

Florida Department of Health

Mpox and Oropouche: Understanding Emerging Diseases and Public Health Implications



Florida
HEALTH

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Presenter



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Mpox: Discovery and History¹

Orthopoxvirus

Zoonotic

1958

1970

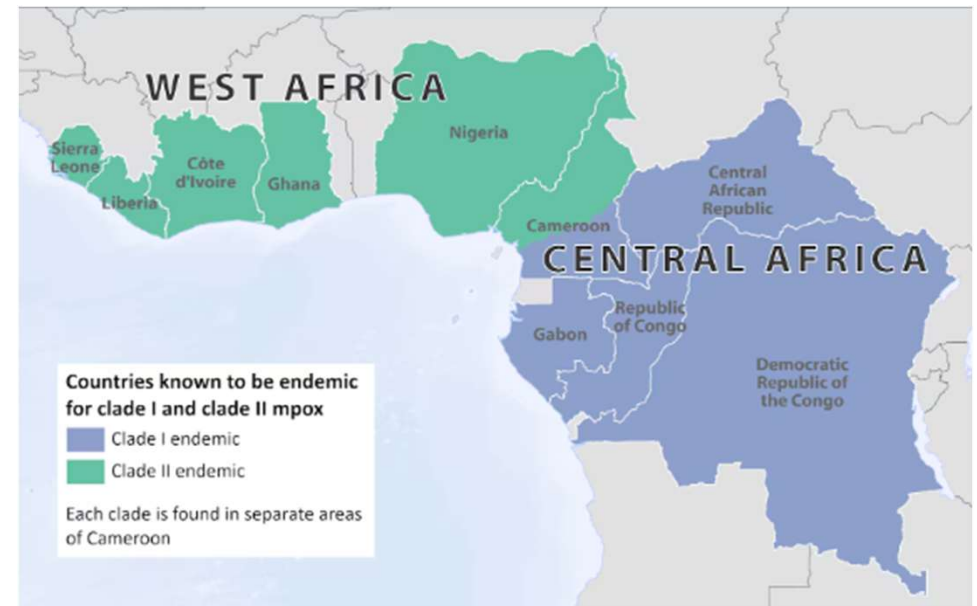
Clade I and Clade II¹

Clade I

- Subclades *Ia* and *Ib*
- Current rise of cases in Central and Eastern Africa
- Causes severe illnesses
- More transmissible

Clade II

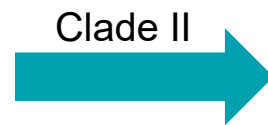
- Subclade *IIa* and *IIb*
- Global outbreak in 2022 (subclade *IIb*)
- Less severe



Public Health Importance

2022

**Central and
West Africa**



**Global
Epidemic**

Current Outbreaks in the U.S. Clade I²

California
2024

Georgia
2025

New
Hampshire
2025

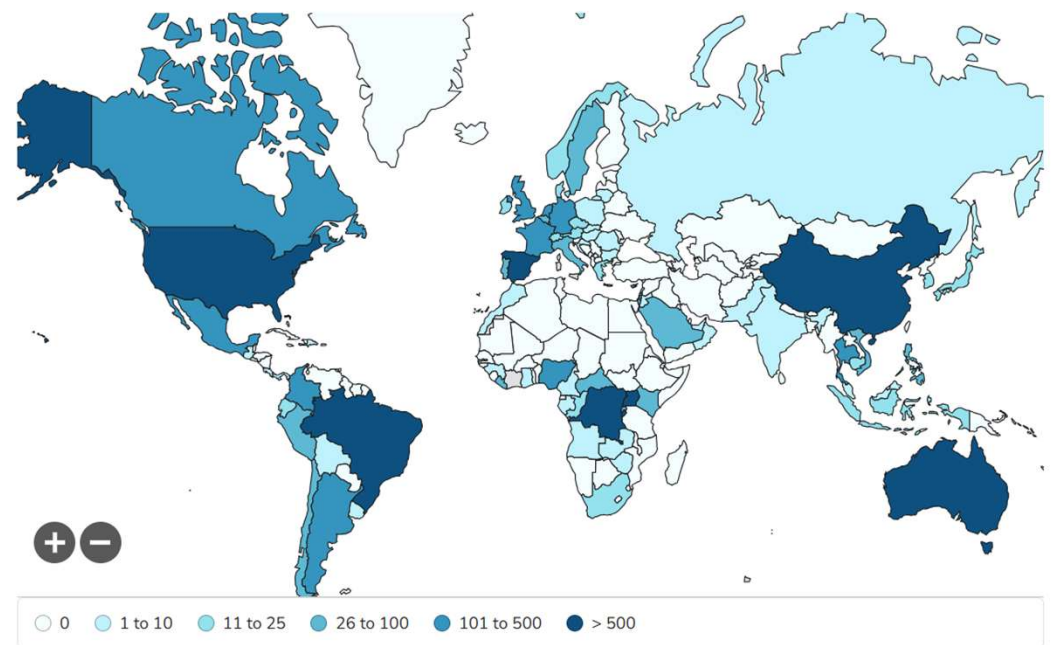
New York
2025

- No additional cases have been reported
- Cases are not linked
- CDC risk assessment:
 - Low to moderate risk

Current Outbreaks in the U.S. Clade II³

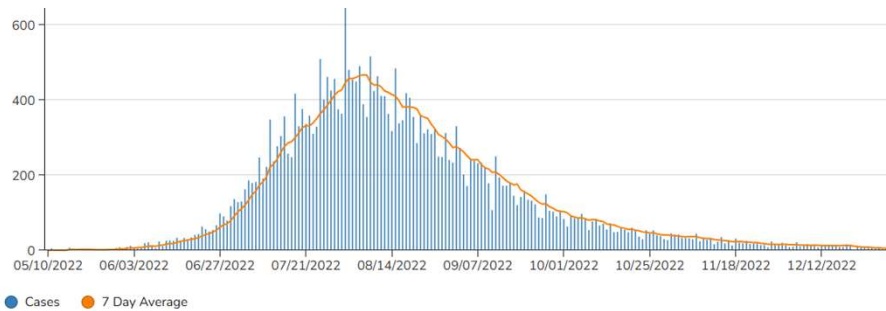
- Cases have decreased since the peak in 2022
- 1,700 cases reported in 2023
- >3,000 cases reported in 2024

