

# Evaluation of the Returning Traveler With Fever

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## A Traveler With Fever

Picture it: Your next patient—either in an emergency room or an outpatient clinic—is a 30-year-old woman who has had 2 days of high fever, headache, and runny nose. While taking her history, you remark on a healing sunburn on her neck. "Oh, I got that in Brazil," she says. "You should've seen it when I first came back a week ago!"

What would you do if this happened tomorrow? What would you have done if this had happened 5 years ago?

### Think Zika First

"In somebody coming back [with a fever] from Latin America or the Caribbean, Zika rings all the bells and the flags and the whistles," says Phyllis Kozarsky, MD, a travel medicine expert at the Centers for Disease Control and Prevention (CDC) and professor of infectious diseases at Emory University.

"But if we look at all people who come back with fevers from the tropics, we think about other things," she says. "Things that are common happen commonly."

Zika's explosive spread has resulted in over 3800 travel-associated [cases](#) in the United States and US territories combined in 2016. The mass media has covered the epidemic extensively, and with every spike in Zika news coverage, people search for Zika information more frequently online.<sup>[1]</sup>

At the same time, front-line physicians in primary care practices and emergency rooms are asking patients about recent travel more now than they did before the Ebola outbreak, says Dr Kozarsky. And when evaluating returning travelers from Latin America and the Caribbean, assessing them for Zika infection often takes top priority.

Zika testing may be indicated in select patients with recent travel to this region (see the [CDC's Zika Virus site](#) for up-to-date testing recommendations). However, while evaluating ill returning travelers in the outpatient setting for this relatively new kid on the block, providers shouldn't forget to also assess for the common infections with similar symptoms that have not stopped causing disease in the tropics—even if they're not receiving much press for it.

### Beyond Zika: Where to Start

Specialists in infectious disease or tropical medicine may be able to generate an extensive differential diagnosis for a returning traveler's illness based on the patient's history and physical. However, for a primary care or emergency room clinician conducting an initial outpatient evaluation, creating an exhaustive list is not as important as identifying diseases that are rapidly progressive, treatable, transmissible, or all three.

**History.** The evaluation starts with a careful history. A [sample form](#) is available from the CDC. Establish where the patient has traveled or lived and what exposures they had while away. Contact with animals, the outdoors, and untreated water are relevant, as are food and drink, sexual contact with new partners, and a history of insect bites (although because they often go unnoticed, a negative history does not rule them out). Ask about use of any medications or vaccines to prevent disease, as these can reduce the likelihood of certain infections.

Also important is determining when potential exposures took place. The incubation periods of different travel-related infections vary widely, and many diseases can be excluded if a patient becomes ill more than a month after return from travel. This CDC resource is very useful, including a [chart](#) delineating common causes of fever, by geographic area.

A history of symptoms should identify gastrointestinal, respiratory, and dermatologic concerns, as well as the peak and duration of any fevers.

**Physical examination.** The physical exam should include assessment for skin lesions, eye changes, lymphadenopathy, liver or spleen enlargement, neurologic findings, and genital lesions if indicated.

**Laboratory tests.** Laboratory evaluation should include a complete blood count with differential, a basic chemistry panel, liver function tests, a thick and thin malaria smear, and blood cultures.

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## Other Infections to Consider

### Malaria

Malaria is the infection to assess for first. "Depending on what part of the world the patient is coming from, it may be a low-probability event," says Paul Arguin, MD, chief of the Domestic Response Unit in CDC's Malaria Branch. "But being that it has the potential for severe illness, fatality, and disability, it can be diagnosed quickly, and rapid treatment makes such a difference; it should always be right at the top of the list of things that get evaluated."

In addition, although individual patients' disease patterns can inform the diagnostic process, the clinical features of many travel-related illnesses overlap substantially, and looking for signs and symptoms to rule out high-morbidity diseases can be a trap. "I would never try to rely 100% on clinical features" to determine which testing should be done, says Dr Arguin. Just because a traveler recently returned from the tropics and has respiratory symptoms along with fever and chills, for example, "that shouldn't make you think, 'That's not malaria,'" he says.

Some malaria species can cause symptoms months after return from travel. Malaria is still endemic throughout Latin America, including Brazil, and on the island of Hispaniola (composed of Haiti and the Dominican Republic) in the Caribbean. (The CDC maintains a [list of malaria information by country](#) and a [Malaria Map](#), which provide information about malaria species and risk.)

Any patient with a fever who has traveled to an endemic area should have at least one set of thick and thin malaria smears, which should be read emergently by a pathologist. Three sets of negative smears, separated by 12-24 hours, effectively rules out malaria. The CDC's malaria hotline (770-488-7788 or 855-856-4713 during business hours, or 770-488-7100 for emergency consultation after hours) can be reached around the clock to assist healthcare providers with the diagnosis or management of malaria, and often can provide assistance with reading smears if a pathologist is not immediately available.

