Epidemiological Update Chikungunya in the Region of the Americas

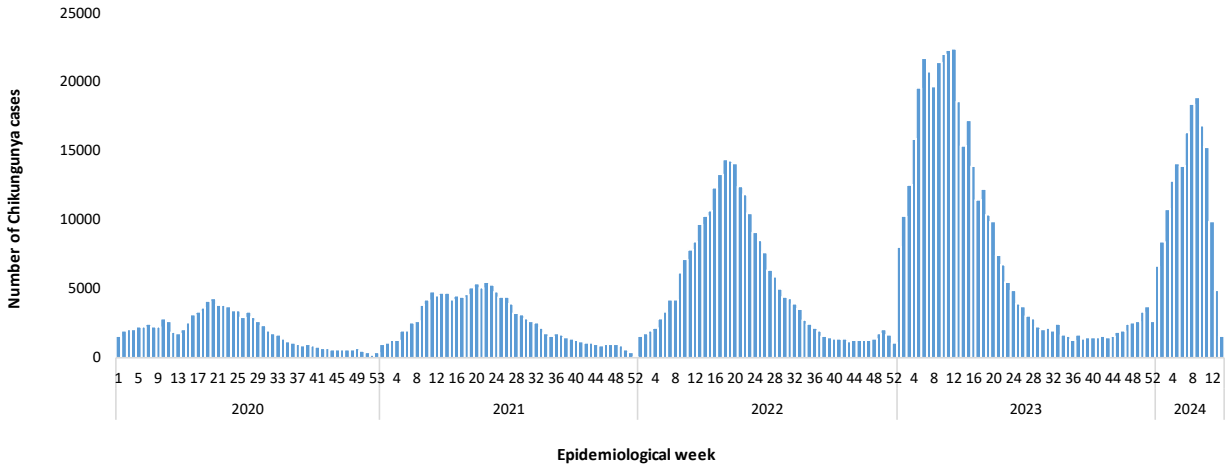
22 April 2024

Situation Summary

Between epidemiological week (EW) 1 and EW 52 of 2023, 410,754 cases of chikungunya, including 419 deaths, were reported in 17 of the countries and territories in the Region of the Americas. This figure is higher than that observed in the same period in 2022 (273,841 cases, including 87 deaths) and is the highest number of cases reported in recent years (**Figure 1**). In 2024, up to EW 14, 186,274 cases were reported, including 60 deaths due to chikungunya, with 97% of the cases reported in Brazil (n=180,600) *(1)*.

These increases in the number of cases and deaths due to chikungunya are higher than those reported in recent years and added to the simultaneous circulation of other arboviruses, such as dengue, Zika, and Oropouche, are causing an overload on health care services. These three diseases can be transmitted by the same vectors, *Aedes aegypti* and *Aedes albopictus*. These vectors are present in almost all countries and territories in the Americas; however, so far, *Aedes aegypti* is considered the main vector of these diseases.

Figure 1. Distribution of chikungunya cases by EW of notification. Region of the Americas, 2020-2024 (up to EW 14 of 2024).



Source: Adapted from the Pan American Health Organization. PLISA Health Information Platform for the Americas, Chikungunya Indicators Portal. Washington, DC: PAHO; 2024 [cited 16 April 2024]. Available from: https://www3.paho.org/data/index.php/en/mnu-topics/chikv-en/550-chikv-weekly-en.html

