

VIRAL HAEMORRHAGIC FEVER (VHF) - CHW

PRACTICE GUIDELINE[®]

DOCUMENT SUMMARY/KEY POINTS

- In the event that a patient presents meeting the criteria for *Increased Possibility of VHF* or *Confirmed VHF*, the Virologist / Clinical Microbiologist, Infectious Diseases physician and Infection Prevention and Control practitioner will form a VHF working group to implement this policy and address any issues or concerns.
- The Infection Prevention and Control Team must be contacted to advise and assist with the implementation of the Infection Prevention and Control precautions.
- Patients who meet the criteria for *Increased Possibility of VHF* or *Confirmed VHF* must be transferred to the designated isolation room on Variety ward as soon as possible for further management. Strict Infection Prevention and Control precautions, as outlined in this document, must be enforced.
- All personnel attending a child with suspected or confirmed VHF must wear full PPE as outlined in this document.
- Patient care equipment must be dedicated for the sole purpose of the patient for the duration of their admission.
- For patients who meet the criteria for *Increased Possibility of VHF* or *Confirmed VHF*, pathology specimens must only be collected following discussion with the Virologist / Clinical Microbiologist or Infectious Diseases physician on call.
- No initial pathology specimens from patients meeting the criteria for *Increased Possibility of VHF* or *Confirmed VHF* are to be processed at The Children's Hospital at Westmead. In this instance all specimens are to be packaged and transferred for processing at the Physical Containment Level 4 (PC4) Laboratory at Westmead Hospital as outlined in this document.
- This document complies with the **NSW Contingency Plan for Viral Haemorrhagic Fevers**: <http://www.health.nsw.gov.au/Infectious/alerts/Documents/NSW-VHF-Plan-Web.pdf>

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1 st January 2015	Review Period: 3 years
Team Leader:	Staff Specialist	Area/Dept: Infectious Disease & Microbiology

CHANGE SUMMARY

- Updated to be in line with Ministry of Health 2014 document.
- March 2016: Updated to be in line with the NSW Contingency Plan for Viral Haemorrhagic Fevers published by Health Protection NSW in December 2015.

READ ACKNOWLEDGEMENT

- Executive
- Public Relations Team
- Infectious Diseases, Microbiology and Infection Prevention and Control staff must read and acknowledge this document.
- Infectious Diseases Physicians
- After Hours Nurse Managers and Patient Flow Team
- Chief Resident Medical Officer
- Laboratory staff and Emergency, PICU and Variety Ward Medical and Nursing staff should read this document.
- All other clinical staff should be aware of this document.

This document reflects what is currently regarded as safe practice. However, as in any clinical situation, there may be factors which cannot be covered by a single set of guidelines. This document does not replace the need for the application of clinical judgement to each individual presentation.

Approved by:	SCHN Policy, Procedure and Guideline Committee	
Date Effective:	1 st January 2015	Review Period: 3 years
Team Leader:	Staff Specialist	Area/Dept: Infectious Disease & Microbiology

TABLE OF CONTENTS

1	Contact Numbers	5
1.1	The Children's Hospital at Westmead (CHW)	5
1.2	Westmead Hospital.....	5
1.3	NSW Health.....	6
2	Epidemiology of Viruses Associated with Viral Haemorrhagic Fever (VHF) in Humans	7
2.1	Introduction.....	7
2.2	Viruses Associated with Haemorrhagic Fever in Humans	7
2.3	Epidemiology	8
3	Command and Control	10
4	Patient Risk Assessment for VHF	11
5	CHW communication pathway	13
5.1	Communication Flow - Responsibilities Checklist	14
6	Responsibilities of Medical and Nursing Staff	15
6.1	VHF Working Group	15
6.2	Initial Duties of Medical & Nursing Staff for Patients that Present Directly to the Emergency Department	15
6.4	Collection of Specimens for Pathology.....	16
7	Personal Protective Equipment for the Management of VHF Patients	18
7.1.1	<i>Donning PPE</i>	19
7.1.2	<i>Doffing (removing) PPE Following a Short Exposure to a Clinically Stable Patient under Investigation for VHF [P2/N95 Mask & Face Shield]</i>	20
7.1.3	<i>PPE removal process with disposable powered air purifying respirator (PAPR) hood</i>	22
7.1.4	<i>PPE disposal or decontamination</i>	24
7.1.5	<i>Staff training on the use of PPE</i>	24
7.1.6	<i>Visitors and PPE</i>	24
7.1.7	<i>Other</i>	24
7.2	Staffing	24
7.2.1	<i>Staff Register / Log for VHF Contact</i>	24
7.2.2	<i>Staff Allocation</i>	25
7.2.3	<i>Laboratory Staff</i>	25
8	Contacts	26
8.1	Categories	26
8.1.1	<i>Surveillance & Physical Quarantine</i>	27
8.1.2	<i>Prophylaxis for contacts</i>	27
8.1.3	<i>Infection risk during convalescence:</i>	27
8.2	Management of Accidental Exposures.....	28
8.2.1	<i>Management of high risk exposures</i>	28
8.3	Body Fluid Spill	28
9	Transfer of a Patient to CHW who is Categorised as Increased Possibility of VHF or Confirmed VHF	30

9.1	Receiving a Patient.....	30
9.2	Room Preparation (Variety Ward Room 12).....	30
9.3	Patient Management – Isolation Room	30
9.4	Parents / Carers.....	31
9.5	Transport of Specimens from CHW to the CIDMLS PC4 Laboratory, Westmead Hospital	31
9.6	Washing the Patient.....	31
9.7	Food	31
9.8	Room Cleaning	32
9.9	Linen.....	33
9.10	Patient clothing	33
10	Waste Treatment and Disposal.....	34
10.1	Clinical Waste	34
10.2	Toilet Waste.....	35
10.3	Sharps Management	35
11	Death of a Patient	37
11.1	Following the Death of a Patient	37
11.1.1	<i>Post-mortem Examination</i>	<i>37</i>
11.1.2	<i>Removal and Transport of a Body to the Mortuary</i>	<i>37</i>
11.1.3	<i>Removal of bodies from bags or wrapping</i>	<i>38</i>
12	Guidelines for Specimens.....	39
12.1	Staff Testing	39
12.2	Patient Specimens.....	39
12.2.1	<i>Process for Specimen Collection.....</i>	<i>40</i>
Appendix 1: Supplies and Equipment		43
Supplies to be kept in or near the patient isolation room.....		43
Supplies to be kept in the Variety Ward store		43
Resuscitation equipment and trolley		43
Other equipment.....		44
Appendix 2: Ribavirin Regimens for Treatment and Prophylaxis.....		45
<i>Treatment.....</i>		<i>45</i>
<i>Prophylaxis (for high risk contacts)</i>		<i>45</i>
Appendix 3: CHW Patient Contact Log.....		46
Appendix 4: CHW Equipment Log.....		47
Appendix 5: Visitor Incident Sheet.....		48
Appendix 6: Staff Incident Sheet.....		50

1 Contact Numbers

1.1 The Children's Hospital at Westmead (CHW)

Position	Contact
Virologist	(02) 9845 3823 p6444
Microbiologist	(02) 9845 3279 p 7019 or (02) 9845 3267 p 6628
Paediatric Infectious Diseases (ID) Physician On Call	Via switch
Infection Prevention and Control (IP&C)	(02) 9845 2578 p6131/6655
Paediatric Intensive Consultant On call	Via switch
Nursing Unit Manager – Variety Club Ward	(02) 9845 1063 p 6355
Variety Club Ward Team Leader – After Hours (AH)	(02) 9845 1135 p 7084
Security	(02) 9845 2000 p 6377
Porters Emergency Department (ED) Cleaning Manager/ Leading Hand After Hours	p 6224 (02) 9845 3248 p 6073 (02) 9845 2902 p 6768
Public Relations	(02) 9845 3364
Bed Manager/ After Hours Nurse Manager (AHNM)	0408 479 385
Executive On-Call	Via switch

The CHW Switchboard can page or contact the relevant person.
 If any of the above numbers are unanswered, contact the CHW Switchboard on
 (02) 9845 0000.

1.2 Westmead Hospital

Position	Contact	
	Normal Hours	After Hours
Microbiology Consultant on call	(02) 9845 6255	(02) 9845 6609
Infectious Diseases Physician on call	(02) 9845 6609	(02) 9845 6609
ICU Shift Co-ordinator	(02) 9845 9454 or (02) 9845 9455	(02) 9845 9454 or (02) 9845 9455
Westmead Hospital Security	(02) 9845 5999	(02) 9845 5999

Westmead Hospital Switchboard can page or contact the relevant person.
 If any of the above numbers are unanswered, contact WMH switchboard on
 (02) 9845 6609 or (02) 9845 5555.

1.3 NSW Health

Position	Contact	
	Normal Hours	After Hours
Chief Quarantine Officer	(02) 9391 9195	0419 230 683
Western Sydney LHD Public Health Unit	(02) 9840 3603	(02) 9845 6609 or (02) 9845 5555 (Westmead Hospital Switchboard)
NSW HSFAC Emergency Contact	(02) 8396 5019	(02) 8396 5019
NSW Ambulance Controller	Contact via NSW HSFAC	Contact via NSW HSFAC

2 Epidemiology of Viruses Associated with Viral Haemorrhagic Fever (VHF) in Humans

2.1 Introduction

Viral haemorrhagic fevers (VHFs) are a group of diseases caused by several distinct families of viruses. Characteristically, the overall vascular system is damaged resulting in severe multisystem organ failure. 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.

2.2 Viruses Associated with Haemorrhagic Fever in Humans

Virus Family	Virus	Human Disease
<i>Arenaviridae</i>	<u>Old World arenaviruses</u> Lassa virus Lujo virus <u>New World arenaviruses</u> Junín virus Machupo virus Guanarito virus Sabia virus Chapare virus	Lassa fever Lujo haemorrhagic fever Argentinian haemorrhagic fever Bolivian haemorrhagic fever Venezuelan haemorrhagic fever Brazilian haemorrhagic fever Chapare haemorrhagic fever
<i>Filoviridae</i>	Marburg virus Ebola viruses: Zaire Ebola virus Sudan Ebola virus Bundibugyo Ebola virus	Marburg virus disease Ebola virus disease (EVD) Ebola virus disease (EVD) Ebola virus disease (EVD)
<i>Flaviviridae</i>	Yellow fever virus Omsk haemorrhagic fever virus Alkhurma haemorrhagic fever virus Kyasanur Forest Disease virus (Dengue viruses)	Yellow fever Omsk haemorrhagic fever Alkhurma haemorrhagic fever Kyasanur Forest disease (Dengue haemorrhagic fever)
<i>Bunyaviridae</i>	Crimean-Congo haemorrhagic fever virus Rift Valley fever virus Ngari virus <u>Genus <i>Hantavirus</i>:</u> Dobrava-Belgrade virus Hantaan virus Saaremaa virus Seoul virus Puumala virus	Crimean-Congo haemorrhagic fever Rift valley fever Viral haemorrhagic fever Haemorrhagic fever with renal syndrome (HFRS) Haemorrhagic fever with renal syndrome (HFRS) Haemorrhagic fever with renal syndrome (HFRS) Haemorrhagic fever with renal syndrome (HFRS) Haemorrhagic fever with renal syndrome (HFRS)

The following viruses (highlighted in yellow in the above table) are of particular concern due to the risk of importation and transmission to other people and/or vectors within Australia: Lassa fever virus, Crimean-Congo haemorrhagic fever virus, Marburg virus, the Ebola virus species and Yellow fever virus. All are subject to the Australian Quarantine Act with strict levels of isolation and containment required to prevent nosocomial transmission and laboratory-acquired infection.

