

Title: Protocol for Processing Specimens from Patients with suspected Hazard Group 4 VHF Infection and respiratory infection with a High Consequence Infectious Disease (HCID).

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Amendment Procedure

Controlled document reference	MPH035
Controlled document title	Protocol for processing specimens from patients with Suspected VHF Infection

Each controlled document has a separate record of amendments detailed in this Amendment Procedure.

On issue of revised or new pages each controlled document should be updated by the copyholder.

Amendment		Discard		Insert		Section(s) involved
Number	Date	Page(s)	Issue Number	Page(s)	Issue Number	
	07.11.14		11		11	New issue
1	21.11.14	Whole issue		New issue	13	New issue
2	1 3.04.15	Appendix B	13	New issue	15	Appendix B
3	10.03.16	5,7,8,12,17,1,8	15	5	16	All
4	05.05.16	Whole issue	15		17	All
5	05.05.17	5,6,8,10,12,	17	5,6,8,10.1,2	18	
6	15.08.16	9,18	18	9,18	19	
7	13.06.19	Whole issue	20	New issue	21	New issue Including references to supporting documentation, additional guidance on contacting RIPL and transportation of high risk sample correction of some grammatical errors – changes in blue text.
8	28/06/2019	All pages	22	New issue	22	Update regarding to not perform malaria PCR in suspected VHF cases. Formatting.
9	13/05/22		22		23	Update following LIMS change to Beaker
10	20/12/2022		23		24	Update post NDDH merger
11	27/05/2023	all	24	Appendix, hyperlinks, amendments	25	Amend authors and update document
12	13/06/23	all	25		28	Include VHF categories 1,2,3,4

13	05/07/2023		28		30	Update following Trust wide VHF walk through
14	17/10/2023		31		32	Update to include Hazard group 3 and Hazard Group 4 criteria
15	26/04/2024		33		34	Revise Cat A waste bins
16	07/08/2024		34		35	Amend Category 3 Malaria test wording.
17	23/10/2024		35		36	Amend categorization from 4 groups to 3
18	12/11/2024		36		37	Update to include Mpox and HCID
19	28/11/24		37		38	ADR update added version to footer reprint page44 only
20	03/04/2025		38		39	MPox not now a HCID

INTRODUCTION

This SOP describes the workflow for specimens associated with Hazard Group 4 Viral Haemorrhagic Fever (VHF) infections.

(Also requirements for specimen taking from patients suspected of other High Consequence Infectious diseases eg?H5N1 Avian Flu).

Patients presenting at the hospital with suspected Hazard Group 4 Viral Haemorrhagic Fever (VHF) require specimens to be collected and processed via special protocols. Procedures apply to suspected infections of **Ebola** and **Lassa** fevers, **Chapare**, **Venezuelan**, **Argentine**, **Bolivian**, **Brazilian**, **Crimean Congo**, **Marburg**, **Alkhurma**, **Omsk** haemorrhagic fevers and **Kyasanur** forest disease.

Patients suspected of infection with any of these pathogens will be assessed to determine their VHF infection risk – see the link below.

<https://assets.publishing.service.gov.uk/media/6718da11d94d2c219a540613/vhf-risk-assessment-algorithm-23-october-2024.pdf>

NOTE - there are other diseases with haemorrhagic manifestations such as Dengue, Yellow fever, Leptospirosis, Rift Valley fever, and Hantaviruses.

Dengue, Yellow fever, Leptospirosis, Rift Valley fever, and Hantaviruses are Hazard Group 3 pathogens and do not require handling protocols described in this SOP. Specimens from patients suspected of these Hazard Group 3 infections may be received and processed under containment level 2 criteria with appropriate PPE. Specimens can be sent to reference lab for Imported Fever Screen (IFS) at Porton Down via routine Microbiology transport protocol (Hays Dx- UN3373) or, if designated by Microbiology consultant as Urgent/ High Risk, via Category B transport requirements (UN3373) - City Sprint couriers (see Appendix A below)

Specimens from patients suspected of severe Dengue (or similar) can be processed at containment level 3.

Suspected Hazard Group 4 VHF patients will be categorized into one of the **3** risk categories according to HSE Viral Haemorrhagic Fevers Risk Assessment (above).

Patient VHF risk categories are:-

- 1 - MINIMAL** – minimal risk of VHF
- 2 - AT RISK** - at risk of VHF
- 3 - CONFIRMED** – confirmed VHF

Always discuss with the Microbiology consultant the suspected VHF pathogen, the categorization and clinical urgency of any samples from patients suspected of Viral Haemorrhagic Fever.

Wards / Infection Control team **must** notify the laboratory / Consultant Microbiologist of suspected VHF or ?HCID respiratory patients before any specimens are sent to the any of the laboratories.

Microbiology Consultant

For cases of suspected VHF - The Microbiology Consultant on duty and involved with the initial patient assessment should, contact the Imported Fever Service (IFS) at the Rare and Imported Pathogens Laboratory (RIPL), UKHSA Porton on **0844 7788990**, for advice and consultation.

Discussion with the IFS team will determine the level of risk that the patient and their associated specimens pose.

Laboratory procedure for processing specimens will alter depending on the suspected VHF pathogen and the designated VHF risk category.

The Microbiology Consultant / Infection Control team **MUST** inform the Microbiology dept and Blood Sciences dept of any suspected VHF risk category 2 or 3 patients and associated specimens being sent to the laboratories.

For specimens rated at VHF risk category (1 or 2) or ?HCID respiratory disease continue to follow the details below.

Patients / specimens rated at VHF risk category **3** – SEE APPENDIX B.

?HCID respiratory illness – specimen collection is detailed in this SOP. For full SOP see MLPVM095

UKHSA guidance for management for ?VHF patients can be found in:

- Management of Hazard Group 4 Viral Haemorrhagic Fevers and similar human infectious diseases of high consequence. Advisory Committee on Dangerous Pathogens 2015

[Viral haemorrhagic fever: ACDP algorithm and guidance on management of patients - GOV.UK](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/444444/Viral_haemorrhagic_fever_ACDP_algorithm_and_guidance_on_management_of_patients.pdf)

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- UKHSA Microbiology Services VHF Sample Testing Advice – November 2022
- <https://www.gov.uk/government/publications/viral-haemorrhagic-fever-sample-testing-advice/viral-haemorrhagic-fever-vhf-sample-testing-from-the-imported-fever-service>
- See RDUH Eastern policy for on the RDUH Hub - **Viral Haemorrhagic Fever - Policy for Risk Assessment & Management of Patients.**

Access to VHF screening is only available through the Imported Fever Service at RIPL. EDTA, Serum Blood and urine specimens are to be sent to the Rare and Imported Pathogens Laboratory (RIPL) for urgent rapid Imported Fever Screening (IFS).

VHF Risk category 1 (Minimal risk of VHF infection).

Patients who are unlikely to have a Hazard Group 4 VHF infection (risk category 1)

For patients in suspected VHF risk category **1 (Minimal)** specimens can be processed in the laboratory at Containment level 2 with routine PPE, laboratory coat, disposable gloves and good laboratory technique.

The overall risk to laboratory workers from specimens from these patients is considered to be minimal, and specimens may be processed at Containment level 2.

Analysis of specimens should not be delayed whilst awaiting the results of VHF tests.

Malaria remains the most likely diagnosis and therefore screening for malaria is most urgent.

Malaria tests (blood films) to be performed in Blood Sciences lab

Routine laboratory tests should be carried out where possible in auto-analysers using standard practices and procedures at Containment level 2.

Wear disposable gloves to process specimens. Label specimens with Danger of Infection labels.

Specimens can be discarded with routine waste.

Waste to be treated as Category B waste (UN3291)

VHF Risk category 2 (At risk of VHF infection).

For patients in risk category **2 (At risk)** - Specimens should be processed, ideally, at Containment Level 3 - in a Microbiological Safety Cabinet (MSC). Specimens can be processed in a MSC at Containment level 2 (malarial slides in Blood sciences).

The overall risk to laboratory workers from specimens from this category of patient is also considered to be low, and specimens that are tested in auto analysers may continue to be processed (for a restricted list of investigations – inc blood cultures) at Containment level 2.

When preparing Gram stain slides from Positive blood culture bottles consideration should be given to the potential for splash and therefore should be carried out in a CL3 MSC (Microbiological Safety Cabinet) by an experienced BMS.

Do NOT process Positive Blood culture bottles until result of Imported Fever Screen is known.

All further Microbiology specimen manipulations from VHF Category 2 should be carried out at Containment level 3 and inside an MSC.

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Malaria remains the most likely diagnosis and therefore screening for Malaria is urgent regardless of a previous negative Malaria screen.

