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PUBLIC HEALTH ADVISORY

To: Health Care Providers
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Seasonal Arbovirus Updates for Health Care Providers

Summary

Eastern Equine Encephalitis virus (EEE), West Nile virus (WNV), and Jamestown Canyon virus (JCV) are all mosquito-borne viruses endemic to Maine. These infections can result in severe neurological disease and may be fatal. This advisory is intended to alert clinicians to the risk of human arboviral disease activity in Maine and provide information on prevention, testing, and reporting. Clinicians should consider mosquito-borne viruses in patients presenting with unexplained fever, meningitis, or encephalitis, particularly among individuals with outdoor exposure or recent travel to areas with known arboviral transmission. In addition to endemic viruses, clinicians should be aware of imported viruses like Chikungunya, Dengue, Oropouche, Yellow Fever, and Zika, particularly in returning travelers.

Background

In 2024, Maine reported 1 human case of EEE and 2 human cases of WNV. So far in 2025, Maine reported 1 human case of JCV to date (as of June 25, 2025).

Table 1. Recent Endemic Mosquito-borne Arboviral Activity in Maine

Virus	2023	2024
EEE	17 animals, 5 mosquito pools	27 animals, 1 mosquito pool
JCV	3 mosquito pools	4 mosquito pools
WNV	3 animals, 1 mosquito pool	43 animals, 1 mosquito pool

In 2024, Maine documented transmission in humans, animals, and/or mosquitoes across 13 counties, the widest geographic distribution on record. Notably, many of the latest detections

occurred in north-central Maine. Recently, these viruses have shown up as early as May and as late as November. Year-to-year activity is often weather dependent, but clinicians should be aware of the potential for endemic viruses to show up outside the traditional window of risk.

In addition to endemic viruses, clinicians should also evaluate for travel-associated arboviral infections such as Dengue, Chikungunya, Oropouche, Yellow Fever, and Zika virus in patients who report recent travel to affected regions. Maine lacks the mosquito species capable of transmitting these viruses locally, but imported cases remain possible. Clinicians should monitor [U.S. CDC travel health notices](#) for updates on arboviral activity occurring in other countries. So far in 2025, Maine reported 1 imported dengue case (as of June 25, 2025).

Clinical Presentation

EEE, JCV, and WNV infections have similar symptoms. Most people infected by these viruses are asymptomatic. The clinical presentations are either neuroinvasive or non-neuroinvasive.

- Non-neuroinvasive (mild): fever, headache, fatigue, muscle aches, and neck stiffness
- Neuroinvasive (severe): vomiting, ataxia, aphasia, encephalitis, meningitis, confusion, altered mental status, convulsions, seizures, paresis/paralysis, coma, and death

Incubation periods vary by virus. Following a mosquito bite, symptoms may appear 4–10 days after for EEE, 1–14 days after for JCV, and 3–15 days after for WNV.

Arboviruses often have higher case fatality rates compared to other infectious diseases, ranging from 10–50% depending on the virus and clinical presentation.

Risk Factors

The following groups of people are at higher risk for clinically significant arboviral infection:

- People who work or spend time outdoors
- Individuals age over 50 years old and younger than 15 years old
- Persons with weakened immune systems

Prevention

The best way to prevent mosquito-borne illness is to prevent mosquito bites.

- Wear long sleeves and pants to minimize exposed skin for mosquitoes to bite.
- Use EPA-approved insect repellents on skin and permethrin on clothing. Always remember to follow label instructions.
- Avoid outdoor activity from dusk to dawn, when mosquitoes are most active.
- Reduce standing water around homes at least weekly to disrupt mosquito breeding habitats, like birdbaths and pet bowls.

Testing

Diagnosis of arboviral infections relies on a high index of suspicion, travel history, and on results of specific laboratory tests. EEE, JCV, WNV, or other arboviral infections should be considered in any individual with an onset of unexplained influenza-like illness, encephalitis, meningitis, or high fever. The local presence of EEE, JCV, and WNV in animals and mosquito pools should further raise the index of suspicion. Clinicians can find up to date information on reportable arboviruses in the [weekly arboviral surveillance report](#) posted online.

Maine's Health and Environmental Testing Laboratory (HETL) and many reference laboratories can test for EEE, JCV, and WNV as well as Chikungunya, Dengue, and Zika. Testing for

Oropouche and Yellow Fever is only available at U.S. CDC and some reference laboratories. Preferred testing is by serological IgM and Plaque Reduction Neutralization Test (PRNT), but PCR is also available. Dengue may also be diagnosed with an antigen test.

Both the HETL [Requisition Form](#) and [Arboviral Submission Form](#) are required for testing.

