Public Health England

Protecting and improving the nation's health

Specimen processing in suspected and confirmed Ebola virus disease

Rob Shorten

5th November 2015

Perform a risk assessment

Febrile patients with travel or exposure history considered at risk. Classified into one of three categories:

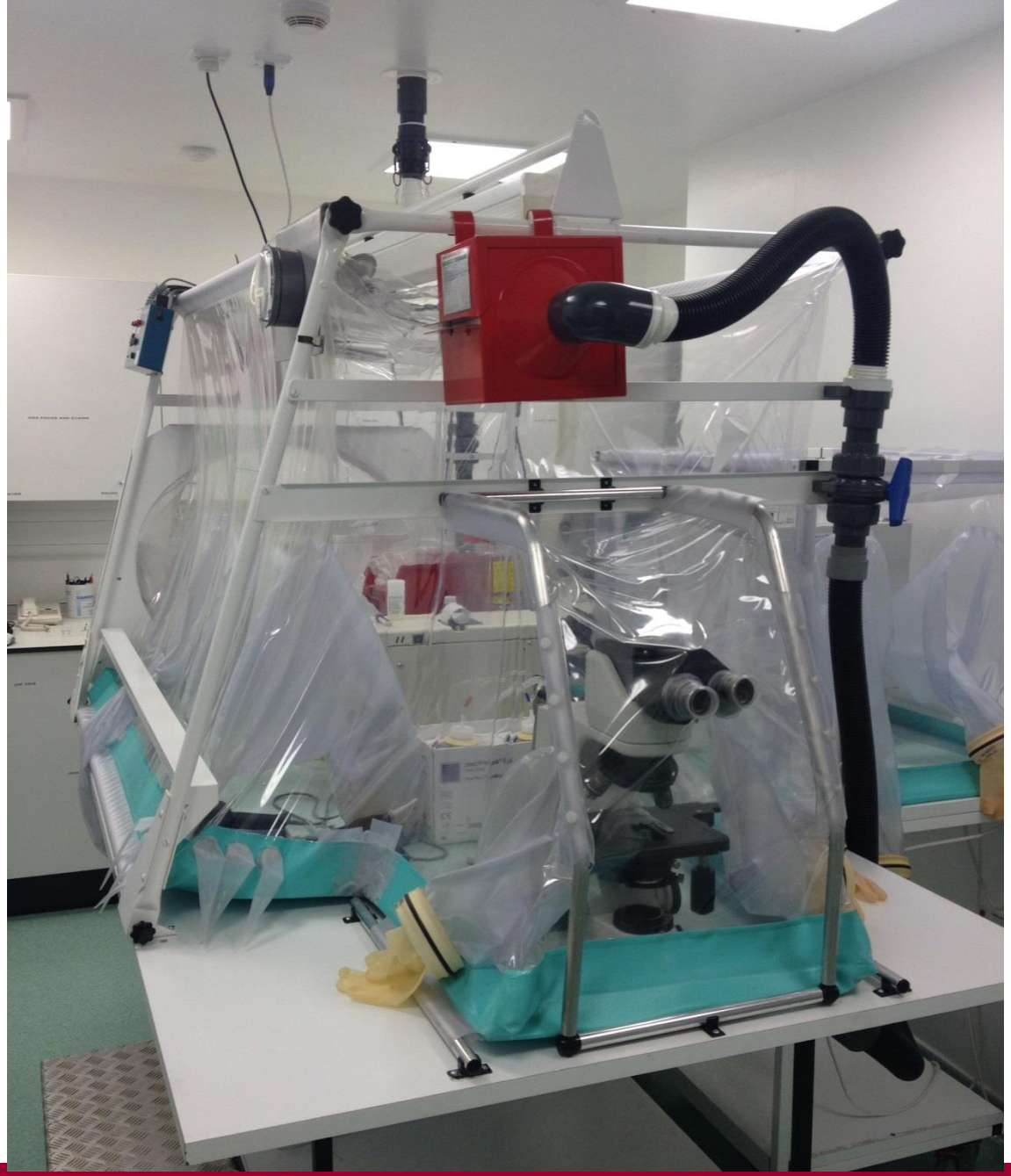
VHF Unlikely
Low Possibility of VHF
High Possibility of VHF

Commonest cause of fever in these patients is malaria

Essential to perform pathology tests locally to help diagnose and manage the patient appropriately

Which assays are important?

