Epidemiological Update Oropouche in the Americas Region

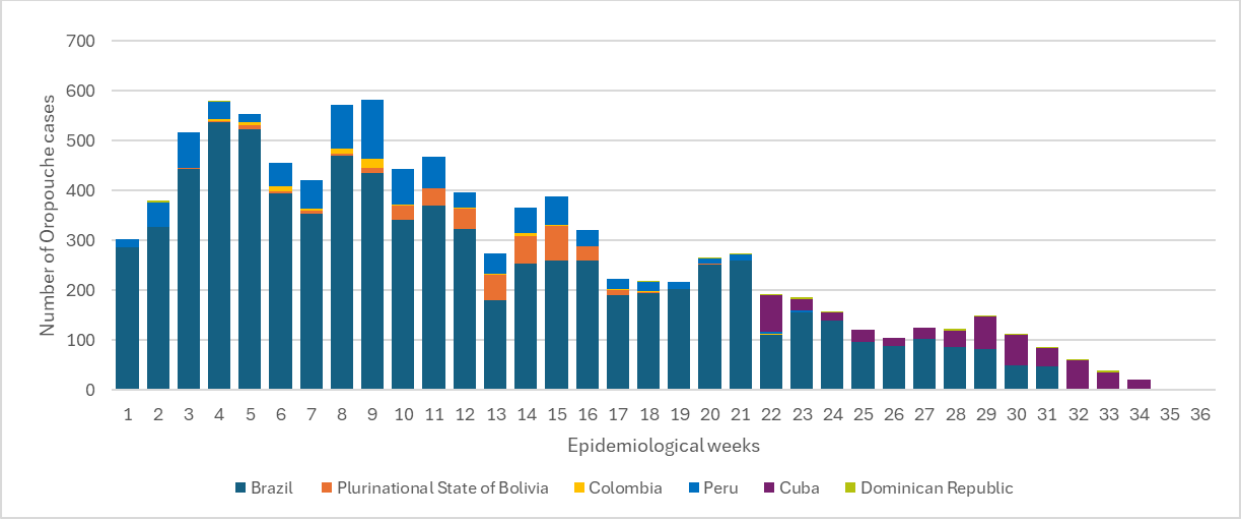
6 September 2024

Situation summary

Between epidemiological week (EW) 1 and EW 35 of 2024, a total of 9,852 confirmed Oropouche cases, including two deaths, were reported in the Americas Region. Confirmed cases were reported in eight countries: Bolivia (Plurinational State of) (n= 356 cases), Brazil (n= 7,931 cases, including two deaths), Canada (n= 1 imported case), Colombia (n= 74 cases), Cuba (n= 506 cases), the Dominican Republic (n= 33 cases), Peru (n= 930 cases), and the United States of America (n=21 imported cases)[1] (**Figure 1**) *(1-11)*. Additionally, imported Oropouche cases have been reported in countries in the European Region (n= 30 cases) *(12-15)*.

Since the Pan American Health Organization/World Health Organization (PAHO/WHO) Oropouche Epidemiological Alert issued on 1 August 2024, an additional 1,774 Oropouche cases were reported in six countries in the Region: Brazil (n= 647 cases), Canada (n= 1 imported case), Cuba (n= 432 cases), the Dominican Republic (n= 33 cases), Peru (n= 640 cases), and the United States (n= 21 imported cases) *(1-11)*.

Figure 1. Number of confirmed cases of Oropouche by country and epidemiological week (EW) of symptom onset, Americas Region, 2024.



Source: Adapted from data provided by the respective countries and reproduced by PAHO/WHO *(1-11)*.

[1] Information as of 16 August 2024.

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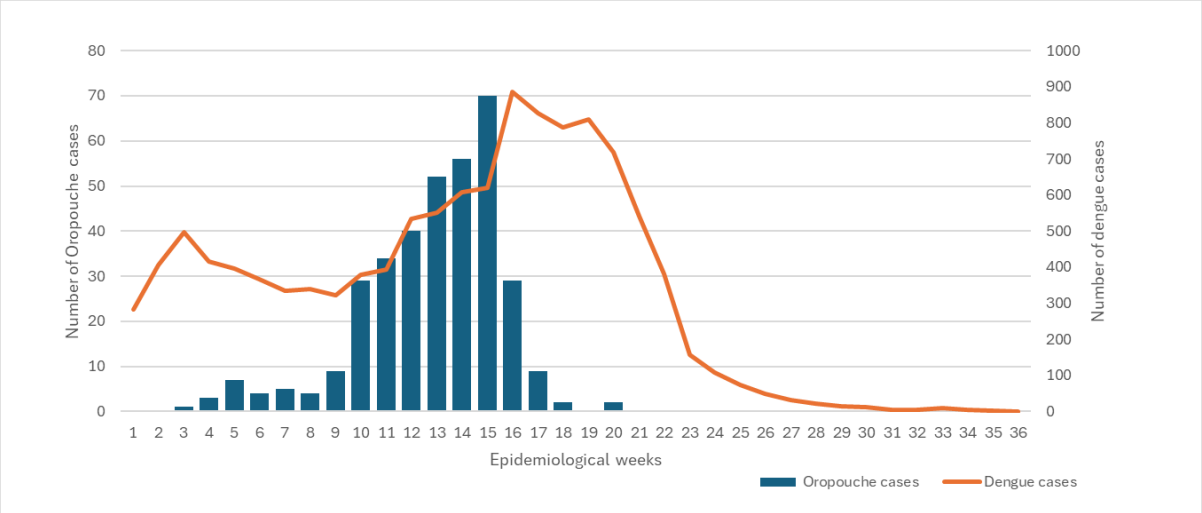
Regarding cases of vertical transmission of Oropouche virus infection (OROV) under investigation and its consequences, Brazil reported eleven fetal deaths, three spontaneous miscarriages, and four cases of congenital anomalies *(3)*.

