**Evaluation of fever in the returning traveler**

**Author:**

[Mary Elizabeth Wilson, MD](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/contributors)

**Section Editor:**

[Karin Leder, MBBS, FRACP, PhD, MPH, DTMH](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/contributors)

**Deputy Editor:**

[Elinor L Baron, MD, DTMH](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/contributors)

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**INTRODUCTION**

The evaluation of fever in returned travelers should focus on the possible infections given the patient's clinical findings, travel geography, administration (if any) of vaccinations and malaria chemoprophylaxis, the nature and timeframe of potential exposure(s), and the incubation period(s) of the relevant possible infections ([table 1](https://www.uptodate.com/contents/image?imageKey=ID%2F75701&topicKey=ID%2F3888&search=fever&source=see_link)) [[1,2](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/1,2)].

Good resources that provide current information about the infections that occur in various geographic areas are essential [[3-5](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/3-5)]. The United States Centers for Disease Control and Prevention website includes an online version of Health Information for International Travel under Travelers' Health and updates on travel-related infections [[5](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/5)]. The World Health Organization website also has regularly updated information about outbreaks.

The approach to evaluation of fever in the returning traveler will be reviewed here. Other issues related to travel are discussed separately:

●(See ["Travel advice"](https://www.uptodate.com/contents/travel-advice?search=fever&topicRef=3888&source=see_link).)

●(See ["Immunizations for travel"](https://www.uptodate.com/contents/immunizations-for-travel?search=fever&topicRef=3888&source=see_link).)

●(See ["Prevention of malaria infection in travelers"](https://www.uptodate.com/contents/prevention-of-malaria-infection-in-travelers?search=fever&topicRef=3888&source=see_link).)

●(See ["Skin lesions in the returning traveler"](https://www.uptodate.com/contents/skin-lesions-in-the-returning-traveler?search=fever&topicRef=3888&source=see_link).)

Diseases associated with travel to specific geographic regions are discussed separately. (See ["Diseases potentially acquired by travel to East Asia"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-east-asia?search=fever&topicRef=3888&source=see_link) and ["Approach to illness associated with travel to South Asia"](https://www.uptodate.com/contents/approach-to-illness-associated-with-travel-to-south-asia?search=fever&topicRef=3888&source=see_link) and ["Diseases potentially acquired by travel to Southeast Asia"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-southeast-asia?search=fever&topicRef=3888&source=see_link) and ["Diseases potentially acquired by travel to East Africa"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-east-africa?search=fever&topicRef=3888&source=see_link) and ["Diseases potentially acquired by travel to West Africa"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-west-africa?search=fever&topicRef=3888&source=see_link) and ["Diseases potentially acquired by travel to Central Africa"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-central-africa?search=fever&topicRef=3888&source=see_link) and ["Diseases potentially acquired by travel to North Africa"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-north-africa?search=fever&topicRef=3888&source=see_link) and ["Diseases potentially acquired by travel to Southern Africa"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-southern-africa?search=fever&topicRef=3888&source=see_link) and ["Approach to illness associated with travel to Latin America and the Caribbean"](https://www.uptodate.com/contents/approach-to-illness-associated-with-travel-to-latin-america-and-the-caribbean?search=fever&topicRef=3888&source=see_link).)

**EPIDEMIOLOGY AND ETIOLOGY**

The epidemiology of fever among travelers has been evaluated in several studies [[6-10](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/6-10)]. The most common specific diagnoses are [[6](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/6)]:

●Malaria

●Dengue fever

●Mononucleosis (due to Epstein-Barr virus or cytomegalovirus)

●Rickettsial infection

●Typhoid or paratyphoid fever (enteric fever)

In one report including nearly 25,000 ill returned travelers between 1997 and 2006, fever was a chief reason for seeking care in 28 percent of cases [[7](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/7)]. The most common specific diagnoses among patients with fever were malaria and dengue fever (21 and 6 percent of cases, respectively). Other diagnoses among patients with fever included unspecified febrile illness (22 percent), fever with diarrhea (15 percent), and fever with respiratory infection (14 percent). Preventable infection (via chemoprophylaxis for malaria or via vaccination against *Salmonella typhi*, hepatitis A, or influenza) occurred in 17 percent of patients.

Among nearly 25,000 ill returned travelers, of whom almost 70 percent had visited sub-Saharan Africa, Southeast Asia, the Caribbean, or Central and South America, the geographic breakdown of febrile illness was as follows [[7](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/7)]:

●Sub-Saharan Africa – Febrile illness occurred in 49 percent of patients (malaria in 42 percent, respiratory illness in 10 percent, diarrheal illness in 10 percent, and no specific diagnosis in 19 percent). Most rickettsial infections were acquired in this region and were usually tickborne.

●Southeast Asia – Febrile illness occurred in 34 percent of patients (dengue fever in 18 percent, malaria in 7 percent, respiratory illness in 17 percent, diarrheal illness in 17 percent, and no specific diagnosis in 22 percent). More than 70 percent of cases of enteric fever (typhoid and paratyphoid) were acquired in south-central or Southeast Asia.

●Caribbean and Central and South America – Febrile illness was present in 25 percent (dengue fever in 9 percent, malaria in 8 percent, respiratory illness in 13 percent, diarrheal illness in 15 percent, and no specific diagnosis in 26 percent).

In another study including more than 82,000 ill travelers, acute and potentially life-threatening tropical diseases occurred in 4.4 percent of patients [[11](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/11)]. Malaria and enteric fever accounted for 77 percent and 18 percent, respectively; other life-threatening diagnoses included leptospirosis, severe dengue, rickettsial infection, relapsing fever, melioidosis, and African trypanosomiasis. There were 13 deaths; of these, 10 (77 percent) were caused by falciparum malaria.

Geographically localized infections in the United States that can be acquired during travel include plague, babesiosis, Lyme disease, coccidioidomycosis, ehrlichiosis, relapsing fever, Colorado tick fever, rickettsial infections, tularemia, and hantavirus pulmonary syndrome. Geographically localized infections in Europe include visceral leishmaniasis, hemorrhagic fever with renal syndrome, rickettsial infections, Q fever, sand fly fever, tickborne encephalitis, and other arboviruses.

In addition to travel-related infections, cosmopolitan causes of fever should be considered in ill travelers; patients may have been incubating an infection prior to departure or have become ill after their return ([table 1](https://www.uptodate.com/contents/image?imageKey=ID%2F75701&topicKey=ID%2F3888&search=fever&source=see_link)). Noninfectious cause of fever should also be considered, including venous thrombosis and drug fever.

**INITIAL EVALUATION**

The focus of the initial evaluation should be on diagnosis of infections that are treatable, transmissible, and/or have serious sequelae ([table 2](https://www.uptodate.com/contents/image?imageKey=ID%2F113656&topicKey=ID%2F3888&search=fever&source=see_link)).

**History and physical examination** — The clinical history should establish a number of clinical details and include review of the preceding 12 months prior to presentation ([table 3](https://www.uptodate.com/contents/image?imageKey=ID%2F54195&topicKey=ID%2F3888&search=fever&source=see_link)) [[6,7,12](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/6,7,12)]:

●Careful documentation of signs and symptoms and their time of onset – Understanding the clinical timeline is important for establishing the likely incubation period, which is useful for narrowing the differential diagnosis. The causes of travel-associated fever based on the interval since exposure are summarized in the table and figure ([table 4](https://www.uptodate.com/contents/image?imageKey=ID%2F55035&topicKey=ID%2F3888&search=fever&source=see_link) and [figure 1](https://www.uptodate.com/contents/image?imageKey=ID%2F113655&topicKey=ID%2F3888&search=fever&source=see_link)).

●The nature of travel (including geographic region, travel dates, type of transportation, and nature of accommodations) – The patient should be asked specifically about travel to areas with malaria transmission ([figure 2](https://www.uptodate.com/contents/image?imageKey=ID%2F103385&topicKey=ID%2F3888&search=fever&source=see_link) and [figure 3](https://www.uptodate.com/contents/image?imageKey=ID%2F72797&topicKey=ID%2F3888&search=fever&source=see_link)) and/or areas with ongoing outbreaks (such as viral hemorrhagic fevers or meningitis). In some circumstances, infection control precautions may be warranted based on clinical and exposure history before diagnostic results are available ([table 5](https://www.uptodate.com/contents/image?imageKey=ID%2F50001&topicKey=ID%2F3888&search=fever&source=see_link)).

●Relevant activities and exposures (such as consumption of unclean water or undercooked food, insect bites, animal exposure, sexual contact) – (See ['Consider the exposure history'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H4111215997) below.)

●General medical information (including vaccination history, past medical history, and medications) – If malaria chemoprophylaxis was taken, the clinician should inquire as to the drug, the dose, the intervals between doses, and the duration of therapy prior to arrival and following departure from the transmission area. (See ['Evaluate for malaria'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H3480488726) below.)

Physical findings that signal severe illness warranting prompt intervention include hemodynamic instability, respiratory distress, hemorrhagic manifestations, and neurologic findings such as confusion, lethargy, stiff neck, or focal deficits. The physical examination should also include evaluation for skin lesions, lymphadenopathy, retinal or conjunctival changes, enlargement of liver or spleen, genital lesions, and neurologic findings.

