Government of **Western Australia**
Department of **Health**

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Viral Haemorrhagic Fever Response Plan for Western Australia

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Contents

Acronyms

Acronym	Definition
ABHR	Alcohol based hand rub
AGP	Aerosol generating procedure
BSL-4	Biosafety (level 4)
CDCD	Communicable Disease Control Directorate
CDNA	Communicable Disease Network Australia
CHO	Chief Health Officer
CPAT	Complex patient transport
DPMD	Disaster Preparedness and Management Directorate
EBOD	Ebola disease
ED	Emergency department
EVD	Ebola virus disease
GP	General practitioner
HBO	Human Biosecurity Officer
HCF	Healthcare facility
HCW	Healthcare worker
HMA	Hazard management agency
IDEMP	Infectious Disease Emergency Management Plan
IMT	Incident management team
IPC	Infection prevention and control
LHD	Listed Human Diseases
NETS	Neonatal Emergency Transport Service
NPIR	Negative pressure isolation room
PAPR	Powered air purifying respirator
PC3	Physical containment (level 3)
PCH	Perth Children's Hospital
PCR	Polymerase chain reaction
PFR	Particulate filtrate respirator
PHEOC	Public Health Emergency Operations Centre
PHP	Public health physician
PHU	Public health unit
PME	Postmortem examination
PPE	Personal protective equipment
QEIIMC	Queen Elizabeth II Medical Centre
RFDS	Royal Flying Doctor Service
SCGH	Sir Charles Gairdner Hospital

SHICC	State Health Incident Coordination Centre
SJWA	St John Ambulance (WA)
UMRN	Unique medical record number
VHF	Viral haemorrhagic fever
WA	Western Australia
WACHS	WA Country Health Service
WHO	World Health Organization

1. Purpose

The *Viral Haemorrhagic Fever Response Plan for Western Australia* (the '*VHF Response Plan*') provides an overview of principles to respond to and manage viral haemorrhagic fever (VHF) cases within the Western Australia (WA) health system. It includes guidance for the initial assessment and management of suspected cases, considerations for risk assessments and laboratory testing, triggers for convening a public health incident management team or activating the State Health Incident Coordination Centre, and principles for case transportation and postmortem care.

Scope and terminology

The term *viral haemorrhagic fever* may encompass a broader range of diseases than those addressed in this plan. For the purposes of this plan, VHF refers to Ebola disease, Marburg virus disease, Lassa fever and Crimean-Congo haemorrhagic fever. These diseases are considered specifically due to their potential for human-to-human transmission and the specialised public health and clinical management arrangements they require.

The term *Ebola disease (EBOD)* is used throughout this plan to reflect disease caused by all ebolavirus species, whereas the previously used term *Ebola virus disease (EVD)* refers specifically to disease caused by the Zaire ebolavirus strain.

2. Related documents

Relevant emergency management documents

- *State Hazard Plan – Human Biosecurity*, details the state-level strategic arrangements for the management of a human epidemic in WA.
- *Infectious Disease Emergency Management Plan (IDEMP)*, the strategic, state-level plan that outlines how the WA Department of Health responds to any human health infectious disease emergency within WA.

Related guidelines

- *Viral Haemorrhagic Fever Infection Prevention & Control Guideline for Western Australia* (the '*VHF IPC Guideline*'), outlines the infection prevention and control (IPC) advice for VHF in WA.
- *Ebola virus disease (EVD) CDNA National Guidelines for Public Health Units*.

3. Background

3.1 Overview of VHF

VHFs are a group of severe zoonotic infections caused by several virus families, including filoviridae, arenavidae and nairoviridae.(1) VHFs are characterized by fever and systemic illness and may be associated with haemorrhage, multiorgan dysfunction and high case fatality.(1, 2) Initial human infection typically occurs through zoonotic transmission from infected animals or arthropod vectors, with subsequent outbreaks sustained through human-to-human transmission via direct contact with blood or bodily fluids, or through contaminated surfaces or materials.(3, 4)

VHFs are endemic in specific geographic regions – primarily in Africa, but also including the Middle East, Eastern Europe, and Asia.(1, 4) These diseases are not endemic in Australia

and establishment here is unlikely as environmental conditions do not currently support the natural reservoirs and vectors of these viruses. The likelihood of a VHF case being diagnosed in WA is very low, requiring importation of the virus by travelers from endemic areas. However, this risk may be increased during periodic epidemics of VHFs, which have been described since 1976.(5-7) To date, the only documented case of VHF diagnosed in Australia was a convalescent case of Lassa fever diagnosed in a rural hospital in New South Wales in 1985.(8)

Contingency planning for VHFs aims to enable early identification and assessment of suspect cases; safe laboratory testing; safe clinical management of suspected, probable and confirmed cases; and prevention of transmission.

The detection, diagnosis and management of VHFs in WA presents several challenges, including:

- the rarity of patients presenting with VHFs in Australia increases the risk of misdiagnosis/delayed diagnosis
- the early clinical presentation (e.g. fever, headache, pharyngitis, myalgia) is nonspecific and mimics more common and less severe conditions(9, 10)
- the risk for transmission to contacts, including HCWs, particularly during the early symptomatic phase prior to the diagnosis being considered and appropriate IPC precautions implemented.(11)

An overview of the major characteristics of the different VHFs is provided in *Appendix 1*.

3.2 Legislative basis

VHFs are nationally notifiable and are Listed Human Diseases (LHDs). LHDs are subject to the *Commonwealth Biosecurity Act 2015*. Under the *Biosecurity Act 2015,* potential cases of LHDs recognised at a port of arrival into Australia are required to be reported to a Human Biosecurity Officer (HBO).

In the event of a case of EBOD in Australia, a *Communicable Diseases Incident of National Significance (CDINS)* may be declared nationally.

In WA, VHFs are a notifiable infectious disease and require **urgent mandatory notification** to the Chief Health Officer (CHO) under the *Public Health Act 2016 (WA)*. Emergency powers are available to the CHO under the *Public Health Act 2016 (WA)* to manage a public health incident.

The State Health Coordinator (SHC), a power delegated by the Director General under the *Health Services Act 2016 (WA)*, may direct any WA Health entity to undertake certain functions for the purpose of preventing, preparing for, responding to and recovering from emergencies, disasters and other disruptive events.

A case of VHF in WA would trigger the *State Hazard Plan – Human Biosecurity*, designating the WA Department of Health as the Hazard Management Agency (HMA), and triggering the activation of a State Health Incident Coordination Centre (SHICC). Additionally, the HMA has emergency powers under the *Emergency Management Act 2005 (WA)*.

3.3 Roles and responsibilities

3.3.1 Public health physicians and public health units

- Receive and respond to the notification of a suspected VHF case.
- Coordinate the initial response to a suspected VHF case, including testing advice, case interview and risk assessment, communicating with the laboratory and affected health services, and providing prompt briefings to the WA Department of Health.
- Convene an incident management team (IMT) where required, as part of initial coordination activities.
- Oversee contact tracing, active surveillance of exposed persons and provide information to those in the community, including facilitating testing of symptomatic exposed persons.

3.3.2 Human Biosecurity Officers

- Receive and respond to calls from Department of Agriculture, Fisheries and Forestry Biosecurity Officers regarding travellers at international ports who have been identified as potentially having a listed human disease.
- For suspected VHF cases identified at international ports, coordinate the initial public health response.

3.3.3 Communicable Disease Control Directorate (CDCD)

- Maintain the *VHF Response Plan* and related *VHF IPC Guideline*, including testing public health system readiness.
- Maintain situational awareness and communicate periods of increased risk of introduction of VHF to the WA health system including WA clinicians and other relevant stakeholders.
- Support the public health unit (PHU) in the initial response to a suspected VHF case, including providing representation on the IMT.
- Provide IPC advice for a response, including for suspected, probable or confirmed cases.
- Lead provision of public health advice for public communications.
- Provide public health expertise for a SHICC, if activated.
- Coordinate debrief of suspected VHF cases where negative results are returned.
- The Director CDCD, as the Chief Human Biosecurity Officer for WA, is responsible for notifying the Commonwealth Department of Health, Disability and Ageing Chief Medical Officer (also Director of Human Quarantine).

3.3.4 On-call clinical microbiologist, PathWest QEII Medical Centre (QEIIMC)

- Provide expert advice on testing for VHF, including specimen collection and transportation.
- Facilitate urgent VHF testing in the PC3 laboratory at PathWest QEIIMC.
- Relay the result, whether positive or negative, to the PHU public health physician (PHP) and treating clinician.

3.3.5 Private laboratories

- Facilitate identification of suspected VHF cases where able, and alert PHUs and PathWest accordingly.
- Facilitate urgent transportation of specimens of suspected cases to PathWest QEIIMC after discussion with the on-call clinical microbiologist, PathWest QEIIMC.

3.3.6 State Health Coordinator, Disaster Preparedness and Management Directorate

- Provide oversight of health system readiness for emergency incident responses.
- Participate in an IMT, where convened by the PHU PHP.

- Maintain situational awareness through regular incident updates from CDCD (during hours) or PHU PHP (after hours).
- Facilitate the activation of WA Department of Health's crisis information management system (WebEOC) as appropriate and update as necessary.
- Provide advice on activation of a SHICC, and command and coordinate a SHICC if activated on direction of the Director General or delegate.

3.3.7 Health services

- Undertake response preparedness and planning for suspected, probable and confirmed VHF cases, including maintaining and testing local VHF plans, maintaining an initial supply of required PPE and adequately training staff. Planning should consider response coordination and governance.
- For the purposes of this plan, Sir Charles Gairdner Hospital (SCGH) is the designated quarantine hospital for the treatment of adults (including pregnant women), and Perth Children's Hospital (PCH) for the treatment of children and neonates. Quarantine hospitals may be requested to assist other health services with just-in-time PPE and IPC training, as required and where able.

