



Pan American  
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# Epidemiological Alert

## Oropouche in the Region of the Americas: vertical transmission event under investigation in

Brazil

17 July 2024

In previous epidemiological updates, circulation of Oropouche virus (OROV) has been reported in several countries in the Region of the Americas. In this epidemiological alert the identification of possible cases of vertical transmission of OROV in Brazil, which are under investigation, are being reported. The Pan American Health Organization / World Health Organization (PAHO/WHO) urges Member States to remain alert to the occurrence of similar events in their territories and to notify their occurrence through the established communication channels under the International Health Regulations (IHR).

### Summary of the situation

On 12 July 2024, the Brazil IHR National Focal Point (NFP) informed PAHO/WHO about the characterization of a presumed vertical transmission of Oropouche virus (OROV). A pregnant woman with no history of travel, resident of Rio Formoso Municipality, Pernambuco State (an area of Northeastern Brazil where OROV transmission has been reported since May 2024) presented with symptoms compatible with Oropouche on 24 May 2024, including fever, headache and epigastric pain, during the 30th week of gestation. The patient reported a history of close contact with a positive case of Oropouche in the territory. On 3 June 2024, samples were collected from the pregnant woman and the results indicated a reactive response for dengue and chikungunya (Elisa-IgM); additionally, serum and placenta samples were tested, with a positive result for OROV detection by RT-PCR (1).

On 6 June 2024, the case sought medical attention after noticing lack of fetal mobility at 30 weeks gestation. On the same day, fetal death was confirmed. The fetus was sent to the Death Verification Service of Recife (SVO-Recife per its acronym in Portuguese) for histopathological examination to investigate the presence of arbovirus (1).

Fetal samples were sent to the Instituto Evandro Chagas (IEC per its acronym in Portuguese) of Brazil, and on 4 July 2024, the detection of OROV genetic material in umbilical cord blood and organ tissue obtained from the fetus, including brain, liver, kidneys, lungs, heart, and spleen was confirmed by RT-PCR, which is indicative of vertical transmission of the virus. The sample was negative for molecular detection of other arboviruses (dengue, Zika, chikungunya, and Mayaro). Further laboratory analysis, along with epidemiological, clinical and pathological investigations, are underway for final classification of this case (1).

In a subsequent communication, the Brazil IHR NFP reported a second suspected case in a 33-year-old pregnant woman residing in Jaqueira, Pernambuco state, with no history of travel. The patient presented symptoms on 6 June 2024, with a clinical picture characterized

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by fever, headache, lumbago, skeletal pain, arthralgia, retro-orbital pain, chills, photophobia, nausea, pruritus and taste alteration. Uterine hemorrhage was observed during the sixth week of pregnancy, with miscarriage on 27 June 2024, in the eighth week of gestation. The pregnant woman's serum sample, collected on 12 June, was negative for molecular detection for dengue, Zika, chikungunya, and Mayaro, and detectable in PCR for OROV, as well as reactive for dengue in IgM Elisa. It was not possible to collect samples from the fetus for investigation (1).

In its 12 July communication, the Brazil IHR NFP also reported that, in June 2024, the IEC of Brazil conducted a retrospective analysis of serum and cerebrospinal fluid samples collected and stored for arbovirus research at the institution, which had tested negative for dengue, chikungunya, Zika, and West Nile virus. In this study, four newborns with microcephaly (three newborn at one day of life and one at 27 days of life) were detected with the presence of IgM class antibodies against Oropouche virus (OROV) in serum samples (newborn at 1 day of life and another at 27 days of life) and cerebrospinal fluid (two newborn at 1 day of life and the newborn at 27 days of life, in which IgM was also detected in cerebrospinal fluid) (1, 2). The limitations of the studies do not allow establishing a causal relationship between OROV infection and neurological malformations (1, 2).

In 1982, IEC professionals together with the Institute of Tropical Medicine of Manaus and the University of Manaus, Brazil reported the occurrence of nine cases of OROV infection in pregnant women. Among these cases, two, who were in the second month of gestation, resulted in spontaneous abortion. Although the technique used for diagnosis in pregnant women was a serological test (due to the unavailability of molecular tests at the time), this finding is suggestive of vertical transmission, and was recorded as part of the characterization of the first outbreak of Oropouche in the state of Amazonas, Brazil between 1980 and 1981 (3).

### **Oropouche cases in the Region of the Americas**

As of 16 July 2024, 7,688 confirmed cases of Oropouche have been reported in five countries in the Region of the Americas: the Plurinational State of Bolivia (n= 313), Brazil (n= 6,976), Colombia (n= 38), Cuba (n= 74), and Peru (n= 287). During the last quarter, cases of Oropouche have been reported in areas and countries where no autochthonous cases had been previously reported (4-12).