**Laboratory tests** — The initial laboratory evaluation for febrile travelers should include complete blood count and differential, liver enzymes, blood cultures and blood smears, and/or rapid diagnostic test for malaria (if there was exposure to an area with malaria transmission). Additional studies depend upon exposures and other factors ([table 6](https://www.uptodate.com/contents/image?imageKey=ID%2F70923&topicKey=ID%2F3888&search=fever&source=see_link)).

Patients with fever and exposure to an area with malaria transmission should have diagnostic tests completed promptly (on the day of the encounter). Because parasites may be sequestered in the deep vasculature in patients with falciparum malaria, few parasites may be visible on a peripheral smear even in severe infection. Therefore, if the initial smear is negative, additional smears should be evaluated over the subsequent 24 to 72 hours. Rapid diagnostic tests should be used if available. (See ['Evaluate for malaria'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H3480488726) below and ["Laboratory tools for diagnosis of malaria"](https://www.uptodate.com/contents/laboratory-tools-for-diagnosis-of-malaria?search=fever&topicRef=3888&source=see_link).)

**SUBSEQUENT CLINICAL APPROACH**

The clinical approach to evaluation of fever in returned traveler requires integration of the patient's clinical history and physical examination with relevant exposures. A suggested approach based on the presenting syndrome and potential exposures is outlined below.

**Evaluate for malaria** — Malaria is characterized by fever, malaise, nausea, vomiting, abdominal pain, diarrhea, myalgia, and anemia. Any patient with fever who has spent time in a region where malaria is endemic should be evaluated for malaria, even if afebrile at the time of evaluation ([figure 2](https://www.uptodate.com/contents/image?imageKey=ID%2F103385&topicKey=ID%2F3888&search=fever&source=see_link) and [figure 3](https://www.uptodate.com/contents/image?imageKey=ID%2F72797&topicKey=ID%2F3888&search=fever&source=see_link)). Fevers in malaria wax and wane; ≥40 percent of patients may not have fever at the time of the initial evaluation, and physical examination can be normal [[13-15](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/13-15)].

Malaria is transmitted by *Anopheles* mosquitoes. The incubation period of malaria due to *Plasmodium falciparum* is usually 7 to 30 days (but may be longer). The shortest incubation period of non-falciparum malaria is 9 to 14 days but can be delayed by weeks or months. The diagnosis of malaria is established by visualization of parasites on peripheral smear or rapid antigen tests. (See ["Malaria: Clinical manifestations and diagnosis in nonpregnant adults and children"](https://www.uptodate.com/contents/malaria-clinical-manifestations-and-diagnosis-in-nonpregnant-adults-and-children?search=fever&topicRef=3888&source=see_link) and ["Laboratory tools for diagnosis of malaria"](https://www.uptodate.com/contents/laboratory-tools-for-diagnosis-of-malaria?search=fever&topicRef=3888&source=see_link).)

The efficacy of various malaria chemoprophylactic regimens varies by geographic region; even in areas where no resistance has been reported, malaria chemoprophylaxis is not 100 percent effective. Use of chemoprophylaxis may delay the malaria symptom onset, and chemoprophylactic regimens other than [primaquine](https://www.uptodate.com/contents/primaquine-drug-information?search=fever&topicRef=3888&source=see_link) or [tafenoquine](https://www.uptodate.com/contents/tafenoquine-drug-information?search=fever&topicRef=3888&source=see_link) do not prevent relapse of vivax malaria [[16-19](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/16-19)]. (See ["Prevention of malaria infection in travelers"](https://www.uptodate.com/contents/prevention-of-malaria-infection-in-travelers?search=fever&topicRef=3888&source=see_link).)

**Consider the presenting syndrome** — The clinical manifestations should be considered in conjunction with the patient's geographic exposure, the timing of clinical presentation relative to the incubation periods of relevant infections, and the patient's activities while traveling that may represent potential pathogen exposure. Some important syndromic presentations are summarized below with respect to these factors.

**Fever with respiratory symptoms**

**Absence of eosinophilia** — Travel-related infections associated with fever and respiratory symptoms (in the absence of eosinophilia) include:

●**Influenza** – Influenza (including seasonal and avian influenza) should be suspected in patients with fever and respiratory symptoms returning from a region where influenza was circulating. The incubation period is two to four days. The diagnosis is established via rapid antigen test or nucleic acid test of nasopharyngeal aspirates, washings, or swabs. (See ["Clinical manifestations of seasonal influenza in adults"](https://www.uptodate.com/contents/clinical-manifestations-of-seasonal-influenza-in-adults?search=fever&topicRef=3888&source=see_link) and ["Diagnosis of seasonal influenza in adults"](https://www.uptodate.com/contents/diagnosis-of-seasonal-influenza-in-adults?search=fever&topicRef=3888&source=see_link) and ["Clinical manifestations and diagnosis of avian influenza"](https://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-avian-influenza?search=fever&topicRef=3888&source=see_link).)

●**Middle East respiratory syndrome coronavirus** (MERS-CoV) – MERS-CoV should be suspected in patients with fever and respiratory symptoms with travel within 14 days before onset of illness to the Arabian Peninsula. The diagnosis is established via real-time reverse-transcriptase polymerase chain reaction (rRT-PCR) of respiratory secretions. (See ["Middle East respiratory syndrome coronavirus: Clinical manifestations and diagnosis"](https://www.uptodate.com/contents/middle-east-respiratory-syndrome-coronavirus-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

●**Tuberculosis** – Tuberculosis is characterized by cough >2 to 3 weeks' duration, lymphadenopathy, fevers, night sweats, and weight loss. Transmission is human to human, and infection occurs worldwide. The incubation period is at least three months. Diagnostic evaluation begins with chest radiography, followed by sputum acid-fast bacilli (AFB) smear and nucleic acid amplification (NAA) testing. (See ["Diagnosis of pulmonary tuberculosis in adults"](https://www.uptodate.com/contents/diagnosis-of-pulmonary-tuberculosis-in-adults?search=fever&topicRef=3888&source=see_link).)

The differential diagnosis of fever with respiratory symptoms also includes etiologies unrelated to travel, such as upper respiratory tract infection and community-acquired pneumonia (due to bacterial or viral pathogens). (See ["The common cold in adults: Treatment and prevention"](https://www.uptodate.com/contents/the-common-cold-in-adults-treatment-and-prevention?search=fever&topicRef=3888&source=see_link) and ["Epidemiology, pathogenesis, and microbiology of community-acquired pneumonia in adults"](https://www.uptodate.com/contents/epidemiology-pathogenesis-and-microbiology-of-community-acquired-pneumonia-in-adults?search=fever&topicRef=3888&source=see_link) and ["Diagnostic approach to community-acquired pneumonia in adults"](https://www.uptodate.com/contents/diagnostic-approach-to-community-acquired-pneumonia-in-adults?search=fever&topicRef=3888&source=see_link).)

Less common travel-related infections with fever and respiratory symptoms include:

●**Legionnaires' disease** – Legionnaires' disease is characterized by fever, myalgia, headache, and nonproductive cough; abdominal pain and diarrhea may be present. It is transmitted via inhalation of aerosols containing the organism; among travelers, the most common source has been contaminated water in hotels or cruise ships. Infection also occurs in non-travelers. The incubation period is 2 to 10 days (usually 5 to 6 days). Special media is needed to culture the organism; the diagnosis can also be established by specific rapid tests, urine antigen, and serologic testing. (See ["Clinical manifestations and diagnosis of Legionella infection"](https://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-legionella-infection?search=fever&topicRef=3888&source=see_link).)

●**Leptospirosis** – (See ['Fever with jaundice'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1669602154) below.)

●**Q fever** – Q fever (*Coxiella burnetii* infection) may present with a broad spectrum of manifestations. Respiratory infection consists of fever, nonproductive cough, fatigue, headache, and myalgia. Infection may also be associated with hepatitis, endocarditis, and bone and joint disease. The illness occurs worldwide and is most commonly transmitted by contact with infected animals, materials contaminated with animal manure, contaminated aerosols, or ingestion of unpasteurized milk. The incubation period for acute infection is usually 2 to 3 weeks (range few to 30 days). The diagnosis is established via serologic testing. (See ["Clinical manifestations and diagnosis of Q fever"](https://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-q-fever?search=fever&topicRef=3888&source=see_link).)

●**Histoplasmosis** – Acute pulmonary histoplasmosis is characterized by fever, headache, nonproductive cough, pleuritic chest pain, and fatigue. The infection is transmitted via inhalation of spores from soil contaminated with bird droppings or bat guano. The infection occurs on all continents except Antarctica, most often in association with river valleys. The incubation period is 3 to 17 days. The diagnosis is established via histopathology, culture, antigen detection, or serology. (See ["Pathogenesis and clinical features of pulmonary histoplasmosis"](https://www.uptodate.com/contents/pathogenesis-and-clinical-features-of-pulmonary-histoplasmosis?search=fever&topicRef=3888&source=see_link) and ["Diagnosis and treatment of pulmonary histoplasmosis"](https://www.uptodate.com/contents/diagnosis-and-treatment-of-pulmonary-histoplasmosis?search=fever&topicRef=3888&source=see_link).)

