

# The unwell returned traveller



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## Background

Presentations of unwell patients after travel can be challenging, as assessment and management requires consideration of a range of unfamiliar conditions.

## Objective

The objective of this article is to provide general practitioners (GPs) with a framework they can use when faced with an unwell returned traveller. This enables the GP to go through a process to reach a differential diagnosis, and ultimately a diagnosis, of the illness or illnesses that may be present.

## Discussion

There are many causes of illness in the returned traveller; these range from very common and potentially self-limiting to severe and potentially life-threatening. It is important that GPs are aware of the epidemiology and incubation periods of diseases overseas to help provide a diagnosis or diagnoses. The process will help GPs identify life-threatening diseases or those that may be a public health threat. A detailed history of travel itinerary and the presenting symptoms, combined with a thorough examination and relevant investigations, are required. The treating GP requires an awareness of when extra help or referral are required.

**IT IS ESTIMATED THAT BETWEEN** 43% and 79% of travellers become unwell while they are travelling or after returning home because of their travel.<sup>1</sup> Travel is increasing post-COVID-19, and people are increasingly travelling to locations that are off the beaten track. Consequently, general practitioners (GPs) can expect to see more people presenting unwell after travel. Many post-travel disease presentations are mild and self-limiting. Infectious diseases brought home by travellers can be from various sources, including the environment (water, air or soil), food and water, animals and arthropods, and diseases may be caused by various organisms, such as viruses, bacteria, fungi and parasites. The result is many different diseases that might have a variety of presentations, the most common of which are febrile illness, respiratory illness, travellers' diarrhoea and dermatological conditions.<sup>1</sup> It is important to consider and ask about recent travel, as the patient may not volunteer this information.

Returning unwell travellers are not common in general practice. The aim of this paper is to outline a way to assess the unwell returning traveller to assist the GP in obtaining a diagnosis or diagnoses.

## Assessment of the unwell traveller

A patient who presents unwell after travel should be assessed in a structured manner aimed at eliciting the optimal amount of information to make a differential diagnosis and subsequent diagnosis. It is important to realise that the sick traveller may have more than one condition causing the range of presenting symptoms.

Initially an assessment of their travel and risk factors should be undertaken alongside the traveller's current and past medical history (Box 1).

The next step is to consider the history of the current problem and its evolution until the patient returned home and sought medical care (Box 2).

After obtaining a thorough history of travel and presenting illness/illnesses, physical examination can be considered. Depending on the presenting complaint, this might be localised or include a full examination including all skin. Consent may be needed for the patient to remove clothing to allow for

a more thorough examination. Refer to Box 3 for suggested examination points.

It is important to consider physical findings that may be present in certain diseases. For example, if there is a rash or skin condition,

it could be primary, such as cutaneous larva migrans or contact dermatitis, or it could be secondary to diseases such as dengue, measles, typhoid, syphilis, gonorrhoea or rickettsial infections. Jaundice could

indicate hepatitis, malaria, yellow fever or leptospirosis.<sup>2</sup>

Taking the history of the trip initially provides the GP with additional information to consider the differential diagnosis as the presenting complaint is outlined. The aim here is to consider the disease epidemiology of each country or region the patient has visited and other exposures they may have had to cause disease. If the traveller is returning from Sub-Saharan Africa, malaria is a very common diagnosis. Diarrhoeal disease is common in South, Central and Southeast Asia and North Africa; respiratory diseases are common in Northern Asia and Southeast Asia; and dengue is common in Southeast Asia and the Caribbean. More recently, arboviruses have been very common in South America.<sup>3</sup> Common diseases of travellers related to respective destinations can be found in a GeoSentinel paper by Torresi et al.<sup>4</sup> Prior to deciding on a differential diagnosis, it is prudent to consider the following points:

- Common diagnoses are common by definition and are therefore the most likely both locally and in travellers. For instance, it has already been noted that respiratory conditions are very common in returned travellers. Vaccination is available for COVID-19 and influenza, but if we consider the risk of unvaccinated travellers obtaining these infections in a month of travel, influenza risk is 1% and COVID-19 risk is even higher, particularly if their trip included a cruise.<sup>5</sup>
- Are there any possible diagnoses that should not be missed? This is particularly important for diseases such as malaria, typhoid and dengue, from which death is a possible outcome. Could the disease be significant from a public health perspective, such as measles?
- Malaria should be considered if patients have been in a malarious area. It is important to remember that malaria can mimic other diseases. Malaria symptoms can be many and include diarrhoea, for example, which could potentially be diagnosed as travellers' diarrhoea if malaria is not considered. Anyone returning from a malarious area with a fever should be considered to have malaria until proven otherwise.