3.3.8 Transport providers

- This includes St John Ambulance WA (SJWA) and Royal Flying Doctor Service (RFDS).
- Undertake response preparedness and planning for transport of suspected, probable or confirmed cases of VHF, including maintaining VHF plans, PPE supply, skilled staff to implement a just-in-time training model, and testing transport system readiness.

3.4 Response governance and communication

3.4.1 Internal communications – business hours

During business hours, the PHU PHP (or Human Biosecurity Officer) will provide a prompt briefing to the Director CDCD when a person is under investigation for VHF, and of both negative and positive test results for VHF and other pathogens, as these become available.

The Director CDCD (and Chief Human Biosecurity Officer) will notify:

- State Health Coordinator, via the Disaster Preparedness and Management Directorate (DPMD) on-call duty officer on 1800 434 122
- CHO
- Commonwealth Department of Health, Disability and Ageing Chief Medical Officer (also Director of Human Quarantine)
- Principal Media Coordinator and on-call media, Communications Directorate
- internal CDCD teams including Surveillance and Disease Control, Infection Prevention Policy and Surveillance Unit, and relevant Senior Medical Advisors.

The State Health Coordinator will facilitate creation of a WebEOC incident to manage communication within the WA Health system.

3.4.2 Internal communications – after hours

After hours, the on-call PHP (or Human Biosecurity Officer) will notify:

- State Health Coordinator, via the Disaster Preparedness and Management Directorate (DPMD) on-call duty officer on 1800 434 122

- relevant media team (WA Department of Health if metropolitan on-call PHP, WACHS media team for regional on-call PHP)
- National Incident Centre, who will inform the Commonwealth Department of Health, Disability and Ageing Chief Medical Officer (also Director of Human Quarantine).

The State Health Coordinator will inform:

- CHO
- Director General.

The State Health Coordinator will facilitate creation of a WebEOC incident to manage communication within the WA Health system.

3.4.3 State Health Incident Coordination Centre

A SHICC may be required to coordinate the response, taking into consideration the location of the case, exposures and community risk, and the resources required for a response.

Triggers to activate a SHICC for a VHF incident include:

- a confirmed (or probable) VHF case
- multiple suspected VHF cases
- high-pre-test probability of VHF in a suspected case with an expected delay in pathology results beyond the same day and exposures impacting healthcare delivery within regional health services, or substantial impacts on health service delivery or other government agencies. This may be required in high-impact situations such as if a patient has presented to hospital with secretory symptoms, has high probability of VHF requiring early transfer from the regions, or a healthcare facility (HCF) is unable to implement appropriate transmission-based precautions.

4. Guiding principles

The following principles underpin the assessment and management of patients with suspected, probable or confirmed VHF in WA. Emergency management principles also apply as per the *WA Health Emergency Management Arrangements*.

Planning and preparedness

- All health services should consider and be prepared for the possibility of a suspected VHF case presenting or being referred to an emergency department (ED) and should have plans in place to respond accordingly.
    - in situ management at the site of presentation may be required where a person cannot be transported safely to a tertiary hospital for management.
- Plans should include triage processes, governance and role of a hospital IMT in a response, testing plans, IPC management, PPE supply, and staff, inpatient and visitor contact tracing.
- Designated quarantine hospitals will maintain VHF management plans specific to their facilities.
- Transport organisations should maintain plans for transporting a VHF case, including staff training, IPC management, PPE supply, and decontamination and cleaning of their vehicles.
- Annual review and exercising of plans by health services is recommended.

- In the event of increased background risk of VHF, due to an overseas outbreak occurring:
    - a national risk assessment will inform commencement of screening passengers at ports of entry into Australia
    - there will be consideration of accommodation facilities for returned travellers at risk of VHF to remain in the Perth area for the duration of their incubation period and prevent travel to regional areas
    - preparedness and planning to manage suspected VHF cases should be escalated within the WA Health system, including transport services, with prioritisation given to testing plans and training staff in IPC practices and PPE.

Health service response and IPC practices

- In the event of a suspected VHF case arriving at a port of entry (i.e. Perth Airport), WA's designated quarantine hospitals (SCGH and PCH) may be requested to accept care of the case where capacity permits and transport is available.
- Health services will ensure appropriate standard and transmission-based precautions are adopted for the care of VHF cases, including:
    - placement of cases in a negative pressure isolation room (NPIR), or where NPIR is unavailable, a single room with ensuite and door that can be kept closed
    - application of contact, droplet, and airborne precautions, as outlined in the *VHF IPC Guideline*.
- Health services and transport providers will need to plan and deliver VHF-related training for their staff:
    - any HCWs to be involved in the care of VHF cases are to receive appropriate and comprehensive training and have demonstrated competence in VHF-related IPC practices and procedures
    - PPE training must align to the *VHF IPC Guideline* and *Mandatory Policy 0172/22 Respiratory Personal Protective Equipment Policy*
    - a just-in-time PPE training model may be appropriate for healthcare workers where VHF is less likely to first present, particularly in rural and remote areas.
- Contact with the patient should be limited to only essential HCWs required for the patient's care.
- Confirmed VHF cases requiring prolonged admission will may require ongoing risk assessment where infectivity persists, to balance rehabilitation and recovery needs with ongoing exposure risk to staff.
- Avoid unnecessary family and visitor contact with the patient, acknowledging that a paediatric patient will have an adult caregiver present; the clinical treating team should undertake a risk assessment in discussion with the family to determine how caregiver risk will be managed.
- A log of all staff involved in the patient's care must be maintained, including names and contact details, dates and duration of care, type of care provided and PPE used.

Invasive procedures

- Invasive procedures should be kept to a minimum and practised safely, to reduce the risk of blood or bodily fluid exposure and sharps injuries.
- Clinicians **should not undertake any procedure** that may expose them to blood or bodily fluids, including performing throat swabs, aerosol-generating procedures

(AGPs), and venepuncture, until discussion with a PHP and relevant specialists regarding testing
    - Such procedures should only proceed where immediately required for clinical care and appropriate transmission-based precautions are in place.

Risk assessment, testing and management

- All clinicians must **urgently notify** the PHU where:
    - VHF is suspected and prior to any testing
    - a person has been in contact with a VHF case, even if they have no symptoms; note, this does not apply for HCWs where appropriate PPE has been worn and there has not been a breach in PPE.
- Persons under investigation (those with symptoms and who have an epidemiological risk) should be immediately isolated and discussed with a PHP who will:
    - liaise with other specialists to conduct a rapid risk assessment
    - provide the outcome of the risk assessment, including whether the case should undergo VHF testing (and therefore meets the suspected case definition outlined in *5.1 Case and contact definitions*) and relevant logistics
    - prompt consideration of other diagnoses as appropriate, including other causes of fever in travellers from Africa (e.g. malaria, dengue, yellow fever, typhoid fever, shigellosis, etc.).
- Clinicians may be requested to implement other actions as advised by the PHP relating to risk management or risk communication to staff and patients.
- Laboratory testing for VHF is to be undertaken at the PC3 containment laboratory at PathWest, QEIIMC.
- A negative PCR test for VHF should only be considered definitive in a patient who has been symptomatic for more than 72 hours.
    - a negative test within the first 72 hours of symptoms will generally require a follow-up test beyond 72 hours to exclude VHF, particularly if there is no confirmed credible alternative diagnosis and the clinical picture remains consistent with VHF
    - see *Appendix 6* for further details on test result interpretation.
- Decisions regarding specific treatments and procedures should be made on a case-by-case basis and decisions about limitation of care should only occur after wide consultation by a panel of specialists.

Transport

- **Clinicians should not arrange transport** of a suspected, probable or confirmed case to another health service.
    - decisions to transport a suspected case will be made after consultation with the PHU PHP
    - the PHU PHP will facilitate discussion with other relevant specialists, which may occur via an IMT *5.7.1 Governance and decision making*.
- The decision to transfer a case between hospitals versus in situ management requires a risk assessment by the IMT, taking various factors into account relating to the patient's clinical status and care needs, IPC precautions, capacity for critical care, options for transport, and external influences.
- Transportation of a pathology specimen to PathWest QEIIMC for testing is preferred over transporting a case due to the lower transmission risk, however the decision to

transport a pathology specimen versus a person will need to be informed by a risk assessment by an IMT.

5. VHF case identification and response

5.1 Case definitions

VHF should be suspected in any person with clinical **AND** epidemiological evidence:

- **Clinical evidence:** fever or history of fever in the past 24 hours, with or without other symptoms such as headache, sore throat, myalgia, arthralgia, vomiting, diarrhoea, abdominal pain, rash and/or unexplained bleeding/bruising.
    - Refer to *Appendix 1* for full list of symptoms according to disease.

- **Epidemiological evidence**: history of travel to a country where there is a VHF outbreak **or** contact with a person with VHF or their blood or bodily fluids, during the incubation period.
    - For EBOD, the incubation period is 21 days prior to symptom onset.
    - Refer to *Appendix 1* for incubation periods of other VHFs.

A **person under investigation** is a person who has both clinical and epidemiological evidence of VHF.

A **suspected case** is a person under investigation (see above) for whom a decision has been made that testing for VHF is required, based on a risk assessment between a PHP and clinical microbiologist. For EBOD, the *Ebola virus disease (EVD) CDNA National Guidelines for Public Health Units* contains further details on epidemiological evidence that may inform a risk assessment.

For **probable** and **confirmed case** definitions, refer to the *CDNA Viral haemorrhagic fever (not elsewhere classified) surveillance case definition*.

5.2 Identifying and notifying VHF risk

While it is acknowledged that some countries have risks of sporadic VHF, the highest risk periods for importation to Australia is during large VHF outbreak overseas, historically in Africa.

At these times, the Australian Centre for Disease Control will assess the risk of VHF to Australia. During periods of increased risk, CDCD will inform health services and clinicians early via established pathways including clinician alerts. Additionally, CDCD and PHUs may engage health services and other stakeholders in preparedness activities.

As part of preparedness activities, health services should incorporate processes in triage assessments to identify potential cases of VHF early, and clinicians should be alert to the possibility of travel to a VHF-affected country or contact with a person with VHF among patients.

