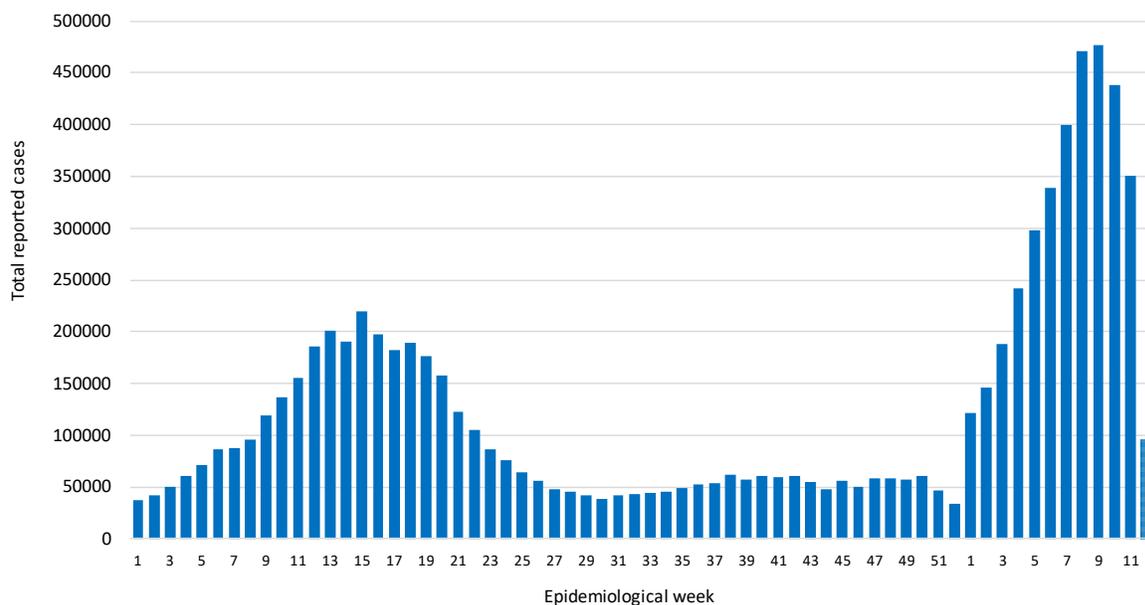


Situation summary in the Region of the Americas

In the Region of the Americas, the highest number of cases of dengue was reported in 2023, with a total of 4,569,464 cases, including 7,665 (0.17%) severe cases and 2,363 deaths (case fatality rate [CFR] 0.052%). During 2024, up to epidemiological week (EW) 12, there were 3,578,414 dengue cases reported to the Health Information Platform for the Americas (PLISA per its acronym in Spanish). Of this, 2,888 cases were characterized as severe dengue (0.08%), and 1,039 fatal cases were reported (case fatality rate 0.029%). The total cases reported through PLISA in 2024 represents an increase of more than three times compared to the same period in 2023 in the Region of the Americas (**Figure 1**) (1).

During 2024, as of EW 12, circulation of the four dengue virus serotypes was identified in the Region of the Americas. Brazil, Costa Rica, Guatemala, Honduras, Mexico, and Panama reported simultaneous circulation of the four serotypes (DENV-1, DENV-2, DENV-3, and DENV-4). In addition, Argentina, Peru, and Puerto Rico reported simultaneous circulation of DENV-1, DENV2 and DENV-3 (1).

Figure 1. Total number of suspected cases of dengue 2023 - 2024 (as of EW 12). Region of the Americas.



Note: Cases recorded in EW 12 of 2024 are preliminary.

Source: Adapted from the Pan-American Health Organization. PLISA Health Information Platform for the Americas, Dengue. Washington, DC: PAHO; 2024 [cited 28 March 2024]. Available from: <https://www3.paho.org/data/index.php/en/mnu-topics/indicadores-dengue-en.html>

Suggested citation: Pan American Health Organization / World Health Organization. Epidemiological Update: Dengue in the Region of the Americas. 29 March 2024. Washington, D.C.; PAHO/WHO: 2024.

