage
- Typical in-use concentrations are 10,000ppm(1%) for the disinfection of blood-spills and 1,000ppm (1%) for general environmental cleaning
- Sodium dichloroisocyanurate (NaDCC) may be used as an alternative to NaOCl. This is also available in granule form, which may be practical to absorb, contain and disinfect spills. Refer to suppliers' instructions for in-use concentrations
- Gloves should be suitable for use and inspected before they are put on to ensure that they are intact. Where the task involves using chemicals such as chlorine-

based products, the gloves should be certified as suitable for chemical resistance and comply with PPE directive.

- Ensure adequate ventilation when disinfecting areas with chlorine-based products i.e. open windows or doors where necessary.

### **RECOMMENDED PROCEDURES WHEN THERE HAS BEEN NO OBVIOUS CONTAMINATION BY BLOOD AND/OR BODILY FLUIDS**

8. Validated standard washing and cleaning methods can adequately treat areas and equipment, which have not been contaminated with blood, bodily fluids or laboratory specimens.

### **RECOMMENDED PROCEDURES WHEN THERE HAS BEEN CONTAMINATION BY BLOOD AND/OR BODILY FLUIDS**

9. VHF viruses have been known to survive for 2 weeks or even longer on contaminated fabrics and equipment. Persons carrying out decontamination and cleaning procedures must wear appropriate PPE and use suitable disinfectant products determined by a robust risk assessment.
10. Disposable cookery and crockery should be used where possible for those patients categorised as high possibility or confirmed VHF. Subject to risk assessment, these items should be disposed of as category A waste.
11. Toilets or commodes may be used by patients categorised as 'high possibility' or 'confirmed' for VHF infection. Where commodes are employed, a dedicated commode should be used with a disposable bowl. After use, the contents are to be solidified with high-absorbency gel and then autoclaved or incinerated. Toilets and commodes should be disinfected with hypochlorite containing 10,000ppm available chlorine at least daily, preferably after each use, and upon patient discharge. For non-ambulant patients, disposable bedpans should be used and the contents to be solidified with high-absorbency gel and then autoclaved or incinerated.
12. The use of disposable linen should always be considered when appropriate, in particular when caring for a patient with a 'high possibility of' or 'confirmed' VHF infection. Subject to risk assessment, this linen may need to be treated and disposed of as category A waste.  
All re-useable linen from patients with 'confirmed' VHF infection should not be returned to laundry and must therefore be treated and disposed of as category A infectious waste.
13. All re-usable linen from patients classified as 'high possibility' may be segregated and safely stored whilst awaiting PCR test results if facilities are available. However, if it is not practicable to segregate and store pending PCR results then waste from 'high possibility' cases must be treated as category A. If PCR results subsequently confirm the patient as negative for VHF, re-usable linen can then be treated as category B.

14. Following the discharge of a confirmed VHF positive patient, HLIU wards will need to be decontaminated by fumigation. Rooms used to house confirmed VHF patients in a non-specialist IDU will also need to be decontaminated via fumigation. This procedure will need to be carried out following a thorough risk assessment and in consultation with HLIU staff.

### **SPILLAGE OF BLOOD OR BODY FLUIDS**

For small spots of blood or small spills:

- The surface should be washed with warm water and detergent
- All waste, including gloves and paper towels, should be autoclaved or incinerated

For larger spills:

- Where possible, allow any potential aerosols to settle out
- Towels, gloves, disposable overshoes and any contaminated clothing should be autoclaved or incinerated, according to local protocols. Rubber boots may be cleaned then disinfected with hypochlorite solution containing 10,000ppm available chlorine (1%; 1 in 5 dilution of typical bleach).

### **ROOM FUMIGATION**

- In order to ensure successful room decontamination, gross contamination will need to be cleaned and disinfected appropriately prior to the fumigation process
- The fumigation process should be validated as effective against the target agent. Vaporised hydrogen peroxide and formaldehyde are known to be effective against VHF's
- Specialist advice should be sought for undertaking the fumigation process. A risk assessment should be prepared which provides a safe system of work. All staff involved must be fully trained and follow the procedures outlined in the risk assessment
- It may be necessary to move nearby patients to a more suitable location prior to the fumigation procedure
- Rooms to be fumigated must be suitably sealed so as to prevent leakage of fumigant and ensure that levels of fumigant in adjacent areas do not exceed the Workplace Exposure Limit (WEL)
- Before entering the room after fumigation, it is necessary to ensure levels of fumigant are below the WEL
- After fumigation, rooms should be cleaned following locally established protocols.