The following is a summary of the situation in the countries that have reported confirmed Oropouche cases in the Americas during 2024.

In **Bolivia**, between EW 1 and EW 35 of 2024, there were 356 Oropouche cases confirmed[2] by laboratory by using the molecular biology technique (RT-PCR) *(1)*. Transmission has been reported in three departments: La Paz with 75.3% of cases (n= 268), followed by Beni with 21.3% of cases (n= 76), and Pando with 3.4% of cases (n= 12). Cases have been reported in 16 municipalities that are considered endemic for this disease, with the highest proportion of cases reported in the municipalities of Irupana, La Paz, with 33% of cases; followed by La Asunta, La Paz, with 13% of cases; Chulumani, La Paz, and Guayaramerín, Beni, with 12% each.

Among the cases reported, 50% of the cases (n= 179) were female and the highest proportion was found in the 30-39 years age group with 20% (n= 70) of cases. No deaths that could be associated with OROV infection have been reported. In addition, between EW 12 and EW 15 of 2024, six cases of coinfection of Oropouche and dengue were reported in patients in three municipalities of the department of La Paz, all of whom tested positive for dengue (RT-PCR) with DENV-1 (one case) and DENV-2 (five cases) serotyping *(1)*.

Figure 2. Number of confirmed cases of Oropouche and confirmed cases of dengue by epidemiological week (EW) of symptom onset, Bolivia, 2024.



Source: Adapted from data provided by the Ministry of Health and Sports Bolivia - National Surveillance Program for Endemic and Epidemic Diseases - Arbovirosis Component. Epidemiological Surveillance and Environmental Health Unit. La Paz; 2024. Unpublished *(1,2)*.

[2] The Plurinational State of Bolivia has a definition of suspected and confirmed case. The definition of a **suspected case of Oropouche** is as follows: Any person who resides in or has visited in the last 14 days areas of transmission or with a history of Oropouche outbreak and who presents at least one or more of the following signs and symptoms: fever greater than or equal to 38°C, intense headache, chills, arthralgias, lack of appetite, myalgias, photophobia, dizziness, lumbar pain, difficulty walking. The definition of a **confirmed case of Oropouche** is: any suspected case of Oropouche with a positive result for OROV in a laboratory RT-Real-time PCR test *(1)*.

Regarding the trend of confirmed cases of Oropouche by epidemiological week (EW), compared to the trend of confirmed cases of dengue in Bolivia, it is observed that both events show a similar behavior from EW 10, with an upward trend up to EW 15 for Oropouche with the highest number of cases reached (n= 70) and up to EW 16 for dengue with the highest number of cases during the year (n= 886). After this, there was a progressive decrease in the number of dengue cases and no new cases of Oropouche were observed after EW 20 in Bolivia (**Figure 2**) *(1,2)*.

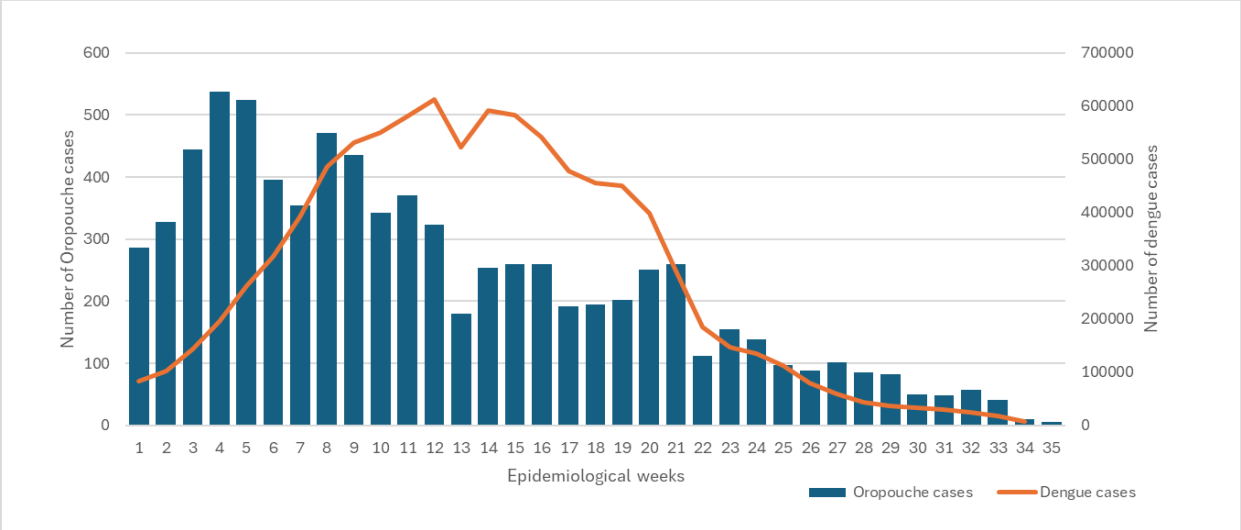
In **Brazil,** between EW 1 and EW 35 of 2024, a total of 7,931 laboratory-confirmed[3] cases of Oropouche have been reported, including two deaths. Most cases have been reported in municipalities in the northern states; however, to date, cases have been reported in 24 of the country's 27 states. The Amazon region, an area considered endemic for Oropouche, accounts for 75.7% of the cases reported in the country, with six states reporting cases: Amazonas (n= 3,230), Rondônia (n= 1,710), Acre (n= 270), Roraima (n= 267), Pará (n= 87), and Tocantins (n= 8) *(3, 4)*.

