Re-defining the dengue-receptive area of Queensland after the 2019 dengue outbreak in Rockhampton

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On 23 May 2019, the Central Queensland Public Health Unit received a confirmed laboratory notification of a dengue virus serotype-2 (DENV-2) infection in a Rockhampton resident. On 5 May, a 71-year-old man without a history of travel overseas or to Far North Queensland had developed symptoms consistent with a zoonotic disease, and presented later that month to his general practitioner because his symptoms had not abated. Between 23 May and 7 October 2019, 21 locally acquired cases of DENV-2 were identified in Rockhampton: 13 laboratory-confirmed cases and eight probable cases detected by active surveillance. This was the first outbreak of locally acquired dengue in Central Queensland for 65 years.[1] In 14 cases (67%), the infected persons sought medical attention; two required hospitalisation.

A formal outbreak response was initiated by the Central Queensland Public Health Unit on 23 May 2019, including extensive mosquito surveillance and active and passive human surveillance within 200 metres of the residences of each identified infected person. Particular attention was directed to surveying locations that might facilitate increased dengue transmission in the community (such as schools, a plant nursery, and aged care facilities) for artificial and natural containers that could serve as breeding areas for infected mosquitoes (*Aedes aegypti*). Such containers were either removed or emptied of residual water and treated with pellets of the insect growth regulator (*S*)-methoprene, and the premises and buildings were sprayed inside and out with the residual insecticide Temprid 75 (Bayer; includes imidacloprid and β-cyfluthrin). In addition to the house-to-house human surveillance, a novel "lure and kill" approach was adopted for vector control: lethal ovitraps were deployed within 200 metres of the residence of any person with a probable or confirmed infection. *Ae. aegypti* was found in 105 of 1107 inspected residential premises (9.5%), or more than half of the 205 premises found to contain mosquitoes.

Enhanced serological surveillance was undertaken to detect patients with viraemia early, enabling prompt public health and mosquito control interventions. The complete DENV-2 genome sequence (GenBank accession number, MN982899.1) indicated that the implicated virus was most closely related to Southeast Asian strains of DENV-2.

Given the presence of *Ae. aegypti* in Central Queensland and the increasing numbers of travellers and visitors returning from countries in which dengue is endemic, it is important that Rockhampton be recognised as a dengue-receptive area. As locally acquired cases of dengue are being reported outside Far North Queensland, the state map of dengue-receptive areas[2] should be updated; specifically, the broad geographic area from Townsville south to Rockhampton should be considered dengue-receptive.

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2 Communicable Disease Network Australia. Dengue CDNA national guidelines for public health units; version 2.0. May 2015. https://www1.health.gov.au/internet/main/publishing.nsf/Content/FE1CB334E23F9DD4CA257BF0001C11FC/$File/DENGUE-SONG.pdf (viewed Dec 2020). ■

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