

Trust Guideline for Viral Haemorrhagic Fever – Management Protocol

For Use in:	All Clinical and Laboratory Areas
By:	Health Care Personnel
For:	Viral Haemorrhagic Fever – Management Protocol for Norfolk and Norwich University Hospital Foundation Trust (NNUH)
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This guideline has been approved by the Trust's Clinical Guidelines Assessment Panel as an aid to the diagnosis and management of relevant patients and clinical circumstances. Not every patient or situation fits neatly into a standard guideline scenario and the guideline must be interpreted and applied in practice in the light of prevailing clinical circumstances, the diagnostic and treatment options available and the professional judgement, knowledge and expertise of relevant clinicians. It is advised that the rationale for any departure from relevant guidance should be documented in the patient's case notes.

The Trust's guidelines are made publicly available as part of the collective endeavour to continuously improve the quality of healthcare through sharing medical experience and knowledge. The Trust accepts no responsibility for any misunderstanding or misapplication of this document.

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This is a Controlled Document

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2. Definitions of Terms Used

ED - Emergency Department (previously A&E – Accident and Emergency)
ACDP - Advisory Committee on Dangerous Pathogens
Av. Cl. – Available Chlorine
AMU – Acute Medical Unit
BMS – Biomedical scientist
CAU – Children’s Assessment Unit
CCDC – Consultant in Communicable Disease Control
CDC – Centers for Disease Control and Prevention
CoSHH - Control of Substances Hazardous to Health
DHSC– Department of Health and Social Care
D&V – Diarrhoea and Vomiting
EAUS – Emergency Assessment Unit Surgery
EEAS – East of England Ambulance Service NHS Trust
EVD – Ebola Virus Disease (formerly known as Ebola haemorrhagic fever)
GCS – Glasgow Coma Scale
GP – General Practitioner
HCW – Healthcare Worker
HLIU – High Level Isolation Unit
HPT –Health Protection Team (UKHSA East of England)
HSE – Health and Safety Executive
ITU- Intensive Therapy Unit
MIU – Minor Injury Unit (Cromer Hospital)
NNUHFT – Norfolk and Norwich University Hospital NHS Foundation Trust
PPE – Personal Protective Equipment
PPM – Parts per million
SICP’s – Standard Infection Control Precautions
UKHSA – UK Health Security Agency (*previously Public Health England*)
VHF – Viral Haemorrhagic Fever
WHWB – Workplace Health and Wellbeing

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Links to Quick Reference Flowcharts and Documents

Some of these documents can be printed and displayed for information

To open link hold the Ctrl button on your keyboard and click the link with your mouse.

[VHF Risk assessment documentation form](#)

[Donning and Doffing PPE – NNUH guidance for VHF](#)

[Enhanced Precautions PPE Box - list of contents for admission areas](#)

[VHF Waste Process](#)

[Respiratory Mask Fit Test Procedure](#)

[Viral Haemorrhagic Fever \(VHF\) Contact Trace Infection Case Log](#)

[Information for staff contacts with VHF](#)

[VHF Enhanced Isolation Precautions and Posters](#)

[VHF General Environment Actichlor Poster](#)

[VHF Blood Spills Actichlor Poster](#)

