CLINICAL GUIDELINE

Possible Viral Haemorrhagic Fever (VHF) Management in Adults and Children

A guideline is intended to assist healthcare professionals in the choice of disease-specific treatments.

Clinical judgement should be exercised on the applicability of any guideline, influenced by individual patient characteristics. Clinicians should be mindful of the potential for harmful polypharmacy and increased susceptibility to adverse drug reactions in patients with multiple morbidities or frailty.

If, after discussion with the patient or carer, there are good reasons for not following a guideline, it is good practice to record these and communicate them to others involved in the care of the patient.

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Approval Group:	Acute Services Division Clinical Governance Forum

Important Note:

The Intranet version of this document is the only version that is maintained.
Any printed copies should therefore be viewed as 'Uncontrolled' and as such, may not necessarily contain the latest updates and amendments.

Management of Adults and Children with possible Viral Haemorrhagic Fever (VHF) in GGC. Version 10

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VHF is a rare cause of illness in persons returning from some tropical countries. VHF is caused by infection with one of the following viruses – Lassa, Ebola, Marburg and Crimean-Congo Haemorrhagic Fever (CCHF).**Malaria is the most common diagnosis in patients suspected of having VHF and urgent treatment may be necessary.**

VHF may present as a severe and life-threatening illness and is of particular public health importance the infection can spread within a hospital setting. VHF infections have been reported in Africa, the Middle East and Europe.

The largest **Ebola** outbreak in West Africa began in 2014-2016, killing over 11,000 people. There are currently smaller outbreaks of Ebola in Democratic Republic of the Congo and Guinea (2021).

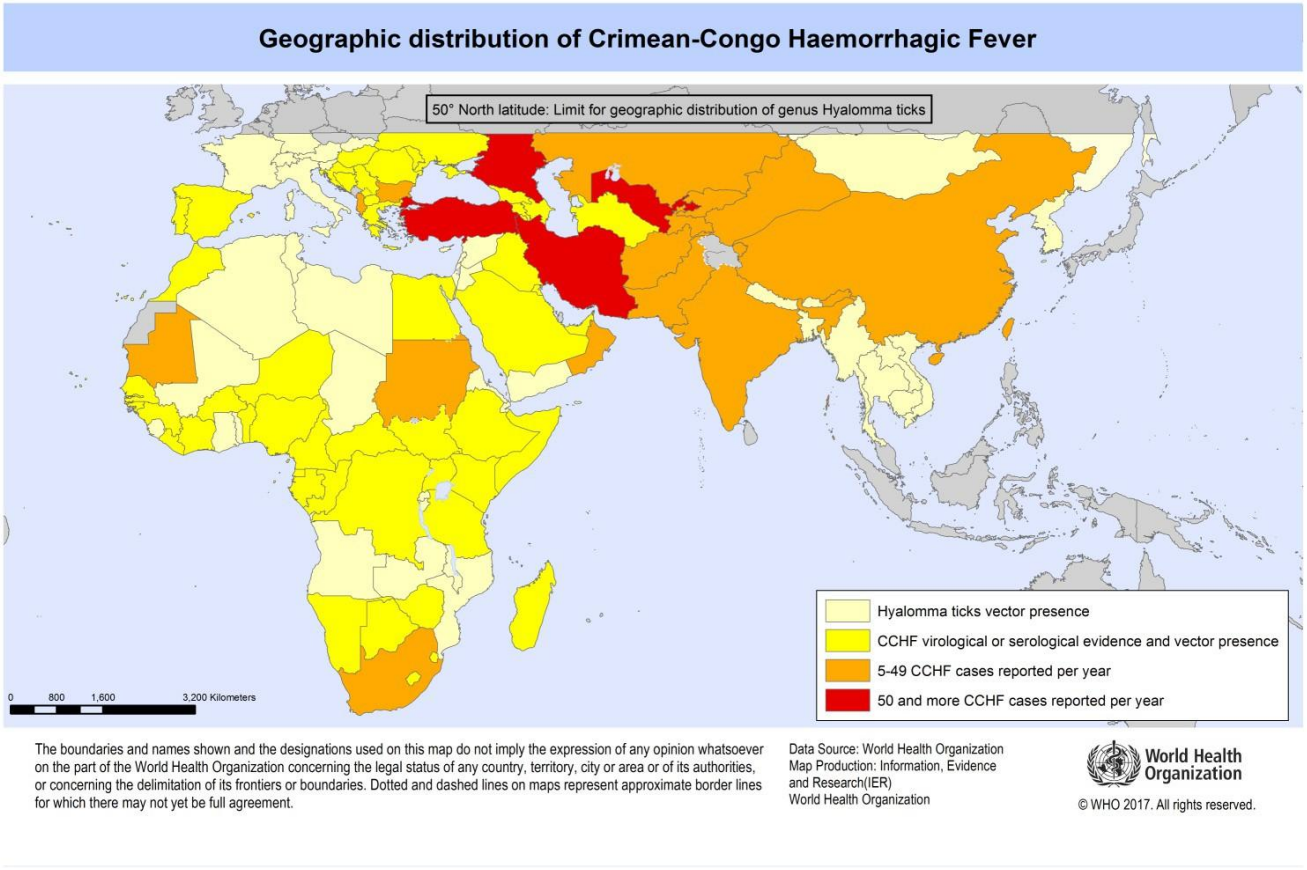
Lassa fever is linked to multimamte rats and the last large outbreak was in Nigeria in 2018 with 1081 suspected cases and 90 reported deaths. It is endemic in a number of other countries.

