

Given the detection of the first cases of autochthonous transmission of chikungunya fever in the Americas, the Pan American Health Organization (PAHO) / World Health Organization (WHO) recommends Member States establish and maintain the capacity to detect and confirm cases, manage cases and implement an effective public communication strategy to reduce vector presence, particularly in areas where the mosquito that transmits the disease is present.

Situation summary

On 6 December 2013, PAHO/WHO was notified of the confirmation of two cases of autochthonous transmission of chikungunya virus on the island of Saint Martin / Sint Maarten.¹

In the Americas, imported cases had previously been registered in Brazil², Canada, French Guyana, Guadeloupe, Martinique and the United States of America.

The first occurrence of the disease was described in Tanzania in 1952. Starting in 2004, intense outbreaks have been constantly reported in Africa, the islands of the Indian Ocean, the Pacific region including Australia and Asia (India, Indonesia, the Maldives, Myanmar, Sri Lanka and Thailand). In 2007, the virus extended to Italy, where it produced an outbreak transmitted by *Aedes albopictus* in the Emilia-Romagna region. Recent chikungunya fever outbreaks have shown important impacts on public health, particularly in health services.

Chikungunya Fever (CIE-10 A 92.0)

This is a disease caused by the chikungunya virus (CHIKV). CHIKV belongs to the alphavirus genus (togoviridae family). This virus is transmitted by the bite of *Aedes* mosquitoes, particularly *Aedes aegypti* and *Aedes albopictus*.

In humans bitten by an infected mosquito, the disease symptoms usually appear after an incubation period of three to seven days (range 1-12 days).

CHIKV can cause acute, sub-acute, and chronic disease.

In **acute disease**, symptoms develop abruptly and include high fever, headache, myalgia and arthralgia (predominantly in limbs and large joints). The appearance of a maculopapular rash is also frequent. Severe forms of the disease are rare. Symptoms usually resolve in 7-10 days, although arthralgia and joint stiffness may persist intermittently for several months.

Attack rates in communities affected by recent outbreaks ranged from 38% -63%.

¹ The island of Saint Martin / Sint Maarten is located in the northeastern part of the Caribbean and has a combined population of 77,741 inhabitants. Authorities of the island immediately launched corresponding prevention and control activities.

² On 3 September 2010, the International Health Regulations (IHR) National Focal Point (NFP) of Brazil reported an imported case of chikungunya fever in a 41-year-old male with recent travel history to Indonesia.

Recommendations

The broad distribution of *Ae. aegypti* and *Ae. albopictus* in the Americas, coupled with the high mobility of persons around this Region and worldwide, puts this Region at risk for the spread of chikungunya virus. PAHO/WHO reinforces the recommendations made in the Guidelines for "Preparedness and Response for Chikungunya Virus, Introduction in the Americas" and urges Member States with circulation of the mosquito that transmits this disease to establish and maintain the capability to detect and confirm cases, manage cases, and implement an effective public communication strategy to reduce vector density.

Provided in below are the key recommendations related to surveillance, case management, and prevention and control measures as contained in the Guidelines.

Surveillance

In those countries with existing dengue surveillance systems, chikungunya surveillance should be set up based on the same system while taking into account differences in the clinical presentation. As appropriate to the epidemiological situation, surveillance should be directed to (i) determine if the chikungunya virus may have been introduced to an area, (ii) to track the disease once introduced, or (iii) to follow the disease once it has been established.

In countries without autochthonous transmission of the chikungunya virus, it is recommended to:

- Test for chikungunya infection in a percentage of patients presenting with fever and arthralgia or fever and arthritis with no known etiology (e.g., negative test for malaria or dengue).

Early detection will allow for proper response and characterization of the outbreak and identification of the viral strains circulating.

In countries with autochthonous transmission of chikungunya, it is recommended to:

- Describe the time, place and person epidemiological characteristics, as well as key clinical features;
- Monitor the spread of the virus to determine the introduction into new areas;
- Assess clinical severity and impact on society (e.g., days missed from work, school closures, etc.);
- Identify risk factors for infection or severe disease; and
- Identify circulating chikungunya virus lineages, when the capacity exists.

These efforts are the basis for developing effective control measures.

Once the introduction of the virus is documented, ongoing surveillance should be continued to monitor changes in the epidemiology and in chikungunya virus vector transmission. Any changes in surveillance at the national level should be promptly communicated to the national authorities of prevention and control in order to ensure timely decisions for actions as warranted.

Laboratory detection

Laboratory diagnostic tests to confirm chikungunya virus infection are: virus isolation, detection of the virus RNA³ through reverse transcriptase-polymerase chain reaction (RT-PCR) and / or serological evidence of recent infection (serology tests).

Virus isolation can be performed on acute serum specimens (≤ 8 days). Serum obtained from whole blood collected during the first week of illness and transported cold (2° -- 8° C or dry ice), as soon as possible (≤ 48 hours) to the laboratory can be inoculated into a susceptible cell line or suckling mouse. It is important to note that chikungunya virus isolation must only be carried out in biosafety level 3 (BSL3) conditions.