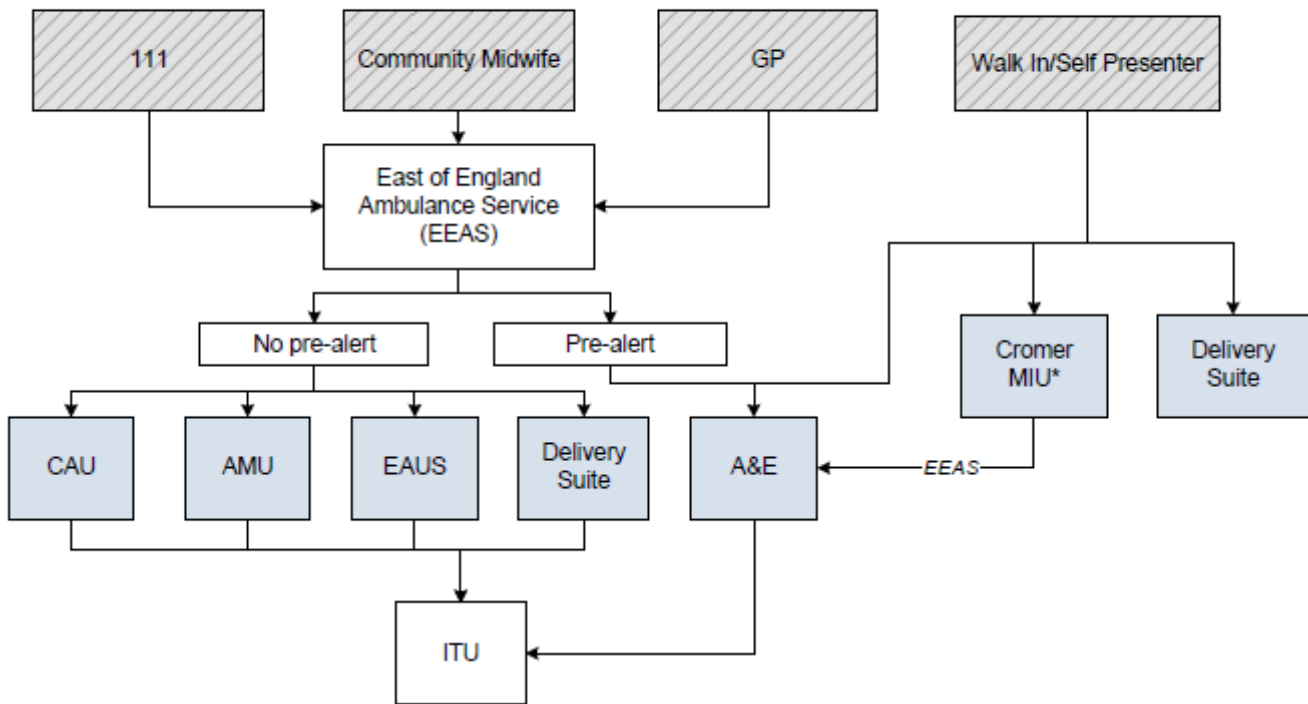
3. Quick reference

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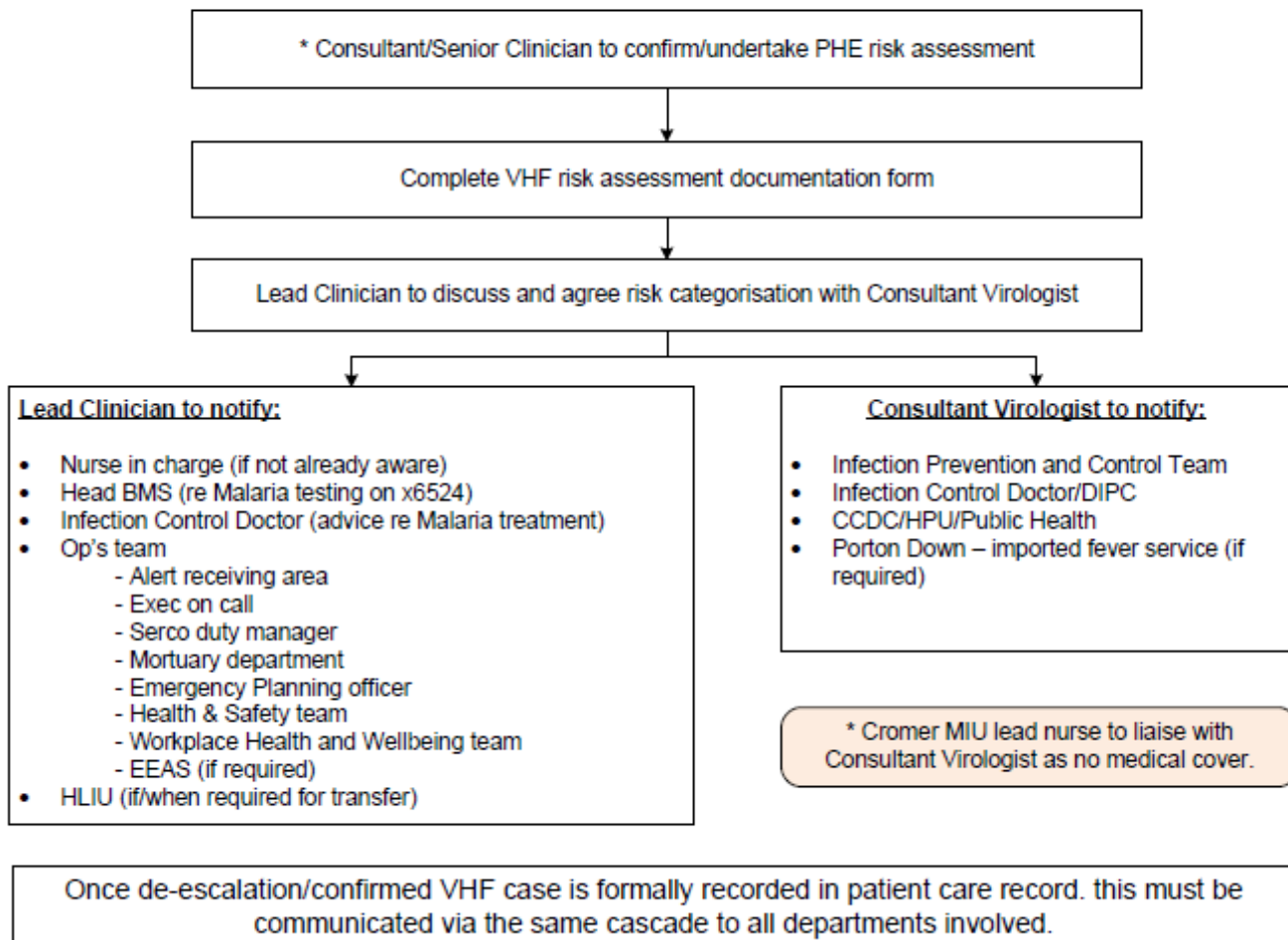
Quick reference guideline

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Patient Pathway for a suspected VHF case attending NNUH



Communication cascade for a suspected VHF case attending NNUH



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Key Contact Details

Department	Position	Work Contact Number	Out of Hours Contact
CCC	Coordinator	01603 646661 (int. ext. 6661)	01603 646661 (int. ext. 6661)
CCC	On-call Consultant Intensivist	Via switchboard	
UKHSA East of England Health Protection Team (Norfolk)	Duty Clinician	0300 303 8537	01603 481221 (Medicom)
Haematology	Duty Biomedical Scientist (BMS)	01603 646524 (int. ext. 6524)	
Haematology	Consultant	01603 646744 (int. text 6477)	via switchboard
High Level Isolation Unit (HLIU) Royal Free Hospital London	Duty Clinician	020 7794 0500 (ext. 36285)	0844 8480700 Infectious Diseases Consultant on-call
Imported Fever Service	Duty Clinician	0844 778 8990	
Infection Prevention & Control Team	Duty Nurse	01603 289847 (5847)	via site manager
ITU consultant on-call	Consultant	Via switchboard	via switchboard
Microbiology/ ICD	Consultant	01603 288587 (int. ext. 4587)	via switchboard: (01603 286286)
NNUH Operational Team	Site Manager	01603 289061 (int. ext. 6537)	Via switchboard / (int. ext. 6042)
Rare and Imported Pathogens Laboratory (UKHSA Porton Down)	Duty Clinician	01980 612100	
The VHF Reference Laboratory (UKHSA Colindale)	Duty Clinician	020 8327 6017	020 8200 4400
Virology	Consultant	01603 288587 (int. ext. 4587)	via switchboard: (01603 286286)
Virology	Specialist Registrar	01603 288531 (int. ext. 4531)	via switchboard: (01603 286286)

4. Objectives

This guideline has been developed for use in the Norfolk and Norwich University Hospital NHS Foundation Trust (NNUHFT) for the assessment and management of Viral Haemorrhagic Fever (VHF). This policy should be read in conjunction with the following policies; [Hand Hygiene](#), [Isolation Procedures](#), [Cleaning and Decontamination Policy](#), [Waste Policy](#) and the [Trust Guideline for Care after Death](#).

4.1 Staff Groups

Chief Executive Officer (CEO) - has overall responsibility for ensuring there are effective procedures and resources in place to enable the implementation of this guideline.

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Director of Infection Prevention and Control (DIPC) - has strategic responsibility within the Trust for the development and implementation of infection prevention and control best practice.

Consultant Infection Control Doctor (ICD) – is responsible for providing expert clinical guidance on the assessment and management of infectious diseases and guidance for Infection Prevention and Control.

