



# MPOX 2024

## Current Clade Considerations



Image credit: [NIAID](#).

In spring of 2022, cases of mpox (caused by monkeypox virus (MPXV)) with no traditional risk factors for infection, such as travel or contact with rodents, were popping up in countries across the globe that do not normally report mpox. MPXV is a member of the genus Orthopoxvirus, which also includes variola virus (causative agent of smallpox) and vaccinia virus (used for vaccination against smallpox and mpox).

First identified in 1970, and considered endemic in several countries in West and Central Africa, mpox is typically introduced to a community zoonotically, but it can cause outbreaks through human-to-human transmission chains within affected households and health care facilities. The virus has two distinct genetic subtypes (clade I and clade II) with differing endemic geographies and potential for causing severe illness. Clade I has a higher risk of death and is also a select agent.

The clade II outbreak in 2022 demonstrated that MPXV is capable of quickly spreading throughout the world via human-to-human sexual contact. The first cases in this outbreak were reported in May, in the United States and across the globe. Activity peaked during August before case counts dropped precipitously. Low levels of mpox activity continue in the United States today and increases in transmission have been noted in New York City during the first half of 2024.

Beyond concerns about reignited outbreaks of clade II MPXV, the New York State Department of Health (NYSDOH) is also closely following an mpox outbreak in the Democratic Republic of Congo (DRC). The Centers for Disease Control and Prevention (CDC) describes the situation in DRC as “an unprecedented number of suspected clade I MPXV infections” (McQuiston JH *et al.*, 2024). The DRC outbreak poses a risk for importation of clade I MPXV into the United States, as well as the potential global spread seen in 2022. The epidemiology of the outbreak in DRC is more complex than previous outbreaks in the country. In this situation, clade I viruses have been introduced into the population via multiple instances of zoonotic transmission. In addition to the more traditional household transmission, there are reports of sexual transmission of clade I MPXV in this outbreak as well.

### Inside Wadsworth

- **Current outbreak:** Mpox clade II
- **Lab highlight:** Parasitology
- **Reader Q & A:** Dengue virus

### Highlighted Training

- Packing and shipping

### Stay in Touch

#### We'd love to hear from you!

To ensure you receive this Newsletter, enter your email address at the following link:

[SUBSCRIBE HERE](#)

If your lab is interested in training or refreshers, contact us at:

[btrlab@health.ny.gov](mailto:btrlab@health.ny.gov).

**Please distribute this newsletter to all microbiology laboratory staff.**



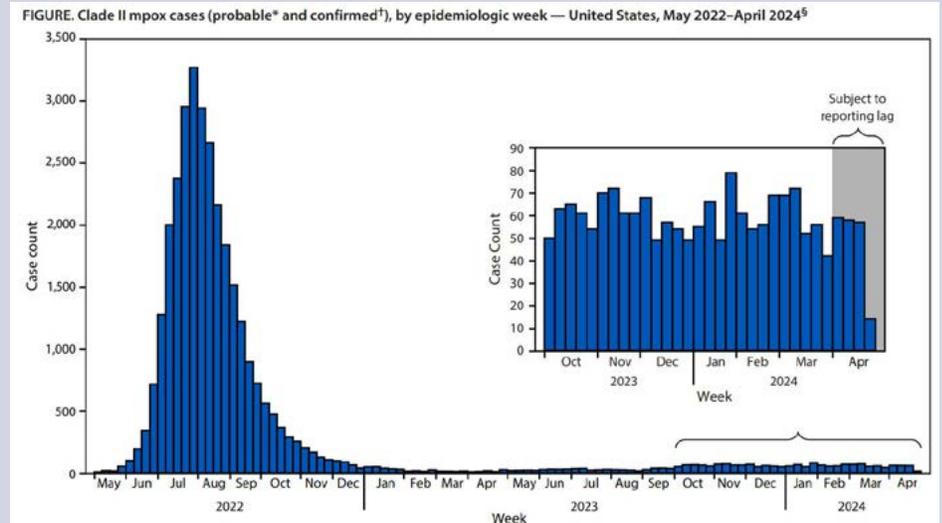
In the United States, available diagnostic testing for MPXV includes CDC’s Food and Drug Administration (FDA)-cleared non-variola Orthopoxvirus (NVO) real-time PCR test as well as MPXV clade differentiating laboratory-developed tests and FDA emergency use-authorized tests. Not all laboratories offer every test. The testing strategy is further complicated by deletions observed in clade I MPXV genomes in the DRC that affect the sensitivity of clade I-specific tests. The CDC recommends “...the NVO test be used in addition to clade-specific testing, and that positive NVO or negative clade II test results be further investigated through sequence analysis.” (McQuiston JH et al., 2024)

New York State Department of Health Wadsworth Center offers the NVO test as well as a Clade II-specific test.