Biochemistry	**Haematology**	**Coagulation**
Sodium	Haemoglobin	Prothrombin Time
Potassium	Platelets	Activated Partial Thromboplastin Time
Urea	Leucocyte count with differential	Fibrinogen degradation products
Creatinine	Erythrocyte count	
AST		**Others**
ALT	Blood grouping & antibody screening	ICT Malaria
Bilirubin	Cross matching	HIV Rapid
Alkaline phosphatase		
C-reactive protein		
Lactate		
Blood gases		
Magnesium		

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Department of Health

HSE

Management of Hazard Group 4 viral haemorrhagic fevers and similar human infectious diseases of high consequence

Advisory Committee on Dangerous Pathogens

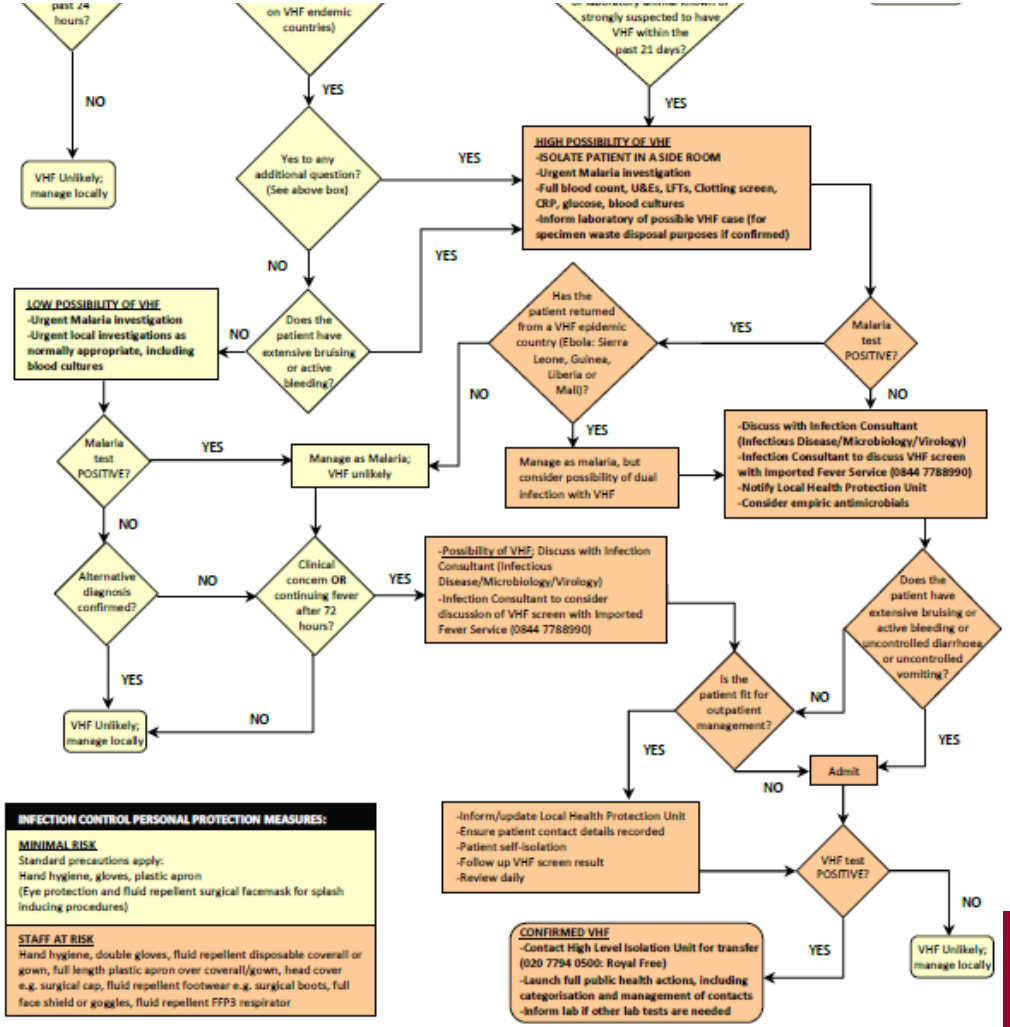
November 2014

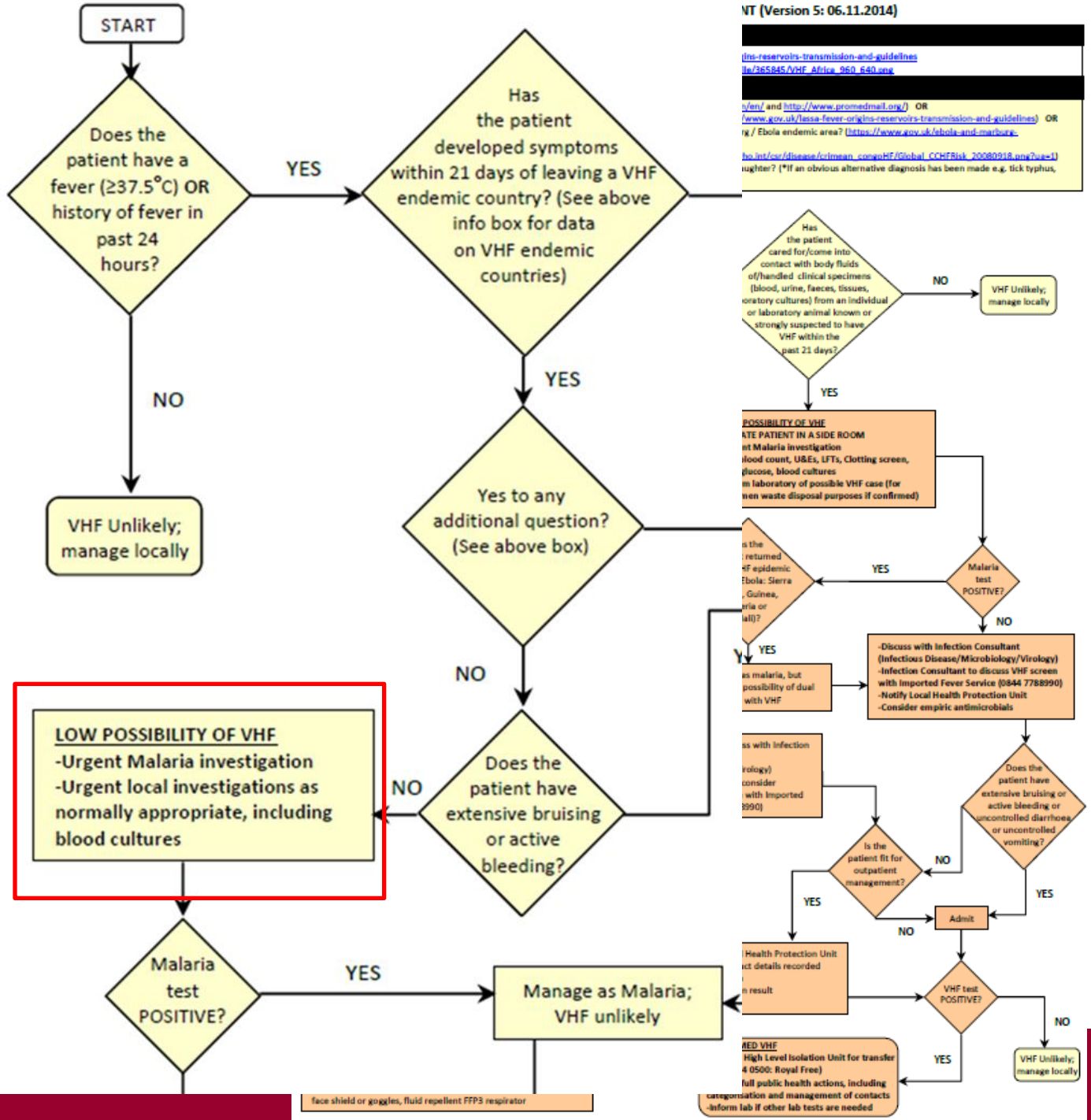
VHF ENDEMIC COUNTRIES:

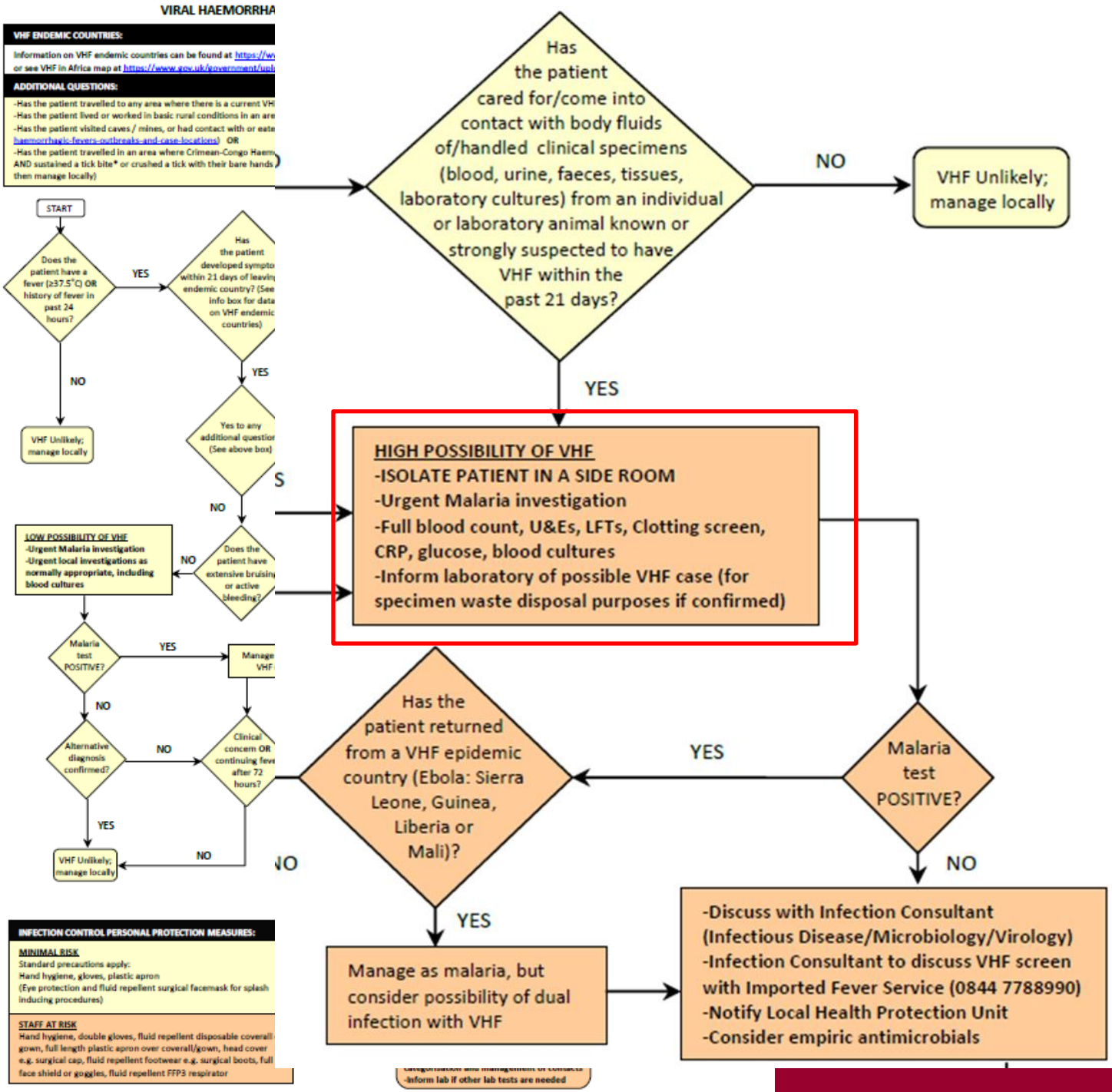
Information on VHF endemic countries can be found at https://www.gov.uk/viral-haemorrhagic-fevers-origins-reservoirs-transmission-and-guidelines
or see VHF in Africa map at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/365845/VHF_Africa_960_640.png

