

IMPLEMENTATION OF AN ACUTE FEBRILE ILLNESS SURVEILLANCE NETWORK IN BELIZE, 2020-2021

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Background: Belize is a low- to middle-income country with ~390,000 residents. Millions of tourists visit the country each year, increasing the risk of introduction of infectious pathogens. In January 2020, the Acute Febrile Illness (AFI) Surveillance Network was implemented country-wide in 11 hospitals and clinics with the purpose of collecting epidemiologic data and performing enhanced diagnostics for 51 different etiologic causes of AFI, including vector-borne (VBD), respiratory (RP), and gastrointestinal (GI) pathogens.

Materials/Methods: Patients presenting with new onset fever (within 7 days) and/or ≥ 2 RP symptoms and/or ≥ 2 GI symptoms were invited to enroll. Demographic and epidemiologic data were collected along with a blood specimen; nasopharyngeal swabs, and/or stool samples were collected based on symptomatology. Whole blood was tested on a vector-borne PCR panel, and nasopharyngeal swabs and stool samples were tested on the BioFire platform (RP Panel 2.1 and GI Panel). Data were collated into a real time analytic dashboard for distribution to stakeholders.

Results: From January 16, 2020, to September 15, 2021, 2238 patients were enrolled in AFI surveillance. Average age was 28 (range 2 months-97 years); 1166 (52%) were female. For the GI panel, 247 of 306 (81%) cases had at least one positive result, including pathogenic E. coli, norovirus, rotavirus, Giardia, Campylobacter, Salmonella, and cholera. For the RP panel, 762 of 1399 (54%) cases had at least one positive result, including human rhinovirus/enterovirus, SARS-CoV-2, coronavirus OC43, adenovirus, influenza, and respiratory syncytial virus. VBDs included one acute Chagas case, 44 dengue cases, and 4 Zika virus cases. Since implementation, we have tracked the COVID-19 pandemic throughout the country, we confirmed the circulation of four dengue serotypes, and we identified the first case of acute Chagas disease in Belize and the first cases of Zika since 2017.

Conclusions: AFI surveillance provides a valuable tool to understand the incidence of emerging pathogens and to identify epidemiologic trends. The data presented from our active surveillance of AFI patients addresses the critical need for active surveillance to inform public health measures to diminish the spread of pathogens and outbreaks, including SARS-CoV-2, in the region.

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