Fever in the Returning Traveller

Dr H Andrews; Dr H Stubbs; Dr E Shone
Updated May 2018

Fever in the Returned Traveller - Flowchart for Assessment

Fever in a Returned Traveller

Assess for Viral Haemorrhagic Fever (VHF) Risk
Use “Viral Haemorrhagic Fever Risk Assessment Tool” below

Low risk of VHF

Take a full history (including travel history) and examination as above.

Has the patient been to a Malaria Endemic Area?
(use http://www.fitfortravel.nhs.uk/home to assess)

No

Send x1 EDTA (Purple top) for Malaria Thick and Thin Film Ring Lab to inform

Malaria Film Negative

1. Investigate as per source of fever (see above for initial investigations)
2. Treat sepsis or shock
3. Start empirical treatment - may require discussion with ED Senior or Infectious Diseases

Malaria Film Positive

1. Assess severity - need for HDU setting?
2. Admit under Medicine
3. Contact Infectious Diseases
4. Treat as per Malaria Guidelines


For the ED:
- Careful fluid resuscitation – increased capillary permeability and high risk of fluid overload
- Close monitoring of blood glucose – high risk of hypoglycaemia
- Platelet transfusion only if evidence of bleeding
5. Investigate for other co-infections
Approach to the Febrile Returned Traveller

- Wear gloves, gown and consider other PPE
- Consider Isolation
  - Viral Haemorrhagic Fever Risk Assessment (see algorithm)
  - Diarrhoeal Diseases
  - Other concerns e.g. meningitis, known TB patient
- Common things are common; don’t forget regular causes of fever e.g. pneumonia, pyelonephritis, cholecystitis, influenza etc.
- Beware false localising features - e.g. the headache of malaria and the breathlessness of meningitis

The Travel History

- Viral Haemorrhagic Fever - Risk Assessment
  See below
- Malaria
  Malaria endemic country?
  Did they take prophylaxis with them?
  Did they use it? [Note - always test for malaria regardless of prophylaxis]
- Fever Timing
  Onset of fever and incubation period
  Timeline of symptoms - did they start upon return or whilst travelling
  Periodic fever - is it present all the time, or does it come and go? When is it worst?
- Location
  Specific dates
  Which country, for how long
  Rural or urban
  Specific cities and areas
  Purpose of visit
- Pre-Travel
  Vaccinations, malarial advice, any prophylactic meds taken.
- Specific Travel Questions:

<table>
<thead>
<tr>
<th>Questions to Consider</th>
<th>Relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safari or Game Reserves</td>
<td>Trypanosomiasis, Rickettsial infection</td>
</tr>
<tr>
<td>Farms</td>
<td>Brucellosis, Q Fever, Leptospirosis</td>
</tr>
<tr>
<td>Caves</td>
<td>Histoplasmosis, Rabies</td>
</tr>
<tr>
<td>Inpatient at Healthcare Facility</td>
<td>Hepatitis B +C, HIV, ESBL</td>
</tr>
<tr>
<td>Working at Healthcare Facility</td>
<td>TB, HIV, VHF, Typhus, Typhoid</td>
</tr>
<tr>
<td>Unpasteurised milk</td>
<td>Brucellosis, Listeria</td>
</tr>
<tr>
<td>Contact with freshwater</td>
<td>Acute Schistosomiasis, Leptospirosis</td>
</tr>
<tr>
<td>Food sanitation and hygiene</td>
<td>Diarrhoeal Diseases, Helminth infections</td>
</tr>
<tr>
<td>Funerals</td>
<td>VHF</td>
</tr>
<tr>
<td><strong>Possible</strong>: Sexual practices</td>
<td>HIV seroconversion, Syphilis</td>
</tr>
</tbody>
</table>

- Systems Review
  Many infections - both tropical and endemic in the UK - are non-specific and do not classically present.
  Run through of systems may provide helpful pointers and negatives are
- Past Medical History
  Where is patient originally from? Have they been visiting friends and relatives?
  Consider HIV and Sickle Cell
- Remember pregnancy / breast feeding
The Examination
Key signs on examination in the returned traveller;

<table>
<thead>
<tr>
<th>General Assessment</th>
<th>Features of shock, sepsis, haemorrhage?</th>
<th>Enteric fever, meningococcal sepsis, malaria, dengue, VHF → Isolation and Contact Infectious Diseases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Head</td>
<td>Suffused conjunctiva Epistaxis Subconjunctival haemorrhages</td>
<td>VHF, leptospirosis, Dengue</td>
</tr>
<tr>
<td>Neurological</td>
<td>Decreased GCS Strange behaviour Meningism</td>
<td>Meningitis (consider rarer causes e.g. TB, Cryptococcus) Encephalitis</td>
</tr>
<tr>
<td>Abdomen</td>
<td>Hepatomegaly Splenomegaly Bloody Diarrhoea</td>
<td>Typhoid, Leptospirosis, Viral Hepatitis Malarial, Visceral Leishmaniasis Shigella, Salmonella, E. Coli, Amoebiasis</td>
</tr>
<tr>
<td>Skin</td>
<td>Jaundice Eschar Urticarial Rash</td>
<td>Viral Hepatitis, Malaria, Leptospirosis Rickettsial Infection Acute Schistosomiasis, Strongyloides</td>
</tr>
</tbody>
</table>

The Initial Investigations

Investigate as for a normal septic screen as per focus e.g. sputum, urine, stool culture.