Divisional Managers/Matrons/Ward Managers - are responsible for ensuring they have a process in place to reassure the organisation that all staff under their leadership are aware of the content of this guideline and receive appropriate training. They also have a responsibility to ensure the provision of the necessary resources to manage a patient suspected of VHF safely and effectively. To keep up to date with relevant updates and information on the intranet and communicate this appropriately within their areas.

The following admission areas listed below need to keep stocks of the appropriate PPE as per [Enhanced Precautions PPE Box - list of contents for admission areas](#):

- CAU
- AMU
- EAUS
- Delivery Suite
- ED
- Cromer MIU

The box and contents should be checked regularly including any items that are dated and replenished as required.

Operations Team/ Emergency Planning Officer – are responsible for planning and providing logistical and operational support for the assessment, management, transfer and communication cascade of any patient suspected of an infectious disease, particularly in the 'out of hours' period when the matron is unavailable.

Infection Prevention and Control Team (IPCT) - is responsible for reviewing this guidance and amend as required at the review date, or prior to this following new developments to reflect current best practice. The IPCT have a responsibility to offer training and specialist advice and support to staff regarding this guideline.

Health and Safety Team – are responsible for updating and advising on PPE, waste and other health and safety elements regarding the management of VHF.

Registered Medical Practitioners – are responsible for the assessment and clinical management of patients with a suspected infectious disease. The consultant (or senior registrar) will assume the lead for the management of any patient suspected of having a VHF infection.

Mortuary Staff – must ensure they have policies and procedures in place to safely manage a deceased patient with suspected or known VHF. They must have the necessary safety equipment as per the national guidelines and communicate clearly with the appropriate funeral director.

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All Staff - have a responsibility to ensure they follow the advice in this guideline and must ensure they attend appropriate training. Any deviations from these guidelines must be clearly documented including risk assessments made.

It is the responsibility of each employee to be aware of the procedural documents which relate to their department/area of practice.

5. Rationale

To ensure that healthcare workers (HCW's) consider VHF as a possible diagnosis in patients with an indicative history and symptoms.

To ensure that all HCW's take appropriate actions to minimise the risk of cross infection to themselves and others by urgent and appropriate referral in line with the guidance developed by the Department of Health.

To ensure that all HCW's apply appropriate infection prevention and control precautions when providing care for patients with suspected or known infection with VHF.

6. Scope

This policy is designed to safeguard patients, staff and the wider public from the risk of VHF.

The policy is aimed at healthcare staff working in NNUH, but particularly:

- Emergency Department staff/Admission Units/Staff working in acute admission areas
- Out of hours services
- Operations Team
- Laboratory staff
- Mortuary Department
- Public Health professionals

7. Processes to be followed

VHFs are a group of severe and life-threatening diseases caused by several distinct families of viruses that are endemic in some parts of the world, particularly:

- Africa
- South America
- Middle East, and
- Eastern Europe

[Click to check which VHF's are associated with which countries](#)

In general, the term “Viral Hemorrhagic Fever” is used to describe a severe multisystem syndrome (affecting multiple organ systems in the body). Characteristically, the overall vascular system is damaged, and the body's ability to regulate itself is impaired. These symptoms are often accompanied by haemorrhage. While some types of haemorrhagic fever viruses can cause relatively mild illnesses, many of these viruses cause severe, life-threatening disease.

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VHF's are of particular public health importance because:

- they can spread within a hospital setting
- they have a high case-fatality rate
- they are difficult to recognise and detect rapidly, and
- there is currently no effective cure

Causative Organisms	Of 18 viral agents (CDC), 4 are relatively more common types seen globally: <ul style="list-style-type: none"> • Ebola (Filoviridae); • Marburg (Filoviridae); • Lassa (Arenaviridae); • Crimean-Congo haemorrhagic fever caused by Nairovirus (Bunyaviridae).
Clinical manifestation	Fever >37.5°C, headache, myalgia, pharyngitis, diarrhoea, vomiting, headache, bruising, bleeding, multi organ failure
Incubation period	From 2 to 21 days (dependent on virus)
Period of infectivity	Can be up to 64 days post onset. Ebola virus RNA has been detected in the following body fluids days or months after onset of illness: saliva (22 days), conjunctiva/tears (28 days), stool (29 days), vaginal fluid (33 days), sweat (44 days), urine (64 days), amniotic fluid (38 days), aqueous humor (101 days), cerebrospinal fluid (9 months), breast milk (16 months [preliminary data]), and semen (18 months). Nevertheless, the only documented cases of secondary transmission from recovered patients have been through sexual transmission Virus can survive on surfaces for around 2 weeks, or longer on fabrics/soft furnishings
Mode of transmission	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 There is no current evidence of an aerosol transmission risk from VHF patients.
Reservoirs	Animal/insect hosts Secondary infection risk from exposure to infected blood or body fluids.
Population at risk	Travellers, healthcare/aid workers, laboratory staff All recorded cases of VHF in the UK to date have been acquired abroad, with the exception of one laboratory worker who sustained a needle-stick injury.
Notifiable disease	Yes - Consultant Virologist to complete urgent notification.

7.1 Patient Risk Assessment

VHF viruses are classified as biosafety level four (BSL-4, the highest level) pathogens. Risk Assessment is a **legal obligation** under the Control of Substances Hazardous to Health (CoSHH) Regulations.

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It is the responsibility of clinical teams and divisional managers to ensure their departments have systems in place to **recognise and document** the potential risk of VHF, ideally before the patient even arrives at the NNUH during the referral process.

Patients should routinely be questioned about recent travel history and pyrexia prior to and on arrival to any admission unit (e.g. Emergency Departments, Acute Medical Units, Emergency Assessment Unit Surgical (EAUS), Children's Admission Unit (CAU), Delivery Suite, Cromer MIU). The answers from these questions should be recorded on the admission documentation.

VHF infection is possible in any patient presenting with:

- A)** a pyrexia of unknown origin ($>37.5^{\circ}\text{C}$), or a history of pyrexia within previous 24 hours **AND** has returned from (or is currently residing in) a VHF endemic country where there is a current VHF outbreak within 21 days of symptoms developing. ([click to check which countries meet this definition](#)) **OR**
- B)** a pyrexia of unknown origin ($>37.5^{\circ}\text{C}$), or a history of pyrexia within previous 24 hours **AND** has cared for/come into contact with body fluids of /handled clinical specimens (blood, urine, faeces, tissues, laboratory cultures) from an individual or laboratory animal known or strongly suspected to have VHF.