Tests for Malaria (blood films) can be performed in the **Blood Sciences lab at** Containment level 2 - **inside an MSC**. See Blood Sciences SOP BS/SOP/216.

Specimens and laboratory waste are to be retained in a dedicated waste bin which should be processed as Category A waste (UN3549) if there is a Positive IFS result.
Waste can be treated a Category B waste (UN3291) if the IFS result is Negative.

VHF Risk category 3 (Confirmed VHF infection)

All specimens from VHF risk category **3** will be considered high risk of infection (Category A).

All specimens received from Confirmed positive Hazard Group 4 VHF patients are initially NOT to be processed at Exeter Microbiology laboratory.

Patients, once confirmed with a known Hazard Group 4 VHF infection, will be transported (together with all associated specimens) to a HCID (High Consequence Infectious Diseases) center and will not be treated here in Exeter.

If all HCID centers are full or if the patient is too ill to travel then specimens “may” need to be processed in the Exeter laboratories. In that event - Follow APPENDIX B below.

- All Tests should be undertaken in an MSC - Microbiological Safety Cabinet.
- For manual centrifugation procedures, a sealed centrifuge bucket or rotor must be used;
- Patient samples that are not for immediate disposal should be packed in rigid containers, which should be surface decontaminated and retained within the laboratory awaiting safe disposal
- Retained specimens must be disposed of as category A waste and inactivated by autoclave
- Blood film for Malaria (see BS/SOP/217) should be disposed of in a dedicated sharps bin, which must be processed as category A waste
- Work surfaces should be treated with 10,000 ppm available chlorine

– See Appendix A for transportation arrangements

Microbiology BMS to arrange courier collection.

The specimens must be transported to Porton Down/UKHSA Bristol via courier.

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?HCID respiratory infection (UKHSA Bristol) - use **Category B** postal regulations UN3373

VHF risk category **1** - (Minimal risk) (RIPL) - use **Category B** postal regulations UN3373

VHF risk category **2** - (At risk) (RIPL) - use **Category B** postal regulations UN3373.

VHF risk category **2** - (At risk) (RIPL) – Very High likelihood - use **Category A** postal regulations UN2814.

VHF risk category **3** - (Confirmed) (RIPL) - use **Category A** postal regulations UN2814.

Reference lab request forms to be completed by Microbiology Consultant. If NOT completed by Microbiology consultant the Microbiology BMS can complete the form taking the information recorded in Beaker.

The courier companies “may” require a name of the person at Porton Down/ UKHSA Bristol who will receive the couriered parcels.

For ?VHF - The Microbiology Consultant to complete the UKHSA Rare and Imported Pathogens Request form **P1** – see the link below.

[P:\MICROBIOLOGY\USER DATA\LABORATORY\SEDAWAY FORMS & LABELS\FORMS\UKHSA - P1 - Rare and Imported Fever screen.pdf](#)

For ?H5N1 Avian Flu HCID respiratory infection - The Microbiology Consultant to complete the UKHSA Bristol Molecular referral form – see the link below.

[P:\MICROBIOLOGY\USER DATA\LABORATORY\SEDAWAY FORMS & LABELS\FORMS\UKHSA Bristol - VFM232 - Molecular referral request form.pdf](#)

NOTE – the Category A courier- CryoPDP - are a 2 plus hours’ drive away from Exeter (based at Heathrow). Be aware as this courier will take a number of hours to arrive on site.

For UN2814 (Category A) parcels - BMS to complete the **Dangerous Goods Note** - required by the courier companies. Keep this form with the specimen packages.
See APPENDIX A below

COMMUNICATION CASCADE

Microbiology Consultant / Infection Control team

Consultant Microbiologist / Infection Control team involved with initial patient risk assessment will alert Blood Sciences and Microbiology laboratories to expect the specimens from patients suspected of a Hazard Group 4 VHF infection - risk category 2 (At risk) or 3 (Confirmed).

Risk category 1 (minimal) laboratory staff do not need any prior warning and specimens from this type of patient can be processed as per other routine specimens.

Contact numbers are - During working hours (08:00 – 17:30)

- Blood Sciences **2938**
- Microbiology **2975**

Ward clinicians, Consultant microbiologist to declare the patient risk category to enable the laboratory to process the specimens under the correct guidelines.

Consultant Microbiologist / Infection Control team involved with initial patient risk assessment will alert Microbiology laboratory to expect the specimens from patients suspected of Mpox Clade1 infection.

Consultant Microbiologist / Infection Control team involved with initial patient risk assessment will alert Microbiology laboratory to expect the specimens from patients suspected of HCID respiratory infection.

SPECIMEN TAKING AND TRANSPORT

Diagnostic samples required for testing for Hazard Group 4 VHF infection

PPE selection should be proportionate to the likelihood of infection.

Specimen transport bags containing 3 marked specimen containers for the transport of HCID specimens to Blood Sciences and Microbiology are located on **TORRIDGE WARD** and in the **Accident and Emergency dept**

Before samples are collected

- 1) Microbiology consultant **MUST** be consulted in **ALL** cases of suspected Hazard Group 4 VHF, ?Mpox, ?HCID respiratory infection.
- 2) Blood Sciences and Microbiology laboratories **MUST** be informed of cases of suspected VHF patients - risk category (2 or 3). Microbiology Lab must be notified of ?Mpox Clade1 and HCID respiratory infection
- 3) Do not take samples to the laboratories until the laboratories are ready to receive them.

Contact numbers:

Blood Sciences Working hours tel. 2934 Out of hours bleep 226

Microbiology Working hours tel. 2975 Out of hours via switchboard

Specimens to be collected.

2 x EDTA, 3 x Serum, 1 x Clotting, 1 x Blood culture set, 1 x Urine.

Request tests in EPIC as stated below, and highlighted in **RED**

1. Container 1 – for Microbiology



x1 Blood Culture Set. Request **BC** in EPIC

2. Container 2 – for Microbiology to forward to RIPL for the Imported Fever Screen Request in EPIC the test **Returning Traveller Screen (LAB9221)**

Attach the correct label to the correct specimen



x1 EDTA.



X2 Serum.



x1 Urine (White Top).

3. Container 3 – for Blood Sciences



x1 EDTA

FBC+ Malaria screen



x1 Serum

U&E's, LFT's, CRP, Glucose



x1 Clotting Bottle

Clotting

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Once collected each sample must be placed in a new, clean specimen bag.

Register the specimens in EPIC with the tests stated (if not done so already).

All specimens **MUST** be then double bagged. The outer bag should be a clear "clip lock" style bag

Ensure urine sample, if available, has the lid securely fastened.

Ensure all specimens are NOT grossly contaminated with the patient's body fluid (blood / urine). Grossly contaminated specimens will be rejected. Repeat specimens will be required.

- Double bagged specimens must be placed in the appropriately labelled screw capped specimen container.



Container 1	1. Blood culture bottles	Take to Microbiology	CL3 lab. Floor 3, Old Path Lab
Container 2	1. EDTA (purple top) 2. X2 Serum (gold top) 3. Urine White top universal	Take to Microbiology	CL3 lab. Floor 3, Old Path Lab
Container 3	1. Serum (gold top) for U&E, LFTs, CRP, Glucose 2. EDTA (purple top) for FBC + Malaria screen 3. Clotting (blue top)	Take to Blood Sciences	Template A2

- Any accompanying paperwork must be put separately in the sleeve on the outside of the transport bag. No paperwork is to be placed inside the transport bag.



- Zip close the transport bag.

For Hazard Group 4 VHF - risk category 2

- The transport bag is to be taken, without delay, by a member of the Infection Control team or Microbiology Consultant **FIRST** to Template A2 (Blood Sciences).
- Specimen container **3** to be handed to the Blood Sciences BMS.
- The transport bag must then to be taken to Microbiology (Old Path Lab) by the member of the Infection Control team or Microbiology Consultant and handed to the Microbiology BMS.
- Specimen containers **1** and **2** to be handed to the Microbiology BMS.
- Replacement Green transport bag with labelled containers can be collected from Microbiology and returned to the wards ready for the next use.

For Hazard Group 4 VHF - risk category 3

- The transport bag is to be taken to Microbiology (Old Path Lab) by the member of the Infection Control team or Microbiology Consultant and handed to the Blood Sciences or Microbiology BMS by the CL3 lab.

Replacement Green transport bag with labelled containers can be collected from Microbiology and returned to the wards ready for the next use.

The vacuum tube transport (POD) **MUST NOT** be used to send ANY samples from ANY suspected or confirmed VHF patients.

PPE selection should be proportionate to the likelihood of infection.