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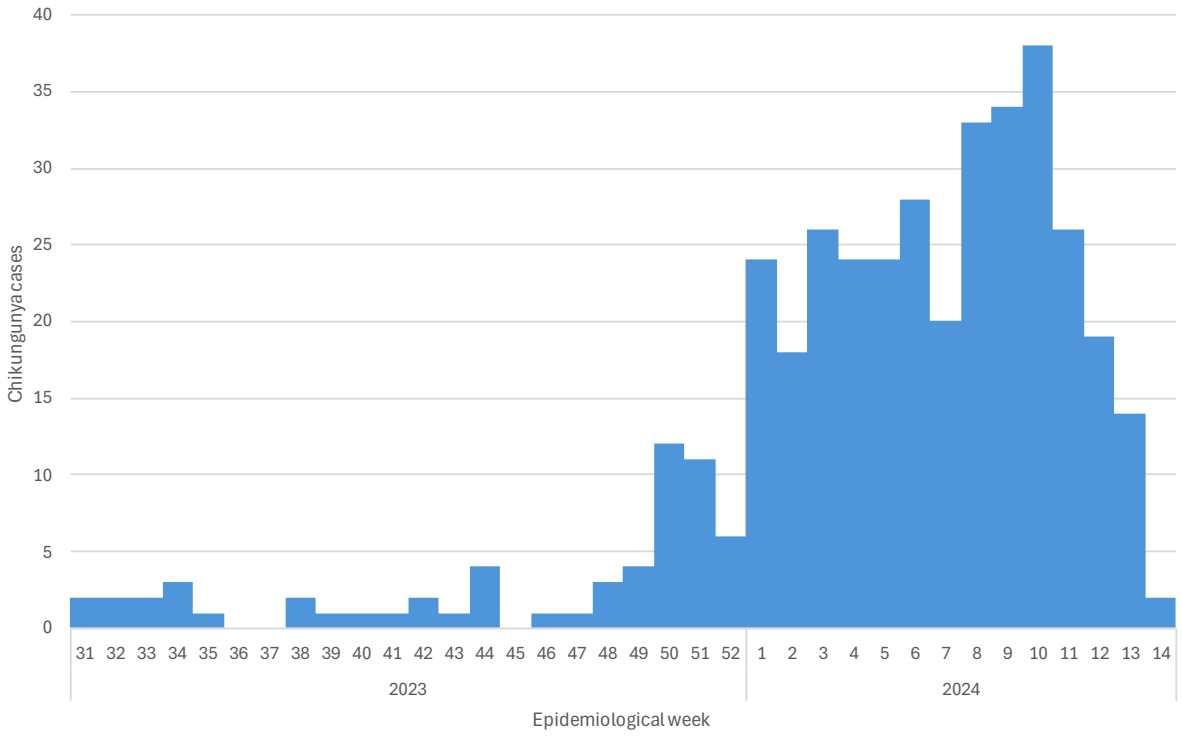
The epidemiological situation of chikungunya in select countries of the Region of the Americas is presented below:

In **Argentina**, between EW 31 of 2023 and EW 14 of 2024, a total of 389 confirmed and probable cases were reported. Of the total number of cases, 262 had no history of travel, 33 were imported, and 94 are under investigation. Most of the autochthonous cases were reported among the provinces of Salta (n=63), Chaco (n=59), Santa Fe (n=50), Buenos Aires (n=45), and Misiones (n=20) *(2)*.

Between EW 49 and EW 52 of 2023, there was an increase in the number of cases with an average of eight cases per week; from EW 1 of 2024, a new increase was observed, with an average of 25 cases per week between EW 1 and EW 12 (**Figure 2**) *(2)*.

Figure 2. Confirmed and probable cases of chikungunya by epidemiological week. EW 31 of 2023 to EW 14 of 2024, Argentina.