Marburg is rare and related to bat exposure. Most recent cases in the last 10 years have originated in Uganda. **CCHF** is linked to tick and infected livestock exposure and there have been recent outbreaks in Russia, Turkey, Iran, Kazakhstan, Mauritania, Kosovo, Albania, Pakistan and South Africa

Any patient presenting with a fever or recent history of fever, within 21 days of travel to Africa or one of the countries shown in the following map should be risk assessed – see below.

An up to date **world map of out breaks** is available via
http://www.healthmap.org/promed/
(open in Google Chrome if not able to view)

CCHF distribution. WHO 2017. Countries in red and dark orange have had confirmed cases and are at higher risk. Countries in light orange or yellow have had no confirmed clinical cases



VHF Risk Assessment

Should be carried out using the screening tool from the UK Advisory Committee on Dangerous Pathogens (ACDP).
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/478115/VHF_Algo.pdf

also at Appendix 1

The full ACDP guidance document is available at:

https://www.gov.uk/government/publications/viral-haemorrhagic-fever-algorithm-and-guidance-on-management-of-patients

The initial risk assessment should be carried out by the doctor at the site where the patient has presented.

Risk Assessment Questions:

Use the flowchart on the last page of this document.

If a patient has previously had Ebola virus diagnosed "**Ebola survivor**" please discuss with the ID consultant on-call. This document does not apply to them necessarily.

Management of Patients categorised as “VHF Unlikely” or “Low Possibility” of VHF

Where: The patient should be isolated in a side-room at the site where they have presented pending further discussion with ID

PPE: Hand hygiene, gloves and plastic aprons.
Eye protection and fluid repellent surgical facemask should only be worn for splash inducing procedures

Blood tests: Samples from these patients can be handled in the laboratories as per routine samples.

It is **not** necessary for the medical staff to inform the laboratory prior to sending samples.

They should be investigated for other causes of fever as usual, e.g. malaria test, U&E, LFTs, Lactate, CRP, Glucose, FBC, Coagulation, Blood Cultures.

No group and save samples should be sent.

Adult patients should be discussed with the on call Infectious Diseases registrar at the QEUH – available through switchboard**, 0141 201 1100**

Paediatric patients should be discussed with the on call Paediatric Consultant for Infectious Diseases – available through switchboard

Management of Patients categorised as "High Possibility" of VHF

These patients must be isolated in a side-room and discussed with the on-call Adult or Paediatric Infectious Diseases Consultant **immediately**. If the risk assessment is confirmed by the ID Consultant, the communications cascades outlined below should be initiated.