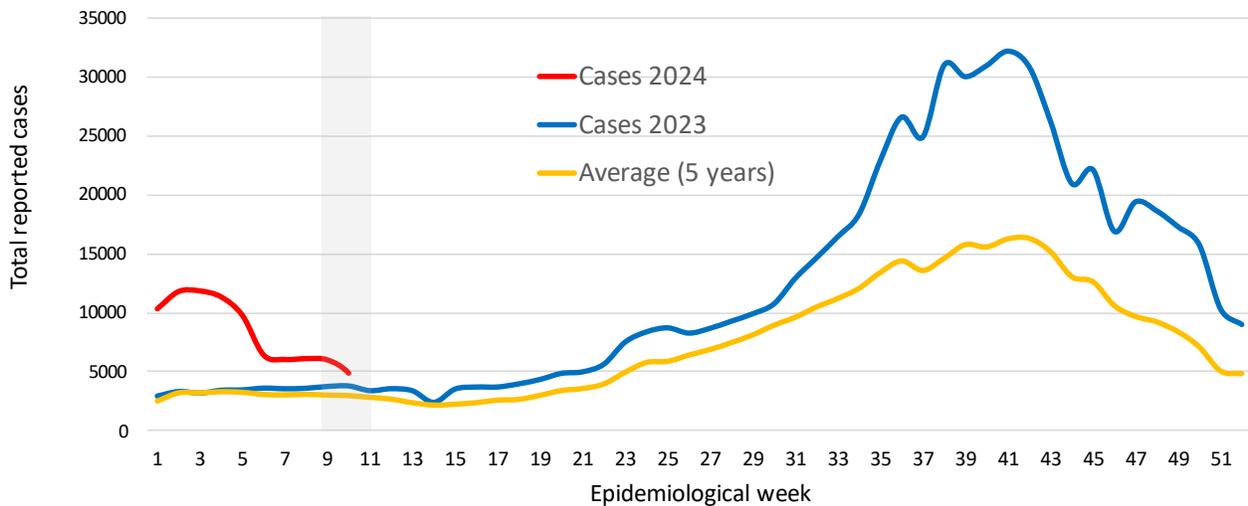
Current situation summary by subregion¹

Subregion of Central American Isthmus and Mexico

Between EW 1 and EW 11 of 2024, 86,221 cases of dengue were reported, representing an increase of 128% compared to the same period in 2023 and 192% over the average of the last 5 years in the subregion (**Figure 2**) (1).

In **Mexico**, during the first 11 epidemiological weeks of 2024, 40,984 cases of dengue were reported, representing an increase of 322% compared to the same period in 2023. The states that reported the most cases were Guerrero, Tabasco, and Quintana Roo. The cumulative incidence rate as of EW 11 is 31 cases per 100,000 population (1).

Figure 2. Dengue cases in 2023 - 2024 (as of EW 11) and average of the last 5 years. Central American Isthmus and Mexico.



Source: Adapted from Pan American Health Organization. PLISA Health Information Platform for the Americas, Dengue. Washington, DC: PAHO; 2024 [cited 28 March 2024]. Available from: <https://www3.paho.org/data/index.php/en/mnu-topics/indicadores-dengue-en.html>

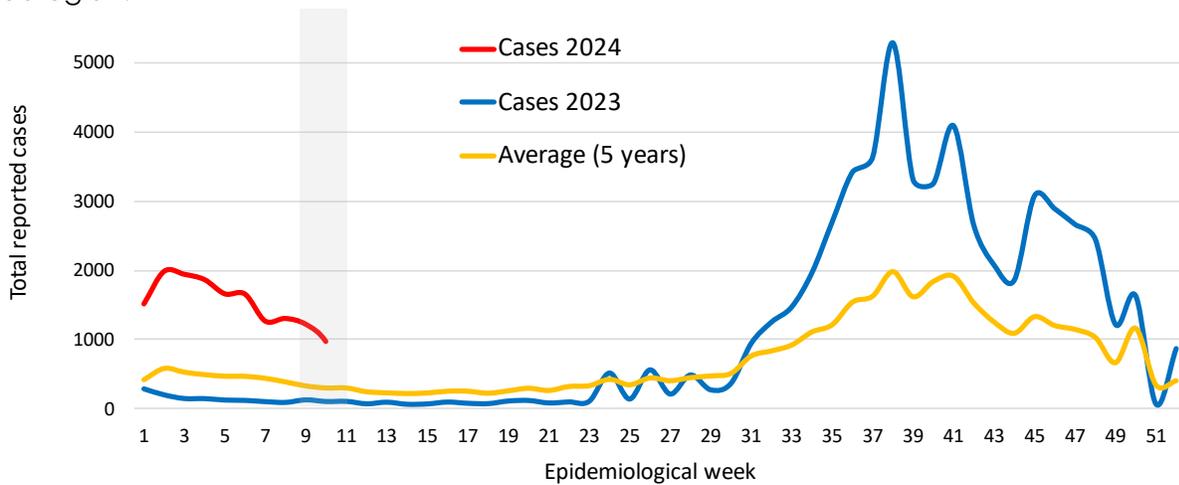
Caribbean Subregion²

Between EW 1 and EW 11 of 2024, 16,082 suspected cases of dengue were reported. The subregion registered a six-fold increase in cases compared to the same period in 2023 and a 3.5-fold increase compared to the average of the last 5 years in the subregion (**Figure 3**) (1).

