Epidemiological Alert
Chikungunya increase in the Region of the Americas

13 February 2023

In 2022, the number of cases and deaths due to chikungunya in the Region of the Americas were above the numbers reported in previous years. The first weeks of 2023 have seen this trend continuing with the increase in cases and deaths becoming more evident. Due to this increasing trend, the Pan American Health Organization / World Health Organization (PAHO/WHO) recommends Member States intensify actions to prepare health care services, including the diagnosis and proper management of cases, to face possible outbreaks of chikungunya and other arboviral diseases, to minimize deaths and complications from these diseases.

Situation summary

Between epidemiological week (EW) 1 and EW 52 of 2022, a total of 271,176 cases of chikungunya[1], including 95 deaths[2,3], were reported in 13 of the countries and territories of the Region of the Americas. This figure is higher than that observed in the same period of 2021 (137,025 cases, including 12 deaths). During the first four epidemiological weeks of 2023, 30,707 cases and 14 deaths[3] due to chikungunya were reported (**Figure 1 and 2**).

The increase in cases and deaths from chikungunya compared to the numbers reported in recent years are in addition to the simultaneous circulation of other arboviral diseases, such as dengue and Zika, both transmitted by the same vectors, *Aedes aegypti* (most prevalent) and *Aedes albopictus*, which are present in almost all countries and territories of the Region of the Americas.

Additionally, several countries in the Region, especially in the Southern Cone, will have an increase in temperature related to the summer season during the first half of 2023, which, depending on its magnitude and impact on the endemic areas of arboviruses, could constitute an additional burden of these diseases for health systems in the affected areas.

It is very important for the entire southern hemisphere to be extremely vigilant and prepared to intensify prevention and control actions in the face of any increase in cases of arbovirus in this first half of 2023 and especially chikungunya, given the number of susceptible people

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[1] Data from the PAHO/WHO Health Information Platform for the Americas (PLISA per its acronym in Spanish), accessed 7 February 2023. Available from: https://bit.ly/3H3BYwU

[2] Information provided by the Brazil International Health Regulations (IHR) National Focal Point (NFP).

[3] Information provided by the Paraguay International Health Regulations (IHR) National Focal Point (NFP).

since it has been eight years since the 2014 epidemic, the last major outbreak of chikungunya in the Americas.

Figure 1. Chikungunya cases by epidemiological week (EW) of report. Region of the Americas, 2020-2023 (up to EW 4 of 2023).
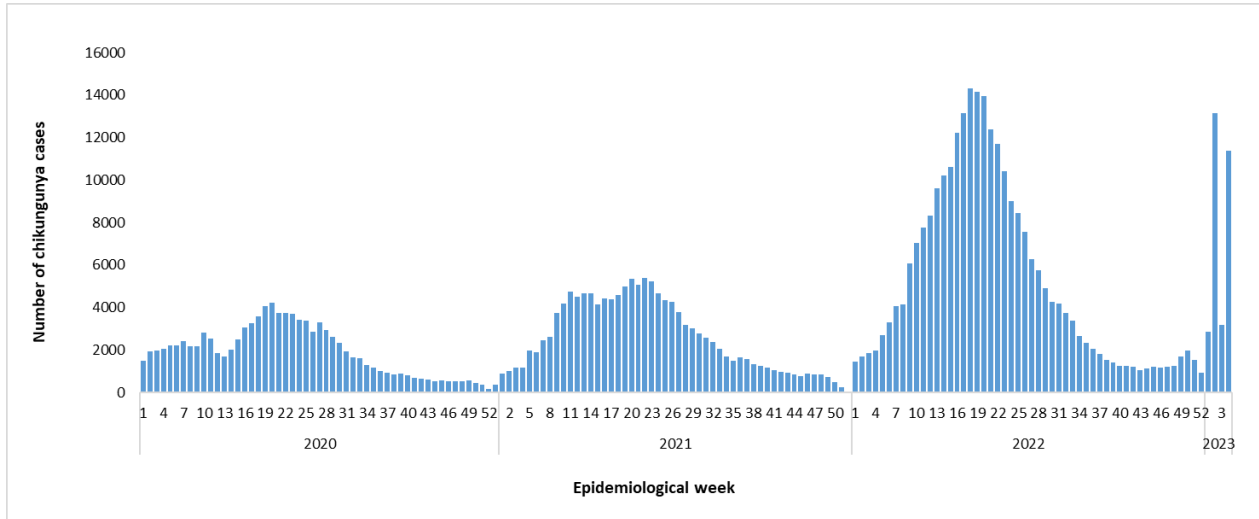
Source: Data from the PAHO/WHO Health Information Platform for the Americas (PLISA per its acronym in Spanish) as provided by Ministries and Institutes of Health of the countries and territories of the Region of the Americas. Available from: https://www.paho.org/data/index.php/es/. Accessed 7 February 2023.