2.3 Epidemiology

VHFs are life-threatening infections that are not indigenous to Australia but are distributed throughout most of the rest of the world. Human infection with the viruses that cause haemorrhagic fever syndromes is associated with travel to one of the following areas in the previous three weeks or contact with a diagnosed human case.



Figure 1: Geographic distribution of arenavirus haemorrhagic fevers
(Image from Smith DR, *et al. Antiviral Research* 2014; 112: 59-79)

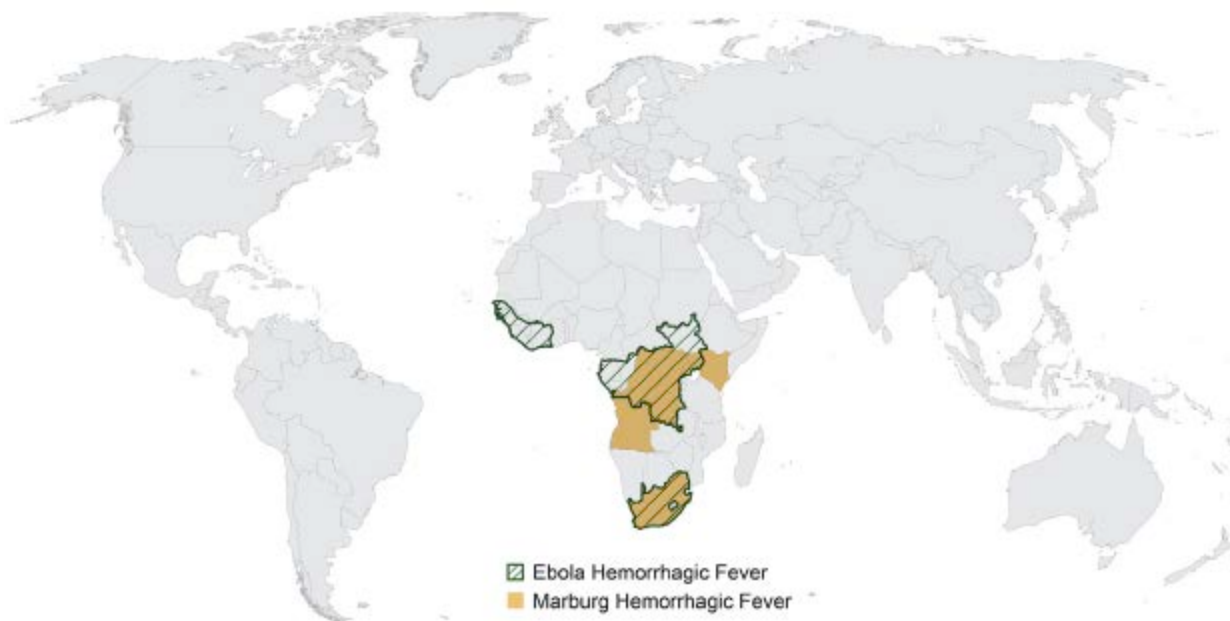


Figure 2: Geographic distribution of the filovirus haemorrhagic fevers
(Image from Smith DR, *et al. Antiviral Research* 2014; 112: 59-79)

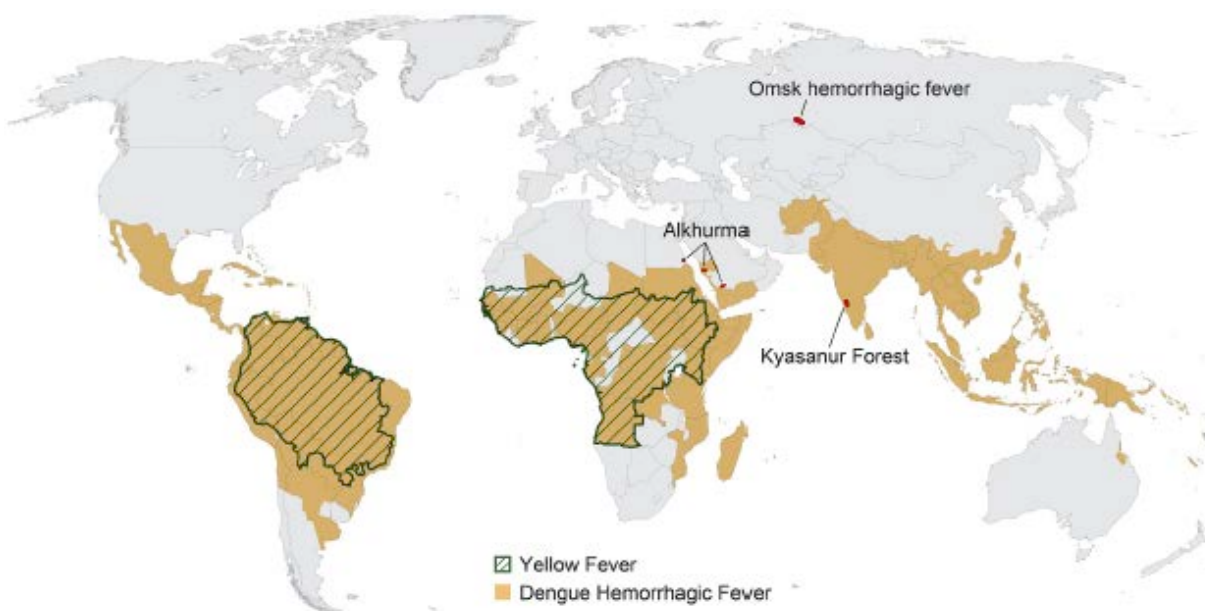


Figure 3: Geographic distribution of the flavivirus haemorrhagic fevers
(Image from Smith DR, *et al. Antiviral Research* 2014; 112: 59-79)

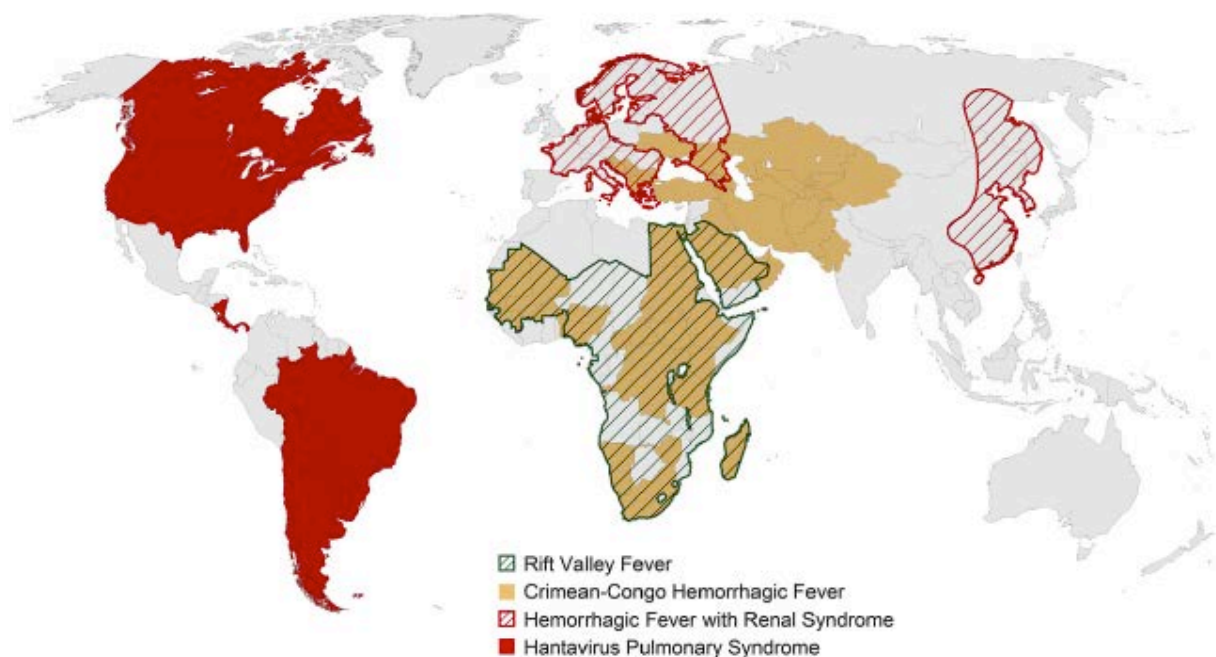


Figure 4: Geographic distribution of the bunyavirus haemorrhagic fevers
(Image from Smith DR, *et al. Antiviral Research* 2014; 112: 59-79)

3 Command and Control

- Responsibility for implementation of this policy is the direct responsibility of the working group as outlined in [Section 6](#). The working group will be chaired by the Virologist or ID physician on-call.
- Notification of relevant people will occur as per the communication pathway outlined in [Section 5](#).
- The clinical line managers will take advice and direction from Infection Prevention and Control staff and the Virologist / Clinical Microbiologist / ID physician.
- Viral Haemorrhagic Fever (VHF) is mandated as a reportable infection to Public Health.
- A Reportable Incident Brief (RIB) will be sent to NSW Department of Health on any potential media interests or problems. This is currently the responsibility of the Infectious Diseases physician on call; they will provide a report to the Chief Executive via the Director of Clinical Governance.

4 Patient Risk Assessment for VHF

The risk of VHF is increased in people that live or have travelled to an endemic region (as defined in Section 2.3). However, the risk of infection remains low unless there has been direct exposure to the bodily fluids of an infected person or animal (alive or dead) or in some cases, to bites by an arthropod vector (e.g. Yellow fever, Crimean-Congo haemorrhagic fever virus).

VHF Risk Categories:

Patients can be risk stratified based on the presence of epidemiological, clinical and/or laboratory evidence of VHF infection.