¹ Note: Subregions and corresponding countries and territories follow the divisions described in PLISA Health Information Platform for the Americas, Dengue Portal. Washington, DC: PAHO; 2024 [cited 28 March 2024]. Available from: <https://www3.paho.org/data/index.php/es/temas/indicadores-dengue.html>.

² Includes countries and territories belonging to the Latin Caribbean and the non-Latin Caribbean according to the divisions described in PLISA Health Information Platform for the Americas, Dengue Portal. Washington, DC: PAHO; 2024 [cited 2024 Mar 28]. Available from: <https://www3.paho.org/data/index.php/es/temas/indicadores-dengue.html>

Figure 3. Dengue cases in 2023 - 2024 (as of EW 11) and average of the last 5 years. Caribbean Subregion.

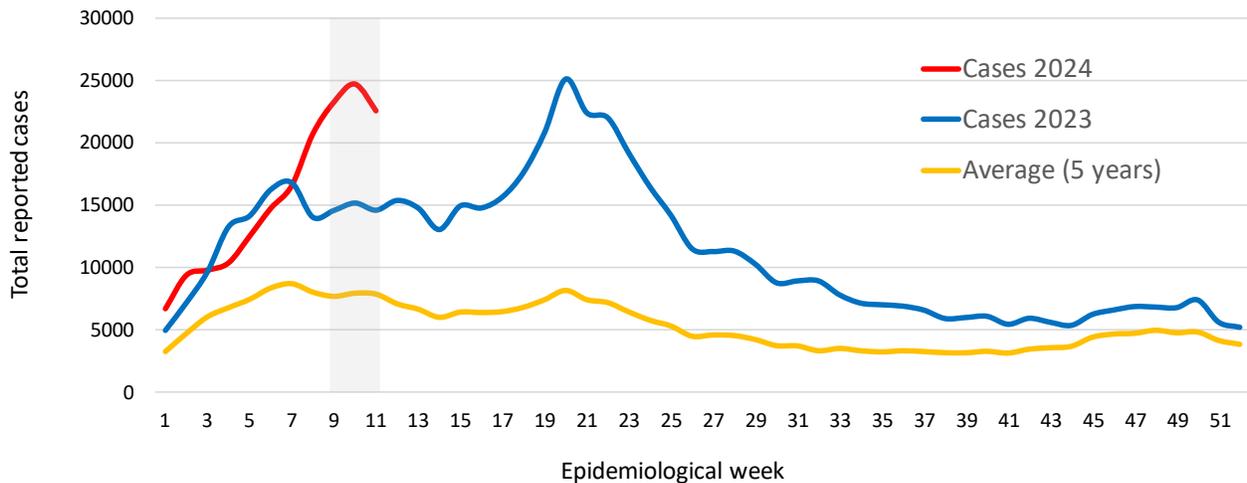


Source: Adapted from Pan American Health Organization. PLISA Health Information Platform for the Americas, Dengue Indicators Portal. Washington, DC: PAHO; 2024 [cited 28 March 2024]. Available from: <https://www3.paho.org/data/index.php/en/mnu-topics/indicadores-dengue-en.html>

Andean Subregion

Between EW 1 and EW 11 of 2024, 173,874 suspected cases of dengue were reported. The Andean subregion reported a 20% increase compared to the same period in 2023 and 153% above the average of the last 5 years (**Figure 4**) (1).

Figure 4. Dengue cases in 2023 - 2024 (as of EW 11) and average of the last 5 years. Andean Subregion.