Figure 2. Deaths due to chikungunya by EW of report. Region of the Americas, 2021-2023 (up to EW 5 of 2023).
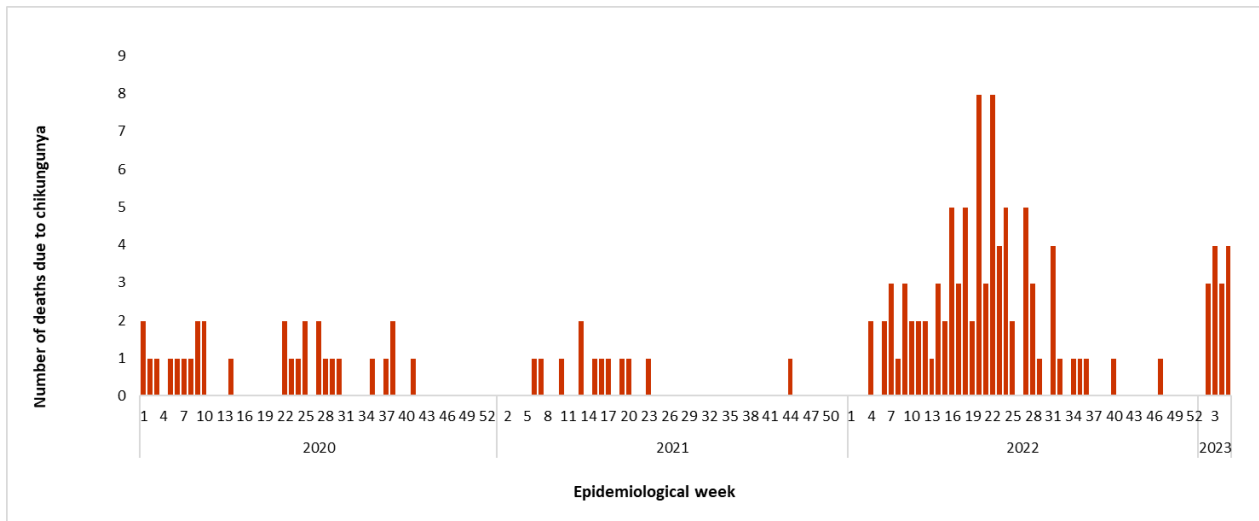
Sources: Data from the PAHO/WHO Health Information Platform for the Americas (PLISA per its acronym in Spanish) as provided by Ministries and Institutes of Health of the countries and territories of the Region of the Americas. Available from: https://www.paho.org/data/index.php/es/. Accessed 7 February 2023.
The Paraguay 2023 data was received from the Paraguay International Health Regulations (IHR) National Focal Point (NFP).

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Guidance for national authorities

Given the increase in the number of cases and deaths from chikungunya above that reported in previous years and the beginning of the season of greatest transmission of arboviruses in the Southern Hemisphere, the Pan American Health Organization / World Health Organization (PAHO/WHO) urges Member States to continue strengthening surveillance, triage, diagnosis, and timely and appropriate treatment of cases of chikungunya and other arboviral diseases and simultaneously, intensify health care services preparedness to facilitate access for patients with these diseases.

PAHO/WHO reminds Member States that the same guidance published in the Epidemiological Update of 10 June 2020 on dengue and other arboviral diseases, available from: https://bit.ly/3dRrUZR, remain current.

Adequacy of health-care services

Due to recent increases in the incidence of chikungunya in some areas of the Region, Member States are encouraged to ensure health care services provide timely and adequate responses to persons at all levels of care, including through:

- Organize in each institution, by levels of care, the screening, patient flow, clinical surveillance, and hospitalization areas.

- Reorganize healthcare services in outbreak/epidemic situations at different levels of patient care.

- Strengthen patient care networks in diagnosis, management, and follow-up of patients with suspected chikungunya in all its phases, including the chronic phase.

Laboratory diagnostics

Clinical suspicion of chikungunya virus (CHIKV) infection can be confirmed in the laboratory by virological techniques, including molecular detection by PCR. For detection, the ideal sample is serum collected during the acute phase of infection, preferably in the first 5 days after the onset of symptoms. However, CHIKV usually presents with longer viremias, so a sample may be useful for molecular confirmation[4] up to the eighth day from the onset of symptoms.

There are different algorithms to perform molecular detection of CHIKV, depending on the epidemiological and clinical context. Thus, in the event of a clinical suspicion compatible with CHIKV infection, it is suggested to start the algorithm with a specific PCR where a positive result confirms the infection; if the result is negative, the detection of other arboviruses, mainly dengue virus (DENV), and Zika virus (ZIKV), or other pathogens that are considered within the differential diagnosis can be continued sequentially (**Figure 3**).