Diagnostic samples required for testing for ?High Consequence Infectious disease (HCID) respiratory infection.

? HCID specimen requirements. **Respiratory infection ?Influenza (?Avian Flu ?H5N1)**

Yellow Top Cobas PCR swab



EPIC test code = Respiratory Virus Panel – **LAB9702** for test at RDUH Microbiology lab.

PRINT 2 LABELS. ADD ONE LABEL TO THE YELLOW TOP TUBE - ABOVE.

ADD ONE LABEL TO THE GREEN TOP TUBE - BELOW

RDUH Eastern use Green Top Virocult swab (RDUH Northern use blue COPAN swab)



Once collected each sample must be placed in a new, clean specimen bag.

Register the specimens in EPIC with the tests stated (if not done so already).

All specimens **MUST** be then double bagged. The outer bag should be a clear “clip lock” style bag.

Bagged specimens must be placed in the any of the screw capped specimen containers in the HCID Green transport bag and transported to the Microbiology Lab ASAP.

(All other specimens collected at the same time as these samples are also to be collected booked into EPIC with the appropriate codes, double bagged and transported to the correct laboratory).

Ensure all specimens are **NOT** grossly contaminated with the patient’s body fluid (blood / urine). Grossly contaminated specimens will be rejected. Repeat specimens will be required.

The vacuum tube transport (POD) **MUST NOT** be used to send ANY samples from ANY suspected or confirmed HCID respiratory infection patients

LABORATORY PROCEDURES

Lone working is not permitted in the CL3 laboratory when processing high risk specimens.

Call in a second BMS or Medical Microbiologist if processing is required.

*When processing samples from VHF risk category 3 patients (during the day or out of hours) see **APPENDIX B** below*

Processing specimens from VHF risk category 2 patients is permitted.

*If out of hours and specimens from VHF risk category 2 patients are received - Microbiology BMS **MUST** contact a member of the Microbiology BMS On Call team to come in and assist. If No member of the Microbiology On Call team is available the Microbiology consultant / Lab manager must come in and assist the BMS (read the step by step SOP) processing the samples.*

PPE and equipment required for processing all categories of suspected HCID infections are in the two labelled boxes in the lobby of the CL3 lab.

PPE required for handling HCID specimens is in the one box (labelled Ebola PPE).

Equipment required for the processing of HCID samples are in the second box.

(spare gowns, visors, masks, aprons, containers (1,2,3) are in the bottom drawer in the lobby labelled "VHF PPE Spares").

Ensure a Microbiology Safety Cabinet (MSC) is ready to process HCID samples.
Use the large MSC closest to the MGIT analyser

Process all high risk samples - ?HCID respiratory infection, ?VHF - in a Microbiological Safety Cabinet (MSC).

If testing samples for ?H5N1 ?Avian Flu HCID respiratory infections ensure Qiasat respiratory panel cartridges are available.

Put on PPE

- 1) Green lab coat.
- 2) Disposable gloves
- 3) Blue disposable cuff protectors

In the large MSC - close and decontaminate the outside of any current in use Biobin waste / sharps bins, using Tristel Jet. After 1 minute wipe dry with paper towels. Remove these containers and other waste material in the MSC to bagged autoclave bins. Decontaminate and remove all unnecessary equipment from the MSC. Spray and wipe down internal surfaces of the MSC using Tristel Jet. Put a new Biobin in the MSC. Put all paper towels used for wiping down surfaces into the Biobin.

Prepare disinfectant solution (10,000ppm chlorine)

Add 4 large HazTabs (check HazTabs are "In Date") to 1000 ml of distilled water in red box container provided (labelled for dunking specimens).

Put this red box containing Chlorox in the MSC. Place paper towels in the "lid" half.

Mix by stirring with gloved hand to ensure the Haz tabs are fully dissolved. Dry gloved hand with paper towels. Discard paper towels into Biobin.

Ensure the following items inside the MSC:

Blue absorbent tissue on top of the white spill tray	
Red box containing Chloros	
An Empty Biobin waste bin	Open
Alcohol Hand sanitizer	Check this is in date.
Paper towels	For drying Blood culture bottles etc

Outside the cabinet (but within easy reach)

Rack for blood culture bottles

New Screw cap (DX) container (this is for the transport of the labelled specimens to RIPL

Boxes of spare gloves

Absorbent wadding for packaging specimen.

Paper towels

Ensure double bagged clip locked waste containers are close by.
Ensure the lids are readily available

?HCID Respiratory infection. Remove the screw capped specimen container from the transport bag and place inside the MSC. Remove the double bagged specimen. Receipt the specimen in EPIC.

Inoculate the Qiasat respiratory panel inside the MSC with the recommended volume of specimen. Transfer the panel to the Qiasat and run the sample – see MLPVM095

If required - **Re pack the Green top Virocult specimen (RDUH Northern Blue top COPAN) using UN3373 guidelines and label the outside (see appendix A).**
complete the sendaway form.

<P:\MICROBIOLOGY\USER DATA\LABORATORY\SEDAWAY FORMS & LABELS\FORMS\UKHSA Bristol - VFM232 - Molecular referral request form.pdf>
Arrange transport via Hays DX or courier (depending on clinical need).

PROCESSING VHF SAMPLES

BEFORE PROCESSING SAMPLES ENSURE THAT YOU HAVE CONFIRMED THE VHF RISK CATEGORY WITH THE DUTY MICROBIOLOGY CONSULTANT.

ONLY PROCEED IF VHF RISK CATEGORY is 1 or 2.

VHF RISK CATEGORY 3 - FOLLOW STEPS LISTED IN APPENDIX B

PROCESS VHF SCREEN SPECIMENS FIRST.

Open the Container 2 inside the MSC.

Do not remove the blood samples from the double bagging.

- 1) Check that the specimens are intact (no leakage) and are labelled with correct patient details.
- 2) Examine specimens through the clear plastic bags. If there is any gross blood contamination on the specimens the Consultant Microbiologist must be notified and replacement specimens ordered. If specimens are irretrievably contaminated, they must be placed in the dedicated Category A discard container for disposal.
- 3) If specimens appear clean (small amounts of blood around the inoculation site are acceptable) receive the specimens into Beaker by scanning the barcode through the MSC viewing window (and double bagging). The PC barcode reader will reach the large MSC.
- 4) Buddy BMS to hold the open screw capped DX container close to the MSC. BMS working in the MSC - place the double bagged EDTA, Serum and Urine specimens in DX screw cap plastic container for sending to RIPL.
- 5) Add absorbent material and packaging to support and protect the samples.
- 6) Buddy BMS - Screw lid on the container and place it inside the cardboard outer DX container. Place safely on the bench for sending to RIPL.
- 7) Use Hand sanitizer on the gloved hands.
- 8) *Remove the pair of gloves (discard into waste container).*
- 9) Put on a new pair of disposable gloves.
- 10) Buddy BMS - Place the completed form **P1** inside the DX box but outside of the screw capped plastic container.
- 11) Close the box and place security seal over the tag. Label the box - see Appendix A
- 12) See **APPENDIX A** for courier transport to RIPL.

PROCESS BLOOD CULTURES SECOND

1. Inside the MSC open Container 1 and remove the still double bagged blood culture bottles.
2. Examine specimens through the clear plastic bags and check that Blood culture bottles are labelled correctly. If there is any gross blood contamination on the specimens the Consultant Microbiologist should be notified and replacement specimens ordered. If specimens are irretrievably contaminated, they must be placed in the dedicated Category A discard container for disposal.
3. If specimens appear clean (small amounts of blood around the inoculation site are acceptable) receive the specimens into Beaker by scanning the barcode through the MSC viewing window (and double bagging). The PC barcode reader will reach the large MSC.
4. Remove the blood bottles from the double bagging and immerse the bottles in the red box containing 10,000 ppm chlorine solution for 2 minutes. Set timer running. Use gloved hand to immerse the bottles in the Chloros.
5. Discard the specimen bags in the Biobin

(The Bactec blood bottle barcode and EPIC labels do deteriorate in this strength Chlorine solution BUT are still readable / scannable after 10 minutes plus in the Chloros solution – see label integrity after Chloros immersion.

P:\MICROBIOLOGY\USER DATA\LABORATORY\Cat 3 lab 2021\VHF bc after Chlorine).