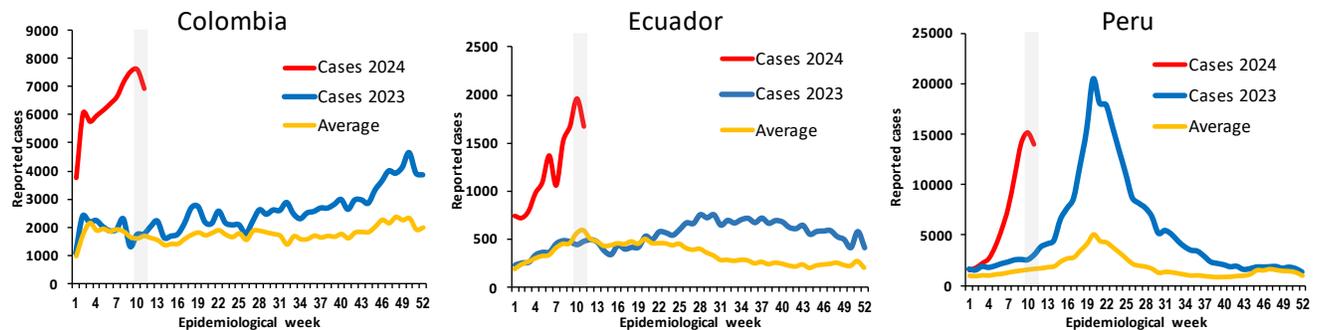
Source: Adapted from Pan American Health Organization. PLISA Health Information Platform for the Americas, Dengue. Washington, DC: PAHO; 2024 [cited 28 March 2024]. Available from: <https://www3.paho.org/data/index.php/en/mnu-topics/indicadores-dengue-en.html>

Colombia reported 69,837 cases between EW 1 and EW 11 of 2024, representing an increase of 262% compared to the average of the last 5 years for the same period in the country (**Figure 5**). The cumulative incidence rate as of EW 11 is 136 cases per 100,000 population (1).

Ecuador reported 13,075 cases between EW 1 and EW 11 of 2024, representing an increase of 277% compared to the average of the last 5 years for the same period in the country (**Figure 5**). The cumulative incidence rate as of EW 11 is 73 cases per 100,000 population (1).

Peru reported 79,741 cases between EW 1 and EW 11 of 2024, representing an increase of 471% compared to the average of the last 5 years for the same period in the country (**Figure 5**). The cumulative incidence rate as of EW 11 is 239 cases per 100,000 population (1).

Figure 5. Dengue cases in 2023 - 2024 (as of EW 11) and average of the last 5 years. Colombia, Ecuador, and Peru.



Source: Adapted from Pan American Health Organization. PLISA Health Information Platform for the Americas, Dengue. Washington, DC: PAHO; 2024 [cited 28 March 2024]. Available from: <https://www3.paho.org/data/index.php/en/mnu-topics/indicadores-dengue-en.html>

Southern Cone Subregion

Between EW 1 and EW 12 of 2024, 3,292,542 suspected cases of dengue were reported in the Southern Cone subregion. This represents an increase of 254% compared to the same period in 2023 and 408% compared to the average of the last 5 years in the subregion (**Figure 6**).

In **Argentina**, the number of cases reported in the first 11 epidemiological weeks of 2024 was 134,202. This represents an increase of more than 30 times compared to the average of the last 5 years for the same period in the country (**Figure 7**). The cumulative incidence rate as of EW 11 is 294 cases per 100,000 population (1).

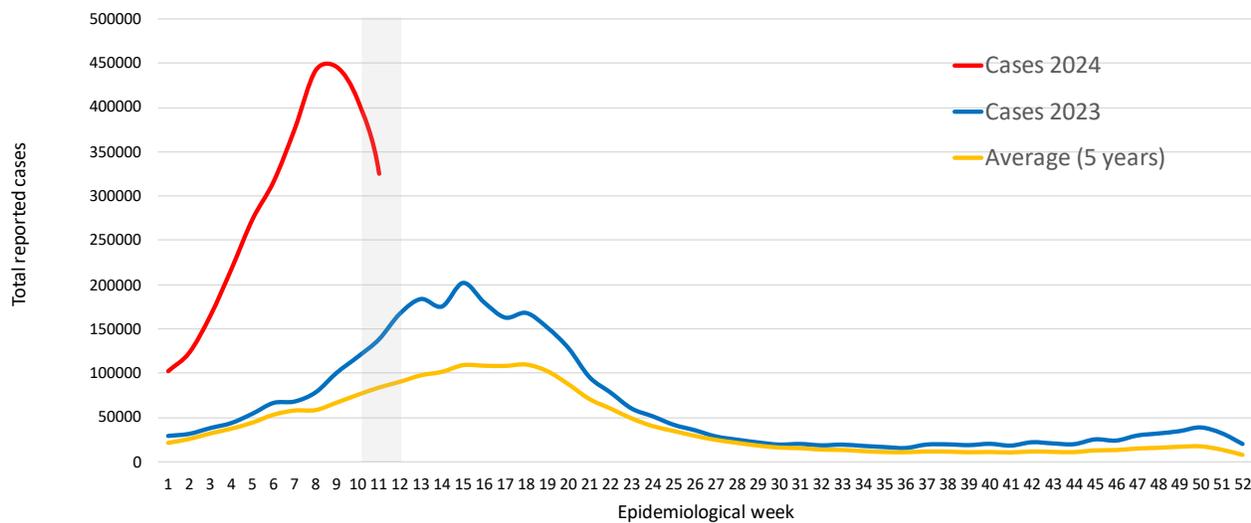
In **Brazil**, the number of cases reported in the first 12 epidemiological weeks of 2024 was 2,966,339, representing an increase of 227% compared to the same period in 2023 and an increase of 284% compared to the average of the last 5 years in this country (**Figure 7**). The cumulative incidence rate as of EW 12 is 1,386 cases per 100,000 population (1).