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[4] PAHO/OMS. Recommendations for the detection and laboratory diagnosis of arbovirus infections in the Region of the Americas. 29 August 2022. Available in Spanish from: https://bit.ly/3YtZP1R

On the other hand, when the clinical suspicion is not clear and the nonspecific symptomatology may be compatible with infection by another Arbovirus (or even other pathogens), or syndromic surveillance is performed, a multiple amplification protocol (multiplex) that includes the simultaneous detection of at least 3 of the most likely endemic Arboviruses (DENV, CHIKV, and ZIKV) can be efficient (**Figure 4**).

In fatal cases, tissue sampling, mainly liver and spleen, is recommended for molecular detection. These samples are also useful for histopathological analysis to support the diagnosis and better characterize the case.

On the other hand, serological confirmation of chikungunya infection is only possible when paired samples collected at least one week apart (acute phase and convalescent phase) are processed. Seroconversion (negative IgM in the initial sample and positive in the second sample, by ELISA or neutralization) or the increase of at least 4-fold of the antibody titer (with a quantitative methodology), may be useful to confirm the diagnosis. However, it is important to note that serological assays are susceptible to cross-reaction, in the case of CHIKV with other alphaviruses including Mayaro virus. Also, a positive result in a single sample for serological determination is not considered confirmatory since in addition to the possibility of a cross-reaction, IgM can be detected in blood for several months and even years after infection, so a detection may reflect past infection.

In cases with neurological manifestations (e.g., meningoencephalitis), molecular and serological detection may also be performed on cerebrospinal fluid (CSF) samples. However, this sample should be taken only by clinical indication and not for the specific purpose of identifying the etiologic agent. It is important to note that while a positive CSF molecular test result confirms infection, a negative result does not rule it out.

Additionally, given the similarity of the clinical picture of chikungunya with measles disease, and the risk of reintroduction of this in the Region, it is recommended to also consider the latter as a differential diagnosis[5].

Finally, it is important to note that the initial diagnosis of CHIKV infection is clinical, and proper suspicion may guide the confirmation protocol. However, laboratory results should always be analyzed in conjunction with demographic information and according to epidemiological context, for surveillance purposes and not for clinical decision-making.
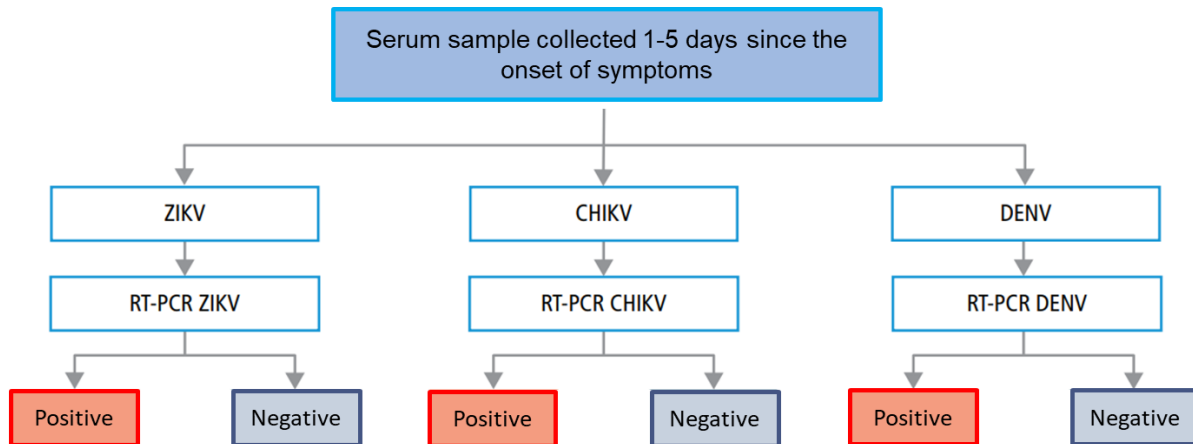
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[5] PAHO/WHO. Guidance for testing of measles and rubella in the laboratory network of the Region of the Americas. 13 December 2019. Available from: https://bit.ly/3YNnTwx