Ongoing Global Outbreak since 2022

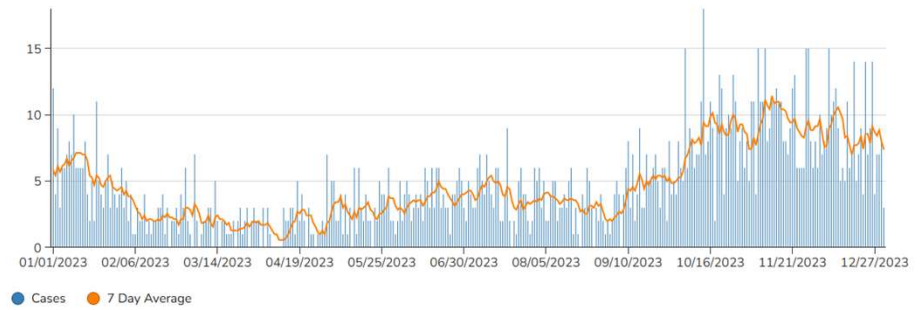


Current Outbreaks in the U.S. Clade II⁴

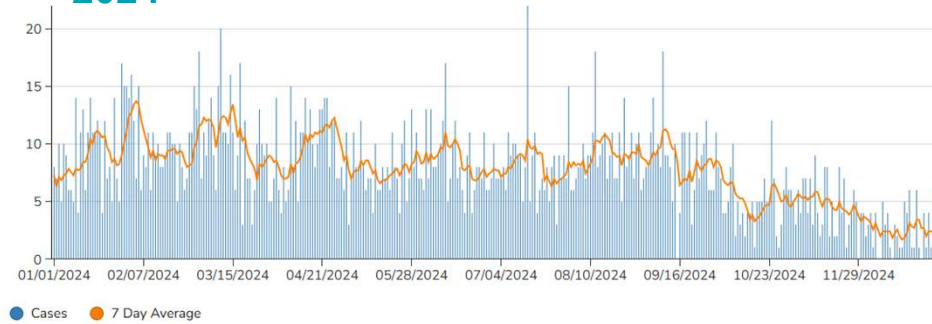
2022



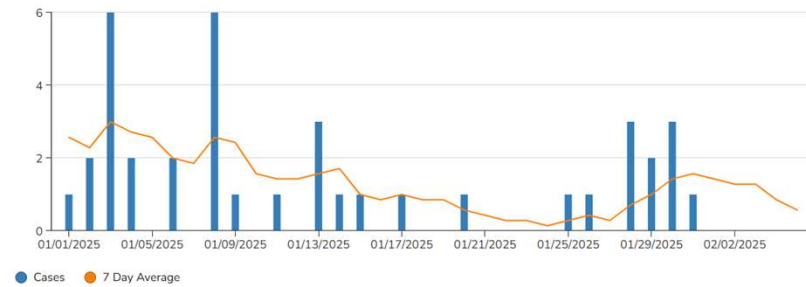
2023



2024



2025



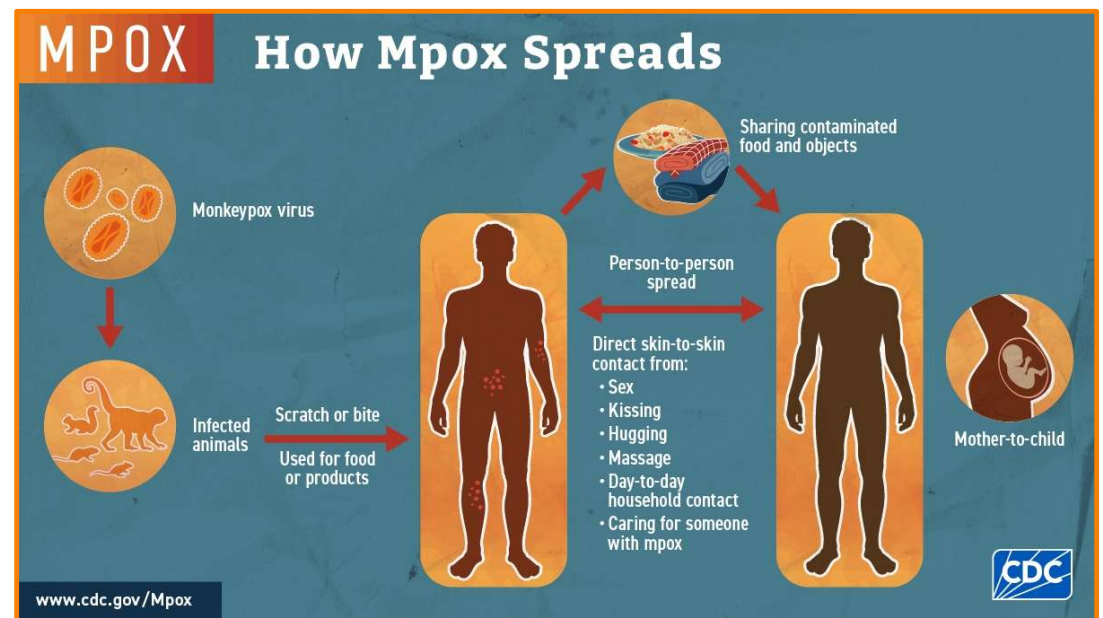
Transmission^{5,6}

Modes of transmission:

