Epidemiological Update Oropouche in the Americas Region

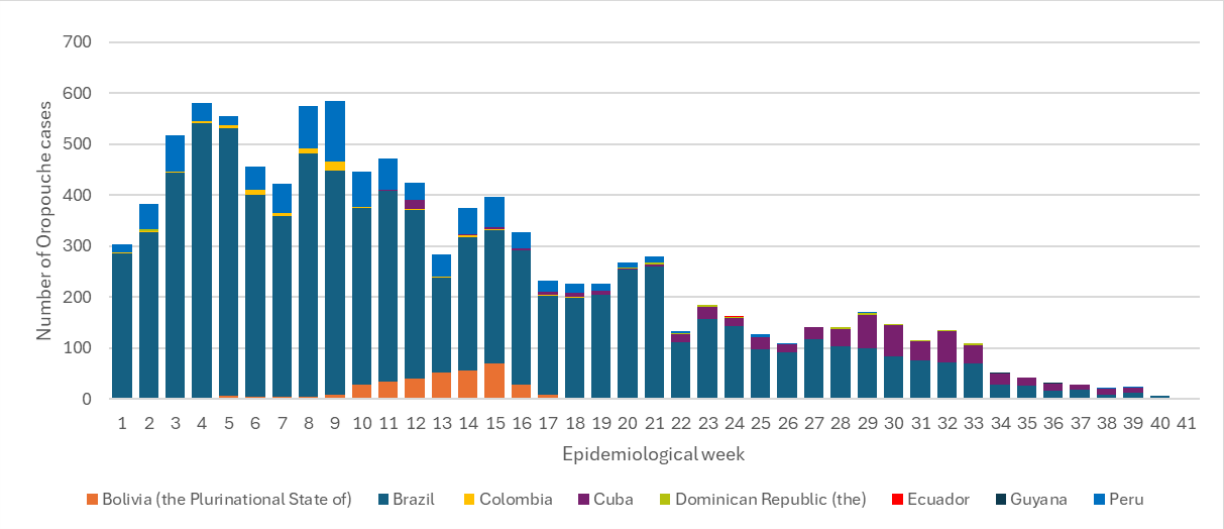
15 October 2024

Situation summary

Between epidemiological week (EW) 1 and EW 40 of 2024, a total of 10,275 confirmed Oropouche cases, including two deaths, were reported in the Americas Region. Confirmed cases were reported in nine countries: Bolivia (Plurinational State of) (n= 356 cases), Brazil (n= 8,258 cases, including two deaths), Canada (n= 2 imported cases), Colombia (n= 74 cases), Cuba (n= 555 cases), Ecuador (n= 2 cases), Guyana(n=2 cases), Peru (n= 936 cases), and the United States of America (n= 90 imported cases) (**Figure 1**) *(1-13)*. Additionally, imported Oropouche cases have been reported in countries in the European Region (n= 30 cases) *(14-17)*.

Since the Pan American Health Organization/World Health Organization (PAHO/WHO) Oropouche Epidemiological Update issued on 6 September 2024 *(18)*, an additional 423 Oropouche cases were reported in seven countries in the Region: Brazil (n= 327 cases), Canada (n= 1 imported case), Cuba (n= 49 cases), Ecuador (n= 2 cases), Guyana (n= 2 cases), Peru (n= 6 cases), and the United States (n= 69 imported cases) *(1-13)*. Two new countries in the Americas Region reported cases for the first time, Ecuador and Guyana *(9, 10)*.

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 *(1-13)*.

Cases and consequences of vertical transmission of Oropouche virus infection (OROV) have been reported in Brazil and Cuba and are currently under investigation. Brazil reported 13

Suggested citation: Pan American Health Organization / World Health Organization. Epidemiological Update: Oropouche in the Americas Region, 15 October 2024. Washington, D.C.: PAHO/WHO; 2024.