If the patient answers yes to either question A or B, the full [Public Health England Viral Haemorrhagic Fever Risk Assessment Algorithm](#) must be followed by the senior clinician on duty, documented on the [VHF risk assessment record form](#) and discussed with the duty Virology Consultant.

Full enhanced levels of personal protective equipment (PPE) are to be worn by any staff caring for the patient during that risk assessment as described in 'enhanced precautions' and the IP&C summary table in this guideline. [Donning and Doffing PPE – NNUH guidance for VHF](#)

Each acute admission area that could potentially receive a VHF patient should have a supply of relevant and in date PPE stocked and accessible at all times.

In some situations, the East of England Ambulance Service (EEAS), GP, Walk in Centre and 111 services may identify a patient at risk of VHF and should follow the ACDP guidance they have been sent. They will be responsible for undertaking the initial risk assessment as per government guidelines and then may refer the patient to NNUH.

A pre-alert from these referring organisations is essential to allow teams at NNUH time to prepare an appropriate environment and equipment to safely manage the patient.

For any patient brought to NNUH via ambulance who meets the criteria of a potential VHF, whether pre-alerted or not, the [ACDP risk assessment](#) and risk categorisation should be confirmed by the senior clinician, whilst the patient remains inside the ambulance (if clinically safe to do so).

When assessing a patient with fever who has a history suggestive of VHF, it is difficult to make a firm diagnosis solely on clinical grounds, therefore attention and targeted questions must be paid to epidemiological evidence e.g. travel to endemic areas, association with any known cases. Specific details, routes and dates of the patients

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travel history is key to accurately assess the level of risk. Details of when symptoms developed and of any close contacts from the point symptoms developed is of great importance from a public health perspective, as this information may not be obtainable if the patient then deteriorates.

Collateral history from family members/friends is extremely valuable, particularly for patients with reduced GCS, confusion or if there is doubt as to the reliability of the patient account.

If the patient is confirmed as a possible case of VHF whilst still on the ambulance, the patient should only be transported once the receiving area is prepared.

The transfer of the patient from ambulance to the agreed single room must be coordinated by the Operations team, ensuring the route is clear of patients, visitors and staff (Security will be required to assist).

The minimum number of staff possible should have close contact with the patient whilst assessing the patient and (if confirmed as a risk of VHF) whilst facilitating the transfer from the ambulance to the allocated VHF isolation room. Paramedics should complete their handover to the NNUHFT transfer team at the ambulance and then proceed to doff their PPE via the decontamination facility and follow EEAST protocols for the decontamination of the vehicle. All PPE and waste from the EEAST staff must be double bagged and securely stored as Category A waste until a final result or de-escalation is confirmed. Their names should be recorded on the [contact log](#) and these staff (or organisation) must be contacted when the patient's diagnosis and risk status is confirmed.

Please note this is a live [ACDP risk assessment](#) document and is frequently updated; therefore it is crucial that the current version is accessed via the links in this guideline (including the image of the tool below) and the Infection control manual or the DH website directly.

Following this assessment, patients will be classified as:

- **VHF Unlikely** – answers no to questions in ACDP risk assessment:
 - A)** travel to an endemic country or
 - B)** contact with a patient/samples strongly suspected to have a VHF.
- **Low Possibility of VHF** – fever $>37.5^{\circ}\text{C}$ **AND** history of travel to an endemic country in past 21 days in a patient who does not have any additional risk factors (e.g. exposure to bats, ticks and visiting mines) and who **DOES NOT** develop extensive bruising or active bleeding, e.g. nosebleed, bloody diarrhoea;
- **High possibility of VHF** – fever $>37.5^{\circ}\text{C}$ **AND** history of travel to an endemic country in past 21 days **AND** has cared for/come into contact with body fluids of an individual or laboratory animal known or strongly suspected to have VHF or come into contact with bats, rodents, livestock or ticks in a region with a VHF outbreak **OR** answers yes to any additional questions in the Viral Haemorrhagic Fevers Risk Assessment chart who develops:
 - Extensive bruising or active bleeding, e.g. nosebleed, bloody diarrhoea;
 - Sudden rise in aspartate transaminase (AST);
 - Sudden fall in platelets;
 - Clinical shock;

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- Rapidly increasing O₂ requirements in the absence of other diagnosis;
- Continuing fever and relevant travel history, malaria negative, without diagnosis.

- **Confirmed VHF** – any patient with a positive VHF screen.

The [VHF risk assessment record form](#) must be completed, signed and dated, detailing the rationale for the final decision of the patient's risk category. This must be filed appropriately in the patient care record.

This classification will determine the interventions, precautions and escalation to the Imported Fever Service that are required to safely manage patient care and minimise the risk of cross infection to staff and the wider population. As an organisation, we have made the decision to commence our enhanced precautions from the initial assessment phase, and only to de-escalate once the consultant in charge has discussed with the Consultant Virologist and recorded the decision to de-escalate in the patient's notes – detailing the rationale for this decision.

If further information becomes available from the patient/next of kin that may affect the decision the risk assessment may need to be repeated.

The Consultant Virologist will liaise with the Imported Fever Service at Public Health England to discuss VHF screening as appropriate: **Telephone 0844 7788990**.

7.2 Patient Management

Isolate the patient in a single en-suite room. Limit the number of healthcare staff who enter the room. Only essential healthcare personnel with designated roles should evaluate the patient and provide care to minimize transmission risk.

It is assumed that **ALL STAFF** will observe a minimum of standard infection control precautions (SICPs) at **ALL TIMES** with **ALL PATIENTS**, to minimise the risk of infection to staff and other patients.

For any patient deemed a low or high possibility for VHF, only staff who are required to have close clinical contact should do so. If tasks can safely be undertaken without exposing staff to bodily fluids, this is preferable. If HCW's are required to have close contact, appropriate PPE must be utilised to sufficiently protect the HCW. As per SICP's, a risk assessment is required based on the planned care activity that will be undertaken. Staff are responsible for ensuring they are competent in the donning and doffing procedure as failure to do this correctly can place the HCW at risk of contamination.

Staff (medical and nursing) must ensure the patient and their relatives are communicated with in a clear and sensitive manner, informing them of the procedures that will be in place as precautionary measures and updating them at regular intervals.