1. VHF Highly Unlikely:

Patients are in this category if they **do not** meet **one or both** of the following criteria:

- a) Presence of a fever or history of fever in the past 24 hours.
- b) Returned from a VHF endemic region within 21 days prior to illness onset OR report having had contact with a known or highly suspected case of VHF within 21 days of illness onset.

2. No Known Exposure:

Patients are in this category if they meet the following criteria:

- a) Presence of a fever or history of fever in the past 24 hours.
- b) Returned from a VHF endemic region within 21 days prior to illness onset OR report having had contact with a known or highly suspected case of VHF within 21 days of illness onset.

But they **do not** meet any of the epidemiological exposure risk criteria described under the *Increased Probability of VHF* category.

3. Increased Possibility of VHF

Patients are in this category if they meet the following criteria:

- a) Presence of a fever or history of fever in the past 24 hours.
- b) Returned from a VHF endemic region within 21 days prior to illness onset OR report having had contact with a known or highly suspected case of VHF within 21 days of illness onset.

And they meet one of the following **epidemiological exposure risk criteria:**

- Come into contact with body fluids or have handled clinical specimens (e.g. blood, urine faeces, tissue) from an individual or animal known or strongly suspected to have VHF.
- Participated in a funeral which involved direct contact with the deceased body.
- Lived or worked in basic rural conditions in a Lassa Fever endemic area.

- Contact with primates or bats in a Marburg or Ebola endemic area, including visiting bat infected caves or mines.
- Sustained a tick bite OR crushed a tick with their bare hands OR had close involvement with animal slaughter in an area where Crimean-Congo Haemorrhagic Fever is endemic.
- Have been assessed by an Infectious Diseases physician and/or Public Health unit as having increased possibility of VHF.

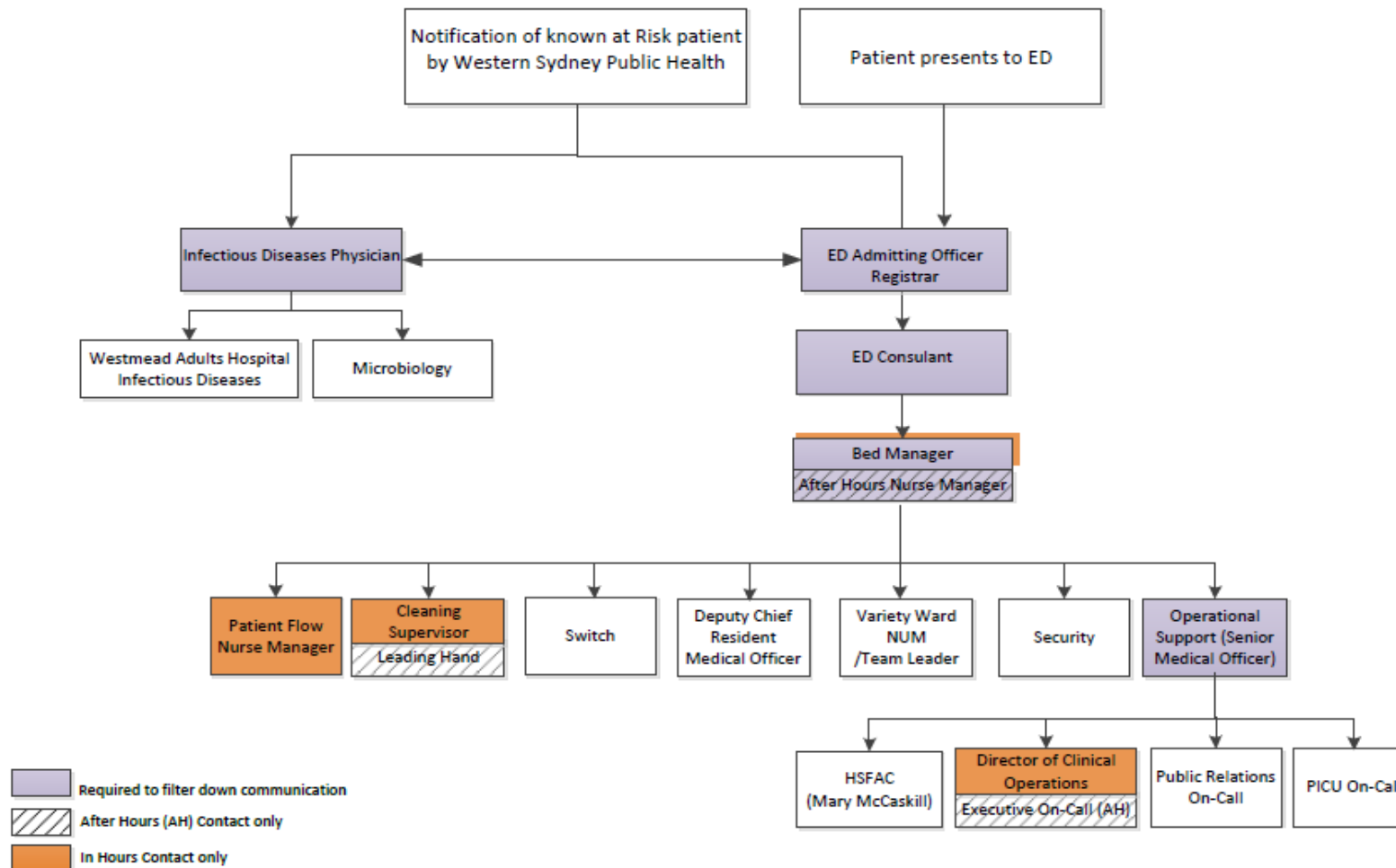
4. Confirmed VHF

Patients with fever are categorised as having *Confirmed VHF* if they have a positive VHF laboratory test result from a VHF reference laboratory.

5 CHW communication pathway

Refer to Section 1.1 for Contact names and numbers

SCHN INITIAL NOTIFICATION PROCESS OVERVIEW EBOLA VIRUS



5.1 Communication Flow - Responsibilities Checklist

In addition to the notification process overview; the following roles are required to undertake the below responsibilities

Bed Manager (in-hours) / After Hours Nurse Manager (after-hours)

- Page Team Leaders of Commercial Travellers/ Edger Stephens/ Clancy/ Camperdown Ward
TEXT 'Rapid decanting of VW commenced. Please send 1 RN to VW for transfers now'
- Co-ordinate Patient Transfer
- Disaster Page Alert (via switch)
TEXT 'Disaster Alert: Infectious patient transfer in place - restrict all movements until further notice'
- Stand down Alert once transfer complete

Patient Flow Nurse Manager (in-hours)

- Notify Medical Clinical Program Director (All hours)
- Notify Critical Care Clinical Program Director (All hours)

Variety Ward Nursing Unit Manager (in-hours)/ Team Leader (after-hours)

- Notify Nurse Manager

Deputy Chief Resident Medical Officer

- Notify JMOs On-Call
- Notify Chief Resident Medical Officer
- Review requirements to re-deploy JMOs in house

HSFAC CHW Representative

- Notify Western Sydney HSFAC

Switch

- Notify Associate Director Corporate Services

Director of Clinical Operations (in-hours)/ Executive On-call (after-hours)

- Notify SCHN Chief Executive

Public Relations On-Call

- MoH On-Call Media Officer

Cleaning Supervisor (in-hours) / Leading Hand (after-hours)

- Contact Porter (to assist with transfer of patient)
- Contact cleaner (if advised of any spills)

6 Responsibilities of Medical and Nursing Staff

6.1 VHF Working Group

In the event that a patient presents meeting the criteria for *Increased Possibility of VHF* or *Confirmed VHF*, the Virologist / Clinical Microbiologist, Infectious Diseases physician on call and Infection Prevention and Control practitioner will form a VHF working group consisting of key staff involved in the implementation of this protocol.

The Working Group must include the following hospital personnel:

- Paediatric Infectious Diseases Physician
- Paediatric Virologist or Microbiologist
- Infection Prevention and Control CNC and/or CNS
- NUM of Variety, PICU and Emergency (or nominated representative)
- Director of Clinical Operations (or nominated representative)
- PICU Medical Director (or nominated representative)
- Patient Flow Nurse Manager (or nominated representative)
- Disaster Co-ordinator
- Public Relations Representative
- Corporate Services Representatives (i.e. Security Manager, Cleaning Manager, Linen services Manager)
- CRMO

6.2 Initial Duties of Medical & Nursing Staff for Patients that Present Directly to the Emergency Department

- Ensure appropriate Infection Prevention and Control precautions are maintained from presentation.
- If the patient is febrile or has a history of fever in the past 24 hours AND a parent/carer reports returning from a VHF endemic region in the past 21 days OR having contact with a confirmed or highly suspected case of VHF within the past 21 days:
 - The patient should immediately be placed in a single room with the door closed on identification of the potential VHF risk.
 - If possible, the patient should be provided with a surgical mask (+/- vomit bag if vomiting).
 - All staff members that have clinical contact with the patient should put on VHF Personal Protective Equipment relevant to their working area (as per Section 7.1): available in the VHF/disaster kits storeroom in Variety Ward and Emergency.
- Ensure the patient is clinically stable.

- Perform a patient risk assessment for VHF:
 - The patient risk assessment must be led by a senior member of the medical team (i.e. Emergency Medicine physician or admitting team consultant) and involve an Infectious Diseases physician &/or Clinical Microbiologist.
 - Epidemiological exposure risks for VHF (as outlined in Section 4) should be addressed here.
 - The Public Health Unit should be consulted early in the assessment process.
- If the patient is assessed as meeting the criteria (as per Section 4) for *Increased Possibility of VHF* or *Confirmed VHF*, the attending JMO and nursing staff should be instructed to:
 - Notify the Bed Manager / After Hours Nurse Manager to initiate the communication pathway as outlined in Section 5.
 - Initiate a patient contact log ([Appendix 3](#)) that lists all persons who have come into contact with the patient at any point from the time of arrival in hospital.
- Through the Bed Manager/After Hours Nurse Manager, the Patient Flow Manager should be notified to arrange immediate preparation of room 12 in Variety ward.

6.3 Transfer of the Patient to Variety Ward

For patients meeting the criteria for *Increased Possibility of VHF* or *Confirmed VHF*, transfer of the patient to Variety Ward should occur as soon as possible. The following process should be followed for patient transfer:

- i. Contact Security (Ext. 52000) to clear a route.
- ii. Ensure that the Bed Manager / After Hours Nurse Manager is informed of the pending transfer so that the disaster page alert can be actioned.
- iii. Ensure the NUM and/or team leader of Variety ward has been notified of the impending transfer.
- iv. Ensure the patient is wearing a surgical mask during transport (if possible).
- v. Transport in the presence of authorised personnel **only** (including in the lift).
- vi. If blood or secretions are spilled on route, quarantine the lift or other area until cleaned by trained staff.