Where: Patients presenting to the Queen Elizabeth University Hospital (QEUH) A&Es or IAU will be moved to the isolation room within the medical HDU on 1st floor (usually room 44). Patients presenting elsewhere in GGC will be managed on a case by case basis but if they are to be moved, the Scottish Ambulance SORT team will be required.

PPE: Hand hygiene, double gloves, fluid repellent disposable gown/suit, apron, eye protection, FFP3 respirator, foot protection.

Blood tests: Prior to the results of the VHF test, local blood tests should only be performed if there is clinical need. The ID Consultant on call will advise on whether urgent blood tests should be performed and discuss with the Lab Consultants **prior** to any samples being sent. If the patient is stable, local blood tests may be deferred pending the VHF test results.

For patients presenting to the QEUH, samples will be analysed in the haematology lab on site. For patients presenting **elsewhere in GGC including the GRI**, samples will only be analysed at the **QEUH** lab and so transportation of these samples to the QEUH must be arranged (see below).

Contact details for QEUH Laboratories to inform them of 'High possibility' VHF samples

	Within working hours	Out of hours
Haematology	0141 354 9097	On call Consultant via switchboard
Microbiology	0141 354 9132	On call Consultant via switchboard

Please ensure to inform the laboratory before any samples from possible VHF patients are sent. This includes the reference labs (virology and parasitology) that may not initially be contacted.

Management of Pregnant women with possible VHF

Pregnant women with fever and a history of travel within 21 days to a VHF endemic country must be risk assessed as above by the obstetric team wherever the patient has presented. If VHF infection is risk assessed as low possibility or high possibility, the obstetric Consultant must be informed immediately as well as the Infectious Diseases Consultant on call. Patients will be managed on a case by case basis depending on the pregnancy gestation, the clinical presentation and where the patient has presented.

Blood sample collection for "High Possibility Cases"

The ID Consultant will decide which tests are required urgently and which tests can wait until the VHF test result is available. The following tests can be ordered on TrakCare:

1. Malarial parasites
2. Urea & Electrolytes*
3. LFT*
4. Lactate*
5. CRP*
6. Glucose
7. Full Blood Count
8. Coagulation screen
9. General Bacterial Culture (Sample in Blood Culture Bottles)

- Label all bottles with TrakCare stickers outside of the patients room
- **In addition**, label TWO EXTRA blood bottles for VHF testing.
    a. 4.5ml EDTA (same as for a full blood count)
    b. 5ml SERUM gold top (same as for Urea & Electrolytes)

***Note: in the QEUH, a lithium heparin (green) sample is required for U&Es.**
All biochemistry tests are initially tested within the haematology laboratory in the safety cabinet.

No group and save samples should be sent. If blood products are required, then speak with the lab.

Do NOT take arterial blood gases.

Microbiology will not automatically process stool and urine on high possibility cases but only on a case by case basis after discussion between ID and Microbiologist.

Blood sample packaging:

The blood bottles must be packaged in Category A transport boxes to prevent any accidental spillage. These containers should be available at each A&E department. If not, these are available from Virology at GRI by taxi during office hours (38721) and QEUH A&E out of hours. One container is required for each laboratory, i.e. haematology, biochemistry microbiology and the Edinburgh Royal Infirmary virology lab. Each box contains a hard plastic container with lid, bubble wrap, PARAFILM "M" laboratory tape and absorbent material. Follow these instructions for collecting these samples

- Blood is drawn from the patient, wearing full protective equipment as above. The packaging materials and boxes **must not** enter the patient's room. Take only the labelled bottles, venepuncture equipment and PARAFILM into the patients room

- After filling the bottles, the doctor should wipe his/her hands with an alcohol soaked wipe, then wipe each bottle individually. Seal the blood bottles with PARAFILM laboratory tape by wrapping the tape around the lid of each bottle like "cling-film"

- An assistant, wearing gloves, should come to the door of the room, but not enter the room. The assistant should hold open specimen bags each containing absorbent tissue. The doctor from the patient's room should drop a single blood bottle into each bag using a no touch technique.
- Away from the patient room, the assistant should seal each bags, then wrap each specimen + bag in bubble wrap before sealing it in the waterproof hard plastic container. The request form and sealed container is then put back in the cardboard box and sealed with the sticker provided prior to delivery to the lab.

