Dengue

Traveler Summary

Key Points

- Dengue, a viral infection occurring in most tropical and subtropical countries of the South Pacific, Asia, the Caribbean, the Americas, and the Indian Ocean islands, is acquired through the bite of day-biting mosquitoes.
- Risk is increased for travelers going to populated urban and residential areas of affected countries.
- Symptoms include high fever; rash; severe headache; and muscle, joint, and back pain, some of which overlap with other tropical illnesses (e.g., malaria, Zika, and chikungunya) and COVID-19.
- Consequences of infection include bleeding, shock, and death in a small percentage of patients and severe chronic fatigue lasting weeks to months in many others.
- Prevention includes wearing long sleeves and long pants as well as observing daytime personal protective measures against mosquito bites.
- Dengue vaccines (Dengvaxia and Qdenga) can be given in 2 or 3 doses (depending on the vaccine) to persons living in dengue-affected areas. Qdenga is also approved for travel to affected areas.
- Vaccine side effects are most commonly injection-site reactions, headache, malaise, and muscle aches.
- The duration of protection is approximately 6 years for Dengvaxia and 4 years for Qdenga; the need for a booster dose has not yet been determined.

Introduction

Dengue is a viral infection that occurs in most countries of the South Pacific, Asia, the Caribbean, the Americas, and the Indian Ocean islands and is acquired through the bite of mosquitoes carrying the dengue virus. Dengue is the most common cause of fever in travelers returning from the Caribbean, Latin America, and Southeast Asia.

Risk Areas

Dengue is common in most tropical and subtropical countries of the South Pacific, Asia, the Caribbean, the Americas, and the Indian Ocean islands, mainly due to the broad geographic distribution of the infected mosquitoes. Recently, dengue has emerged in Angola, Kenya, Tanzania, and several countries in West Africa. The incidence of dengue is typically higher during warm and humid seasons in affected areas; local health authorities are usually aware of periods of increasing dengue activity. Since 2001, isolated outbreaks of dengue have occurred in the US in southern areas of Florida and in Hawaii and Texas.

Transmission

Dengue virus is transmitted through the bite of infected mosquitoes, which may be found indoors in close contact with humans. These mosquitoes have a very erratic feeding behavior, interrupting their feeding at the slightest movement and returning quickly to feed on the same or a different human host in the same location.

Unlike malaria-transmitting mosquitoes, dengue-transmitting mosquitoes are daytime feeders with 2 peak times of biting activity in the day: the first, 2 to 3 hours after dawn; and the second, mid-to-late afternoon. However, this pattern changes to one of all-day activity indoors or during overcast days.

Risk Factors

All persons in an affected area who have not been previously exposed to the currently circulating dengue virus are at risk of infection. Risk is higher for persons staying in inappropriately screened facilities (especially if places are nearby which may host mosquito larvae, e.g., stagnant water or water containers), in populated urban and residential areas (the mosquito vectors can thrive in urban areas and indoors), and for long durations (> 6 months).

Symptoms

Approximately 40% to 80% of infections are symptom free or mild and self-managed, and may be misdiagnosed as other illnesses with fever. Symptoms most commonly appear 5 to 7 days following exposure and include sudden onset of high-grade

fever; rashes; severe muscle, abdominal, joint, and lower back pain; severe pain behind the bony socket of the eye; nausea; vomiting; and generalized weakness. Fever that occurs more than 14 days after last exposure is not due to dengue. Mild bleeding from the nose, mouth, or under the skin (seen as bruising) may also occur.

Dengue has symptoms in common with chikungunya and Zika, which usually coexist in the same areas because they are transmitted by the same mosquitoes.

Consequences of Infection

Dengue infection can lead to severe fatigue (lasting for weeks or months) and, uncommonly, significant blood loss and organ (kidney, liver, brain) damage. Although the risk for severe dengue is greater during a second dengue infection, severe dengue also can occur during the first, third, or fourth infection.

Need for Medical Assistance

Travelers who develop symptoms of dengue should seek immediate medical attention because a febrile illness in the tropics can include several serious diseases (e.g., malaria) and diseases with significant consequences (e.g., dengue, Zika, and chikungunya). Travelers with persistent fever should avoid using aspirin and other nonsteroidal anti-inflammatory drugs (because they prevent formation of blood clots).

Prevention

Nonvaccine

Personal protective measures are the main prevention strategy. Mosquitoes that transmit dengue virus (***Aedes*** spp.) can bite throughout the day—especially indoors or during overcast days—but have peak biting activity during early morning and late afternoon and evening. Travelers should be especially vigilant in applying repellent during peak biting activity times. Treat outer clothing, boots, tents, and sleeping bag liners with permethrin (or other pyrethroid) when traveling in an area of very high-risk for dengue. Additionally, containers with stagnant water can serve as breeding sites for mosquitoes and should be removed from the proximity of human habitation whenever possible. See ***Insect Precautions***.

Vaccine

Two dengue vaccines (Dengvaxia and Qdenga) are approved and available for persons living in dengue-affected areas. Dengvaxia is approved only for persons with proof of previous dengue; Qdenga does not have this requirement and is also approved for persons traveling to affected areas.

Side Effects

The most frequent side effects associated with both vaccines are headache, injection-site reactions, malaise, and muscle aches.

Persons with underlying medical conditions or who have concerns about the vaccine should speak to their health care provider before vaccine administration.

Timing

Dengvaxia is given as 3 doses, 1 each at 0, 6, and 12 months to persons aged 6-45 years (age range depends on the country where vaccine is given) with confirmation of previous dengue and living in a dengue-affected area. In the US, administration is limited to children aged 9-16 years living in a dengue-affected US territory.

Qdenga is given as 2 doses 3 months apart to persons aged 4 years and older, regardless of previous dengue infection.

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