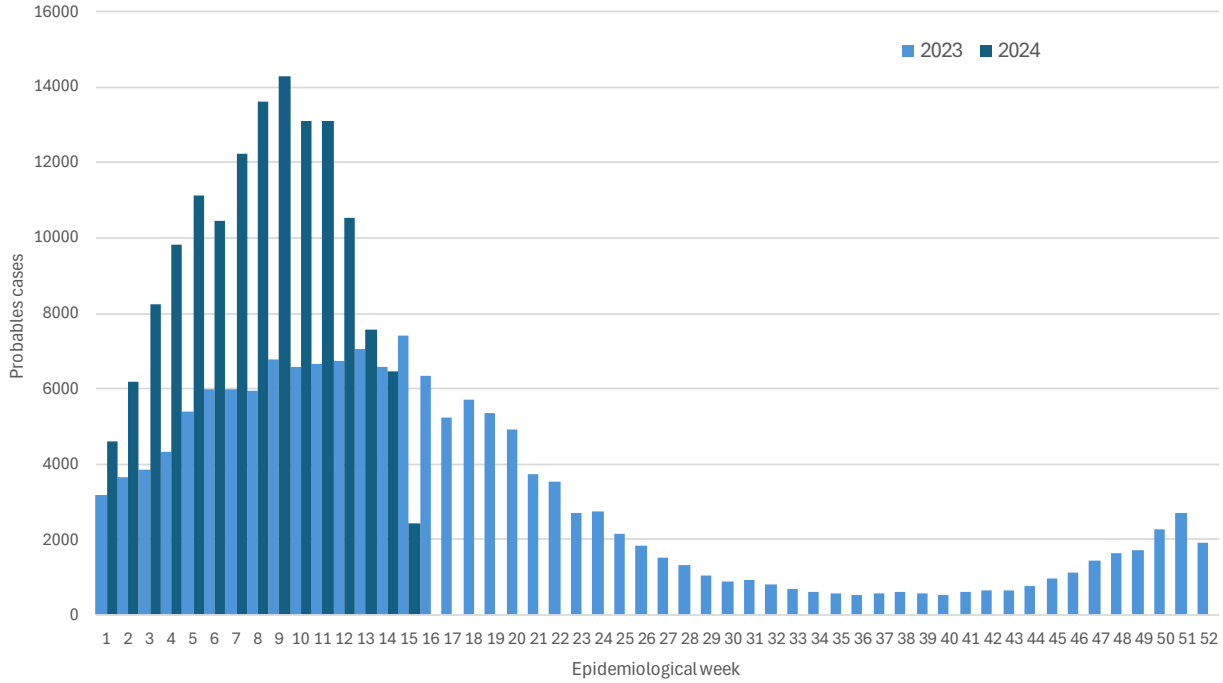
Source: Ministry of Health of the Argentine Republic (2024). National Epidemiological Bulletin N°699. Available from: https://www.argentina.gob.ar/sites/default/files/2024/04/ben-699-se14.pdf.

In 2024, in **Brazil** between EW 1 and EW 15, 188,836 suspected cases of chikungunya were reported, of which 143,831 are probable cases (cumulative incidence of 67 cases per 100,000 population). This represents a 67% increase as compared to the same period in 2023 (n=86,044) (**Figure 3**). The highest proportion of cases is in the southeastern region of the country at 72% (n=103,891), with a cumulative incidence of 112 cases per 100,000 population *(3)*.

While all 26 states and the Federal District have reported cases in 2024, the highest proportion of probable cases has been reported in the state of Minas Gerais with 62.1% (n=89,330) of cases, followed by Bahia with 7% (n=10,473) of cases, and Espírito Santo with 5% (n=7,187) of cases *(3)*.

During the same period, 68 deaths from chikungunya have been reported and 106 remain under investigation. These deaths occurred across nine states of the country, with the highest proportion of these in the state of Minas Gerais with 60% (n=41) of the cases, followed by Bahia with 10% (n=7) of cases, and Sao Paulo with 9% (n=6) of cases *(3)*.

Figure 3. Probable cases of chikungunya by EW of 2023 and 2024, Brazil.



Source: Brazil International Health Regulations (IHR) National Focal Point (NFP). E-mail information dated 18 April 2024. Brasilia; 2024. Unpublished *(3)*.

Guidance for national authorities

Given the increase in the number of cases and deaths from chikungunya in some countries in the Region, the Pan American Health Organization / World Health Organization (PAHO/WHO) urges Member States to continue to strengthen surveillance, triage, diagnosis, and timely and adequate treatment of cases of chikungunya, and other arboviral diseases. Simultaneously, Member States are urged to intensify actions to prepare health care services to facilitate access for patients with these diseases.

PAHO/WHO reminds Member States that the same guidelines published in the Epidemiological Update of 13 February 2023 on the chikungunya increase in the Region of the Americas, available from https://www.paho.org/en/documents/epidemiological-alert-chikungunya-increase-region-americas remain current.