Sample transport to the Laboratories:

For a patient at the QEUH, packaged blood samples must be carried by hand to the haematology laboratory reception. They must not be sent by automated transport system e.g. vacuum tube system.

For all sites across GGC including the GRI, the packaged blood samples must be transported by road to the QEUH Haematology laboratory.

If samples to be sent are risk categorised as category A, a **specified courier(ID consultant will have details)** will pick up the samples from the site the patient presented, e.g. GRI A&E, and drop at the QEUH haematology lab prior to taking the sample for VHF testing to the Edinburgh Royal Infirmary virology lab.

If the samples are categorised as" category B", taxi's can be sent from GRI to QEUH and another taxi sent to Edinburgh with the sample for VHF testing.

Blood cultures should be packaged as above and transported to the QEUH microbiology lab in person, or via licensed courier service (see below) if at a different hospital site. Blood cultures taken after 8pm should remain at ward level with the patient until next morning, then transported.

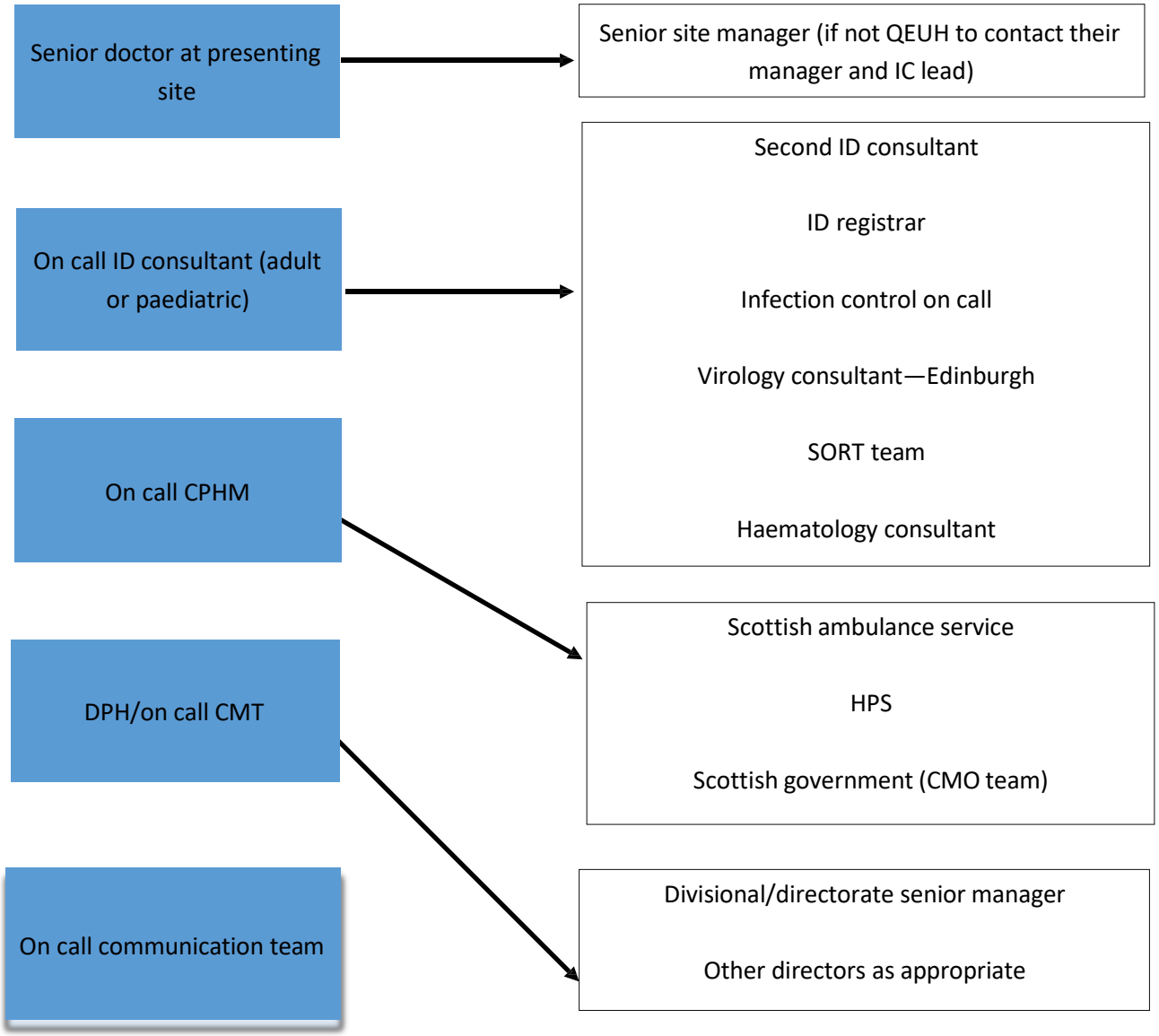
VHF PCR testing at the Scottish National VHF Testing Service (SNVTS) in Edinburgh

