Management of the febrile traveller

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INTRODUCTION
Background

- 1 billion travellers/year worldwide
- Health problems self reported in 22 – 64%
- 8% travellers developing world require medical care
Ebola!

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CURRENT NOTES
Ebola outbreak declared an emergency of international concern
48/3201 The first meeting of the Emergency Committee convened by the Director-General under the International Health Regulations (IHR 2005) regarding the Ebola virus disease (EVD) outbreak in West Africa was held on 6-7 August 2014.

Following discussion and consideration, the Committee advised that:

• the Ebola outbreak in West Africa constituted an 'extraordinary event' and a public health risk to other states
• the possible consequences of further international spread were particularly serious in view of the virulence of the virus, the intensive community and health facility transmission patterns, and the weak health systems in the currently affected and most at-risk countries
• a co-ordinated international response was deemed essential to stop and reverse the international spread of Ebola.

The Committee agreed that the conditions for a Public Health Emergency of International Concern (PHEIC) had been met. Further information on the challenges for the affected countries and the advice from the Committee to the Director-General for consideration to address the Ebola outbreak in accordance with the IHR (2005)
How do we risk assess for VHF?

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

Advisory Committee on Dangerous Pathogens

September 2014
Learning Outcomes

Following this webinar participants will be able to:

• understand the common causes of fever in returning travellers
• understand the appropriate investigation and management of febrile travellers
• know how to risk assess travellers for Viral haemorrhagic Fever and ensure appropriate care of “high risk” patients
What illnesses do travellers get?

Spectrum of Disease and Relation to Place of Exposure among Ill Returned Travelers

David O. Freedman, M.D., Leah H. Wald, Ph.D., Phyllis E. Kozarsky, M.D., Tamara Fink, M.D., Rachel Robins, M.D., Frank von Sonnenburg, M.D., Jay S. Keystone, M.D., Prativa Pandey, M.D., and Martin S. Cetron, M.D., for the GeoSentinel Surveillance Network

ABSTRACT

BACKGROUND

Approximately 8 percent of travelers to the developing world require medical care during or after travel. Current understanding of morbidity profiles among ill returned travelers is based on limited data from the 1980s.

METHODS

Thirty GeoSentinel sites, which are specialized travel and tropical-medicine clinics on six continents, conducted clinician-based sterile surveillance data for 12,953 ill returned travelers. We compared the frequency of occurrence of each diagnosis among travelers returning from six developing regions of the world.

RESULTS

Significant regional differences in proportions morbidity were detected in 16 of 21 broad syndromic categories. Among travelers presenting to GeoSentinel sites, systemic febrile illnesses with an unclear etiology occurred disproportionately among those returning from sub-Saharan Africa or Southeast Asia, whereas diarrhea among those returning from south central Asia, and dermatologic problems among those returning from the Caribbean or Central America. With respect to specific diagnoses, malaria was one of the three most frequently caused of systemic febrile illnesses among travelers from every region, although travelers from every region except sub-Saharan Africa and Central America had confirmed or probable disease more frequently than malaria. Among travelers returning from sub-Saharan Africa, rodent-borne infections, primarily rodent-borne spotted fever, occurred more frequently than typhoid or dengue. Travelers from all regions except Southeast Asia presented with parasite-induced diarrhea more often than with bacterial diarrhea.

CONCLUSIONS

When patients present to specialized clinics after travel to the developing world, travel destinations are associated with the probability of the diagnosis of certain diseases. Diagnostic approaches and empiric therapies can be guided by these destination-specific differences.

New England Journal of Medicine 2006;354:119-130
<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>All Regions (N=17,353)</th>
<th>Caribbean (N=1115)</th>
<th>Central America (N=1326)</th>
<th>South America (N=1675)</th>
<th>Sub-Saharan Africa (N=4524)</th>
<th>South Central Asia (N=2403)</th>
<th>Southeast Asia (N=2793)</th>
<th>Other or Multiple Regions (N=3517)</th>
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<td>Underlying chronic disease‡</td>
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<td>Loss to follow-up‡</td>
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<td>12</td>
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<td>8</td>
<td>5</td>
<td>4</td>
<td>13</td>
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</table>