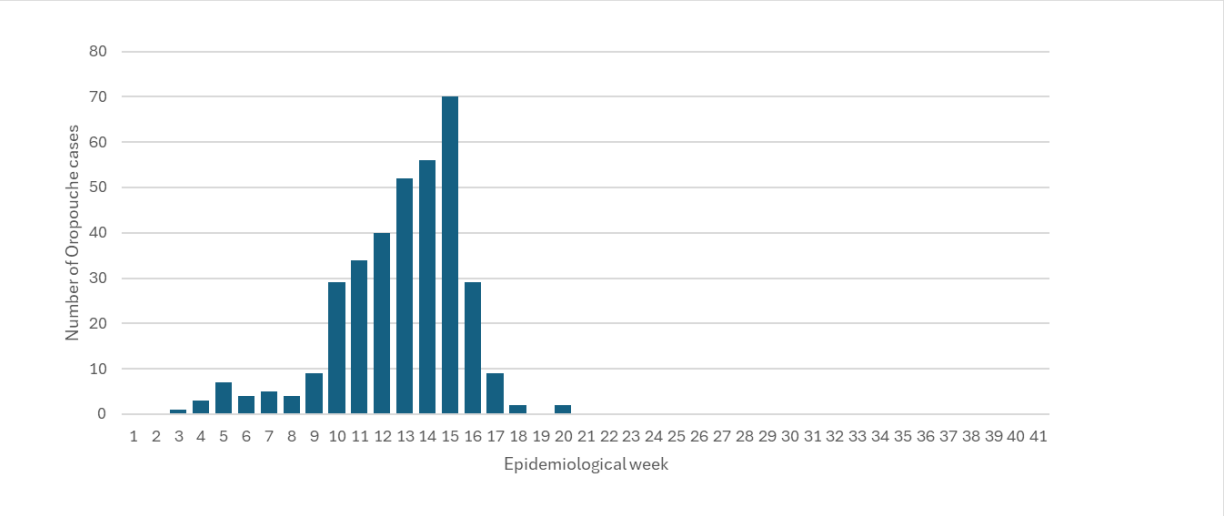
fetal deaths, three spontaneous miscarriages, and four cases of congenital anomalies *(3)* and, in September, Cuba confirmed a case of congenital anomaly *(8)*.

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 40 of 2024, 356 laboratory confirmed[1] Oropouche cases were identified using the molecular biology technique (RT-PCR) *(1, 2)*. 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 *(1, 2)*.

Among the cases reported, 50% (n= 179) were female and the highest proportion of cases was registered in the 30-39 years age group, accounting for 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, ten 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 (n= 2 cases) and DENV-2 (n= 8 cases) serotyping *(1, 2)*.

Figure 2. Number of confirmed cases of Oropouche 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)*.

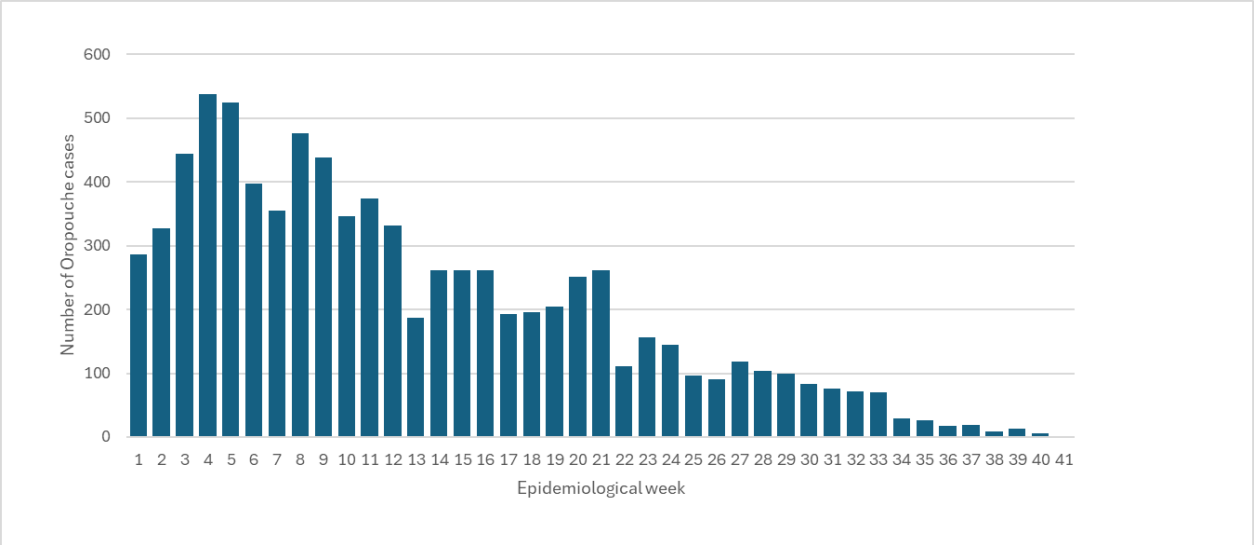
[1] The Plurinational State of Bolivia has a definition of suspected and confirmed case. The definition of a **suspected case of Oropouche** is as follows: Any person who resides in or has visited in the last 14 days areas of transmission or with a history of Oropouche outbreak and who presents at least 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 EW, an upward trend was observed from EW 10 to EW 15 with the highest number of cases (n= 70). Subsequently, no new cases of Oropouche were observed in Bolivia after EW 20 (**Figure 2**) *(1, 2)*.