6. After 2 minutes in Chloros. Remove specimens from the Chlorine solution and stand on absorbent material to dry in the “lid” half of the red box.
 7. Using paper towels - Wipe the top of the specimen bottles to remove any traces of blood. Discard the paper towels into the Biobin waste container in the MSC.
 8. Carefully dab dry the bottles with the fresh paper towels and discard towels into the Biobin waste container in MSC.
 9. Use Hand sanitizer on the gloved hands.
 10. *Remove the pair of gloves* (discard into waste container).
 11. Put on a new pair of disposable gloves.
 12. Place the Blood Culture bottles in the rack outside the MSC.
- All other specimens received (except blood cultures) from suspected High Risk (VHF) patients will be stored in a standard screw top transport container and kept at the back of Class 1 MSC in the CL3 laboratory until IFS screen status of patient is known.
 - Following the IFS result a risk assessment will be made as to whether the specimens are processed at Exeter (VHF Negative) - or sent, with the patient, to center for HCID (VHF POSITIVE).

When all actions are completed for processing the specimens from suspected VHF patients

- 1) Discard blue absorbent pad into Biobin.
- 2) Using paper towels wet with Chlorox wipe over the inside of the MSC starting on the left side of the MSC to make a "clean space". One item at a time -wipe the exterior surfaces of items, including Container 1 and 2, using the Chlorox moistened cloth and move them into the clean space.
- 3) Continue and wipe down everything in the MSC - all internal surfaces.
- 4) Discard the paper towels cloth into Biobin waste bin.
- 5) Discard alcohol hand sanitizer into the Biobin.
- 6) Close the waste Biobin container.
- 7) Disinfect the outside of the Biobin waste container using Tristel Jet. Leave for 1 minute. Wipe dry with paper towels.
- 8) When dry discard the Biobin into the Category A waste bin along with any remaining paper towels inside and outside the MSC.
- 9) Discard the specimen transport containers (1 and 2) into the Category A waste bin.
- 10) Remove gloves and discard into Category A waste bin.
- 11) Put on new gloves.
- 12) Carefully remove the red box containing Chlorox from the MSC.
- 13) Discard disinfectant (Chlorox) carefully down the sink avoiding splashes – rinse with running water. Stand the red box upside down to air dry.
- 14) Remove gloves and blue cuff protectors into Category A waste bin
- 15) Place the lid on the Cat A waste bin. Place the Cat A waste bin next to the CL3 autoclave.
- 16) Remove Green lab coat.
- 17) Place lab coat into a bag lined metal waste bin. Replace the lid. Place this bin and the next to the CL3 autoclave
- 18) Wash hands using soap and warm water
- 19) Put on white lab coat and new disposable gloves.
- 20) Remove the lid of the Formalin vaporizer on the MSC. Add 25m water and 25ml Formalin to the Formalin vaporizer on the righthand side of the MSC. Replace the lid – only finger tight – do not overtighten.
- 21) Place the secure aperture door to the front of the MSC. Tighten all the locks. Ensure the bung is tightly in place.

- 22) Start the Formalin vaporizer cycle on the MSC. This should run for eight hours.
- 23) Take the blood cultures (in the rack) out of the CL3 laboratory.
- Load the Blood culture bottles (labelled with High Risk stickers) on the Bactec FX. Note the location of the blood cultures in the Bactec FX against the lab number of the specimen in Beaker.
- 24) If these Blood culture bottles flag positive – DO NOT PROCESS – seek advice from Microbiology consultant.
- 25) Return to the CL3 lab. Open the CL3 autoclave. Place the Cat A waste bin inside the autoclave. Place the metal bin containing the lab coats inside the autoclave.
- 26) Close the door and start the Bagged Waste cycle.
- 27) Open the Sendout Bench tab in Beaker. Create a Packing list for RIPL. Add the specimen to the RIPL Packing list. Click “Ready” then Click “Pick up”.
- 28) Keep an eye out for the Courier. You may need to fill out a Dangerous Goods note – see page 18 below.

Wipe dry the red Chlorox pot. Return to the Ebola PPE boxes.

Contact the Infection Control team for replacing Transport bags to TORRIDGE and / or A+E.

There are two fully stocked replacement specimen transport bags on the shelf of the store room in TF.

Transport bags are labelled “VHF”

OR

*Restock the ward based **Specimen Transport Bags**.*

Surface decontaminate the outside and inside of the transport bag and carrying handles with Tristel (DUO or Jet) Ensure that there are 3 labelled (1,2 and 3) screw cap pots and Specimen Transport instructions laminate inside the bag. Spare pots are in the bottom drawer in the CL3 lobby marked “VHF PPE Spares”.

WASTE DISPOSAL

Current HSE guidelines state that waste from potential or confirmed VHF patients should be, where possible, autoclaved on site.

Bins containing Category A waste from potential VHF positive patients are to be autoclaved ASAP using the Bagged Waste cycle (126°C for 65 minutes) on the Priorclave Tactrol 3 320Litre Passthrough autoclave linked to the CL3 laboratory.

Load all Category A waste bins.
Check the autoclave cycle is on “**Bagged Waste**”.
Close the autoclave door.
Press “Start”

Following the “Cycle Pass” completion of the Bagged Waste cycle - waste will be removed from the autoclave.

The clinical waste bin is transferred to Yellow wheelie bin, treated as Category B waste and incinerated as per RDUH waste policy.

If the suspected VHF patient is tested by RIPL and found to be **IFS screen Negative** – ALL waste can be treated as Category B waste and follow RDUH waste policy.

If the CL3 autoclave is out of action due to fault or maintenance all **Category A waste is to be collected into a lockable wheelie bins and transferred to the BMM Weston Path Lab autoclave on the second floor of the Old Path Lab. Use 126 Waste cycle – see MPH030.**

If the BMM Weston autoclave is also out of action due to fault or maintenance all **Category A waste is to be collected in Category A waste bins, labelled as hazardous waste** and follow as per RDUH Waste Management Disposal of waste policy see the HUB.

<https://hub.exe.nhs.uk/resources/assets/attachment/full/0/189172.doc>

Category A waste (UN3549) – see Appendix 11

Call waste Management on **6069** at the earliest opportunity to arrange for a specified date and time for collection and disposal of Category A waste bins.

All waste bins containing specimens and waste from confirmed VHF patients must be kept separately in lockable wheelie bin in CL3 lab until collection.

Collection of Category A waste must be by a designated, named waste collection company (as designated in RDUH Trust Waste Policy) and disposed off site.

Patients confirmed as VHF positive must have any samples racks used if the processing of the specimens discarded along with the samples and all other waste

Check Ebola PPE and equipment bins – Restock as appropriate
(see drawer labelled VHF PPE Spares)

References

Management of hazard group 4 viral haemorrhagic fevers and similar human infectious disease of high consequence

[Viral haemorrhagic fever: ACDP algorithm and guidance on management of patients - GOV.UK](#)

<https://assets.publishing.service.gov.uk/media/6718da11d94d2c219a540613/vhf-risk-assessment-algorithm-23-october-2024.pdf>

[P:\MICROBIOLOGY\USER DATA\LABORATORY\SEDAWAY FORMS & LABELS\FORMS\UKHSA - P1 - Rare and Imported Fever screen.pdf](#)

<https://www.gov.uk/government/publications/viral-haemorrhagic-fever-sample-testing-advice/viral-haemorrhagic-fever-vhf-sample-testing-from-the-imported-fever-service>

UN2814 - Category A transport guidelines – Infectious substances affecting humans.

UN3373 – Category B transport guidelines – Biological Substance

<https://assets.publishing.service.gov.uk/media/5f60c1c58fa8f51063ce4e83/dangerous-goods-guidance-note-17-document.pdf>

UN3291 – Biomedical waste

<https://www.gov.uk/guidance/healthcare-waste-appropriate-measures-for-permitted-facilities/managing-healthcare-wastes>

UN3549 – Category A medical waste

MPH045 Bench guide for handling Mpox specimens

MLPVM095 Qiasat

APPENDIX A

Contacting Porton Down Rapid Fever Screening Service

Before arranging transportation, the following steps should have been taken:

- The Microbiology Consultant will liaise with the Reference Laboratory (Microbiology Services Division – Porton Down Tel: 0844 7788990) and determine the level and probability of risk
- Low risk / probability of Category 4 organism -> Transport as Category B (UN3373)
High risk / probability of Category 4 organism -> Transport as Category A (UN2814)
- The Microbiology Consultant will arrange for a VHF screen with Imported Fever Service Tel: (0844 7788990) and complete the P1 UKHSA Rare and Imported Pathogen Request form.
- The Microbiology Consultant should obtain the name and contact details of the recipient clinician. This may be required by the courier.

