

Fever in a Returned Traveller

For practical purposes a “returned traveller” is someone who has returned from travel within the last month. This is only a guide as some infections present up to a year after returning. Most infections in returned travellers are not tropical but rather non-travel-related infections which they would normally present with. However, tropical infections do occur and should be considered in the differential diagnosis and the patient should be isolated in a side room until the risk of a potentially transmissible infection has been excluded.

20-70% of travellers to developing countries develop a fever. Of these:

- 1-5% seek medical attention
- 0.1% need medical treatment (tropical and non-tropical)
- Only 0.001% will actually die (i.e. 1 in 100,000)

The most important part of the assessment of fever in a returned traveller is the history.

Clinical Features

Clinical features vary, but the essential components of the history are:

- Where have they been, for how long, and was it rural or urban?
- Have they had any contact with animals and insects?
- Have they been exposed to anyone else ill and how long ago was it?
- How long have they been unwell and when did it start?
- Have they received immunisations including both the primary childhood course and travel related?
- Did they take malaria prophylaxis? What and for how long?

These questions indicate what microorganisms the patient might have been exposed to and what investigations and specimens are required.

Causes

<14 days incubation OR return from travel within 14 days	<ul style="list-style-type: none">• Blood-borne – malaria, dengue, rickettsiae, leptospirosis, typhoid, paratyphoid• Gastrointestinal – gastroenteritis, typhoid, paratyphoid• Respiratory – influenza, <i>Legionella</i> spp.• CNS – meningitis, cerebral malaria, typhoid, typhus, rabies• HIV
>14 days incubation OR more than 14 days after return from travel	<ul style="list-style-type: none">• Malaria• Typhoid• Hepatitis A, B or E• Parasites• HIV• Tuberculosis

Warning

Clinical information is critical on laboratory request forms to ensure full investigations are done and also to warn the laboratory staff if they are at risk of infection from handling the sample. If unclear what to request then discuss with Infectious Diseases Physician or Microbiologist to ensure the correct samples are sent.

Destinations and Travel-Related Diseases

Diagnosis	Travel Destination							
	Sub-Saharan Africa	North Africa, Middle East & Mediterranean	Eastern Europe & Scandinavia	South & Central Asia	South East Asia	North Australia	Latin America & Caribbean	North America
Malaria	✓			✓	✓		✓	
Enteric fever (Typhoid and Paratyphoid)	✓			✓	✓		✓	
Meningococcal sepsis	✓							
Viral Haemorrhagic Fever (VHF)	✓							
HIV	✓	✓	✓	✓	✓	✓	✓	✓
Rickettsiae	✓					✓		
Amoebic liver abscess	✓							
Brucellosis (<i>Brucella</i> spp.)	✓	✓					✓	
Dengue	✓			✓	✓	✓	✓	
Q Fever (<i>Coxiella</i> spp.)		✓				✓		
Lyme Disease			✓					✓
Tick-borne encephalitis			✓					
Chikungunya				✓	✓			
Leptospirosis					✓		✓	
Melioidosis (<i>Burkholderia pseudomallei</i>)					✓			
Rocky Mountain Spotted Fever								✓
West Nile fever								✓
Antibiotic resistant enterobacteriaceae				✓				✓
Rabies	✓	✓	✓*	✓	✓		✓	

* Eastern Europe **ONLY**

Investigations

- MSU to rule out simple UTI
- Stool for ova, cysts and parasites, as well as culture and sensitivity
- Biopsy of any skin lesions
- If systemic symptoms, consider taking blood cultures
- Serology for Hepatitis A, B or E
- Chest X-ray for pneumonia including tuberculosis
- Abdominal ultrasound if suspecting hepatic pathology e.g. abscess

Investigations Cont.

