



Dengue Surveillance Summary Rhode Island 2014-2023

Dengue Overview

- Dengue, also known as dengue fever, is a virus transmitted by mosquitoes in tropical and subtropical parts of the world.
- It is endemic in more than 100 nations worldwide, with transmission increasing predominantly in urban and semi-urban areas in recent years. **Currently, there is no evidence of local transmission in Rhode Island.** All Rhode Island dengue cases have a history of travel to a country with known dengue transmission.
- Dengue viruses are spread through the bite of an infected female *Aedes aegypti* or *Aedes albopictus* mosquito. A mosquito becomes infected when it bites a person with dengue virus in their blood. After an extrinsic incubation period of 8 to 12 days, the mosquito can spread the disease by biting another person.
- Dengue does not spread person to person except in rare cases from pregnant individuals to their unborn child.
- There are four distinct, but closely related, serotypes of the virus that cause dengue (DEN-1, DEN-2, DEN-3, and DEN-4). Recovery from infection provides lifelong immunity against that serotype, but not against the others. Thus, a person can be infected up to four times across their lifespan. Prior infection increases the risk of severe dengue if re-infected with a different serotype.

Climate and Dengue

- Mosquitos that spread dengue are most active during warm or rainy seasons. Mosquitos breed in pools of stagnant water that may be as small as a teaspoon, and can be found in nature (puddles or tree holes) or in human environments (trash, flower pots, buckets, used tires, etc.).
- Natural weather deviations can influence the number of dengue cases, as can individual events, such as hurricanes or floods.
- Warmer temperatures can extend the length of the season when mosquitoes are able to reproduce and actively spread the virus, allowing a longer period for dengue transmission. At higher temperatures, adult mosquitos bite more frequently.
- As global temperatures rise, the number of geographical locations where these mosquitos can survive increases. As a result, areas that have previously seen no cases or low numbers of cases may see increases in dengue transmission.

Clinical Presentation of Dengue

- Most people infected with dengue will have mild or no symptoms. Symptoms usually appear after 4-10 days of the mosquito bites and last for 2-7 days.



Rhode Island Department of Health
Division of Emergency Preparedness and Infectious Disease
Center for Acute Infectious Disease Epidemiology

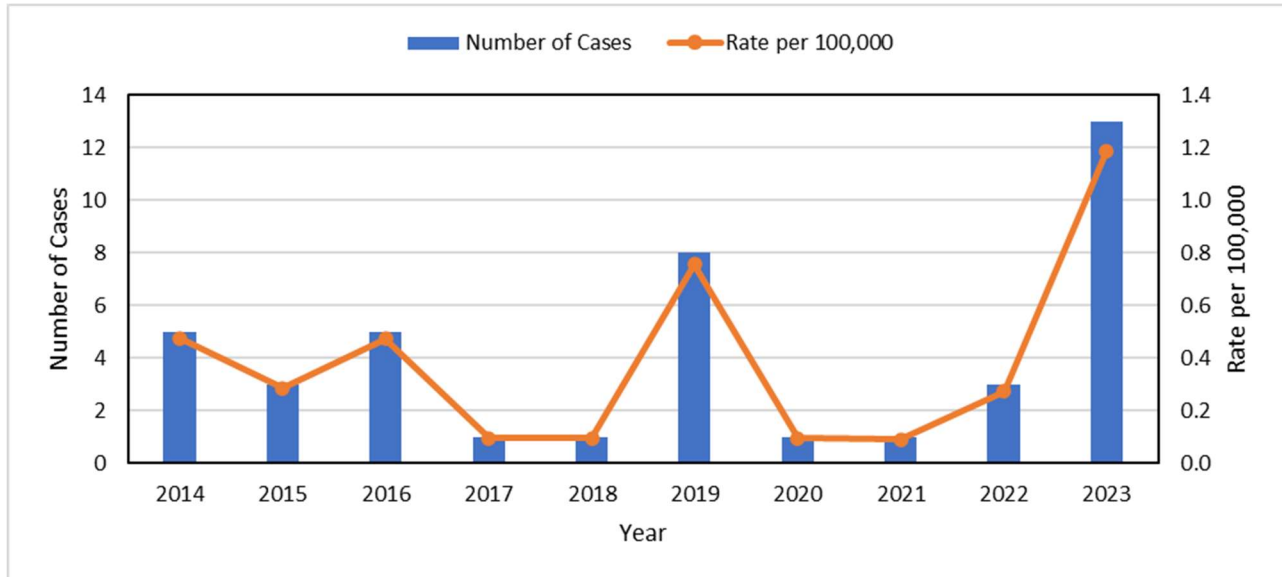
- People with symptoms can develop high fever (104°F), severe headache, pain behind the eyes, muscle and joint pains, nausea, vomiting, swollen glands, and rash.
- A small percentage of people (1-5%) infected will develop severe dengue, also called dengue hemorrhagic fever or dengue shock syndrome. Severe dengue symptoms include severe abdominal pain or tenderness, persistent vomiting, bleeding from the nose or gums, and extreme lethargy. People with these symptoms should seek immediate emergency care. Dengue can be fatal if untreated.
- There is no specific treatment for dengue, but access to proper medical care reduces the likelihood that the disease will become more serious.
- **Preventing mosquito bites is the most effective way to prevent dengue.** If traveling to an affected area, mosquito nets, insect repellent, and protective clothing are recommended to avoid mosquito bites. In addition, community education programs that raise awareness of the importance of avoiding mosquito bites, as well as educating healthcare professionals on the signs and symptoms of dengue, are essential.