In **Chile**, as of 23 March 2024 (EW 12), 16 confirmed autochthonous cases of dengue were identified on Easter Island, where no cases had been recorded since 2020. The DENV-1 serotype was identified in three of these cases. At the national level, as of the same date, 112 cases of dengue have been confirmed; 96 imported and 16 autochthonous cases from Easter Island. All cases have presented a mild course of the disease, without warning signs or severe symptoms. In addition, the reintroduction of the *Aedes aegypti* mosquito has been detected in the region of Arica and Parinacota, where three imported cases of dengue have been confirmed to date (2).

In **Paraguay**, the number of cases reported in the first 11 epidemiological weeks of 2024 was 191,923, which represents an increase of 319% compared to the average of the last 5 years for the same period in the country (**Figure 7**). The cumulative incidence rate as of EW 11 is 2,541 cases per 100,000 population (1).

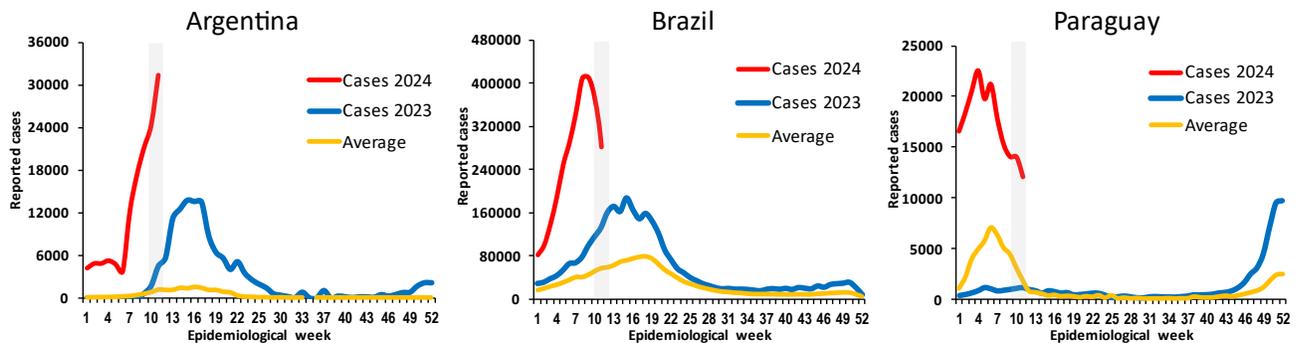
As of 26 March 2024, **Uruguay** had 183 confirmed cases of dengue fever, of which 83 are autochthonous and 100 are imported. Among the reported cases, one death has been recorded and is under investigation. Regarding autochthonous cases, 63% were reported in the department of Salto (52 cases), followed by Paysandú (14 cases), and Montevideo (10 cases). During 2023, 35 cases were reported nationwide, of which two were autochthonous cases and corresponded to the department of Rocha (3).

Figure 6. Dengue cases in 2023 - 2024 (as of EW 12) and average of the last 5 years. Southern Cone Subregion.



Source: Adapted from Pan American Health Organization. PLISA Health Information Platform for the Americas, Dengue. Washington, DC: PAHO; 2024 [cited 28 March 2024]. Available from: <https://www3.paho.org/data/index.php/en/mnu-topics/indicadores-dengue-en.html>

Figure 7. Dengue cases in 2023 - 2024 (as of EW 11 and 12) and average of the last 5 years. Argentina, Brazil, and Paraguay.



Source: Adapted from Pan American Health Organization. PLISA Health Information Platform for the Americas, Dengue. Washington, DC: PAHO; 2024 [cited 28 March 2024]. Available from: <https://www3.paho.org/data/index.php/en/mnu-topics/indicadores-dengue-en.html>

Guidance for national authorities

PAHO/WHO reminds Member States of the same guidance published in the Epidemiological Update of 10 June 2020 on dengue and other arboviruses, available from: <https://www.paho.org/en/documents/epidemiological-update-dengue-and-other-arboviruses-10-june-2020> (4).