Then:

- The Microbiology Biomedical Scientist will arrange for a courier to transport the specimens from and to:

From :-

Microbiology.
Royal Devon University Healthcare NHS Foundation Trust.
Old Path Lab.
Church Lane.
Heavitree.
Exeter.
EX2 5AD
Tel number 01392 402975

To :-

(Named recipient) call 08447788990 for receiving clinician name if required by courier
The Rare and Imported Pathogens Laboratory
UKHSA Microbiology Services
Porton Down
Salisbury
Wiltshire.
SP4 0JG

Specimen requirements for ?VHF

Specimens required for a VHF screen are 2x 10mls of clotted blood (Yellow topped vial) and 5mls EDTA (Purple topped vial) plus (if possible) 20 ml Urine (sterile universal).

Specimen requirements for ?Mpox

?HCID respiratory infection

To :-

Infection Sciences.

Pathology Sciences Building

Southmead Hospital

Bristol

BS10 5NB

DX6120200 Bristol 90BS

Specimen requirements for ?HCID respiratory infection for sending to reference lab

Specimens required for a HCID respiratory panel are 1x Green top Virolcult swab (Blue top COPAN for RDUH Northern) from the Nose and throat.

Courier Services

CATEGORY 'A' SPECIMEN TRANSPORT PROCEDURE (PDP)

Category A Transportation (to follow UN2814).

To be used for VHF risk category 2 or 3 patients

For Category A transport - contact CryoPDP couriers on **01784 420466** (this number is 24/7) and quote reference **RDE-NHS**. State where the parcel is to be collected from and where it is to be delivered. **Ask CryoPDP for identity of courier driver – confirm at time of parcel collection.**

Email CryoPDP on **uk-cs@cryopdp.com** - state all the details stated above.

A quote is to be generated by reply to the email and this will be used to enter into Procurements Unit 4 for payment.



Account No: RDE-NHS

Online User Name: NA Online Password: N/A.

Website: www.pdpcouriers.com

Keep the specimen parcel in padded transport bag (UN3373) prior to transfer to CryoPDP.

Microbiology BMS to wait until courier arrives on site.

Check the CryoPDP courier identity documents. Any difference to the identity stated originally by CryoPDP and the identity of the courier on site - confirm the change with CryoPDP office prior to handing over the specimen parcel.

Packaging and labelling will be supplied by CryoPDP and this must be used.

Transfer the container (containing the EDTA vial, the Gold top vial and the urine specimen) into the new packaging supplied by CryoPDP.

Also need a completed Dangerous Goods Form

An example can be found by this hyperlink - edit as appropriate:

[P:\MICROBIOLOGY\USER DATA\LABORATORY\VIROLOGY & SEROLOGY RESTORED\190214\VHF\ADR DG 2814 - RD&E 2024-09-25.doc](#)

Place the VHF request form P1 inside the CryoPDP packaging.

Microbiology BMS to ensure the specimen parcel for testing is placed in the secure transport location in the CryoPDP courier vehicle.

Give the Dangerous Goods note to the CryoPDP courier driver.

CATEGORY 'B' SPECIMEN TRANSPORT PROCEDURE (CitySprint)

Category B Transportation.

To be used for risk category 1 patients

For Category B samples - contact City Sprint on 01752 333550 (this number is 24/7).

State all the details required particularly where it is to be collected from and where it is to be delivered.



The details of our account and the CitySprint local service centre are below. They are available 24/7, 365 days a year.

Our Account Number:	CS035553
Our Account Name:	Royal Devon University Healthcare NHS Foundation Trust. The Microbiology Department.
Your Local Service Centre	PLYMOUTH
Phone:	01752 333550
Service Centre Manager:	Paul Papamichael

Use standard Category B packaging available in the laboratory

Please note the drivers are not local. The PDP driver may take 2-3 hours to get here. Please bear this in mind if you are asked to do this on call.

For City Sprint – these are based in Plymouth so allow at least 1 hour for courier to get here.

Microbiology BMS to wait until courier arrives on site.
Microbiology BMS to ensure the specimen parcel for testing is placed in the secure transport location in the Citysprint courier vehicle

Unit 4

NB. The next day or as soon as possible an order should be placed on Unit 4 and authorised so that the courier company can be paid.

APPENDIX B

Protocol for processing specimens of suspected Hazard Group 4 VHF - Infection risk category 3

**BEFORE PROCESSING SAMPLES ENSURE THAT YOU HAVE CONFIRMED THE POTENTIAL
PATHOGEN AND RISK CATEGORY WITH THE DUTY MICROBIOLOGY CONSULTANT.
ONLY PROCEED IF VHF RISK CATEGORY IS 3.
RISK CATEGORY 1 or 2 FOLLOW STEPS LISTED IN above pages 5 – 19**

RDUH North Microbiology (Barnstaple hospital) does not possess a Containment level 3 laboratory. Specimens from patients with confirmed Hazard Group 4 VHF are not to be processed on site. The patient and all specimens from the patient should be transferred to HCID hospital.

Microbiology Consultant

Consultant Microbiologist/Infection Control team involved with initial patient risk assessment will alert Blood Sciences and Microbiology laboratories on presence of a patient suspected of VHF (Category 3) and will notify the laboratories to expect the specimens required in VHF guidance.

Contact numbers are - During working hours (08:00 – 17:30)

- Blood Sciences **2938**
- Microbiology **2975**
- *The Haematology BMS will take the slides, blood tube rack (including packaging to keep tubes upright), slide transport box and Acetone over to the microbiology lab.*
- *OUT of Hours – contact Haematology and Microbiology via switchboard*

If “Out of Hours”:-

The Haematology BMS will contact the ‘Second On’ Haematology BMS to cover the department whilst the “First On” BMS is processing the suspected VHF samples.

The First On Call Haematology BMS will await the “Second On’s” arrival. Once the Second On BMS has arrived in Blood Sciences dept, the Haematology BMS will take the slides, blood tube rack (including packaging to keep tubes upright), slide transport box and Acetone over to the microbiology lab.

Once a patient is identified in risk category 3 the respective laboratory BMS’s should search the EPIC (LIMS) to ensure there are no other specimens received from the patient already in the laboratory. These specimens and associated work will need to be found and removed from routine processing. Any specimens are to be collected, double bagged and transported to Microbiology for storage until the results of the VHF testing from the IFS are known.

These specimens are to be stored in CL3 lab.

The Microbiology Consultant will complete the UKHSA Rare and Imported Pathogens Request Form P1 – see the link below. **If form NOT completed by Microbiology consultant the BMS can complete the form taking the information recorded in Beaker for the Returning Traveller Screen (LAB9221) under the correct specimen number**

<P:\MICROBIOLOGY\USER DATA\LABORATORY\SEDAWAY FORMS & LABELS\FORMS\UKHSA - P1 - Rare and Imported Fever screen.pdf>

The courier companies may require a name of the person at Porton Down who will receive the couriered parcels. The Microbiology Consultant should obtain this name during discussions with the IFS.

Microbiology BMS to arrange courier collection. See Appendix A.

NOTE – Category A courier CryoPDP are 2 plus hour's drive away from Exeter (based at Heathrow). Arrange the courier first as this will take a number of hours to arrive on site.

BMS to complete the **Dangerous Goods Note.** See **APPENDIX A** below - required by the courier companies.

LABORATORY PROCEDURES

These instructions must be followed carefully.

Do NOT rush.

Take your time! Check you have all equipment required before starting.

Two members of staff (BMS's from Microbiology and Haematology) MUST be present to process samples from suspected VHF positive patients.

Lone working is not permitted in this laboratory out of hours or when processing VHF risk category 4 specimens. **Before processing any work on suspected VHF positive specimens ensure you have all the equipment required AND that all reagents / consumables required are "In Date".**

PPE and equipment required for processing these specimens are in the two labelled boxes in the lobby of the CL3 lab in Microbiology.

PPE required is in the one box (labelled Ebola PPE).

Equipment required for the processing of HCID samples are in the second box. (Spare gowns, visors, masks, aprons, containers (1,2,3) are in the bottom drawer in the lobby labelled "VHF PPE Spares").

Raspberry scrubs (stored in the CL3 lobby cupboard) are available to be worn, if preferred, by the BMS's processing the specimens. If so take the scrubs to the rest rooms and change into them before continuing.

Remove hand and wrist jewellery. Store safely outside of the CL3 laboratory until all associated processes with this SOP are complete.

Prepare to re enter the CL3 lab

Put the "DO NOT ENTER" sign in front of the door of the CL3 laboratory.

This is to ensure there are no disturbances / distractions whilst processing these HCID specimens.

Prepare disinfectant solution (10,000ppm chlorine)

Add 4 large HazTabs (check these HazTabs are "In Date") to 1000 ml of distilled water in red box container provided (labelled for dunking specimens). Put this red box containing Chlorox in the MSC. Place paper towels in the "lid" half.

Prepare disinfectant solution of 10,000 ppm chlorine by adding 8 large HazTabs (check these HazTabs are "In Date") in 2 litres of water (from 2 bottles in the equipment box) using white histology pot provided - and place this by the lab staining sink.