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[Ebola] Viral Haemorrhagic Fever (VHF) Infection Prevention and Control Precautions Summary
Based on the [ACDP VHF Guidance \(Nov 2015\)](#) and [WHO IP&C guidance summary \(Aug 2014\)](#)

Criteria	Low Possibility of VHF	High Possibility of VHF	Confirmed VHF	Comments
Patient Placement (accommodation)	Single Room En-suite / own commode Adjacent dedicated waste/ PPE removal room required	Transfer from single en-suite room to HLIU		HLIU – High Level Isolation Unit
Moving between wards and departments within the hospital (including theatres)	Do not transfer unless discussed with IPCT or ICD Provide patient with a surgical mask (if clinically able) Ensure patient is wrapped with absorbent ‘inco’ pads/sheets prior to transfer. Operations team to have a pre-prepared transfer pack (including high-absorbency gel sachets, inco sheets, waste bags, vomit bowl etc.) All staff to wear enhanced PPE for transfer and Op’s team to coordinate transfer and clear the route of unnecessary staff, patients and visitors.	IPCT – Infection Prevention and Control Team ICD – Infection Control Doctor Details of which lift was used is important. If body fluid exposure in lift – must be sealed off.		
Contact with people	Limit contact to only essential staff. Keep an up to date contact	Visiting restriction should apply for all possible cases until VHF discounted as potential cause. Exception may be if a paediatric/maternity patient is admitted, to discuss with ICD and IPCT		

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	<p>log of everybody who enters the room (including level of PPE used) for possible contact assessment.</p> <p>Clinical staff only in room, i.e. no domestic staff, HCWs to perform routine cleaning.</p> <p>Any relatives/ visitors should be asked about their level of contact and signs and symptoms, ideally before they arrive at NNUH.</p>	
Precautions required	<p>Enhanced Precautions to be implemented with a buddy system until formally stood down by consultant in charge. Appropriate isolation signage must be clearly displayed.</p>	NB there is no evidence of airborne transmission
Personal Protective Equipment (PPE)	<p>PPE must establish a full barrier and cover all exposed skin against contact with contaminated surfaces, splash, spray, bulk fluids and aerosol particles</p>	
Donning PPE in correct order	<p>PPE must be donned and doffed in the correct order to minimise the risk of cross</p>	

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	infection. Follow NNUH Donning and Doffing PPE - guidance for VHF			
Criteria	Low Possibility of VHF	High Possibility of VHF	Confirmed VHF	Comments
PPE: To cover hands	<p>Disposable double gloves (sterile gloves provide a tight fit around the cuff of the long-sleeved apron/coverall)</p> <p>Gloves are the final item to be donned before entering room. (Hand hygiene prior to donning & immediately after removal)</p> <p>Heavy duty gloves required as outer pair when cleaning and handling waste.</p>	<p>Hand protection must overlap the junction of the long sleeves of the apron or coverall (sterile gloves can provide more secure overlap)</p> <p style="text-align: center;">Enhanced Precautions</p>		
PPE: To cover body area	<p>Scrubs to be worn as base layer.</p> <p>To enter room: Full body hooded coverall.</p> <p>Plastic long sleeved apron over the coverall for body fluid exposure risk (e.g. D+V, bleeding).</p>			<p>D&V (diarrhoea and/or vomiting)</p> <p>Disposable means single use.</p>
PPE: To cover head and neck	Full body hooded coverall.			
PPE: To cover face, (including mucous membranes of the eyes,	Single use FFP3 respirator & compatible eye protection (face visor) to enter room			<p>Staff must also perform a fit check each time FFP3 worn</p> <p style="text-align: center;">Respiratory Mask Fit Test Procedure</p>

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<p>mouth and respiratory tract)</p>	<p>All staff who use FFP3 masks must have passed a fit test and use the correct brand of mask that they were fit tested with.</p>	
<p>PPE: Feet</p>	<p>As per Uniform Policy / water resistant closed shoes together with over boots</p>	<p>Theatre boots to be used if significant body fluid exposure risk (with over boots)</p>
<p>Removing PPE in correct order</p>	<p>One of the highest risks of transmission and cross infection is during the removal of PPE process.</p> <p>The buddy system is essential to ensure a safe and ordered removal is completed. The steps of the NNUH Donning and Doffing PPE - guidance for VHF must be followed</p>	<p>Visor may need to be removed with caution away from the face, prior to full glove and long sleeved apron removal.</p>
<p>Equipment</p>	<p>Single Use (B/P, stethoscope, wash bowl, thermometer, tourniquet etc.)</p> <p>Keep extra supplies <u>out</u> of the room</p> <p>Use needle safety devices where possible</p> <p>DO NOT remove equipment from the room</p>	<p>Make sure the equipment is required before placing in the room as once inside, it cannot be removed.</p>

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Criteria	Low Possibility of VHF	High Possibility of VHF	Confirmed VHF	Comments
	without permission of IPCT			
Process / transport of specimens	<p>Clinician in charge to notify lead haematology BMS on x6524 in advance of sending specimens</p> <p>Collect VHF specimen delivery container from pathology reception and place specimens in to hand deliver to pathology reception</p> <p>No vacuum transport of specimens</p> <p>Containment Level 2 required for sample processing</p>	Only essential samples as per DH guideline		<p>Lead clinician to contact the Chief Bio-Medical Scientist on 6524 to notify that samples will be sent.</p> <p style="text-align: center;">Packaging, Labelling and Transportation of Specimens</p>
Healthcare Waste	<p>Double yellow bag and then into rigid container (limb bin) with high-absorbency gel sachets in the base (Powergate code HFL8662).</p> <p>Solidify any bodily fluids prior to placing in clinical waste bags. Bags to be tied with a swan neck tie as per the NNUH Waste Policy</p> <p>Category A waste (autoclave/incinerate)</p> <p>Hold in a dedicated and secure area until transport</p>	<p>Involve Serco/Norse/Estates as per communication cascade</p> <p style="text-align: center;">Refer to NNUH Waste Policy for advice on Cat A Waste</p>		

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	<p>available to incinerate/ autoclave. Must have correct labelling as per national guidelines prior to leaving the premises.</p>	
<p>Spills of blood or body fluids</p>	<p>As per VHF posters for decontamination of blood and body fluid spills Solidify waste with high-absorbency gel, then discard as Category A waste. Use Actichlor plus (10 tablets to 1 litre) 10,000 parts per million (ppm) available chlorine (av. cl.) for 2 minutes contact time to disinfect area. Use Enhanced precautions throughout cleaning and disinfection process Use overshoes/ wellington boots when dealing with large spills</p>	<p style="text-align: center;">VHF General Environment Actichlor Poster</p> <p style="text-align: center;">VHF Actichlor Blood Spills Poster</p>
<p>Toilet Facilities and human waste (including vomit)</p>	<p>Patient may use dedicated en-suite toilet or Commode / bedpan. Solidify contents with high-absorbency gel sachets, bag receptacle and then</p>	