●**Hantavirus** – Hantaviruses occur worldwide. New World hantaviruses are associated with hantavirus cardiopulmonary syndrome (HCPS); Old World hantaviruses are associated with hemorrhagic fever with renal syndrome (HFRS). Hantaviruses are transmitted by aerosolization of rodent urine, feces, or saliva. The incubation period is a few days to 6 weeks; the diagnosis is established via serology. (See ["Hantavirus cardiopulmonary syndrome"](https://www.uptodate.com/contents/hantavirus-cardiopulmonary-syndrome?search=fever&topicRef=3888&source=see_link) and ["Renal involvement in hantavirus infections"](https://www.uptodate.com/contents/renal-involvement-in-hantavirus-infections?search=fever&topicRef=3888&source=see_link).)

●**Plague** (extremely rare in travelers) – Pneumonic plague is characterized by sudden onset of dyspnea, high fever, pleuritic chest pain, and cough that may be accompanied by bloody sputum. Pneumonic plague can be primary (eg, acquired by inhalation of respiratory secretions or aerosolized droplets from infected animals or humans or by laboratory exposure) or secondary (eg, developing in the setting of bubonic or septicemic plague). The disease occurs in the southwestern United States, the former Soviet Union, and foci in Africa, Asia, and South America. The incubation period is two to eight days; the diagnosis is established by isolation of the organism in culture, serologic testing, or rapid testing in some circumstances. (See ["Clinical manifestations, diagnosis, and treatment of plague (Yersinia pestis infection)"](https://www.uptodate.com/contents/clinical-manifestations-diagnosis-and-treatment-of-plague-yersinia-pestis-infection?search=fever&topicRef=3888&source=see_link).)

●**Psittacosis** – Psittacosis is characterized by fever, dry cough, and bird exposure. It is transmitted by exposure to birds, including contact with poultry or visiting aviaries or bird parks. The incubation period is usually 5 to 14 days. The diagnosis is established by serologic testing. (See ["Psittacosis"](https://www.uptodate.com/contents/psittacosis?search=fever&topicRef=3888&source=see_link).)

●**Melioidosis** – Melioidosis is characterized by pneumonia and localized skin infection. Transmission occurs via percutaneous inoculation associated with exposure to wet soil or contaminated water with hematogenous dissemination; less commonly, infection may be transmitted via aspiration of contaminated water. The disease is endemic in South and Southeast Asia and northern Australia, with isolated reports from Africa and South America. The incubation period ranges from 1 to 21 days (but can be months or years). The diagnosis is established via culture. (See ["Melioidosis: Epidemiology, clinical manifestations, and diagnosis"](https://www.uptodate.com/contents/melioidosis-epidemiology-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

Travel-associated infections that may include respiratory symptoms but typically present with rash as the prominent feature include measles, acute schistosomiasis syndrome, scrub typhus, and anthrax. (See ['Fever with rash'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1696663381) below.)

**Presence of eosinophilia** — Travel-related infections associated with fever, respiratory symptoms, and eosinophilia are uncommon; they include:

●**Acute schistosomiasis syndrome** – Acute schistosomiasis syndrome (Katayama syndrome) is characterized by fever, urticaria and angioedema, chills, myalgia, arthralgia, dry cough, diarrhea, abdominal pain, and headache. It is acquired by swimming in fresh water contaminated with cercariae (the infectious form of the parasite). It occurs in Africa, South America, East Asia, and the Middle East. The incubation period is three to eight weeks. The diagnosis is often made on clinical suspicion and confirmed when serology becomes positive. (See ["Schistosomiasis: Epidemiology and clinical manifestations"](https://www.uptodate.com/contents/schistosomiasis-epidemiology-and-clinical-manifestations?search=fever&topicRef=3888&source=see_link) and ["Schistosomiasis: Diagnosis"](https://www.uptodate.com/contents/schistosomiasis-diagnosis?search=fever&topicRef=3888&source=see_link).)

●**Tropical pulmonary eosinophilia** (filariasis) – Tropical pulmonary eosinophilia is a clinical manifestation of lymphatic filariasis, which is a parasitic infection caused by nematodes (roundworms). The disease is characterized by gradual onset of nonproductive cough (which is frequently paroxysmal and nocturnal) and blood eosinophilia, usually above 3000/microL. The disease is transmitted by a number of mosquito vectors throughout the Caribbean, South America, Africa, Asia, and the Pacific islands. The incubation period is approximately one month. The diagnosis is usually established via serology. (See ["Tropical pulmonary eosinophilia"](https://www.uptodate.com/contents/tropical-pulmonary-eosinophilia?search=fever&topicRef=3888&source=see_link).)

●**Loeffler syndrome** – Loeffler syndrome is a condition associated with transpulmonary passage of roundworm larvae. It is most commonly associated with *Ascaris,*but also associated with hookworms (Ancylostoma duodenale, Necator americanus) and Strongyloides stercoralis. It is characterized by respiratory symptoms (dry cough, dyspnea, fever, wheezing), characteristic radiographic findings (migratory bilateral round infiltrates), and peripheral eosinophilia. The incubation period is a few weeks. The diagnosis may be definitively established via visualization of *Ascaris*, hookworm, or Strongyloides larvae in respiratory secretions or gastric aspirates; stool examination is not useful for diagnosis of pulmonary infection. (See ["Ascariasis"](https://www.uptodate.com/contents/ascariasis?search=fever&topicRef=3888&source=see_link) and ["Hookworm infection"](https://www.uptodate.com/contents/hookworm-infection?search=fever&topicRef=3888&source=see_link).)

●**Strongyloidiasis** – Most patients with *Strongyloides*infection do not experience prominent symptoms. Uncommonly, transpulmonary migration of *Strongyloides* larvae is associated with dry cough, throat irritation, dyspnea, wheezing, and hemoptysis. Eosinophilia may occur in the presence or the absence of symptoms. (See ['Fever with diarrhea'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H3195633454) below and ['Fever with rash'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1696663381) below and ["Strongyloidiasis"](https://www.uptodate.com/contents/strongyloidiasis?search=fever&topicRef=3888&source=see_link).)

●**Fungal infection** – Fungal infections associated with fever, respiratory symptoms, and eosinophilia include coccidioidomycosis and paracoccidioidomycosis.

•Coccidioidomycosis should be suspected patients with exposure in endemic areas (southwestern United States, Mexico, Central America, and South America) and a respiratory illness of more than a week's duration. The incubation period is 7 to 21 days. The diagnosis is established via serology or culture. (See ["Primary pulmonary coccidioidal infection"](https://www.uptodate.com/contents/primary-pulmonary-coccidioidal-infection?search=fever&topicRef=3888&source=see_link).)

•Paracoccidioidomycosis should be suspected in patients with endemic exposure (Mexico, Central America, and South America), pulmonary infiltrates, and chronic mucosal ulcers in the upper airways. The incubation period is not well defined. The diagnosis is established via microscopic visualization of fungal elements suggestive of *Paracoccidioides*spp, culture, and/or serologic testing. (See ["Clinical manifestations and diagnosis of chronic paracoccidioidomycosis"](https://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-chronic-paracoccidioidomycosis?search=fever&topicRef=3888&source=see_link).)

Issues related to the approach to patients with eosinophilia are discussed further separately. (See ["Approach to the patient with unexplained eosinophilia"](https://www.uptodate.com/contents/approach-to-the-patient-with-unexplained-eosinophilia?search=fever&topicRef=3888&source=see_link).)

**Fever with jaundice** — Travel-related infections associated with fever and jaundice include:

●**Severe malaria** – Manifestations of severe malaria are summarized in the table ([table 7](https://www.uptodate.com/contents/image?imageKey=ID%2F107439&topicKey=ID%2F3888&search=fever&source=see_link)). (See ['Evaluate for malaria'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H3480488726) above and ["Malaria: Clinical manifestations and diagnosis in nonpregnant adults and children"](https://www.uptodate.com/contents/malaria-clinical-manifestations-and-diagnosis-in-nonpregnant-adults-and-children?search=fever&topicRef=3888&source=see_link) and ["Laboratory tools for diagnosis of malaria"](https://www.uptodate.com/contents/laboratory-tools-for-diagnosis-of-malaria?search=fever&topicRef=3888&source=see_link).)

●**Severe dengue fever** – The cardinal features of dengue hemorrhagic fever include fever, increased vascular permeability, hemorrhagic manifestations, and marked thrombocytopenia (≤100,000 cells/mm3). The virus is transmitted by *Aedes aegypti* mosquitoes, which have broad epidemiologic distribution ([figure 4](https://www.uptodate.com/contents/image?imageKey=ID%2F113653&topicKey=ID%2F3888&search=fever&source=see_link) and [figure 5](https://www.uptodate.com/contents/image?imageKey=ID%2F113652&topicKey=ID%2F3888&search=fever&source=see_link) and [figure 6](https://www.uptodate.com/contents/image?imageKey=ID%2F113651&topicKey=ID%2F3888&search=fever&source=see_link)); the incubation period is 4 to 7 days (range 3 to 10 days). The diagnosis is established via PCR or serologic testing. (See ['Fever with rash'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1696663381) below and ["Dengue virus infection: Clinical manifestations and diagnosis"](https://www.uptodate.com/contents/dengue-virus-infection-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

●**Acute viral hepatitis**

•Hepatitis A and E are acute infections transmitted by the fecal-oral route; the incubation period ranges from 15 to 60 days. Hepatitis A is characterized by nausea, vomiting, anorexia, fever, malaise, and abdominal pain; the infection is usually self-limited and occurs worldwide. The average incubation period is 28 days (range 15 to 50 days). Hepatitis E is usually asymptomatic; symptoms occur in up to 5 percent of cases and resemble those of hepatitis A. Hepatitis E occurs worldwide; the prevalence is highest in Asia and Africa. The infections are diagnosed by serology or PCR. (See ["Hepatitis A virus infection in adults: Epidemiology, clinical manifestations, and diagnosis"](https://www.uptodate.com/contents/hepatitis-a-virus-infection-in-adults-epidemiology-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link) and ["Hepatitis E virus infection"](https://www.uptodate.com/contents/hepatitis-e-virus-infection?search=fever&topicRef=3888&source=see_link).)