Additionally, autochthonous transmission has been documented in twelve non-Amazonian states, some of which had not previously reported cases: Bahia (n= 886), Espírito Santo (n= 452), Ceará (n= 209), Minas Gerais (n= 194), Santa Catarina (n= 179), Pernambuco (n= 132), Rio de Janeiro (n= 116), Maranhão (n= 33), Piauí (n= 29), Mato Grosso (n=17), São Paulo (n= 7), and Mato Grosso do Sul (n=2). Furthermore, cases reported in the states of Amapá (n=72), Sergipe (n=24), Alagoas (n= 6), and Paraíba (n= 1) are being investigated to establish the probable source of infection. Regarding the distribution of cases by sex and age group, 52% (n= 4,122) correspond to males and the highest proportion of cases is registered in the 20-29 years age group with 21% (n= 1,680) of the cases reported *(3, 4)*.

In relation to the trend of Oropouche cases by EW, compared to the trend of dengue in Brazil, it is observed that the highest proportion of Oropouche cases was recorded during the first two months of 2024, with the highest number of cases occurring in EW 4, with 537 cases, followed by a gradual decrease thereafter, which has been maintained up to EW 34. Unlike the behavior of Oropouche, dengue cases concentrated the highest number of cases between EW 9 and EW 20, reaching the highest number of cases in EW 12 with 611,989 cases; after, a progressive decrease in the number of dengue cases was observed, indicating a trend similar to that of Oropouche (**Figure 3**) *(3)*.

[3] Brazil has a confirmed case definition. The definition of a **confirmed case of Oropouche** is as follows: any case with laboratory diagnosis of OROV infection. Laboratory diagnosis of OROV infection, preferably by direct testing (molecular biology or viral isolation), and whose clinical and epidemiological aspects (i.e. exposure in an endemic region or with an outbreak/epidemic or exposure to risk situations in peri-urban, forest, rural or wild areas) are compatible with the occurrence of the disease. Serological detections (IgM ELISA) should be carefully evaluated, especially in areas with isolated detections and high incidence and prevalence of other arboviruses *(3)*.

Figure 3. Number of confirmed cases of Oropouche and reported cases of dengue by epidemiological week (EW) of symptom onset, Brazil, 2024.



Source: Adapted from data provided by the Brazil International Health Regulations National Focal Point (IHR NFP) Communication received on 5 September 2024 by e-mail. Brasilia; 2024. Unpublished *(3, 4)* and data from the Pan American Health Organization. PLISA Health Information Platform for the Americas, Basic Indicators Portal. Washington, DC: PAHO; 2024 (accessed 2 September 2024. Available from: https://opendata.paho.org/en*(16)*.

Regarding deaths associated with Oropouche, the Brazil International Health Regulations National Focal Point (IHR NFP) reported two deaths associated with OROV infection in the state of Bahia[4] and one under investigation in the state of Parana, with probable source of infection in the state of Santa Catarina[4] *(3, 17)*.

Additionally, on 12 August 2024, Brazil reported a case of encephalitis associated to OROV. The case is a male resident of the state of Piauí, who on 1 May 2024, was admitted to the emergency department of the local hospital with signs and symptoms of high fever, headache, disorientation, tremors and involuntary movements. On 17 May, biological samples were taken for viral investigation for suspected viral encephalitis. Blood, cerebrospinal fluid, urine and nasal swab samples were sent to the Dr. Costa Alvarenga Central Public Health Laboratory, which, after preliminary analysis, were consequently sent to the Evandro Chagas Institute for arbovirus investigation. The case was transferred to a higher-level hospital for clinical management due to neurological deterioration, from where he was discharged with partial improvement. The presence of IgM antibodies against OROV was detected in the blood and cerebrospinal fluid *(3)*.

Regarding cases of vertical transmission and its consequences[5] as of 3 September 2024, the following have been confirmed: one case of fetal death in Pernambuco (n= 1 case) and one case of congenital anomaly in Acre. As for cases under investigation in the country, 10 cases