- Human-to-human
- Animal-to-human

High-risk populations:

- Interaction with infected person or animal
- HIV
- STIs and comorbidities
- MSM
- Unsafe sexual activities
- Other factors



Clinical Features for Health Care Providers⁷

Incubation period

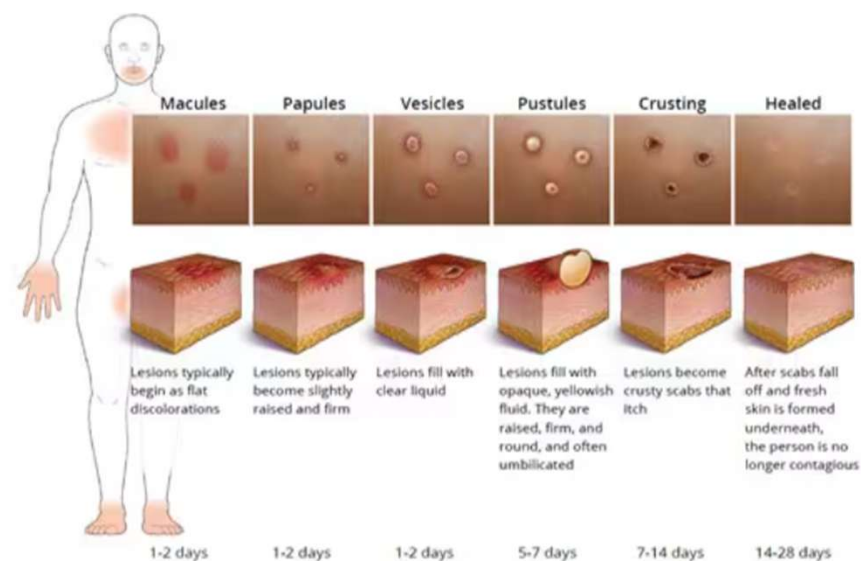
- No symptoms
- 1-2 weeks

Prodrome

- Fever
- Malaise
- Headache
- Sore throat
- Cough
- Swollen lymph nodes

Rash

- Enanthem
- Macules
- Papules
- Vesicles
- Pustules
- Scabs



Rash: Macules, Papules, Vesicles, Pustules, Scabs⁷



Diagnosis and Testing⁸

- Clinical suspicion and differential diagnosis
- Laboratory testing:
 - PCR test (gold standard)
 - Collect two swabs from each lesion (2-3 lesions)
 - Skin
 - Fluid
 - Crust
 - Blood testing (less reliable)

Recommended for people who have a rash consistent with mpox.

Health Care Providers: Case Definitions⁹

Suspect Case

- New characteristic rash or meets one of the epidemiologic criteria and has a high clinical suspicion for mpox

Probable Case

- No suspicion of recent Orthopoxvirus and demonstration of the presence of
 - Orthopoxvirus DNA by PCR
 - Orthopoxvirus using immunohistochemical or electron microscopy testing
 - Anti-orthopoxvirus IgM

Confirmed Case

- Mpox virus (MPXV) DNA
- Isolation of MPXV in culture

Health Care Providers: Epidemiologic Criteria⁹

Within 21 days of
illness onset

- Close contact with a person with a similar rash or who received a diagnosis of confirmed/probable mpox
- Close or intimate contact with individuals in a social network experiencing mpox
- Traveled outside of U.S. where MPXV is endemic
- Contact with a dead or live wild animal that is an African endemic species

Health Care Providers: Exclusion Criteria⁹

Excluded as a suspect, probable, or confirmed case:

- Alternative diagnosis
- No rash within five days of illness onset
- No presence of orthopoxvirus, MPXV, or antibodies

Management and Treatment¹⁰

Supportive Care

- Pain management
- Wound care
- Hydration

Antiviral Treatment

- Tecovirimat (TPOXX)
- Brincidofovir
- Vaccinia Immune Globulin Intravenous
- Cidofovir

ISOLATION GUIDELINES
Until all lesions have scabbed
and new skin has formed

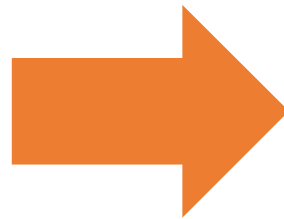
Prevention: Vaccination¹¹

JYNNEOS

- 2-dose vaccine
- Clade II MPXV outbreak

ACAM2000

- Less commonly used
- More side effects



Pre-exposure prophylaxis

- At risk populations

Post-exposure prophylaxis

- Within four days of exposure

Infection Control: Health Care Settings¹²

Recommendations

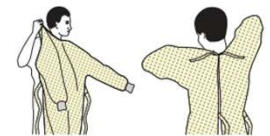
- Patient placement
 - Single patient room
 - Dedicated bathroom
 - Limit transport and movement
- Personal protective equipment (PPE)
- Environmental
 - Wet cleaning methods preferred
 - Cleaning and disinfection

SEQUENCE FOR PUTTING ON PERSONAL PROTECTIVE EQUIPMENT (PPE)

The type of PPE used will vary based on the level of precautions required, such as standard and contact, droplet or airborne infection isolation precautions. The procedure for putting on and removing PPE should be tailored to the specific type of PPE.