•Hepatitis B, C, and D can present acutely or chronically and are transmitted by body fluids. Hepatitis D infection always occurs in association with hepatitis B infection. The incubation periods of hepatitis B and C are 4 to 16 weeks and 2 to 26 weeks, respectively. Hepatitis B and C occur worldwide; hepatitis D is endemic in the Mediterranean and Far East. The infections are diagnosed by serology or PCR. (See ["Hepatitis B virus: Clinical manifestations and natural history"](https://www.uptodate.com/contents/hepatitis-b-virus-clinical-manifestations-and-natural-history?search=fever&topicRef=3888&source=see_link) and ["Hepatitis B virus: Screening and diagnosis"](https://www.uptodate.com/contents/hepatitis-b-virus-screening-and-diagnosis?search=fever&topicRef=3888&source=see_link) and ["Pathogenesis, epidemiology, natural history, and clinical manifestations of hepatitis D virus infection"](https://www.uptodate.com/contents/pathogenesis-epidemiology-natural-history-and-clinical-manifestations-of-hepatitis-d-virus-infection?search=fever&topicRef=3888&source=see_link) and ["Diagnosis of hepatitis D virus infection"](https://www.uptodate.com/contents/diagnosis-of-hepatitis-d-virus-infection?search=fever&topicRef=3888&source=see_link) and ["Clinical manifestations and natural history of chronic hepatitis C virus infection"](https://www.uptodate.com/contents/clinical-manifestations-and-natural-history-of-chronic-hepatitis-c-virus-infection?search=fever&topicRef=3888&source=see_link) and ["Screening and diagnosis of chronic hepatitis C virus infection"](https://www.uptodate.com/contents/screening-and-diagnosis-of-chronic-hepatitis-c-virus-infection?search=fever&topicRef=3888&source=see_link).)

●**Leptospirosis** – Leptospirosis is characterized by fever, rigors, myalgia, conjunctival suffusion, and headache; respiratory involvement can develop as a complication. Less common symptoms and signs include cough, nausea, vomiting, diarrhea, abdominal pain, and jaundice. It is transmitted via exposure to animal urine, contaminated water or soil, or infected animal tissue; outbreaks in endemic areas are associated with increased rainfall or flooding. The disease is widespread, particularly in South and Southeast Asia and South America. The incubation is 2 to 29 days. The diagnosis is established via serology. (See ["Leptospirosis: Epidemiology, microbiology, clinical manifestations, and diagnosis"](https://www.uptodate.com/contents/leptospirosis-epidemiology-microbiology-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

●**Yellow fever** – Yellow fever is characterized by acute infection with nonspecific symptoms followed by a period of remission and a subsequent episode of illness with hepatic and renal dysfunction. It is transmitted by *Ae. aegypti* mosquitoes and forest-dwelling mosquitoes in tropical regions of South America and sub-Saharan Africa; the incubation period is three to eight days. The diagnosis is established via serology or RT-PCR. (See ["Yellow fever"](https://www.uptodate.com/contents/yellow-fever?search=fever&topicRef=3888&source=see_link).)

●**Crimean-Congo hemorrhagic fever** (CCHF; rare) – CCHF is characterized by fever and hemorrhage. It is transmitted by ticks (incubation period 1 to 9 days) or contact with infected humans or rodents (incubation period 3 to 13 days) and is endemic in parts of Southern Europe, the Middle East, Africa, and northwestern China. The diagnosis is established via RT-PCR or serology. (See ["Crimean-Congo hemorrhagic fever"](https://www.uptodate.com/contents/crimean-congo-hemorrhagic-fever?search=fever&topicRef=3888&source=see_link).)

●**Other viral hemorrhagic fevers** (rare) – Other viruses capable of causing hemorrhagic fever include Ebola virus, Marburg virus, Lassa virus, and severe fever with thrombocytopenia syndrome virus (SFTSV). These illnesses can all cause severe multiorgan system illness accompanied by hemorrhage. They are transmitted via contact with infected humans or animals and have an incubation period of less than three weeks. Ebola virus, Marburg virus, and Lassa virus are endemic to Africa; most cases of SFTSV have been reported from Asia (China and Korea). The diseases may be distinguished based on PCR or serologic testing. (See ["Clinical manifestations and diagnosis of Ebola virus disease"](https://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-ebola-virus-disease?search=fever&topicRef=3888&source=see_link) and ["Marburg virus"](https://www.uptodate.com/contents/marburg-virus?search=fever&topicRef=3888&source=see_link) and ["Lassa fever"](https://www.uptodate.com/contents/lassa-fever?search=fever&topicRef=3888&source=see_link) and ["Severe fever with thrombocytopenia syndrome virus"](https://www.uptodate.com/contents/severe-fever-with-thrombocytopenia-syndrome-virus?search=fever&topicRef=3888&source=see_link).)

●**Oroya fever** (rare) – Oroya fever is characterized by fever, headache, anorexia, and anemia. It is transmitted by sand fly bite and is endemic to a region in the Andes Mountains of Peru, Colombia, and Ecuador. The incubation period is 10 to 210 days. The diagnosis is established by blood culture or smear. (See ["South American bartonellosis: Oroya fever and verruga peruana"](https://www.uptodate.com/contents/south-american-bartonellosis-oroya-fever-and-verruga-peruana?search=fever&topicRef=3888&source=see_link).)

The differential diagnosis of fever with jaundice also includes etiologies that may be unrelated to travel, such as cytomegalovirus (CMV) infection and Epstein-Barr virus (EBV) infection. (See ["Infectious mononucleosis"](https://www.uptodate.com/contents/infectious-mononucleosis?search=fever&topicRef=3888&source=see_link) and ["Epidemiology, clinical manifestations, and treatment of cytomegalovirus infection in immunocompetent adults"](https://www.uptodate.com/contents/epidemiology-clinical-manifestations-and-treatment-of-cytomegalovirus-infection-in-immunocompetent-adults?search=fever&topicRef=3888&source=see_link) and ["Overview of diagnostic tests for cytomegalovirus infection"](https://www.uptodate.com/contents/overview-of-diagnostic-tests-for-cytomegalovirus-infection?search=fever&topicRef=3888&source=see_link).)

**Fever with abdominal pain** — Travel-related infections associated with fever and abdominal pain include:

●**Enteric fever** – Enteric fever (*Salmonella enterica* serotype Typhi [formerly *S. typhi*] and *S. enterica* serovar Paratyphi A, B, and C) is characterized by abdominal pain, fever, and chills. Classic manifestations include relative bradycardia, pulse-temperature dissociation, and "rose spots" (faint salmon-colored macules on the trunk and abdomen). Hepatosplenomegaly, intestinal bleeding, and perforation may occur, leading to secondary bacteremia and peritonitis. The disease occurs worldwide; regions of highest incidence include South Asia, Southeast Asia, and southern Africa. Transmission is fecal-oral; the incubation period is 6 to 30 days. The diagnosis is established via culture. (See ["Epidemiology, microbiology, clinical manifestations, and diagnosis of enteric (typhoid and paratyphoid) fever"](https://www.uptodate.com/contents/epidemiology-microbiology-clinical-manifestations-and-diagnosis-of-enteric-typhoid-and-paratyphoid-fever?search=fever&topicRef=3888&source=see_link).)

●**Liver abscess** – Liver abscess occurs worldwide and may be pyogenic or amebic; in addition, an invasive liver abscess syndrome due to *Klebsiella pneumoniae* has been described in East Asia. Liver abscess is characterized by fever and right upper quadrant pain, nausea, vomiting, anorexia, weight loss, and malaise. Some patients with amebic liver abscess report history of dysentery within the previous few months; the incubation period is 8 to 20 weeks (median 12 weeks). The diagnosis of liver abscess is made via radiographic imaging, followed by aspiration of the lesion for Gram stain, culture, and parasite examination. In addition, amebic infection may be established via serology or stool parasite examination. (See ["Pyogenic liver abscess"](https://www.uptodate.com/contents/pyogenic-liver-abscess?search=fever&topicRef=3888&source=see_link) and ["Invasive liver abscess syndrome caused by Klebsiella pneumoniae"](https://www.uptodate.com/contents/invasive-liver-abscess-syndrome-caused-by-klebsiella-pneumoniae?search=fever&topicRef=3888&source=see_link) and ["Extraintestinal Entamoeba histolytica amebiasis", section on 'Amebic liver abscess'](https://www.uptodate.com/contents/extraintestinal-entamoeba-histolytica-amebiasis?sectionName=AMEBIC+LIVER+ABSCESS&search=fever&topicRef=3888&anchor=H2&source=see_link#H2).)

●**Cholangitis due to liver fluke infection** (rare) – Cholangitis due to liver fluke infection (*Clonorchis, Opisthorchis,* and *Fasciola*) is characterized by fever, anorexia, abdominal pain, myalgia, arthralgia, malaise, and urticaria.