* Diagnoses included in each syndrome category are listed in the Supplementary Appendix. Numbers may not total 1000 because patients may have had more than one diagnosis.† This category includes travel to West Asia, Northeast Asia, eastern Europe, Oceania, North Africa, or Antarctica (1868 travelers) or to multiple developing regions, for which ascertainment of exposure was impossible (1649 travelers).‡ P<0.01 for the comparison among regions.
<table>
<thead>
<tr>
<th>Syndrome and Cause</th>
<th>All Regions</th>
<th>Caribbean</th>
<th>Central America</th>
<th>South America</th>
<th>Sub-Saharan Africa</th>
<th>South Central Asia</th>
<th>Southeast Asia</th>
<th>Other or Multiple Regions†</th>
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<td>Specific pathogen or cause reported‡</td>
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Ill travellers presenting with fever

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<th>Diagnosis</th>
<th>Percentage of all fevered travellers</th>
<th>Percentage hospitalised</th>
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<tr>
<td>Unspecified</td>
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<tr>
<td>Malaria</td>
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<td>Acute diarrhoea</td>
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<td>15</td>
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<tr>
<td>Respiratory infection</td>
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<td>24</td>
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<td>Genitourinary infection</td>
<td>4</td>
<td>29</td>
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<tr>
<td>Skin infection</td>
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<td>21</td>
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<tr>
<td>Non diarrhoeal GI infection</td>
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<td>45</td>
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<td>Enteric fever</td>
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<td>Rickettsial infection</td>
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NO cases of Viral Haemorrhagic Fever

Clinical Infectious Diseases  2007;44:1560-1568
**Imported Malaria in UK 2013**

60% of our imported malaria comes from West Africa

**Imported malaria cases by species and region of travel, United Kingdom: 2013**

<table>
<thead>
<tr>
<th>Region of acquisition [1]</th>
<th>*P.falciparum</th>
<th>P.vivax</th>
<th>P.ovale</th>
<th>P.malariae</th>
<th>Mixed</th>
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<th>2012 total</th>
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<td>906</td>
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<td>Middle Africa</td>
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<td>Eastern Asia</td>
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<td><strong>Total</strong></td>
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<td>78</td>
<td>39</td>
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<td>1378</td>
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Downloaded from; https://www.gov.uk/government/publications/imported-malaria-in-the-uk-statistics
Viral Haemorrhagic Fever

- Lassa, Ebola/Marburg, CCHF, SAVHFs, RVF, DHF, Yellow fever

Exposure

Rural > Urban
Nosocomial
VHF in Africa
(Areas of known risk)

- Lassa and Ebola
- Lassa
- Ebola / Marburg
- CCHF

- Guinea
- Sierra Leone
- Liberia
- Ivory Coast
- Nigeria
- Sudan
- Uganda
- Kenya
- Gabon
- DR Congo
- Congo
- Angola
- Zimbabwe
- South Africa
Clinical Presentation

Exposure

Up to 21 days

Non specific febrile illness

Haemorrhagic manifestations

Sepsis syndrome/shock

Death

Treatment

Supportive
Correct coagulopathy/anaemia
Ribavirin
So, in febrile returning travellers...

• VHF presents with a non specific febrile illness similar to malaria, enteric fever, Dengue etc

• Malaria and other infections are far more likely and can be fatal if not treated in a timely manner

.........we need a rational approach
**VIRAL HAEMORRHAGIC FEVERS RISK ASSESSMENT** (Version 4: 10.09.2014)

A) Does the patient have a fever (>38°C) or history of fever in past 24 hours AND has returned from (or is currently residing in) a VHF endemic country [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/354636/VHF_Africa_2014_update.jpg] within 21 days? 
OR 
B) Does the patient have a fever (>38°C) or history of fever in past 24 hours AND has cared for/or 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?

NO to A AND B

VHF Unlikely; manage locally

YES to A only

ADDITIONAL QUESTIONS:
- Has the patient travelled to any area where there is a current VHF outbreak? [http://www.promedmail.org/]
- 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#epidemiology]
- Has the patient visited caves/Or mines, or had contact with primate, antelope or bats in a Marburg/Ebola endemic area? [https://www.gov.uk/ebola-and-marburg-haemorrhagic-fevers-outbreaks-and-case-locations]
- Has the patient travelled in an area where Crimean-Congo Haemorrhagic Fever is endemic? [http://www.who.int/csr/disease/cremien_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?