1. GOWN

- Fully cover torso from neck to knees, arms to end of wrists, and wrap around the back
- Fasten in back of neck and waist



2. MASK OR RESPIRATOR

- Secure ties or elastic bands at middle of head and neck
- Fit flexible band to nose bridge
- Fit snug to face and below chin
- Fit-check respirator



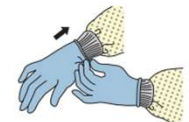
3. GOGGLES OR FACE SHIELD

- Place over face and eyes and adjust to fit



4. GLOVES

- Extend to cover wrist of isolation gown
















USE SAFE WORK PRACTICES TO PROTECT YOURSELF AND LIMIT THE SPREAD OF CONTAMINATION

Infection Control: Home¹³

Recommendations

- Avoid close contact
 - Isolate
- Do not share personal items
- Use separate bathrooms
- Avoid wearing contact lenses
- Avoid shaving rash-covered areas of the body
- Source control
 - Hand hygiene
 - Wear a mask
 - Cover skin rash

If you live with other people:			If you can't avoid being in the same room as someone else:	
 <p>Isolate in a separate room.</p>	 <p>Use a separate bathroom, or clean and disinfect (with household disinfectant) after each use.</p>	 <p>Clean hands frequently using soap and water or an alcohol-based hand sanitizer.</p>	 <p>Cover rash with clothing/bandages.</p>	 <p>Avoid touching each other.</p>
 <p>Clean and disinfect frequently touched surfaces and objects with soap and water and household disinfectant.</p>	 <p>Avoid sweeping and vacuuming.</p>	 <p>Use separate dishes, cups, bedding, towels and electronics such as phones.</p>	 <p>Wear well-fitting medical masks.</p>	 <p>Open windows.</p>
 <p>Do your own laundry. Put everything in a plastic bag before carrying it out to the washing machine or washing area. Use soap and hot water. Ideally, the water should be at least 60 degrees.</p>		 <p>Open windows.</p>		 <p>Clean hands often.</p>

August 2025

Third meeting of the International Health Regulations (2005) Emergency Committee regarding the upsurge of mpox 2024 – Temporary recommendations¹⁴

“...**Temporary recommendations for states parties** experiencing transmission of mpox, **including**, but not limited to, those where there is **sustained community transmission and where there are clusters of cases or sporadic travel-related cases of MPXV clade Ib.**”

International Health Regulations (2005) Emergency Committee, continued

Emergency Coordination

- Resource allocation
- Response coordination

Collaborative Surveillance

- Geographic coverage
- Access to diagnostic testing
- Close contacts
- Case investigation

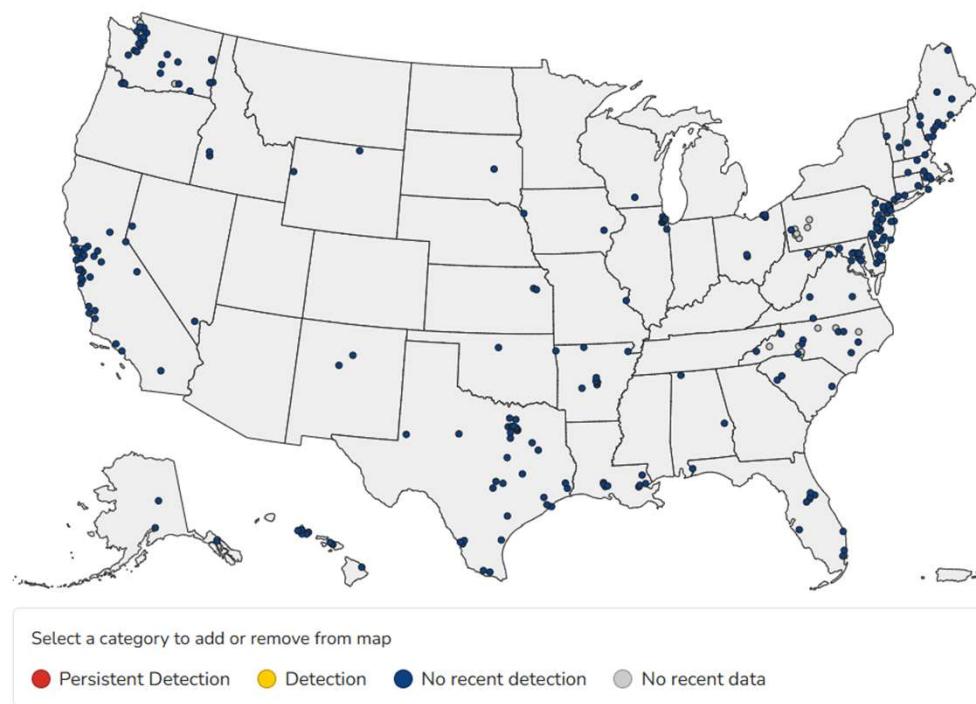
Safe and Scalable Clinical Care

- Clinical, nutritional and psychosocial support
- Expand access to optimized supportive clinical care
 - Coinfections

International traffic

International Health Regulations (2005) Emergency Committee, continued

- Vaccination
 - High risk of exposure
- Community protection
 - Strengthen risk communication and community engagement systems
 - Training
 - Mapping high risk populations
 - Community feedback
 - Misinformation
- Governance and financing
- Addressing research gaps
- Reporting on the implementation of temporary recommendations



Conclusion: Key Takeaways

Mpox can be managed effectively by:

- Early detection, which is critical
- Proper case management
- Vaccination and prevention
- Infection control measures
- Surveillance and public health coordination
- Community education
- Coordinated emergency response

Contact Information



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Florida Department of Health

Oropouche: Understanding Emerging Disease and Public Health Implications



**Florida
HEALTH**

Presenter



Rachel McDougal, MPH

Epidemiologist

Florida Department of Health in Miami-Dade County

Oropouche Fever

Oropouche fever was first identified in 1955 in a forest worker in Trinidad and Tobago.¹

This disease is endemic to Amazon regions in South America.¹

- It is the second most common vector-borne viral disease in South America, and more than 500,000 cases have been recorded since discovery.²
- In 2024, oropouche cases increased dramatically in endemic areas and expanded geographically to new regions.^{3,4}