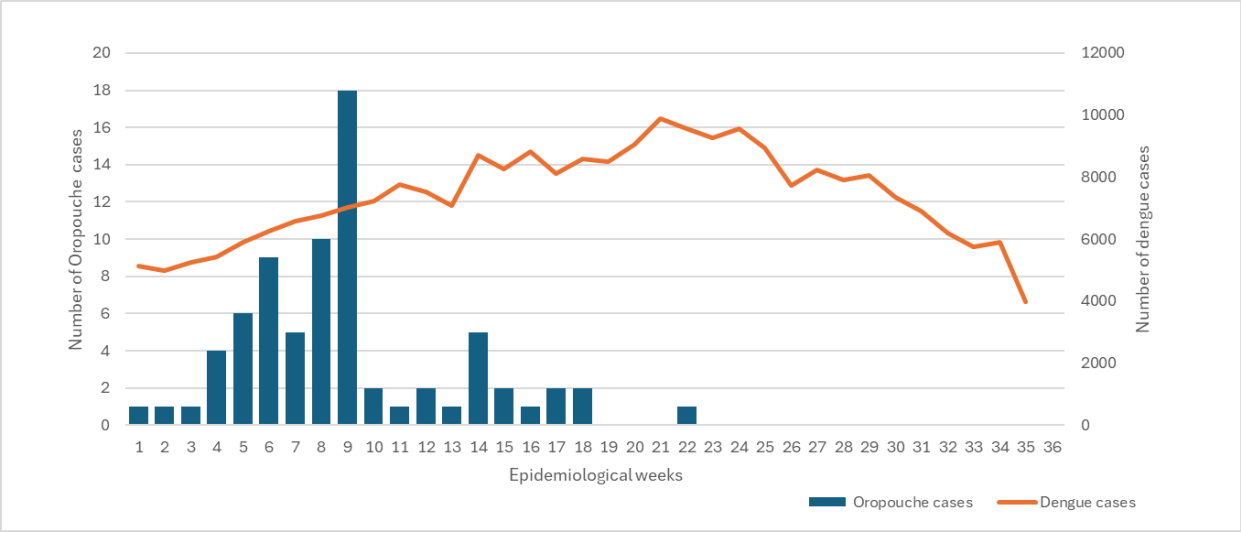
[4] Detailed information on these cases is available in the Oropouche Epidemiological Alert in the Region of the Americas 1 August 2024 of the Pan American Health Organization / World Health Organization. Available from: https://www.paho.org/en/documents/epidemiological-alert-Oropouche-region-americas-1-august-2024

[5] Detailed information on previously reported cases is available in the Epidemiologic Alert on Oropouche in the Region of the Americas: vertical transmission event under investigation in Brazil, 17 July 2024. Washington, D.C.: PAHO/WHO; 2024. Available from: https://www.paho.org/en/documents/epidemiological-alert-Oropouche-region-americas-vertical-transmission-event-under

of fetal death in Pernambuco (n= 9 cases) and Ceará (n= 1 case), 3 cases of congenital anomaly in Acre (n= 2 cases) and Bahia (n= 1 case) and 3 spontaneous miscarriages in Pernambuco (n= 3 cases) have been identified *(3, 18)*.

In **Colombia**, between EW 1 and EW 35 of 2024, 74 confirmed cases of Oropouche[6] have been reported in three departments of the country: Amazonas (n= 70), Caquetá (n= 1), and Meta (n= 1), in addition to the identification of two cases from Tabatinga, Brazil. The cases were identified through a retrospective laboratory search strategy implemented by the National Institute of Health of Colombia (INS per its acronym in Spanish) based on dengue surveillance (n= 38) and investigation of febrile syndromes (n= 36). Regarding the distribution of cases by sex and age group, 51.4% (n= 38) were female and the highest proportion of cases was recorded in the 10-19 age group with 36.5% (n= 27) of cases. No deaths have been reported that could be associated with OROV infection *(6)*.

Figure 4. Number of confirmed cases of Oropouche and reported cases of dengue fever by epidemiological week (EW) of symptom onset, Colombia, 2024.



Source: Adapted from data provided by the Colombia International Health Regulations National Focal Point (IHR NFP). Communication received on 5 September 2024 by e-mail. Bogotá; 2024. Unpublished (*6*).

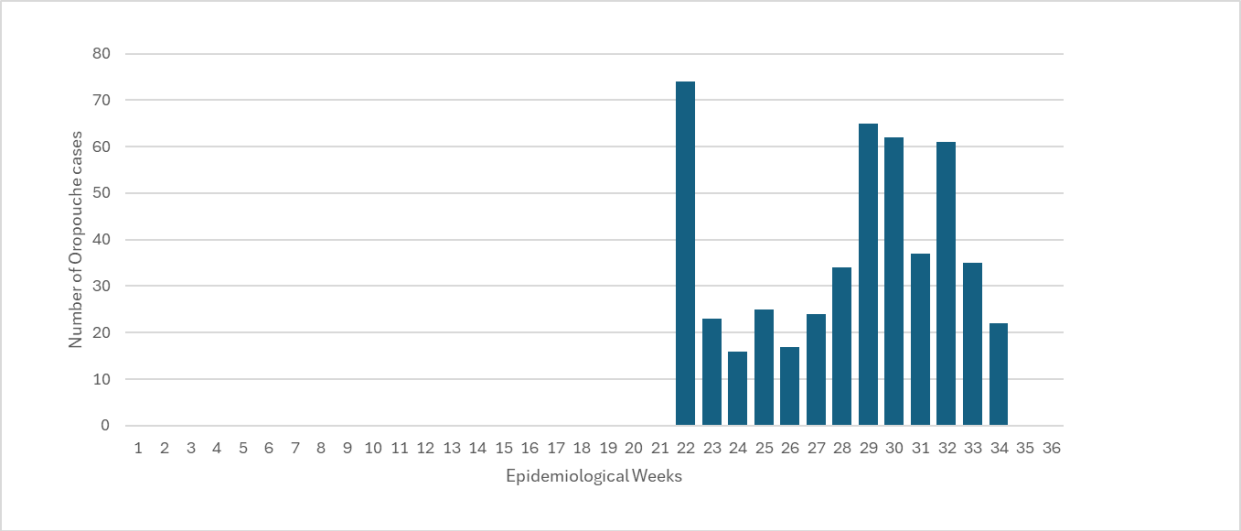
Regarding the trend of Oropouche cases by EW, in comparison with the trend of dengue in Colombia, it is observed that dengue cases have remained at high levels throughout the year, with more than four thousand cases weekly and reaching the highest number of cases in EW 21 with 9,900 cases, while Oropouche cases with a lower proportion of cases showed an increase from EW 4, reaching the highest number of cases in EW 9 with 18 cases (**Figure 4**)*(6)*.

