ZIKA: *Surveillance and Laboratory Testing*

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Surveillance and Laboratory Testing

The CARPHA laboratory serves as the regional reference laboratory for a number of its Member States. At the start of the Zika outbreak, the Agency's laboratory capacity was strengthened in response to the increase in testing demand. During the outbreak, samples were sent regularly by CARPHA Member States (CMS), except for Jamaica and Suriname which sent samples at the start and occasionally. Jamaica and Suriname have developed testing capacity and only sent samples to CARPHA for confirmation. As the number of ZIKV laboratory testing requests increased so too did the number of ZIKV positive results.

Reverse Transcriptase Polymerase Chain Reaction or RT-PCR testing was done by the CARPHA laboratory for the detection of viral RNA from sera samples to confirm ZIKV infection. Serum samples were received no more than five (5) days after the onset of fever. In instances where an early sample could not be obtained (between 5-8 days), acute phase and convalescent phase paired sera were utilised for diagnosis. The agency also extended its testing capacity to test urine and Cerebrospinal fluid (CSF) for suspected cases of Guillain-Barré syndrome (GBS).

Once local transmission was confirmed in a district/region of a country, the testing of samples was limited to pregnant women, patients <5 years or >65 years old, hospitalized patients and persons with two or more diseases. As a result, the majority of positive results were from pregnant women.

As part of routine surveillance conducted by CARPHA, the importance of syndromic surveillance by CMS was emphasized. Surveillance data of two syndromes - undifferentiated fever, and fever with neurologic symptoms, were closely monitored. Once new cases were detected for the first time in a country, CARPHA provided expert public health consultation to the public health authority in that country with respect to the enhancement of surveillance and control measures.

The number of CARPHA laboratory confirmed cases observed between January 2016 and April 2016 showed a gradual increase from 11 to 48 cases where as the number of requests increased from 153 to 352 (Figure 1). Laboratory confirmed cases increased sharply from May, reaching a peak value of 404 in August, 2016. ZIKV positive results peaked in August at 404 cases. Laboratory test requests and positive cases then began a steady decline from August to December 2016, returning to a number comparable to the number of cases observed at the start of the outbreak.

Figure 1: Number Laboratory Requests for ZIKV Testing and the Number of Laboratory Confirmed ZIKV Cases by Month in 2016, CARPHA

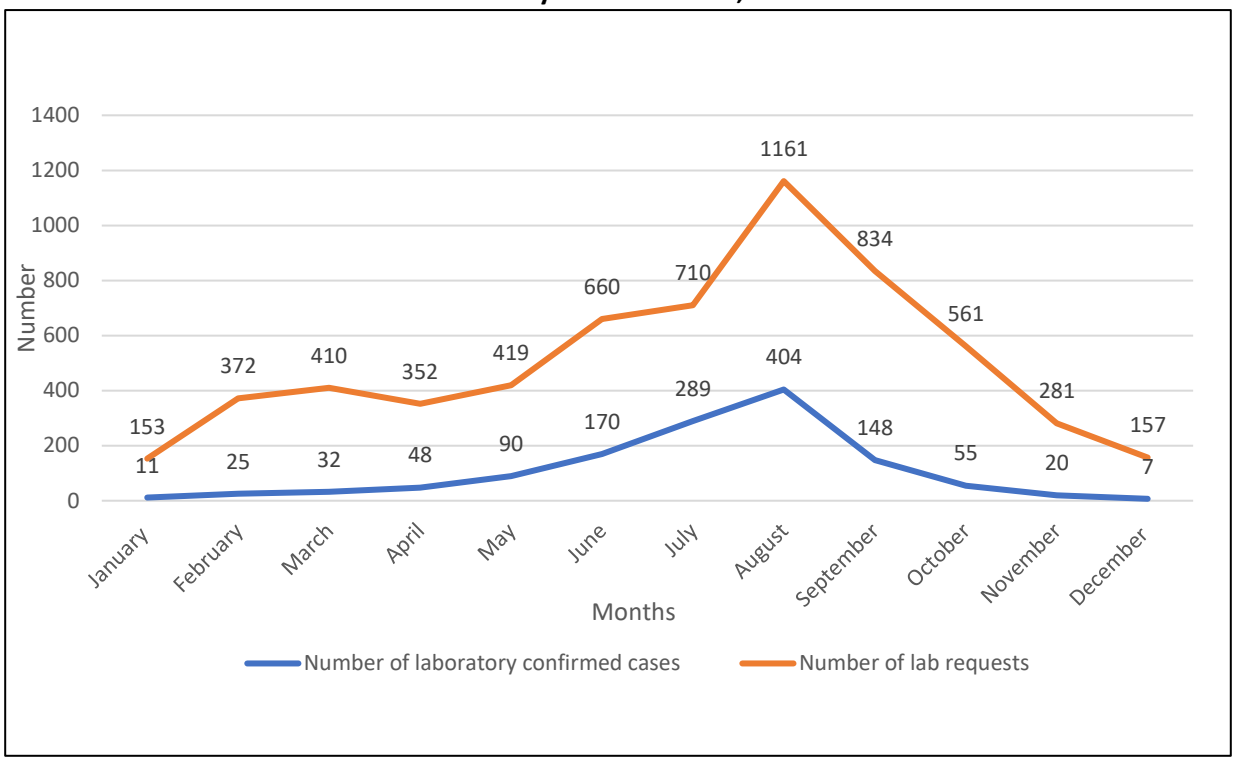

Table 1: ZIKV Testing Laboratory Requests, Laboratory Confirmed Cases by Month and Percentage of ZIKV Positive Laboratory Requests

Month	Number of Laboratory Confirmed Cases	Number of Laboratory Requests	ZIKV Positive Laboratory Requests (%)
January	11	153	7.2
February	25	372	6.7
March	32	410	7.8
April	48	352	13.6
May	90	419	21.5
June	170	660	25.8
July	289	710	40.7
August	404	1161	34.8
September	148	834	17.8
October	55	561	9.8
November	20	281	7.1
December	7	157	4.5