In **Brazil,** between EW 1 and EW 40 of 2024, a total of 8,258 laboratory-confirmed[2] 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 22 of the country's 27 states. The Amazon region, an area considered endemic for Oropouche, accounts for 70% of the cases reported in the country, with seven states reporting cases: Amazonas (n= 3,231), Rondônia (n= 1,710), Acre (n= 272), Roraima (n= 276), Pará (n= 137), Amapá (n= 126), and Tocantins (n= 8) *(3, 4)*.

Additionally, autochthonous transmission has been documented in 15 non-Amazonian states, some of which had not previously reported cases: Bahia (n= 889), Espírito Santo (n= 504), Ceará (n= 232), Minas Gerais (n= 195), Santa Catarina (n= 179), Pernambuco (n= 143), Rio de Janeiro (n= 116), Alagoas (n= 115), Sergipe (n= 34), Maranhão (n= 33), Piauí (n= 30), Mato Grosso (n= 18), São Paulo (n= 8), Mato Grosso do Sul (n= 1), and Paraíba (n= 1). Regarding the distribution of cases by sex and age group, 60% (n= 4,284) correspond to males and the highest proportion of cases is registered in the 20-29 years age group with 21% (n= 1,750) of the cases reported *(3, 4)*.

Figure 3. Number of confirmed cases of Oropouche 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 10 October 2024 by e-mail. Brasilia; 2024. Unpublished *(3, 4)*.

In relation to the trend of Oropouche cases by EW it is observed that the highest proportion of Oropouche cases was recorded during the first two months of 2024, with the highest

[2] 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)*.

number of cases occurring in EW 4, with 538 cases, followed by a gradual decrease thereafter, which has been maintained up to EW 39 (**Figure 3**) *(3, 4)*.

Regarding deaths associated with Oropouche, the Brazil International Health Regulations (IHR) National Focal Point (NFP) reported two deaths associated with OROV infection in the state of Bahia,[3] and four cases under investigation: one in the state of Parana, with probable source of infection in the state of Santa Catarina[4], one in Espírito Santo, one in Alagoas, and one in Mato Grosso *(3, 19, 20)*.

Additionally, on 12 August 2024, Brazil reported a case of encephalitis associated with OROV. The case is a male resident of the state of Piauí[4] *(3, 18)*.

Regarding cases of vertical transmission and its consequences[5] as of EW 40 of 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, 12 cases of fetal death in Pernambuco (n= 11 cases) and Ceará (n= 1 case), three cases of congenital anomaly in Acre (n= 2 cases) and Bahia (n= 1 case), and three spontaneous miscarriages in Pernambuco (n= 3 cases) have been identified *(3, 21)*.

In **Colombia**, between EW 1 and EW 40 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, 7)*.

Six cases of coinfection with dengue were reported in the department of Amazonas, four in the municipality of Leticia (2 with DENV-1 and 2 with DENV-2), and one in the municipality of Puerto Nariño (DENV-3), and in the department of Meta, one in the municipality of Guamal (DENV-4) *(6, 7)*.

Regarding the surveillance of cases of vertical transmission and its consequences, up to 3 October 2024, two cases of Oropouche have been identified in pregnant women, both from Leticia, aged 18 years (onset of symptoms at 29 weeks of gestation) and 22 years (onset of symptoms at 34 weeks of gestation), respectively. Both evolved favorably and their children