Integrated Surveillance

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

Since clustering of cases is common in these diseases (dengue, chikungunya, and Zika), efforts should be made to analyze the spatial distribution of cases to enable a rapid response at the local level in the most affected areas. Information from the hotspots of the three diseases should be targeted for intensive vector control.

Sentinel entomological surveillance will help assess changes in vector-borne disease risk and the impact of vector control measures.

Case Management

Measures to ensure proper clinical management of suspected dengue cases should be a priority.

Capacities must be strengthened at the level of primary health care and, from this level, avoid progression to severe forms and deaths from dengue. This requires early clinical diagnosis and recognition of warning signs in dengue (such as severe and sustained abdominal pain or tenderness of the abdomen, persistent vomiting, clinical fluid accumulation, mucosal bleeding, lethargy, restlessness, liver enlargement >2 cm below the costal ridge and enlargement progressive hematocrit) in order to initiate an adequate management according to the recommendations published in the PAHO clinical guidelines. In cases where dengue is suspected, healthcare workers should provide clear guidance to patients and/or families to monitor for warning signs and seek immediate medical attention should they occur. These measures will also help reduce the number of patients who must be referred to hospitals, thus avoiding the saturation of these facilities and intensive care units.

At the same time, all second and third level hospitals must be prepared to handle dengue cases with warning signs and cases of severe dengue.

More information on the clinical management of dengue cases is available in the Guidelines for the Clinical Diagnosis and Treatment of Dengue, Chikungunya and Zika (5) and the Instrument for the Diagnosis and Care of Patients with Suspected Arbovirus (6), both published by PAHO.

PAHO reiterates the recommendations for technical teams in charge of malaria control, which also apply to personnel involved in arbovirus care, available at: <https://iris.paho.org/handle/10665.2/52080> (7).

Adequacy of health care services

Considering the current increase in the incidence of dengue in the Region, Member States are urged to adapt their health services to provide a timely and correct response to the population at all levels of care.

- Organize in each institution, by levels of care, the screening, patient flow and clinical surveillance and hospitalization areas,
- Reorganize healthcare services in outbreak/epidemic situations at different levels of patient care.
- Strengthening of patient care networks for clinical diagnosis, management, follow-up, as well as referral and counter-referral of patients with suspected dengue, chikungunya or Zika.

Laboratory confirmation

It is important to keep in mind that the initial diagnosis of DENV infection is clinical, and adequate suspicion can guide the confirmation protocol. Laboratory results should be analyzed with clinical information and according to epidemiological context, for surveillance and not for clinical decision making.

Laboratory confirmation of dengue infection is based on virological (RT-PCR, detection of NS1 antigen by ELISA, and in some cases viral isolation in culture for further characterization) and serological (IgM detection) tests. However, virological assays that demonstrate the presence of the whole virus, its genetic material or its proteins should be prioritized for case confirmation. Virological assays for dengue are performed on serum samples taken during the first 5 days after the onset of symptoms (acute phase) (**Figure 8**).

On the other hand, serological assays based on IgM detection should be analyzed with care, taking into account the time that antibodies circulate in the blood after infection, as well as the possibility of cross-reactivity with other flaviviruses (including Zika, yellow fever and others) and nonspecific detection. Thus, a single IgM result in a patient indicates only one contact with the virus, and these cases are defined as a probable case of dengue. A second sample taken at least one week apart, processed in parallel with the first and with a quantitative serological assay (PRNT, for example) that allows to demonstrate seroconversion or increase in antibody titer, can be useful to clarify the diagnosis (**Figure 9**).

It is important to have a clear laboratory algorithm for early detection. Although *multiplex* molecular methodologies (*multiplex* PCR) are useful when there is no clear clinical suspicion, when a case of dengue meets the established definitions and where the clinical picture is compatible, it is suggested to prioritize protocols for specific detection (*singleplex*) of the virus (8).

