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Epidemiological Update - YELLOW FEVER

March 20, 2017

Situation Summary

In December 2016, the Brazilian Ministry of Health reported an ongoing outbreak of yellow fever starting in the state of Minas Gerais, but cases have since been reported in the neighboring states of Espirito Santo and Sao Paulo. Colombia, Peru and the Plurinational State of Bolivia also reported suspected and confirmed yellow fever cases.

A laboratory confirmed case of yellow fever was reported during Epidemiological Week 10 (week beginning March 5, 2017) in a traveler from the Netherlands who had not been vaccinated for yellow fever and visited Suriname from mid-February to early-March 2017[1]. This case was confirmed via Real-Time Polymerase Chain Reaction (RT-PCR) and sequencing at the Erasmus Medical Center in Rotterdam and by RT-PCR by the Bernhard Nocht Institute in Hamburg Germany. Cases of yellow fever have not been reported by Suriname since 1971[2]. Member States are encouraged to remain vigilant.

Background

- Yellow fever is a vaccine-preventable, vector-borne illness caused by a virus from the family Flaviviridae. It is endemic in tropical regions of Africa and some regions of South America. The "yellow" in the name refers to the jaundice that affects some patients.
- The virus is transmitted primarily through the bite of infected *Aedes* spp. *(*in particular, *Aedes aegypti* the same mosquito that can the transmit dengue, chikungunya and zika viruses*),* *Haemagogus* spp. and *Sabethes* spp. mosquitoes.
- Mosquitoes acquire the virus by feeding on infected primates (human or non-human) and then can transmit the virus to other primates (human or non-human).
- Yellow fever virus has three transmission cycles – sporadic, intermediate and urban. Sporadic cases resulting from sylvatic (jungle) transmission are seen in South America and Africa. The intermediate cycle of transmission occurs in the moist savannah zones of Africa only. Urban transmission occurs where the virus is introduced into urban areas and the domestic *Aedes aegypti* mosquito is widespread. The *Sabethes* and *Haemagogus* species are involved in the sylvatic/jungle cycle whilst *Aedes aegypti* is involved in the urban cycle.
- Once contracted, the virus incubates in the body for 3-6 days. Whilst many people do not experience symptoms, a small proportion of patients who contract the virus develop severe symptoms and approximately half of those die within 7 to 10 days.

- Symptoms of yellow fever include fever, headache, jaundice, muscle pain, nausea, vomiting and fatigue.
- Good and early supportive treatment in hospital improves survival rates. There is no specific anti-viral drug for yellow fever. Vaccination is the most important means of preventing the disease.

Recommendations from CARPHA

The risk for urban yellow fever exits due to the occurrence of epizootic and human cases in some areas in the Americas, the broad distribution of the *Aedes aegypti* vector and movement of persons to and from areas of sylvatic circulation.

Member states are encouraged to remain vigilant, keep healthcare professionals apprised of relevant information so that suspected cases can be treated appropriately, enhance vector control activities and preventative measures and maintain adequate vaccination coverage in at risk populations.

Several countries have advised travelers on Yellow Fever vaccination requirements. Travellers are advised to refer to the Requirements for International Certificate of Vaccination or Prophylaxis for countries in the Americas prior to travel available at: http://www.paho.org/hq/index.php?option=com_topics&view=rdmore&cid=5514&Itemid=40784&lang=en

Yellow Fever Case Definition

Suspected case	A person with a history of travel to a yellow fever at risk country and an abrupt onset of fever followed by jaundice two weeks after the onset of symptoms, and one of the following symptoms: 1) bleeding from the nose, gums, skin, or digestive tract, or 2) death within three weeks of the onset of symptoms.
Confirmed case	A person meeting the suspected case definition that has been laboratory-confirmed or is epidemiologically linked to a laboratory-confirmed case.

Testing for Yellow Fever at CARPHA

CARPHA can perform (PCR) testing on acute serum samples from symptomatic patients within 5 days from onset of symptoms. Turn around time for testing for Yellow Fever is 2 business days.

Additional Resources

1. Epidemiological Update Yellow Fever March 16, 2017; Available at: http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&Itemid=270&gid=38672&lang=en
2. Laboratory Diagnosis of Yellow Fever Virus infection – February 2017; Available at: http://www.paho.org/hq/index.php?option=com_topics&view=rdmore&cid=5053&Itemid=40784&lang=en
3. Control of Yellow Fever: Field Guide; Available at:

http://www.paho.org/immunization/toolkit/resources/paho-publication/field-guides/Control-of-Yellow-Fever.pdf?ua=1

References

1. Wouthuyzen-Bakker M, Knoester M, van den Berg AP, GeurtsvanKessel CH, Koopmans MP, Van Leer-Buter C, Oude Velthuis B, Pas SD, Ruijs WL, Schmidt-Chanasit J, Vreden SG, van der Werf TS, Reusken CB, Bierman WF. Yellow fever in a traveller returning from Suriname to the Netherlands, March 2017. Euro Surveill. 2017;22(11):pii=30488. DOI: http://dx.doi.org/10.2807/1560-7917.ES.2017.22.11.30488
2. De Haas RA, Oostburg BF, Sitalsing AD, Bellot SM. Isolation of yellow fever virus from a human liver obtained by autopsy in Surinam.Trop Geogr Med. 1971;23(1):59-63