•*Clonorchis*is endemic in the Far East. *Opisthorchis felineus* occurs in Southeast Asia and in Central and Eastern Europe; *Opisthorchis viverrini* is endemic in Southeast Asia. Infection due to *Clonorchis* or *Opisthorchis* is transmitted by ingestion of undercooked fish; the incubation period is 10 to 26 days.

•*Fasciola* is endemic in sheep-rearing areas of temperate climates, including Central and South America, Europe, Asia, Africa, and the Middle East. Infection due to *Fasciola* is transmitted by ingestion of watercress; the incubation period is 6 to 12 weeks.

The diagnosis of liver fluke infection is established by identifying eggs in stool, duodenal aspirates, or bile specimens. (See ["Liver flukes: Clonorchis, Opisthorchis, and Metorchis"](https://www.uptodate.com/contents/liver-flukes-clonorchis-opisthorchis-and-metorchis?search=fever&topicRef=3888&source=see_link) and ["Liver flukes: Fascioliasis"](https://www.uptodate.com/contents/liver-flukes-fascioliasis?search=fever&topicRef=3888&source=see_link).)

The differential diagnosis of fever with abdominal pain also includes cosmopolitan etiologies unrelated to travel such as appendicitis, diverticulitis, cholecystitis, pancreatitis, or cholangitis due to stones.

**Fever with diarrhea** — Travel-related infections associated with fever and diarrhea include ([table 8](https://www.uptodate.com/contents/image?imageKey=ID%2F62537&topicKey=ID%2F3888&search=fever&source=see_link) and [table 9](https://www.uptodate.com/contents/image?imageKey=ID%2F86525&topicKey=ID%2F3888&search=fever&source=see_link)):

●**Invasive enteropathies**

•***Campylobacter* infection** – *Campylobacter* infection is characterized by acute onset of watery or bloody diarrhea, abdominal pain and cramping, and nausea and vomiting. Fever frequently precedes onset of diarrhea and may be high grade. *Campylobacter* is a zoonotic bacterial infection acquired by ingesting contaminated food or water or via close contact with infected puppies or other pets. Incubation is usually 2 to 5 days (range 1 to 10 days). Diagnosis is made by stool culture or PCR. (See ["Clinical manifestations, diagnosis, and treatment of Campylobacter infection"](https://www.uptodate.com/contents/clinical-manifestations-diagnosis-and-treatment-of-campylobacter-infection?search=fever&topicRef=3888&source=see_link).)

•**Shigellosis** – Shigellosis is a bacterial infection of the distal small intestine and colon characterized by fever, diarrhea (sometimes bloody), nausea, and sometimes cramps and vomiting. Infection occurs worldwide and is acquired by ingestion of food or water that has been contaminated by an infected person. The incubation period is usually one to three days (up to a week). The diagnosis is established via stool culture or PCR. (See ["Shigella infection: Clinical manifestations and diagnosis"](https://www.uptodate.com/contents/shigella-infection-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

•**Nontyphoidal salmonellosis** – Nontyphoidal salmonellosis infection is characterized by diarrhea, nausea, vomiting, fever, and abdominal cramping. Infection occurs worldwide; transmission is fecal-oral. The incubation period is 6 to 72 hours, and diagnosis is established via culture of stool or blood or via PCR. (See ["Nontyphoidal Salmonella: Gastrointestinal infection and carriage"](https://www.uptodate.com/contents/nontyphoidal-salmonella-gastrointestinal-infection-and-carriage?search=fever&topicRef=3888&source=see_link).)

●**Cyclosporiasis** – Cyclosporiasis is characterized by anorexia, nausea, flatulence, fatigue, abdominal cramping, diarrhea, low-grade fever, and weight loss. Transmission is via ingestion of contaminated food or water. The infection is most frequently reported in Latin America, the Indian subcontinent, and Southeast Asia. The incubation period is approximately one week. The diagnosis is established via stool microscopy. (See ["Cyclospora infection"](https://www.uptodate.com/contents/cyclospora-infection?search=fever&topicRef=3888&source=see_link).)

●**Cryptosporidiosis** – Cryptosporidiosis is characterized by voluminous watery diarrhea and low-grade fever. Infection occurs worldwide, and transmission occurs via waterborne, foodborne, or fecal-oral routes. The incubation period is 3 to 28 days, and the diagnosis is established via stool microscopy, PCR, or enzyme immunoassay. (See ["Epidemiology, clinical manifestations, and diagnosis of cryptosporidiosis"](https://www.uptodate.com/contents/epidemiology-clinical-manifestations-and-diagnosis-of-cryptosporidiosis?search=fever&topicRef=3888&source=see_link).)

●**Intestinal amebiasis** – Intestinal amebiasis is characterized by bloody diarrhea; fever occurs in less than half of patients. Infection occurs worldwide, and transmission is fecal-oral. The incubation period is one to three weeks, and the diagnosis is established via serology, PCR, or antigen testing together with identification of the parasite in stool or extraintestinal sites (such as liver abscess pus). (See ['Fever with abdominal pain'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1876657029) above and ["Intestinal Entamoeba histolytica amebiasis"](https://www.uptodate.com/contents/intestinal-entamoeba-histolytica-amebiasis?search=fever&topicRef=3888&source=see_link).)

●**Strongyloidiasis** – Most patients with *Strongyloides*infection do not experience prominent symptoms. When manifestations do occur, they may include abdominal pain with diarrhea, cough, or rash. Some patients have eosinophilia in the absence of symptoms. The disease is transmitted via penetration of larvae into the skin, and it is endemic in rural areas of tropical and subtropical regions. The incubation period is weeks to decades; the diagnosis is usually made by detecting rhabditiform larvae in concentrated stool or via serology. (See ['Fever with respiratory symptoms'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H472569271) above and ['Fever with rash'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1696663381) below and ["Strongyloidiasis"](https://www.uptodate.com/contents/strongyloidiasis?search=fever&topicRef=3888&source=see_link).)

**Diarrhea in absence of fever** — Causes of diarrhea in travelers that are not typically associated with fever include:

●**Travelers' diarrhea** – Travelers' diarrhea is classically caused by enterotoxigenic *Escherichia coli* (ETEC) and other bacterial and viral pathogens; it is characterized by watery diarrhea, malaise, anorexia, and abdominal cramps. Transmission is fecal-oral and most commonly occurs via ingestion of contaminated food or water; risk is highest in South and Southeast Asia, Africa, South and Central America, and Mexico. The incubation period depends on the pathogen and can range from <1 day to several days. Travel-associated diarrhea is usually self-limited; patients with severe, prolonged, or bloody diarrhea warrant diagnostic evaluation with stool microscopy for ova and parasites, stool culture, and blood cultures. (See ["Travelers' diarrhea: Clinical manifestations, diagnosis, and treatment"](https://www.uptodate.com/contents/travelers-diarrhea-clinical-manifestations-diagnosis-and-treatment?search=fever&topicRef=3888&source=see_link).)

●**Giardiasis** – Giardiasis is characterized by diarrhea, malaise, abdominal cramps, and weight loss. Fever is not prominent. It occurs worldwide and is transmitted by waterborne, foodborne, or fecal-oral routes; the incubation period is typically 7 to 10 days (range 3 to 25 days). The diagnosis may be established by stool microscopy, antigen detection, or PCR. (See ["Giardiasis: Epidemiology, clinical manifestations, and diagnosis"](https://www.uptodate.com/contents/giardiasis-epidemiology-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

**Fever with rash** — Travel-related infections associated with fever and rash include ([table 10](https://www.uptodate.com/contents/image?imageKey=ID%2F106512&topicKey=ID%2F3888&search=fever&source=see_link)):

●**Dengue fever** – Classic dengue fever is an acute febrile illness accompanied by headache, retro-orbital pain, and marked muscle and bone pains. Fever typically lasts for five to seven days. Hemorrhagic manifestations and thrombocytopenia can also occur. A macular or maculopapular rash occurs in approximately half of cases. The virus is transmitted by *Ae. aegypti* or *Aedes albopictus* mosquitoes, which have broad epidemiologic distribution; the incubation period is 4 to 7 days (range 3 to 10 days). The diagnosis is established via serologic testing, NS1 antigen, or PCR. (See ['Fever with jaundice'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1669602154) above and ["Dengue virus infection: Clinical manifestations and diagnosis"](https://www.uptodate.com/contents/dengue-virus-infection-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

●**Chikungunya** – Chikungunya virus infection is characterized by acute febrile polyarthralgia and myalgia. Skin manifestations (macular or maculopapular rash) occur in 40 to 75 percent of patients. Chikungunya is transmitted by *Aedes* mosquitoes and is endemic in West Africa; outbreaks have occurred in Africa, Asia, Europe, islands in the Indian and Pacific Oceans, and the Americas. The incubation period is 1 to 14 days. The diagnosis is established via serology or PCR. (See ["Chikungunya fever: Epidemiology, clinical manifestations, and diagnosis"](https://www.uptodate.com/contents/chikungunya-fever-epidemiology-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

●**Zika virus** – Zika virus infection is characterized by fever, rash, headache, arthralgia, myalgia, and conjunctivitis [[20](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/20)]. The primary mode of transmission is via *Aedes* mosquito bites; sexual transmission can also occur. Outbreaks of Zika virus infection have occurred in Africa, Southeast Asia, the Pacific Islands, the Americas, and the Caribbean. The incubation period is 2 to 14 days. The diagnosis of Zika virus infection is established by PCR or serology. (See ["Zika virus infection: An overview"](https://www.uptodate.com/contents/zika-virus-infection-an-overview?search=fever&topicRef=3888&source=see_link).)