Figure 3. Sequential algorithm for virological testing in suspected chikungunya cases
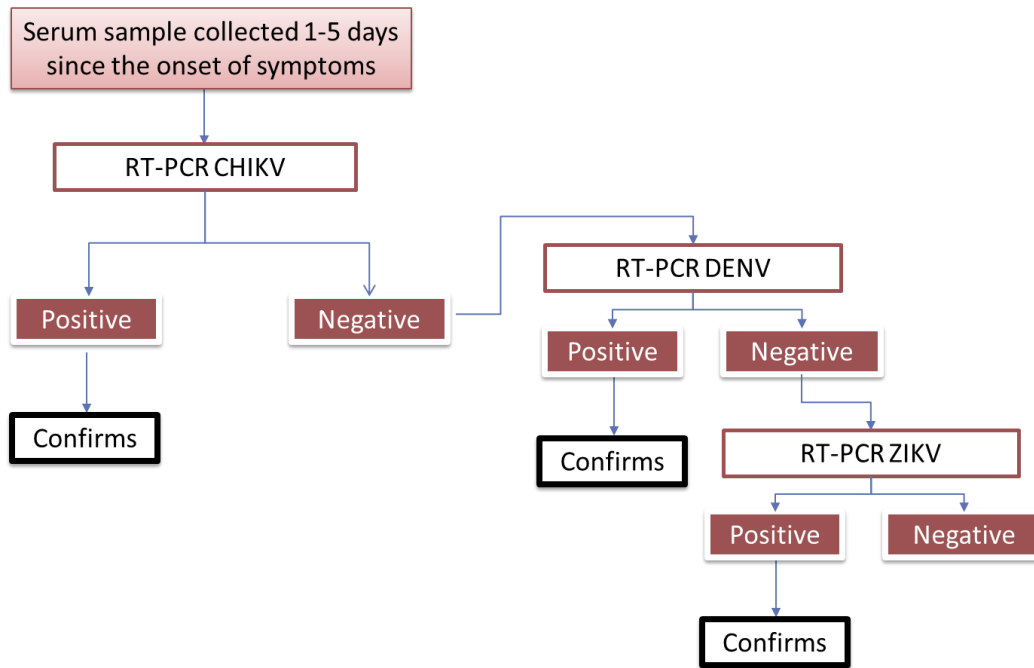
Figure 4. Multiplex algorithm for virological testing in suspected chikungunya cases

Case Management

Chikungunya virus disease has a wide range of clinical manifestations, however it is mainly characterized by the onset of fever associated with arthritis or arthralgia. Other common clinical manifestations are headache, muscle pain, rash and pruritus. The duration of clinical manifestations varies from a few days to several months, thus determining the different phases of the disease, acute, post-acute, and chronic. Each of these phases requires specific care and different levels of care. The acute phase lasts up to 2 weeks, the post-acute phase goes from the third week to the third month, and the chronic phase from the fourth month and can last up to years. In most chronic patients, their quality of life worsens during the first years after chikungunya infection. Consequently, considering the high number of recently reported cases, it is recommended to train health personnel at all levels and in all phases of the disease. In particular:

- Train health professionals from service-providing institutions on suspected diagnosis and case management recommendations for chikungunya and other arboviral diseases that are present in the regional epidemiological picture, especially dengue and Zika.

- Train different levels of patient care to prevent and treat the sequelae of the chronic phase of chikungunya.

- Adapt the "Guidelines for the clinical diagnosis and treatment of dengue, chikungunya, and Zika"[6] to national and subnational levels.

- Provide ongoing training workshops for public and private health care personnel on the organization of health services, including outbreak response.

- Guide pregnant women, children under 1 year of age, older adults, and people with comorbidities (hypertension, chronic renal failure, diabetes, obesity, heart disease, among others) to immediately go to the nearest health unit at the first suspicion of chikungunya infection due to the risk of presenting serious manifestations or complications of chikungunya.

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[6] PAHO/WHO. Guidelines for the clinical diagnosis and treatment of dengue, chikungunya and Zika. 3 January 2022. Available from: https://bit.ly/3K5oDJl

Sources of information

1. PAHO/WHO Health Information Platform for the Americas (PLISA per its acronym in Spanish). Available from: https://bit.ly/3lGwSwc

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3. Report from the Paraguay International Health Regulations (IHR) National Focal Point by email to PAHO/WHO.

4. PAHO/WHO. Methodology for Evaluating National Arboviral Disease Prevention and Control Strategies in the Americas. 17 February 2022. Available from: https://bit.ly/3jOg1fz

5. PAHO/WHO. Guidelines for the clinical diagnosis and treatment of dengue, chikungunya and Zika. 3 January 2023. Available from: https://bit.ly/3K5oDJl

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7. PAHO/WHO. Preparedness and Response for Chikungunya Virus: Introduction in the Americas. 24 November 2011. Available from: https://bit.ly/414Ssjt

8. PAHO/WHO. Epidemiological Update: Dengue and other Arboviruses. 10 June 2020, Washington, D.C.: PAHO/WHO; 2020. Available from: https://bit.ly/3mM1H36

9. PAHO/WHO. Chikungunya: Case definition, clinical classification, and disease phases. 10 February 2023. Available in Spanish from: https://bit.ly/3YHFXbn