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	<p>place into double bagged clinical waste bin. All Waste to be managed as Category A waste.</p> <p>Toilets must be cleaned with 10,000 ppm Actichlor at least daily, ideally after each use.</p>			
Criteria	Low Possibility of VHF	High Possibility of VHF	Confirmed VHF	Comments
Cleaning and Disinfection	<p>Commodes: Actichlor plus (10:1 concentration) providing 10,000 ppm av. cl. after each use and at least daily.</p> <p>Routine cleaning (key touch points) to be cleaned regularly throughout shift with 1,000 ppm av. cl. by NNUH staff</p> <p>Actichlor plus to be stored outside the patient room and decanted into receptacle to be taken into the room for cleaning tasks.</p> <p>Mattress integrity must be checked prior to terminal cleaning. If VHF confirmed the mattress will be disposed of as category A waste.</p>			<p>Terminal cleaning will require hydrogen peroxide fogging – IPCT will coordinate with HLIU and Serco/Norse.</p> <p>Leave decontaminated equipment within the area until fumigation process complete.</p> <p style="text-align: center;">Cleaning and Decontamination Policy</p>
Crockery & Cutlery	<p>Disposable crockery and cutlery should be used and</p>			Serco to provide on request

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	disposed of as Category A waste	
Care of the deceased patient	<p>Enhanced PPE when dealing with a deceased patient – this is one of the highest risks in terms of potential virus transmission and cross infection.</p> <p>Label body with ID bands as per usual protocol</p> <p>Do not wash or pack the body, wrap in absorbent pads and sheet</p> <p>Place in double body bags (absorbent material between bags) and seal – disinfect each bag with 1,000 ppm av. Cl.</p> <p>Attach documentation clearly recording danger of infection with category 4 pathogen</p> <p>All property to be secured in the patient’s room – await IPCT/HLIU advice</p>	<p style="text-align: center;">Detailed guidance in Appendix 12 of ACDP VHF Guidance (Sept 2014)</p> <p style="text-align: center;">Trust guideline for Care after Death</p>
Staff Health and Wellbeing	<p><u>Prevention / Management</u></p> <ul style="list-style-type: none"> • Ensure sufficient supplies of appropriately fitting PPE to the relevant specifications are available. • Ensure sufficient staff are FFP3 fit tested and that records are accessible. • Proactively question any referral for history of fever and travel to VHF endemic countries. <p><u>Staff who care for these patients must know about VHF:</u></p> <ul style="list-style-type: none"> • That the virus is present in blood and body fluids including urine, on contaminated instruments and equipment, in waste on contaminated clothing (including PPE) and contaminated surfaces. 	

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- Mode of transmission is through direct contact exposure of broken skin or mucous membranes to blood and / or body fluids when touching or when aerosolising / splashing of blood / body fluids occur (it is not airborne).
- Indirect transmission via broken skin contact with mucous membranes or broken skin and contaminated equipment / surfaces.
- Transmission risk is highest during the later stages of illness when vomiting, diarrhoea and often haemorrhage may lead to splash and droplet generation.
- Staff should read the [WHWB information leaflet](#) so they can be aware of the potential symptoms to be aware of, the risk categorisation of contacts and who to contact if they develop symptoms indicative of VHF.
- All staff entering the patient's room must be logged on the [Staff contact Log](#) and support is available from the WHWB team. All contacts of a positive case will be followed up by UKHSA team.
- All cuts and abrasions must be covered. If this is not possible seek advice on safety to enter patients rooms
- All blood and body fluids are potentially contaminated – use PPE to prevent direct contact with blood or body fluid.

7.3 Samples

Low Possibility of VHF	High Possibility of VHF	Confirmed VHF	
Malarial Screen	URGENTLY – Should only be undertaken in containment level 2 facilities		N/A
Routine diagnostic tests (suggested)	<ul style="list-style-type: none"> • Full blood count • U&E's • LFTs • Glucose • Clotting Screen • Blood Culture 		Patient would be transferred to the HLIU where further testing would be undertaken.
VHF Screening	Discuss with Consultant Virologist if malaria negative with continuing fever.	Discuss with Virologist if malaria negative or not responding to treatment. Consultant Virologist to liaise with Porton Down if VHF testing required.	N/A

To minimise the risk to staff, the following must be observed:

- Laboratory staff **MUST** be informed of specimens prior to receipt by the clinician in charge who will call lead BMS on ext. 6524.
- Specimen handling and storage should be kept to a minimum.
- Vacutainer system must be used to collect blood samples.
- Small rigid sharps container to be used, closed, and managed as category A waste.
- All specimens from cases with a possibility of VHF must be appropriately labelled, double bagged and placed into a rigid PVC container (i.e. a bio bottle within an appropriate cardboard box) ¹ (obtained from the pathology laboratory) reception for transporting the blood samples from the patient to the laboratory.
- Pneumatic tube system **must not be used** for the transport of samples to the laboratory.
- Initially **only** blood samples should be processed and examined for the presence of malarial parasite.
- Strict adherence to SICP's and laboratory procedures by all staff at all times.

¹ Rigid PVC UN marked container which meets the standard required by The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009

7.4 Haematology/Specimen handling & laboratory procedures for VHF investigations

- The VHF risk must be identified to the Haematology BMS on call prior to the specimen arriving at the specimen reception by the clinician in charge on the patient.
- The Haematology BMS (once notified of VHF risk) will prepare and assess blood samples to exclude malaria according to local protocol.
- Results will be telephoned to the clinician in charge and the Consultant Virologist on duty immediately and then reported on the electronic results system.
- Refer to [Packaging, Labelling and Transportation of Specimens](#) and [NNUH Waste Policy](#) for more detailed guidance.
- If VHF testing is clinically indicated and agreed by the Imported Fever Service, a secure courier service will collect and deliver a fresh sample to the secure laboratory. UKHSA should be updated when a patient is accepted for VHF testing.
- This result should be available within 12 hours of receipt and the result will be communicated to the consultant virologist on duty.

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- The Consultant Virologist will then ensure the relevant teams are notified and the communication cascade will again be utilised.

7.5 Retrieval of specimens

If the possibility of VHF is realised after specimens have been sent, it is the responsibility of the chief haematology BMS to ensure that specimens are:

- Located quickly
- Managed as per [NNUH Waste Policy](#)

7.6 NNUH Communication Cascade

The initial and subsequent communication regarding a suspected and confirmed VHF case should follow the communication cascade in the quick reference guide at the beginning of this guideline.

