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The first report of two confirmed Zika virus-related microcephaly cases in Asia, an outcome of nationwide surveillance implementation in Thailand, February - September 2016

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Background: Zika virus related microcephaly in newborns was recognized and concerned after massive epidemic of Zika virus in Brazil since 2015. South East Asian countries have reported Zika virus circulation since 2010 but the confirmed cases of Zika virus related microcephaly was not recognized in the region. Thailand Ministry of Public Health established surveillance for microcephaly in newborns nationwide since February 2016.

Methods: Microcephaly in newborn is defined as a newborn who has head circumference (HC) below third percentile by Fenton curve for preterm and WHO growth chart for term infant. The newborn who met case definition of microcephaly required laboratory investigation. Blood and urine samples from mothers and newborns were collected and tested by Realtime RT-PCR and anti-Zika IgM. Other tests including CT brain were done in lab-confirmed cases (either positive PCR or IgM). TORCHS antibodies were also carried out.

Results: A total of 190 microcephaly cases had been reported in Thailand in 2015. Those were diagnosed at birth (31 case) and at age <1 year (159 cases). Since February to September 2016, we received notification of 52 microcephaly cases including 2 lab-confirmed cases. The first case was a female term infant (39^{+3} weeks of gestation), born on 1st March 2016 with 27 cm in HC. Anti-Zika IgM was positive in the newborn. Mother denied history of rash or fever while pregnancy. The second case was a male term infant (38 weeks of gestation), born on 23rd June 2016 with 28 cm in HC. PCR was positive in the newborn's urine. The CT brain of both cases revealed intracranial calcification in frontal lobe and periventricular area including loss of cerebral sulci. TORCHS antibodies were all negative in

both cases. Both infants presented with neurological deficits such as muscle spasticity and hearing loss including failure of head development (27 to 33 cm in 6 months and 28 to 28.5 cm in 3 months). The two confirmed cases were exposured in the same district of a province near Bangkok. This district was also reported of confirmed Zika virus outbreak in January 2015.

Conclusions: The exposure period of Zika virus infection in these 2 pregnant women was likely in late 2015. The Zika virus was probably endemic in the region for years since we discovered in 2012. The first confirmed cases of Zika virus related microcephaly in Asia reflected ability of the national surveillance and well trained laboratory scientists. Improving laboratory capacity together with active surveillance is crucial for detection of microcephaly.