Urgently notify the PHU PHP if VHF is suspected or if a person has been in contact with a VHF case, even if they have no symptoms.

5.3 Initial risk assessment and testing

Anyone with recent travel to a VHF-affected country or contact with a suspected, probable or confirmed VHF case requires screening for fever and other VHF symptoms.

Cases may be identified by:

- a Biosecurity Officer at an airport or seaport
- self-report of symptoms from a previously identified at-risk person (e.g. returned aid worker or contact of a known case) under active surveillance in the community
- a hospital ED or infectious diseases physician/clinical microbiologist
- a primary care clinician (less likely).

5.3.1 International ports

In WA, certain WA Health PHPs are designated as HBOs under the *Biosecurity Act 2015.* Symptomatic travellers arriving at an international airport or seaport with relevant travel history may be identified by a Department of Agriculture, Forestry and Fisheries (DAFF) Biosecurity Officer and notified to the HBO on-call.

The HBO will undertake a risk assessment, which may include consultation with the PathWest QEIIMC on-call clinical microbiologist and/or an infectious diseases physician. The HBO will provide advice to the DAFF Biosecurity Officer regarding disposition and management. Advice may include:

- directing that the person be taken to a quarantine hospital (SCGH or PCH) via ambulance as a suspected VHF case
- advising the person to isolate at home while domiciliary testing is arranged through PathWest QEIIMC by the HBO, where:
    - an alternative diagnosis is considered more likely,
    - the person is not acutely unwell and requiring inpatient assessment/admission,
    - the person resides in metropolitan Perth, and
    - the person is able to safely isolate at home.

Where ambulance transport from Perth Airport to hospital is required, this is usually arranged by the Perth Airport Duty Manager. At T1, transport may also be arranged through the SJWA paramedic permanently stationed at that terminal. The HBO should confirm that the VHF risk has been communicated to SJWA prior to attendance, so that appropriate precautions can be taken by the attending crew.

5.3.2 Hospital settings

Metropolitan hospitals

Hospital EDs are to follow the steps in *Appendix 2* for the initial risk assessment and management of a suspected VHF case.

The assessment and management of a suspected VHF case must be led by a senior member of the medical team (e.g. emergency medicine physician or admitting team consultant). Clinicians must **immediately notify the PHU PHP** of a person with identified VHF risk. The PHP will coordinate a risk assessment and the provision of testing advice through discussions with the senior treating clinician, PathWest QEIIMC on-call clinical microbiologist, and treating hospital infectious diseases physician (where available).

Non-metropolitan hospitals

Presentation of a case to a non-metropolitan hospital is considered less likely, as identified at-risk individuals, such as returning aid/healthcare workers, will generally be identified and advised to remain in the metropolitan area until completion of their active surveillance period.

However, if a person presenting to a non-metropolitan hospital meets the criteria for a person under investigation, the same initial management principles apply as for metropolitan hospitals.

5.3.3 Primary care settings

Presentation of a case to a GP clinic is considered less likely, as identified at-risk individuals, such as returning aid/healthcare workers and contacts of cases, will have been specifically instructed not to present to GPs.

If VHF is suspected, the GP must **immediately notify the PHU PHP**, who will coordinate a risk assessment and a plan for investigation and clinical management, in consultation with the PathWest QEIIMC on-call clinical microbiologist. Unless the patient is critically unwell and requires urgent emergency care, the GP should not independently arrange ambulance transport or direct referral to hospital prior to public health advice.

5.4 Pathology specimen collection and testing

5.4.1 Testing principles

Decision to test for VHF

Discuss any suspected cases where testing is being considered with the PHU PHP **prior to specimen collection.** The PHP will undertake a risk assessment in liaison with:

- PathWest QEIIMC on-call clinical microbiologist, and
- the facility's infectious diseases physician, where available, or a tertiary hospital infectious diseases physician.

Where a decision to test has been made to proceed with testing based on risk assessment, the process for specimen collection, packaging, transport and testing must be carefully considered.

PathWest QEIIMC is WA's designated containment laboratory and maintains local protocols for laboratory procedures and precautions. These should be referred to in conjunction with the *Public Health Laboratory Network (PHLN) laboratory procedures and precautions for samples collected from patients with VHFs*.

Early symptomatic testing

Samples taken for VHF within the first 72 hours of symptom onset cannot be used to exclude VHF definitively. In this scenario, **a second sample must be taken** at greater than 72 hours since the onset of symptoms to exclude VHF.

See *Appendix 6* for further details on test result interpretation.

Suspected VHF criteria not met

Persons under investigation who, following discussion with the PHP and input from a clinical microbiologist and/or infectious diseases physician, do not meet the suspected case definition can be managed as per routine laboratory practices.

5.4.2 Process for specimen collection and transport

Where advised to proceed with specimen collection by the PHP, hospitals are to:

- ensure specimens are only collected by HCWs trained in both specimen collection and the use of VHF-specific PPE
- use a pre-prepared VHF specimen collection kit
- refer all pathology samples (VHF diagnostic and others) from suspected, probable, or confirmed VHF cases to the Department of Microbiology at PathWest QEIIMC
- liaise with the PathWest QEIIMC on-call clinical microbiologist regarding the transport of specimens to the PC3 laboratory at QEIIMC.

For detailed instructions, see *Appendix 5*.

5.4.3 Process for diagnostic testing

Health service-affiliated laboratories **must not perform laboratory testing** on samples from suspected, probable or confirmed cases in laboratories outside PathWest QEIIMC, without prior discussion with the on-call clinical microbiologist at PathWest QEIIMC.

In addition:

- if required, the PathWest QEIIMC on-call clinical microbiologist will arrange for PC3 laboratory staff to be called in to perform testing
- specimens delivered to the central reception area will be transferred to the PC3 laboratory unopened
- results will be communicated to the on-call clinical microbiologist who will be responsible for informing the PHU PHP and the treating clinician. The PHU PHP will brief the CDCD or State Health Coordinator (refer to *3.4 Response governance and communication*).

The following samples will be urgently sent to the Victorian Infectious Diseases Reference Laboratory (VIDRL) for testing and transported as an Infectious Substance, affecting humans, Category A UN28141:

- samples which are positive by polymerase chain reaction (PCR) for one of the VHF viruses
- samples from patients with strongly suspected VHF, even if negative VHF PCR result
- samples requiring tests for VHF viruses that are not available at PathWest QEIIMC.

Samples not meeting the above criteria will be transported as Biological Substance, Category B UN 3373.

Transportation of Category A infectious substances require trained individuals to oversee the process for air transport, which may not be immediately available in remote sites. Consult the PathWest QEIIMC on-call clinical microbiologist for further information.

5.5 Infection prevention and control guidelines

For detailed IPC guidance of persons under investigation for VHF and suspected, probable or confirmed cases, refer to the *VHF IPC Guideline*.

5.6 Waste management at healthcare facilities

All clinical waste from patients with probable or confirmed VHF is classified as a *Category A Infectious Substance, affecting humans,* in the *Australian Dangerous Goods Code, Edition 7.9 July 2024*. As such, transport of waste from a HCF must be transported in containers

that meet the UN 2814 criteria[1]. These containers must be rigid, puncture-proof, sealed, adequately labelled and meet the specific criteria agreed upon by the competent authority in WA, the Department of Mines, Petroleum and Exploration.

In the unlikely event that waste from a suspected case needs to be disposed of prior to confirmation of VHF, it must be transported in the same way as above and marked as a suspected Category A Infectious Substance. Waste should only be transported by the nominated and approved waste contractor. Waste should not be transported from WA into any other states or territories.

It is the responsibility of the HCF to ensure that VHF waste is disposed of in a responsible and safe way.

5.7 Management of a suspected case

5.7.1 Governance and decision-making

Decision making for a suspected case is outlined in *Table 1*. The level of response activation will determine the lead for any decisions and advice regarding transport and public communications.

Table 1. Responsibility assignment matrix (RACI)

Function	Treating hospital	PHP, PHU	PathWest QEIIMC	CDCD	SHC (via DPMD)
Testing					
Testing advice	R	A	C	I	I
Specimen collection	R	A	C	I	I
Specimen transport	R	A	C	I	I
Laboratory testing	I	I	A, R	I	I
Communication (of suspected case, providing updates, and test result outcomes)					
Communicating test results	I	A	R	I	I
Communicating to PHP, PHU	R	A	R	I	I
Communicating to CDCD	-	A, R	I	I	-
Communicating to SHC	-	I	I	A, R	I
Response activation					
Public health IMT	C	A, R	C	C	C
Activating SHICC	I	C	I	C	A, R

[1] National Transport Commission, *Australian Dangerous Goods Code,* Edition 7.9, July 2024. https://www.ntc.gov.au/codes-and-guidelines/australian-dangerous-goods-code

R = Responsible, A = Accountable (Lead), C = Consulted, I = Informed.
CDCD = Communicable Disease Control Directorate; PHP = public health physician; PHU = public health unit; PathWest QEIIMC = on-call clinical microbiologist at PathWest QEII Medical Campus; SHC = State Health Coordinator (WA Department of Health); DPMD = Disaster Preparedness and Management Directorate; IMT = incident management team; SHICC = State Health Incident Coordination Centre.

Public health

For a suspected case undergoing VHF testing, the PHU PHP may convene a public health IMT to support decision-making while test results are pending. This may include discussion of testing, IPC considerations, transport arrangements and any factors that may influence whether patient should be transferred or managed in situ.

The public health IMT may be convened after specimen collection and before laboratory results are available. It is separate from any hospital IMT, although there may be overlap in membership. Refer to *Table 2* for public health IMT representatives.

The triggers for a public health IMT meeting may include:

- a high pre-test probability for VHF, as informed by the risk assessment, and in consideration of clinical evidence and epidemiological risk factors
- a delay in pathology results is anticipated (e.g. specimen collection undertaken in a regional location)
- concerns regarding the ability for the HCF to appropriately manage IPC on an ongoing basis
- that the case is not clinically stable or there is concern the patient may deteriorate in the next 24-48 hours
- that the case is located in a HCF outside of a tertiary metropolitan hospital, or
- there is a need to rapidly establish shared situational awareness across agencies to support time-critical decision-making.