[3] 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

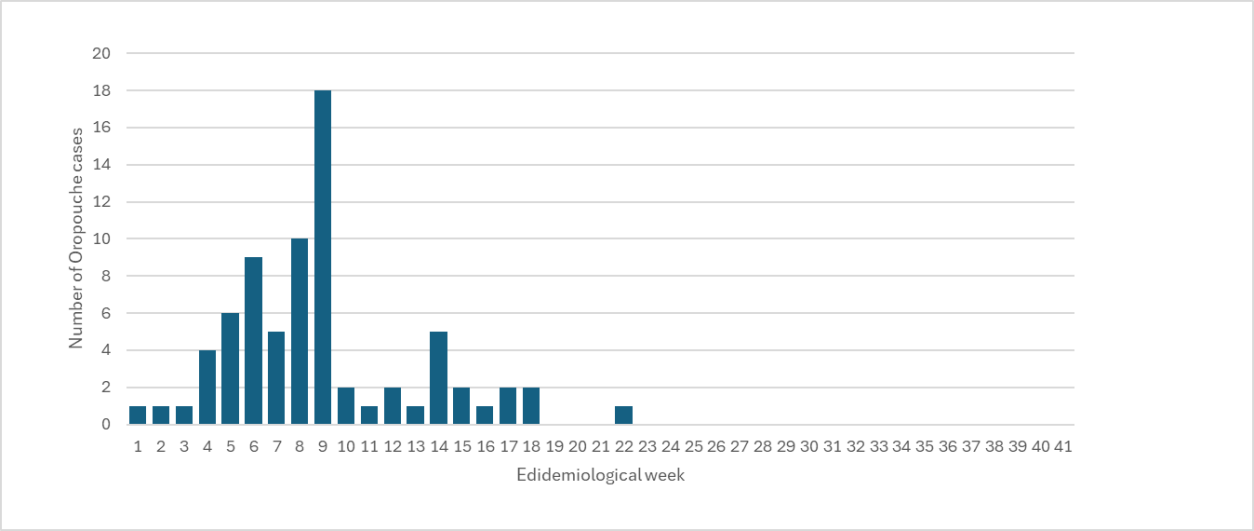
[4] Detailed information on this case is available in the 6 September 2024 Oropouche Epidemiological Update in the Region of the Americas from the Pan American Health Organization / World Health Organization. Available from: https://www.paho.org/en/documents/epidemiological-update-oropouche-americas-region-6-september-2024

[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

[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)*.

were born without complications. To date, none of the infants show evidence of congenital anomalies, neurological syndromes or neurodevelopmental disorders *(6, 7)*.

Figure 4. Number of confirmed cases of Oropouche 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 10 October 2024 by e-mail. Bogotá; 2024. Unpublished *(6)*.

Concerning the trend of Oropouche cases by EW of symptom onset shows that the number of cases increased from EW 4, reaching a maximum of 18 cases in EW 9; 57% of the cases occurred between EW 6 and EW 9 of 2024. The last detected case occurred in EW 22. Subsequently, no new cases were confirmed through the retrospective surveillance strategy of the national reference laboratory or through the reporting of research activities (**Figure 4**) *(6, 7)*.

In **Cuba,** in May 2024, samples from 89 cases with non-specific febrile syndrome from the provinces of Santiago de Cuba and Cienfuegos, where a sudden increase in cases of non-specific febrile syndrome of unknown etiology was detected, were processed by RT-PCR OROV by the national reference laboratory of the Institute of Tropical Medicine "Pedro Kourí" (IPK), confirming the identification of OROV in 83% (n= 74) of these samples. Since this first identification and up to EW 39, 555 confirmed[7] cases of Oropouche were reported. Cases continue to be identified through surveillance for non-specific febrile syndrome, with cases recorded in 109 municipalities in the 15 provinces of the country. The provinces of Havana (n= 170 cases), Santiago de Cuba (n= 74 cases), Pinar del Rio (n= 41 cases), and Cienfuegos (n= 36 cases) accounted for 58% of confirmed cases *(8, 22)*.