6.4 Collection of Specimens for Pathology

- Specimens for VHF testing must only be collected following discussion between the on call ID physician, Public Health Unit, the CHW Virologist/Clinical Microbiologist and the Clinical Microbiologist on call at CIDMLS-ICPMR (Westmead Hospital).
- The designated trained medical officer will be notified of the decision to collect samples for testing and which samples to collect by the ID physician/Virologist/Clinical Microbiologist.

- All specimens will be processed in the Physical Containment Level 4 (PC4) Laboratory at Westmead Hospital.
- All samples should be packaged as per protocol and be delivered directly to the PC4 Laboratory at Westmead Hospital by a member of staff (see Section 12.2).
- Samples must **NOT** be sent to the CHW Microbiology laboratory in an automated transfer system (such as the vacuum tube) due the risk of sample breakage.

Viral Haemorrhagic Fever – Supporting Information for Medical Staff

DO:

1. Stay calm, don't rush and ask for advice at any time if you are concerned
2. Remember the child may be scared seeing everyone in PPE
3. Have a light snack and go to the toilet before donning PPE
4. Take a detailed history including:
 - a. Presenting symptoms
 - b. Travel history and sick contacts
 - c. Past medical history
 - d. Allergies, medications and immunisation history
5. Review observations carefully
6. Examine the child but avoid certain procedures (below)
7. Discuss the child's clinical presentation with the ID consultant
8. Consider other causes for the clinical presentation including malaria and other serious bacterial infections (SBI)
9. Undertake blood investigations as directed by ID consultant using the documented procedure
10. Consider commencement of empiric antibiotics for SBI in discussion with ID consultant if it cannot be excluded

DO NOT:

1. Try to use a traditional stethoscope, it will disturb the PPE
2. Use a tongue depressor as you risk inducing gag and vomiting
3. Attempt fundoscopy as very challenging in PPE and unlikely to add to clinical assessment over other clinical signs
4. Perform a rectal examination
5. Perform pinprick pain sensation testing
6. Order an ECG, CXR or other mobile imaging without approval from the ID consultant or Intensive Care Consultant
7. Take VHF bloods whilst in the ED, only to be performed in Variety Ward.

7 Personal Protective Equipment for the Management of VHF Patients

7.1 Personal Protective Equipment

ALL Staff MUST WEAR PPE at all times when in patient contact areas

<p>Initial assessment of a febrile patient that has returned from an endemic region in the past 21 days OR assessment of a patient meeting the criteria for <i>Increased Probability of VHF</i>: Short term exposure</p> <p>Includes only:</p> <ul style="list-style-type: none"> Stable patient with no active bleeding, vomiting or diarrhoea 	<ul style="list-style-type: none"> Surgical scrubs Impervious protective gown OR Impervious one piece coverall suit (no integrated hood) Disposable full face shield P2/N95 mask Disposable long boot covers Gloves – 2 pairs including 1 pair of long chemotherapy gloves
<p>Patient meeting the criteria for <i>Increased Probability of VHF</i> or <i>Confirmed VHF</i>: Longer exposure &/or high risk of aerosol generation</p> <p>Includes:</p> <ul style="list-style-type: none"> Potential aerosol-or splash-inducing procedures* Patient is unstable or has active bleeding, vomiting &/or diarrhoea Daily patient care of confirmed VHF patient Cleaning, waste management and spill containment 	<ul style="list-style-type: none"> Surgical scrubs Impervious protective gown OR Impervious one piece coverall suit Long (mid-calf length) impervious apron over gown or coverall suit Respirator hood with full face shield <u>Optional</u>: P2/N95 mask under respirator hood for high risk procedures Shoe covers Disposable long boot covers Gloves – 2 pairs including 1 pair of long chemotherapy gloves

Recommended footwear: comfortable (to minimise blistering) enclosed shoes with low heel. Shoes must be washable with 70% alcohol and preferably without laces.

High risk procedures

Potential aerosol or splash-inducing procedures include:

- bronchoscopy;
- airway suctioning;
- positive pressure ventilation via face mask;
- central line insertion;
- diagnostic sputum induction;
- aerosolised or nebulised medication administration.

7.1.1 PPE

This guidance is based on three key principles:

- All health care workers that are likely to work with patients with suspected or confirmed VHF must undergo training and are practiced and assessed as competent in donning of PPE in a systematic manner.
- There must be no skin exposure when PPE is worn
- All workers are supervised by a trained observer who monitors each worker donning on and taking off PPE.

PPE Donning Process:

(to be read in conjunction with PPE Safe Work Practice document)

i. Theatre Scrubs

- HCWs should first change into theatre scrubs and dedicated washable footwear.
- No personal items (e.g. jewellery, mobile phones and pagers) should be brought into the patient room.
- Hair should be tied back.

ii. Disposable Boot Covers

- Should be put on first so that they are under the pants leg of the coverall suit to prevent pooling of bodily fluids.

iii. Gloves

- Hands are to be washed with Chlorhexidine handwash (0.5%) prior to donning gloves.
- Double gloves should be used for all clinical contacts.
- The inner gloves should be put on prior to the protective gown or coverall suit.
- A second pair of gloves (long chemotherapy gloves with extended cuffs) should be put on after the gown or coverall suit with the glove cuffs pulled over the sleeves.

iv. Gown or Coverall Suit

- A disposable impervious long sleeve gown or coverall suit should be worn at all times. After use it is disposed into a designated clinical waste bag.

v. P2/N95 Masks or Respirator Hoods

- An impermeable (particulate) P2/N95 high filtration mask is to be used for short-term exposures to clinically stable patients under investigation for VHF.
- After putting on a P2/N95 mask a seal check should be performed.
- A disposable powered air purifying respirator (PAPR) hood should be worn for longer exposures, contact with unstable patients and all aerosol-generating procedures including:

- Endotracheal intubation;
- Bronchoscopy;
- Airway suctioning;
- Positive pressure ventilation via face mask;
- Mechanical Ventilation
- Central line insertion;
- Diagnostic sputum induction.

vi. Outer Apron (if used)

- Use is advised for longer exposures, contact with unstable patients and all aerosol-generating procedures to provide an additional layer of protection of the front of the body.

vii. Full Face Shield (if used)

- May already be incorporated into the respirator hood (if used).
- Separate full face shields should be put on over the P2/N95 mask for short-term exposures to clinically stable patients under investigation for VHF.

7.1.2 Doffing (removing) PPE Following a Short Exposure to a Clinically Stable Patient under Investigation for VHF [P2/N95 Mask & Face Shield]

(to be read in conjunction with PPE Safe Work Practice document)

Step 1	Inspect the PPE to assess for visible contamination, cuts, or tears before starting to remove. If any PPE is visibly contaminated, then disinfect area using a hospital grade disinfectant wipe and discard wipe into a designated waste container.
Step 2	Disinfect outer pair of gloves with alcohol-based hand rub and allow to dry.
Step 3	Remove waterproof apron (if worn) <ul style="list-style-type: none"> ● Untie apron from the back ● Grasp the neck of the apron and remove over the head downwards ● Slowly roll the apron down from the inside out, touching only the inside surface ● Discard into a designated waste container
Step 4	Again inspect remaining PPE to assess for visible contamination or cuts or tears. If visibly contaminated, disinfect using a hospital grade disinfectant wipe and discard wipe into a waste container.
Step 5	Disinfect outer pair of gloves with alcohol-based hand rub and allow to dry.
Step 6	Remove the outer gloves <ul style="list-style-type: none"> ● Grasp outside of glove with opposite gloved hand; peel off ● Hold removed glove in double-gloved hand ● Slide fingers of under-gloved hand under the opposite glove cuff at the forearm ● Peel glove off over previously removed glove. ● Discard gloves into a designated waste container
Step 7	Inspect inner pair of gloves for visible contamination or tears then disinfect with alcohol-based hand rub and allow them to dry.
Step 8	Remove protective face shield

	<ul style="list-style-type: none"> Assume that the outside of the face shield is contaminated To remove, slide the band over the head and remove shield downwards away from the face Place into a designated waste container
Step 9	Disinfect inner pair of gloves with alcohol-based hand rub and allow them to dry.
Step 10	<p>Remove the impervious long sleeve gown or coverall suit.</p> <p>For gowns:</p> <ul style="list-style-type: none"> Assume that the gown front and sleeves are contaminated Unfasten ties Avoid contact with scrubs underneath Pull away from the body, touching the inside of the gown only Roll gown inside out <p>For coverall suits:</p> <ul style="list-style-type: none"> Unzip or unfasten coverall completely Roll coverall down and inside out Avoid contact with scrubs underneath Touch the inside of the coverall only <p>Fold or roll the gown or coverall into a bundle and discard into a designated waste container.</p>
Step 11	Disinfect inner pair of gloves with alcohol-based hand rub and allow them to dry.
Step 12	<p>While sitting down begin removal of boot covers:</p> <ul style="list-style-type: none"> Roll the boot covers down from the inside out to the ankles and pull off over foot. Take care not to contaminate scrub pants legs Discard boot covers into a designated waste container
Step 13	Disinfect inner pair of gloves with alcohol-based hand rub and allow them to dry.
Step 14	<p>Remove the inner gloves</p> <ul style="list-style-type: none"> Grasp outside of glove with opposite gloved hand; peel off Hold removed glove in gloved hand Slide fingers of un-gloved hand under remaining glove at wrist Peel glove off over the previously glove Discard gloves into a designated waste container
Step 15	Perform hand hygiene with alcohol-based hand rub.
Step 16	Don a new pair of gloves.
Step 17	<p>Remove P2/N95 face mask</p> <ul style="list-style-type: none"> Assume that the front of mask is contaminated Tilt your head down Grasp first the bottom, then top elastic strap or tie, pull over the head and remove downwards and away from the face without touching the front of the mask Discard P2/N95 mask into a designated waste container
Step 18	Disinfect gloves with alcohol-based hand rub and allow them to dry.
Step 19	Disinfect washable shoes using a hospital grade disinfectant wipe and discard wipe into a designated waste container.
Step 20	Disinfect gloves with alcohol-based hand rub and allow them to dry.
Step 21	<p>Remove the gloves:</p> <ul style="list-style-type: none"> Grasp outside of glove with opposite gloved hand; peel off Hold removed glove in gloved hand

	<ul style="list-style-type: none"> • Slide fingers of un-gloved hand under remaining glove at wrist • Peel glove off over previously removed glove. • Discard gloves into a designated waste container
Step 22	Perform hand hygiene with soap and water or alcohol-based hand rub including the forearms up to the elbows
Step 23	HCWs should then proceed to the showering area <ul style="list-style-type: none"> • Use a neutral soap • Change into fresh scrubs.
Step 24	Discard scrubs into routine linen for processing if not contaminated. Contaminated scrubs should be disposed of as clinical waste in a designated waste container.