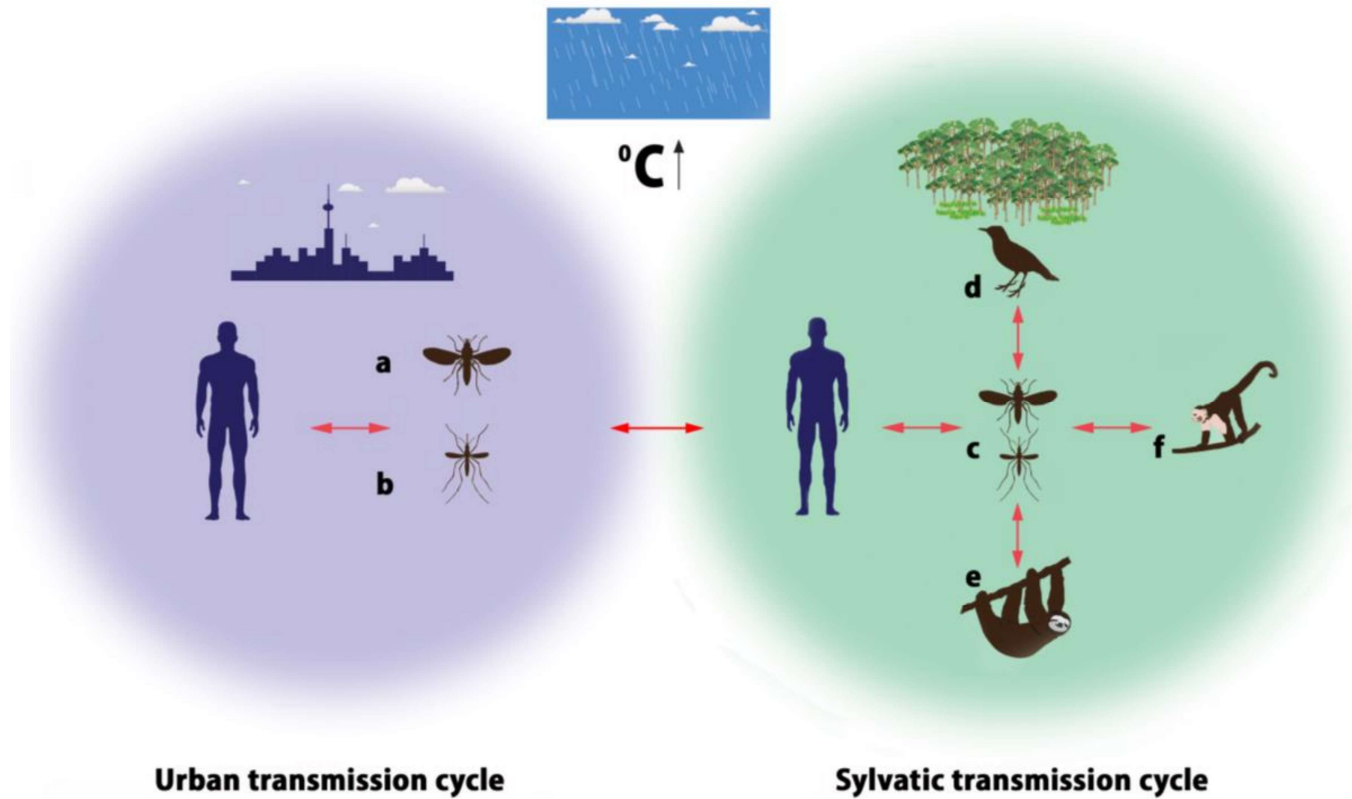
Oropouche Fever

- This is an emerging arbovirus with potential to affect Florida residents in coming years.
 - In 2024, the first imported confirmed oropouche cases were recorded in Florida and the U.S.³

Transmission

- Oropouche virus (OROV) is transmitted to humans by the bite of a biting midge or mosquito.¹
- The virus is transmitted in urban and sylvatic transmission cycles by multiple hosts and vectors.²
- Cases of vertical transmission in Brazil are under investigation.³
- The possibility of sexual transmission is also under investigation.¹

Transmission⁵



Transmission

Oropouche Vectors

- Oropouche is transmitted through the bite of a *C. paraensis* biting midge.²
- Mosquito species *C. quinquefasciatus*, *C. venezuelensis*, *Ma. venezuelensis*, and *A. serratus* can also transmit the virus.²



Transmission

Primary Vector: Biting Midges

- At least 47 biting midge species, including the *C. paraensis* are present in Florida.⁵
- Biting midges readily bite humans and may be more active around dawn and dusk.⁵
- Preferred habitats are wet areas close to forests or bodies of water such as: damp tree holes, mangrove swamps, wet pastures, and puddle edges.⁵



Transmission

Vertical Transmission

- Oropouche virus has been associated with adverse pregnancy outcomes, including fetal deaths and congenital abnormalities.¹
- CDC is investigating the risks of oropouche during pregnancy.¹

Sexual Transmission

- OROV was detected in the semen of a confirmed Oropouche case.¹
- Detection of viruses in semen are associated with a risk of sexual transmission.¹
- Although no cases of sexual transmission have been reported, the possibility is under investigation by the CDC.¹

Symptoms



- Incubation period is 3-10 days¹
- Symptoms usually last 2-7 days, but relapse of symptoms days or weeks later is reported in 60% of patients²
- Up to 4% of patients develop severe neurologic complications including meningitis and encephalitis¹

CDC Suspect Case Definition

A suspect case is a patient who has been in an [area with documented](#) or suspected Oropouche virus circulation [\[A\]](#) within two weeks of **initial** symptom onset (as patients may experience recurrent symptoms) and the following:

- In the absence of a more likely clinical explanation, meets one of the following clinical criteria:
 - Acute onset of fever or chills or two or more of the following: headache, myalgia, arthralgia, retro-orbital pain, or generalized rash; **OR**
 - Meningitis, encephalitis, acute flaccid paralysis, or other acute signs of central or peripheral neurologic dysfunction, as documented by a physician.

AND

- Tested negative for other possible diseases, in particular dengue [\[B\]](#).