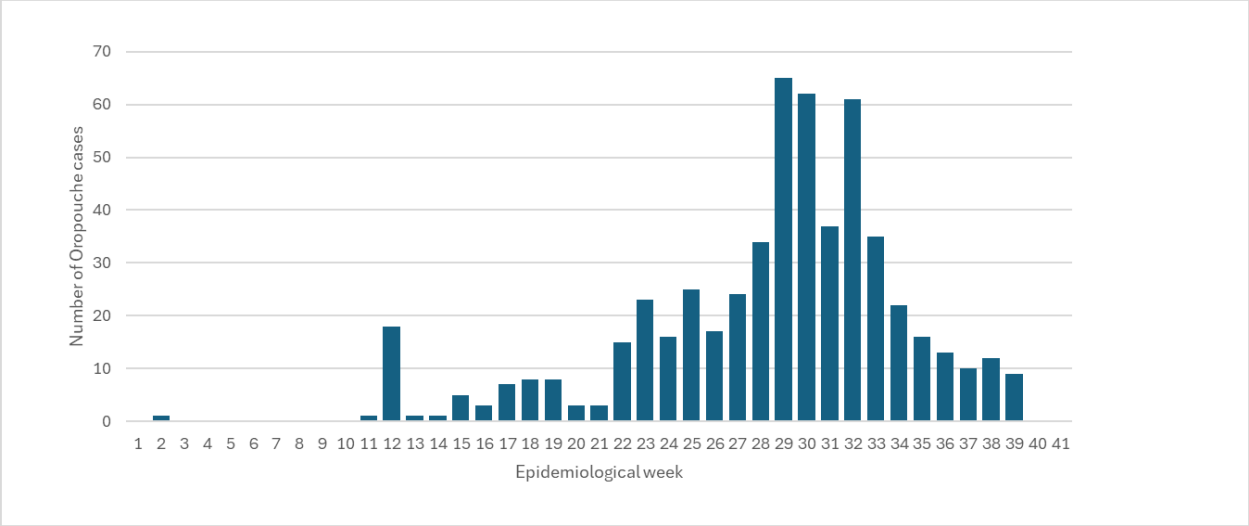
[7] **Cuba** has **a definition of suspected case and confirmed case**. The **definition of a suspected case of Oropouche** is as follows: any case presenting with a fever of 38 or more and headache with one or more of the following symptoms: myalgia, arthralgias, chills, low back pain, photophobia, with resolution of the condition in two to four days, negative IgM laboratory report for dengue, with a history of having been in an endemic area or where an unusual increase in SFI has been recorded. The **definition of a confirmed case of Oropouche** is as follows: any case with a laboratory diagnosis of OROV infection.

As for the distribution of cases by sex and age group, 55% (n= 306) were female and the highest proportion of cases was recorded in the 19-54 age group with 53% (n= 297) of cases *(8)*.

On 19 September 2024, Cuba reported three cases of Guillain-Barré syndrome (GBS) associated with OROV. The three cases presented with onset of symptoms in June, corresponding to two females and one male, aged 51, 53, and 64 years respectively; the cases are residents of the province of Santiago de Cuba, in the municipalities of San Luis (n= 1 case) and Santiago de Cuba (n= 2 cases). Serum, cerebrospinal fluid (CSF) and urine samples were collected in two cases and only serum and CSF in one case. Bacterial and mycological cultures were performed on the serum and CSF samples with negative results in all cases. Multiple RT-PCR DENV/ZIKV/CHIKV and RT-PCR OROV were performed on the three types of samples and in all three cases the serum and CSF samples were positive for Oropouche virus *(8, 23)*.

Concerning the surveillance of vertical transmission and its consequences, seven cases of Oropouche were identified in pregnant women, two of whom delivered live babies without any congenital anomalies being detected. On the other hand, three cases of congenital anomalies of the central nervous system with suspected infectious aetiology have been identified through the national antenatal referral service, of which one has undergone virological testing with a positive result for OROV in fetal heart blood; the other two cases are being followed up and investigated *(8)*.

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 10 October 2024 by e-mail. Havana; 2024. Unpublished *(8)*.

Regarding the trend of Oropouche cases by EW of symptom onset, the highest number of cases was recorded in EW 29 (n= 65 cases), followed by four weeks of reporting more than 30 cases per week and then a decrease that was maintained until EW 39 (**Figure 5**) *(8)*.

In the **Dominican Republic,** on 14 October 2024, their IHR National Focal Point reported that the Dr. Defillo National Reference Laboratory proceeded to perform additional PCR-RT tests

on the samples of cases[8] in which OROV had been detected through a retrospective analysis on dengue negative samples stored by the National Public Health Laboratory, previously reported for the PAHO/WHO epidemiological update on Oropouche published on 6 September 2024 *(18)*. Of the 33 cases which were reported as identified in August 2024, only ten had serum samples available and, after processing, they were negative, so these ten cases have been considered as ruled out for OROV. The remaining 23 cases remain as suspected cases rather than confirmed cases, pending serological testing. Most of the suspected cases were reported in the province of Hermana Mirabal (n= 6 cases) *(24)*.