●**Rickettsial infection** – Many rickettsial infections present with fever and rash; some are also associated with eschar and/or enlarged nodes ([table 11](https://www.uptodate.com/contents/image?imageKey=ID%2F76555&topicKey=ID%2F3888&search=fever&source=see_link)). However, rash may be absent. They are usually transmitted by ticks with an incubation period of 2 to 14 days and span a broad geographic distribution ([table 12](https://www.uptodate.com/contents/image?imageKey=ID%2F66169&topicKey=ID%2F3888&search=fever&source=see_link)). The diagnosis may be established via serology or PCR. (See ["Other spotted fever group rickettsial infections"](https://www.uptodate.com/contents/other-spotted-fever-group-rickettsial-infections?search=fever&topicRef=3888&source=see_link).)

●**Enteric fever** – Enteric fever (*S. enterica* serotype Typhi [formerly *S. typhi*] and *S. enterica* serovar Paratyphi A, B, and C) is characterized by abdominal pain, fever, and chills. It may be associated with "rose spots" (faint salmon-colored macules on the trunk and abdomen), though these lesions may be sparse or absent. (See ['Fever with abdominal pain'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1876657029) above.)

●**Acute human immunodeficiency virus (HIV) infection** – Acute HIV infection is commonly characterized by fever, lymphadenopathy, sore throat, rash, myalgia/arthralgia, and headache. The infection is transmitted sexually, and infection occurs worldwide. The incubation period is two to four weeks. The diagnosis is established via immunoassay and viral load. (See ["Acute and early HIV infection: Clinical manifestations and diagnosis"](https://www.uptodate.com/contents/acute-and-early-hiv-infection-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

●**Measles** – Measles is characterized by fever, rash, cough, coryza, and conjunctivitis; pneumonia can develop as a complication of measles. Transmission airborne and is human to human, and infection occurs worldwide. The incubation period is 6 to 21 days (median 13 days). The diagnosis is usually established via PCR on a nasopharyngeal swab or by serologic testing. (See ["Measles: Clinical manifestations, diagnosis, treatment, and prevention"](https://www.uptodate.com/contents/measles-clinical-manifestations-diagnosis-treatment-and-prevention?search=fever&topicRef=3888&source=see_link).)

●**Meningococcal infection** – Meningococcal infection is characterized by acute onset of fever, nausea, vomiting, headache, confusion, and myalgia. Non-blanching purpuric rash may be observed. (See ['Fever with neurologic symptoms'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H38323098) below.)

●**Lyme disease** – Lyme disease is caused by *Borrelia* *spirochete* and is may be associated with erythema migrans, a characteristic rash with an area of central clearing that appears at the site of an *Ixodes* tick bite. The rash may be accompanied by fever, fatigue, arthralgia, and myalgia. The incubation period is 3 to 30 days. Lyme disease is highly endemic in northeastern and north-central United States and also found in Europe and parts of Asia. The diagnosis is established via serologic testing. (See ["Clinical manifestations of Lyme disease in adults"](https://www.uptodate.com/contents/clinical-manifestations-of-lyme-disease-in-adults?search=fever&topicRef=3888&source=see_link) and ["Diagnosis of Lyme disease"](https://www.uptodate.com/contents/diagnosis-of-lyme-disease?search=fever&topicRef=3888&source=see_link).)

●**Acute schistosomiasis syndrome** (rare) – (See ['Presence of eosinophilia'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H2470320144) above.)

●**Scrub typhus infection** (rare) – Scrub typhus infection is caused by *Orientia tsutsugamushi* and is characterized by fever, headache, anorexia, and malaise; an eschar or rash may develop in a subset of patients. It is transmitted by larval mites (chiggers) in Asia and northern Australia. The incubation period is 6 to 20 days. The diagnosis may be established via serology or PCR. (See ["Scrub typhus: Clinical features and diagnosis"](https://www.uptodate.com/contents/scrub-typhus-clinical-features-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

●**Strongyloidiasis** (rare) – *Strongyloides* infection may produce cutaneous reactions when larvae penetrate the skin. These reactions include inflammation, edema, petechiae, serpiginous or urticarial tracts, and pruritus. As larvae migrate, a raised, evanescent pink track develops; these lesions are known as larva currens ("running" larva) and are pathognomonic of strongyloidiasis. (See ['Fever with respiratory symptoms'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H472569271) above and ['Fever with diarrhea'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H3195633454) above and ["Strongyloidiasis"](https://www.uptodate.com/contents/strongyloidiasis?search=fever&topicRef=3888&source=see_link).)

●**Anthrax** (rare) – Cutaneous anthrax is characterized by a painless papule that enlarges, develops a central vesicle, and subsequently erodes, leaving a necrotic ulcer with a black depressed eschar. Extensive surrounding edema, regional lymphadenopathy, and fever may be present. Anthrax is transmitted by contact with animals or animal materials (eg, skin) contaminated with anthrax spores; it occurs in agricultural regions in Central and South America, sub-Saharan Africa, Central and Southwestern Asia, and Southern and Eastern Europe. The incubation period is one to seven days; the diagnosis is established via culture or by two supportive nonculture methods. (See ["Clinical manifestations and diagnosis of anthrax"](https://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-anthrax?search=fever&topicRef=3888&source=see_link).)

Additional issues related to skin lesions in the returning traveler are discussed separately. (See ["Skin lesions in the returning traveler"](https://www.uptodate.com/contents/skin-lesions-in-the-returning-traveler?search=fever&topicRef=3888&source=see_link).)

**Fever with neurologic symptoms** — Travel-related infections associated with fever and neurologic symptoms include:

●**Cerebral malaria** – Cerebral malaria is an encephalopathy that presents with impaired consciousness, delirium, and/or seizures. (See ['Evaluate for malaria'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H3480488726) above and ["Malaria: Clinical manifestations and diagnosis in nonpregnant adults and children", section on 'Cerebral malaria'](https://www.uptodate.com/contents/malaria-clinical-manifestations-and-diagnosis-in-nonpregnant-adults-and-children?sectionName=Cerebral+malaria&search=fever&topicRef=3888&anchor=H6&source=see_link#H6) and ["Laboratory tools for diagnosis of malaria"](https://www.uptodate.com/contents/laboratory-tools-for-diagnosis-of-malaria?search=fever&topicRef=3888&source=see_link).)

●**Meningococcal infection** – Meningococcal infection is characterized by acute onset of fever, nausea, vomiting, headache, confusion, and myalgia. Non-blanching purpuric rash may be observed. The infection is transmitted by person-to-person contact and occurs worldwide; the highest rate of disease is in the meningitis belt of sub-Saharan Africa (from Senegal in the west to Ethiopia in the east). The incubation period is 2 to 10 days, and the diagnosis is established via culture of blood or spinal fluid, agglutination tests, or PCR. (See ["Clinical manifestations of meningococcal infection"](https://www.uptodate.com/contents/clinical-manifestations-of-meningococcal-infection?search=fever&topicRef=3888&source=see_link) and ["Diagnosis of meningococcal infection"](https://www.uptodate.com/contents/diagnosis-of-meningococcal-infection?search=fever&topicRef=3888&source=see_link).)

●**West Nile virus** – West Nile virus infection is characterized by fever, headache, malaise, back pain, myalgia, and anorexia; neuroinvasive illness can present as encephalitis, meningitis, or an acute asymmetric flaccid paralysis. It is transmitted by mosquitoes and occurs in Africa, the Middle East, parts of Europe and the former Soviet Union, South and Southeast Asia, Australia, and the Americas. The incubation period is 2 to 14 days. The diagnosis is established via serologic testing in serum and spinal fluid. (See ["Clinical manifestations and diagnosis of West Nile virus infection"](https://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-west-nile-virus-infection?search=fever&topicRef=3888&source=see_link).)

●**Rabies** (rare) – Rabies is characterized by fever, hydrophobia, pharyngeal spasms, and hyperactivity. It is transmitted by animal bite (dogs, bats, and other animals) and is distributed worldwide. The average incubation period is one to three months. The diagnosis can be made by virus-specific immunofluorescent staining of skin biopsy specimens, isolation of virus from the saliva, or detection of anti-rabies antibodies in serum or cerebrospinal fluid. (See ["Clinical manifestations and diagnosis of rabies"](https://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-rabies?search=fever&topicRef=3888&source=see_link).)

●**Japanese encephalitis** (rare) – Japanese encephalitis is characterized by acute encephalitis; aseptic meningitis or nonspecific febrile illness with headache also occurs. It is transmitted by mosquitoes and occurs throughout most of Asia and parts of the Western Pacific region. The incubation period is 5 to 15 days. The diagnosis is established via detection of Japanese encephalitis virus-specific immunoglobulin (Ig)M antibody in cerebrospinal fluid (CSF) or serum by an enzyme-linked immunosorbent assay or via PCR. (See ["Japanese encephalitis"](https://www.uptodate.com/contents/japanese-encephalitis?search=fever&topicRef=3888&source=see_link).)

●**Scrub typhus infection** (rare) – (See ['Fever with rash'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1696663381) above.)