- The ID Consultant should discuss with the UK Imported Fever Service (IFS) on 08 44 77 88 99 0 (Doctor on Call: 07789 031 672) prior to sending samples for testing.
- If samples are to be sent for VHF testing, the ID Consultant should call the SNVTS by contacting the On Call Consultant Virologist at the Royal Infirmary of Edinburgh through 0131 536 1000
- The ID or Virology Consultant on call will advise on how these samples are transported to Edinburgh

Transportation of a "High Possibility" or "Confirmed" VHF Patient

These patients can only be transported using the Scottish Ambulance Special Operations Response Teams (SORT). The Consultant in Infectious Diseases/ or Public Health Medicine should contact ambulance control and ask for the National Risk & Resilience Department (NRRD) Tactical Advisor to access this service.

Adult Communications Escalation for "High Possibility" or "Confirmed" VHF



Useful numbers

ID paediatric or adult consultant on call

Infection Control consultant on call

Public Health consultant on call

Scottish ambulance service SORT team via ambulance control and ask for National Risk & Resilience Department Tactical Advisor

QEUH switchboard **01412011100**

Scottish National Viral Haemorrhagic Fever test service-Edinburgh "on call consultant virologist"

Edinburgh Royal Infirmary **01315361000**

Courier service information available to ID consultant as subject to change

Within the first 90 - 120 minutes from presentation an early Problem Assessment Group, with representation from Public Health(chair), Infectious Diseases, corporate management, Infection Control, ambulance service, labs and communications will be held. A full IMT will be held subsequently if indicated. Public Health is responsible for co-ordinating response activities, including contact tracing and monitoring, and will chair the IMT. These activities will be in alignment with the ACDP VHF guidance and the Scottish Government VHF “mini-guide”.

Returning workers

Public Health England (PHE) provide a returning Workers Scheme for UK businesses and organisations who send staff to Ebola outbreak areas. Staff going to these areas are registered, and then risk assessed by PHE on their return. Dependent on the level of risk, returning workers will undergo a 21 day monitoring period. This is carried out in line with UK agreed process. Once informed by HPS of a returning worker PHPU will cascade this information to ID and IPCT senior staff.

Paediatric appendix

Paediatric EVD and the principles of its management share many common features with those outlined above. The risk assessment questions and categories of patients identified by risk assessment, and the infection control principles of management and PPE usage are defined by the ACDP algorithm and the same as those above.

The care of children identified as high risk will take place in one of the two positive pressure ventilated lobbied rooms (PPVL) in CDU (preferably cubicle 18) the necessary PPE will be set up within the adjacent room. Where possible patients will be instructed to enter via the ambulance entrance and will go straight to this room. For walk -ins to the main A+E reception ? room will be used in the first instance followed by transfer to CDU by staff wearing full PPE.