For chikungunya virus RNA detection testing, real time, closed system assays should be utilized, due to their increased sensitivity and lower risk of contamination. The published protocol by the United States Centers for Disease Control and Prevention (US-CDC) is recommended.⁴

For serological diagnosis, it is recommended to use serum obtained from whole blood for utilization in the enzyme-linked immunosorbent assay (ELISA) and the plaque reduction neutralization testing (PRNT). PRNT testing, whether used to confirm the MAC-ELISA or to demonstrate an increase of titer of antibodies in acute/convalescent specimens, should always include other serogroup viruses (e.g., Mayaro virus) to validate the specificity of the reactivity. In situations where PRNT is not available, other serological tests (e.g., hemagglutination inhibition [HI]) can be used to identify a recent alphavirus infection; however, PRNT is required to confirm a recent chikungunya virus infection.

Case management

There is no specific antiviral drug treatment for chikungunya. Symptomatic treatment after excluding more severe conditions like malaria, dengue and bacterial infections is recommended.

It is important to distinguish chikungunya virus infection from dengue due to severe clinical outcomes of dengue (including death). Both infections can exist simultaneously in the same patient. Compared with dengue, chikungunya virus infection causes pain that is more intense and localized in the joints and tendons, the onset of fever is more acute and shorter in duration, and shock or severe bleeding is rare.

Because chikungunya outbreaks could cause additional burdens on all levels of the health care system, it is necessary to develop and implement institutional plans and protocols for the triage, care and rehabilitation of patients.

Acute disease

Treatment is symptomatic or supportive, comprised of rest and the use of acetaminophen or paracetamol to relieve fever, and ibuprofen, naproxen or another non-steroidal anti-inflammatory agent (NSAID) to relieve the arthritic component of the disease.

³ RNA: Ribonucleic acid

⁴ The complete protocol is available at: <http://wwwnc.cdc.gov/eid/article/13/5/pdfs/07-0015.pdf>

Using aspirin is not advised due to the risk of bleeding and developing Reye's syndrome in children younger than 12 years of age. In patients with severe joint pains that are not relieved by NSAID, narcotics (e.g., morphine) or short-term corticosteroids can be used after evaluating the risk-benefit of these treatments.

Patients should be advised to drink plenty of fluids to replenish fluid lost from sweating, vomiting and other insensible losses.

Sub-acute and chronic disease

While recovery from chikungunya is the expected outcome, convalescence can be prolonged (sometimes up to a year or even more) and persistent joint pain may require pain management, including prolonged long-term anti-inflammatory therapy. Disabling peripheral arthritis that has a tendency to persist for months, if refractory to other agents, may occasionally respond to short-term corticosteroids. To limit the use of oral corticosteroids local injections (intra-articular) of corticosteroid or topical NSAID therapy can be used. Physiotherapy may be beneficial in these cases.

Patient isolation

To prevent infection of others in the household, the community, or the hospital, a chikungunya virus-infected patient should avoid being bitten by *Ae. aegypti* and *Ae. albopictus* mosquitoes during the first week of illness (viremic phase). Staying under an insecticide-treated (IT) bednet or remaining in a place with intact screen is highly recommended. In addition, physicians or health care workers who visit chikungunya virus-infected patients should take care to avoid being bitten by mosquitoes by using insect repellent and wearing long sleeves and pants.

Prevention and control measures

Prevention and control measures should be aimed at reducing vector density, attempting to obtain the acceptance and collaboration of the local population in the adoption of such measures.

Similarly, it is important to provide quality and transparent information on this disease through local communication outlets.

An effective and operational control dengue program provides the basis for adequate preparation against chikungunya, because the biology and control procedures for *Ae. aegypti* are similar to those of *Ae. albopictus*. To respond to the introduction of the chikungunya virus, the prevention and control recommendations developed for the management of dengue as part of the Integrated Strategy for the Prevention and Control of Dengue (EGI -Dengue) may be used and intensified. The integrated vector management (IVM) program, an independent quality control program, should be incorporated into the approach.

To succeed, the chikungunya IVM program must include intersectoral participation and collaboration at all levels of government and of health, education, environment, social development and tourism agencies. IVM programs also benefit from the participation of non-governmental organizations (NGOs) and private organizations. The chikungunya virus control program must maintain risk communication and mobilize the whole community.

Related Links

- Preparedness and Response for Chikungunya Virus – Introduction in the Americas. PAHO/WHO and US Centers for Disease Control and Prevention, 2011. Available at: http://www.paho.org/hq/index.php?option=com_docman&task=doc_download&gid=16984&Itemid=
- Chikungunya - PAHO/WHO Health Topics. Available at: http://www.paho.org/hq/index.php?option=com_content&view=article&id=9053&Itemid=39843&lang=en
- Chikungunya – WHO Fact sheet No. 327, March 2008. Available at: <http://www.who.int/mediacentre/factsheets/fs327/en/>