NO to ALL additional questions

CLINICAL QUESTION TO DETERMINE INFECTION CONTROL BEHAVIOUR AND PROTECT STAFF: does the patient have extensive bruising or active bleeding?

NO

Malaria Positive: Manage as Malaria; VHF unlikely

Malaria Negative

Continuing fever after 72 hours?

NO

Discuss with infection Consultant (Infectious Disease/Microbiology/Virology) Possibility of VHF; infection Consultant to consider discussion of VHF screen with Imported Fever Service (0844 7788990)

YES

Alternative diagnosis confirmed?

NO

VHF Unlikely; manage locally

YES

Clinical concern OR continuing fever after 72 hours?

NO

Inform/update Local Health Protection Unit
- Ensure patient contact details recorded
- Patient self isolation
- Follow up VHF screen result
- Review daily

YES

Is the patient fit for outpatient management?

No

Manage locally

Confirmed VHF

- Contact High Level Isolation Unit for transfer (020 7794 0500: Royal Free)
- Launch full public health actions, including categorisation and management of contacts
- Inform lab if other lab tests are needed
CASE 1
16 year old Scottish female.

Returned on flight to Glasgow via London from Malawi

2 months volunteer work and holiday in Blantyre, building school and playing with local children.

Took antimalarial (Malarone) “religiously”
Pre travel advice with vaccination against HAV/Typhoid/rabies/HBV

Had developed fever, headache, myalgia, sore throat on flight. Collected from airport and brought straight to A&E by mother.
On Examination

Temp 38.6ºC; Pulse 102/min; BP 126/82; Resp rate 22/min;
SpO2 99% on air

Throat NAD
No cervical adenopathy

Chest clear and normal chest X ray

Abdomen soft, mild generalised tenderness
VIRAL HAEMORRHAGIC FEVERS RISK ASSESSMENT (Version 4: 10.09.2014)

A) Does the patient have a fever (>38°C) or history of fever in past 24 hours AND has returned from (or is currently residing in) a VHF endemic country (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/354636/VHF_Africa_2014_update.jpg) within 21 days? OR
B) Does the patient have a fever (>38°C) or history of fever in past 24 hours AND has 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?

NO to A AND B

VHF Unlikely; manage locally

YES to A only

ADDITIONAL QUESTIONS:
- Has the patient travelled to any area where there is currently a VHF outbreak? (http://www.promedmail.org/)
- Has the patient lived or worked in basic rural conditions in any area where Lassa Fever is endemic? (https://www.gov.uk/lassa-fever-origins-reservoirs-transmission-and-guidelines#epidemiology)
- Has the patient visited caves or mines, or had contact with primates, antelopes or bats in a Marburg / Ebola endemic area? (https://www.gov.uk/ebola-and-marburg-haemorhagic-fevers-outbreaks-and-case-locations)
- 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?

No to ALL additional questions

YES to ANY ADDITIONAL QUESTION

CLINICAL QUESTION TO DETERMINE INFECTION CONTROL BEHAVIOUR AND PROTECT STAFF: does the patient have extensive bruising or active bleeding?

LOW POSSIBILITY OF VHF
- Urgent Malaria investigation
- Urgent local investigations as normally appropriate, including blood cultures

Malaria Negative
- Continuing fever after 72 hours?
  - Low possibility of VHF
  - Discuss with infection Consultant (Infectious Disease/Microbiology/Virology)
  - Possibility of VHF; infection Consultant to consider discussion of VHF screen with Imported Fever Service (0844 7788990)

Malaria Positive: Manage as Malaria; VHF unlikely
- Is the patient fit for outpatient management?
  - Yes
    - Inform/update Local Health Protection Unit
    - Ensure patient contact details recorded
    - Patient self isolation
    - Follow up VHF screen result
    - Review daily
  - No
    - Manage locally

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)

Malaria Negative
- Discuss with infection Consultant (Infectious Disease/Microbiology/Virology)
- Infected Consultant to arrange VHF screen with Imported Fever Service (0844 7788990)
- Notify Local Health Protection Unit
- Consider empiric antimicrobials