### Box 1. Assessment of the trip, exposures, medical and past medical history (if not known)

1. If you are not the patient's usual general practitioner, elucidate a full past medical history including medications and if they might be immunosuppressed.
2. Take a step-by-step account of the trip from day 1 until they returned – not just the country visited but the parts of the country that were visited.
3. Determine the purpose of travel: visiting friends and relatives, short-term business traveller, safari – these types of travel all have different risk profiles in terms of type and risk of disease acquisition.
4. Elucidate whether they travelled to the city or a rural location, including the type of accommodation – five star or backpacking, insect screened or not.
5. Find out about any recreational exposures, including hiking, camping, hot tubs or freshwater exposure, food and water exposures.
6. Enquire about any potential exposures to specific risks, such as animal or arthropod bites, unprotected sexual activity or tattoos.
7. If the traveller was in malarious areas, determine whether they took prophylactic medication and/or used preventive measures, such as mosquito nets or repellents.
8. Determine whether they are up to date with their routine vaccines as well as what travel vaccinations they received prior to the trip or in the past.
9. Enquire about travel companions: Were any travel companions unwell? Did others have the same illness? This is important with illnesses such as travellers diarrhoea.

### Box 2. Evaluation of the illness and its progression

1. When did the patient start to become unwell or exhibit symptoms?
2. How did the illness start? What symptoms did they have? Obtain a full history of symptom progression to the time of presentation.
3. Did they seek medical care overseas? If so, where and what services and treatments were provided? Did they receive any paperwork if they sought medical care?
4. Were any over-the-counter or other medications taken for the illness?
5. What concerns do they themselves have?

### Box 3. Specific examination features to consider in a returned unwell traveller

1. Are any of the following present: fever, jaundice, anaemia, bruising, bleeding, photophobia or conjunctivitis?
2. Is there neck stiffness?
3. Are blood pressure and pulse within normal limits?
4. Is there evidence of hepatosplenomegaly? Are there areas of abdominal tenderness, bloating or masses if gastrointestinal disease is the presenting illness?
5. Does the skin exam show any rash or lesions? If the presenting problem is dermatological, this will involve a more detailed analysis.
6. Do they have wheeze on chest examination? Any breath sounds or change in percussion? Is a chest X-ray required?
7. Is there any muscle, joint or neurological involvement?
8. Urinalysis may be considered on the basis of history.

- Typhoid has varying incidence around the world. The incidence in non-immune travellers in Southern Asia is approximately 1 in 10,000 in a month, whereas the risk in Africa, Latin America, the Middle East and Southeast Asia is approximately 1 in 100,000.<sup>5</sup> If someone has travelled to Southern Asia, particularly if they were visiting friends and relatives, this is a diagnosis to consider after full assessment of the individual.<sup>5</sup> There is increasing resistance of typhoid fever

to antibiotics, particularly in travellers from Pakistan.<sup>6,7</sup> Approximately 10–15% of hospitalised patients with typhoid can develop intestinal perforation/haemorrhage, encephalopathy or shock. The case fatality is 1–4% if treated and 10–20% if untreated or incorrect antibiotics are used.<sup>8</sup>

- Dengue is becoming more common in travellers and is currently third on the list of vaccine-preventable diseases obtained by travellers in one month.<sup>5</sup> It is important to consider dengue as a differential diagnosis and to recognise symptoms of severe dengue.<sup>9,10</sup> Many patients with warning signs for severe dengue are missed in the Australian setting.<sup>11</sup> A study of people hospitalised with dengue in Australia found that approximately 40% presented with warning signs, and of these, 20% had previously been prescribed nonsteroidal anti-inflammatory medications, which are contraindicated with this infection.<sup>12</sup> Dengue may also have public health implications, with *Aedes aegypti* mosquitoes occurring in Far North Queensland.

It is crucial to consider the incubation period of diseases when considering a differential diagnosis. The incubation period for potential diseases after disease acquisition can be divided into three time periods, <2 weeks, 2–6 weeks and >6 weeks, which can be seen in Table 1. The table is not an exhaustive list of diseases. A number of diseases do not fit clearly into just one category.

It is important to consider at this stage whether the patient is too unwell to be managed safely as an outpatient.

Questions to consider include:

- Is the patient likely to deteriorate?
- If I request investigations, how long will the results take to return? Do I need to consider sending the patient to emergency instead? If pathology is requested and a serious disease is diagnosed, it is critical that enough information is provided for the laboratory to contact you and hence the patient if needed.
- Is the patient home alone? This may change your decision.

If you are not confident with your differential diagnosis, it is important to seek help.