Clinicians evaluating suspect mpox cases with concerning travel history are encouraged to use the public health laboratory for testing. Approval prior to sending specimens to Wadsworth Center is required and should be requested via the local health department (LHD) where the patient resides. If the LHD is unavailable, requests can be made through the Wadsworth Center laboratory (518-474-4177), the Bureau of Communicable Disease Control (518-473-4439), or after hours for both groups at 866-881-2803.

### Mpox in the United States

[Centers for Disease Control and Prevention](#), accessed 06/24/2024.



### Mpox in New York City

[New York City Department of Health and Mental Hygiene](#),

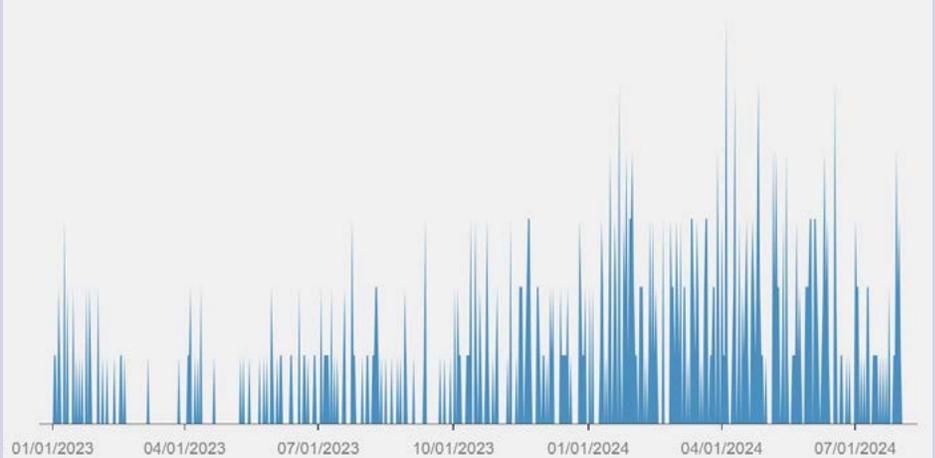
accessed 06/24/2024.

#### 2024 Cases

Since January 1, 2024, 307 people in New York City have tested positive for mpox. There have been 26 cases in the last month (July 7, 2024 to August 3, 2024).

Data are as of August 8 at 1 p.m. These data will be updated on the second Thursday of every month.

Daily mpox cases diagnosed in NYC





### Babesiosis

Summer is a busy time for public health laboratories. As people spend more time interacting with each other and with nature, there are more opportunities for exposure to infectious diseases and their vectors. For example:

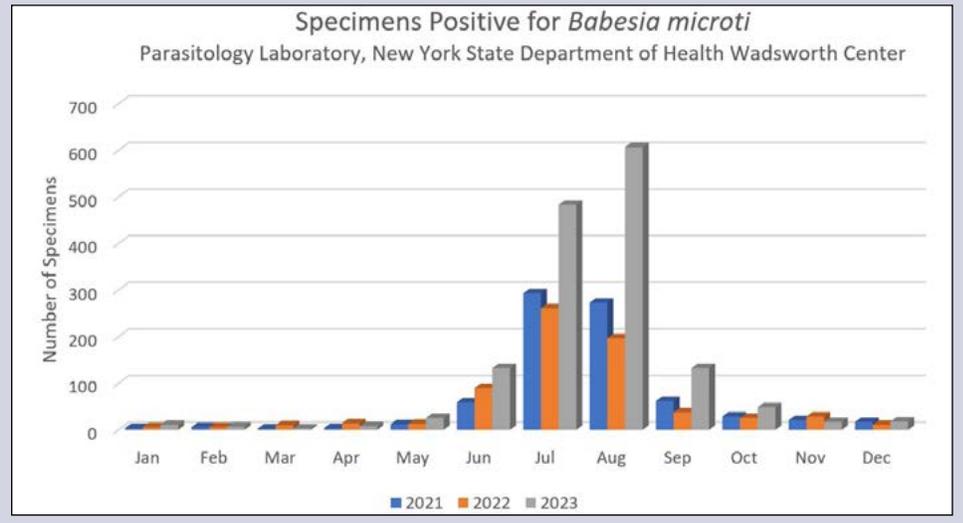
- Bats and rabies virus
- Picnic foods and *Salmonella* bacteria
- Mosquitos and West Nile virus
- Ticks and *Babesia*

In 2023, the Parasitology Laboratory at Wadsworth Center experienced a noticeable uptick in specimens positive for *Babesia* during the months when ticks are typically active.