Malaria Positive: Manage as Malaria; VHF unlikely
- Continuing fever after 72 hours?
  - Low possibility of VHF
  - Discuss with infection Consultant (Infectious Disease/Microbiology/Virology)
  - Possibility of VHF; infection Consultant to consider discussion of VHF screen with Imported Fever Service (0844 7788990)

Malaria Negative
- Discuss with infection Consultant (Infectious Disease/Microbiology/Virology)
- Infected Consultant to arrange VHF screen with Imported Fever Service (0844 7788990)
- Notify Local Health Protection Unit
- Consider empiric antimicrobials

CONFIRMED VHF
- Contact High Level Isolation Unit for transfer (020 7794 0500: Royal Free)
- Launch full public health actions, including categorisation and management of contacts
- Inform lab if other lab tests are needed

Please note this algorithm is a guide designed to aid early diagnosis of VHF cases.
Malaria RDT positive

Falciparum ring forms
2% parasitaemia
CASE 2
48 year old Scottish male.

Returned on flight to Glasgow from Mumbai (via Dubai) 6 days ago.

6 week trip to Mumbai to visit friends and relatives. Stayed in Mumbai only. Drank “only bottled water”.

No Pre travel advice. No pre travel vaccines and no antimalarial chemoprophylaxis.

Has a 48 hr history of fever, rigors, headache, myalgia and abdominal pain. No loose stool.
Self referral to A&E.
On Examination

Temp 38.1\textdegree{}C; Pulse 110/min; BP 89/62; Resp rate 28/min; SpO2 99% on air

Throat NAD
No cervical adenopathy

Heart sounds pure
Chest clear and normal chest X ray

Abdomen soft, mild generalised tenderness
Management

Patient is septic!
  • IV fluids
  • Oxygen
  • All bloods including 2 sets blood cultures and malaria antigen/film

Discussed with local Infectious Diseases
  • In the absence of localising signs and fact that travel to India, Typhoid (enteric fever) most likely diagnosis
  • Commences on 2g Ceftriaxone daily
  • Transferred to ID ward
Progress

Malaria antigen x2 negative

FBC shows neutrophilia with thrombocytopenia
Biochemistry shows slight hepatic changes

Patient continues to be febrile 48 hrs later when blood cultures reported as growing “gram negative rods”

Day 3 of admission confirmed as growing *S. typhi*
Day 4 of admission fever settles – completes 14 days iv Ceftriaxone via OPAT
CASE 3
30 year old male from Sierra Leone.

Presents with fever and myalgia 48 hrs after arriving in UK. No localising symptoms on further history.

No past medical history and on no regular medications.

Lives in Freetown in Sierra Leone and is an athlete. No rural travel, no hospitalisation and no ill contacts in the last 3 weeks.
On Examination

Temp 37.9⁰C; Pulse 110/min; BP 96/52; Resp rate 21/min; SpO2 99% on air

Throat NAD
No cervical adenopathy

Heart sounds pure
Chest clear and normal chest X ray

Abdomen soft and non tender.
VIRAL HAEMORRHAGIC FEVERS RISK ASSESSMENT (Version 4: 10.09.2014)

A) Does the patient have a fever (>38°C) or history of fever in past 24 hours AND has returned from (or is currently residing in) a VHF endemic country (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/354636/VHF_Africa_2014_update.jpg) within 21 days? OR
B) Does the patient have a fever (>38°C) or history of fever in past 24 hours AND has 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?

NO to A AND B

VHF Unlikely; manage locally

YES to A only

ADDITIONAL QUESTIONS:
- Has the patient travelled to any area where there is a current VHF outbreak? (https://www.promedmail.org/)
- 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#epidemiology)
- Has the patient visited caves OR mines, or had contact with primates, antelopes or bats in a Marburg / Ebola endemic area? (https://www.gov.uk/ebola-and-marburg-haemorrhagic-fevers-outbreaks-and-case-localisations)
- 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?

No to ALL additional questions

CLINICAL QUESTION TO DETERMINE INFECTION CONTROL BEHAVIOUR AND PROTECT STAFF: does the patient have extensive bruising or active bleeding?

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)

NO

LOW POSSIBILITY OF VHF
- Urgent Malaria investigation
- Urgent local investigations as normally appropriate, including blood cultures

Malaria Positive: Manage as Malaria; VHF unlikely

Continuing fever after 72 hours?