7.1.3 PPE removal process with disposable powered air purifying respirator (PAPR) hood

Step 1	Inspect the PPE to assess for visible contamination, cuts, or tears before starting to remove. If any PPE is visibly contaminated, then disinfect area using a hospital grade disinfectant wipe and discard wipe into a designated waste container.
Step 2	Disinfect outer pair of gloves with alcohol-based hand rub and allow them to dry.
Step 3	Remove waterproof apron (if worn) <ul style="list-style-type: none"> • Untie apron from the back • Grasp the neck of the apron and remove over the head downwards • Slowly roll the apron down from the inside out, touching only the inside surface Discard into a designated waste container
Step 4	Again inspect remaining PPE to assess for visible contamination or cuts or tears. If visibly contaminated, disinfect using a hospital grade disinfectant wipe and discard wipe into a waste container.
Step 5	Disinfect outer pair of gloves with alcohol-based hand rub and allow them to dry.
Step 6	Remove the outer gloves <ul style="list-style-type: none"> • Grasp outside of glove with opposite gloved hand; peel off • Hold removed glove in double-gloved hand • Slide fingers of under-gloved hand under the opposite glove cuff at the forearm • Peel glove off over previously removed glove • Discard gloves into a designated waste container
Step 7	Inspect inner pair of gloves for visible contamination or tears then disinfect with alcohol-based hand rub and allow them to dry.
Step 8	Remove PAPR hood with external belt-mounted blower (if a PAPR with self-contained blower in the helmet is used, wait until later to remove): <ul style="list-style-type: none"> • Remove the headpiece • This step might require assistance from the trained observer while still connected to the belt-mounted blower and filter • Disinfect inner gloves with alcohol-based hand rub • Remove the belt-mounted blower unit, tubing, the belt and battery unit • Disinfect inner gloves with alcohol-based hand rub

	<ul style="list-style-type: none"> Place all reusable PAPR components in an area or container designated for the collection of PAPR components for disinfection
Step 9	Disinfect inner pair of gloves with alcohol-based hand rub and allow them to dry.
Step 10	<p>Remove the impervious long sleeve gown or coverall suit.</p> <p>For gowns:</p> <ul style="list-style-type: none"> Assume that the gown front and sleeves are contaminated Unfasten ties Avoid contact with scrubs underneath Pull away from the body, touching the inside of the gown only Roll gown inside out <p>For coverall suits:</p> <ul style="list-style-type: none"> Unzip or unfasten coverall completely Roll coverall down and inside out Avoid contact with scrubs underneath Touch the inside of the coverall only <p>Fold or roll the gown or coverall into a bundle and discard into a designated waste container.</p>
Step 11	Disinfect inner pair of gloves with alcohol-based hand rub and allow them to dry.
Step 12	<p>While sitting down begin removal of boot covers:</p> <ul style="list-style-type: none"> Roll the boot covers down from the inside out to the ankles and pull off over foot. Take care not to contaminate scrub pants legs Discard boot covers into a designated waste container
Step 13	Disinfect inner pair of gloves with alcohol-based hand rub and allow them to dry.
Step 14	Disinfect washable shoes using a hospital grade disinfectant wipe and discard wipe into a designated waste container.
Step 15	Disinfect inner pair of gloves with alcohol-based hand rub and allow them to dry.
Step 16	<p>If a PAPR with self-contained blower in the helmet is used, remove components here:</p> <ul style="list-style-type: none"> Remove and discard the disposable hood into a designated waste container Disinfect inner pair of gloves with alcohol-based hand rub and allow them to dry Remove the helmet, belt and battery unit. This step might require assistance from the trained observer Place all reusable PAPR components in an area or container designated for the collection of PAPR components for disinfection
Step 17	<p>Disinfect & remove the inner gloves</p> <ul style="list-style-type: none"> Disinfect inner pair of gloves with alcohol-based hand rub and allow them to dry Grasp outside of glove with opposite gloved hand; peel off Hold removed glove in gloved hand Slide fingers of un-gloved hand under remaining glove at wrist Peel glove off over the previously glove Discard gloves into a designated waste container
Step 18	Perform hand hygiene with soap and water or alcohol-based hand rub including the forearms up to the elbows

Step 19	HCWs should then proceed to the showering area <ul style="list-style-type: none"> • Use a neutral soap • Change into fresh scrubs.
Step 20	Discard scrubs into routine linen for processing if not contaminated. Contaminated scrubs should be disposed of as clinical waste in a designated waste container.

It is recommended that staff shower with soap and wash their hair with shampoo after prolonged contact with a patient and don fresh clothes/surgical scrubs at the end of a shift.

7.1.4 PPE disposal or decontamination

Following removal, disposable PPE will need to be placed into suitable disposal receptacles and treated as clinical infectious waste. Surgical scrubs are disposed of in routine linen if not contaminated with any blood or body fluid. If surgical scrubs are contaminated, they should be treated as clinical infectious waste and disposed of into a designated waste container.

7.1.5 Staff training on the use of PPE

Staff should be trained in donning and doffing PPE, especially in regard to the correct sequence to avoid cross contamination. Staff should also be able to perform a fit check after putting on a respirator. Staff must receive clear instructions on when PPE is to be used and how it is to be disposed of or, as appropriate, decontaminated, maintained and stored. This training should be held regularly.

7.1.6 Visitors and PPE

Visitors should be strongly discouraged from visiting the patient while in hospital. In general, only one parent or carer should be within the patient room at any given time. If it is necessary to have a visitor, they must be restricted to well adults. No immunocompromised individuals or children are able to visit.

Visitors must be trained in the correct use of PPE and wear the same PPE as staff members. Visitors should be monitored to ensure they maintain PPE for the duration of their visit and then be guided on how to safely remove PPE as outlined in Section 7.1.2 or 7.1.3, as appropriate.

7.1.7 Other

Staff must not eat or drink in the isolation room designated for VHF patients. Variety Ward has designated staff toilets and a designated area for staff to have their meal breaks.

7.2 Staffing

7.2.1 Staff Register / Log for VHF Contact

All staff members that care for any suspected or confirmed VHF patient must sign and fill out the register. The Nursing Unit Manager or delegate of Variety Ward is responsible for maintenance of this staff record during the full admission of the patient. These records are to be kept after discharge or death of the patient.

7.2.2 Staff Allocation

- Staffing for the care of this patient is the responsibility of the Variety Ward Nursing Unit Manager (NUM). Staff members are to be rostered for six to eight hour shifts only, to reduce fatigue.
- All staff must be orientated to the ward and have read and understand this policy before attending to the patient. IP&C staff will be available to talk to staff members when needed.
- Staff cannot be allocated to other patients during the time of caring for a patient with suspected or confirmed VHF
- Staff members that are to be excluded from providing care include pregnant women, immunosuppressed staff or those whom have open wounds.

7.2.3 Laboratory Staff

- No clinical specimens are to be processed in the CHW laboratory.
- Specimens should go directly to the Physical Containment Level 4 (PC4) Laboratory at CIDMLS, Westmead Hospital, in the approved transport container.
- The process for specimen packaging and transport to Westmead Hospital is outlined in Section 12.2.1.
- Refer to the "Viral Haemorrhagic Fevers – Laboratory Protocol", copy available in the Virology Department in CHW.

8 Contacts

8.1 Categories

The identification, management and monitoring of contacts of *Increased Possibility of VHF* and *Confirmed VHF* cases is the responsibility of the local Public Health Unit with support from multiple departments, including the hospital Infection Prevention & Control team. Each potential contact should be **individually assessed for risk of exposure and categorised** according to the table below:

Risk category	Description
Unclear	Not sure of contact. Exposure risk level yet to be established.
No risk	No casual, low risk or high risk contacts.
Casual contact risk	Near vicinity of a VHF case or travel to an area with widespread VHF transmission with no known high or low risk exposures.
Low risk	Direct contact with the patient (e.g. routine medical/nursing care, handling of clinical / laboratory specimens, but did not handle body fluids or wore appropriate PPE.
High risk	Unprotected exposure of skin or mucous membranes to potentially infectious blood or body fluids, including on clothing and bedding. This includes: <ul style="list-style-type: none"> • Unprotected handling of clinical/laboratory specimens; • Mucosal exposure to splashes; • Needle stick or other penetrating injury; • Kissing and/or sexual contact.

Contacts should be managed as outlined in the table below:

Risk category	Action and Advice
Unclear	<ul style="list-style-type: none"> • Carefully interview and conduct risk assessment to reclassify; • Provide PHU surveillance officer contact details should they recall any contact; • Provide general factsheet.
No risk	<ul style="list-style-type: none"> • Reassure about likely absence of risk; • Provide general factsheet.
Casual contact risk	<ul style="list-style-type: none"> • Reassure about very low risk; • Institute regular passive monitoring of temperature and other disease compatible symptoms for 21 days from last exposure; • Patient to report to PHU if febrile or symptomatic; • Provide casual contact factsheet.

Low risk	<ul style="list-style-type: none"> • Reassure about low risk; • Institute daily passive monitoring of temperature and other disease compatible symptoms for 21 days from last exposure; • Patient to report to PHU if temperature is elevated or symptomatic; • Provide low risk contact factsheet.
High risk	<ul style="list-style-type: none"> • Inform about risks; • Institute daily active monitoring of temperature and other disease compatible symptoms for 21 days from last exposure; • The PHU surveillance officer to initiate contact by 12 noon each day; further evaluation as necessary. • Inform PHU officer urgently if symptoms develop; • Provide high risk contact factsheet.

8.1.1 Surveillance & Physical Quarantine

Hospital Infection Prevention and Control practitioners or Work Health & Safety officers may be asked to undertake active monitoring of healthcare workers and/or other hospital contacts on behalf of the local PHU.

Physical quarantine by self-isolation is not routinely required for asymptomatic contacts in any risk category. Public health officers will conduct a detailed risk assessment and provide specific advice for each individual case.

8.1.2 Prophylaxis for contacts

Ribavirin should be prescribed by the Virologist / Infectious Diseases physician on call as post exposure prophylaxis for high risk contacts of patients with arenavirus infections, particularly Lassa fever. Experience is more limited with Crimean-Congo Haemorrhagic Fever, but post exposure prophylaxis with ribavirin is also recommended for high-risk contacts. For prophylaxis, Ribavirin is given orally at a dose of 500mg q6h for 7 days (see [Appendix 2](#)).