In **Ecuador**, in EW 40 of 2024, two laboratory-confirmed cases of Oropouche were reported, which were detected based on retrospective analysis of dengue-negative samples by the National Institute of Public Health Research (INSPI per its acronym in Spanish). The cases correspond to one male and one female, aged 62 and 36 years respectively, with no history of travel. The cases presented symptoms on 11 June and 17 July 2024. The first case is a resident of Caluma canton, Bolivar province, and the second is a resident of Urdaneta canton, Los Rios province. None of the cases required hospitalization and have fully recovered *(9)*.

In **Guyana**, two laboratory-confirmed cases of Oropouche were reported in EW 37 of 2024, being the first detection of this disease in the country. The cases corresponded to two females aged 47 and 42 years respectively, with no history of travel, who presented symptoms on 21 August and 2 September 2024. Both cases had resided in the same geographical area in the Mahaica-Berbice region (Region No. 5), near the Atlantic Ocean, for at least 14 days prior to symptom onset. The cases sought medical attention at Fort Wellington Regional Hospital (Region No. 5), the first on 24 August 2024 and the second on 3 September 2024. Blood samples were collected on the same dates of care and sent to the National Public Health Reference Laboratory (NPHRL) for testing according to national diagnostic guidelines. Laboratory RT-PCR tests performed on 3 and 7 September were positive for OROV and negative for dengue, Zika, chikungunya, and Mayaro *(10)*.

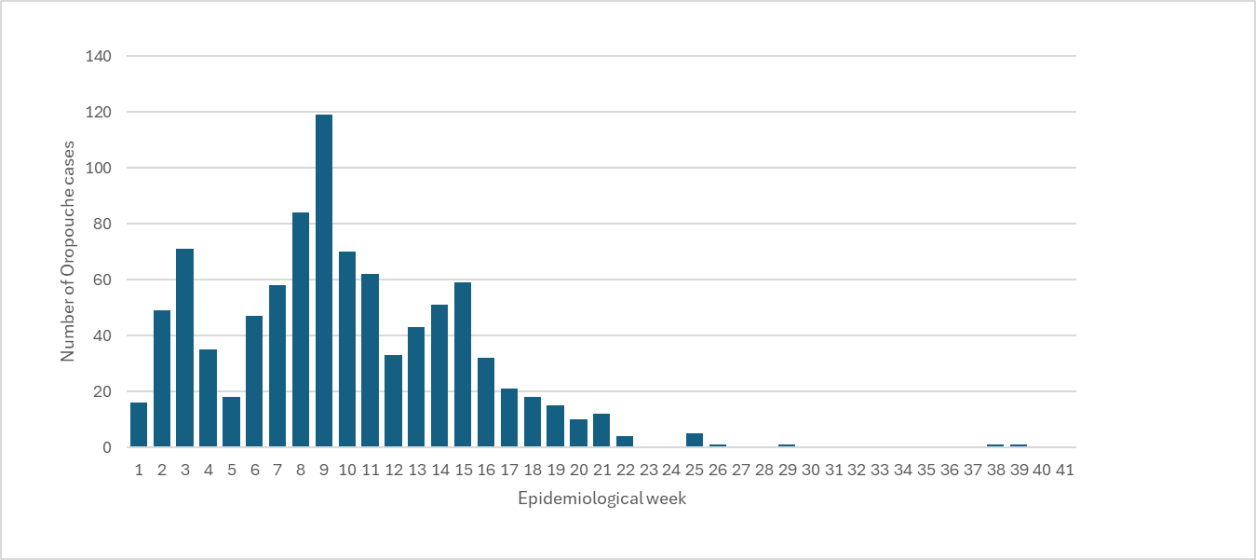
In **Peru**, between EW 1 and EW 40 of 2024, 936 confirmed cases[9] of Oropouche have been reported in eight departments of the country. The departments that reported confirmed cases are as follows: Loreto (n= 466), Madre de Dios (n= 312), Ucayali (n= 138), Huanuco (n= 15), Junin (n= 2), Tumbes (n= 1), San Martin (n= 1), and Puno (n= 1). Regarding the distribution of cases by sex and age group, 51% (n= 476) were males, with the highest proportion of cases in the 30-39 age group with 37% (n= 348) of cases. No deaths that could be associated with OROV infection have been reported. There are no reports of possible vertical transmission of OROV in the country *(11)*.

Regarding the trend of Oropouche cases by EW, it is observed that the Oropouche cases showed the highest number of cases in EW 9 with 119 cases (**Figure 6**) *(11)*.