In **Cuba**, since the first identification of cases of Oropouche on 27 May 2024, and as of EW 35, 506 confirmed cases[7] were reported. Cases have been reported in 99 municipalities in the 15 provinces of the country. The provinces of Havana (n= 154 cases), Santiago de Cuba (n= 73 cases), and Cienfuegos (n= 35 cases) account for 53% of the cases. As for the distribution of

[6] Colombia has a confirmed case definition only. The definition of a confirmed case of Oropouche is the following: Patient with acute febrile illness of 2 to 7 days of evolution accompanied by any of the following manifestations: headache, retro-ocular pain, myalgias, arthralgias, rash, exanthema, with positive PCR for OROV *(6)*.
[7] The case definition used by Cuba is not available.

cases by sex and age group, 55% (n= 278) were female and the highest proportion of cases was recorded in the 65 and over age group with 12.1% (n= 61) of cases. No deaths have been reported that could be associated with OROV infection *(7)*.

Figure 5. Number of confirmed cases of Oropouche by epidemiological week (EW) of symptom onset, Cuba, 2024.



Source: Adapted from data provided by the Cuba International Health Regulations National Focal Point. Communication received 4 September 2024 by e-mail. Havana; 2024. Unpublished (*7*).

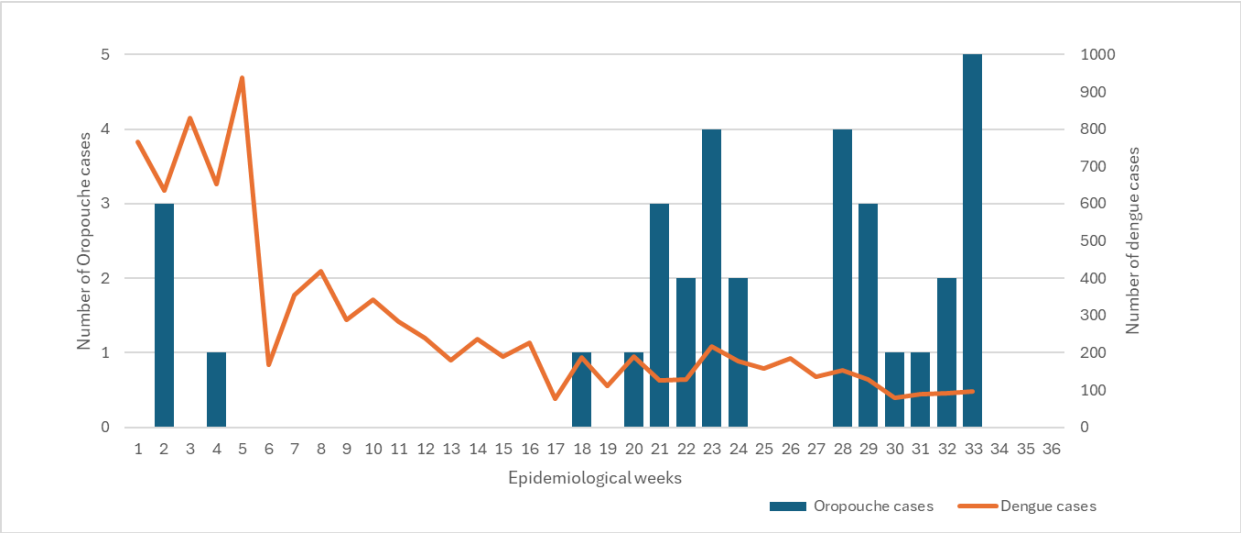
Regarding the trend of Oropouche cases by epidemiological week, it is observed that the highest number of cases was recorded in EW 22 (n= 74), when the first detection of cases was made, and then maintained for five weeks a notification of less than 30 cases per week and subsequently an increase in which the identification of more than 30 cases per week is observed (**Figure 5**).

The **Dominican Republic** reported that, based on the retrospective analysis of dengue-negative samples stored in the National Public Health Laboratory's serum library, 33 confirmed cases of Oropouche[8] were identified in 12 provinces in August, with the majority of cases registered in the province of Hermana Mirabal (n= 12 cases). Regarding the distribution of cases by sex and age group, 66.6% (n= 22) were males, with the highest proportion of cases in the 0-9 age group with 39% (n= 13) of cases *(8)*.

Regarding the trend of Oropouche cases by EW, compared to the trend of dengue in the Dominican Republic, it is observed that the highest proportion of dengue cases occurred between EW 1 and EW 6 of 2024, reaching the highest number of cases in EW 5 with 939 cases and maintaining a progressive decrease. Unlike dengue cases, Oropouche cases showed a higher number from EW 21, registering the highest number of cases in EW 33, with 5 cases (**Figure 6**) *(8)*.