**CATEGORISATION AND MANAGEMENT OF CONTACTS**

In the event of a confirmed case of VHF, Public Health England will assign a Monitoring Officer to monitor the higher risk contacts and the follow up actions to be taken. Each individual contact will be assessed according to the categories in the table below.

<b>Risk category</b>	<b>Description</b>	<b>Action and Advice</b>
<b>Unclear</b>	Not sure of contact.	Reassure about absence of risk. Advise to contact the Monitoring Officer* should they recall any contact. Provide general factsheet
<b>No risk (Category 1)</b>	No contact with the patient or body fluids. Casual contact, e.g. sharing a room with the patient, without direct contact with body fluids or other potentially infectious material.	Reassure about likely absence of risk.  *Provide category 1 factsheet.
<b>Low risk (Category 2)</b>	Direct contact with the patient, e.g. routine medical/nursing care, handling of clinical/laboratory specimens, but did not handle body fluids, and wore personal protective equipment appropriately.	Reassure about low risk;  <u>Passive monitoring</u> Self-monitor for fever and other disease compatible symptoms for 21 days from last possible exposure;  *Report to the Monitoring Officer if temperature >38°C, with further evaluation as necessary.  *Provide category 2 factsheet.

<p><b>High risk (Category 3)</b></p>	<p>Unprotected exposure of skin or mucous membranes to potentially infectious blood or body fluids, including on clothing and bedding (for healthcare workers see Appendix H).</p> <p>This includes:</p> <ul style="list-style-type: none"> <li>• unprotected handling of clinical/laboratory specimens;</li> <li>• mucosal exposure to splashes;</li> <li>• needlestick injury;</li> <li>• kissing and/or sexual contact.</li> </ul>	<p>Inform about risks;</p> <p><u>Active monitoring</u></p> <p>Record own temperature daily for 21 days following last contact with the patient and report this temperature to the Monitoring Officer by 12 noon each day, with further evaluation as necessary.</p> <p>*Inform Monitoring Officer urgently if symptoms develop.</p> <p>*Provide category 3 factsheet.</p>
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\* The PHE Duty Doctor (020 8200 6868) will provide information sheets (general, category 1, category 2 and category 3). These should include contact details for the Monitoring Officer.

### MANAGEMENT OF STAFF ACCIDENTLY EXPOSED TO POTENTIALLY INFECTIOUS MATERIAL

Accidental exposures that need to be dealt with promptly are;

- Percutaneous injury e.g. needlestick injury
- Immediately wash the affected part with soap and water. Encourage bleeding via squeezing
- Contact with broken skin
- Immediately wash the affected part with soap and water
- Contact with mucous membranes (eyes, nose or mouth)
- Immediately irrigate the area with emergency wash bottles, which should be accessible in case of emergency.

In all cases, the incident will need to be reported via the Trust incident reporting procedure and follow-up managed via the Trust occupational health provider, with support from Public Health England. These cases should be managed as **High Risk (Category 3)** (see Appendix G).

In all cases, the incident will need to be reported immediately to the local Virologist, Clinical Microbiologist or Infectious Disease Physician.

- For a high possibility 'suspected' source case on which VHF testing has not been completed, the local Clinical Virologist, Clinical Microbiologist or Infectious Disease Physician to whom the incident has been reported should immediately discuss it with the duty RIPL physician, contacted by telephoning the Imported Fever Service on 0844 77 88 99 0.
- For a source case in which VHF infection has been confirmed by laboratory testing, the local Clinical Virologist, Clinical Microbiologist or Infection Disease physician to whom the incident has been reported should immediately discuss it with the duty Infectious Disease Physician at the Royal Free Hospital contacted by telephoning the HLIU on 020 7794 0500 or 0844 848 0700.
- In the event that VHF infection in the source patient is excluded by laboratory testing, the recipient of the body fluids exposure incident may still require the appropriate follow-up for possible blood borne virus (HIV, HBV, HCV) exposure, including with their local occupational health provider.
- In the event that VHF infection is confirmed in the source patient, the exposed individual should be followed up as a Category 3 contact- see Section 6 for details. In **Great Britain**, the incident may need to be reported under Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR) to HSE

(<http://www.hse.gov.uk/riddor/>). In Northern Ireland, it may need to be reported under RIDDOR (NI) to HSENI (<http://www.hseni.gov.uk/>). Under RIDDOR, a definite exposure would be reported as a dangerous occurrence, whereas if the staff member actually acquired an infection it would need to be reported under the occupational disease category.