All risk assessments, contact logs and decisions to escalate and de-escalate precautions must be clearly documented and communicated to all relevant staff and departments in a timely and sensitive manner.

Staff must remain professional and maintain patient confidentiality at all times. They must also be sensitive to the high possibility for media attention and public anxiety.

The communications team will manage all external communications regarding any suspected or confirmed case in consultation with the DIPC and Infection Control Doctor on duty.

7.7 Patient Transport to HLIU

On confirmation of a VHF positive result, **the clinician in charge** will refer the patient to the consultant on duty at the HLIU. The HLIU team will arrange and coordinate the safe transfer of the patient from NNUH to the chosen HLIU. Once the patient is transferred, the room and all equipment inside, should be sealed off with hazard tape to prevent unauthorised access.

7.8 Terminal cleaning of potentially contaminated rooms

Appendix 10 of the [ACDP guidance](#) provides specific cleaning and decontamination advice including the need for hydrogen peroxide fumigation. This guidance states that the advice should also be sought from the local HLIU and local UKHSA team following any positive result.

7.9 Last offices, Post Mortem & Guidance for Funeral Staff

With reference to the [Trust guideline for Care after Death](#) some specific guidance is included in appendix 12 of the [ACDP guidance](#).

Post-mortem:

- A post-mortem examination on a person known to have died of VHF exposes staff to an unwarranted risk and should NOT be performed.
- Removal of pacemakers or implants should only be undertaken following discussion and agreement with the CCDC.

Body preparation/last offices:

- Hygienic preparation and embalming on a patient known to have died of VHF exposes staff to an unwarranted risk and should NOT be performed.
- Where the body of a confirmed or suspected VHF patient is not in an isolator, staff wearing suitable PPE should place the body in a double body bag. Absorbent material should be placed between each bag, and the bag sealed and disinfected with 1,000 ppm available chlorine or other appropriate disinfectant. The bag should be labelled as high risk of infection and placed in a robust coffin, which will need to have sealed joints.
- The coffin must be kept, by special prior arrangement with mortuary staff, in a separate and identified cold store unit to await prompt cremation or burial.

7.10 Public Health Management

The Consultant Virologist will notify the CCDC who may then convene and chair an Incident Management team (IMT) and the [Major and limited outbreaks of infection](#) policy should be referred to. All contacts, including healthcare workers, will be followed up and monitored by the UKHSA team for a period of 21 days from their final contact with the patient and their environment.

7.11 Management of Staff accidentally exposed to potentially infectious material

Staff should refer to the most up to date [WHWB guidance](#) for VHF via the VHF intranet page.

All staff who are entering the isolation facility to care for this patient must complete the [contact log](#), confirming whether PPE was worn and removed appropriately during their contact with the patient and their environment.

Any staff member who is exposed to, or sustains an injury with potential for exposure to, blood or body fluids in cases of highly possible or confirmed cases of VHF must:

- Take immediate first aid in line with current policy (e.g. needlestick injury)
- Wash the affected area soap and running water
- Irrigate mucous membranes with emergency wash bottles
- A DATIX form should be completed

All such exposures must be reported without delay to the Consultant in charge of the patients care, Workplace health and wellbeing team (WHWB), ICD and Consultant Virologist for further advice and monitoring if required.

If VHF is subsequently confirmed in the source patient, the exposed individual must be followed up as a High risk contact (Category 3), please refer to [WHWB guidance](#).

8. Clinical audit standards

To ensure that this document is compliant with the above standards, the following monitoring processes will be undertaken:

This guideline will be audited by reviewing the debrief and Serious incident reports of any positive case as this will trigger the major outbreak or incident of infection policy.

There guideline will also be tested through tabletop/live exercises to test organisational preparedness.

9. Summary of development and consultation process undertaken before registration and dissemination

This guideline was developed in collaboration with the NNUH Viral Haemorrhagic working group with draft versions circulated within that group for comments.

This version has been endorsed by the Clinical Guidelines Assessment Panel (CGAP).

This guideline was sent out for consultation to the following groups:

DIPC	IP&C Link Nurses
HICC members	Matrons and Senior Nurses
Clinical Directors	Ward Sisters/Charge Nurses
Workplace Health and Well-being	Health and Safety
Emergency, Preparedness, Resilience, Response (EPRR)	

10. References

Advisory Committee on Dangerous Pathogens (ACDP) (November 2015) [Management of Hazard Group 4 viral haemorrhagic fevers and similar human infectious diseases of high consequence:](#)

The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations (2009)

World Health Organisation (2014) [Infection prevention and control guidance for care of patients in health-care settings, with focus on Ebola.](#)

11. Appendices

Appendix 1 - VHF Enhanced Isolation Precautions

Appendix 2 - Setup prompt for patients requiring VHF enhanced precautions

<p style="text-align: center;">VHF ENHANCED ISOLATION PRECAUTIONS [in addition to standard precautions] For patients assessed as answering YES to 'A' and/or 'B' on the Viral haemorrhagic fever [VHF] risk assessment</p>

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Isolate The patient in a single room with en-suite facilities. Doors to room must be kept closed at all times. A **VHF Enhanced Isolation Poster** must be clearly displayed outside the room or on the door. Offer [while in isolation](#) patient information leaflet.

See - [Donning and Doffing PPE – NNUH guidance for VHF](#) and [Respiratory Mask Fit Test Procedure](#)

Staff entering the patient's room for either direct/indirect contact must be restricted to the minimum number required to safely care for the patient. An ongoing [staff contact log](#) to be commenced as soon as the patient arrives and to be continued for the duration of the patients stay or.

- Keep hands away from face • Limit surfaces touched
- Change gloves when torn or heavily contaminated
- Perform hand washing with soap and water followed by hand sanitiser
- Heavy duty gloves required as outer pair when cleaning and handling waste

Source Blood or body fluids, contaminated equipment and the environment

Mode of transmission Main routes of transmission of VHF infection are 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 a **respiratory** transmission risk from VHF patients.

Personal Protective Equipment [PPE] Staff entering the patient's room or the temporary waste hold must wear PPE to include: - Double gloves, fluid repellent suit with hood, long sleeved apron, visor, FFP3 respirator and over boots.