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Place the following items inside the MSC:

Blue absorbent pad on top of the white spill tray	
An Empty Sharps container and lid	Leave the lid off until finished to allow large items to be deposited
An Empty Biobin waste bin	Open
Red box containing Chlorox	
Alcohol Hand sanitizer	Check this is in date.
Coplin jar with acetone	Haematology to supply acetone
Labelled Malaria slides and buffer	From Haematology
Rack for labelled Malaria slides	From Haematology
Paper towels	For drying Blood culture bottles etc
Replacement disposable gloves	
Replacement specimen bags	For repacking and transport to A2
Honey Jar	For discarding used Acetone

Outside the cabinet (but within easy reach)

Rack for blood culture bottles

New Screw cap (DX) container (this is for the transport of the labelled blood specimens to Blood Sciences dept in template A2 of the hospital)

Boxes of spare gloves

Plastic slide carrier for fixed malaria slides - From Haematology

Rack for Blood Science bloods

Absorbent wadding for packaging specimen.

Paper towels

A second specimen transport (UN3373) bag to transport bloods and slides to Blood Sciences. (This second transport bag can be found on the second shelf of the bacteriology store cupboard in TF1 Microbiology main lab, third floor of the Old Path Lab).

Ensure double bagged clip locked waste containers are close by.
Ensure the lids are readily available

When ready to process the specimens - Put on PPE

Put on PPE in the following order:

1. Disposable gloves.
2. Disposable fluid resistant lab coat/gown
3. Apron
4. Gauntlets
5. Third set of disposable gloves
6. Filter mask (FFP3)
7. Eye protection.

PPE will only provide protection for staff if it is worn correctly.

The Donning and Doffing procedure is listed below and also in Appendix A (Print if second copy required).

PPE - Donning (Buddy) Checklist

The 'Buddy' checking BMS 1, who is donning the PPE prior to processing the samples, should read out the actions listed, assist BMS 1 with putting on PPE, and check that PPE is correctly fitted. The buddy must tick off each stage as it is completed.

	Tick, when completed
1) Prepare 8 strips of micropore tape per BMS - approx 8-10 cm in length. 2) Note you should peel off and cut 16 strips for the two BMS's. 3) Put on first pair of gloves (routine laboratory gloves).	
4) Put on disposable gown – (opens at back) . 5) Ensure that it is done up in such a way as to allow it to be untied by the wearer. 6) Do up Velcro at neck. 7) Buddy to help tie gown if required. 8) Tie the outside tie to left side of body (with the long tie in reach so that it can be undone by the wearer . 9) Ensure that cuffs of the gown are over the cuffs of the gloves.	
10) Put on disposable plastic apron over gown and tie at the back	
11) Put on second pair of gloves (surgical ones with long cuffs) – ensure that cuffs of gloves are pulled up over the cuffs of the gown sleeves.	
12) Buddy to stick the micropore tape to the surgical gloves and gown, securing the gloves to the gown (4 pieces of tape per wrist).	

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Always get the second BMS (Buddy) to watch and check that you put on your PPE correctly. After BMS 1 has put on PPE, swap roles, repeat the process and check that the Buddy has also donned the PPE and is wearing it correctly.

Ensure a Microbiology Safety Cabinet (MSC) is ready to process HCID samples.

In the MSC chosen - close and decontaminate the outside of any Biobin waste / sharps bins, using Tristel Jet. After one minute wipe dry. Remove these containers and other waste material in the MSC to bagged autoclave bins. Spray and wipe down internal surfaces of the MSC using Tristel Jet.

Open Specimen Transport bag and transfer Containers 1,2 and 3 into the designated MSC.

- Samples for Microbiology (Blood cultures) and Malaria screen (Container 1) will be processed in Microbiology.
- Samples for VHF testing (Container 2 - to be sent to Porton Down) will be repackaged in Microbiology CL3 lab.
- Specimens for Biochemistry and Coagulation studies (Container 3) will be checked and centrifuged in the Microbiology CL3 (Hermle Z446) then repackaged and transferred to Blood Sciences.
- All other specimen received (except blood cultures) from suspected High Risk (VHF) patients will be stored in a standard screw top transport container and kept at the back of Class 1 MSC in the CL3 laboratory until IFS screen status of patient is known.
- Blood cultures will be loaded (labelled with High Risk stickers) on the Bactec FX.
- If these Blood culture bottles flag positive – **DO NOT PROCESS.**
- A risk assessment by Microbiology Consultant (and awaiting IFS result) will be made as to whether the bottles are processed at Exeter - or sent, with the patient, to center for HCID.

PROCESSING OF SAMPLES

PROCESS SPECIMENS TO BE SENT TO PORTON DOWN FOR VHF SCREEN FIRST. Performed by Microbiology BMS

Open the Container **2** inside the MSC.

Do not remove the blood samples from the double bagging.

- 1) Check that the specimens are intact (no leakage) and are labelled with correct patient details.
- 2) Examine specimens through the clear plastic bags. If there is any gross blood contamination on the specimens the Consultant Microbiologist must be notified and replacement specimens ordered. If specimens are irretrievably contaminated, they must be placed in the dedicated Category A discard container for disposal.
- 3) If specimens appear clean (small amounts of blood around the inoculation site are acceptable).

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- 4) Place the EDTA specimen, Serum tube and Urine specimens in Hays screw cap plastic container for sending to RIPL.
- 5) Place sufficient absorbent wadding inside the container and in between the specimens.
- 6) Screw lid on the container and place it to one side inside the MSC.
- 7) Use Hand sanitizer on the gloved hands.
- 8) *Remove the pair of gloves* (discard into waste container).
- 9) Put on a new pair of disposable gloves.
- 10) Decontaminate the outside of the specimen container using Tristel Jet. Leave for one minute.
- 11) Wipe DRY the outside of the container
- 12) Place this screw capped container outside of the MSC.
- 13) Use Hand sanitizer on the gloved hands
- 14) *Remove the pair of gloves* (discard into waste container).
- 15) Put on a new pair of disposable gloves.
- 16) Place screw capped container into the inside the cardboard exterior (DX) box.
- 17) Place the completed form **P1** (see page 5 above – the Microbiology consultant will have completed the form to go with these specimens) inside the DX box but outside of the screw capped plastic container.
- 18) Close the box and place security seal over the tag. Label the box - see Appendix A
- 19) See APPENDIX A for courier transport to RIPL.

PROCESS BLOOD CULTURES SECOND.
Performed by Microbiology BMS

- 1) Inside the MSC open Container 1 and remove the still double bagged blood culture bottles.
- 2) Examine specimens through the clear plastic bags and check that Blood culture bottles are labelled correctly. If there is any gross blood contamination on the specimens the Consultant Microbiologist should be notified and replacement specimens ordered. If specimens are irretrievably contaminated, they must be placed in the dedicated Category A discard container for disposal.
- 3) If specimens appear clean (small amounts of blood around the inoculation site are acceptable), remove the bottles from the double bagging and immerse the bottles in the red box containing 10,000 ppm chlorine solution for 2 minutes. Discard specimen bags into Biobin. Use gloved hand to immerse bottles in the Chloros
(The Bactec blood bottle barcode and EPIC labels do deteriorate in this strength Chlorine solution BUT are still readable / scannable after 10 minutes plus in the Chloros solution – see label integrity after Chloros immersion.
P:\MICROBIOLOGY\USER DATA\LABORATORY\Cat 3 lab 2021\VHF bc after Chlorine).

- 4) After 2 minutes in Chlorox. Remove specimens from the Chlorine solution and stand on absorbent material to dry in the "lid" half of the red box.
 - 5) Wipe the top of the specimen bottles to remove any traces of blood. Discard the paper towels into the Biobin waste container in the MSC.
 - 6) Carefully dab dry the bottles with the paper towels and discard towels into the Biobin waste container in MSC.
 - 7) Use Hand sanitizer on the gloved hands.
 - 8) *Remove the pair of gloves* (discard into waste container).
 - 9) Put on a new pair of disposable gloves.
 - 10) Place the Blood Culture bottles in the rack outside the MSC.
- All other specimens received (except blood cultures) from suspected High Risk (VHF) patients will be stored in a standard screw top transport container and kept at the back of Class 1 MSC in the CL3 laboratory until IFS screen status of patient is known.
 - Following the IFS result a risk assessment will be made as to whether the specimens are processed at Exeter (VHF Negative) - or sent, with the patient, to center for HCID (VHF POSITIVE).