### CARE AFTER DEATH

- Due to the occupational and public health risks contact with the body must be limited, including by next of kin. Religious/ritual preparation of the body, washing, dressing, viewing, touching or kissing of the deceased should not take place.
- The body of a patient should be placed in a **double body bag**. Staff should wear suitable PPE/RPE (See Appendix A), absorbent material (such as inco pads) should be placed between each bag, and the bag sealed and disinfected.
- The bag should be labelled as high risk of infection.
- The mortuary admission form must be completed.
- A post-mortem examination on a person known to have died of VHF exposes staff to unwarranted risk and should not be performed.
- Where a patient suspected of having VHF dies prior to a definitive diagnosis, it may be necessary on public health grounds to undertake some diagnostic tests to either establish or eliminate the diagnosis of VHF or to provide an alternative diagnosis including e.g. malaria. Consultation with appropriate specialists e.g. local infectious disease physician or virologist may help to determine the extent of the limited amount of sampling that will suffice such an assessment.
- Personnel undertaking diagnostic tests must wear appropriate PPE and follow the guidance for safe collection and transport of specimens (See Appendix C).
- Where the results of such tests have found the deceased to be negative for VHF then a post mortem may be required.
- Embalming or hygienic preparation of bodies presents an unacceptably high risk and should not be undertaken.
- An infection control notification sheet should be completed in readiness for the funeral directors.
- Funeral directors will need to be consulted beforehand and provided with sufficient information of the infection risk normally provided by an infection control notification sheet.

#### **Repatriation/expatriation**

- If repatriation/expatriation of the deceased's remains is necessary, refer to Appendix 11 of the Management of Hazard Group 4 viral haemorrhagic fevers and similar human infectious diseases of high consequence

[http://www.hpa.org.uk/webc/HPAwebFile/HPAweb\\_C/1194947382005](http://www.hpa.org.uk/webc/HPAwebFile/HPAweb_C/1194947382005)

## **Clothing and personal effects**

Personal effects and valuables may be returned to relatives following decontamination as follows:

- Items of clothing should be safely disposed of (see Appendix E).
- Wedding rings, jewellery and other physical artefacts should either be autoclaved or decontaminated using a validated disinfectant.

## HAZARD GROUP 4 VIRUSES

Virus	Disease	Geographical distribution	Transmission routes/vectors	Further Information
<b>ARENAVIRIDAE</b>				
<b>Old World arenaviruses</b>				
Lassa  <a href="http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/LassaFever/">http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/LassaFever/</a>	Lassa fever	<b>West and Central Africa</b>  In particular: <b>Guinea, Liberia, Sierra Leone, Nigeria</b> Also consider: <b>Central African Republic, Mali, Senegal, Burkina Faso, Cote D'Ivoire, Ghana, Gabon, Uganda</b>	Contact with <b>excreta</b> , or materials contaminated with excreta, of infected multimammate rat Inhalation of <b>aerosols</b> of <b>excreta</b> of multimammate rat Contact with <b>blood</b> or <b>body fluids</b> from infected patients, or <b>sexual contact</b>	
Lujo	Unnamed	<b>Southern Africa</b>	Transmission to the index case unknown. Direct contact with <b>infected patient, blood</b> or <b>body fluids</b>	First identified in October 2008 following a nosocomial outbreak in South Africa involving 5 people, 4 of whom died.
<b>New World arenaviruses (Tacaribe complex)</b>				
Chapare	Chapare Haemorrhagic Fever	<b>Bolivia</b>	Direct contact (e.g. <b>bite</b> ) with infected <b>rat</b> or <b>mouse</b>	Details of the outbreak and genetic analysis are available
Guanarito	Venezuelan Haemorrhagic Fever	<b>Central Venezuela</b>	Direct contact with <b>excreta</b> of infected rat or mouse	
Junin	Argentine Haemorrhagic Fever	<b>Argentina Pampas region</b>	Contact with <b>materials</b> (e.g. <b>food</b> ) <b>contaminated with excreta</b> from infected rat or	