If the patient has confirmed VHF or extensive bruising, active bleeding, uncontrolled diarrhoea and/or uncontrolled vomiting then a plastic apron over the gown or suit must also be used. PPE should provide complete adequate coverage of all exposed skin, with sufficient integrity to prevent ingress or seepage of bulk liquids or airborne particles, under foreseeable conditions of usage; All PPE should be single use and disposed of immediately on removal in **double** clinical waste bags as Category A waste.

Buddy System Another staff member should be appointed as a PPE "buddy" to ensure appropriate and consistent use of PPE and the correct putting on and removal of the PPE. The buddy must direct the safe removal of PPE, ensuring removal without contaminating one's eyes, mucous membranes, or clothing with potentially infectious materials.

Hand Hygiene All staff must **decontaminate their hands** before putting on PPE. Hand washing with soap and water followed by hand sanitiser immediately after removing all PPE and between the steps of PPE removal if hands become contaminated, particularly before removing facial PPE. Refer to the [Hand Hygiene policy](#) in the IP&C Manual.

Waste disposal All waste generated from a patient at risk or confirmed of having VHF will be classed as category A waste and **must** remain segregated from other waste. It must be placed in **double** yellow clinical waste bags, and then placed into a rigid waste container with high-absorbent gel. Please refer to [Waste Management](#) in the Health & Safety Manual.

Body Fluids Dedicated en-suite toilet or commode may be used by patients at risk or confirmed of having VHF infection. Where commodes are employed, a dedicated commode should be used with a disposable bowl [bedpan]. For non-ambulant patients disposable bedpans/bottles should be used. Vomit bowls must also be disposable. After use, the contents of disposable bedpans, bottles and vomit bowls must be solidified with high-absorbency gel and receptacle and contents placed into a plastic bag, sealed and put in a waste bin with double yellow clinic waste bags.

Laundry All laundry (including disposable) generated from a patient suspected/confirmed of having VHF must be processed as category A waste and **must** remain segregated from other laundry and linen. Please refer to [Waste Management](#) in the Health & Safety Manual.

Environment Dedicated en-suite toilet or commode must be disinfected with hypochlorite containing 10,000ppm available chlorine at least daily, after each use, and upon patient discharge. Surfaces and equipment must be damp dusted daily and if contaminated using 1,000 ppm available chlorine. A terminal clean of a confirmed or deceased patient whose status is unknown will require enhanced disinfection including hydrogen peroxide fumigation (coordinated by IPCT/HLIU).

Medical and other Equipment Use disposable products where possible e.g. tourniquet, BP cuff. Reusable equipment should be dedicated for the patients use which once taken into the room must remain in the room e.g. BP machine, pulse oximeter, thermometer etc.

Nursing Notes are not to be taken into the room and **must** remain outside.

Socialising The patient **must** remain in the room. There will be visiting restrictions, please refer to specific policies.

ENHANCED ISOLATION PRECAUTIONS

- . **Foot Protection** (*boots or over boots*)
- . **Full length fluid repellent gown/Coveralls**
- . **Head cover** (*if using gown*)
- . **FFP3 mask** (*as per fit test*)
- . **Face Visor/Eye protection**
- . **Hand hygiene**
- . **Double Gloves**

PPE must be checked by the buddy prior to entering this room

PPE removal to also be supervised by your buddy in the dedicated removal area

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Setup prompt for patients requiring enhanced precautions due to suspected/confirmed VHF

The patient must be placed in a single room with an en-suite/ dedicated commode. A dedicated room/space is required to get dressed in PPE and another dedicated PPE removal area and a clear pathway through these areas should be adhered to.

Name of Ward:		Date:	Sign:
Patient's Room		Room Number:	
Please note that no equipment should leave the dedicated isolation area until either a negative VHF result has been received or the patient has been de-escalated by the consultant in charge in consultation with the Virology consultant. If the patient is transferred from this room, close and seal the room with hazard tape and do not remove anything without discussing with IP&C.			
1	Empty rooms/bed spaces of all non-essential items <i>Remember equipment etc. can be taken in after the patient has arrived but nothing will be able to leave the designated area until a negative VHF result has been received</i>		
2	Small waste bins small x 2 each with double yellow clinical waste bags inside <i>Category A waste must be double bagged. 2 bags also allows for the inner bag to be fastened whilst in the bin and the second bag to facilitating removing the waste from the bin</i>		
3	Ensure sufficient refillable items (soap, paper towels) are available.		
4	Enhanced precautions poster to be placed on the outside of the door. No exit sign on inside of this door (if ante-room available)		
5	Staff/visitor log to be available ready to commence as soon as patient arrives <i>Ambulance staff to be included. This should include Staff, what PPE was worn and checked</i>		
6	Dedicate equipment (where possible disposable) for this patient which once taken into the room must remain in the room e.g. commode, BP machine, pulse oximeter, thermometer, tourniquet etc.		
7	Mark entrance with hazard tape to signify the boundary (must have all PPE in place to enter past this point) and prepare screens to segregate staff route from clean to contaminated areas		
Donning area			
1	Set up the stores of clean PPE in an ordered manner (sizes and brands where applicable). Ensure PPE is stored away from the route the patient will take to come into their room to avoid risk of contamination.		
2	Posters to be placed in donning area (PPE order for donning & Fit check process)		
3	Prepare venepuncture equipment <i>To include empty small sharps bin which is filled with sharps and other venepuncture waste, which is then closed and LOCKED before placing in the waste bin</i>		
Doffing area		Room Number:	
Linen, food utensils, waste etc. must not join the main waste stream – manage all as Category A waste.			
1	Empty room leaving just a stool		
2	Posters to be placed in doffing area (Hand decontamination poster at sink, 2 x large PPE removal posters (1 – inside for staff, 1 – outside for buddy)), No entry sign on outside of ante-room door (if applicable).		
3	Ensure limb bins are prepared and solidifying sachets are available.		
4	Ensure waste bins are prepared (pre-double bagged) and positioned well in room		
5	Ensure sufficient refillable items (soap, paper towels) are available.		
6	Ensure Actichlor plus is prepared and stored in doffing area		
General Guidance			
1	Refer to “Trust Guideline for the Clinical and Laboratory Management of Patients with suspected Viral Haemorrhagic Fever”.		
2	Ensure sufficient supplies of bedpans, waste bags, limb bins, scrubs, PPE etc. are available.		

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3	Ensure Actichlor plus solutions are made up and available in 1,000ppm and 10,000ppm concentrations (ready to decant to take into room)	
4	Consider writing name of staff member of outside of coverall so patient can identify staff	
5	Patients belongings will need to be bagged up and must stay in the room	