### Dengue Virus

A more common cause of fever in travelers to Latin America and the Caribbean is the [dengue virus](#). Dengue should be suspected when a patient presents with high fever and other symptoms such as headache, retro-orbital pain, muscle and joint pains, nausea and vomiting, or lymphadenopathy. The infection is not curable with antiviral drugs. Up to 5% of all dengue patients develop severe disease with hemorrhagic complications, including hypovolemic shock, and may require respiratory and circulatory support.

Identifying dengue enables the physician to advise avoiding aspirin and other nonsteroidal anti-inflammatory drugs (due to their anticoagulant properties), and to recommend close monitoring for symptoms suggestive of severe dengue.

Dengue is endemic throughout Latin America and the Caribbean, with occasional hyperendemicity of certain serotypes. Making the diagnosis is also important for epidemiologic purposes and for preventing unnecessary treatment for other disease entities.

Diagnosis has lately been complicated by the overlap of symptoms and epidemiology with those of Zika. Although reverse transcription polymerase chain reaction (RT-PCR) can differentiate between the two flaviviruses in the first 1-2 weeks of symptoms, making a definitive diagnosis later in the course of infection is more complex. Refer to [CDC's Zika diagnostics Web page](#) for up-to-date guidance.

### Chikungunya

[Chikungunya](#) caused a large outbreak beginning in the Caribbean in late 2013, eventually resulting in over 1 million suspected cases [reported by WHO](#) in 2014.

Although the fever, flu-like symptoms, and prominent joint pain often associated with infection can be debilitating, mortality due to the disease is generally low. The diagnosis can be made by viral culture or nucleic acid amplification test during the first week after onset of symptoms, or by serology in the weeks thereafter.

Chikungunya's incubation period (2-7 days) and symptoms overlap substantially with those of dengue and Zika.<sup>[2]</sup> Testing performed at several state laboratories or CDC can usually differentiate between chikungunya and flavivirus infections, including dengue and Zika (by RT-PCR in the first 5 days of illness or by antiviral IgM serology thereafter).

### Typhoid and Paratyphoid Fever

Typhoid and paratyphoid fever can also cause fevers and a variety of symptoms in visitors to the region, and is an important cause of morbidity and mortality, particularly in areas with poor sanitation. Although these infections are thought to have a lower burden in Latin America than in other regions,<sup>[3]</sup> they should be considered in returning travelers with persistent fevers. Because blood cultures have only 50% sensitivity for typhoid, the initial diagnosis may need to be made clinically. Multiple cultures increase culture sensitivity.

### Influenza

In febrile patients with respiratory symptoms, influenza virus may be a consideration. Flu season in the southern hemisphere peaks in July, a fact often forgotten by physicians practicing in the northern hemisphere, says Dr Davidson Hamer, a professor at the Boston University School of Public Health and School of Medicine, and a board member of the International Society of Travel Medicine (ISTM).

### Nontravel Diagnoses in Travelers

It is also important to remember that travelers get community-acquired pneumonia, bacterial sepsis, meningitis, and other infections not related to travel. They may also have inflammatory, rheumatologic, and oncologic conditions that cause fever. These and other causes should be considered in parallel with travel-related diagnoses in the context of each patient's symptoms and medical history.

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## Practice Advice for Clinicians

- Febrile patients who have recently traveled to or lived in a malaria-endemic area should always be tested for malaria with a thick and thin blood smear, read immediately.
- Other important infections to evaluate for include bacterial bloodstream infections, such as typhoid, and arthropod-borne viral infections common in the tropics, such as dengue and chikungunya.
- Evaluation for other infections should be guided by symptoms (eg, patients with diarrhea should have a stool evaluation).
- Ask for help from a travel medicine or infectious diseases specialist early in the evaluation.

The CDC's [Yellow Book](#) is an excellent resource for clinicians evaluating returning international travelers and can be accessed online at no charge. Other resources include [Gideon](#), which requires a subscription, and [HealthMap](#), which tracks outbreaks using a variety of data sources. Even with these resources, however, it can be daunting to generate a differential diagnosis and a plan.

The ISTM maintains an online clinic [directory](#) to assist in locating specialists—and it's there for a reason, says Dr Hamer. "For primary care providers," he says, "it's important that if they feel uncomfortable managing a returning traveler with fever, they should think early about trying to engage with infectious disease specialists or tropical medicine specialists."

### Related Resource

[Georgia Department of Public Health Travel Clinical Assistant \(TCA\)](#)

### References

1. Southwell BG, Dolina S, Jimenez-Magdaleno K, Squiers LB, Kelly BJ. Zika virus-related news coverage and online behavior, United States, Guatemala, and Brazil. *Emerg Infect Dis*. 2016;22:1320-1321. [Abstract](#)

2. Sharp TM. Differentiating chikungunya from dengue: a clinical challenge. *Medscape*. September 15, 2014. <http://www.medscape.com/viewarticle/831523> Accessed October 20, 2016.
3. Buckle GC, Walker CL, Black RE. Typhoid fever and paratyphoid fever: Systematic review to estimate global morbidity and mortality for 2010. *J Glob Health*. 2012;2:010401.

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Cite this article: Evaluation of the Returning Traveler With Fever. *Medscape*. Oct 25, 2016.

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