Dengue Surveillance in Rhode Island (2014-2023)

- Healthcare professionals must report dengue viral infections to the Rhode Island Department of Health within four days of diagnosis.
- A dengue case is defined using CDC's 2015 case definition, which includes a combination of clinical, laboratory, and epidemiologic criteria. More information can be found [HERE](#).
- Between 2014 and 2023:
 - 41 cases of dengue were reported in Rhode Island, with a peak of 13 cases reported in 2023 (see Figure 1).
 - Most cases were female (56%), between 40-59 years old (37%), and resided in Providence County (80%) (see Table 1).



Figure 1. Dengue Cases by Year, Rhode Island, 2014-2023



Note: The population denominator when calculating rate per 100,000 is based on American Community Survey 5-Year Population Estimates, per year.

Table 1. Demographic Characteristics of Dengue Cases in Rhode Island Between 2014-2023

Characteristic	Number of Cases	Percent of Cases
Age (Years)		
≤17	6	14.6
18-24	5	12.2
25-39	11	26.8
40-59	15	36.6
≥60	4	9.8
Sex		
Female	23	56.1
Male	18	43.9
County of Residence		
Bristol County	1	2.4
Kent County	4	9.8
Newport County	2	4.9
Providence County	33	80.5
Washington County	1	2.4



- All Rhode Island cases between 2014 and 2023 had recently traveled to countries with documented dengue transmission prior to their illness onset, with the most common destination being the Dominican Republic (39%). Table 2 and Figure 2 showcase the complete list of travel destinations.
- In 2023, the Dominican Republic was also the most common travel destination among cases. (See Figure 3).

Table 2. List of Countries Visited by Rhode Island Cases Between 2014-2023

Country of Travel	Number of Cases	Percent of Cases
Cambodia	1	2.4
Colombia	2	4.9
Costa Rica	1	2.4
Dominican Republic	16	39.0
El Salvador	3	7.3
Guatemala	7	17.1
Indonesia	2	4.9
Jamaica	1	2.4
Mexico	3	7.3
Nepal	1	2.4
Philippines	1	2.4
Puerto Rico	1	2.4
Thailand	1	2.4
Vietnam	1	2.4

Figure 2. Map of Countries Visited by Rhode Island Cases Prior to Illness Onset Between 2014-2023