●**Tickborne encephalitis** (rare) – Tickborne encephalitis is characterized by fever, fatigue, malaise, headache, and arthralgia, followed by meningitis or encephalitis. It is transmitted by *Ixodid* ticks or via ingestion of unpasteurized dairy products from infected goats, sheep, or cows. Tickborne encephalitis occurs in Europe and Asia and has an incubation period of 7 to 14 days. The diagnosis is established via serologic testing in serum and spinal fluid. (See ["Arthropod-borne encephalitides", section on 'Tick-borne encephalitis virus'](https://www.uptodate.com/contents/arthropod-borne-encephalitides?sectionName=TICK-BORNE+ENCEPHALITIS+VIRUS&search=fever&topicRef=3888&anchor=H16&source=see_link#H16).)

●**Human African trypanosomiasis** (rare) – Human African trypanosomiasis is characterized by headache, fevers, malaise, and arthralgia, followed by late symptoms including difficulty concentrating, personality changes, sensory disorders, tremor, and ataxia. The infection is caused by *Trypanosoma brucei*parasites and is transmitted by the bite of a tsetse fly; the incubation period is 7 to 21 days. The diagnosis is established via demonstration of the parasite in blood, lymph node aspirate, chancre aspirate, or cerebrospinal fluid. (See ["African trypanosomiasis: Clinical manifestations, diagnosis, and treatment"](https://www.uptodate.com/contents/african-trypanosomiasis-clinical-manifestations-diagnosis-and-treatment?search=fever&topicRef=3888&source=see_link).)

The differential diagnosis of fever with neurologic symptoms also includes etiologies unrelated to travel such as meningitis, encephalitis, brain abscess, and subdural empyema.

**Fever with no localizing symptoms**

**Incubation period ≤10 days** — The differential diagnosis of fever with incubation period ≤10 days since exposure in the absence of localizing symptoms in a returning traveler includes:

●**Malaria** – (See ['Evaluate for malaria'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H3480488726) above.)

●**Dengue** – (See ['Fever with jaundice'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1669602154) above and ['Fever with rash'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1696663381) above.)

●**Rickettsial infection** – (See ['Fever with rash'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1696663381) above.)

●**Chikungunya** – (See ['Fever with rash'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1696663381) above.)

●**Zika virus infection** – (See ['Fever with rash'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1696663381) above.)

●**Enteric fever** – (See ['Fever with abdominal pain'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1876657029) above.)

●**Leptospirosis** – (See ['Fever with jaundice'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1669602154) above.)

●**Relapsing fever** (rare) – Relapsing fever is characterized by recurring febrile episodes that last approximately three days and are separated by afebrile periods. Transmission is via a tick or a louse bearing *Borrelia spirochetes*. Tickborne relapsing fever occurs on every continent except Australia and Antarctica; louse-borne relapsing fever is endemic in Ethiopia and Sudan, and epidemics occur in settings of crowding and poor hygiene. The incubation period is typically 4 to 14 days; the diagnosis is established via blood smear or serologic testing. (See ["Clinical features, diagnosis, and management of relapsing fever"](https://www.uptodate.com/contents/clinical-features-diagnosis-and-management-of-relapsing-fever?search=fever&topicRef=3888&source=see_link).)

The differential diagnosis of acute fever also includes etiologies that may be unrelated to travel, such as urinary tract infection or infectious mononucleosis.

**Incubation period >10 days** — The differential diagnosis of fever with incubation period >10 days since exposure in the absence of localizing symptoms in a returning traveler includes:

●**Malaria** – (See ['Evaluate for malaria'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H3480488726) above.)

●**Enteric fever** – (See ['Fever with abdominal pain'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1876657029) above.)

●**Acute HIV infection** – (See ['Fever with rash'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1696663381) above.)

●**Acute schistosomiasis syndrome**(rare) – (See ['Presence of eosinophilia'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H2470320144) above.)

●**Q fever** – (See ['Fever with respiratory symptoms'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H472569271) above.)

●**Tuberculosis** – (See ['Fever with respiratory symptoms'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H472569271) above.)

●**Visceral leishmaniasis** (rare) – Visceral leishmaniasis is characterized by subacute progression of malaise, fever, weight loss, and splenomegaly (with or without hepatomegaly) over a period of months. Transmission occurs via sand fly bites, and endemic areas include the Mediterranean, the Middle East, Afghanistan, Iran, Pakistan, East Africa, South Asia, and Brazil. The incubation period is usually two to six months; the diagnosis is established by histopathology or culture. (See ["Visceral leishmaniasis: Clinical manifestations and diagnosis"](https://www.uptodate.com/contents/visceral-leishmaniasis-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

●**Brucellosis** (rare) – Brucellosis is characterized by fever, night sweats, anorexia, arthralgia, fatigue, and weight loss. Transmission occurs via contact with fluids from infected animals (sheep, cattle, goats, pigs, or other animals) or derived food products such as unpasteurized milk and cheese. Major endemic areas include the Mediterranean basin, the Persian Gulf, the Indian subcontinent, and parts of Mexico and Central and South America. The incubation is usually one to four weeks but may be several months. The diagnosis is established by culture or serologic testing. (See ["Brucellosis: Epidemiology, microbiology, clinical manifestations, and diagnosis"](https://www.uptodate.com/contents/brucellosis-epidemiology-microbiology-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

The differential diagnosis of prolonged fever also includes etiologies that may be unrelated to travel, such as endocarditis or occult abscess. Noninfectious etiologies such as malignancy should also be considered.

**Consider the incubation period** — The incubation periods for common infections associated with travel are summarized in the table and figure ([table 4](https://www.uptodate.com/contents/image?imageKey=ID%2F55035&topicKey=ID%2F3888&search=fever&source=see_link) and [figure 1](https://www.uptodate.com/contents/image?imageKey=ID%2F113655&topicKey=ID%2F3888&search=fever&source=see_link)).

**Consider the exposure history** — Some important exposures for transmission of infection are summarized below ([table 13](https://www.uptodate.com/contents/image?imageKey=ID%2F113654&topicKey=ID%2F3888&search=fever&source=see_link)).

**Unclean water or undercooked food** — Consumption of unclean water or undercooked food may be associated with travelers' diarrhea, giardiasis, enteric fever, nontyphoidal salmonellosis, shigellosis, *Campylobacter*infection, hepatitis A and E, or amebic dysentery.

Consumption of unpasteurized milk may be associated with listeriosis, brucellosis, Q fever, or tickborne encephalitis.

**Arthropod bites** — Insects serve as vectors for a large number of infectious diseases, as follows:

●Infections transmitted by mosquitoes include malaria, dengue fever, chikungunya, Zika virus infection, yellow fever, West Nile virus infection, Japanese encephalitis, Rift Valley fever, and filariasis. (See related topics.)

●Infections transmitted by flies include leishmaniasis (sand fly), African sleeping sickness (tsetse fly), sand fly fever, and Oroya fever (sand fly). (See ["Visceral leishmaniasis: Clinical manifestations and diagnosis"](https://www.uptodate.com/contents/visceral-leishmaniasis-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link) and ["Cutaneous leishmaniasis: Clinical manifestations and diagnosis"](https://www.uptodate.com/contents/cutaneous-leishmaniasis-clinical-manifestations-and-diagnosis?search=fever&topicRef=3888&source=see_link) and ["African trypanosomiasis: Clinical manifestations, diagnosis, and treatment"](https://www.uptodate.com/contents/african-trypanosomiasis-clinical-manifestations-diagnosis-and-treatment?search=fever&topicRef=3888&source=see_link) and ["South American bartonellosis: Oroya fever and verruga peruana"](https://www.uptodate.com/contents/south-american-bartonellosis-oroya-fever-and-verruga-peruana?search=fever&topicRef=3888&source=see_link).)

●Infections transmitted by ticks include rickettsial infections, tickborne relapsing fever, Lyme disease, babesiosis, anaplasmosis, ehrlichiosis, tickborne encephalitis, Crimean-Congo hemorrhagic fever, and tularemia. (See related topics.)

●Infections transmitted by fleas include murine typhus (*Rickettsia typhi*) and plague. (See ["Murine typhus", section on 'Diagnosis'](https://www.uptodate.com/contents/murine-typhus?sectionName=DIAGNOSIS&search=fever&topicRef=3888&anchor=H2937937000&source=see_link#H2937937000) and ["Clinical manifestations, diagnosis, and treatment of plague (Yersinia pestis infection)"](https://www.uptodate.com/contents/clinical-manifestations-diagnosis-and-treatment-of-plague-yersinia-pestis-infection?search=fever&topicRef=3888&source=see_link).)

●Infections transmitted by lice include louse-borne relapsing fever (*Borrelia recurrentis*), epidemic typhus (*Rickettsia prowazekii*), and trench fever (*Bartonella quintana*). (See ["Clinical features, diagnosis, and management of relapsing fever"](https://www.uptodate.com/contents/clinical-features-diagnosis-and-management-of-relapsing-fever?search=fever&topicRef=3888&source=see_link) and ["Epidemic typhus"](https://www.uptodate.com/contents/epidemic-typhus?search=fever&topicRef=3888&source=see_link) and ["Clinical features, diagnosis, and treatment of Bartonella quintana infections"](https://www.uptodate.com/contents/clinical-features-diagnosis-and-treatment-of-bartonella-quintana-infections?search=fever&topicRef=3888&source=see_link).)