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

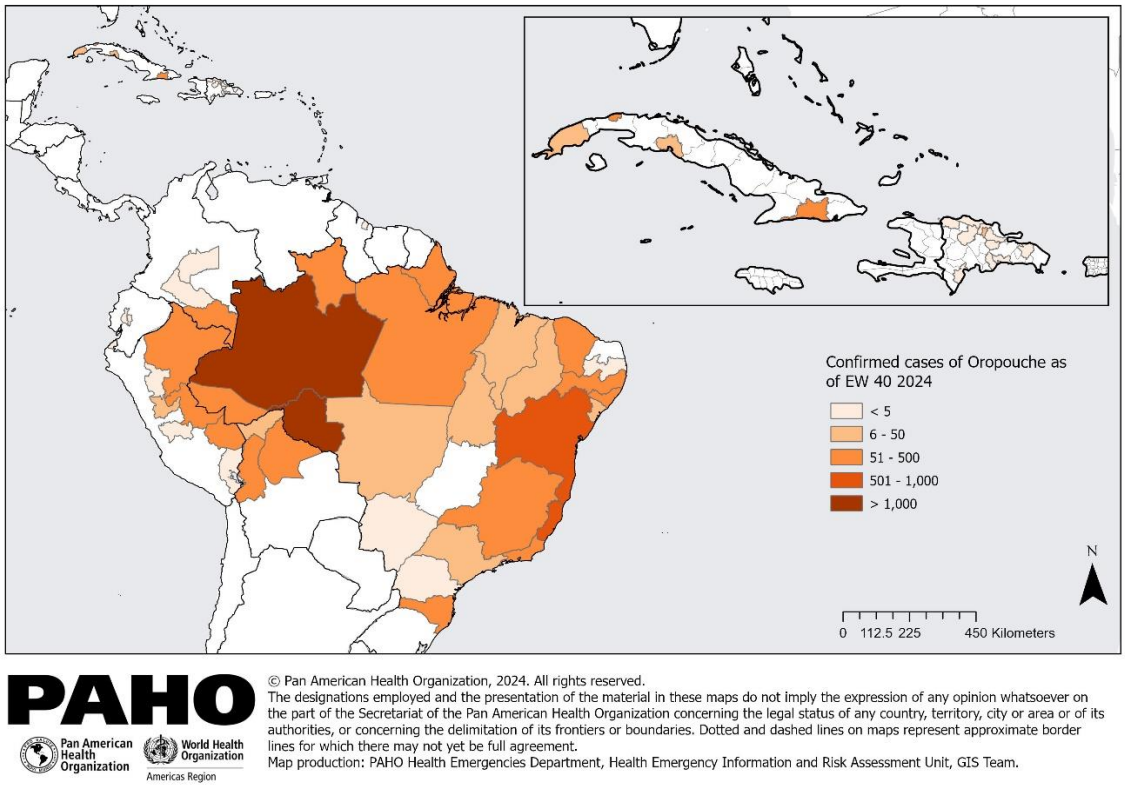
[9] Under the Oropouche Epidemiological Alert in the Region of the Americas published by PAHO/WHO on 1 August 2024. As an epidemiological surveillance strategy, the Peruvian Ministry of Health has conducted an active search for Oropouche through differential diagnosis of dengue cases with negative results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

Figure 6. Number of confirmed cases of Oropouche by epidemiological week (EW) of symptom onset, Peru, 2024.