[8]The case definition used by the Dominican Republic is not available.

Figure 6. Number of confirmed cases of Oropouche and reported cases of dengue by epidemiological week (EW) of symptom onset, Dominican Republic, 2024.



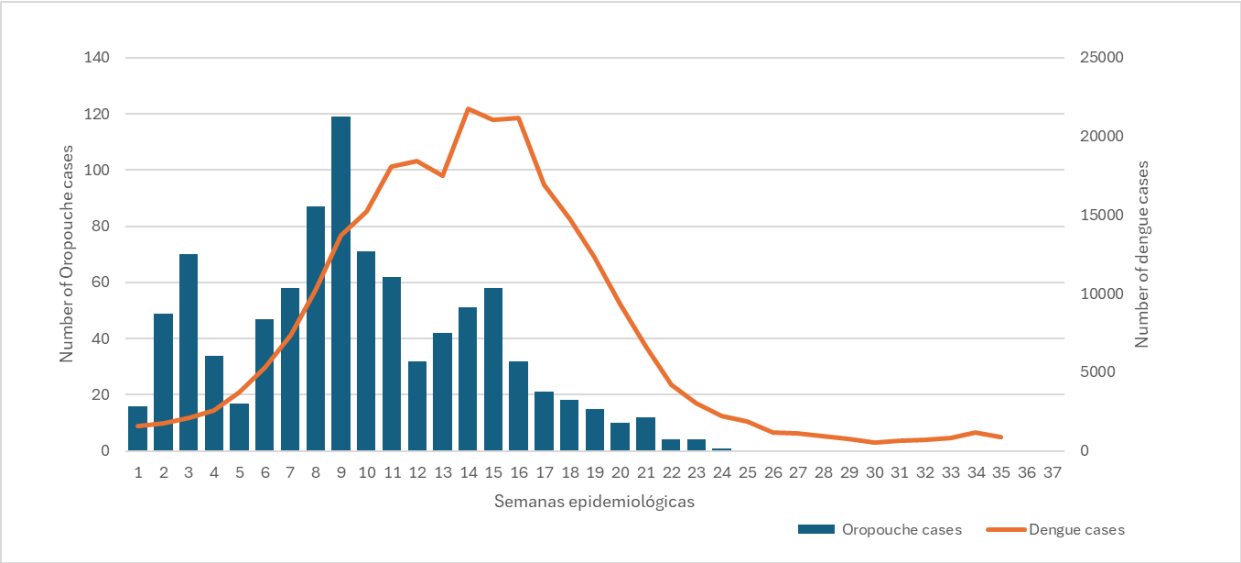
Source: Adapted from Oropouche data provided by the Dominican Republic International Health Regulations National Focal Point (IHR NFP). Communication received on 4 September 2024 by e-mail. Santo Domingo; 2024. Unpublished *(8)*.

In **Peru**, between EW 1 and EW 35 of 2024, 930 confirmed cases[9] of Oropouche have been reported in seven departments of the country. The departments that reported confirmed cases are as follows: Loreto (n= 454), Madre de Dios (n= 312), Ucayali (n= 148), Huanuco (n= 12), Junin (n= 2), Tumbes (n= 1), and San Martin (n= 1). Regarding the distribution of cases by sex and age group, 51% (n= 470) were males, with the highest proportion of cases in the 30-39 age group with 37% (n= 346) of cases. No deaths that could be associated with OROV infection have been reported *(9)*.

Regarding the trend of Oropouche cases by EW, compared to the trend of dengue in Peru, it is observed that dengue cases showed an upward trend starting in EW 6 until reaching the highest number of cases in EW 14 with 21,779 cases and maintaining a progressive decrease until EW 26; in contrast, Oropouche cases showed a higher number of cases in EW 9 with 119 cases (**Figure 7**) *(9)*.

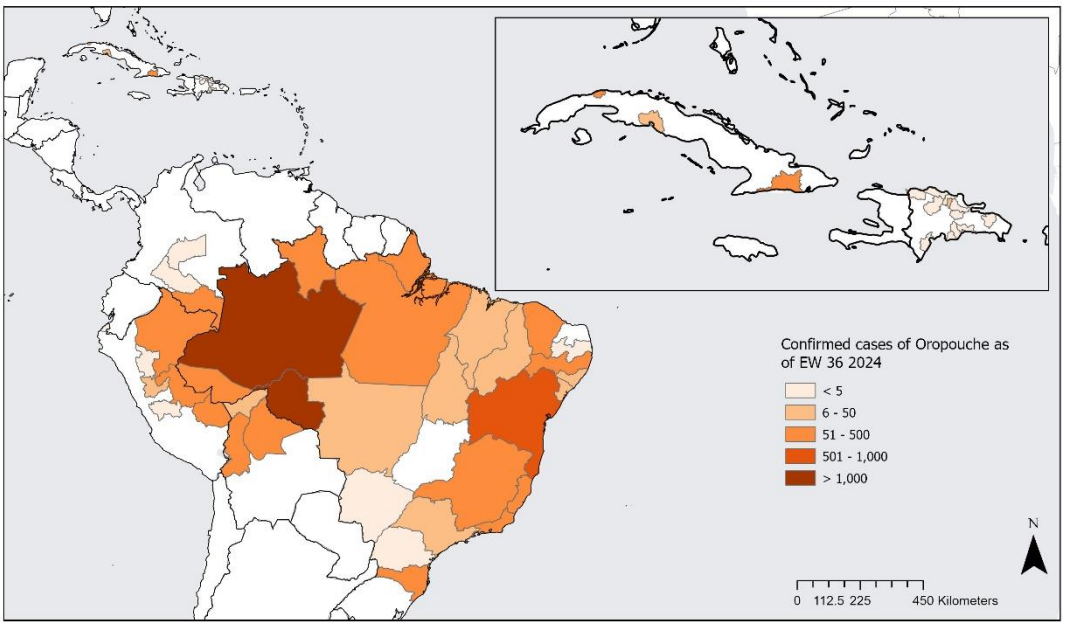
[9] Under the Oropouche Epidemiological Alert in the Region of the Americas published by PAHO/WHO on 1 August 2024. As an epidemiological surveillance strategy, the Peruvian Ministry of Health has conducted an active search for Oropouche through differential diagnosis of dengue cases with negative results during the year.