Diagnosis

- All oropouche specimens should be submitted to the CDC through state health departments.¹
- CDC can perform RT-PCR and/or PRNT oropouche virus testing, depending on when the specimen was collected in comparison to symptom onset date.¹

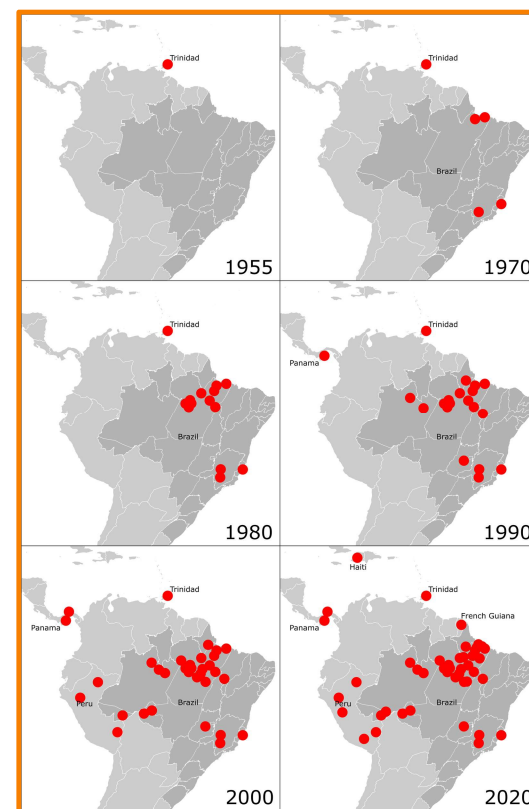
Day of specimen collection post symptom onset	Assay
0-7	RT-PCR
6-7	PRNT, if RT-PCR is negative
>7	PRNT

Treatment

- Supportive care (rest, fluids, pain relief) is recommended.¹
- No vaccines or specific antiviral drugs are available to prevent or treat the disease.²
- Hospitalization is recommended for patients with severe symptoms.¹
- Infections usually resolve within two to three weeks.³

Historical Outbreaks

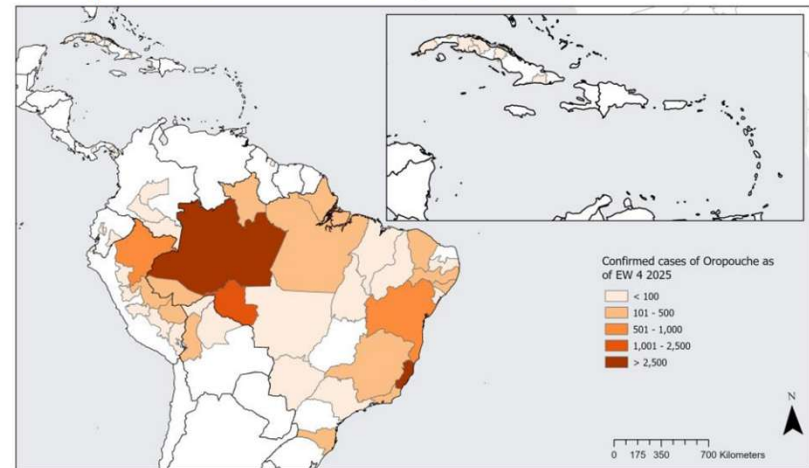
- Most cases and outbreaks occur in the Amazon regions of Brazil and Peru.²
- More than 30 epidemics have occurred in the Amazon region of Brazil since 1961.²
- Past outbreaks have occurred in rural and urban settings.⁶
- Disruptions in environments and communities can trigger oropouche outbreaks.⁶
 - These include vegetation loss, deforestation, habitat loss, or human/animal migrations.⁶



2024 Outbreak

- In 2024, cases increased dramatically and expanded geographically to new regions.^{3,4}
- From 2015 to 2022, **261** oropouche cases were recorded in Brazil.⁴
- In 2024, **13,785** confirmed cases were recorded in Brazil.³
- In 2024, in the Americas Region **16,239** confirmed oropouche cases were reported.³

Figure 8. Geographic distribution of cumulative confirmed cases* of autochthonous transmission of Oropouche in the Americas Region, 2024-2025*



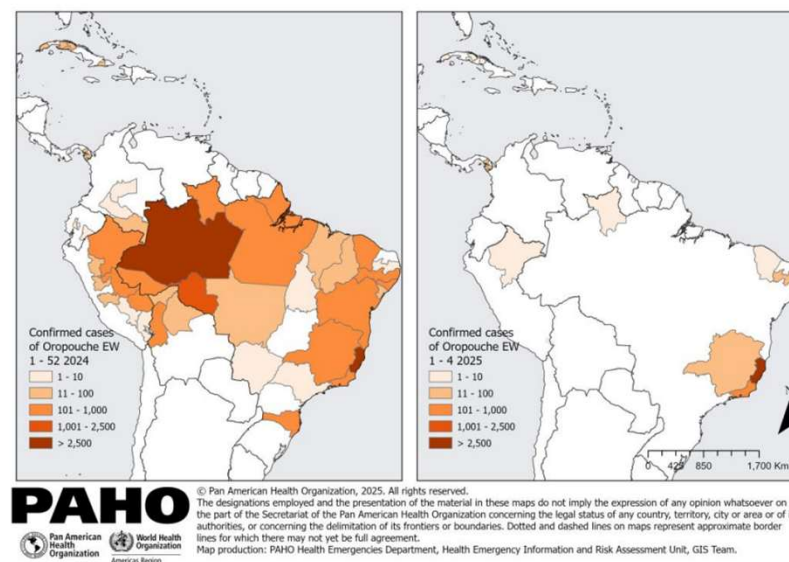
© Pan American Health Organization, 2025. All rights reserved.
The designations employed and the presentation of the material in these maps do not imply the expression of any opinion whatsoever on the part of the Secretariat of the Pan American Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted and dashed lines on maps represent approximate border lines for which there may not yet be full agreement.
Map production: PAHO Health Emergencies Department, Health Emergency Information and Risk Assessment Unit, GIS Team.