8.1.3 Infection risk during convalescence:

Convalescent patients and their contacts should be warned that some of the causative agents of VHF might be present for many weeks in semen and the eye (as demonstrated with Marburg and Ebola viruses) and in urine (as occurs sometimes with Lassa virus). Convalescent patients must be meticulous about personal hygiene. While data is limited regarding infectivity during the convalescent period, patients should be advised to abstain from sexual intercourse until genital fluids have been shown to be free of the virus for a minimum of 3 months.

8.2 Management of Accidental Exposures

The procedures outlined below pertain to the management of accidental exposures of healthcare workers to blood or body fluids from patients categorised as *Increased Possibility of VHF* or *Confirmed VHF*.

8.2.1 Management of high risk exposures

Accidental exposures that need to be dealt with promptly are:

Type of blood or body fluids exposure	Action
Percutaneous injury (e.g. Needle-stick injury)	Immediately wash the affected part with soap and water [#] .
Contact with broken skin	Immediately wash the affected part with soap and water [#] .
Contact with mucous membranes (i.e. eyes, nose, or mouth)	Immediately rinse the area with water or saline. If blood or other body substances get in the mouth, spit them out and then rinse the mouth with water several times

[#] Where water is not available use of a non-water cleanser or antiseptic should replace the use of soap and water for washing cuts or punctures of the skin.

The individual needs to be referred urgently to a Virologist, Clinical Microbiologist or Infectious Diseases physician. Management following an exposure to blood or bodily fluid should be consistent with the NSW Health policy directive PD2005_311 *HIV, Hepatitis B and Hepatitis C – Management of Health Care Workers Potentially Exposed*.

The healthcare worker will be classified as a high risk contact and quarantine surveillance with active monitoring should be commenced as outlined in Section 8.1.

In all cases, an IIMS report will need to be made and the incident recorded in the patient's clinical record.

8.3 Body Fluid Spill

The following additional precautions are recommended when there has been a spill of blood or body fluids from a patient categorised as having an *Increased Possibility of VHF* or *Confirmed VHF*:

- Full PPE, as for higher risk exposures (outlined in Section 7.1), should be worn for cleaning up the spill. After the cleaning is completed, staff members are recommended to shower with a neutral soap.
- Initially the spill should be contained by placing a “bluey” over the area. Ensure that the pad side is in contact with the fluid and the impervious side is face up.
- Discard the bluey into a designated clinical waste container.

- The spill area should then be liberally covered with a bleach solution of minimum concentration of 5000 ppm available chlorine (e.g. 5 dichloroisocyanurate tablets dissolved in 1L of water) and allowed to air dry.
- Follow with a wipe down of the area with a neutral detergent. Allow to air dry.
- Discard all cleaning material into a designated clinical waste container.

9 Transfer of a Patient to CHW who is Categorised as Increased Possibility of VHF or Confirmed VHF

9.1 Receiving a Patient

(to be read in conjunction with safe work practice document for transfer of patients with VHF)

- The patient should be transferred immediately and directly from the ambulance to the allocated isolation room in Variety Ward, level 3.
- Staff must comply with wearing PPE as per Section 7.1.
- The Bed Manager / After Hours Nurse Manager should be notified to activate the communication pathway as outlined in Section 5 and the disaster page alert on arrival of the patient.
- Security is to be notified to clear a passage to the ward and commandeer a lift for transfer of the patient.
- The patient should be brought from the ambulance the lift and up to Variety ward on level 3. As directed by Security

9.2 Room Preparation (Variety Ward Room 12)

- Close doors to other rooms in the receiving ward.
- Cordon access to the corridor with a bollard, cord and sign (bollards available from Maintenance).
- Clear all unnecessary furniture from the receiving room.
- Assemble supplies in the isolation room. Only frequently used supplies and patient support equipment should be kept in this room. Label room as "VHF room".
- Use the corridor north of the barrier for:
 - Storage of ancillary equipment
 - Delivery of food/equipment
 - Emergency staff shower in Variety ward before returning to Emergency

9.3 Patient Management – Isolation Room

- Room 12, Beds 17 & 18 in Variety ward (room number 931W029)
- The patient should not leave this room until advised by the Virologist, Clinical Microbiologist or Infectious Diseases physician on call.
- Only direct patient care items should be kept in this room.
- "In use" linen and waste bags are to be kept in this room.
- A sharps container is to be placed at bedside (not within patient's reach).

9.4 Parents / Carers

- One parent or carer may be allowed into the patient area.
- Parents and carers must wear full PPE as outlined in Section 7.1 when entering the patient room.
- Only parents or primary carers should be allowed into the patient room. A sign should be placed on the patient's door and the doors at the entry to the north corridor in Variety Ward alerting staff and visitors to entry restrictions.

9.5 Transport of Specimens from CHW to the CIDMLS PC4 Laboratory, Westmead Hospital

- All laboratory specimens must be packaged and transported according to the International Air Transport Association (IATA) Category A protocol for the Transport of Infectious Substances. This process is outlined in Section 12.
- Care must be taken to avoid contamination of the external surfaces of the container.

9.6 Washing the Patient

- Staff must wear full PPE as outlined in Section 7.1.
- A disposable washbowl should be used.
- A disposable washer and a neutral soap should be used to wash the patient. The washer should then be discarded into the clinical waste. Note that disinfectants used to clean environmental surfaces, such as sodium hypochlorite, should not be used to wash the patient.
- To the used wash water, 5 dichloroisocyanurate tablets per 1L should be added (i.e. to create a 5000 ppm sodium hypochlorite solution) and left for 30 minutes. The contents of the bowel should then be emptied into the isolation room toilet and flushed with the toilet lid down.
- The washbowl should then be placed into the clinical waste.

9.7 Food

- Disposable cutlery and crockery or disposable infant formula bottles are to be used and disposed of into clinical waste after meals.
- The ward NUM should notify dietetics of this requirement.
- Meals can be organised for the patient's parent or carer but food **MUST NOT** be consumed in the room by parents, carers or staff.

9.8 Room Cleaning

- VHF viruses are readily inactivated by low-level disinfectants.
 - Sodium hypochlorite solution (bleach) at a concentration of 1000 ppm available chlorine (e.g. 1 dichloroisocyanurate tablet dissolved in 1L of water) is the preferred disinfectant for environmental cleaning. Solutions can be prepared using hospital bleach or chlorine tablets following manufacturers' instructions.
 - 3% hydrogen peroxide is also suitable for environmental cleaning if sodium hypochlorite cannot be obtained.

The following applies to patients who have been categorised as *Increased Possibility of VHF* or *Confirmed VHF*:

Routine Environmental Cleaning

- A daily clean of the isolation room followed by disinfection using a 1000 ppm sodium hypochlorite solution is required. Prior to disinfection, cleaning should be performed using a neutral detergent and yellow colour-coded cleaning equipment for infectious/isolated areas. Refer to the NSW Health Environmental Cleaning Policy (PD 2012_061) for further information.
- In addition, the patient toilet should be cleaned with a 5000 ppm sodium hypochlorite solution (e.g. 5 dichloroisocyanurate tablets dissolved in 1L of water) after each use. The protocol for disposal of toilet waste is outline in Section 10.2.
- Full PPE, as for higher risk exposures (outlined in Section 7.1), should be put on by cleaning staff prior to entry into the patient's room.
- Disposable cleaning cloths, mop heads and wipes should be used and discarded into the designated clinical waste after each clean is completed.
- Any reusable equipment (e.g. buckets, mop handles) must be disinfected with a 5000 ppm sodium hypochlorite solution after use and kept in the isolation room. On patient discharge these items should be discarded into the designated clinical waste.

Terminal Cleaning

- Terminal cleaning should be performed according to the NSW Health Environmental Cleaning Policy (PD 2012_061) and Standard Operating Procedures.
- Full PPE, as for higher risk exposures (outlined in Section 7.1), should be put on by cleaning staff prior to entry into the patient's room.
- Once the patient has left the room the entire room should be cleaned with a neutral detergent then allowed to air dry. All cleaning cloths and mop heads must not be reused and should be discarded into the clinical waste.
- Once the room is air dry, the room should be disinfected using a 1000 ppm sodium hypochlorite solution (e.g. 1 dichloroisocyanurate tablet dissolved in 1L of water),

ensuring that the disinfectant is liberally applied to all surfaces within the isolation room. Dispose of all cleaning equipment including buckets, mop handles, mop heads and cloths into the clinical waste after a terminal clean.

- Allow the room to air dry. Maintain negative pressure in the room during the terminal clean.
- Allow an additional 30 minute period after the room has air dried before switching off the negative pressure and allowing the next patient to enter the room.
- Discard all non-fluid-impermeable pillows and mattresses and textile privacy curtains into the designated clinical waste rather than laundering them for reuse.

Inventory

- An item list of all stock used and staff time involved should be kept to allow cost recovery from the NSW Ministry of Health.

9.9 Linen

- Disposable linen is the first preference for patient clothing and bed linen. Currently at CHW disposable linen is not available and regular linen is to be used.
- The patient is to wear hospital gowns rather than their own clothes.
- All patient clothing and used linen (including sheets, towels and blankets) is to be disposed of as clinical waste rather than laundering for reuse.
- All clothing and linen wet by body fluids must be placed into a leak proof bag prior to disposal and not a cloth linen bag.
- Patient clothing and linen must not be laundered in a domestic washing machine.

9.10 Patient clothing

- The patient should wear hospital clothing and gowns and not their own clothes.
- Obtain consent to dispose of contaminated patient clothing into the clinical waste.

10 Waste Treatment and Disposal

The following applies to patients who have been categorised as *Increased Possibility of VHF* or *Confirmed VHF*:

10.1 Clinical Waste

- Waste derived from a patient suspected of having or confirmed to have a VHF infection is classified as Category A waste under the international standard UN2814 for infectious substance, affecting humans. Clinical waste in this setting includes:
 - Any single-use items (includes PPE, linen, cleaning cloths and wipes, food service items).
 - Cleaning equipment that is to be discarded following a terminal clean of the isolation room (includes buckets, mops).
 - Any items stained by or containing bodily fluids, as per the NSW Waste Policy (PD2005_132-*Waste Management Guidelines for Healthcare Facilities*).
- Category A waste must be packaged in a triple containment system consisting of:
 - A primary leak proof plastic bag sealed by a cable tie or tape.
 - A secondary leak proof plastic bag sealed by a cable tie or tape.
 - A rigid outer container being a UN approved 1H2 removable head plastic drum or 4H2 solid plastic box. This outer packaging must be approved to a minimum of a Packing Group II level for solids and liquids and have successfully completed the leak proof test at a minimum of 20kPa.
 - Absorbent material between the secondary and outer packaging layers in sufficient quantity to absorb all free liquid in the Category A waste.
- Note that the primary and secondary plastic bags used in packaging must adhere to the following standards:
 - Tear resistance of not less than 480 grams in both the parallel and perpendicular planes with respect to the length of the bag when tested in accordance with ASTM D 1922.
 - Impact resistance of not less than 165 grams when tested in accordance with ASTM D 1709.
- Additional requirements for handling VHF clinical waste:
 - Waste bags must not be filled beyond approximately 2/3 of capacity.
 - A system for safely packaging clinical waste should be developed. This involves keeping the primary waste bags inside the patient isolation room. Primary waste bags should then be placed into secondary waste bags kept outside the patient room, and in turn placed into a rigid outer container outside the patient room.
 - Prior to collection by a waste contractor, VHF clinical waste must be stored in a secure area where access is restricted to authorised and trained personnel only.
 - VHF clinical waste must be destroyed within 24 hours of collection, as far as is practicable.