Figure 7. Number of confirmed cases of Oropouche and reported cases of dengue by epidemiological week (EW) of symptom onset, Peru, 2024.



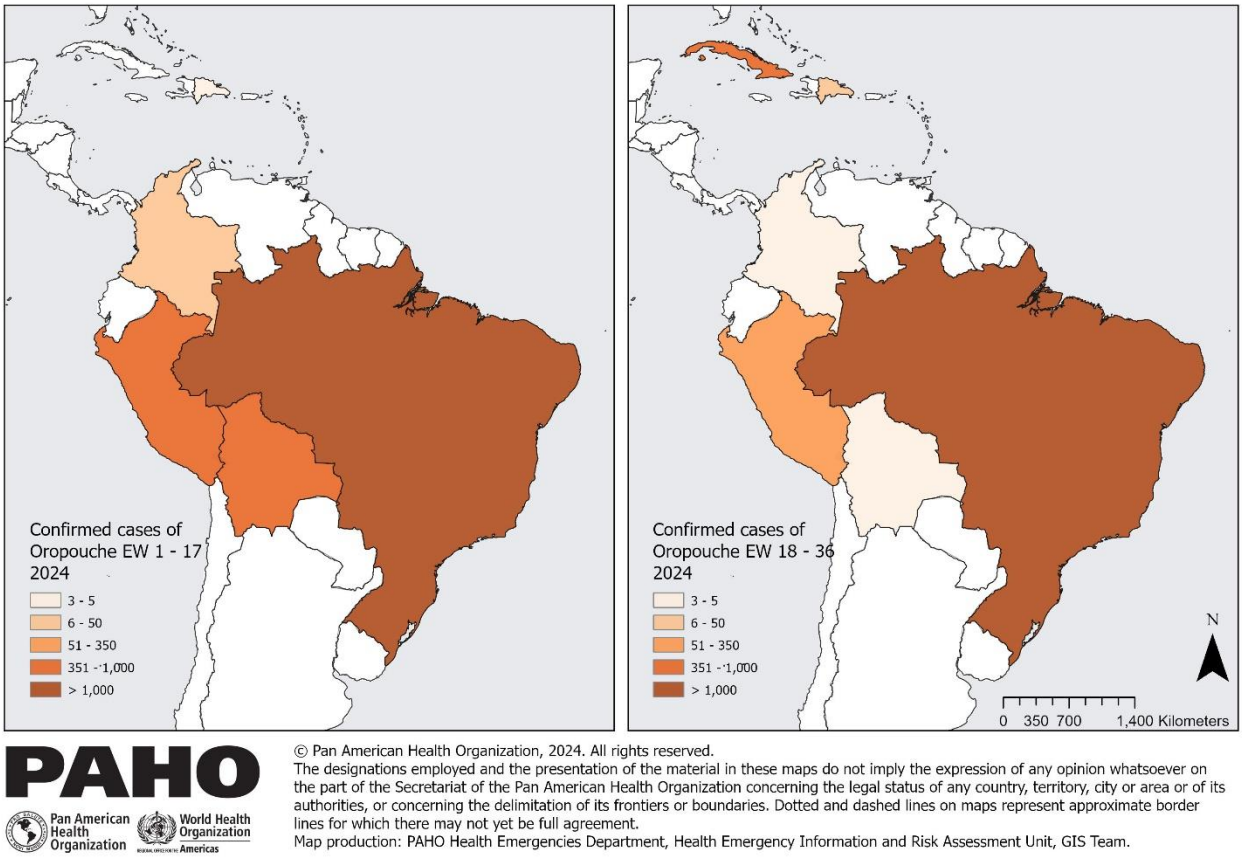
Source: Adapted from Oropouche data provided by Peru International Health Regulations National Focal Point. Information from e-mail dated 5 September 2024. Lima; 2024. Unpublished *(10)*.

Figure 8. Geographic distribution of cumulative confirmed cases of local transmission of Oropouche in the Region of the Americas, 2024.



Source: Adapted from data provided by the respective countries and reproduced by PAHO/WHO *(1-11)*.

Figure 9. Geographic distribution of Oropouche cases locally acquired, in the Region of the Americas EW 1-17 and EW 18-36, 2024.



Source: Adapted from data provided by the respective countries and reproduced by PAHO/WHO *(1-11)*.

