

EPIDEMIOLOGICAL AND CLINICAL CHARACTERISTICS OF ACUTE DENGUE VIRUS INFECTIONS DETECTED THROUGH ACUTE FEBRILE ILLNESS SURVEILLANCE, BELIZE 2020

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Background: Dengue is a global health threat, especially for many low- and middle-income countries in the tropical and subtropical regions. With a tropical climate, high rates of poverty, and lack of resources, Belize is at increased risk for transmission of infectious diseases including dengue. The Acute Febrile Illness (AFI) Surveillance Network in Belize is a countrywide active surveillance program aimed at diagnosing vector-borne, respiratory, and enteric pathogens among patients presenting with new onset fever to 11 participating hospitals and clinics throughout the country.

Materials/Methods: This study describes the epidemiology of dengue virus (DENV) infections in Belize diagnosed through AFI surveillance in 2020. Patients > 60 days of age with a fever of unknown cause were invited to participate. Enrolled patients were interviewed to collect demographic, clinical, and epidemiological information. Blood samples were collected to test for DENV along with other vector-borne pathogens by real-time multiplexed polymerase chain reaction (PCR). Samples positive for DENV were then tested with an additional real-time PCR to determine the DENV serotype. Univariate and multivariate analyses were used to determine risk factors for infection and to describe clinical features of cases.

Results: Of 894 patients enrolled and PCR-tested for DENV in this period, 44 DENV-positive cases (5%) were identified. All four DENV serotypes were detected, with two cases testing positive for DENV serotype 4, which is the first report of this serotype in Belize since 2004. Among the cases, 29 (66%) were diagnosed in Belize District, which contains Belize City, the nation's largest urban area. Positive cases were detected between January and September 2020, with 39 (89%) diagnosed during the January to April dry season, unlike years prior when cases were more often diagnosed during the wet season. Two cases (5%) were hospitalized, both of whom were infected with DENV serotype 2.

Conclusions: Active surveillance of DENV among AFI cases provides insight into the epidemiologic and clinical characteristics of DENV in Belize including variation from previous seasonality and presence of all four DENV serotypes. This information is critical to inform public health interventions to mitigate DENV transmission in Belize, where DENV is endemic.

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