Tickborne pathogens with the potential to cause human disease are reportable by both health care providers and laboratories in New York. For the most common tickborne bacterial pathogens, *Borrelia burgdorferi* and *Anaplasma phagocytophilum*, it is the responsibility of the laboratory to report positive test results to public health via the Electronic Clinical Laboratory Reporting System (ECLRS). Specimens with positive blood smear or nucleic acid test results for the tickborne parasites of the genus *Babesia* have an additional requirement, beyond ECLRS reporting, to be sent to Wadsworth Center for confirmation. Laboratory reporting guidance can be found at <https://www.wadsworth.org/programs/id>.

#### Specimens Positive for *Babesia microti*

Parasitology Laboratory, New York State Department of Health Wadsworth Center.



#### Did you know?

*Babesia* testing at Wadsworth Center includes both a nucleic acid amplification test and microscopic identification.



Babesiosis is a potentially life-threatening disease caused by *B. microti*, an intraerythrocytic parasite spread by the bite of the black-legged tick. Symptoms can vary from none or mild flu-like symptoms to severe fever, chills, body aches and anemia requiring hospitalization. Once diagnosed, treatment with antimicrobials (a two-drug combination of an antibiotic and an anti-parasitic) is effective.

The incidence of tickborne illness can be somewhat dependent on people’s behavior, the weather, and the size of the tick population. Perhaps this past year was an unusually good year for ticks and people spent more time in activities that put them at risk for tick bites and subsequent *Babesia* infections. There are multiple studies documenting increasing incidence for babesiosis over time as well as across geographies in the northeastern United States (for example see [this CDC report](#)).

Thankfully, there are multiple interventions that can lower the risk of babesiosis: prevent tick bites by using repellents, wear protective clothing, and avoiding where ticks are likely to live. Check for and remove ticks every time you spend time in tick habitat.

**Learn more about tickborne illness and babesiosis**

- [www.health.ny.gov/diseases/communicable/lyme/](http://www.health.ny.gov/diseases/communicable/lyme/)
- [www.cdc.gov/babesiosis/prevention/index.html](http://www.cdc.gov/babesiosis/prevention/index.html)



- Tuck pants into socks.
- Use a repellent with DEET.
- Bathe or shower soon after coming indoors.
- Check for ticks.

**Your to-do list isn't complete without a tick check.**

Part of enjoying outdoor activities is protecting yourself from ticks. Check your entire body after being outdoors.

For more information visit [www.cdc.gov/ticks](http://www.cdc.gov/ticks)



Image credit: [CDC](#).



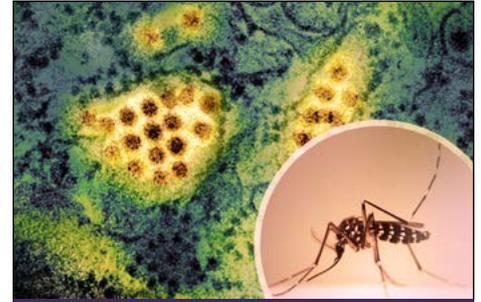
Q & A with Newsletter Readers!

Why is there so much coverage of dengue in the news recently? That’s a tropical disease, right?

