Epidemiological Alert
Oropouche in the Region of the Americas

9 May 2024

Considering the detection of Oropouche fever cases outside of the Amazon region in Brazil during the last month, alongside reports of widespread dengue circulation by several countries and territories in the Region of the Americas, the Pan American Health Organization/World Health Organization (PAHO/WHO) urges Member States to implement the recommendations for the differential diagnosis of Oropouche virus (OROV) and to bolster measures for entomological surveillance, vector control, and personal protection for populations at higher risk.

Background

In the Region of the Americas, outbreaks of Oropouche virus (OROV) during the last ten years have occurred mainly in the Amazon region. Historically, numerous outbreaks of OROV disease have been reported in both rural and urban communities in Brazil, Colombia, Ecuador, French Guiana, Panama, Peru, and Trinidad and Tobago *(1)*.

OROV is transmitted to humans primarily through the bite of the *Culicoides paraensis* midge that is present in the Region of the Americas, as well as the *Culex quinquefasciatus* mosquito which can also be a vector *(1-3)*.

Summary of the situation

In 2024, 5,193 confirmed cases of Oropouche have been reported in four countries in the Region of the Americas: the Plurinational State of Bolivia, Brazil, Colombia, and Peru. Since the last epidemiological update on Oropouche by the Pan American Health Organization (PAHO), Brazil and Bolivia have reported cases in areas where no autochthonous cases had previously been reported *(4-7)*.

In **Bolivia** during 2024, as of epidemiological week (EW) 18, 1,856 suspected cases of Oropouche have been reported, of which 313 have been confirmed by real-time RT-PCR laboratory tests. Transmission has been identified in three departments and laboratory confirmation in 16 municipalities, with four new municipalities reporting confirmed cases since the last update. Of the cases registered, 66% (n=235) were in the department of La Paz, followed by Beni with 21% (n=68) and Pando with 3% (n=10). Regarding the distribution of cases by sex and age group, 51% (n=157) corresponded to female cases, with the highest proportion of cases among the 30-39 age group at 21% (n=66) of the total number of cases *(6-9)*.

In **Brazil**, between EW 1 and EW 18 of 2024, 4,583 confirmed cases of OROV were detected. Most of the cases detected had a probable site of infection in municipalities of the Northern states of Brazil. The Amazon region is considered endemic, accounts for 93% of the cases

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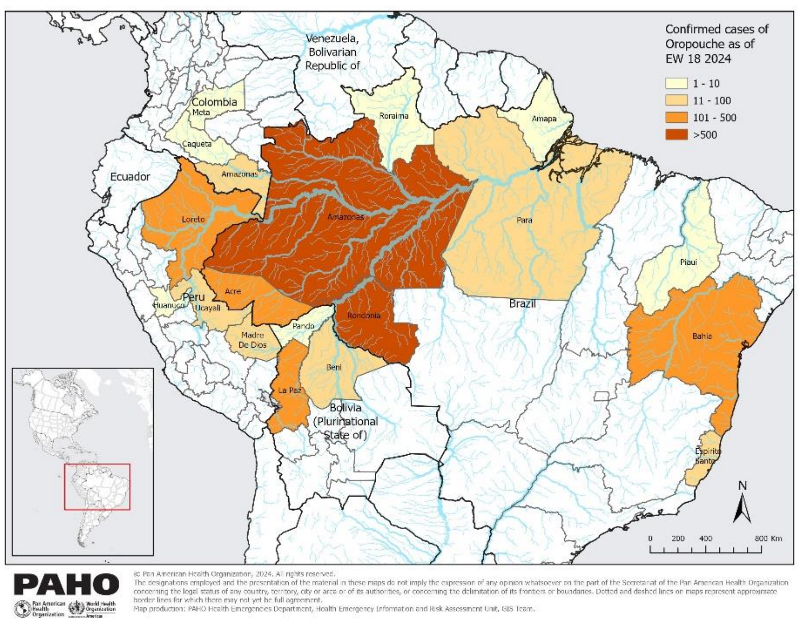
reported in the country: Amazonas (n=2,910), Rondônia (n=1,113), Acre (n=163), Pará (n=52), Roraima (n=7), and Amapá (n=1). Additionally, autochthonous transmission has been identified in three non-Amazonian states where no autochthonous cases had previously been reported: Bahia (n=273), Espírito Santo (n=33), and Piauí (n=10). In addition, cases reported in the states of Rio de Janeiro (n=10), Santa Catarina (n=7), and Paraná (n=1) are under investigation to establish the probable site of infection. Regarding the distribution of cases by sex and age group, 52% (n=2,396) correspond to male cases and the highest proportion of cases is registered in the 20-29 years of age group with 21% (n=977) of the cases (*5, 10)*.

In **Colombia**, between EW 1 and EW 18 of 2024, 38 confirmed cases of Oropouche were detected in three departments of the country: Amazonas (n=35), Caquetá (n=1), and Meta (n=1); in addition, one case was identified from Tabatinga, Brazil. Cases were identified through a retrospective laboratory case-finding strategy implemented by the Colombian National Institute of Health (INS per its acronym in Spanish) from dengue surveillance. Regarding the distribution of cases by sex and age group, 61% (n=23) correspond to male cases and the highest proportion of cases is registered in the 10-19 years of age group with 44% (n=17) of the cases *(11)*.