***Note:** Information for Brazil is up to EW 5 of 2025 and information for Panama is up to EW 6 of 2025.
Source: Adapted from data provided by the respective countries and reproduced by PAHO/WHO (1-8, 10-16).

2024 Outbreak

- Confirmed cases were reported in Barbados, Bolivia, Brazil, Colombia, Cuba, Ecuador, Guyana, Panama, and Peru.³
- U.S., Canada, Cayman Islands, and Europe (Germany, Spain and Italy) reported imported cases.³
- Four deaths and five vertical transmission cases were reported in Brazil.³

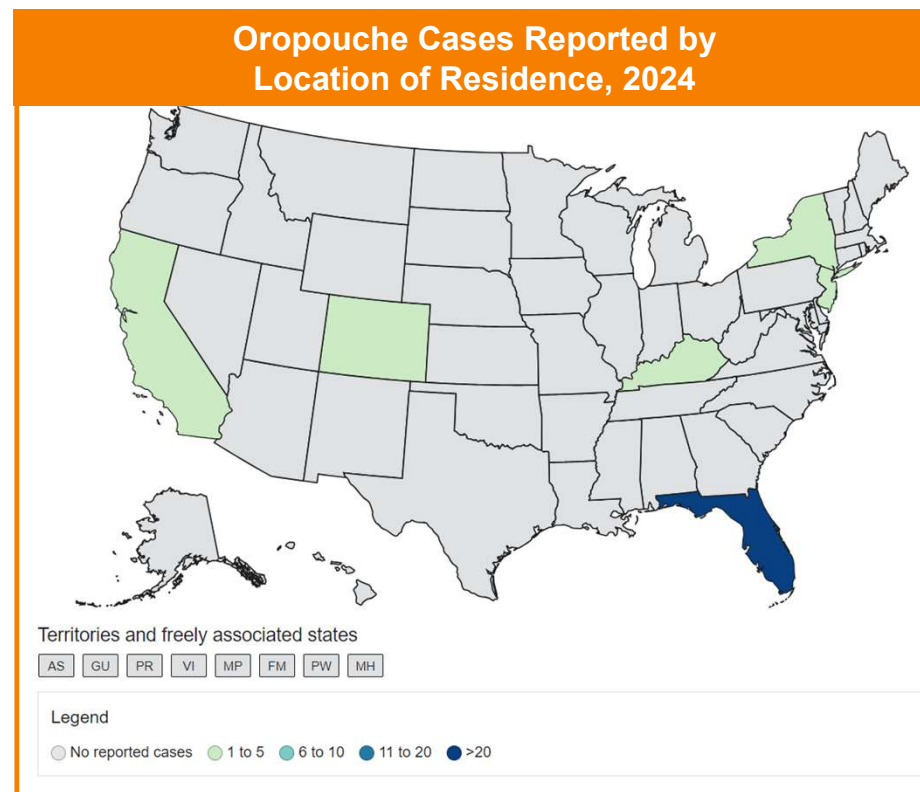
Figure 9. Geographic distribution of autochthonously transmitted cases* Oropouche in the Americas Region, 2024 and 2025*



*Note: Information for Brazil is up to EW 5 of 2025 and information for Panama is up to EW 6 of 2025.
Source: Adapted from data provided by the respective countries and reproduced by PAHO/WHO (1-8, 10-16).

2024 U.S. Cases

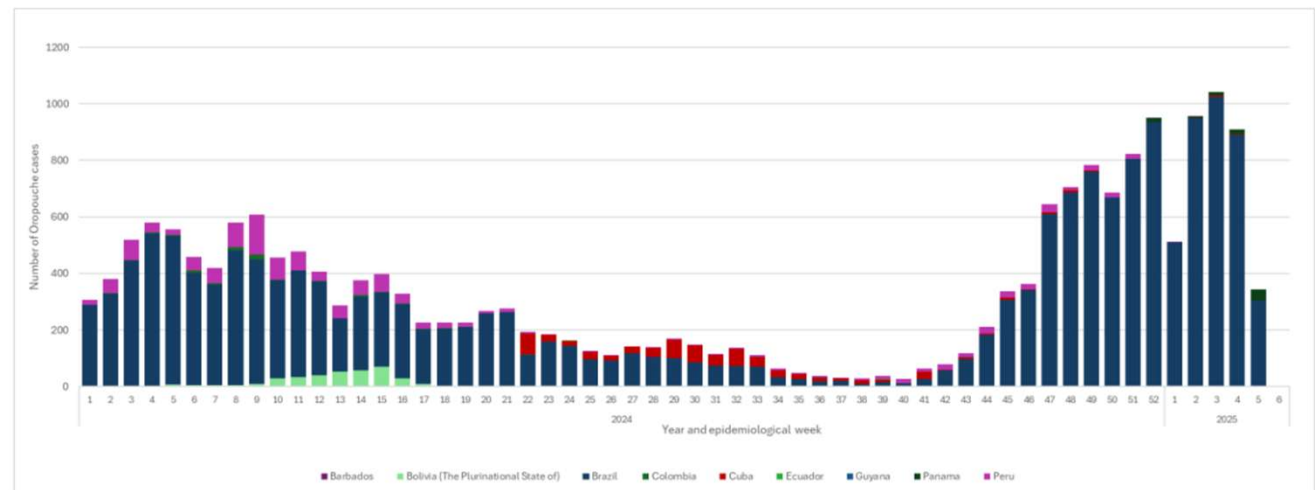
- 108 oropouche cases were reported in the U.S. in 2024, with 103 of these cases in Florida⁷
- Two cases presented with neuroinvasive disease³
- 17% of U.S. cases were hospitalized³
- All cases had a history of travel to Cuba³



2025 Cases

In the first four weeks of 2025, 3,765 confirmed oropouche cases have been reported.³

Figure 1. Number of confirmed autochthonous Oropouche cases by country and epidemiological week (EW) of symptom onset, Americas Region, 2024 -2025*



***Note:** Information is up to EW 4 of 2025 for most countries; information for Brazil is up to EW 5 of 2025 and information for Panama is up to EW 6 of 2025.