●Infections transmitted by mites include rickettsialpox (*Rickettsia akari*) and scrub typhus (*Orientia tsutsugamushi*). (See ["Rickettsialpox"](https://www.uptodate.com/contents/rickettsialpox?search=fever&topicRef=3888&source=see_link) and ["Scrub typhus: Clinical features and diagnosis"](https://www.uptodate.com/contents/scrub-typhus-clinical-features-and-diagnosis?search=fever&topicRef=3888&source=see_link).)

●Infection transmitted by reduviid bugs (triatomine insect) consists of the protozoan parasite *Trypanosoma cruzi*, the cause of Chagas disease (American trypanosomiasis). (See ["Chagas disease: Acute and congenital Trypanosoma cruzi infection"](https://www.uptodate.com/contents/chagas-disease-acute-and-congenital-trypanosoma-cruzi-infection?search=fever&topicRef=3888&source=see_link) and ["Chagas disease: Chronic Trypanosoma cruzi infection"](https://www.uptodate.com/contents/chagas-disease-chronic-trypanosoma-cruzi-infection?search=fever&topicRef=3888&source=see_link).)

**Animal exposures** — Animal bites may be associated with transmission of rabies (via dogs, bats, and other mammals), cat-scratch fever (*Bartonella henselae*), rat-bite fever (*Spirillum minus* or *Streptobacillus moniliformis*), and simian herpesvirus B infection (via Old World monkeys, especially macaque family). (See ["Zoonoses from dogs"](https://www.uptodate.com/contents/zoonoses-from-dogs?search=fever&topicRef=3888&source=see_link) and ["Zoonoses from cats"](https://www.uptodate.com/contents/zoonoses-from-cats?search=fever&topicRef=3888&source=see_link) and ["Zoonoses from pets other than dogs and cats"](https://www.uptodate.com/contents/zoonoses-from-pets-other-than-dogs-and-cats?search=fever&topicRef=3888&source=see_link).)

Contact with animals may be associated with transmission of toxoplasmosis (cats), anthrax (cattle, sheep, goats), Q fever (cattle, sheep, goats), hantavirus infection (rodents), plague (rodents), psittacosis (birds), avian influenza (birds), and rabies (dogs, bats, and other animals).

**Sexual contact** — Sexual contact with new partners is common during travel [[21,22](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler/abstract/21,22)]. The clinical history should include a sexual history, including number of partners, types of sexual activities, and whether barrier protection was used. The physical examination should include a careful genital examination in individuals who have had sexual contact while traveling.

Unprotected sex with a new partner(s) or commercial sex worker may be associated with a number of sexually transmitted infections; these include herpes, syphilis, gonorrhea, chlamydia, HIV, hepatitis (A, B, or C), Zika virus infection, and viral hemorrhagic fevers (such as Ebola virus).

**Consider the geographic region(s) of exposure** — Common causes of fever by geographic area are summarized in the table ([table 14](https://www.uptodate.com/contents/image?imageKey=ID%2F113657&topicKey=ID%2F3888&search=fever&source=see_link)).

These are also discussed further separately:

●(See ["Diseases potentially acquired by travel to East Asia"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-east-asia?search=fever&topicRef=3888&source=see_link).)

●(See ["Diseases potentially acquired by travel to Southeast Asia"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-southeast-asia?search=fever&topicRef=3888&source=see_link).)

●(See ["Approach to illness associated with travel to South Asia"](https://www.uptodate.com/contents/approach-to-illness-associated-with-travel-to-south-asia?search=fever&topicRef=3888&source=see_link).)

●(See ["Diseases potentially acquired by travel to West Africa"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-west-africa?search=fever&topicRef=3888&source=see_link).)

●(See ["Diseases potentially acquired by travel to East Africa"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-east-africa?search=fever&topicRef=3888&source=see_link).)

●(See ["Diseases potentially acquired by travel to Central Africa"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-central-africa?search=fever&topicRef=3888&source=see_link).)

●(See ["Diseases potentially acquired by travel to North Africa"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-north-africa?search=fever&topicRef=3888&source=see_link).)

●(See ["Diseases potentially acquired by travel to Southern Africa"](https://www.uptodate.com/contents/diseases-potentially-acquired-by-travel-to-southern-africa?search=fever&topicRef=3888&source=see_link).)

●(See ["Approach to illness associated with travel to Latin America and the Caribbean"](https://www.uptodate.com/contents/approach-to-illness-associated-with-travel-to-latin-america-and-the-caribbean?search=fever&topicRef=3888&source=see_link).)

**SOCIETY GUIDELINE LINKS**

Links to society and government-sponsored guidelines from selected countries and regions around the world are provided separately. (See ["Society guideline links: Malaria"](https://www.uptodate.com/contents/society-guideline-links-malaria?search=fever&topicRef=3888&source=see_link) and ["Society guideline links: Travel medicine"](https://www.uptodate.com/contents/society-guideline-links-travel-medicine?search=fever&topicRef=3888&source=see_link).)

**INFORMATION FOR PATIENTS**

UpToDate offers two types of patient education materials, "The Basics" and "Beyond the Basics." The Basics patient education pieces are written in plain language, at the 5th to 6th grade reading level, and they answer the four or five key questions a patient might have about a given condition. These articles are best for patients who want a general overview and who prefer short, easy-to-read materials. Beyond the Basics patient education pieces are longer, more sophisticated, and more detailed. These articles are written at the 10th to 12th grade reading level and are best for patients who want in-depth information and are comfortable with some medical jargon.

Here are the patient education articles that are relevant to this topic. We encourage you to print or e-mail these topics to your patients. (You can also locate patient education articles on a variety of subjects by searching on "patient info" and the keyword(s) of interest.)

●Basics topics (see ["Patient education: Vaccines for travel (The Basics)"](https://www.uptodate.com/contents/vaccines-for-travel-the-basics?search=fever&topicRef=3888&source=see_link) and ["Patient education: When to worry about a fever in adults (The Basics)"](https://www.uptodate.com/contents/when-to-worry-about-a-fever-in-adults-the-basics?search=fever&topicRef=3888&source=see_link))

●Beyond the Basics topic (see ["Patient education: General travel advice (Beyond the Basics)"](https://www.uptodate.com/contents/general-travel-advice-beyond-the-basics?search=fever&topicRef=3888&source=see_link))

**SUMMARY**

●The most common causes of fever among travelers include malaria, dengue fever, mononucleosis, rickettsial infection, and typhoid or paratyphoid fever (enteric fever). In addition to travel-related infections, cosmopolitan causes of fever should be considered ([table 1](https://www.uptodate.com/contents/image?imageKey=ID%2F75701&topicKey=ID%2F3888&search=fever&source=see_link) and [table 2](https://www.uptodate.com/contents/image?imageKey=ID%2F113656&topicKey=ID%2F3888&search=fever&source=see_link)). (See ['Epidemiology and etiology'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H2) above.)

●The clinical history should include careful documentation of signs and symptoms and their time of onset, the nature of travel, relevant activities and exposures, and general medical information ([table 3](https://www.uptodate.com/contents/image?imageKey=ID%2F54195&topicKey=ID%2F3888&search=fever&source=see_link)). The physical examination should include evaluation for skin lesions, lymphadenopathy, retinal or conjunctival changes, enlargement of liver or spleen, genital lesions, and neurologic findings. The approach to the initial laboratory evaluation is summarized in the table ([table 6](https://www.uptodate.com/contents/image?imageKey=ID%2F70923&topicKey=ID%2F3888&search=fever&source=see_link)). (See ['Initial evaluation'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1415747572) above.)

●Any patient with fever who has spent time in a region where malaria is endemic should be evaluated for malaria, even if afebrile at the time of evaluation ([figure 2](https://www.uptodate.com/contents/image?imageKey=ID%2F103385&topicKey=ID%2F3888&search=fever&source=see_link) and [figure 3](https://www.uptodate.com/contents/image?imageKey=ID%2F72797&topicKey=ID%2F3888&search=fever&source=see_link)). Malaria is characterized by fever, malaise, nausea, vomiting, abdominal pain, diarrhea, myalgia, and anemia. (See ['Evaluate for malaria'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H3480488726) above.)

●The clinician should consider the patient's presenting syndrome in conjunction with the incubation period, relevant epidemiologic exposures, and geographic region of travel. The differential diagnoses for a number of clinical syndromes are summarized above. (See ['Consider the presenting syndrome'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H14) above.)

●The incubation periods for common infections associated with travel are summarized in the table and figure ([table 4](https://www.uptodate.com/contents/image?imageKey=ID%2F55035&topicKey=ID%2F3888&search=fever&source=see_link) and [figure 1](https://www.uptodate.com/contents/image?imageKey=ID%2F113655&topicKey=ID%2F3888&search=fever&source=see_link)). (See ['Consider the incubation period'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1328174108) above.)

●Relevant exposures for transmission of infection include consumption of unclean water or undercooked food, arthropod bites, animal exposures, and sexual contact ([table 13](https://www.uptodate.com/contents/image?imageKey=ID%2F113654&topicKey=ID%2F3888&search=fever&source=see_link)). (See ['Consider the exposure history'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H4111215997) above.)

●Common causes of fever by geographic area are summarized in the table ([table 14](https://www.uptodate.com/contents/image?imageKey=ID%2F113657&topicKey=ID%2F3888&search=fever&source=see_link)). (See ['Consider the geographic region(s) of exposure'](https://www.uptodate.com/contents/evaluation-of-fever-in-the-returning-traveler?search=fever&topicRef=2736&source=see_link#H1686093044) above.)

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