An IMT may not be necessary if the probability of VHF is low, other differential diagnoses are considered more likely (e.g. malaria), and the test result will be available within 24 hours with minimal disruption to the health care system in the meantime.

Table 2. Public health IMT representatives

Agency/type	Area	Roles
Department of Health	CDCD	Director (Chair) or delegate, PHP, IPC representative, Secretariat
	DPMD*	Director or delegate
	Communications Directorate*	Media representative
	State Health Operations Centre*	Director or delegate
PathWest	QEII Medical Centre*	Head of Department or on-call clinical microbiologist
Public health unit	Local PHU*	PHP
Relevant hospital	Treating team*	Senior clinician
	IPC, where available	IPC representative

	Infectious diseases (if not available, seek representation from tertiary hospital)*	Infectious diseases physician
	Executive	Hospital Executive on-call
St John Ambulance (WA)	St John Ambulance (WA)*	Operations Director and IPC representative
State quarantine facility	IPC and infectious diseases representatives (from relevant facility, depending on the patient)*	IPC representative and infectious diseases physician
	Emergency department	Head of Department
Consider the following attendees as relevant		
Royal Flying Doctor Service (RFDS)	RFDS Western Operations	RFDS Western Operations Incident Emergency Management (CIEM) Incident Commander
Newborn Emergency Transport Service (NETS WA)	NETS WA Operations	Lead clinician
WA Country Health Service (WACHS)	WACHS	Executive Director, Clinical Excellence Director, Public Health Director, Population Health Medicine
	WACHS Communications Acute Patient Transport Coordination Centre	Media team representative

*Indicates attendees to be included should an IMT be convened after-hours.

SHICC activation

Where a SHICC is activated (see *3.4.3 State Health Incident Coordination Centre*), the SHICC will convene a meeting with key agencies. The public health IMT, if convened, will be stood down.

5.7.2 Transfer versus in situ management

Where transfer to a quarantine hospital is being considered, the decision should be informed by risk assessment and the factors outlined below. If a decision is made to transfer the case, this should occur as a matter of urgency once the required transport, IPC and receiving facility arrangements are in place:

Factors to consider when deciding whether to transfer a case to a quarantine hospital or manage them in situ include:

- access to patient transport options with appropriate IPC measures and trained staff, and ability for vehicle decontamination
- clinical status of the patient and likelihood of imminent deterioration (including consideration of comorbidities)
- presence of secretory symptoms (vomiting, diarrhoea, bleeding) which may increase exposure risk and affect ability to maintain IPC precautions during transfer

- ability of the transferring HCF to safely manage the case in situ, considering IPC requirements and capacity to provide appropriate clinical care, including critical care if required
- ability of relevant quarantine hospital to support the transferring HCF and patient transport provider with just-in-time PPE and IPC training, where required
- arrangements for paediatric suspected cases, including minimising separation from a parent/carer while managing exposure risk to the accompanying adult
- impact on the broader HCF staff and community
- external influences including political and/or public interests.

General principles for the road transport of suspected VHF cases by SJWA include:

- assessing expected travel time and confirming that ambulance staff can safely maintain the recommended PPE and IPC precautions for the full duration of transport
- planning for longer-distance transfers where required, including staff fatigue management, PPE tolerance and timed PPE changes
- using a designated ambulance stocked with recommended PPE and checklists, with unnecessary equipment removed
- considering the use of Complex Patient Transport (CPAT) vehicles if more than one case requires transport at the same time and a second vehicle is required
- using an isolation pod whenever available and appropriate.

In regional areas, the following tiered approach to inform transportation may be considered, applying the above principles:

- **Tier 1** – low probability of VHF **and** mild symptoms
  - liaise with public health regarding arranging testing
  - immediate transport not required
- **Tier 2** – moderate probability of VHF **or** significant comorbidities
  - stabilise locally and undertake telehealth review
  - decision for transfer to be made by the IMT or SHICC
- **Tier 3** – high probability of VHF with secretory symptoms
  - transport only if a trained team with isolation capability is available, and vehicle decontamination is feasible.

5.7.3 Inter-hospital transfer logistics

If the public health IMT deems that transfer of a case is required, the transferring HCF will contact the State Health Operations Centre (SHOC) to request a patient transfer and communicate the associated VHF risk. SHOC will assess system capacity and liaise with the patient transport provider and the accepting HCF.

If a SHICC has been activated, the transport agencies may be tasked via the SHICC.

Following completion of patient transfer, cleaning and disinfection of the vehicle needs to be undertaken. This process should follow transport provider's guidelines and the *Australian Centre for Disease Control's Infection prevention and control principles and recommendations for Ebola virus disease* (*Section 5: Environmental hygiene and waste management controls*). All waste generated should be double bagged and transferred to sealable puncture-proof containers upon arrival at the accepting HCF.

5.7.4 Transfer within hospitals

The mode of transfer of a suspected, probable, or confirmed case of VHF within a hospital will depend on the case's clinical state and whether they have active vomiting, diarrhoea, or bleeding.

Refer to the *VHF IPC Guideline* for guidance on moving a suspected case within a hospital setting.

5.7.5 Transfer of high-risk asymptomatic contacts

High-risk, asymptomatic contacts of probable and confirmed cases of VHF (see *6.1 Contact definition*) in rural and remote areas should be transferred to Perth as a matter of priority, to minimise risk of potential cases in rural and remote WA requiring in situ management.

In these situations, the PHU conducting follow-up of contacts should liaise with CDCD.

5.7.6 Treatment of cases

It is the responsibility of the treating clinical team to follow best practice guidance for the clinical management of the patient suspected or confirmed to have VHF, in discussion with an infectious diseases physician. This may include referring to international or national guidance, or peer-reviewed literature.

For the management of pregnant and breastfeeding women, refer to the World Health Organisation's *Guidelines for the management of pregnant and breastfeeding women in the context of Ebola virus disease*.

5.8 Management of the deceased

5.8.1 VHF transmission risk after death

Deceased VHF cases are likely remain highly infectious for at least a week following death.(12) Transmission can occur via direct contact with the body or remains, via sharps injury during postmortem care, or splashes to mucous membranes. Recommended PPE are the same as those required for contact with a living person with VHF.

5.8.2 Principles for safe management of deceased VHF cases

Exposure risk minimisation

- Where possible, contact with the deceased should be minimised.
- For those handling the deceased, follow the PPE and IPC advice outlined in the *VHF IPC Guideline*.

Body preparation

- Identification procedures must be completed before preparation of the body to avoid the need to reopen body bags later.
- If the deceased has an implantable pacemaker, a decision should be made between the next of kin, the Chief Pathologist and CDCD regarding whether to remove the pacemaker in the mortuary prior to cremation, or whether to proceed with a burial.

Postmortem examination and pathology collection

- Non-natural or otherwise reportable death of a person potentially infected with VHF requires discussion with the Coroner. If the death has been reported to and accepted as a case for the Coroner, a death or cremation certificate cannot be issued by a medical practitioner. In these circumstances:

    - decisions on whether a postmortem examination (PME) is required will be made between Forensic Pathology at PathWest, WA Police, the Coroner and CDCD
    - if a PME if required, Forensic Pathology at PathWest will liaise with the Australian Centre for Disease Preparedness (ACDP) in Geelong, Victoria to discuss transportation and autopsy at Australia's primary BSL-4 facility.
- Non-coronial PMEs **are not to be performed** on patients known to have died from VHF (i.e. a probable or confirmed case).
- Postmortem pathology collection (i.e. a blood test) may be required where:
    - the deceased meets the criteria for a person under investigation or suspected case (e.g. a returned traveller from an outbreak-affected country), and
    - confirmation or exclusion of VHF would inform public health actions (e.g. contact tracing and public communications).

Viewing arrangements

- Any viewing should occur without direct contact with the deceased.
- Viewing should be from a separate room, either through a window or via video link.

5.8.3 Deaths in hospital with VHF risk

Refer to the *VHF IPC Guideline* for management of the deceased in the hospital setting.

5.8.4 Deaths in the community with VHF risk

Notification and risk assessment

Where a death is reported in the community and there is an identified risk of VHF:

- the WA Police or SJWA attending to the deceased (or the on-call forensic pathologist, where notified) are to alert the PHU PHP as soon as the risk is identified
- the PHU PHP will liaise with the PathWest QEIIMC on-call clinical microbiologist **and** on-call forensic pathologist to conduct a risk assessment to inform case classification and the potential need for postmortem VHF testing
- the PHP (or the on-call forensic pathologist, if informed prior to PHP) will provide advice to WA Police and/or SJWA, including that:
    - the scene is secured and persons attending the scene, including police and ambulance staff, remain outside the building and/or avoid coming within two meters of the deceased or any bodily fluids
    - any remaining residents or bystanders should be directed to move to another area, away from the deceased and any bodily fluids
    - collection and preparation of the deceased should follow the guidance outlined below.

Management of deceased suspected VHF cases

If, based on a joint public health, clinical microbiology and forensic pathology risk assessment, a decision is made to manage the deceased as a suspected VHF case:

- the PathWest on-call forensic pathologist will immediately notify the State Health Coordinator (for the purposes of notifying the Chief Health Officer) and the State Coroner if the deceased is a suspected VHF case
- the PHP and PathWest on-call forensic pathologist will decide on the most appropriate location for testing. In general:

- for situations where the deceased is in the Perth metropolitan area, sampling should occur at the State Mortuary
- for situations where a long delay is expected before the deceased arrives at the State Mortuary, sampling should occur at the site of death, prior to transfer.