PROCESS BLOOD SCIENCES SPECIMENS THIRD.
Performed by Microbiology BMS

1. Open and remove samples from container **3**.
2. Examine specimens through the clear plastic bags. If there is any gross blood contamination on the specimens the Consultant Microbiologist must be notified and replacement specimens ordered. If specimens are irretrievably contaminated, they must be placed in the dedicated Category A discard container for disposal.
3. If specimens appear clean (small amounts of blood around the inoculation site are acceptable), remove the bottles from the double bagging and immerse the bottles in the red box containing 10,000 ppm chlorine solution for 2 minutes.
4. After 2 minutes in Chlorox removed the blood tubes from the solution and place on the paper towels in the lid half of the red box.
5. Carefully dab dry the blood tubes with paper towels. Discard towels into the Biobin waste container in MSC.
6. *Use Hand sanitizer on the gloved hands.*
7. *Remove outer pair of gloves* (and discard into waste container).

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8. Put on another pair of gloves.
9. Place blood tubes in rack inside cabinet.
10. Get Buddy to place centrifuge buckets and lids into the MSC.
11. Load blood tubes and balances from the racks into the centrifuge adapters.
12. Place the adapters into the centrifuge buckets. Screw the centrifuge bucket lids closed.
13. Take the buckets to the CL3 centrifuge (Hermle Z446).
14. Centrifuge bloods using correct centrifuge adapters/holders in CL3 centrifuge (Hermle Z446 - 3430RCF (4000RPM) for 10 minutes)
15. Once centrifuge cycle is complete open the centrifuge and transfer the sealed buckets back to the MSC.
16. Make an examination of the internal contents of the centrifuge bucket to check for suspected breakages / spills inside.

If there is any spillage or breakage inside the centrifuge buckets DO NOT OPEN. Leave the centrifuge bucket – unopened - contact the Consultant Microbiologist. Repeat specimens will need to be taken.

17. No obvious breaks / spills inside – Open the centrifuge bucket inside the MSC
18. Remove blood tubes and place in transport rack.
19. Double bag all bloods and place in the small plastic transport container inside the MSC.
20. Add wadding around specimens and Screw on cap.
21. Place specimen pot outside the MSC. Buddy BMS to place this pot in a sealable transport container to carry specimens back to Blood Sciences
22. Remove gloves and dispose in waste bin inside MSC

MALARIA SCREEN PROCEDURE (to be performed by Haematology BMS)

NOTE: The Illumigene malaria assay must not be used. Malarial screening will be performed using thick and thin films in accordance with the procedure below:

Buddy BMS and BMS 1 to swap roles.

Buddy move to the MSC. BMS 1 take hold of this SOP.

Order of work: Use the EDTA blood tube in the specimen rack.

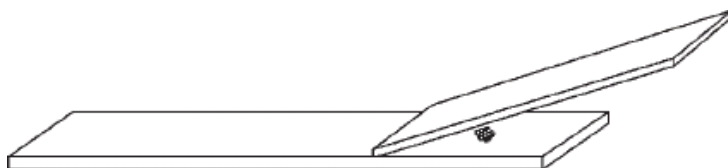
Prepare slides and then undertake rapid antigen test (MIA) whilst slides are drying.

Result of MIA to be phoned through to Torridge (2760 / 2761) by Microbiology BMS

Thin Films

STEP ONE:

Place clean glass slide on a flat surface. Add one small drop of blood to one end.



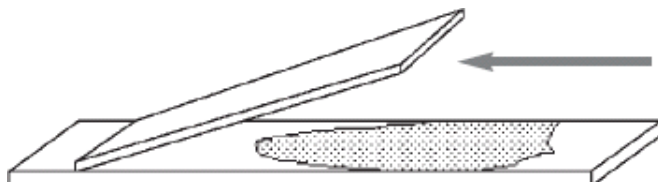
STEP TWO:

Take another clean slide, and holding at an angle of about 45 degrees, touch the blood with one end of the slide so the blood runs along the edge of the slide by capillary action. Push carefully along the length of the first slide to produce a thin smear of blood



STEP THREE:

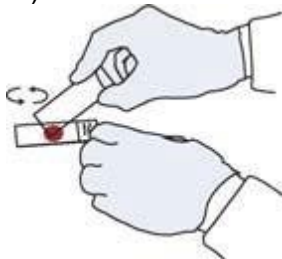
Make 2 smears, allow to air dry, and label clearly with patient surname and sample number on the frosted end of the slide.



Thick Films

1. When making the thick film, place the blood spot close to the non-frosted end of the glass to ensure full exposure to stain.
2. Label clearly with patient surname and sample number on the frosted end of the slide.
3. Using the corner of a clean slide spread the drop of blood in a circle the size of a penny (diameter 1-2 cm).

4. Do not make the smear too thick or it will fall off the slide. (You should be able to read newsprint through it.)



5. Wait until the thin and thick films are completely dry before fixing. They can be dried on the hotplate inside the cabinet.
6. Once dry. Fix the slides in Acetone for 10 minutes.
7. Remove outer pair of gloves, discard in waste bin in MSC.
8. Put on a new pair of gloves
9. After 10 mins remove the slides from the Acetone and leave to air dry for 10 minutes.
10. Place the slides in a slide box, held outside the cabinet by BMS 1.
11. Remove outer pair of gloves, discard in waste bin in MSC.
12. Put on a new pair of gloves

Leaving the Cabinet when all processes are complete

- 1) Discard the specimen and any other items such as tissues / antigen test reagents etc into the Waste sharps container.
- 2) Discard used Acetone into Honey Jar.
- 3) Discard Honey jar into Waste bin in MSC.
- 4) Discard paper towels into Biobin waste container in the MSC.
- 5) Using cloth wet with Chlorox wipe over the inside of the MSC starting on the left side of the MSC to make a "clean space". One item at a time -wipe the exterior surfaces of items using the Chlorox moistened cloth and move them into the clean space.
- 6) Continue and wipe down everything in the MSC - all internal surfaces.
- 7) Discard the Chlorox cloth into Biobin waste bin

- 8) Close the waste container. Put the lid on the sharps container.
- 9) Disinfect the outside of the sharps, Biobin waste container and Containers 1,2 and 3 using Tristel Jet. Leave for 1 minute. Wipe dry with paper towels.
- 10) When dry discard Biobin, sharps bin into the Category A waste bin along with remaining paper towels outside the MSC.
- 11) Discard the specimen transport containers (1,2 and 3) into the Category A waste bin.
- 12) Remove gloves and discard into Category A waste bin.
- 13) Put on new gloves.
- 14) Carefully remove the red box containing Chlos from the MSC.
- 15) Discard disinfectant (Chlorox) carefully down the sink – rinse with running water.
- 16) Open the Sendout Bench tab in Beaker. Create a Packing list for RIPL. Add the specimen to the RIPL Packing list. Click “Ready” then Click “Pick up”.
- 17) Keep and eye out for the Courier. You may need to fill out a Dangerous Goods note – see page 18 above.


When all actions are complete remove PPE.

Removal of PPE

It is important that PPE is removed in a way that avoids contamination of your eyes, mouth and nose during the removal process.

PPE - Removal (Buddy) Checklist

The 'Buddy' should read out and observe the actions, ticking them off when completed correctly

All Category A waste bins must not be over filled. Use multiple bins rather than putting too much waste into one		Tick, when completed
1) Clean surgical gloved hands (3rd set) in case of contamination with 10,000ppm Chlorine – made up in pot by the sink - undertaking correct technique (covering all surfaces of hands and wrist with product). Dry gloves with hand towels. Discard towels into CAT A waste bin.		
2) Remove top (3rd pair) of gloves. To remove the gloves (see diagram below) grasp palm of left glove with the right hand and pull off outer glove. Then place index finger of left hand, which you have just removed the glove from, under the cuff of the glove on the right hand. Slide glove off and discard in Category A waste bin taking care to avoid contaminating inner glove. <i>[please note that removal of the top and middle sets of gloves means you will not see any bare skin unlike the situation in these photographs, but you will see the set of gloves underneath]</i>		
3) Discard gloves into waste container within the Class 1 cabinet. 		
4) Clean surgical gloved hands (2nd set) in case of contamination with 10,000ppm Chlorine – made up in pot by the sink - undertaking correct technique (covering all surfaces of hands and wrist with product). Dry gloves with hand towels. Discard towels into CAT A waste bin.		
5) Apron – Grasp the front of the apron with both hands, between chest and abdomen height. Pull apron forward, until ties break around the waist. Pull apron in a downwards motion until tie broken at neck. DO NOT REMOVE BY LIFTING OVER HEAD. Roll apron into a ball and discard in CAT A waste bin.		