Adequacy of health care services

Due to recent increases in the incidence of chikungunya and dengue 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.

- 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.

Integrated Surveillance

PAHO/WHO encourages continued epidemiological surveillance and sharing reports of suspected and confirmed dengue, chikungunya and Zika cases.

Given that the clustering of cases is common in both diseases (dengue and chikungunya), efforts should be made to analyze the spatial distribution of cases to allow a rapid response at the local levels of the most affected areas. Information on dengue and chikungunya hotspots should be consulted for intensive vector control.

Entomological surveillance will help identify vector abundance in risk areas and evaluate the impact of vector control measures.

Laboratory confirmation

It is important to keep in mind that the initial diagnosis of chikungunya virus (CHIKV) infection is clinical, and adequate suspicion can guide the confirmation protocol. However, laboratory results should always be analyzed in conjunction with demographic information and according to the epidemiological context, for surveillance purposes and not for clinical decision-making.

Clinical suspected cases of CHIKV infection can be confirmed by laboratory by virological techniques, including molecular detection by PCR. The ideal specimen for detection is serum collected during the acute phase of infection, preferably within the first five-days after the onset of symptoms. However, CHIKV usually presents with longer viremias, so a sample even up to day eight from symptom onset can be useful for molecular confirmation *(4)*.

There are different algorithms for molecular detection of CHIKV, depending on the epidemiological and clinical context. Thus, when there is 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 considered within the differential diagnosis, can be continued sequentially (**Figure 4**).

On the other hand, when clinical suspicion is not clear and nonspecific symptomatology may be compatible with infection by another arbovirus (or even other pathogens), or syndromic surveillance is performed, a multiplex amplification protocol that includes simultaneous detection of at least 3 of the most likely endemic arboviruses (DENV, CHIKV, and ZIKV) can be efficient (**Figure 5**).

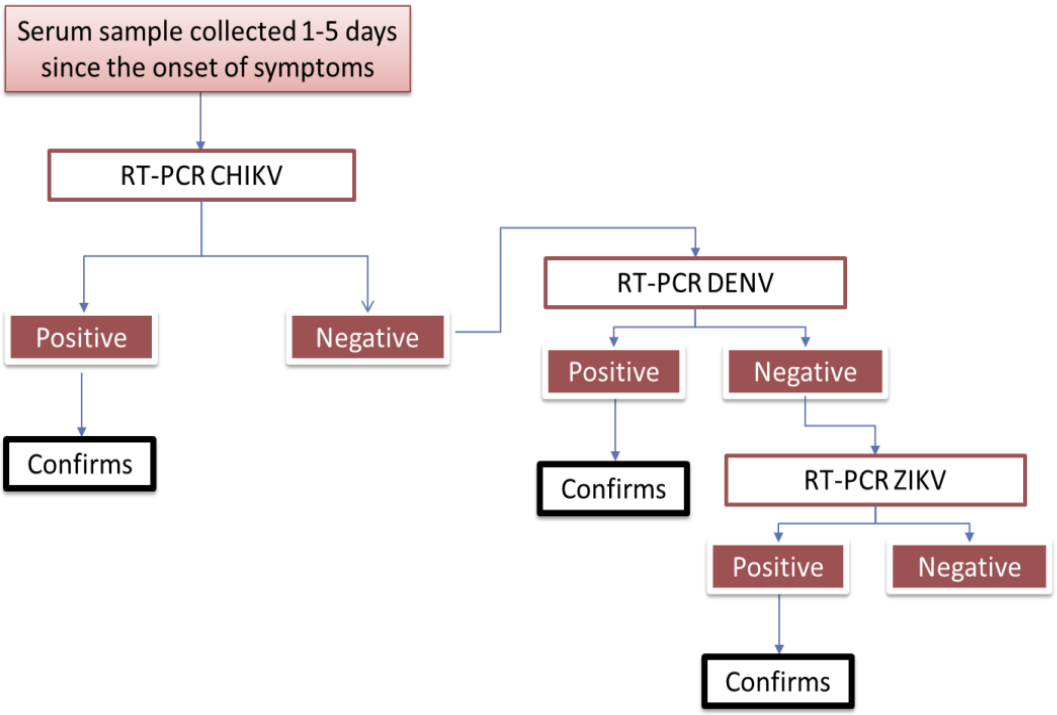
In fatal cases, tissue sampling, mainly liver and spleen, is recommended for enhanced molecular detection. These samples are also useful for histopathological analysis to support the diagnosis and better characterize the case.