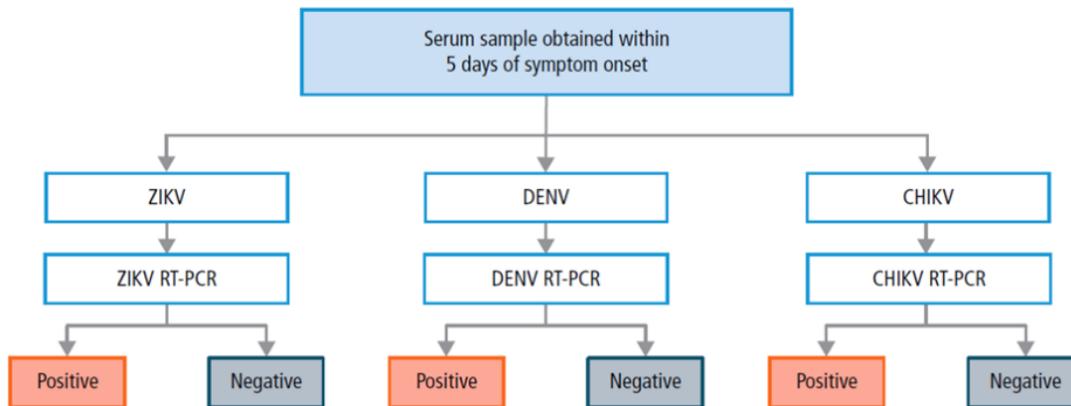
In fatal cases, tissue samples (liver, spleen, kidney) should be considered both for detection of genetic material (RT-PCR) and for histopathological and immunohistochemical studies. Taking biopsies in a patient with suspected dengue is completely contraindicated.

On the other hand, the use of immunochromatographic or rapid tests (NS1 and/or antibodies) is not recommended since their low sensitivity may lead to false negative results; their use should

be limited to community studies under established protocols, but in no case to rule out infection or to implement medical behaviors.

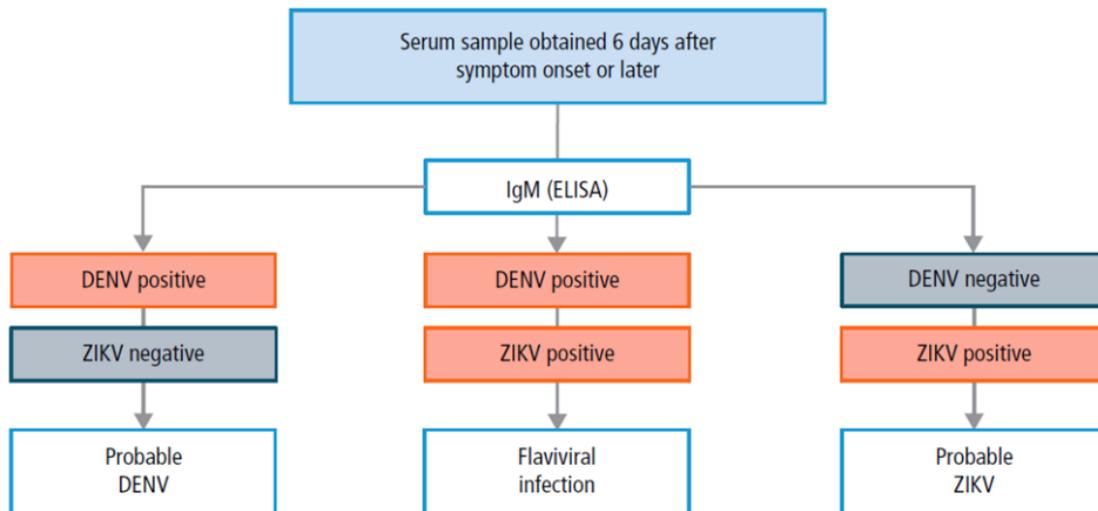
Since laboratory services are a key component of epidemiological and virological surveillance of dengue, timely detection and characterization in appropriate samples should be maintained. As far as possible and according to the capabilities of each laboratory, it is recommended that 100% of severe and fatal dengue cases be sampled, while only a proportion (10-30% or a maximum number of samples according to the installed capacity) of those cases without alarm signs will be necessary for surveillance.

Figure 8. Algorithm for virological testing in suspected cases of dengue, chikungunya, and Zika.



Source: PAHO/WHO. Recommendations for Laboratory Detection and Diagnosis of Arbovirus Infections in the Region of the Americas. 29 August 2022. Available from: <https://iris.paho.org/handle/10665.2/57555>

Figure 9. Algorithm for serological testing in suspected cases of dengue and Zika.



Source: PAHO/WHO. Recommendations for Laboratory Detection and Diagnosis of Arbovirus Infections in the Region of the Americas. 29 August 2022. Available from: <https://iris.paho.org/handle/10665.2/57555>

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 services. This will 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 and morbidity.
- Use of multiple interventions, often in combination and synergistically.
- Collaboration of the health sector with public and private sectors linked to environmental management whose work impacts the reduction of vectors.
- Integration of individuals, families, and other key partners (education, finance, tourism, water and sanitation and others) into prevention and control activities.
- Strengthening of the legal framework that allows an integrated and intersectoral approach.