Postmortem VHF specimen collection in the community

Where postmortem VHF testing is advised prior to transfer of the deceased to the State Mortuary (i.e. in regional locations):

- **no specimen collection should proceed** until instructions have been provided by the PathWest on-call forensic pathologist
- sampling should be planned and conducted in a way that maintains environmental control, including minimising movement of the deceased, disturbance of the scene, interruptions, and the number of personnel involved
- ensure the sample (usually a blood sample) is collected, packaged and transported in accordance with the principles outlined in *5.4.2 Process for specimen collection and transport* and the detailed instructions contained in *Appendix 5*
- ensure personnel collecting the sample wears recommended PPE as per the *VHF IPC Guideline*.

Preparation and collection of the deceased

Refer to the *VHF IPC Guideline* for IPC recommendations including PPE selection and donning and doffing sequences, procedures for handling and bagging the body (including the use of three body bags), and decontamination of the outer body bag and area.

Decisions regarding who should prepare the deceased should be guided by public health, microbiological and forensic pathology risk assessment, staff capability and operational context. This includes consideration of:

- the security and control of the scene
- the urgency of transferring the deceased away from the scene of death to the mortuary
- the availability of personnel able to implement the required IPC precautions, use appropriate PPE, and safely undertake donning and doffing.

Regarding scene access and PPE donning:

- contact with the deceased should be minimised (i.e. necessary handling only)
- personnel entering the immediate scene of death, areas contaminated with bodily fluids, or undertaking photographing or handling of the deceased must wear recommended PPE:
  - this may include, but is not limited to, police officers, detectives, forensic and Coronial Investigation Unit (CIU) staff and pathologists
  - PPE used by forensic staff may vary from that used in healthcare settings (e.g. Tyvek suits may be worn).
- PPE should be donned in a designated area away from the immediate scene of death or any bodily fluid contamination.

Regarding body bag preparation:

- the outer body bag must be decontaminated prior to transport to the State Mortuary

- the name of the deceased, the WA Health Unit Medical Record Number (UMRN) if available, and WA Police/Coronial Identification number should be clearly and indelibly marked on the top outer surface of the outermost body bag
- the outside of the body bag should be clearly marked that the deceased is a probable/confirmed case of VHF
- see *VHF IPC Guideline* for detailed instructions on body bagging process.

Regarding PPE doffing:

- once the body bag has been decontaminated and marked, staff should move to a designated doffing area and follow doffing sequence for removal of PPE.

Transport to mortuary

Once the deceased person has been sealed in three body bags and the outside of the outermost bag has been decontaminated, it can be moved in the usual manner. Normal procedures should be followed to ensure that the chain of custody is maintained.

SHICC will need to liaise with the State Mortuary and funeral directors regarding the management of the deceased person, including IPC guidance.

Scene of death cleaning

The following principles should guide the management of site of death cleaning in the community:

- the room in which the deceased died should be cleaned and disinfected by a person trained in VHF PPE use and cleaning
- any item that cannot be appropriately cleaned following exposure to a probable or confirmed case of VHF (e.g. soft furnishings which are soiled with bodily fluids), will need to be removed for incineration.

5.8.5 Mass fatality scenarios

In the case of an outbreak of VHF in WA resulting in a large number of deaths, SHICC will lead a coordinated response to the management of the deceased.

6. Public health management of VHF exposures

Public health management of VHF exposures follows the *Ebola virus disease (EVD) – CDNA National Guidelines for Public Health Units*. Principles outlined for responding to EBOD may also be relevant for responding to other cases of VHF.

6.1 At-risk persons versus contacts

6.1.1 At-risk persons

At-risk persons are those who may have had a potential VHF exposure and require public health risk assessment and potential active surveillance. These people are not known to have had direct contact with a confirmed or probable VHF case and are therefore not considered contacts.

6.1.2 Contacts

Contacts are people who have been exposed to a confirmed or probable VHF case whilst infectious. For contact definitions and exposure risk categories, refer to *Ebola virus disease (EVD) – CDNA National Guidelines for Public Health Units*.

6.2 At-risk persons

6.2.1 Identification and notification of at-risk persons

The Australian Government is responsible for assessing the nation's overall biosecurity risk. Depending on the risk, a number of national approaches to identify at-risk persons for risk assessment by jurisdictions may occur. These may include:

- border arrival screening processes to identify travellers with travel history to affected countries
- the Department of Health, Disability and Ageing (DHDA) being notified of a returning aid worker by a host organisation.

Additionally, at-risk persons may be identified via self-report to clinicians or public health.

6.2.2 Risk assessment and management of at-risk persons

Where WA Health is notified of an at-risk person, the PHU will contact the person to obtain further information to inform a risk assessment. Depending on the risk characterisation, the PHU may:

- commence active surveillance (see *6.5 Active surveillance*)
- advise the at-risk person to remain within the Perth metropolitan area whilst under surveillance
    - for at-risk persons residing outside of the metropolitan area, discuss with CDCD
    - CDCD and the relevant PHU will work to identify safe and appropriate accommodation, at WA Health expense.
- provide advice on additional restrictions (e.g. travel, work, movement in community).

6.3 Aid workers returning from VHF-affected countries

Aid workers (including HCWs) returning from VHF-affected countries are a specific subgroup of at-risk persons. Although most returning aid workers are at low to very low risk, the nature of aid work may pose varying levels of exposure risk, and specific restrictions apply on return to Australia.

See *DHDA's Guidance for managing departing and returning aid workers* for further details.

6.3.1 Public health objectives

The public health objectives for managing aid workers returning from VHF affected countries are to:

- perform a case-by-case assessment of VHF exposure risk while in the field
- actively monitor for symptoms and provide timely, accurate and appropriate advice
- minimise risk of VHF transmission to close contacts, healthcare workers and the community
- provide support during the incubation period.

6.3.2 Notification of returning aid workers to WA Health

Where DHDA is notified of a returning aid worker by a host organisation:

- the National Incident Centre will notify the Director, CDCD as the Chief Human Biosecurity Officer of WA

- the Director, CDCD will provide details to the relevant PHU to follow-up with the at-risk person.

6.3.3 Risk assessment and management of returning aid workers

Where notified by CDCD, PHUs should contact returning aid workers (including HCWs) from VHF-affected countries within 24 hours to facilitate and exposure and clinical risk assessment. The assessment should also consider the person's circumstances, including their place of residence (and proximity to SCGH), access to suitable accommodation and planned work or travel during the 21-day monitoring period.

During the 21-day monitoring period, returning aid workers from VHF-affected countries:

- **must not undertake clinical care duties**, and temporary reassignment to non-clinical duties or non-punitive leave/furlough arrangements can be considered, however:
    - where the worker is assigned non-clinical duties, no other restrictions will apply providing the worker complies with twice daily monitoring, and
    - the worker remains well (afebrile and asymptomatic).
- who develop fever and/or other symptoms **must immediately isolate** and **contact the PHU**
- must **remain within the Perth metropolitan area** (within approximately one hour's drive of SCGH), unless otherwise agreed by public health
    - for at-risk persons residing outside of the metropolitan area, discuss with CDCD
    - CDCD and the relevant PHU will work to identify safe and appropriate accommodation, at WA Health expense.
- **must not undertake onward travel** to other jurisdictions (within Australia or internationally).

6.4 Contacts of confirmed or probable VHF cases

Contacts are persons who have been exposed to a confirmed or probable VHF case, or their blood, bodily fluids, tissues or contaminated materials, during the case's infectious period. Contact tracing should commence urgently once a probable or confirmed case is identified, or for suspected cases where the risk assessment indicates a high pre-test probability of VHF and a delay in test results is anticipated.

6.4.1 Community (non-healthcare associated) contacts

PHUs are responsible for contact tracing non-healthcare associated contacts. Contact exposure categories should be assessed in line with guidance in the *Ebola virus disease – CDNA National Guidelines for Public Health Units*. PHUs should enter contacts into WA's VHF data management and surveillance system (see *6.5 Active surveillance*) and provide information and advice.

During the 21-day monitoring period, contacts assessed as having both 'lower risk' and 'higher risk' exposure:

- should be advised as to how active surveillance will occur
- should be instructed to perform twice daily self-monitoring of body temperature
- who develop fever and/or other symptoms **must immediately isolate** and **contact the PHU**

- may be advised to remain within the Perth metropolitan area (within approximately one hour's drive of SCGH/PCH as the designated quarantine hospital), depending on a risk assessment
    - for contacts residing outside of the metropolitan area, discuss with CDCD
    - CDCD and the relevant PHU may work to identify safe and appropriate accommodation, at WA Health expense.
- **must not undertake onward travel** to other jurisdictions (within Australia or internationally).

Routine quarantine or occupational restrictions are not recommended for asymptomatic contacts.

6.4.2 Healthcare associated contacts

Health service IPC and Work Health and Safety teams, where available, will be responsible for identifying contacts and conducting exposure assessments for HCWs (and other staff), patients, and visitors exposed to VHF in WA HCFs.

For management of exposed HCWs, refer to *VHF IPC Guideline*.

When conducting contact tracing, health service IPC teams should:

- perform a risk assessment and provide advice on additional restrictions to HCWs and inpatients
- liaise with the relevant PHU to enrol any contacts, who are not inpatients, into the VHF data management and surveillance system
- refer discharged patients and visitors to the relevant PHU for follow-up
- engage an infectious diseases physician to provide oversight of hospital-based follow-up.

Where hospital IPC expertise does not exist, such as in some regional settings, the PHU will lead all contact assessment and management activities.

6.5 Active surveillance

CDCD maintains WA's VHF data management and surveillance system, *EbolaTracks* (hosted on REDCap), to support active surveillance via SMS. Active surveillance of contacts and at-risk persons requiring follow-up includes twice daily temperature and symptom monitoring during the incubation period (for EBOD, 21 days following last possible exposure).

Persons requiring active surveillance are to be provided a VHF self-monitoring pack by the PHU. This pack will include:

- information about the relevant VHF of concern
- a digital thermometer and instructions for use
- a record sheet for logging temperature, movement, and contacts during the incubation period
- instructions on active surveillance and responding to the SMS system
- contact details of the PHU and after hours contact.

If a person under active surveillance develops VHF compatible symptoms or requires non-urgent hospital review or admission for non-VHF related illness, the PHU will discuss with the relevant quarantine hospital regarding further management.