**ALWAYS** inform the lab → both for risk of samples and for accuracy of diagnosis. Don’t put your colleagues at risk!

1. Bloods FBC, Glucose, U&E, LFT, CRP, Clotting
2. Blood Film for Malaria Microscopy* Send x1 EDTA (Purple) bottle and inform lab
3. Blood Culture
4. Urine Dipstick Send for MC+S if positive
5. Imaging CXR
   If neurological signs → consider CT-Brain
6. Point of Care Tests Malaria Rapid Diagnostic Test HIV POCT (if high risk and available)

*Malarial Films - will require x3 films examined by lab over 2 days, taken at different times

<table>
<thead>
<tr>
<th>Lab Indicators</th>
<th>Consider</th>
</tr>
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<tbody>
<tr>
<td>Eosinophilia</td>
<td>Helminth Infections (Schistosomiasis, Strongyloides etc.)</td>
</tr>
<tr>
<td></td>
<td>Does not rise in Malaria</td>
</tr>
<tr>
<td>Thrombocytopenia</td>
<td>Malaria, Dengue, Viral Infections, HIV, Leishmaniasis</td>
</tr>
<tr>
<td>Anaemia</td>
<td>Malaria, Leishmaniasis</td>
</tr>
<tr>
<td>Deranged LFTs</td>
<td>Hepatitis, Leptospirosis</td>
</tr>
</tbody>
</table>
## Incubation Periods

<table>
<thead>
<tr>
<th>Incubation period</th>
<th>Infection</th>
</tr>
</thead>
</table>
| **Short (<10 days)** | Dengue, Chikungunya  
Gastroenteritis (bacterial, viral)  
Melioidosis  
Meningitis (bacterial, viral)  
Relapsing fever (borreliia)  
Respiratory tract infection  
Rickettsial infections |
| **Medium (10 – 21 days)** | Bacterial  
- Brucellosis  
Enteric fever (typhoid and paratyphoid fever)  
- Leptospirosis  
- Melioidosis  
- Q fever (Coxiella burnetii)  
Fungal  
- Histoplasmosis (can be as short as 3 days)  
Protozoal  
- Chagas disease, acute [South America]  
- Malaria (\textit{Plasmodium falciparum})  
- Trypanosomiasis rhodesiensae  
Viral  
- CMV, EBV, HIV, viral haemorrhagic fevers |
| **Long (>21 days)** | Bacterial  
- Brucellosis  
- Tuberculosis  
Fluke  
- Schistosomiasis, acute  
Protozoal  
- Amoebic liver abscess  
- Malaria (including \textit{Plasmodium falciparum})  
- Trypanosomiasis gambiense  
- Visceral leishmaniasis  
Viral  
- HIV  
- Viral hepatitis (A – E) |
**Viral Haemorrhagic Fever Risk Assessment Tool**

VHF s Include: Ebola, Crimean-Congo, Lassa, Dengue, Yellow Fever + Others

Important as can;
- Spread easily within a hospital
- High mortality rate
- Difficult to diagnose early due to non-specific signs
- No effective treatments

<table>
<thead>
<tr>
<th>Does the patient have a <strong>fever</strong> (&gt;37.5°C) or a <strong>history of fever</strong> in the past 24 hours?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>YES</strong> A. Patient has returned from a VHF endemic country within 21 days? <strong>YES</strong></td>
</tr>
<tr>
<td><strong>NO</strong> B. Patient has cared for/come into contact with body fluids of/handled clinical specimens from an individual or laboratory animal known or strongly suspected to have a VHF? <strong>NO</strong></td>
</tr>
<tr>
<td><strong>VHF unlikely</strong> Continue assessment as per Flowchart above</td>
</tr>
</tbody>
</table>

**VHF POSSIBLE**
- Full travel history (as above)
  - Specific VHF-screening questions:
    - Has the patient travelled to any area where there is a current VHF outbreak?
    - Has the patient lived or worked in basic rural conditions in an area where Lassa Fever is endemic?
    - Has the patient visited caves / mines, or had contact with or eaten primates, antelopes or bats in a Marburg / Ebola endemic area?
    - Has the patient travelled in an area where Crimean-Congo Haemorrhagic Fever is AND sustained a tick bite or crushed a tick with their bare hands OR had close involvement with animal slaughter?
- If YES to any of the specific VHF questions, **the patient must be managed as a possible case of VHF**
- If NO to the specific VHF questions, **but the patient has extensive bruising/active bleeding, the patient must be managed as a possible case of VHF**

**VHF POSSIBLE**
- 1. Isolate in Side Room
- 2. Inform lab of concern
- 3. PPE with gloves, gown, mask, overshoes
- 4. Contact ED Senior
- 5. Contact Infectious Diseases
- 6. Further questions/assessment as below

**Up to date information on at-risk countries for VHF;**
Geographical Areas / Further info

Use an up to date resource for accurate Malarial Maps and other concerns;

http://www.fitfortravel.nhs.uk/home

If concerned about an outbreak of an infection, consider using ProMed;

https://www.promedmail.org/

Viral Haemorrhagic Fever Outbreaks;


For up to date outbreak information and country specific disease risk. Phone line for health professionals also available here;

https://travelhealthpro.org.uk

American but very useful and well renowned. Huge database of up to date information and good disease factsheets

https://www.cdc.gov

References

1. Bell 2012 (https://www.rcpe.ac.uk/sites/default/files/bell.pdf)