Machupo	Bolivian Haemorrhagic Fever	<b>North eastern Bolivia Beni department</b>	mouse  Inhalation of <b>aerosols</b> of <b>excreta</b> (often in dust) of rat or mouse	
Sabia	Brazilian Haemorrhagic Fever	<b>Brazil</b>  One case to date	<u>Guanarito, Machupo and Sabia only:</u> Contact with <b>blood</b> or <b>body fluids</b> from infected patients	
<b>BUNYAVIRIDAE</b>				
Nairoviruses				
Crimean Congo haemorrhagic fever  <a href="http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/CCHF/">http://www.hpa.org.uk/Topics/InfectiousDiseases/InfectionsAZ/CCHF/</a>	Crimean Congo Haemorrhagic Fever	<b>Central and Eastern Europe, Central Asia, the Middle East, East and West Africa</b>	<b>Bite</b> of an infected <b>tick</b> Contact with infected patients, their <b>blood</b> or <b>body fluids</b>	
<b>FILOVIRIDAE</b>				
Ebola  <a href="https://www.gov.uk/government/collections/ebola-virus-disease-clinical-management-and-guidance">https://www.gov.uk/government/collections/ebola-virus-disease-clinical-management-and-guidance</a>  <a href="https://www.gov.uk/ebola-and-marburg-haemorrhagic-fevers-outbreaks-and-case-">https://www.gov.uk/ebola-and-marburg-haemorrhagic-fevers-outbreaks-and-case-</a>	Ebola Haemorrhagic Fever	<b>Western, Central and Eastern Africa</b>	Transmission to the index case probably via contact with <b>infected animals</b> Contact with infected <b>blood</b> or <b>body fluids</b>	

<a href="#">locations</a>				
<p>Marburg</p> <p><a href="https://www.gov.uk/marburg-virus-disease-origins-reservoirs-transmission-and-guidelines">https://www.gov.uk/marburg-virus-disease-origins-reservoirs-transmission-and-guidelines</a></p> <p><a href="https://www.gov.uk/ebola-and-marburg-haemorrhagic-fevers-outbreaks-and-case-locations">https://www.gov.uk/ebola-and-marburg-haemorrhagic-fevers-outbreaks-and-case-locations</a></p>	Marburg Haemorrhagic Fever	<b>Central and Eastern Africa</b>	<p>Transmission to the index case probably via contact with <b>infected animals (?fruit bats)</b></p> <p>Contact with infected <b>blood</b> or <b>body fluids</b></p>	
<b>FLAVIVIRIDAE</b>				
Kyansur forest disease	Kyansur Forest Disease	<b>India</b> <b>Western districts of Karnataka state</b>	<b>Bite</b> of an infected <b>tick</b> Contact with and <b>infected animal</b> , most commonly <b>monkeys</b> or <b>rodents</b>	Common in young adults exposed in the forests of western Karnataka – approximately 100-500 cases per year. Case fatality rate is estimated at 2-10%.
Alkhurma (Al Khumrah) haemorrhagic fever	Alkhurmah Haemorrhagic Fever	<b>Saudi Arabia</b> <b>Makkah (Mecca), Jeddah, Jizan, Najran regions</b>	Contact with an <b>infected animal (sheep, camels)</b> <b>Bite</b> of an infected <b>tick</b> or <b>mosquito</b>	Cases have been reported outside Saudi Arabia, but have had contact with animals that likely originated in Saudi Arabia e.g. case in an Italian tourist in 2010 who visited a camel market in southern Egypt.
Omsk haemorrhagic fever	Omsk Haemorrhagic	<b>Russian Federation</b> <b>Novosibirsk region of Siberia</b>	<b>Bite</b> of an infected <b>tick</b> <b>Person-to-person</b>	Virus circulates in muskrats, and other animals, in the

	Fever			forest Steppe regions of Russia. Infection most common in farmers and their families.
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