Imported cases in non-endemic countries

In the Americas Region, **Canada** reported in EW 33 the confirmation of one case of Oropouche, with a history of travel to Cuba *(5)*. Likewise, as of 16 August 2024, **the United States** reported 21 imported cases of Oropouche, identified in the states of Florida (n= 20 cases) and New York (n= 1 case). The median age of the cases was 48 years (range = 15-94 years) and 48% were female. A total of three cases were hospitalized, no deaths were reported, and all cases had a history of travel to Cuba *(10, 11)*.

Additionally, between EW 23 and EW 35 of 2024, 30 imported cases of Oropouche have been identified in three countries of the European Region: Germany (n= 3 cases), Spain (n= 21 cases), and Italy (n=6 cases); 20 of these cases had a history of travel to Cuba and one to Brazil, these cases correspond to the first cases registered in this region *(12-15)*.

Guidance to Member States

The Pan American Health Organization / World Health Organization (PAHO / WHO) reiterates to Member States the recommendations on diagnosis and clinical management, laboratory diagnosis, prevention and vector control of Oropouche virus disease, as well as specific recommendations related to cases of vertical infection, congenital malformation or fetal death associated with OROV infection.

The current outbreak highlights the need to strengthen epidemiological and entomological surveillance measures and to reinforce preventive measures in the population.

Likewise, to contribute to the generation of knowledge about this disease, Member States are requested to notify all related unusual events, including deaths associated with OROV infection, as well as cases of possible vertical transmission and its consequences *(19)*.

Diagnosis and clinical management

After an incubation period of 5 to 7 days, patients experience high fever, intense headache (generally located in the nape of the neck), photophobia, myalgia, arthralgia and, in some cases, rash. In some patients, symptoms may include vomiting, diarrhea and bleeding, manifesting as petechiae, epistaxis and gingival bleeding. Generally, the infection resolves within 2 to 3 weeks *(20)*.

In rare situations, OROV can cause meningitis or encephalitis. In these cases, patients show neurological symptoms and signs such as vertigo, lethargy, nystagmus and nuchal rigidity. The virus can be detected in cerebrospinal fluid (CSF) *(20)*.

During the first week of the disease, the main differential diagnosis is dengue infection. In the second week of the disease, the clinical differential diagnosis should consider the possibility of meningitis and encephalitis *(20)*.

Currently, no specific vaccines or antiviral drugs are available to prevent or treat OROV infection. The treatment approach is symptomatic, focused on relieving pain and fever, hydrating or rehydrating the patient and controlling vomiting. In situations where the disease manifests in a neuroinvasive form, the patient should be admitted to specialized units that allow constant monitoring *(20)*.

Laboratory diagnosis and surveillance

Guidance on laboratory diagnosis and surveillance of emerging arboviruses, including OROV, is detailed in the **"Guidelines for the Detection and Surveillance of Emerging Arboviruses in the Context of Other Arbovirus Circulation"** and "**Guidelines for the Detection and Surveillance of Oropouche in Potential Cases of Vertical Infection, Congenital Malformation, or Fetal Death"** (*21, 22)*.

Prevention and vector control

OROV is transmitted to humans mainly through the bite of the midge *Culicoides paraensis*, which is widely distributed in the Americas Region. Other vectors such as the mosquito *Culex quinquefasciatus* can transmit OROV but are considered of secondary importance *(23)*.

The proximity of vector breeding sites to human habitation is an important risk factor for OROV infection. Vector control measures focus on reducing vector populations by identifying and eliminating vector breeding and resting sites. These measures include *(24-26)*:

- Strengthen entomological surveillance for the detection of species with potential vector capacity.
- Map urban, peri-urban and rural areas with conditions for the development of potential vectors.
- The promotion of good agricultural practices to avoid the accumulation of residues that serve as breeding and resting sites.
- The filling or draining of water collections, ponds or temporary waterlogging sites that may serve as oviposition sites for females and breeding sites for vector larvae.
- Elimination of weeds around the premises to reduce resting and shelter sites for vectors.

Additional information on vector control measures can be found in the document "**Interim guidelines for entomological surveillance and prevention measures for Oropouche virus vectors"** *(27)*.

In addition, measures should be taken to prevent vector bites, which are reinforced in the case of pregnant women. These measures include *(24, 25)*:

- Protection of houses with fine mesh nets on doors and windows[10], thus also preventing other arboviruses.
- Use of clothing that covers the legs and arms, especially in homes where there is someone sick.
- Use of repellents containing DEET, IR3535 or icaridin, which may be applied to exposed skin or clothing, and their use must be in strict accordance with product label instructions.
- Use of insecticide-impregnated or non-insecticide-treated mosquito nets for daytime sleepers (e.g., pregnant women, infants, sick or bedridden people, the elderly).
- In outbreak situations, outdoor activities should be avoided during the period of peak vector activity (dawn and dusk).
- In the case of people with a higher risk of being bitten, such as forestry workers, agricultural workers, etc. The use of clothing that covers the exposed parts of the body is recommended, as well as the use of the previously mentioned repellents.

Finally, considering the ecological characteristics of the main vectors of OROV, it is important to consider that the decision to carry out vector control activities with insecticides depends on entomological surveillance data and the variables that may condition an increase in the risk of transmission. In areas of transmission, insecticide spraying may be an additional measure, especially in urban and peri-urban areas, when technically advisable and feasible.

[10] It is recommended that the mesh holes be smaller than 1.0 mm because the average size of the female *Culicoides paraensis*, considered to be the main vector involved in OROV transmission, is 1 to 1.5 mm.

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