In **Brazil**, between EW 1 and EW 27 of 2024, 6,976 confirmed cases of OROV were detected. Most of the cases detected had probable site of infection in municipalities of the northern states. The Amazon region, considered endemic, accounts for 78% of the cases reported in the country: Amazonas (n= 3,228), Rondônia (n= 1,713), Acre (n= 263), Pará (n= 74), Roraima (n= 191), and Amapá (n= 1) (1, 7).

Additionally, autochthonous transmission has been documented in nine non-Amazonian states, some of which had not previously reported cases: Bahia (n= 790), Espírito Santo (n= 374), Santa Catarina (n= 135), Minas Gerais (n= 83), Mato Grosso (n= 83), Rio de Janeiro (n= 58), Piauí (n= 19), Pernambuco (n= 9), and Maranhão (n= 3). Cases reported in the states of Ceará (n= 5), Paraná (n= 3), and Mato Grosso do Sul (n= 1) are being investigated to establish the probable site of infection. Regarding the distribution of cases by sex and age group, 52% (n= 3,611) correspond to male cases and the highest proportion of cases is registered in the 20-29 years age group with 21% (n= 1,484) of the cases (1, 7).

## Guidance to Member States

The possible vertical transmission and consequences in the fetus are still under investigation. However, this information is shared with the Member States to make them aware of the situation and at the same time request that they be alert to the occurrence of similar events in their territories.

Therefore, and in order to contribute to the building of knowledge about this possible new route of transmission and its consequences, PAHO/WHO requests that Member States with proven transmission of OROV or other arboviruses to intensify surveillance in pregnant women and to report the occurrence of miscarriages or fetal death associated with OROV infection<sup>1</sup>, as well as the increase in miscarriages, fetal deaths, congenital malformations in newborns that cannot be explained by a known cause.

The following are the recommendations for laboratory diagnosis related to this ongoing event. The recommendations for clinical detection and management, which are published in the 9 May 2024 PAHO/WHO Epidemiological Alert: Oropouche in the Region of the Americas remain in effect and are available from: <https://www.paho.org/en/documents/epidemiological-alert-oropouche-region-americas-9-may-2024> (12).

### 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**" (13, 14).

### Laboratory diagnosis of OROV possibly associated with congenital malformations, spontaneous abortion or fetal death.

The diagnosis of OROV infection in pregnant women can be made according to the criteria described above and according to the stage of infection. However, in the event of a possible vertical infection, it is necessary to strictly follow up both the mother and the newborn.

Thus, in the presence of a clear suspicion of vertical transmission or possible congenital involvement, a sample of amniotic fluid (collected only under medical indication for the diagnosis of other syndromes) can be used for molecular detection by PCR of OROV and other agents.

In cases of neonates with malformations possibly associated with OROV infection, it is recommended that serum samples be collected at delivery from both the mother and the newborn, as well as samples of umbilical cord blood and placenta. A cerebrospinal fluid (CSF) sample is strongly suggested, but should be taken only by medical indication, upon reasonable suspicion.

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<sup>1</sup> Product of a miscarriage or stillbirth of a pregnant woman who was confirmed to be infected with OROV during pregnancy and in whom the presence of the virus was confirmed in the tissue of the product of miscarriage or stillbirth.

Molecular detection (RT-PCR) of the virus in neonatal serum or placental samples may indicate a recent vertical infection, but not necessarily the cause of a congenital malformation or damage. The detection of IgM antibodies in both placenta and neonatal serum or CSF samples (taken at delivery and no later than 5 days after birth) may indicate intrauterine infection, given the low likelihood of infection by vector bite and the generation of antibodies in such a short time. A positive IgM result in umbilical cord samples should be contrasted with IgM results in the mother.

In cases of miscarriage and stillbirths, fetal tissue samples should be taken (preserved fresh or in buffered formalin, prioritizing brain sections, but also liver, kidney, spleen, and others) and placenta samples for attempted molecular detection by PCR of OROV and other agents, and for histopathology studies (only samples in buffered formalin). It is also recommended to take a fetal serum sample (if possible) for IgM antibody detection (ELISA) and to analyze in parallel with maternal serum samples.

### Prevention and vector control

OROV is transmitted to humans mainly through the bite of the midge *Culicoides paraensis*, which is present in the Region of the Americas, but can also be transmitted by the mosquito *Culex quinquefasciatus* (15).

Thus, 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 (16-18):

- 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 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.

In addition, measures should be taken to prevent vector bites, which are reinforced in the case of pregnant women. These measures include (16, 17):

- Protection of houses with fine mesh nets on doors and windows, thus also preventing other arbovirolosis.
- 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, 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, taking into account 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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