NYSDOH is closely monitoring dengue virus activity in both North and South America. A mosquito-borne *Flavivirus* consisting of four different serotypes, dengue virus is endemic in tropical climates across the world, placing 500 million at risk of infection. Annual incidence is seasonal with rising infections in the warm and rainy months of summer. Severity of infection can vary from asymptomatic or a generally mild illness, to severe symptoms, shock, and death. Dengue incidence has been rising in the Americas, and 2024 has already been a notable year in the number of diagnoses. The Pan American Health Organization reported over 8 million suspected cases of dengue between January 1<sup>st</sup> and May 11<sup>th</sup>, which “represents an increase of 235% compared to the same period in 2023 and 431% compared to the average of the last 5 years.”<sup>1</sup>

Dengue is considered endemic in three United States territories: American Samoa, Puerto Rico, and the United States Virgin Islands. Though widespread transmission is unlikely, local spread of dengue virus has been previously reported in Florida, Hawaii, Texas, Arizona, and California. In 2013, Wadsworth Center provided the first confirmation of a locally acquired dengue infection in a Suffolk County resident. Because the individual was in New York for the entire incubation period, the most likely route of transmission was via a mosquito that had previously bitten an infected traveler from an endemic area.<sup>2</sup>

Molecular and serologic testing for acute dengue infection is available through NYSDOH-permitted laboratories and at NYSDOH Wadsworth Center. In addition to medical history, recent travel, and vaccination records, the number of days since the start of symptoms affects the approach to laboratory diagnosis. During the acute phase of illness, nucleic acid amplification testing and IgM antibody testing of serum are recommended. More than seven days after symptom onset, molecular testing may be less sensitive than serology. IgM antibodies can still be detected for three months after infection, but cross-reactivity with other flaviviruses can make interpretation complicated. Plaque Reduction Neutralization Tests on paired sera, with more than 21 days between collection of the acute and convalescent serum, can assist with confirmation.



*Aedes* mosquito and a transmission electron micrograph of dengue virus particles.

Image credit: [CDC and NIAID](#).

Do you need packing and shipping training?

The Centers for Disease Control and Prevention offers a **free, online, and on-demand** course for clinical laboratory staff covering the basics of packing and shipping infectious substances and dry ice.

**Click the following link to register:**  
[Packing and Shipping Dangerous Goods: What the Laboratory Staff Must Know](#)

**CE: 2.0 Contact Hour(s)**  
**Duration: 2.0 Hours**

**Description:** The goal of this course is to provide training on packing and shipping Division 6.2 infectious substances and dry ice. This course provides a certificate of completion, but does not provide certification for transport of dangerous goods. Individuals can only be certified by their employer.

**Audience:** This basic-level course is intended for public health and clinical laboratory staff involved in any step of the packing or transport process of patient samples or cultures.



## References and Resources

### Mpox

- Centers for Disease Control and Prevention: <https://www.cdc.gov/poxvirus/mpox/index.html> and <https://www.cdc.gov/mmwr/volumes/72/wr/mm7220a2.htm>.
- McQuiston JH, Luce R, Kazadi DM, et al. U.S. Preparedness and Response to Increasing Clade I Mpox Cases in the Democratic Republic of the Congo — United States, 2024. *MMWR Morb Mortal Wkly Rep*, 2024;73:435–440. DOI: <http://dx.doi.org/10.15585/mmwr.mm7319a3>.
- McQuiston JH, Braden CR, Bowen MD, et al. The CDC Domestic Mpox Response — United States, 2022–2023. *MMWR Morb Mortal Wkly Rep*, 2023;72:547–552. DOI: <http://dx.doi.org/10.15585/mmwr.mm7220a2>.
- Wadsworth Center Biodefense Laboratory.

### Babesiosis

- Centers for Disease Control and Prevention: <https://www.cdc.gov/babesiosis/prevention/index.html> and <https://www.cdc.gov/mmwr/volumes/72/wr/mm7211a1.htm>.
- New York State Department of Health: <https://www.health.ny.gov/diseases/communicable/lyme/>.
- Wadsworth Center Parasitology Laboratory.

### Dengue virus

1. <https://www.paho.org/en/topics/dengue> and <https://www.paho.org/en/documents/situation-report-no-19-dengue-epidemiological-situation-region-americas-epidemiological>.
  2. <https://www.cdc.gov/dengue/data-research/facts-stats/index.html> and <https://www.longislandpress.com/2013/11/21/officials-dengue-virus-case-in-suffolk-county/>.
  3. <https://www.cdc.gov/dengue/hcp/diagnosis-testing/index.html>.
- Wadsworth Center Arbovirus Laboratory.

#### DISCLAIMER

This newsletter may have links to other federal agencies and, in a few cases, may link to private organizations. You are subject to that website's privacy policy when you access their site. We are not responsible for Section 508 compliance (accessibility) on other federal or private Websites. The information provided using this newsletter is only intended to be a general summary of information to the public and is not intended to take the place of either the written law or regulations.