6.6 Non-adherence to public health advice

If cases, contact or at-risk person, including a returning aid or HCW, does not follow public health advice, the PHU must notify CDCD promptly.

Where non-adherence may place others at risk, escalation should occur to determine whether restrictive measures are required. This may include consideration of a Public Health Order under the *Public Health Act 2016 (WA)* by the CHO.

At ports of entry (e.g. Perth Airport), or where relevant under Commonwealth human biosecurity arrangements, use of the dangerous infectious disease provisions under the *Biosecurity Act 2015 (Cth)* may also be considered by the Chief Human Biosecurity Officer of WA (Director, CDCD). This may include consideration of a Human Biosecurity Control Order where a person is suspected of having, or has been in contact with a person who has or is suspected of having, a listed human disease, or has failed to comply with directions.

If a Human Biosecurity Control Order is being considered for a returning aid or HCW, the National Incident Centre should be contacted for advice.

7. Additional resources

Infection prevention and control

- *Viral Haemorrhagic Fever Infection Prevention and Control Guidelines for Western Australia*

Laboratory and testing

- *Public Health Laboratory Network (PHLN) laboratory procedures and precautions for samples collected from patients with VHFs*

Public health

- *Ebola virus disease – CDNA National Guidelines for Public Health Units*
- *Viral haemorrhagic fever (not elsewhere classified) – Surveillance case definition | Australian Government Department of Health, Disability and Ageing*

Clinical

- *Guidelines for the management of pregnant and breastfeeding women in the context of Ebola virus disease*

8. Guideline contact

Enquiries relating to this guideline may be directed to:

Infection Prevention Policy and Surveillance Unit (IPPSU),
Communicable Disease Control Directorate

Email: *IPPSU@health.wa.gov.au*

9. Document control

Version	Date	Revised by	Amendments
1.0	February 1994	WA Department of Health	N/A
1.1	June 1998	WA Department of Health	Minor content update.
1.2	March 2001	WA Department of Health	Minor content update.
2.0	September 2007	WA Department of Health	General content update.
3.0	27 October 2014	WA Department of Health	Updated 'Interim' plan released in response to 2014 EVD outbreak in West Africa.
3.1	11 November 2014	WA Department of Health	Extension of 'Interim' plan to include content on EVD ED management, PPE, fact sheets, testing and specimen collection and a case report form.
4.0	30 December 2014	WA Department of Health	More definitive version of plan with updated information on EVD public health management, management of returned healthcare/aid workers, waste treatment and disposal, postmortem care and examination and patient transport. Contact fact sheets added and document restructured.
4.1	19 January 2015	WA Department of Health	Minor change to advice regarding skin exposure in Section B.8 *Management of HCW exposed to EVD within WA.*
4.2	9 March 2015	WA Department of Health	Updates to diagnostic tests available, Section A.4 *Sampling and diagnostic testing* and Appendix 1. Clarification regarding policy for visitors, Section B.1 *ED management of EVD* and Section B2.5 *Infection prevention and control*. Further detail provided in Section B.6 *Post-mortem care and examination.*
4.3	21 July 2015	WA Department of Health	Incorporates Management of neonates and pregnant and lactating women with suspected, probable or confirmed Ebolavirus disease.

			Updates to EVD factsheets.
5.0	XX June 2026	WA Department of Health	Major content review and update to all sections. Broadens the plan from EVD to VHFs more generally and aligns terminology with current nomenclature. Introduces Guiding Principles to underpin assessment and management of VHF cases. Reorganises content into clearer sections relating background, guiding principles, case identification and response, and public health exposure management. Aligns notification and communication pathways with contemporary processes. Updates advice regarding the management of the deceased and postmortem pathology specimen collection. Distinguishes at-risk persons from contacts and provides updates guidance for the management of returning aid workers. Moves detailed PPE and IPC advice to standalone VHF IPC Guideline. Streamlines appendices, including the removal of appendices relating to case definitions, PPE and cleaning, and management of returning aid workers.

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11. Appendices

Appendix 1 – Summary of viral haemorrhagic fevers (VHFs) characteristics

VHF type	Viruses	Geographic distribution	Reservoir	Incubation period	Clinical presentation	Diagnosis	Fatality rate^	Treatment	Infectious source
Ebola disease (EBOD)	Family: Filoviridae Ebola (Zaire) ebolavirus, Bundibugyo ebolavirus Sudan ebolavirus Taï Forest ebolavirus Bombali ebolavirus* Reston ebolavirus*	Uganda, Democratic Republic Congo, Guinea, Sudan, Gabon, Ivory Coast, Sierra Leone, Liberia.	Unknown – bats suspected. Humans usually infected via non-human primates and other infected animals.	2–21 days	Fever, arthralgia, myalgia, headache, diarrhoea, vomiting, sore throat, rash, haemorrhage, shock and multi-organ failure.	Blood, urine, throat swab for culture and PCR. Serum for IgM and IgG.	50–90%	Two monoclonal antibodies approved by US FDA for Ebola (Zaire) strain – Inmazeb and Ebanga.	Blood and bodily fluids in acute illness. Semen possibly for up to 12 months after clinical recovery. Infected animals.
Marburg virus disease	Family: Filoviridae Marburg virus Ravn virus	Uganda, Zimbabwe, Kenya, Democratic Republic Congo, Angola, Guinea, Ghana.	*Rousettus* bat suspected. Human infection via non-human primates previously documented.	2–21 days	Similar to EBOD. May be prolonged recovery with orchitis, hepatitis, uveitis and transverse myelitis.	Blood, urine, throat swab for culture. Blood for PCR. Conjunctival scrape for antigen. Serum for IgM and IgG	20–30%	No specific treatments proven.	Presumed same as EVD.
Lassa fever	Family: Arenaviridae Lassa mammareanavirus	Benin, Ghana, Guinea, Liberia, Mali, Sierra Leone, Nigeria (likely exists in other West African countries as well).	A small wild rodent, *Mastomys natalensis.*	6–21 days	Fever, arthralgia, myalgia, gastrointestinal disturbances, sore throat, progressing to swelling of face and neck, general oedema, haemorrhage, encephalopathy and shock. Residual deafness in 25%.	Blood, urine, throat swab for culture. Blood for PCR. Conjunctival scrape for antigen. Serum for IgM and IgG	15%	Ribavirin for treatment and prophylaxis	Blood and bodily fluids in acute illness. Urine for 3 weeks, semen for 12 weeks.
Crimean-Congo haemorrhagic fever	Family: Nairoviridae Tick-borne virus: *Nairovirus*	Africa, the Balkans, the Middle East and Asian countries south of the 50th parallel north.	Humans usually acquire via ticks or slaughtering infected animals such as cattle, goats, sheep and hares.	1–13 days	Fever, headache, photophobia, gastrointestinal disturbances, conjunctivitis, jaundice, central nervous system disturbance and haemorrhage.	Blood, urine, throat swab for culture and PCR. Serum for IgM and IgG.	10–40%	No specific treatments proven. Possibly ribavarin or immunoglobulin.	Blood and bodily fluids. Highly infectious in hospital settings.

**Bombali ebolavirus* not known to cause disease in humans or animals; *Reston ebolavirus* has not been documented to cause disease in humans.
^Case fatality rates reported from previous outbreaks in endemic countries.

Appendix 2 – Emergency assessment of 'person under investigation' for VHF

Does the patient report:

(i) A documented **FEVER,** or symptoms of fever (sweats, chills, rigors or night sweats), with or without additional symptoms such as headache, myalgia, arthralgia, vomiting, diarrhoea, abdominal pain or unexplained bleeding/bruising in past 24 hours **AND**

(ii) **TRAVEL** within a country where there is currently an Ebola disease (EBOD) or other VHF outbreak (see **Box 1**) in the 21 days prior to onset of illness **OR** contact with a known case of Ebola disease (EBOD) or other VHF (may not be located in a VHF affected area)

NO

UNLIKELY EBOD or other VHF: Proceed with transmission-based precautions for any other suspected differential diagnoses and appropriate medical assessment.

YES

Consider VHF – PERSON UNDER INVESTIGATION

- ISOLATE PATIENT AND INITIATE TRANSMISSION-BASED PRECAUTIONS.
- All staff having any contact with patient area **must wear recommended PPE** (See **Box 2**).
- Give surgical face mask to patient, ask patient not to touch anything and escort (preferably walking) to a negative pressure isolation room (NPIR) via a predefined route as soon as possible.
- If an NPIR is not available, use a single room with ensuite and door kept closed. Ensure path cleared ahead (route secured if able). **Restrict entry to essential staff only and maintain log.**
- **Do not undertake collection of specimens** without advice from public health (in consultation with PathWest QEIIMC clinical microbiologist).

NOTIFY WA HEALTH PUBLIC HEALTH PHYSICIAN

- Call public health physician (PHP).
- In hours: Metro **1300 623 292** or Regional (see public health unit *contact details*).
- After hours: **1800 434 122**, follow prompts to speak with a PHP.
- The PHP will undertake **RISK ASSESSMENT** with a **clinical microbiologist** .
- PHP will advise whether suspected case definition is MET, NOT MET, or request further details.

IF FURTHER INFORMATION IS REQUIRED

- Assess signs, symptoms and epidemiology (see **EXPOSURE RISK FACTORS**) using the **Appendix 3 – Risk assessment checklist for a 'person under investigation' for VHF**.
- PHP will advise whether suspected case definition is MET or NOT MET.

Suspected case definition MET

- Patient to remain in isolation.
- Maintain log of all persons entering patient room including contact details.
- Notify IPC team and infectious diseases.
- **Do not undertake collection of specimens** without advice (see below).

PHP to advise:

- Need to transfer to quarantine hospital and process for transfer; a public health incident management team meeting may be convened.

On-call microbiology (Box 3) to advise:

- Pathology samples to be collected
- Advice in transporting pathology samples to PathWest QEIIMC

Suspected case definition NOT MET

Proceed with transmission-based precautions for any other suspected differential diagnoses and appropriate medical assessment.