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

- Strengthen environmental management actions, mainly the elimination of vector breeding sites in homes and common areas (parks, schools, cemeteries, etc.).
- Reorganize solid waste collection services to support breeding site disposal 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 (9) of breeding sites through the use of physical, biological and/or chemical methods that actively involve individuals, the family and the community.
- Define areas at high risk of transmission (risk stratification) (10) and prioritize those where there are concentrations of people (schools, terminals, hospitals, health centers, etc.). In these facilities, the mosquito's presence should be eliminated at least 400 meters around. It is important to pay special attention to health units, so that they are free of the presence of the vector and its breeding sites and do not become virus radiating points.
- In areas where active transmission is detected, it is suggested to implement measures aimed at eliminating infected adult mosquitoes (mainly through insecticides) to stop and interrupt transmission. This action is exceptional in nature and is only effective when carried out by properly trained personnel under internationally accepted technical guidelines; and when performed concomitantly with the other proposed actions. The main action to interrupt transmission when it occurs intensively is the elimination of adult mosquitoes infected with the Dengue virus (active transmission) by intradomiciliary spraying, using individual equipment or spatial spraying using heavy equipment mounted on vehicles, in addition to the destruction and/or control of vector breeding sites inside homes (11).
- An effective adult control modality that can be used, considering the available operational capacities, is indoor residual spraying, which should be applied selectively to the resting places of *Aedes aegypti*, taking care not to contaminate food, drinking

water storage containers or those used for cooking. This intervention in treated areas is effective for a period of up to four months and can be used in shelters, homes, health services, schools and others. For more information, consult PAHO's Manual for Indoor Household Residual Spraying for *Aedes aegypti* Control in Urban Areas (12) and the document *Control of Aedes aegypti* in the COVID-19 Simultaneous Transmission Scenario (13).

- Adequate choice of the insecticide to be used (following PAHO/WHO recommendations), its formulation and knowledge of the susceptibility of *Aedes* populations to the insecticide (14).
- Ensure the proper functioning of spraying equipment and its maintenance and ensure insecticide reserves.
- Intensify supervision actions (quality control and coverage) of operators' field work, both for intradomiciliary spraying actions with individual equipment, as well as for space spraying tasks with heavy equipment mounted on vehicles, ensuring compliance with personal protection measures.

Personal preventive measures

Patients infected with dengue, chikungunya and/or Zika viruses are the reservoir of infection for others in their homes and in the community. It is necessary to communicate with patients, their families and the affected community about the risk of transmission and ways to prevent transmission by reducing the vector population and vector-human contact.

To minimize vector-patient contact it is recommended:

- The patient should rest under mosquito nets, whether or not impregnated with insecticide.
- Sick people and other household members should wear long sleeves to cover the extremities.
- Repellents containing DEET, IR3535 or Icaridin may be applied to exposed skin or clothing, and their use must be in strict accordance with product label instructions.
- Use mosquito netting/netting on doors and windows.

Communication and community engagement

Establishing and implementing a rapid communication action plan focused on the following is recommended:

- Measures to prevent the formation of vector breeding sites and their elimination to prevent transmission, and
- Information on symptoms and warning signs of dengue when the epidemiological situation of the country requires it, such as an increase in cases or cases of death due to dengue.

Consider the main audiences should be: individuals, communities, neighborhood committees, municipalities, public and private sectors: messages on measures to prevent the formation of vector breeding sites and their elimination to avoid the transmission of arboviruses.

Audiences:

- Individuals, communities, neighborhood committees, municipalities, public and private sectors: messages on measures to prevent the formation of vector breeding sites and their elimination to avoid the transmission of dengue and other arboviruses. Also, information about the warning signs of dengue to seek immediate medical attention.
- Health care workers (including nurses, doctors, and primary care staff and hospitals) and vector control program technicians: information on dengue symptoms and warning signs that are present or increasing in the country.

Every effort should be made to enlist community support for dengue prevention.

Simple Information, Education, and Communication (IEC) materials can be disseminated through various means of communication (including social media or closed-circuit television in primary care health units).

The population and household members should be encouraged to eliminate sources of mosquito breeding, both at home and around the home. This is everyone's job: the family, the community, the public and private sector.

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

Health care workers and affected communities should be encouraged to be aware of the symptoms of dengue, as well as its warning signs and how to act in the event of such manifestations.

Working with local teams is encouraged, as they know how to make this information more effective, and in many cases national campaigns and messages are not as effective as local initiatives (9).

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Additional Resources

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