YES

Discuss with infection Consultant (Infectious Disease/Microbiology/Virology)
Possibility of VHF; infection Consultant to consider discussion of VHF screen with Imported Fever Service (0844 7788990)

Malaria Negative

Clinical concern OR continuing fever after 72 hours?

YES

CLINICAL QUESTION TO DETERMINE INFECTION CONTROL BEHAVIOUR AND PROTECT STAFF: does the patient have extensive bruising OR active bleeding OR uncontrolled diarrhoea OR uncontrolled vomiting?

NO

Admit

VHF Result

CONFIRMED VHF
- Contact High Level Isolation Unit for transfer (020 7794 0500: Royal Free)
- Launch full public health actions, including categorisation and management of contacts
- Inform lab if other lab tests are needed

YES

Please note this algorithm is a guide designed to aid early diagnosis of VHF cases

NO

Inform/update Local Health Protection Unit
- Ensure patient contact details recorded
- Patient self isolation
- Follow up VHF screen result
- Review daily

Is the patient fit for outpatient management?

YES

Manage locally

No

Staff at Risk

Hand hygiene, gloves, plastic apron, fluid repellent surgical facemask, eye protection (FFP3 respirator for aerosol generating procedures)
- Patients that have extensive bruising, active bleeding, uncontrolled diarrhoea, uncontrolled vomiting
- Hand hygiene, double gloves, fluid repellent disposable gown/suit, eye protection, FFP3 respirator

Staff at High Risk

Hand hygiene, double gloves, fluid repellent disposable gown or suit, plastic apron (over disposable gown/suit) eye protection, FFP3 respirator
Management

Patient is discussed with ID
  • Urgent malaria film (discussed with haematology)
  • Blood cultures and “standard bloods”
  • Transfer ID unit
  • iv fluids
  • Ceftriaxone and po Doxycicline

Patient managed in side room with standard infection control
  • Malaria antigen and film negative
  • VHF screen carried out due to “concern”
  • Patient settles with resolution of SIRS
  • Blood cultures negative
  • Discharged day 3 with negative VHF screen
CASE 4
29 year old male returned from trip to DR Congo.

Travels home by private transport.

Wife was concerned that he looks unwell, calls 999 ambulance
Arrives A&E at 1530hrs

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**Arrives A&E at 1530hrs**

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Transferred to ID unit.
Arrives ID Unit ~2130hrs, seen by on call SHO

Isolated in negative pressure room after overnight discussion with on call ID consultant, who raises possibility of VHF.

PPE – double glove, eye protection, fluid repellent gown, FFP3 face mask

Limited staff exposure with a record of all staff in contact.

Treated with IV ceftriaxone, po doxycycline, given IV fluids and blood products (2x FFP, 1x plts)
Full specialist assessment in ID Unit:

3/52 trip to DRC: Working as part of team in “aid camp”.

Rural setting but denies any animal or tick bite exposure. Numerous unwell contacts in course of work as a nurse.

Unwell for 5 days with multiple symptoms (myalgia, loose bloody stool, haematemesis and haemoptysis, cramping upper abdominal pain, cough, headache) feels has worsened over this time.

O/E has petechia, one spontaneous haematoma over left tibia, and several large haematomas from venepuncture sites. Mucosa are clear apart from conjunctival suffusion. Diffuse tender upper abdomen but no organomegaly. Now pyrexial but haemodynamically stable with GCS 15/15.
**VIRAL HAEMORRHAGIC FEVERS RISK ASSESSMENT** (Version 4: 10.09.2014)

A) Does the patient have a fever (>38°C) or history of fever in past 24 hours AND has returned from (or is currently residing in) a VHF endemic country [link](https://www.gov.uk/viral-haemorrhagic-fevers-origins-reservoirs-transmission-and-guidelines) or see VHF in Africa map at [link](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/354636/VHF_Africa_2014_update.jpg) within 21 days? OR

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**NO to A AND B**

VHF Unlikely; manage locally

**YES to A only**

**ADDITIONAL QUESTIONS:**
- Has the patient travelled to any area where there is a current VHF outbreak? [link](http://www.promedmail.org/)
- Has the patient lived or worked in basic rural conditions in an area where Lassa Fever is endemic? [link](https://www.gov.uk/lassa-fever-origins-reservoirs-transmission-and-guidelines#epidemiology)
- Has the patient visited caves OR mines, or had contact with primates, antelopes or bats in a Marburg / Ebola endemic area? [link](https://www.gov.uk/ebola-and-marburg-haemorrhagic-fevers-outbreaks-outcase-locations)
- Has the patient travelled in an area where Crimean-Congo Haemorrhagic Fever is endemic? [link](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?