ADDITIONAL QUESTIONS:

-Has the patient travelled to any area where there is a current VHF outbreak? (http://www.who.int/csr/don/en/ and 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)




START
Does the patient have a fever (≥37.5°C) OR history of fever in past 24 hours?
YES
NO
VHF Unlikely; manage locally
Has the patient developed symptoms within 21 days of leaving a VHF endemic country? (See above info box for data on VHF endemic countries)
YES
Yes to any additional question? (See above box)
NO
Does the patient have extensive bruising or active bleeding?
NO
LOW POSSIBILITY OF VHF
-Urgent Malaria investigation
-Urgent local investigations as normally appropriate, including blood cultures
Malaria test POSITIVE?
YES
Manage as Malaria; VHF unlikely
face shield or goggles, fluid repellent FFP3 respirator
NT (Version 5: 06.11.2014)
Has the patient cared for/come into contact with body fluids of/handled clinical specimens (blood, urine, faeces, tissues, oratory cultures) from an individual or laboratory animal known or strongly suspected to have, VHF within the past 21 days?
NO
VHF Unlikely; manage locally
YES
POSSIBILITY OF VHF
ATE PATIENT IN A SIDE ROOM
nt Malaria investigation
lood count, U&Es, LFTs, Clotting screen,
lucose, blood cultures
n laboratory of possible VHF case (for
nen waste disposal purposes if confirmed)
Malaria test POSITIVE?
YES
NO
-Discuss with Infection Consultant (Infectious Disease/Microbiology/Virology)
-Infection Consultant to discuss VHF screen with Imported Fever Service (0844 7788990)
-Notify Local Health Protection Unit
-Consider empiric antimicrobials
Does the patient have extensive bruising or active bleeding or uncontrolled diarrhoea or uncontrolled vomiting?
Is the patient fit for outpatient management?
NO
YES
Admit
VHF test POSITIVE?
NO
YES
VHF Unlikely; manage locally
-Inform lab if other lab tests are needed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or see VHF in Africa map at https://www.gov.uk/government/upl
ADDITIONAL QUESTIONS:
-Has the patient travelled to any area where there is a current VH
-Has the patient lived or worked in basic rural conditions in an are
-Has the patient visited caves / mines, or had contact with or eate
haemorrhagic-fevers-outbreaks-and-case-locations) OR
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AND sustained a tick bite* or crushed a tick with their bare hands
then manage locally)
START
Does the patient have a fever (≥37.5°C) OR history of fever in past 24 hours?
YES
NO
VHF Unlikely; manage locally
Has the patient developed sympto within 21 days of leavin endemic country? (See info box for data on VHF endemic countries)
YES
Yes to any additional questior (See above box)
NO
LOW POSSIBILITY OF VHF
-Urgent Malaria investigation
-Urgent local investigations as normally appropriate, including blood cultures
NO
Does the patient have extensive bruisin or active bleeding?
Malaria test POSITIVE?
YES
Manage VHF
NO
Alternative diagnosis confirmed?
NO
Clinical concern OR continuing feve after 72 hours?
YES
VHF Unlikely; manage locally
NO
Has the patient cared for/come into contact with body fluids of/handled clinical specimens (blood, urine, faeces, tissues, laboratory cultures) from an individual or laboratory animal known or strongly suspected to have VHF within the past 21 days?
NO
VHF Unlikely; manage locally
YES
HIGH POSSIBILITY OF VHF
-ISOLATE PATIENT IN A SIDE ROOM
-Urgent Malaria investigation
-Full blood count, U&Es, LFTs, Clotting screen, CRP, glucose, blood cultures
-Inform laboratory of possible VHF case (for specimen waste disposal purposes if confirmed)
Has the patient returned from a VHF epidemic country (Ebola: Sierra Leone, Guinea, Liberia or Mali)?
YES
Malaria test POSITIVE?
YES
NO
Manage as malaria, but consider possibility of dual infection with VHF
YES
-Discuss with Infection Consultant (Infectious Disease/Microbiology/Virology)
-Infection Consultant to discuss VHF screen with Imported Fever Service (0844 7788990)
-Notify Local Health Protection Unit
-Consider empiric antimicrobials
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 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