Testing is through the Scottish National VHF Testing Service (SNVTS) after discussion with the UK Imported Fever Service (IFS) and the same guidance for transport of samples applies (contact details of SNVTS and IFS and sample guidance as above).

The procedures for the processing of routine blood samples from high risk patients in GGC clinical labs are the same and the labs must be warned in advance.

The clinical management of paediatric patients with confirmed EVD shares the same principles of supportive care and transfer to a HSIDU e.g. the Royal Free

The current outbreak of Ebola virus disease (EVD) in West Africa has necessitated a planned paediatric response in the unlikely event of a child presenting as high risk of EVD. This is likely to be a rare occurrence. Other pathogens e.g. malaria are likely to be commoner causes of fever in returner travellers from this region

As few clinical staff and as few clinical facilities should be exposed to high risk patients as possible.

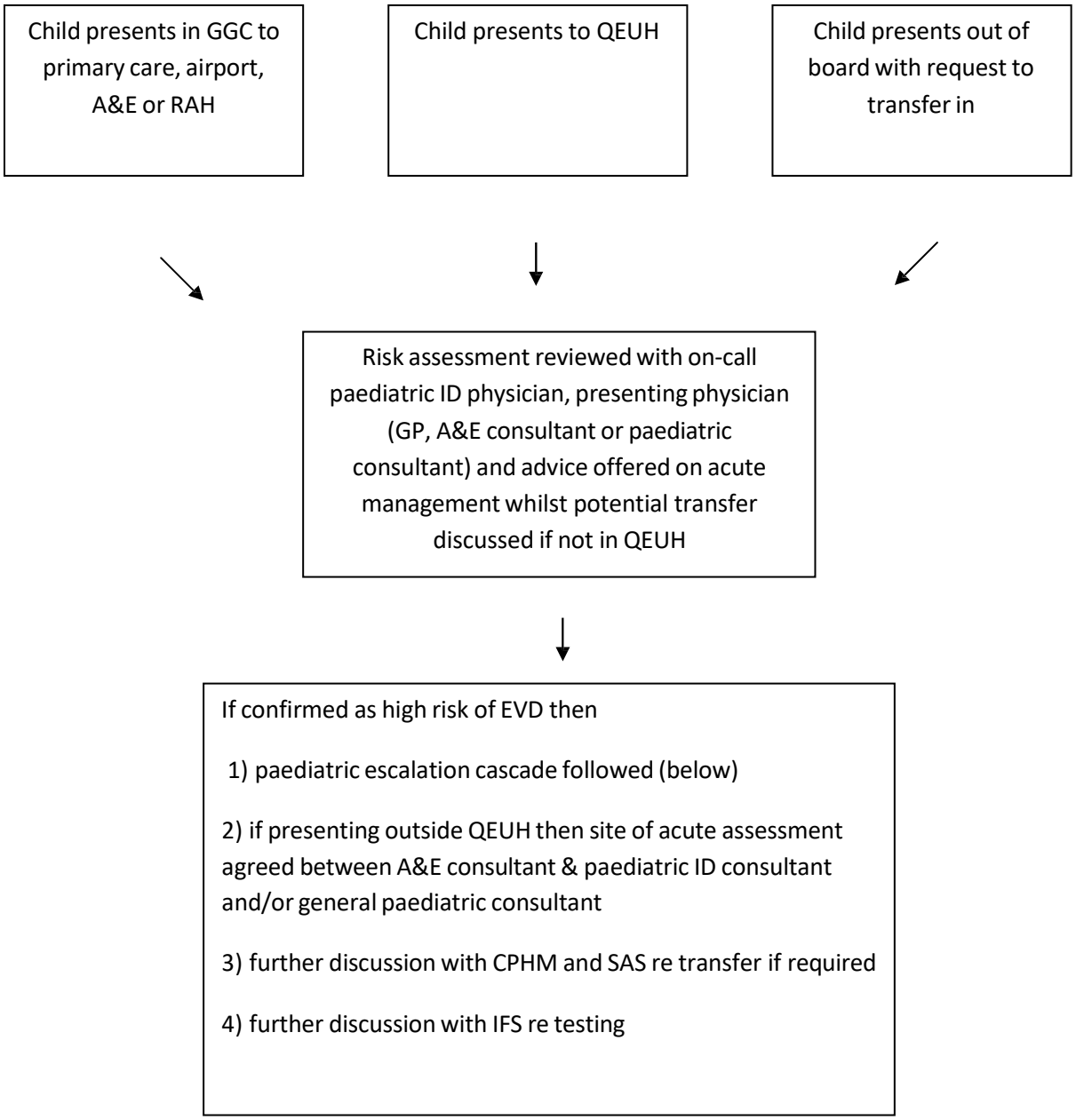
The major differences in paediatric management of children categorised as high risk within GGC are:

- Children rarely present without an accompanying adult and a risk assessment of the accompanying adult must be completed at the time of presentation of the child. Symptomatic parents identified as high risk will also be managed in the QEUHvia the adult plan as above. All details of accompanying carers and families will be passed onto Public Health for follow-up.
- High risk children will likely be more safely nursed without their accompanying asymptomatic adult carers and this will be a stressful position for children and their families to understand. This must be

approached and communicated sensitively to families. . The benefits or otherwise of nursing high risk children with their symptomatic parents will be decided on a case by case basis in conjunction with adult services.

- Venous access and blood sampling are likely to be more problematic. Wherever possible venepuncture should be minimised and carried out by the most experienced members of the clinical team with specific assays prioritised (e.g. malaria screen, VHF testing) depending on volume of blood obtained. For paediatric VHF testing, collect 5ml EDTA (same as for FBC) & 5ml serum (yellow top**)**

Paediatric pathway



Paediatric Communication Escalation

Communication escalation for receiving a child with suspected EVD.				
In hours	Out of hours	Personnel to be contacted	Contact details	Person responsible
x	x	Referring clinician		ID consultant
x	x	Scottish ambulance service	Via switchboard	ID consultant
x	x	CPHM (Public Health Consultant)	Via Switchboard	ID Consultant
x	x	8502 Page holder	Page 8502	ID consultant
x	x	On call microbiologist, haematologist, biochemist	Via Switchboard	ID consultant
x	x	Contact Nurse ED Charge and ED consultant if not already involved	Via switchboard	8502 Page holder
x		Contact appropriate lead nurse	Via Switchboard	8502 Page holder
x	x	Porter Supervisor.	Via Switchboard	8502 Page holder
	x	On Call Duty Manager	Via Switchboard	8502 Page holder
x		CSM/GM /Director/Site Manager	Contact in person one person listed and they will contact the remainder	8502 Page holder

Further Guidance

Health Protections Scotland guidance related to VHF and particularly the use of PPE and infection control measures in hospital are available

https://www.hps.scot.nhs.uk/a-to-z-of-topics/viral-haemorrhagic-fevers-vhf/

https://www.hps.scot.nhs.uk/web-resources-container/ebola-viral-haemorrhagic-fever-vhf-infection-prevention-and-control-precautions-summary-for-the-hospital-setting/

PPE donning and removal checklists including for sterile procedures e.g. central lines
GG&C local guidelines.

Appendix 2

Video training in PPE
https://learn.nes.nhs.scot/58193/high-consequence-infectious-diseases-hcid