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

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

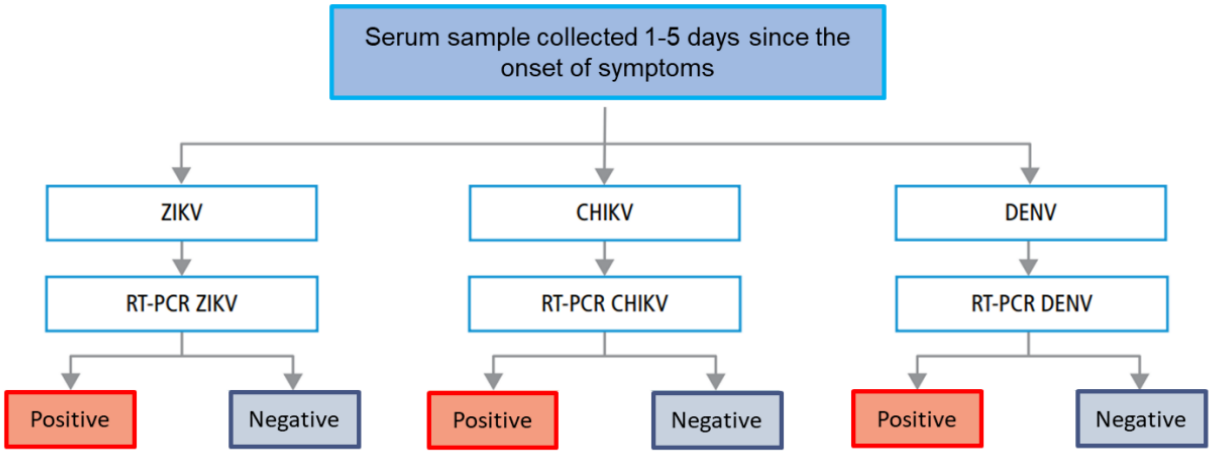
In addition, given the similarity of the initial clinical picture of chikungunya to measles, and the risk of measles for the Region, it is recommended that measles also be considered as a differential diagnosis *(5)*.

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



Source: Pan American Health Organization. Recommendations for Laboratory Detection and Diagnosis of Arbovirus Infections in the Region of the Americas. Washington, D.C.: PAHO; 2022. Available from: https://iris.paho.org/handle/10665.2/57555

Figure 5. Multiplex algorithm for virological testing in suspected chikungunya cases



Source: Pan American Health Organization. Recommendations for Laboratory Detection and Diagnosis of Arbovirus Infections in the Region of the Americas. Washington, D.C.: PAHO; 2022. Available from: https://iris.paho.org/handle/10665.2/57555

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 two 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 *(6)*. 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 to national and subnational levels *(7)*.
- 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 one 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 the disease. Likewise, all newborns born to mothers with suspected or confirmed chikungunya (up to 15 days prior to delivery) must be hospitalized.

Community involvement

Every effort should be made to gain community support for the prevention of dengue, chikungunya, and Zika.

Simple Information, Education and Communication (IEC) materials can be disseminated through various media (including social media).

Household members should be encouraged to eliminate both residential and peri-domiciliary sources of mosquito breeding.

Highly productive mosquito breeding sites, such as water storage containers (drums, elevated tanks, clay pots, etc.) must be subject to preventive measures to avoid vector reproduction. Other breeding sites, such as roof gutters and other water-holding containers, should also be cleaned periodically.

Local teams often know how to convey this information more effectively, and in many cases national campaigns and messages are not as effective as local awareness initiatives.