Source: Adapted from data provided by the respective countries and reproduced by PAHO/WHO (1-8, 10-16).

Prevention

Personal Protective Measures

- Insect repellent with DEET, IR3535, or icaridin is recommended.³
- Individuals should wear clothing that covers the arms and legs.³
- When visiting endemic areas, travelers should limit outdoor activities, especially around dawn and dusk.³
- Fine mesh nets on doors and windows can keep midges and mosquitos out.³

Prevention

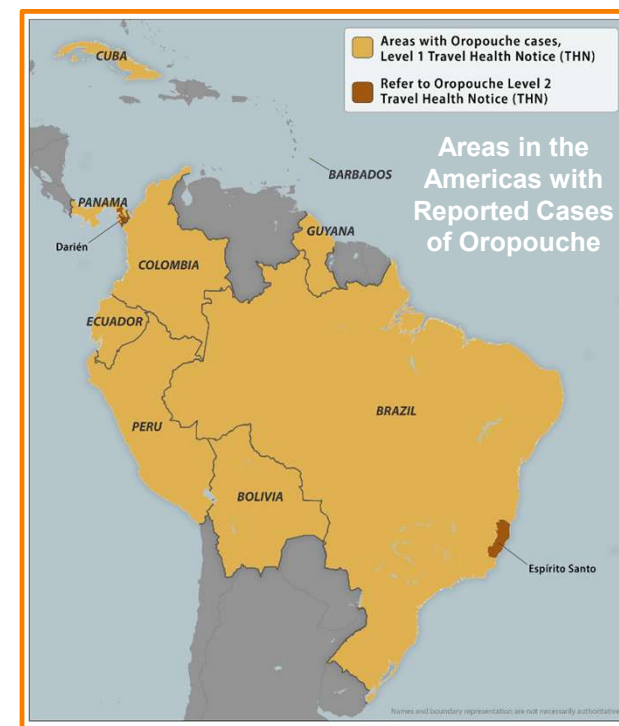
Vector Control Measures

Reduce vector populations by eliminating vector breeding, resting and shelter sites.³

- Promote good agricultural practices to avoid accumulation of residue.³
- Eliminate weeds, leaves, and fallen fruit.³
- Fill or drain water collection sites.³
- Insecticide can be sprayed in urban/peri-urban areas with oropouche transmission when feasible and advised.³

Recommendations

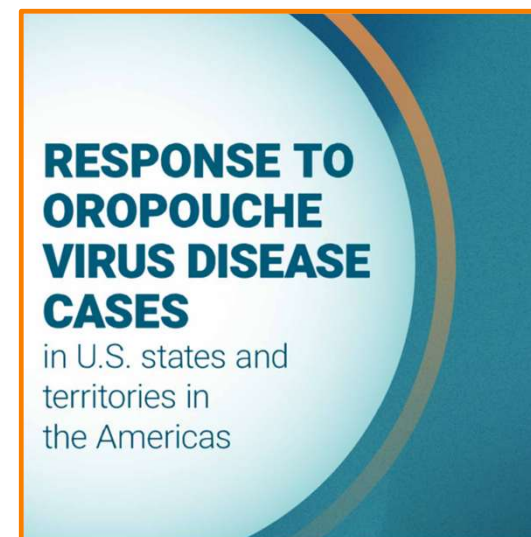
- Prevent bug bites during travel and three weeks after.⁸
- Pregnant women considering travel should consult with their clinician and practice enhanced precaution.⁸
- Travelers who develop symptoms within two weeks of travel should seek medical care, avoid aspirin/NSAIDs to reduce bleeding risks, and continue to prevent bug bites.⁸
- Travelers should wear clothing that covers arms and legs, even indoors if a contact inside is ill.³
- Male travelers with symptoms or an oropouche diagnosis should consider using condoms or abstinence for six weeks after symptoms to prevent sexual transmission.⁸



Emergency Preparedness

CDC has shared guidelines for responding to confirmed local transmission:

- Enhanced surveillance activities in areas of risk.⁹
- Continued vector control activities.⁹
- Recommended testing of pregnant women in areas of risk.⁹
- Provide guidance and clear communications to clinicians, laboratories, local businesses, community members, and travelers.⁹



CDC recommendations for responding to travel-associated or locally acquired Oropouche cases

Discussion

Factors Supporting Oropouche Transmission in Latin America

- Endemic areas have tropical climates with frequent rain⁶
- Extensive wetlands support vector propagation⁶
- Biodiversity with many potential disease hosts⁶
- Human and animal migration⁶
- Deforestation for agriculture and urbanization²

Discussion

Challenges

- Incidence and disease burden may be underestimated.²
- The virus has a similar clinical presentation to other arboviruses.²
- Surveillance and diagnostic testing are limited.²
- Transmission cycle is not fully understood, and birds are potentially hosts.²
- Disease can spread geographically due to vector presence across the Americas.²
- There is concern for vertical and sexual transmission.¹

Conclusion

- Oropouche disease cases in the Americas have dramatically increased in 2024-2025:³
 - Disease continues to expand geographically³
- Miami-Dade County has conditions that may facilitate local transmission:
 - High travel volume, tropical climate, and vector presence
- Local transmission is a public health concern:
 - Risk of severe illness/complications and vertical transmission¹
- Although challenges remain, robust arbovirus surveillance and mosquito control programs in Miami-Dade are prepared.

Contact Information



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