Table 2. Testing Services for EEE, JCV, and WNV at HETL and U.S. CDC

Pathogen	Test Type	HETL	U.S. CDC	HETL Test Order Request
Eastern Equine Encephalitis Virus	Serology	Yes	Yes	Arbovirus IgM Serology Panel*
	PRNT	No	Yes	
West Nile Virus	Serology	Yes	Yes	
	PRNT	No	Yes	
Jamestown Canyon Virus	Serology	No	Yes	Handwrite "JCV Suspected" on Requisition Form**
	PRNT	No	Yes	
	PCR	Yes	No	Jamestown Canyon Virus RT-PCR

* Samples automatically sent to U.S. CDC for PRNT confirmation if IgM is positive or indeterminate

** Samples will be sent to U.S. CDC for serology and PRNT confirmation

Table 3. Testing Services for Imported Arboviruses at HETL and U.S. CDC

Pathogen	Test Type	HETL	U.S. CDC	HETL Test Order Request
Chikungunya Virus (CHIK)	Serology/PRNT	No	Yes	Handwrite "CHIK Suspected" On Requisition Form*
	PCR	Yes	No	Chikungunya Virus RT-PCR
Dengue Virus (DENV)	Serology/PRNT	No	Yes	Handwrite "DENV Suspected" On Requisition Form*
	PCR	Yes	No	Dengue Virus 1-4 RT-PCR
Oropouche Virus (OROV)	Serology/PRNT	No	Yes	Handwrite "OROV Suspected" On Requisition Form*
Yellow Fever Virus (YFV)	Serology/PRNT	No	Yes	Handwrite "YFV Suspected" On Requisition Form*
Zika Virus (ZIKV)	Serology/PRNT	No	Yes	Handwrite "ZIKV Suspected" On Requisition Form*
	PCR	Yes	No	Zika Virus RT-PCR

* Samples will be sent to U.S. CDC for serology and PRNT confirmation

If clinicians suspect arboviral infection based on clinical evidence, they should submit serum, whole blood, and CSF for arboviral testing. The sample type depends on the type of test. All CSF samples submitted to HETL should be accompanied by at least one serum sample. Ideally, clinicians should submit an acute and a convalescent serum sample for each patient. Additional sample collections and tests may be necessary to confirm or rule out infection.

Table 4. Specimen Type and Collection Timeframes by Test Type

Test Type	Specimen Type	Collection Time
Serology/PRNT	Acute Serum (1.0 mL)	Immediately
	Convalescent Serum (1.0 mL)	2+ weeks after onset
	CSF (1.0 mL minimum, 2.0 mL preferred)	2-10 days after onset
PCR	Whole Blood (at least 0.5 mL)	3-10 days after onset
	CSF (0.5 mL minimum, 1.0 mL preferred)	2-10 days after onset

A negative PCR result does **NOT** rule out arboviral infection. Samples from persons with positive IgM and negative PCR results should be forwarded and confirmed at U.S. CDC.

In some instances, arboviruses from the same genus (i.e., flaviviruses such as Dengue, Powassan, St. Louis Encephalitis [SLEV], and WNV) produce cross-reactive antibodies. In areas where two or more closely-related arboviruses occur, serologic testing for more than one virus may be needed to determine the specific causative virus. For example, a positive SLEV IgM in a person with no out of state travel may indicate infection with Powassan or WNV.

Treatment

Treatment of arboviral infections is supportive. There are no specific treatments.

Reporting

All arboviral illnesses are reportable in Maine. All suspected cases and positive laboratory reports should be reported by electronic laboratory reporting, or by phone (if immediately notifiable) to the 24/7 disease reporting and consultation line at 1-800-821-5821. **As of June 4, 2025, laboratories are required to forward all arboviral positive samples to HETL for confirmation testing.**

- **EEE is now immediately notifiable.** (It was previously reportable within 48 hours.)
- JCV and WNV must be reported within 48 hours of diagnosis or lab test result.

Additional Information

- Arboviral testing in Maine for health care providers: www.maine.gov/dhhs/mecdc/infectious-disease/epi/vector-borne/documents/Arboviral-Testing-Healthcare.pdf
- How to submit human arboviral specimens to HETL: www.maine.gov/dhhs/mecdc/public-health-systems/health-and-environmental-testing/micro/submitting-samples.shtml
- Maine CDC arboviral diseases website: www.maine.gov/dhhs/vectorborne
- Weekly arboviral reports (June to October): www.maine.gov/dhhs/mecdc/infectious-disease/epi/vector-borne/arboviral-surveillance.shtml
- U.S. CDC mosquito website: www.cdc.gov/mosquitoes
- U.S. CDC travel health notices: wwwnc.cdc.gov/travel/notices
- Dengue testing guidance: www.cdc.gov/dengue/hcp/diagnosis-testing
- Oropouche clinical guidance: www.cdc.gov/oropouche/site.html#hcp
- Zika testing guidance: www.cdc.gov/zika/hcp/diagnosis-testing
- Imported arboviral risk by country:
 - Chikungunya (U.S. CDC): www.cdc.gov/chikungunya/data-maps
 - Dengue (U.S. CDC): www.cdc.gov/dengue/areas-with-risk
 - Oropouche (U.S. CDC): www.cdc.gov/oropouche/data-maps/index.html
 - Yellow Fever (U.S. CDC): www.cdc.gov/yellow-fever/south-america/index.html
 - Zika (U.S. CDC): www.cdc.gov/zika/geo/index.html
- Maine CDC disease reporting and consultation line: 1-800-821-5821 (available 24/7)