Aedes prevention and control measures

PAHO/WHO urges Member States to make effective use of available resources to prevent and/or control vector infestation in affected areas and in health care services. This may be achieved through the implementation of integrated vector control strategies in emergencies, which include the following processes:

- Selection of control methods based on knowledge of vector biology, disease transmission, morbidity, and PAHO/WHO recommendations.
- Use of multiple interventions, often in combination and synergistically with adequate coverage.
- Collaboration of the health care sector with public and private sectors linked to environmental management whose work impacts the reduction of the vector.
- Integration of individuals, families, and other key partners (education, finance, tourism, water and sanitation, and others) in prevention and control activities.
- Strengthening of the legal framework permitting an integrated and intersectoral approach.

Given the high infestation by *Aedes aegypti* and the presence of *Aedes albopictus* in the Region, PAHO/WHO recommends that prevention and control measures aim to reduce the density of the vector and have the acceptance and collaboration of local populations. Prevention and control measures for implementation by national authorities should include the following:

- Strengthen environmental management actions, primarily the elimination of vector breeding sites in households and in common areas (parks, schools, health units, cemeteries, etc.).
- Reorganize solid waste collection services to support breeding site elimination actions in areas of greatest transmission and, if necessary, plan intensive actions in specific areas where regular garbage collection has been interrupted.
- Apply measures for the control of breeding sites using physical, biological and/or chemical methods, while actively involving individuals, families, and the community *(8)*.
- Define the high-risk transmission areas (risk stratification) *(9)* and prioritize those with high concentrations of people (schools, terminals, hospitals, health care centers, etc.). In these facilities, the presence of mosquitoes must be eliminated in a diameter of at least 400 meters. It is important to pay special attention to health care units and ensure that these are free of the vector and its breeding sites so that they do not become spreading sources of the virus.
- In areas where active transmission is detected, implementing measures aimed at eliminating infected adult mosquitoes (primarily using insecticides) is suggested to stop and cut transmission. This action is of an exceptional nature and is only effective when it is conducted by well-trained personnel under internationally accepted technical guidelines; and when it is carried out simultaneously with the other proposed actions. The main action to interrupt intensive transmission is the elimination of infested adult mosquitoes (active transmission) through indoor spraying by using individual equipment added to the destruction and/or control of vector breeding sites within households.

- An effective modality of adult control that can be used, considering the available operational capacities, is indoor residual spraying, which should be applied selectively to the resting areas of *Aedes aegypti*, avoiding the contamination of storage containers of water used for drinking or cooking purposes. This intervention in treated areas is effective for up to four months; it can be used in shelters, homes, health care services, schools, and others. For more information, see the Manual for the application of intradomiciliary residual spraying in urban areas for the control of *Aedes aegypti (10)* and the document Control of *Aedes aegypti* in the COVID-19 simultaneous transmission scenario *(11)*.
- Correctly choose the insecticide to be used (following PAHO/WHO recommendations), its formulation, and be aware of which mosquito populations are susceptible to the chosen insecticide *(12)*.
- Guarantee the proper functioning of fumigation equipment and its maintenance and ensure insecticide reserves.
- Intensify actions of supervision of the operators' field work (quality control), during both the focal treatment and in the adulticide treatment (fumigation), ensuring compliance with personal protection measures.

Personal preventive measures

Patients infected with dengue, chikungunya, and/or Zika virus are the reservoir of infection for others in their households and in the community. It is necessary to communicate to the sick, their families, and the affected community about the risk of transmission and ways to prevent contagion by reducing the vector population and the contact between the vector and people.

To minimize vector-patient contact it is recommended:

- Patients should rest under mosquito nets, impregnated, or otherwise, with insecticide.
- Patients, as well as other household members, must wear long sleeves (if there are sick people in the house) to cover the extremities.
- Repellents containing DEET, IR3535, or icaridine can be applied to exposed skin or clothing and must be used in strict accordance with the instructions on the product label.
- Use wire-mesh/mosquito nets on doors and windows.

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