- The transfer of VHF clinical waste into the custody of a licensed waste contractor must be documented.

10.2 Toilet Waste

For patients who are able to use the isolation room toilet, the toilet should be prepared prior to each use as follows:

- Add 200mL of 5000 ppm sodium hypochlorite solution to the toilet water.
- Alternatively, chlorine tablets can be added directly to the toilet water (e.g. 5 dichloroisocyanurate tablets)

When a patient uses the isolation room toilet they should be instructed to not flush the toilet. Staff must then:

- Leave the toilet contents for 30 minutes before flushing.
- Ensure the toilet lid is down before flushing.
- Staff must wear PPE as for a high risk exposure (see section 7.1)
- The patient's toilet should be cleaned with a 5000 ppm sodium hypochlorite solution (e.g. 5 dichloroisocyanurate tablets dissolved in 1L of water) after each use following flushing of the contents (as per Section 9.8).

If a patient is unable to use the isolation room bathroom, a disposable pan/bottle should be used, with the following options:

- When a pan sanitiser is not available within the isolation unit: The contents of the pan are to be solidified with high-absorbency gel and then both the pan and contents disposed into clinical waste.

If a high high-absorbency gel cannot be used, the contents of the pan should be carefully poured into the prepared isolation room toilet. The procedure described above for toilet waste disposal should then be followed. The now empty disposable pan should then be placed into the clinical waste.

- If a pan sanitiser is made available for use within the isolation unit: 200mL of 5000 ppm sodium hypochlorite solution should be added to the pan contents and left for 30 minutes before emptying into the pan sanitiser. Alternately, if the pan sanitiser has a hypochlorite cycle, the contents of the pan can be emptied directly into the sanitiser.

10.3 Sharps Management

- A sharps container should be kept at the patient bedside.
- Sharps containers must also be double bagged and placed inside a rigid outer container. The outer container must be wiped down with a 1000 ppm sodium hypochlorite solution (e.g. 1 dichloroisocyanurate tablet dissolved in 1L of water) prior to collection by a waste disposal contractor.
- Sharps management should continue otherwise as per CHW Waste Management Policy.

- Sharps should only be used on patients where absolutely necessary. Staff members using sharps are responsible for their immediate disposal into a sharps container after their use.
- Oral medications should be encouraged where appropriate.
- Blood sample collection should be done with a closed system (e.g. Vacutainer) where possible.

11 Death of a Patient

11.1 Following the Death of a Patient

- All unnecessary handling of a body should be avoided.
- Mortuary staff (including the Anatomical Pathologist) must be notified of the death.
- Do not wash or clean the body.
- Do not remove any inserted medical equipment from the body such as intravenous lines or endotracheal tubes.
- Staff involved in moving or preparing the body must wear full PPE as for high-risk exposures (outlined in Section 7.1 of this policy).

11.1.1 Post-mortem Examination

Careful consideration of the risks and benefits must be considered before undertaking a post-mortem examination. Where there is an *Increased Possibility of VHF* or *Confirmed VHF* diagnosis, it is recommended that a full post-mortem examination should not be performed unless considered essential by the medical or legal authority responsible. Limited diagnostic testing of blood and percutaneous tissue biopsy material may be appropriate, particularly where a patient dies before a definitive diagnosis of VHF is made. However, this must be discussed with the Anatomical Pathologist before proceeding.

Aerosol formation must be avoided (e.g. no electrical cutting instruments).

All solid and liquid waste generated during a post-mortem examination must be decontaminated with disinfectant solution (such as 5000ppm sodium hypochlorite) or autoclaved. All waste should then be incinerated.

Following a post-mortem examination and/or collection of specimens from the deceased patient, the room must be thoroughly cleaned with a disinfectant solution such as 1000ppm sodium hypochlorite.

11.1.2 Removal and Transport of a Body to the Mortuary

VHFs are List B diseases under the Australian Guidelines for the Prevention and Control of Infection in Healthcare published by the National Health and Medical Research Council (NHMRC).

- Refer to the following document for further information:
<http://www.nhmrc.gov.au/guidelines/publications/cd33>
- The body of a suspected or confirmed VHF patient must be placed in a leak proof double body bag for transport.
- The body cannot be removed from the bag; therefore the body cannot be embalmed or viewed (refer to [Section 13 of CHW Procedure "Death of a Child \(Purple Folder\)"](#)).

- The process for safely placing the body in the double body bag is as follows:
 - Staff involved in moving the body must wear full PPE as for high-risk exposures (outlined in Section 7.1 of this policy).
 - Position the mortuary trolley with open body bags next to the patient's hospital bed.
 - Pull the bedsheet(s) that are under the body up and around the front of the body.
 - Remove the inner bag from the trolley. Gently roll the body wrapped in sheets while sliding the inner bag under the body.
 - Place the body wrapped in sheets in the inner body bag. Zip up the bag over the front of the body and expel excess air.
 - Disinfect gloved hands with alcohol-based hand rub.
 - Disinfect the outside surface of the inner bag with a pre-prepared sodium hypochlorite solution (e.g. 5000 ppm sodium hypochlorite solution).
 - Transfer the inner bag with the body in it to the trolley, placing it on top of the outer bag.
 - Absorbent material must be placed in between the inner and outer bags.
 - Work the outer bag around the inner bag and zip it up over the front of the body. Expel any excess air.
 - Disinfect gloved hands with alcohol-based hand rub.
 - Disinfect the outside surface of the outer bag with a pre-prepared sodium hypochlorite solution (e.g. 5000 ppm sodium hypochlorite solution).
 - Disinfect the surfaces of the mortuary trolley from the handles to the wheels.
 - Disinfect gloved hands with alcohol-based hand rub.
 - Push the decontaminated trolley with body bag gently out of the isolation room. Another set of staff should be prepared to receive the body and transport it to the mortuary.
 - Doff PPE as outlined in Section 7.1.3
- The outer bag is to be made of tubular extruded low density polyethylene film of not less than 150 micrometres thickness.
- The outer bag must be indelibly marked with the name of the patient and the words "PRESCRIBED INFECTIOUS DISEASE – HANDLE WITH CARE"
- An Environmental Health Officer from the local PHU will work closely with the relevant funeral director to ensure that appropriate Infection Prevention and Control measures are implemented.
- The body must be cremated or buried in a sealed casket as soon as possible.

11.1.3 Removal of bodies from bags or wrapping

- The body must not be removed from the outer bag.

12 Guidelines for Specimens

12.1 Staff Testing

- Up to 10mL of clotted blood from all staff involved in the care of the patient should be collected and stored in Virology for baseline serology should it be required. A log of all HCWs who enter the room of a patient with *Increased Possibility of VHF* or *Confirmed VHF*, or otherwise have contact with the patient or their body fluids, should be kept. These staff members are required to have baseline serology samples collected as early as possible (e.g. the next working day) for storage. This serum will be stored at CHW.

12.2 Patient Specimens

Initial testing for a Patient with an *Increased Possibility of VHF*:

test	
Ebola virus PCR	EDTA (mauve lids) X 2
Electrolytes, Urea, Creatinine	Lithium heparin (green lid)
Full Blood Count and Differential	EDTA X 1 (mauve lid)
Coagulation studies & X match	Sodium citrate (blue lid) fill to line
Serum to keep	2 X serum separator (orange lids) tubes
Malaria Film	EDTA X 1 (mauve lid)
Urine Culture and urinalysis	
Blood Cultures	Aerobic bottle (essential) +/- Anaerobic bottle

Testing for the following differential diagnoses should also be considered and discussed with the Infectious Diseases physician on call:

- Dengue
- Typhoid fever
- Plague
- Q fever
- Leptospirosis
- Amoebiasis
- Typhus

12.2.1 Process for Specimen Collection

VHFs are classified as Infectious Substances Category A UN 2814. The following protocols for specimen collection and packaging should be followed for patients with *Increased Possibility of VHF* and *Confirmed VHF*.

General points:

- Laboratory testing should be the minimum necessary for diagnostic evaluation and patient care.
- VHF testing should only be conducted following advice from a Virologist, ID physician, PHU and the Clinical Microbiologist on call at CIDMLS, Westmead Hospital.
- Before collecting the specimens, notify the Microbiologist on call at Westmead Hospital (CIDMLS) on (02) 9845 6255 (normal hours) or via the Westmead Hospital switchboard on (02) 9845 6609 or (02) 9845 5555 after hours.
- The on call Microbiologist at Westmead Hospital will advise when the transfer of specimens can occur. After hours, CIDMLS PC4 Laboratory staff may be called in or the transfer delayed until CIDMLS PC4 Laboratory staff are back on duty, depending on the urgency of the test.
- The CIDMLS PC4 laboratory has the capacity to carry out testing twice a day per patient.
- No pathology specimens, including those for point of care tests, are to be collected in the Emergency Department.
- Two healthcare workers (HCW) will be required to don PPE and enter the patient's room to collect blood samples for testing.
- A third HCW may be necessary if the patient is not co-operative and combative.

Materials required:

- VHF specimen collection kit (located in Variety Ward).
- Ensure that the specimen collection kit contains:
 - Four (4) EDTA tubes (purple top) & all tubes for other tests as outlined above in Section 12.2.
 - 50mL Falcon tubes – one is required for each blood tube collected.
 - Each Falcon tube must contain absorbent material (e.g. paper towel or cotton wool) in case of a spill or tube breakage.
 - One zip-lock specimen bag.
 - One screw top Biobottle & accompanying specimen transport box labelled for Category A transport.
 - 5000 ppm available chlorine solution of sodium hypochlorite (e.g. 5 dichloroisocyanurate tablets dissolved in 1L of water).
 - Paper towels to disinfect the blood tubes.
 - Routine equipment used for phlebotomy.
 - Tray to place filled blood tubes during the collection.
 - Pathology request form.