Ongoing considerations

- Minimise contact with patient and restrict entry to essential staff only.
- Visitors must not be permitted.
- Refer to *VHF IPC Guideline* and local policy for IPC advice on cleaning and disinfection, waste treatment and disposal.
- If patient deteriorates or significant secretory symptoms develop, notify PHP urgently.

EXPOSURE RISK FACTORS*

Derived from *Ebola disease CDNA SoNG*.

NB: the below exposure types do not apply if appropriate PPE was worn and no breaches occurred; VHF case = suspected or confirmed.

Higher risk exposures

- Percutaneous or mucous membrane exposure to blood or bodily fluids of VHF case.
- Household or household-like contact with a VHF case.
- Direct skin contact with blood or bodily fluids of VHF case.
- Direct contact with VHF infected deceased body.
- Laboratory processing of bodily fluids from VHF case (without biosafety precautions).
- Direct handling of sick or dead animals from disease-endemic areas.
- Consumption of 'bushmeat' in VHF affected area.
- Unprotected sexual contact with a person with male genitalia who has had EBOD in the past 12 months where clearance has not been demonstrated.

Lower risk exposures

- Being within approx. 1 metre of a VHF case or within the person's room/patient care area.
- Brief direct contact (e.g. shaking hands) with a VHF case.

Unlikely exposure

- No direct or close contact with a VHF case, but within the vicinity of a case.

Box 1: VHF AFFECTED AREAS

Refer to WHO for updates

https://www.who.int/emergencies/disease-outbreak-news

Box 2: RECOMMENDED PPE FOR VHF

LEVEL 1 PPE

For initial assessment of a **person under investigation** where the patient has low-risk symptoms (fever, headache, malaise) and there is a **low risk of exposure to blood or bodily fluids**:

- fluid resistant, fit tested and fit checked particulate filter respirator (PFR)
- disposable full-face shield
- two pairs of gloves (double gloves) – nitrile long cuff
- disposable long sleeve, cuffed, fluid resistant gown.

LEVEL 2 PPE

For suspected, probable or confirmed VHF where the patient has high-risk (secretory) symptoms (vomiting, diarrhoea, haemorrhage) and there is a high risk of exposure to blood and bodily fluids refer to option A or option B.

Option A:

- fluid resistant fit tested and fit checked PFR, disposable full-face shield and headcover (e.g. wimple).

Option B:

- powered air-purifying respirator (PAPR).

The following PPE items must be worn with option A and B:

- disposable surgical scrubs
- two pairs of gloves (double gloves) – nitrile long cuff
- disposable long sleeve, cuffed, fluid resistant gown
- enclosed, fluid and sharps-resistant footwear, plus fluid-resistant boot covers to mid-calf
- consider plastic apron if fluid contamination is anticipated.

Box 3: ON-CALL CLINICAL MICROBIOLOGY CONTACT DETAILS

PathWest QEIIMC on-call clinical microbiologist is reached via SCGH switchboard: **(08) 6457 3333**.

Appendix 3 – Screening checklist for a 'person under investigation' for VHF

- This checklist is for use by medical officers in their initial risk assessment of a person under investigation for VHF (e.g. Ebola disease).
- Refer to WHO for current VHF risk: *https://www.who.int/emergencies/disease-outbreak-news*
- Attending healthcare worker (HCW) to communicate history and findings to HCW outside of the patient isolation room, such by telephone, visible whiteboard, intercom and/or through telehealth where required.

1. Signs and symptoms:				
Symptom/sign	No	Yes	If **Yes**, specify onset date and time	Notes
Fever	☐	☐		
Abdominal pain (provide details)	☐	☐		
Diarrhoea (identify if with blood)*	☐	☐		
Vomiting (identify if with blood)*	☐	☐		
Bleeding (specify location)* - nose - eyes - vaginal - urine - sputum	☐ ☐ ☐ ☐ ☐ ☐	☐ ☐ ☐ ☐ ☐ ☐		
Unexplained bruising (specify location)	☐	☐		
Rash (specify location)	☐	☐		
Chest pain	☐	☐		
Other symptoms^ (specific which)	☐	☐		
*Secretory symptoms				
^Other symptoms/signs may include lethargy, myalgia, arthralgia, nausea, anorexia, sore throat, shortness of breath, cough, sneezing, hiccups, headache, other.				
2. Are any other family members unwell?				
☐ Yes, specify who and symptoms below ☐ No				

3. Occupation (include brief description of duties):

4. Travel history in the 21 days prior to symptom onset:

Complete for each country visited in the 21 days prior to symptom onset. Ask specifically about travel to countries with risk of VHF (refer to WHO www.who.int/csr/disease/ebola/en/)

COUNTRY:

City/town:

Dates:

Accommodation type & details (e.g., hotel, homestay etc):

Reason for visit:

Places visited (e.g., villages/rural regions) during the stay:

COUNTRY:

City/town:

Dates:

Accommodation type & details (e.g., hotel, homestay etc):

Reason for visit:

Places visited (e.g., villages/rural regions) during the stay:

Copy & insert above template as needed.

5. High risk activities in VHF-affected country:

a. Has worked/visited a hospital, clinic, laboratory or other health care setting.

☐ Yes, provide details (e.g., location, presence of VHF patients) below
☐ No

Details:

b. If yes to 5a, complete the following checklist:

HIGH RISK EXPOSURES:

☐ needle stick injury from a patient with VHF

☐ mucous membrane exposed to blood or bodily fluids from a patient with VHF

☐ direct skin contact with skin, blood or bodily fluids from a patient with VHF without appropriate PPE

☐ processed blood or bodily fluids from a VHF patient without appropriate PPE or standard biosafety procedures

☐ direct contact with a dead body in a VHF affected area without appropriate PPE

LOWER RISK EXPOSURES:

☐ has spent time in care areas of VHF patient without appropriate PPE

☐ has been within approximately 1m of a VHF patient without appropriate PPE

☐ has had direct brief contact e.g. shaking hands, with a VHF patient without appropriate PPE

c. Has had contact with a sick person in the community:

☐ Yes, complete the checklist below ☐ No

HIGH RISK EXPOSURE:

☐ household contact of a VHF case in a resource poor setting or when patient had active diarrhoea and/or vomiting

LOWER RISK EXPOSURE:

☐ has been within approximately 1m of a VHF case without appropriate PPE

☐ has had direct brief contact (e.g., shaking hands) with a VHF patient without appropriate PPE

CASUAL CONTACT:

☐ no direct contact with a VHF patient or their bodily fluids, but have been in same general area (e.g., waiting room, airplane).

d. Has the patient undertaken other activities:

☐ Attended a funeral, if yes provide details (e.g., contact with dead)

☐ Consumption of bush meat

LIKELIHOOD OF ALTERNATIVE PATHOLOGY

6. Protective/risk factors for other diseases:

☐ Mosquito bites ☐ Taken malaria prophylaxis	☐ Consumption of unsafe water ☐ Consumption of spoiled food	☐ Contact with wild animals (e.g., bats) ☐ Tick bite

7. Key examination findings:

NEXT STEPS: Once completed, refer back to *Appendix 2 – Emergency assessment of 'person under investigation' with VHF*, and urgently call the public health physician.

Appendix 4 – Key contact numbers

Officer	Telephone (office hours)	Telephone (after hours)
WA Human Biosecurity Officer	Tel: (08) 9222 2131	Tel: 1800 434 122
Public health physician	Contact details (business hours and after hours) can be found *here*.	
CDCD	Tel: (08) 9222 2131	*Via paging service* Tel: 1800 434 122 Ask to speak with the on-call PHP
On-call duty officer, DPMD	Tel: 1800 434 122	
On-call clinical microbiologist **or** forensic pathologist, PathWest QEIIMC	*Via SCGH switchboard* Tel: (08) 6457 3333	*Via SCGH switchboard* Tel: (08) 6457 3333
Media team (WA Health)	Tel: (08) 9222 4333	Tel: (08) 9222 4333
Media team (WACHS)	TBC	TBC
Manager, State Ambulance Operations, SJWA	Tel: (08) 9334 1234	Tel: (08) 9334 1234
Regional Operations Centre, RFDS	Tel: 1800 625 800 **or** (08) 9417 6389	Tel: 1800 625 800 **or** (08) 9417 6389
Perth Airport managers, Department of Agriculture, Fisheries and Forestry	TBC	TBC
Duty manager, Perth Airport	Tel: (08) 9478 8501	Tel: (08) 9478 8501 Control Centre: Tel: (08) 9478 8572
Manager, Safety Fremantle Port Authority	Mob: 0477 114 115 Tel: (08) 9432 3660	Mob: 0477 114 115
Office of Health Protection (Commonwealth Department of Health, Disability and Ageing)	Director, Human Quarantine Tel: (02) 6289 8408, **or** Director, Border Health Tel: (02) 6289 2705	Duty Officer, National Incident Centre (24 hrs) Tel: (02) 6289 3030

