Department of Public Health
CITY OF PHILADELPHIA

Philadelphia Department of Public Health
Division of Disease Control

FRANK FRANKLIN, PHD, JD, MPH
Acting Health Commissioner

SHARA EPSTEIN, MD
Medical Director, Division of Disease Control

LANDRUS BURRESS, DRPH
Director, Division of Disease Control

Increased Risk of Dengue and Oropouche Virus Infections: Clinical Recognition and Management

10/03/2024

SUMMARY POINTS

- Record numbers of dengue cases have been seen this year in the Americas and Puerto Rico.
- Oropouche virus is an emerging virus in the Americas that has caused disease in travelers.
- When evaluating ill travelers who have recently returned from areas of endemic transmission, including Puerto Rico, test for dengue virus and if indicated, Oropouche virus.
- Counsel patients travelling to regions where these viruses are endemic to avoid insect bites. Pregnant individuals should consider avoiding travel to areas with Oropouche virus transmission.

The Philadelphia Department of Public Health (PDPH) is notifying area healthcare providers of the increased risk of travel-related infections due to dengue or Oropouche virus, arboviral infections with similar clinical presentations and overlapping outbreak areas. During 2024, record-breaking dengue virus outbreaks continue in countries in the Americas and Puerto Rico. Concurrently, Oropouche virus infections have increased with spread from endemic areas in the Amazon basin to new areas, including Brazil, Boliva, Peru, Colombia, Dominican Republic, and Cuba.

Epidemiological and Clinic Characteristics:
Dengue: Dengue is the most common arboviral disease globally. Dengue viruses are transmitted through the bites of infected *Aedes* species mosquitoes with *Aedes aegypti* being the most common vector. This species typically lives in tropical and subtropical climates and has been found in south and southwestern areas of the continental United States where limited local outbreaks have occurred. Currently, Florida and Los Angeles, California have reported local transmission of dengue. In Philadelphia, *Aedes albopictus*, a much less efficient vector for transmission of dengue, is present during mosquito season.

Dengue is caused by four distinct but closely related dengue viruses (DENV-1, -2, -3, -4), so infection with a different type is possible for those with a history of dengue virus disease. About 75% of dengue infections are asymptomatic, but the remaining quarter are symptomatic and have symptoms that can range from mild to severe. Patients typically present with fever accompanied by nausea, vomiting, rash, muscle aches, severe bone pain, headaches or low white blood cell counts. About 5% of those with symptomatic dengue develop severe disease, characterized by severe bleeding, shock, respiratory distress or end organ failure. Infants less than 1 year old, pregnant people, older adults and those with certain medical conditions are at higher risk for severe dengue infection.

Oropouche Virus: Oropouche virus is an emerging arthropod-borne virus in South America and the Caribbean that is transmitted by biting midges and certain mosquito species. While Oropouche virus has spread to new areas outside the Amazon Basin, only 74 travel-associated infections from 5 states have been reported in the United States to date in 2024.

Symptoms of Oropouche are similar to other arboviral diseases including dengue. Most symptomatic patients have a self-limited febrile illness, with associated myalgia, headaches and arthralgia. Other symptoms include retroorbital pain, photophobia, vomiting, diarrhea, fatigue, maculopapular rash, conjunctival injection and abdominal pain. Clinical laboratory findings can include lymphopenia and leukopenia, elevated C-reactive protein (CRP), and slightly elevated liver enzymes. Pregnant people, older adults, and people with underlying medical conditions (e.g., immune suppression, hypertension, diabetes, or cardiovascular disease) are at greater risk for severe disease with complications, including hemorrhagic manifestations (e.g., epistaxis, gingival bleeding, melena, menorrhagia, petechiae) and neuroinvasive disease (e.g., meningitis, meningoencephalitis). Two deaths have been reported. Possible vertical transmission has been associated

with adverse pregnancy outcomes. Up to 70% of patients are reported to have recurrent symptoms within days to weeks after resolution of initial illness.

Clinical Recognition and Testing:
Clinicians should have increased suspicion of dengue in febrile patients with a history of travel to an endemic area within 14 days of symptom onset and should also know when to consider testing for Oropouche virus.

- Maintain a high suspicion for dengue among patients with fever and recent travel (within 14 days before illness onset) to areas with frequent or continuous dengue transmission.
- Order appropriate FDA-approved dengue tests (RT-PCR and IgM antibody tests, or NS1 and IgM antibody tests), and do not delay treatment while results are pending.
- Monitor and educate the patient on warning signs for progression to severe dengue, which may appear as fever starts to decline and includes abdominal pain or tenderness, persistent vomiting, clinical fluid accumulation, mucosal bleeding, lethargy or restlessness, and liver enlargement.
- Hospitalize patients with severe dengue or any warning sign of progression to severe dengue and follow CDC/WHO protocols for IV fluid management.
- For patients who test negative for dengue and other possible diseases, consider Oropouche virus infection if the patient has been in an area with documented or suspected Oropouche virus circulation within 2 weeks of *initial* symptom onset. Note that 70% of patients may experience recurrent symptoms days to weeks after resolution of initial symptoms.
    - Contact PDPH at (215) 685-6741 during business hours or (215) 686-4514 after hours to discuss Oropouche virus testing coordination at CDC.
    - When a strong suspicion of Oropouche virus disease exists based on the patient's clinical features and history of travel to an area with virus circulation, do not wait for negative testing for other infections before contacting PDPH.
- Manage travelers with suspect Oropouche virus disease with acetaminophen as the preferred first-line treatment for fever and pain. Aspirin and other NSAIDS should not be used to reduce the risk of hemorrhage.

Prevention:

- Encourage patients who are traveling to take precautions to prevent insect bites during their trip and for 3 weeks after returning, including using an Environmental Protection Agency (EPA)-registered insect repellent, wearing long-sleeved shirts and pants when possible, and staying in places with air conditioning or that use window and door screens.
- Discuss travel plans, reasons for travel, steps to prevent insect bites, and potential risk of Oropouche infection with pregnant patients, including reconsidering non-essential travel to countries with a Level 2 Travel Health Notice for Oropouche virus.
- Advise patients to seek medical care if they develop fever, chills, headache, joint pain, or muscle pain during or within 2 weeks of travel to an area with dengue or Oropouche virus outbreaks.

Reporting: Healthcare providers should contact PDPH at (215) 685-6741 during business hours or (215) 686-4514 after hours (press 1 for Unified Dispatch and ask for the Division of Disease Control on-call staff) to discuss patients with suspected Oropouche virus, suspected locally-acquired dengue infections, or assistance with dengue testing coordination through the Pennsylvania Department of Health Bureau of Laboratories. Imported (travel-related) dengue infections should be reported to PDPH through routine surveillance reporting methods.

Resources:

- Dengue virus
    - CDC Advisory: Increased Risk of Dengue Virus Infections in the United States
    - CDC Current Dengue Outbreak
- Oropouche virus
    - CDC 2024 Oropouche Outbreak
    - CDC Clinical Overview of Oropouche Virus Disease