**Table 1. Timing of illness after disease acquisition**

Incubation period	Diseases
Short: <2 weeks	<ul style="list-style-type: none"> <li>• Arboviruses such as dengue, chikungunya, zika</li> <li>• Urinary tract infection</li> <li>• Allergic or contact skin presentations</li> <li>• Skin lesions due to exposure to cold, such as chilblains</li> <li>• Viral skin rash associated with systemic disease, such as measles</li> <li>• Japanese encephalitis (may be longer)</li> <li>• Influenza</li> <li>• COVID-19</li> <li>• Malaria (can present from 7 days to months, <i>Plasmodium falciparum</i> often presents earlier than other species, but malaria can present up to 1 year post-travel)</li> <li>• Typhoid</li> <li>• Meningococcal</li> <li>• Scrub typhus</li> <li>• Rickettsial diseases, such as African tick bite fever</li> <li>• Travellers' diarrhoea/dysentery – bacterial or viral</li> <li>• Rare diseases: legionella, plague, viral haemorrhagic fever (up to 3 weeks)</li> </ul>
Intermediate: 2–6 weeks	<ul style="list-style-type: none"> <li>• Malaria (as above)</li> <li>• Polio</li> <li>• Chronic diarrhoea – often parasitic</li> <li>• Cutaneous larva migrans (may be longer)</li> <li>• Bot or tumbu fly skin lesions and emergence (may be longer)</li> <li>• Hepatitis A and E (may be longer)</li> <li>• Leptospirosis (may be earlier)</li> <li>• Katayama fever – acute schistosomiasis</li> <li>• Amoebic liver abscess (usually &gt;14 days but can be months to years)</li> <li>• Rare diseases: African trypanosomiasis, brucellosis</li> </ul>
Long: >6 weeks	<ul style="list-style-type: none"> <li>• Malaria (as above)</li> <li>• Hepatitis B</li> <li>• HIV (may be from 3 weeks)</li> <li>• Schistosomiasis</li> <li>• Rabies</li> <li>• Malaria</li> <li>• Melioidosis</li> <li>• Tuberculosis (can be many years later)</li> <li>• Rare diseases: visceral leishmaniasis, filariasis</li> </ul>

**Table 2. Investigations to confirm the differential diagnosis**

Presenting illness/symptoms	Investigations to be considered
Diarrhoea – if acute and mild, investigations might not be necessary. If the diarrhoea is ongoing acute or chronic, or the patient is unwell, consider investigations. Note that cultures might now be more important given the increasing amount of antibiotic resistance in returning travellers	Stool microscopy, culture, and sensitivity; stool ova, cysts and parasites; and stool PCR. MetaPanel is a new non-subsidised metagenomics test that detects bacteria, protozoa, helminths, fungi/microsporidia and viruses
Schistosomiasis	Full blood count (FBC) may be considered if protozoa are considered (eosinophilia)
Urinary symptoms or abnormal urinalysis	Midstream urine
Schistosomiasis	Collect initial urine between 10.00 am and 2.00 pm
Dermatological	Skin biopsy or collection of specimens (pus, larvae)
Fever <sup>13</sup>	FBC (lymphocytosis, leucopenia, thrombocytopenia – useful for arboviruses, malaria and other organisms)
Note that malaria thick and thin films are rarely performed now unless one of the antigen tests comes back positive or if confirmation of malaria species is needed. This is because of the shortage of skilled microscopists in this area. One negative test does not rule out malaria if the patient continues to be unwell. Further testing should be done	Erythrocyte sedimentation rate and C-reactive protein – provide information about inflammation but do not rule out certain diseases
Consideration can be given to storing an acute serum sample for possible retrospective testing.	Liver function tests – many diseases causing diarrhoea, malaria, viruses
	Malaria rapid antigen test or, more recently, nucleic acid amplification (NAAT) tests
	NS1 antigen – dengue (best to test early on in disease)
	Blood cultures – typhoid
Respiratory illness	Chest X-ray may be considered

Investigations may be necessary to confirm the differential diagnosis, as per Table 2.

Assessing an unwell returned traveller in an organised, defined way can aid in appropriate diagnosis or referral and reduce the risk of missing a potentially lethal diagnosis.

## Key points

- Fever in a returned traveller is malaria until proven otherwise.
- A thorough history of the illness, itinerary, exposure risks and disease progression is essential.
- Understanding the incubation period of diseases is important when determining the differential diagnosis of an unwell returned traveller.
- Many patients with signs of severe dengue are missed in the Australian setting, and there are increasing numbers of multidrug-resistant cases of typhoid, particularly from Southern Asia, predominantly Pakistan.
- Consider the safety of managing the unwell patient as an outpatient or referring to an emergency department, an infectious diseases physician or another appropriate non-GP specialist.

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Competing interests: None.

Funding: None.

Provenance and peer review: Commissioned, externally peer reviewed.

AI declaration: The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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