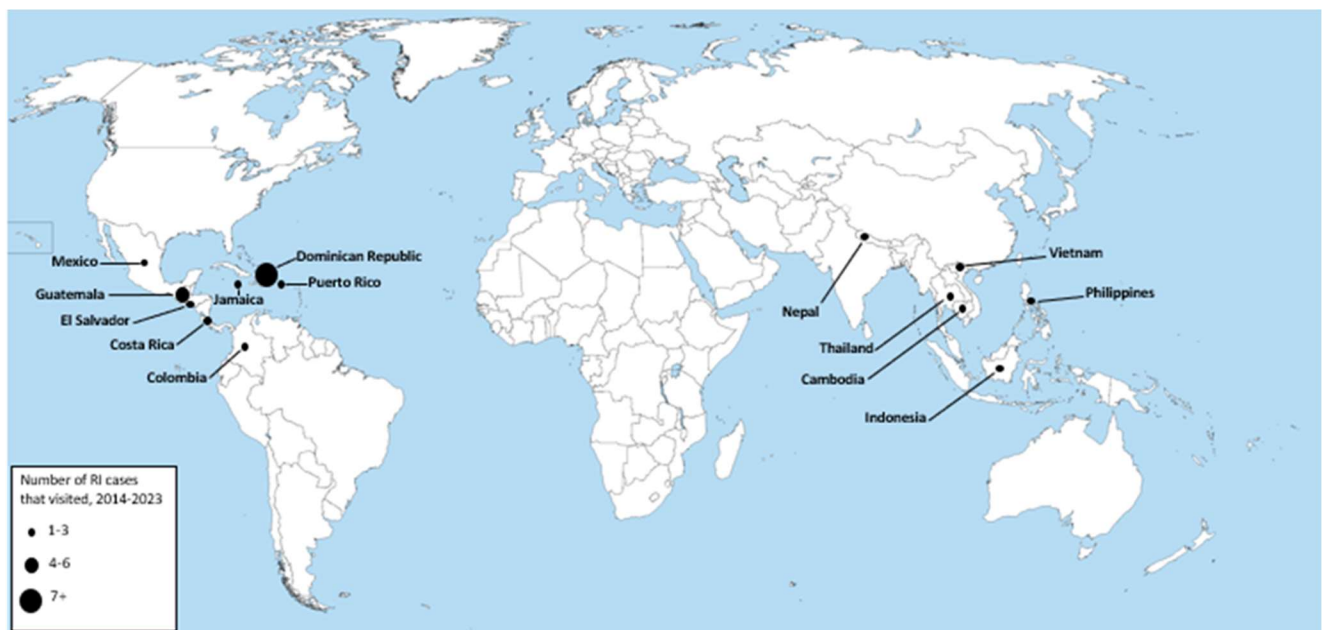
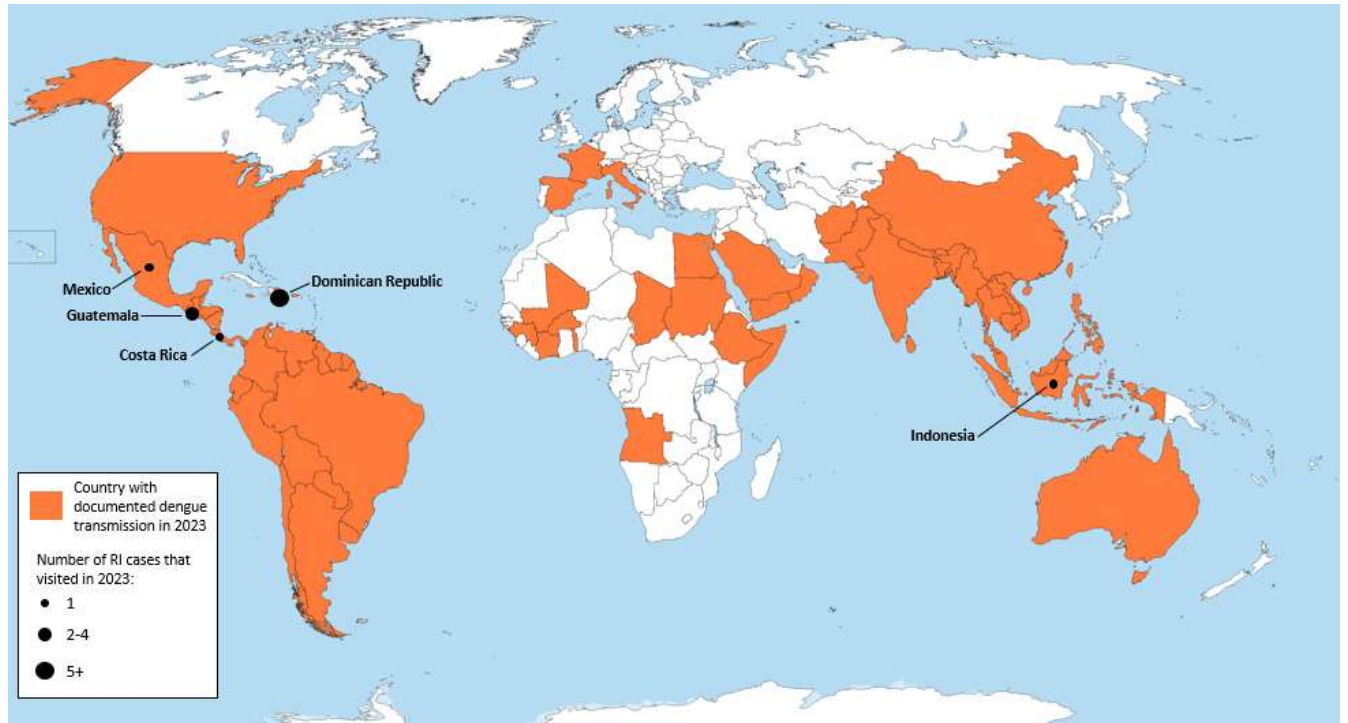




Figure 3. Map of Reported Dengue Transmission in 2023 and Countries where Rhode Island Cases Visited Prior to Illness Onset in 2023



Resources

[CDC: Dengue](#)

[WHO: Dengue and Severe Dengue](#)