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PUBLIC HEALTH ADVISORY

To: Health Care Providers
From: Dr. Isaac Benowitz, State Epidemiologist
Subject: **Increased Arboviral Activity in Maine**
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Mid-Season Arbovirus Update for Health Care Providers in Maine

The arboviral season in Maine is ramping up. The purpose of this health advisory is to remind clinicians to consider testing for mosquito-borne arboviruses in patients presenting with unexplained flu-like symptoms, encephalitis, meningitis, or high fever ($\geq 100.4^{\circ}\text{F}$ or 38°C) during the summer and fall.

Arboviral activity is high in the region. The Maine CDC continues to see more reports of Eastern Equine Encephalitis virus (EEE) and West Niles virus (WNV). So far in 2024, 15 wild birds tested positive for WNV across 10 counties, 1 wild bird tested positive for EEE in Waldo County, and 2 emus tested positive for EEE in Penobscot County. Maine also reported 1 travel-associated human case of WNV. Arboviral infections in birds are often a precursor to infections in mosquitoes and humans. Maine has not detected EEE or WNV in mosquitoes this year, but many other New England states are reporting higher-than-normal arboviral activity in mosquitoes, domestic animals, and more recently humans. Despite the lack of EEE detections in Maine mosquitoes, likely the result of limited surveillance, the EEE detections in emus indicate that the virus is present in local mosquito populations. The continued level of arbovirus activity this fall will largely depend on the amount of rainfall Maine receives over the next two months. More rainfall generally means more mosquitoes and a higher risk of mosquito-borne disease transmission. Providers can refer to the [weekly arboviral surveillance reports](#) posted online to stay up-to-date on local arbovirus activity in Maine.

Clearer testing guidance is provided in this advisory. Refer to the recent [Arboviral Update HAN](#) (July 9, 2024) for more information on virus epidemiology, clinical presentations, risk factors, and prevention.

Background

EEE, WNV, and Jamestown Canyon virus (JCV) are serious arboviral infections that are transmitted by the bite of an infected mosquito. All three viruses are endemic in Maine. Although rare, these diseases can have severe and even fatal consequences for those who contract them.

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 in the summer and fall, and especially those over age 50 years or younger than age 15 years. The local presence of EEE, JCV, and WNV in animals and mosquito pools should further raise the index of suspicion.

Maine’s Health and Environmental Testing Laboratory (HETL) and many reference laboratories can test for EEE, and WNV. Testing for JCV is only available at U.S. CDC and some reference laboratories.

Both the HETL [Requisition Form](#) and [Arboviral Submission Form](#) are required for testing. When suspicion is high, IgM testing on serum may be forwarded to U.S. CDC for Plaque Reduction Neutralization Test (PRNT) confirmation based on patient symptoms. Providers may also submit CSF samples (free of charge) for viral metagenomics for patients with encephalitis of unknown etiology.

Table 1. Testing Services Available at HETL and U.S. CDC for EEE, JCV, POW, and WNV

Pathogen	Test Type	Offered at HETL	Offered at 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	
Powassan Virus	Serology	No	Yes	Handwrite "POW Confirmation" on Requisition Form**
	PRNT	No	Yes	
	PCR	Yes	No	Powassan/Deer Tick RT-PCR

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

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

PCR testing unavailable at HETL

If providers 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, providers 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 2. 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, and West Nile) 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.

Reporting:

All arboviral illnesses are reportable in Maine ([State of Maine Control of Notifiable Diseases and Conditions Rule](#)). All **suspected** and **confirmed** cases, and positive laboratory reports should be reported by electronic laboratory reporting, by fax to 1-800-293-7534, or by phone to the 24/7 disease reporting and consultation line at 1-800-821-5821.

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
- Maine CDC disease reporting and consultation line: **1-800-821-5821** (available 24/7)