<p>6) Clean surgical gloved hands (2nd set) with 10,000ppm Chlorine – made up in pot by the sink - undertaking correct technique (covering all surfaces of hands and wrist with product). Dry gloves with hand towels. Discard towels into CAT A waste bin.</p>	
<p>7) Remove disposable gown.</p> <ul style="list-style-type: none"> Undo neck of gown by grasping shoulders (on front of gown) and pulling forward/to the side. 	
<ul style="list-style-type: none"> Undo tie at front/side of gown. 	
<ul style="list-style-type: none"> Undo inner tie by putting left arm behind back and pulling on tie. 	
<ul style="list-style-type: none"> Pull shoulders forward 	
<ul style="list-style-type: none"> Pull arms out so that sleeves end up inside out. The surgical (set 2) gloves should come away with the gown as they are taped to the outside of the sleeves. Make sure you don't touch the outside of the set 2 gloves 	
<ul style="list-style-type: none"> Continue to roll and fold or roll into a bundle with the set of 2 gloves inside and place in CAT A waste bin. 	
<p>8) Clean surgical gloved hands (1st set) with 10,000ppm Chlorine – made up in pot by the sink - undertaking correct technique (covering all surfaces of hands and wrist with product). Dry gloves with hand towels. Discard towels into CAT A waste bin.</p>	
<p>9) Remove Eye shield – place in Category A waste bin</p>	
<p>10) Remove FFP3 mask - place in Category A waste bin.</p>	
<p>11) Clean gloved hands with 10,000ppm Chlorine – made up in pot by the sink - undertaking correct technique (covering all surfaces of hands and wrist with product). Dry gloves with hand towels. Discard towels into CAT A waste bin.</p>	
<p>12) Inner glove removal (1st set). Using the method described above in section 2</p>	
<p>13) Wash and dry hands - using soap and water</p>	
<p>14) Put on new set of Laboratory gloves. Swap with the Buddy and go through this process again ensuring safe removal of PPE</p>	

**When both buddies have removed PPE –
 Carefully**

- **Close the first bag in the waste bin - Avoiding touching any of the waste inside the bin and try to avoid contact with the second bag.** Fold over the bag dispelling as much air as possible
- **Remove gloves.** Discard gloves into the waste bin (on top of the first bag)
- Put on new gloves.
- **Close the second bag.** Fold over the bag dispelling as much air as possible
- **Remove gloves.** Discard gloves into the Category A waste bin (on top of the second bag).
- Put on new gloves.
- Attach Category A waste lid and ensure lid is securely fixed.
- Make note of the number of this tag - for audit of disposal and record in L:\MICROBIOLOGY\USER DATA\LABORATORY\HEALTH & SAFETY\Cat A waste records
- Decontaminate the outside of the bins - spray and wipe all outside surfaces with Tristel Jet. Wipe dry with paper towels
- Apply Danger Biohazard label to all 4 sides of the bin.
- **Open CL3 autoclave (remove shelf if required).**
- **Place waste bins inside. Close autoclave.**
- **Start “Bagged waste” cycle (126°C for 65 mins).**

If CL3 autoclave unavailable - secure the waste bin lids.
 Collected the Green waste trolley from TF17 (key stored in CL3 flammable cabinet) place waste bins inside and wheel the trolley to the second floor of the Old Path lab. Using the BMM Weston autoclave, open, place bins inside and run the 126°C waste cycle – see MPH030.
 If BMM Weston autoclave unavailable - attach a black numbered waste tag (available from Domestic services) to all Category A waste bins. Record these numbered tags to monitor waste collection and disposal. Contact waste management for Category A waste collection. Store waste bins in locked green wheeled trolley in CL3 lab until collection by waste management

Check Lobby PPE and equipment bins – Restock as appropriate
 (see drawer labelled VHF PPE Spares)

Put on white lab coat and new disposable gloves.

. Take the blood cultures (in the rack) out of the CL3 laboratory.

Load the Blood culture bottles (labelled with High Risk stickers) on the Bactec FX. Note the location of the blood cultures in the Bactec FX against the lab number of the specimen in Beaker.

If these Blood culture bottles flag positive – DO NOT PROCESS – seek advice from Microbiology consultant.

Fixed Malaria Films and Blood Sciences bloods

Blood films for Malaria and centrifuged blood specimens will be taken back to Haematology by the BMS using a new transport container.

Blood Sciences/Haematology to follow their SOP Q-Pulse ref ***** for processing of specimens in that department

*Restock the ward-based **Specimen Transport Bag** and contact the Infection Control team for sending back to TORRIDGE and A+E.*

WASTE DISPOSAL as above

Current HSE guidelines state that waste from potential or confirmed VHF patients should be, where possible, autoclaved on site.

Ensure the lids are securely fixed.

Bins containing Category A waste from potential VHF positive patients are autoclaved ASAP using the Bagged Waste cycle (126°C for 65 minutes) on the Priorclave Tactrol 3 320Litre Passthrough autoclave linked to the CL3 laboratory.

Load all bins.

Check the autoclave cycle is on “**Bagged Waste**”.

Close the autoclave door.

Press “Start”

Following the “Cycle Pass” completion of the Bagged Waste cycle - waste will be removed from the autoclave.

The clinical waste bin is transferred to Yellow wheelie bin, treated as Category B waste and incinerated as per RDUH waste policy.

If the suspected VHF patient is tested by RIPL and found to be **IFS screen Negative** – ALL waste can be treated as Category B waste and follow RDUH waste policy.

If the CL3 autoclave is out of action due to fault or maintenance all **Category A waste is to be collected into a lockable wheelie bins and transferred to the BMM Weston Path Lab autoclave on the second floor of the Old Path Lab. Use 126 Waste cycle – see MPH030.**

If the BMM Weston autoclave is also out of action due to fault or maintenance all **Category A waste is to follow** as per RDUH Waste Management Disposal of waste policy see the HUB.

<https://hub.exe.nhs.uk/resources/assets/attachment/full/0/189172.doc>

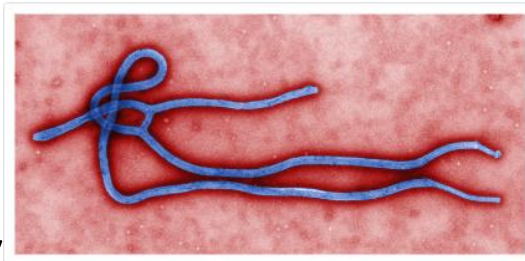
Category A waste – see Appendix 11

Call waste Management on **6069** at the earliest opportunity to arrange for a specified date and time for collection and disposal of Category A waste bins.

All waste bins containing specimens and waste from confirmed VHF patients must be kept separately in lockable wheelie bin in CL3 lab until collection.
Collection of Category A waste must be by a designated, named waste collection (see above) and disposed off site.

Patients confirmed as VHF positive must have any samples racks used if the processing of the specimens discarded along with the samples and all other waste.

After all work has been completed on the HCID specimens and prior to leaving the laboratory, remove the raspberry scrubs and autoclave. Send to Laundry and next earliest opportunity.



APPENDIX C

VHF summary

You may hear the words - “**Viral Haemorrhagic Fever**” - And panic!

Don't focus on these words

Check that the suspected infection is by a Hazard Group 4 VHF pathogen?

If so - Focus on the VHF risk category stated – Act accordingly

If ?Ebola, ?Lassa, ?Marburg, ?Crimean Congo fever or any other Hazard Group 4 VHF pathogens follow of the VHF protocol in this SOP using the information below.

VHF Risk categories

- 1) MINIMAL** - risk of VHF infection
- 2) AT RISK** - of VHF infection
- 3) CONFIRMED** VHF infection

Discuss with Medical Microbiologists for confirmation and clarity for the suspected pathogen, the categorisation and clinical urgency of specimens from any patients suspected of these diseases.

Risk Categories

1) Minimal risk of VHF infection – probably not urgent. Specimens may be processed at CL2. Routine PPE required. Specimens may need to be sent to Porton Down – Any uncertainty - Check with the medics.

2). At Risk of VHF infection.

Likely Urgent. Specimens need to be processed in MSC (and advised) in CL3.

CL3 PPE required. IFS results required.

Treat waste as Category A until result of IFS (Imported Fever Screen) is known.

If “IFS” result is negative downgrade and treat waste as Category B.

3). Confirmed VHF infection

This is the only risk category that requires Full PPE and all procedures to be undertaken in Microbiology CL3 lab by Microbiology and Blood Sciences BMS's.

All waste – treat as Category A

If suspected infection is ?Dengue, ?Yellow, ?Rift Valley fevers or ?Hantavirus – these are Hazard Group 3 VHF pathogens and do NOT require the full Hazard Group 4 VHF protocol.