Appendix 1

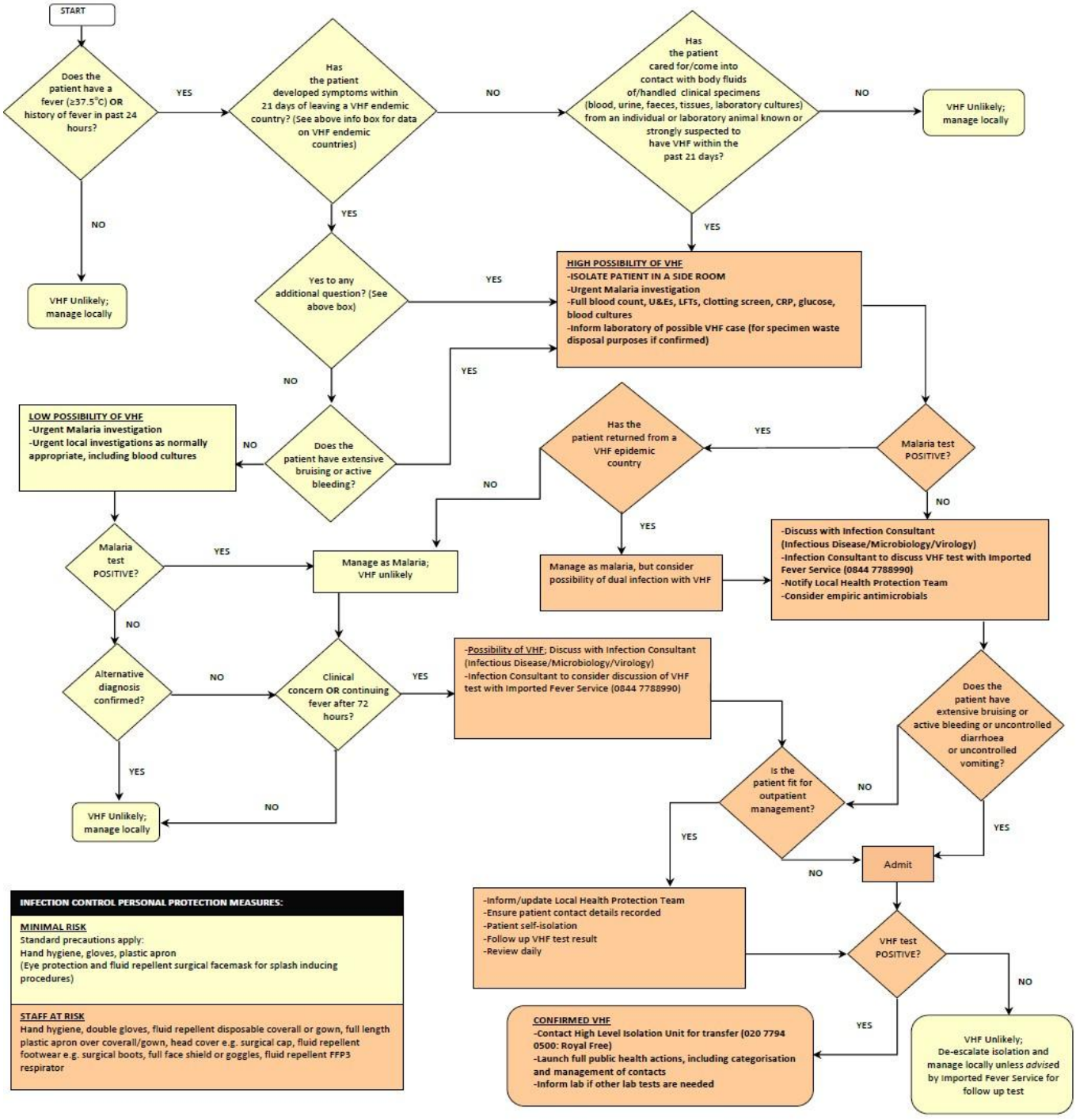
VIRAL HAEMORRHAGIC FEVERS RISK ASSESSMENT (Version 6: 15.11.2015)

VHF ENDEMIC COUNTRIES:

Information on VHF endemic countries can be found at https://www.gov.uk/viral-haemorrhagic-fevers-origins-reservoirs-transmission-and-guidelines
or see VHF in Africa map at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/365845/VHF_Africa_960_640.png

ADDITIONAL QUESTIONS:

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



INFECTION CONTROL PERSONAL PROTECTION MEASURES:

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

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