Diagnosis	Investigations
Malaria	<ul style="list-style-type: none"> • Antigen test and thick and thin films on 3 different whole blood (EDTA) samples, taken over a 72 hour period
Enteric fever (Typhoid and Paratyphoid)	<ul style="list-style-type: none"> • Blood and stool cultures labelled as HIGH RISK
Meningococcal sepsis	<ul style="list-style-type: none"> • Blood cultures PLUS PCR on whole blood (EDTA)
Viral Haemorrhagic Fever (VHF)	<ul style="list-style-type: none"> • PCR on whole blood (EDTA) sample • MUST discuss with Microbiologist before sending
HIV	<ul style="list-style-type: none"> • Combined antigen and antibody test on serum (red or yellow vacutainer) but may not detect seroconversion illness
Rickettsiae (Typhus)	<ul style="list-style-type: none"> • Antibody test on acute serum (red or yellow vacutainer) and 3-6 week serum looking for seroconversion
Amoebic liver abscess	<ul style="list-style-type: none"> • Antibody test on serum (red or yellow vacutainer) PLUS abdominal ultrasound scan
Brucellosis (<i>Brucella</i> spp.)	<ul style="list-style-type: none"> • Blood cultures with extended incubation up to 2 weeks labelled as HIGH RISK, PLUS antibody test on acute serum (red or yellow vacutainer)
Dengue	<ul style="list-style-type: none"> • Onset of symptoms <4 days – PCR on whole blood (EDTA) sample • Onset of symptoms >4 days - antibody test for IgM on serum (red or yellow vacutainer)
Q Fever (<i>Coxiella</i> spp.)	<ul style="list-style-type: none"> • Antibody test on serum (red or yellow vacutainer)
Lyme Disease	<ul style="list-style-type: none"> • Antibody test on serum (red or yellow vacutainer)
Tick-borne encephalitis	<ul style="list-style-type: none"> • Antibody test on serum (red or yellow vacutainer) OR PCR on CSF
Chikungunya	<ul style="list-style-type: none"> • Antibody test on serum (red or yellow vacutainer) OR PCR on whole blood (EDTA)
Leptospirosis	<ul style="list-style-type: none"> • Antibody test on serum (red or yellow vacutainer) OR PCR on whole blood (EDTA) or urine
Melioidosis (<i>Burkholderia pseudomallei</i>)	<ul style="list-style-type: none"> • Blood or urine culture labelled as HIGH RISK
Rocky Mountain Spotted Fever	<ul style="list-style-type: none"> • Antibody test on acute serum (red or yellow vacutainer) and 3-6 week serum looking for seroconversion
West Nile fever	<ul style="list-style-type: none"> • Antibody test on serum (red or yellow vacutainer) OR PCR on whole blood (EDTA) or CSF
Antibiotic resistant enterobacteriaceae	<ul style="list-style-type: none"> • Blood or urine culture
Rabies	<ul style="list-style-type: none"> • Seek specialist advice from Infectious Diseases Physician or Microbiologist

Treatment

Malaria is the most common tropical infection that requires treatment (see section – Emergencies, Malaria). For all travel-related diseases discuss with an Infectious Diseases Physician or Microbiologist.

Malaria	See section – Emergencies, Malaria
Enteric fever (Typhoid and Paratyphoid)	IV Ceftriaxone (patients can be converted to PO Ciprofloxacin OR PO Azithromycin once antibiotic sensitivities known)
Meningococcal sepsis	See section – Emergencies, Meningococcal sepsis
Viral Haemorrhagic Fever (VHF)	See section – Infection Control, Viral Haemorrhagic Fever (VHF)
HIV	See section – Clinical Scenarios, Human Immunodeficiency Virus (HIV and AIDS)
Rickettsiae (Typhus)	PO Doxycycline OR IV Tetracyclines
Amoebic liver abscess	IV or PO Metronidazole PLUS PO Diloxanide furoate
Brucellosis	PO Doxycycline PLUS PO Rifampicin
Dengue	No specific treatment, however observe carefully for signs of dengue haemorrhagic fever or dengue shock syndrome, as these may require critical care support and have a mortality up to 40% Dengue haemorrhagic fever = platelet count $<100 \times 10^9/L$ PLUS objective evidence or clinical signs of plasma leakage (>20% increase in packed cell volume, effusions, hypoproteinaemia) Dengue shock syndrome = narrow pulse pressure $<20\text{mmHg}$ OR systolic blood pressure $<90\text{mmHg}$
Q Fever	PO Doxycycline
Lyme Disease	IV Ceftriaxone OR PO Doxycycline
Tick-borne encephalitis	No specific treatment
Chikungunya	No specific treatment
Leptospirosis	IV Benzylpenicillin
Melioidosis (<i>Burkholderia pseudomallei</i>)	IV Meropenem PLUS PO Co-trimoxazole
Rocky Mountain Spotted Fever	PO Doxycycline OR IV Tetracyclines
West Nile fever	No specific treatment
Antibiotic resistant enterobacteriaceae	Dependent on antibiotic sensitivities
Rabies	No specific treatment
Hepatitis A, B or E	See section – Clinical Scenarios, Viral Hepatitis
Tuberculosis	See section – Clinical Scenarios, Tuberculosis (TB)

Prophylaxis and Prevention

Those intending to travel should be encouraged to seek specialist advice about vaccinations and malaria prophylaxis specific to their destination at least 8 weeks before they travel.