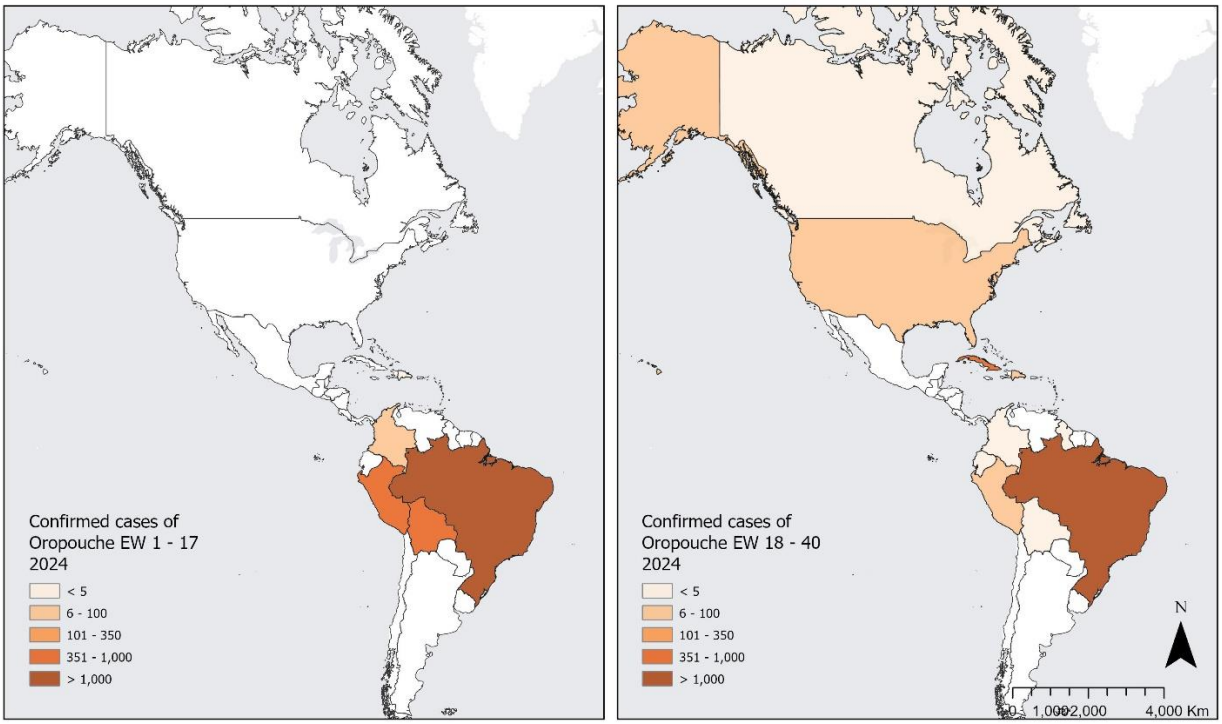
Source: Adapted from Oropouche data provided by Peru International Health Regulations (IHR) National Focal Point (NFP). Information from e-mail dated 10 October 2024. Lima; 2024. Unpublished *(11)*.

Figure 7. Geographic distribution of cumulative confirmed cases* of local transmission of Oropouche in the Americas Region, 2024.



***Note:** The cases represented in the Dominican Republic are suspected cases *(24)*.
Source: Adapted from data provided by the respective countries and reproduced by PAHO/WHO *(1-13, 24)*.

Figure 8. Geographic distribution of Oropouche cases* locally acquired, in the Americas Region, EW 1-17 and EW 18-40, 2024.



***Note:** The cases represented in the Dominican Republic are suspected cases *(24)*.
Source: Adapted from data provided by the respective countries and reproduced by PAHO/WHO *(1-13, 24)*.

Imported cases in non-endemic countries

In the Americas Region, **Canada** reported, in EW 33 and EW 38, the confirmation of two Oropouche cases, both with history of travel to Cuba *(5)*.

Likewise, as of 8 October 2024, the **United States** reported 90 imported cases of Oropouche, identified in the states of Florida (n= 86 cases), California (n= 1 case), Colorado (n= 1 case), Kentucky (n= 1 case), and New York (n= 1 case). The median age of the cases was 51 years (range = 6 to 94 years) and 48% were female. A total of three cases were hospitalized. Two of the cases presented with neuroinvasive disease, no deaths were reported, and all cases had a history of travel to Cuba *(12, 13, 25)*.

Additionally, between EW 23 and EW 39 of 2024, 30 imported cases of Oropouche have been identified in three countries of the WHO 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 are of the first cases registered in this region *(15-18)*.

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 *(26)*.

Diagnosis and clinical management

After an incubation period of 4 to 8 days, patients present high fever, intense headache (generally located in the nape of the neck), myalgia, arthralgia, extreme weakness (prostration) and, in some cases, photophobia, dizziness, persistent nausea or vomiting, and low back pain. Fever usually lasts up to 5 days. In some patients, symptoms may include vomiting, diarrhea and bleeding, manifesting as petechiae, epistaxis and gingival bleeding. The infection usually resolves within 2 to 3 weeks *(27)*.

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) *(27)*.

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 *(27)*. It is reported that up to 60% of cases present relapses of symptoms in the weeks following recovery *(27)*.

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 *(27)*.

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"** *(28, 29)*.

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 *(30)*.

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 *(31-33)*:

- 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"** *(34)*.

In addition, measures should be taken to prevent vector bites, which are reinforced in the case of pregnant women. These measures include *(31, 32)*:

- 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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