Nosocomial Transmission of VHF

Citation	Virus and Year	Location	Comments
J Stewart. Euro Surveill. 1998;2(8):pii=1256	CCHF 1997	UK	64 contacts, including resuscitation. No secondary cases.
N.S. Crowcroft et al Journal of Infection (2004) 48, 221–228	Lassa 2000	UK	Patient initially admitted to HTD (UCLH). 88 staff at RFH and UCLH followed up. No seroconversions.
Haas WH, Clin Infect Dis 2003;36(10):1254-8	Lassa 2000	Germany	High risk exposure to 18 staff (direct blood contact or unprotected handling of samples). No seroconversions or secondary cases. Asymptomatic seroconversion in one clinician with close contact.
A Kitching et al. Eurosurveillance 14(6), 12 February 2009	Lassa 2009	UK	Patient initially admitted to Homerton University Hospital. Many samples taken and processed for in house and referred tests over two weeks. Transferred to HTD (UCLH) – further laboratory tests. Transferred to Royal Free. RIP. 72 lab staff considered low risk (handled samples with PPE). No secondary cases reported.
S Atkin et al. Eurosurveillance 14(10), 12 March 2009	Lassa 2009	UK	Admitted to HTD (UCLH). RIP same day. Lab staff: 21 ‘no risk’, 45 ‘low risk’, 3 ‘high risk’. No secondary cases reported.
Barr DA et al Lancet. 2013 Oct 26	CCHF 2012	UK	Admitted via Glasgow A&E. Routine bloods taken over 36 hours before diagnosis of CCHF confirmed and transferred to HSIDU. No secondary cases reported.

History of VHF imported to the UK

18 VHF cases (12 Lassa, 3 CCHF*, 3 Ebola**) since 1971

1 case of laboratory acquired Ebola in UK (1976): needle-stick at a research lab

No routine nosocomial cases

CCHF in Turkey 2002 - 2012

7192 cases (359 deaths)

37 healthcare related (4 deaths)

Greatest risk = ward-based staff performing invasive procedures including cannulation and venepuncture

No possible/proven cases in laboratory staff, where no additional precautions are taken

H Leblebicioglu & NJ Beeching, submitted

Universal Precautions: If it's good enough for BBV….

PPE

- Laboratory coats
- Eye protection
- Gloves

Auto-analysers

- Sealed/open systems
- Automated pipetting/dilutions

Safe waste disposal

- Clinical waste pathway - traceability
- Direct to drain – dilution effect

Decontamination

- Same as for BBV

Thank you

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