**NO to ALL additional questions**

**YES to ANY ADDITIONAL QUESTION**

**CLINICAL QUESTION TO DETERMINE INFECTION CONTROL BEHAVIOUR AND PROTECT STAFF: does the patient have extensive bruising or active bleeding?**

- Low possibility of VHF
  - Urgent Malaria investigation
  - Urgent local investigations as normally appropriate, including blood cultures

  - Malaria Positive: Manage as Malaria; VHF unlikely

  - Malaria Negative: Continue fever after 72 hours?

    - No: Discuss with infection Consultant (Infectious Disease/Immunology/Virology)

    - Yes: Possibility of VHF; infection Consultant to consider discussion of VHF screen with imported fever Service (0844 7788990)

  - Continuing fever after 72 hours?

    - No: Malaria Negative

    - Yes: Alternative diagnosis confirmed?

      - Yes: VHF unlikely; manage locally

      - No: Clinical concern OR continuing fever after 72 hours?

        - Yes: VHF unlikely; manage locally

        - No: Is the patient fit for outpatient management?

          - Yes: Inform/update Local Health Protection Unit; Ensure patient contact details recorded

          - No: Patient self isolation; Follow up VHF screen result; Review daily

**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

**Confirm VHF**

- Contact High Level Isolation Unit for transfer (020 7794 0500: Royal Free)
- Launch full public health actions, including categorisation and management of contacts
- Inform lab if other lab tests are needed

---

*If an obvious alternative diagnosis has been made e.g. tick typhus, then manage locally

**Please note this algorithm is a guide designed to aid early diagnosis of VHF cases.**
Formally assessed for VHF risk by 2014 DOH guidelines

→ “high possibility of VHF”

Samples (blood, urine) dispatched to HPA Porton

Patient is increasingly drowsy, but easily roused to GCS 15
Positive Ebola PCR result telephoned from HPA Porton at 0100am.

Discussions with high security ID unit (Royal Free) about transfer
Marked clinical deterioration from 0300am:

- Worsening confusion, agitation and labile GCS
- Haematemesis
- Excessive bleeding from venous access sites
- Now oozing haemorrhage from gums
- Problems with IV access
- Rising heart rate, but BP and RR stable
- U/O not measurable

On-going blood product administration

Ongoing discussions about transfer to Royal Free
By 1000am is increasingly unwell, now with HR 140; RR 28; GCS 9/15.

Given sedation to allow better IV access and more aggressive fluid management.

Dedicated blood gas analysis machine provided: finds venous lactate is 19, glucose is 1.7.

Hypoglycaemia corrected and on-going blood products.

Transfer team ready to move to Royal Free.
Transferred by RAF to Royal Free high security isolation unit at 0500am.
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Died in isolation unit despite on-going supportive therapy; profoundly suppressed GCS (?IC haemorrhage), T1RF with massive pulmonary haemorrhage, MOF.
First confirmed case of Crimean-Congo haemorrhagic fever in the UK

In October, 2012, a 38-year-old Afghan man presented to an emergency department in Glasgow, UK, 2 h after returning on a flight from Kabul via Dubai, after a 3 week stay in Afghanistan, where he had attended a wedding in Samangan Province. His symptoms had started 5 days before presentation and included fever, epigastric pain, bloody diarrhoea, and haematemesis. On examination he was unwell but orientated, with physical observations within normal limits. Conjunctival suffusion was present and a ...

Massive environmental contamination

Use of “High Risk” infection control procedures

No secondary cases
Summary

• VHF has a non specific presentation
  • Implications for clinical and laboratory staff
  • The algorithm works – use it
  • Speak to your local Infectious Diseases clinicians

• Keep the risk of VHF in context
  • Common community acquired infection
  • Malaria
  • Enteric fever
  • Dengue fever