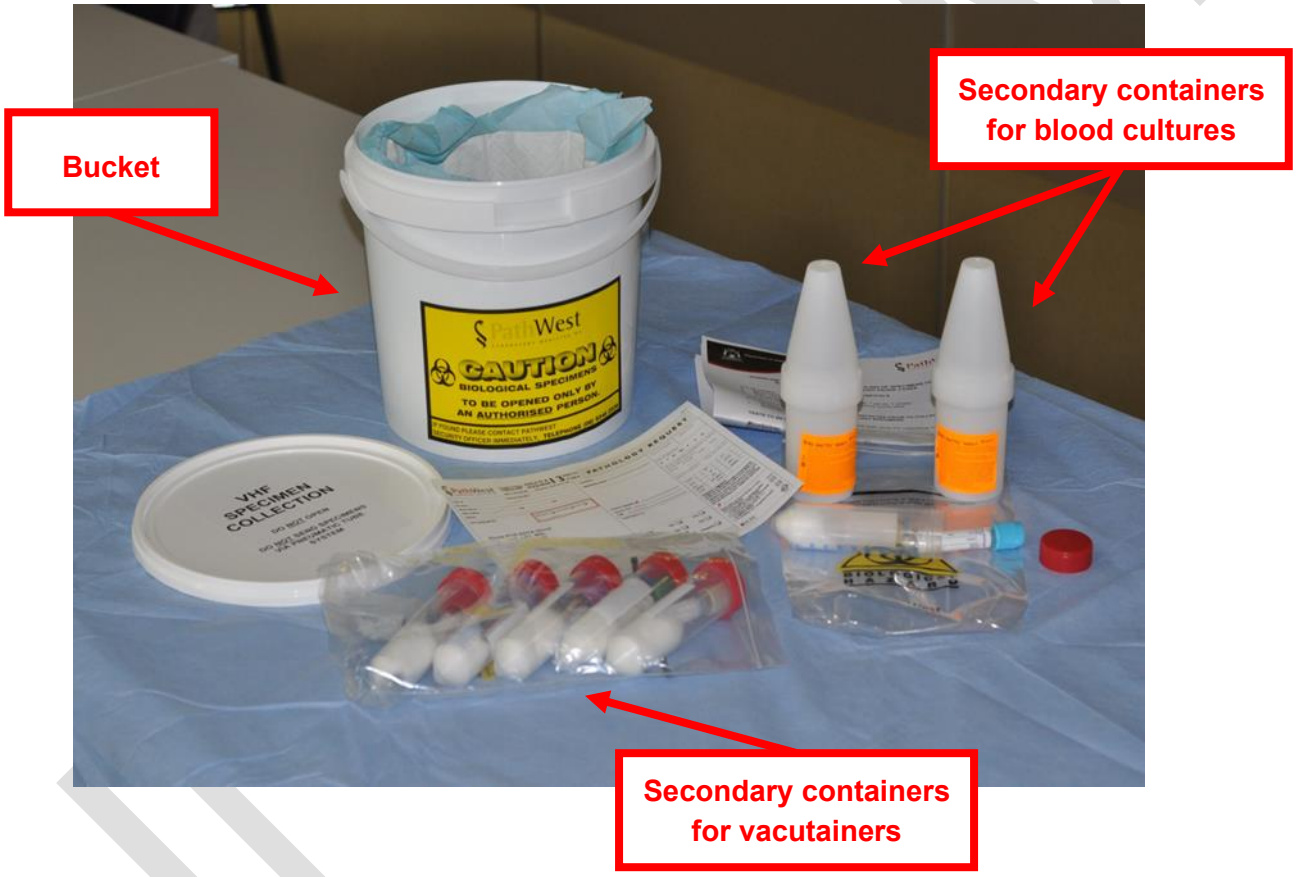
Appendix 5 – Collection and handling of specimens from suspected viral haemorrhagic fever cases

VHF specimen collection kit

Hospitals will need to produce a VHF specimen collection kit. For example, the VHF sampling kit stored at PathWest QEIIMC (refer to *Image 1*) contains:

- blood tubes (2x EDTA, 1x lithium heparin, 1x fluoride, 1x serum, 1x citrate)
- one anaerobic and one aerobic bottle for adults, and one paediatric bottle
- secondary containers with cotton wool for the vacutainer tubes and blood culture bottles
- several biohazard bags for the secondary containers
- laboratory request form
- a sealable container (e.g. 5L bucket) lined with absorbent material.

Image 1: VHF specimen collection kit



Pathology request form

The following tests should be requested using a pre-printed pathology request form:

- Microbiology
  - PCR for suspected VHF virus
    - EDTA blood
    - oral swab for children, where required
  - blood cultures
  - dengue serology
  - malaria film and PCR
- Others

- full blood picture
- urea and electrolytes
- liver function tests
- blood sugar level
- coagulation studies for adults

Specimen collection

Specimens must be collected by hospital staff using institutional infection control protocols, and blood collecting equipment. Special handling of pathology specimens for suspected or proven VHF cases is required due to the potential transmission of VHF viruses from blood and bodily fluids.

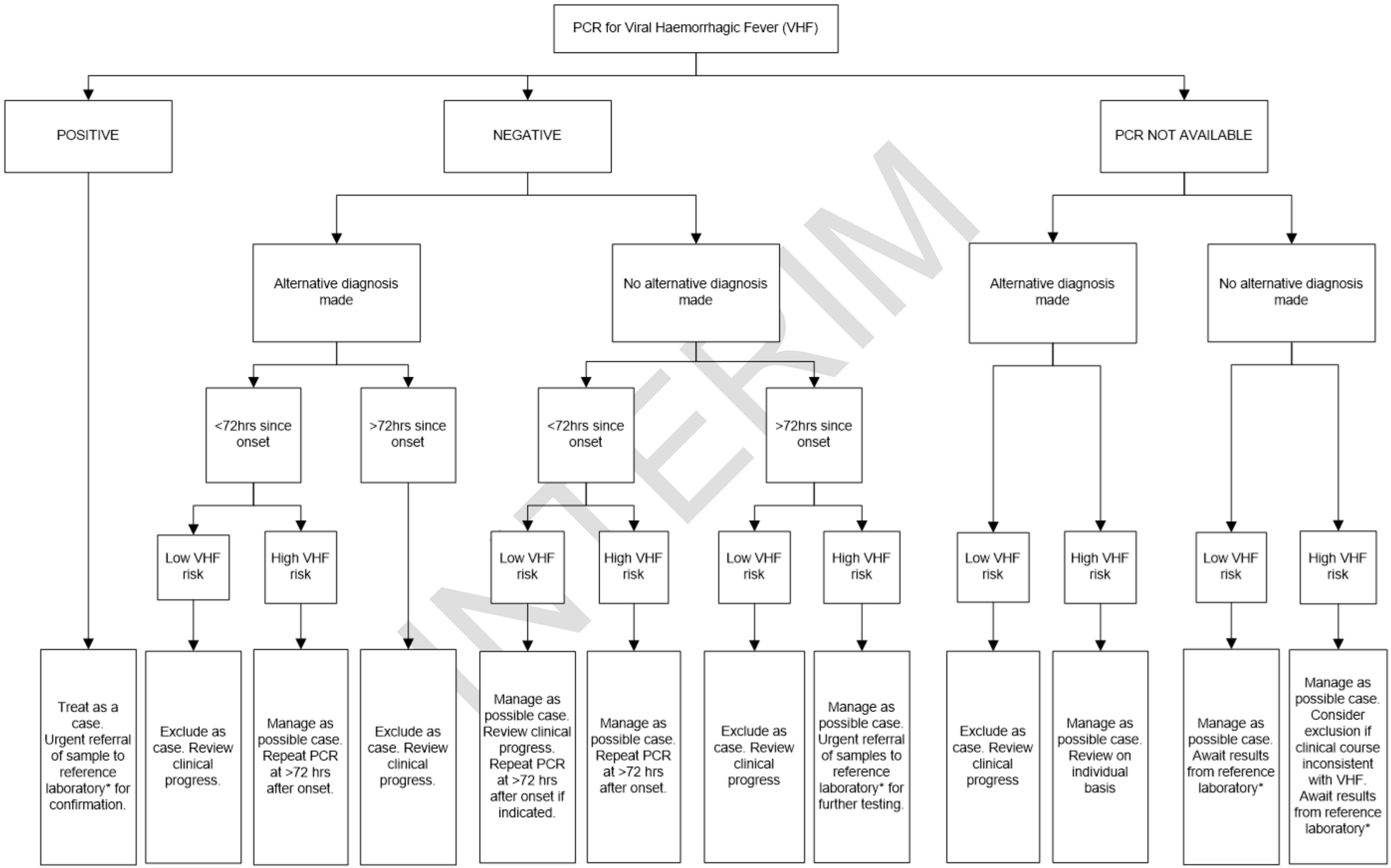
Specimens should be collected using routine collection methods, with the following precautions:

- Remove specimen tubes from the secondary containers into a kidney dish before entering the NPIR, single room or isolation room.
- Leave the bucket, biohazard bags and secondary containers in the anteroom.
- Take sufficient addressograph labels into the room for the specimens.
- After specimen collection, wipe the external surfaces of the vacutainer tubes with 0.5% sodium hypochlorite (equivalent to 5000 ppm available chlorine).
- Label filled blood tubes with the addressograph labels.
- Open door and individually place each labelled blood tube into a separate secondary container held by the assistant in the anteroom.
- The assistant should replace the secondary container lids and place each specimen into a separate biohazard bag.
- Complete the request form in the anteroom, ensuring:
  - the form is completed legibly
  - VHF risk is clearly written on the request form
  - the request form is placed in the request form sleeve of one of the biohazard bags.
- Place the biohazard bags into the bucket and seal the lid.
- Wipe the external surface of the bucket with 0.5% sodium hypochlorite and seal the lid with tamper tape.
- Transfer the sealed bucket in person to the specimen reception area of the on-site laboratory.
- No additional PPE is required for specimen transport.
- Do not use pneumatic tube systems for transport of VHF specimens.
- Specimens must never be left unattended.

Specimen transport to PathWest QEIIMC and testing

- For metropolitan hospitals, the local clinical microbiologist will arrange for specimens to be sent to PathWest Central Reception Area, Ground Floor PP Block, QEIIMC, ensuring:
  - the container is clearly labelled ‘Samples for VHF testing. Do not open’.
  - that only a recognised medical courier is used for transfer of samples.
- Inform the PathWest QEIIMC on-call clinical microbiologist when the specimen is dispatched.
- For regional cases, the PathWest QEIIMC on-call clinical microbiologist will arrange expedited medical courier transport to PathWest QEIIMC, to ensure urgent transfer.
- Only limited clinical chemistry and haematology testing in the PathWest QEIIMC laboratories will be possible during the initial screening phase.

Appendix 6 – Interpretation of VHF PCR results and subsequent management



*Reference laboratory for Australia is the Victorian Infectious Diseases Reference Laboratory (VIDRL).

This document can be made available in alternative formats on request for a person with disability.

health.wa.gov.au