Prior to entering the patient room:

- Determine the boundaries for potentially contaminated and clean areas. The zip-lock specimen bag, pathology request form, Biobottle, outer transport box and some of the 5000 ppm sodium hypochlorite solution must remain in the clean area.
- In the clean area, ensure all blood tubes are labelled with the patient's name, MRN and date of birth.
- In the clean area, ensure that a pathology request form is completed clearly stating that VHF PCR, and all other agreed tests, are required.
- Don full PPE as per section 7.1.

Inside the patient room:

- The person collecting the blood **must not** come into direct contact with the zip-lock specimen bag, Biobottle or transport box.
- Specimens should be collected taking care not to contaminate the external surfaces of the blood tubes.
- A minimum of 200µL of blood per paediatric tube and 4mL of blood per adult blood tube should be collected.
- Place the filled blood tubes on a tray.
- Following blood collection the phlebotomist should disinfect their outer gloves with the prepared sodium hypochlorite solution.
- The phlebotomist then should disinfect each blood tube in turn by gently wiping with paper towel saturated with the 5000 ppm sodium hypochlorite solution.
 - Care should be taken not to erase the patient details.
- Each disinfected blood tube should then be placed into a 50mL Falcon tube containing absorbent material and then the screw top lid should be firmly secured.
- The outer surface of each Falcon tube should be disinfected by wiping with the prepared 5000 ppm sodium hypochlorite solution.
- Specimens are then moved to the boundary of the potentially contaminated and clean areas. Without touching the zip-lock specimen bag (held by an assistant in the clean area), the phlebotomist should then drop each disinfected Falcon tube into the specimen bag.
- The assistant in the clean area should then seal the specimen bag and place the request form in the pouch on the front of the bag.
- The specimen bag containing the filled blood tubes should be placed in a Biobottle and the lid then firmly secured.
- The Biobottle should then in turn be placed in the prelabelled transport box for transfer to the CIDMLS PC4 laboratory. Close and seal the box.
- Contact the Clinical Microbiologist on call at Westmead Hospital after the specimens have been collected and packaged to ensure that the CIDMLS PC4 laboratory is ready to receive the samples.

- Call Westmead Hospital Security on (02) 9845 5999 to advise that specimen transfer is ready to occur and the name of staff member taking the specimens over.
- A CHW Medical/Nursing staff member should take the specimens in the transport container to the front of Westmead Hospital to meet a member of the Security department. .
- Westmead Security should then escort the CHW Medical/Nursing staff member to the CIDMLS PC4 Laboratory for specimen hand over (NOT ICPMR SPECIMEN RECEPTION).
- The CHW Medical/Nursing Staff member is to obtain the name of the person who takes receipt of the specimen/s.
- The CHW Medical/Nursing staff member should then return to CHW.
- The Clinical Microbiologist on call at Westmead Hospital or PC4 Laboratory Staff member will phone the results through to the contact provided on the pathology request form.

Copyright notice and disclaimer:

The use of this document outside Sydney Children's Hospitals Network (SCHN), or its reproduction in whole or in part, is subject to acknowledgement that it is the property of SCHN. SCHN has done everything practicable to make this document accurate, up-to-date and in accordance with accepted legislation and standards at the date of publication. SCHN is not responsible for consequences arising from the use of this document outside SCHN. A current version of this document is only available electronically from the Hospitals. If this document is printed, it is only valid to the date of printing.

Appendix 1: Supplies and Equipment

Supplies to be kept in or near the patient isolation room

- Prescribed medications – keep in a medication cabinet in the patient's room
- Gowns, P2/N95 masks, surgical gloves, hoods, plastic aprons, shoe covers and protective eye wear for staff.

Supplies to be kept in the Variety Ward store

- Plastic sharps container for disposal of needles and other sharp equipment
- Labels and marker pens
- Plastic airtight bags (various sizes) (autoclavable biohazard bags)
- Plastic rubbish bags (clinical waste bags)
- Disinfectants – dichloroisocyanurate tablets (to make fresh stocks of bleach solution).
- Body bags
- Linen, towels
- Gowns, P2 masks, surgical gloves, balaclava hats, plastic aprons, shoe covers and protective eye wear for staff
- Housekeeping materials (absorbent towels for spills)
- Mailing containers for transporting blood specimens to the Laboratory
- Eye wash solution
- Sign and rope

Resuscitation equipment and trolley

- Material for physical examination – (such as stethoscope, thermometer, sphygmomanometer, torch, reflex hammer).
- IV trolley
 - Intravenous equipment and supplies
 - Cannula
 - Tourniquets
 - Alcohol swabs
 - Needles (various sizes)
 - Syringes (various sizes)
 - Plastic sharps container for disposal of needles and other sharp equipment
 - Blood collection tubes for haematologic and biochemical investigations
 - Blood-culture bottles

Other equipment

- Sterile containers for urine or faeces specimens
- Throat and other surface swabs
- Labels and marker pens
- Plastic airtight bags (various sizes) (autoclavable biohazard bags)
- Plastic rubbish bags (Clinical waste bags)
- Disinfectant solutions – 5000 ppm sodium hypochlorite solution (made fresh each day by adding 5 dichloroisocyanurate tablets to 1L of water) and 70% v/v ethanol in water. These are available from the virology / microbiology department.
- Disposable Urine bottles/Bed pans
- Nursing supplies e.g. disposable wash bowls
- Linen, towels
- Toilet articles (soap, toilet brush, etc.)
- Bobby pins, hair ties and hairspray
- Housekeeping materials (absorbent towels for spills)
- Mailing containers for transporting blood specimens to the Laboratory
- Eye wash solution

Appendix 2: Ribavirin Regimens for Treatment and Prophylaxis

Oral and intravenous ribavirin preparations are held in the Westmead Hospital Pharmacy. Further supplies should be obtained through the Epidemiology Branch, NSW Department of Health, or through the VHF Units of other States.

The following dose regimen is recommended for treatment of Lassa Fever, Congo-Crimean Fever, Argentinian Haemorrhagic Fever, Bolivian Haemorrhagic Fever, Rift Valley Fever, and HFRS due to Hantaan virus. Prophylaxis should be considered for high-risk contacts of Lassa Fever or CCHF.

Treatment

Children and Adults:		
Loading dose, day 1	days 1-4	days 5-10
Ribavirin 30mg/kg IV (up to 2g)	Ribavirin 16mg/kg IV 6-hourly (up to 1g)	Ribavirin 8mg/kg IV 8-hourly (up to 0.5g)

Prophylaxis (for high risk contacts)

Children:			
16mg/Kg/dose orally 6-hourly for 10 days			
Estimate	< 6 years	6 – 9 years	> 10 years
	16mg/kg/dose orally 6-hourly for 10 days	400mg 6-hourly orally for 10 days	500mg 6-hourly orally for 10 days
Adults:			
CCHF		Arenaviridae	
500mg orally 6-hourly for 7 days		500mg orally 6-hourly for 14 days	
<p><i>5mg/kg/dose 8 hourly may be sufficient especially when prophylaxis is to be given for 14 days</i></p> <p><i>an IV loading dose of 1gm may be given if there is a prolonged time between contact and initiation of prophylaxis</i></p>			

The FBC and ALT should be monitored. Testing for asymptomatic seroconversion in all contacts treated with Ribavirin should be performed.

Appendix 3: CHW Patient Contact Log

PATIENT CONTACT LOG					
Date	Name	Employee Number	Time in	Time out	Signature

To be kept by the Variety Ward NUM and a copy to be sent to Infection Prevention & Control.

Appendix 5: Visitor Incident Sheet

VISITOR INCIDENT SHEET

Name:

Contact Number:

Date and time of
Incident/Place of Incident:

Description of Incident:

Assessment of Risk

- Follow up Plan
- Report to OHS (IIMS)
- Copy to staff member

Signature of Supervisor: _____ Signature of Employee _____

Date: _____

Risk category	Action and Advice
Unclear	<ul style="list-style-type: none"> • Carefully interview and conduct risk assessment to reclassify; • Provide PHU surveillance officer contact details should they recall any contact; • Provide general factsheet.
No risk	<ul style="list-style-type: none"> • Reassure about likely absence of risk; • Provide general factsheet.
Casual contact risk	<ul style="list-style-type: none"> • Reassure about very low risk; • Institute regular passive monitoring of temperature and other disease compatible symptoms for 21 days from last exposure; • Patient to report to PHU if febrile or symptomatic; • Provide casual contact factsheet.
Low risk	<ul style="list-style-type: none"> • Reassure about low risk; • Institute daily passive monitoring of temperature and other disease compatible symptoms for 21 days from last exposure; • Patient to report to PHU if temperature is elevated or symptomatic; • Provide low risk contact factsheet.
High risk	<ul style="list-style-type: none"> • Inform about risks; • Institute daily active monitoring of temperature and other disease compatible symptoms for 21 days from last exposure; • The PHU surveillance officer to initiate contact by 12 noon each day; further evaluation as necessary. • Inform PHU officer urgently if symptoms develop; • Provide high risk contact factsheet.

Appendix 6: Staff Incident Sheet

STAFF INCIDENT SHEET

Name:

Employee Number:

Contact Number:

Date and time of
Incident/Place of Incident:

Description of Incident:

Assessment of Risk

- Follow up Plan
- Report to OHS (IIMS)
- Copy to staff member

Signature of Supervisor: _____ Signature of
Employee _____

Date: _____

Risk category	Action and Advice
Unclear	<ul style="list-style-type: none"> • Carefully interview and conduct risk assessment to reclassify; • Provide PHU surveillance officer contact details should they recall any contact; • Provide general factsheet.
No risk	<ul style="list-style-type: none"> • Reassure about likely absence of risk; • Provide general factsheet.
Casual contact risk	<ul style="list-style-type: none"> • Reassure about very low risk; • Institute regular passive monitoring of temperature and other disease compatible symptoms for 21 days from last exposure; • Patient to report to PHU if febrile or symptomatic; • Provide casual contact factsheet.
Low risk	<ul style="list-style-type: none"> • Reassure about low risk; • Institute daily passive monitoring of temperature and other disease compatible symptoms for 21 days from last exposure; • Patient to report to PHU if temperature is elevated or symptomatic; • Provide low risk contact factsheet.
High risk	<ul style="list-style-type: none"> • Inform about risks; • Institute daily active monitoring of temperature and other disease compatible symptoms for 21 days from last exposure; • The PHU surveillance officer to initiate contact by 12 noon each day; further evaluation as necessary. • Inform PHU officer urgently if symptoms develop; • Provide high risk contact factsheet.