In **Peru**, between EW 1 and EW 18 of 2024, 259 confirmed cases of Oropouche have been reported in four departments, the highest number of cases reported to date in this country. The departments where confirmed cases were reported are Loreto (n=182), Madre de Dios (n=43), Ucayali (n=26), and Huánuco (n=8). Regarding the distribution of cases by sex and age group, 51% (n=131) were male, with the highest proportion of cases among the 30-39 years of age group with 40% (n=104) of cases *(12)*.

Map. Distribution of confirmed cases of Oropouche in the Region of the Americas, 2024



Source: Adapted from reports sent by the International Health Regulations National Focal Points (IHR NFPs) of Brazil, Bolivia, Colombia, and Peru *(5-12)*.

Guidance to Member States

The Pan American Health Organization / World Health Organization (PAHO / WHO) recommends to Member States intensify surveillance for the timely detection of cases, update health personnel for the detection and proper management of cases and inform the population at-risk about prevention and control measures.

Given its clinical presentation and considering the current situation of dengue and other vector-borne diseases in the Region of the Americas *(13)*, laboratory diagnosis is essential to confirm cases, characterize an outbreak, and monitor disease trends. The following are the main recommendations for clinical diagnosis and management, laboratory surveillance, and prevention and control measures.

Clinical diagnosis and management

After an incubation period of 5 to 7 days, patients experience high fever, headache with photophobia, myalgia, arthralgia and, in some cases, rash. In certain patients, symptoms may include vomiting and bleeding, manifesting as petechiae, epistaxis and gingival bleeding. Generally, the infection resolves within 2 to 3 weeks. In exceptional situations, OROV can cause meningitis or encephalitis. In these cases, patients show neurological symptoms and signs such as vertigo, lethargy, nystagmus, and neck stiffness. The virus can be detected in cerebrospinal fluid (CSF) (*13)*.

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 *(14)*.

Currently, there are no vaccines or specific antiviral drugs available to prevent or treat OROV infection. The treatment approach is palliative, focused on pain relief, rehydration and control of any vomiting that may occur. In situations where the disease manifests itself in a neuroinvasive form, the patient will need to be admitted to specialized units that allow constant monitoring.

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"** *(15)*.

OROV virus has a segmented genome with three segments known as S (small), M (medium), and L (large). During the acute phase of the disease, which usually lasts between 2 and 7 days, it is possible to detect the genetic material of the virus (RNA) by molecular methods (RT-PCR) in serum samples. Although it is also possible to detect RNA in cerebrospinal fluid (CSF) in cases presenting with aseptic meningitis (a rare complication of Oropouche fever), the CSF sample should only be taken on medical indication. Most molecular methods are based on the detection of the conserved genetic segment S *(15-17)*.

On the other hand, viral isolation can be done with the same samples used for RT-PCR by intracerebral inoculation in lactating mice or by inoculation in Vero cell cultures or C6/36 cell cultures. However, viral isolation is not considered a diagnostic method, but rather a tool for further characterization and investigation, and therefore is not routinely applied or a requirement for confirmation of diagnosis *(15, 16)*.

Regarding serological methods, antibodies against OROV can generally be detected in serum from the fifth day after the onset of symptoms. The serological diagnosis of OROV is based on in-house methods, such as plaque reduction neutralization (PRNT), complement fixation, immunofluorescence, hemagglutination inhibition, and IgM and IgG ELISA. Antibodies can also be detected in available or medically collected CSF samples. However, the availability of reagents for serological methods is extremely limited. Therefore, it is recommended to prioritize and use molecular methods (RT-PCR), as long as appropriate samples are available *(15-17)*.

Given the clinical presentation of Oropouche fever, for detection and follow-up, it is suggested to process acute samples (up to 7 days after the onset of symptoms) from dengue surveillance, which meet a definition of a suspected case of dengue, but which are negative for the molecular detection of dengue virus. Depending on laboratory capacity and epidemiological context, a percentage of acute-negative samples may be processed for molecular detection of dengue (which may range from 10% to 30%) or a limited number of representative samples *(15)*.

Genomic surveillance

Due to the segmented nature of its genome, the OROV virus is subject to genomic rearrangement, an important phenomenon that generates viral diversity within the species Orthobunyavirus oropoucheense. Thus, several recombinants have been described within this species such as the Iquitos, Madre de Dios and Perdões viruses, which contain the same L and S segments as OROV but different M segments. For this reason and to expand the knowledge of this virus, genomic surveillance can also be implemented where there is capacity and without neglecting the priority of diagnosis and timely detection *(15)*.

Notification under the International Health Regulations

Given that this is an emerging arbovirus that has been little identified in the Americas, the detection of a positive sample and confirmation of a case requires the use of Annex 2 of the IHR and its consequent notification through the established channels of the International Health Regulations *(18)*.

Vector prevention and control

Proximity of vector breeding sites to places of human habitation is a major 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 *(19-21)*:

- Strengthen entomological surveillance for the detection of species with vector potential.
- 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 water collections, ponds or temporary flooding 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.

In addition, measures should be taken to prevent vector bites. Among these measures are *(19, 20)*:

- Protection of homes with fine-mesh mosquito nets on doors and windows, thus also preventing other arbovirosis.
- 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; their use must be in strict accordance with product label instructions.
- Use of insecticide-treated 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 periods of peak vector activity (dawn and dusk).
- In the case of people at higher risk of being bitten such as forestry workers, agricultural workers, etc. It is recommended to wear garments that cover exposed parts of the body, 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.

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