



# Infectious Disease Epidemiology Report

## Human Arbovirus Surveillance Report—Maine, 2005



### Background

In Maine, arboviruses are spread primarily by mosquitoes (West Nile virus [WNV], Eastern Equine Encephalitis [EEE], St. Louis Encephalitis [SLE]), and ticks (Powassan). Nationwide, WNV remains the leading cause of arboviral infection. In 2003, there were 2,866 reported cases of WNV compared to 15 and 43 cases of EEE and SLE, respectively. Provisional data for 2005 indicate that more than 2,950 cases of WNV were reported in the United States during the year. Thirteen of the cases in 2005 were reported from the New England region. Maine did not report any human cases of WNV or other arboviral infections in 2005. To date, Maine and Washington are the only contiguous states never to have recorded a human case of WNV.

### Methods

Arboviral infections are categorized as neuroinvasive or non-neuroinvasive. Clinical syndromes associated with neuroinvasive infection include encephalitis, aseptic meningitis, and myelitis, which are clinically indistinguishable from similar syndromes caused by other viruses. Non-neuroinvasive syndromes caused by arboviruses can rarely include myocarditis, pancreatitis, or hepatitis. In addition, arboviruses may cause febrile illnesses (e.g., West Nile fever) that are non-localized, self-limited illnesses with headache, myalgias, arthralgias, and sometimes accompanied by skin rash or lymphadenopathy. For surveillance purposes, confirmation by one or more of the laboratory criteria established by the federal CDC is required to meet the case definition<sup>1</sup>.

Human arboviral infection surveillance in Maine relies primarily on health care providers who consider arbovirus infection in their differential diagnosis and submit specimens to the Health and Environmental Testing Laboratory (HETL) for arboviral panel testing. The test panel routinely

screens for arboviruses thought to be medically relevant to the northeast United States, namely: WNV, EEE, SLE, and Powassan. Data presented here were extracted from a database maintained by the Maine CDC, the federal CDC's WNV website, and MMWR publications.

### Results

During 2005, specimens from 72 patients suspected of arboviral infection were submitted for testing by HETL. Another individual, a Maine resident, was tested in Massachusetts. These patients contributed a total of 99 specimens, consisting of 47 acute sera, 14 convalescent sera and 38 cerebral spinal fluids (CSF). Common symptoms exhibited by patients included fever, encephalitis, and aseptic meningitis (61%, 17%, and 19%, respectively). None tested positive for WNV. One patient tested false positive for SLE and two had indeterminate results for EEE. All were subsequently ruled out by confirmatory tests at the federal CDC's vectorbone laboratory.

*Demographic Profile:* Seventy-nine percent of arboviral suspects tested by the State laboratory were Maine residents. Fifty-seven percent of the suspects were male. The median age was 45 years with a range of 3 to 90 years (**Table 1**).

**Table 1. Selected demographics of arboviral infection suspects (N=72)—Maine, 2005**

Characteristics	Number	%
Gender		
Male	41	57
Female	31	43
Maine resident		
Yes	57	79
No	3	4
Unknown	12	17
	<i>Median</i>	<i>Range</i>
Age, years	45	3, 90

Percentages may add up to >100 due to rounding

<sup>1</sup>CDC case definition:  
[http://www.cdc.gov/epo/dphsi/casedef/arboviral\\_current.htm](http://www.cdc.gov/epo/dphsi/casedef/arboviral_current.htm)

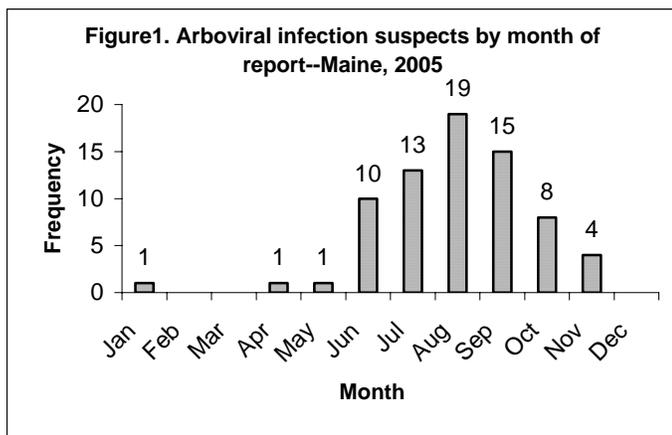
**Statewide Geographic Distribution:** The majority of suspect arboviral patients resided in the counties of York (15%), Kennebec (14%), Androscoggin (13%) and Cumberland (10%). Three patients were from out-of-state while 15 more individuals were missing data on state of residence (**Table 2**).

**Table 2. Arboviral infection suspects by county of residence (N=72)- Maine, 2005**

County	Number	%
Androscoggin	9	13
Cumberland	7	10
Franklin	2	3
Hancock	4	6
Kennebec	10	14
Knox	2	3
Lincoln	2	3
Oxford	4	6
Penobscot	1	1
Piscataquis	1	1
Sagadahoc	1	1
York	11	15
Out-of-state	3	4
Unknown	15	21

Percentages may add up to >100 due to rounding

**Distribution by Month:** As in previous years, most reports of suspect arboviral infections were received by the Maine CDC between the months of June and October, with August being the busiest in terms of number of reports (**Figure 1**).



## Discussion/Recommendations

It is difficult to interpret data that only pertain to suspect, not actual, cases of arboviral infection.

Nonetheless, since WNV and EEE have been found in mosquitoes, birds, and horses, and Powassan has been identified in humans in Maine, it is safe to conclude that every resident or visitor to the State who is exposed to the outdoors is at risk of arboviral infection, especially during the spring, summer, and fall seasons, when temperatures are ideal for mosquitoes and ticks. However, it has been determined from other sources that people younger than 15 (EEE) or older than 50 years (EEE, WNV, SLE) of age have the greatest risk of severe illness.

Since arboviruses are transmitted to humans primarily by the bite of infected mosquitoes (WNV, EEE, and SLE) and ticks (Powassan), the most effective personal prevention strategy is to avoid bites by insects. Individuals should apply repellents containing DEET to exposed skin and DEET or permethrin-based products to their clothing when they go outdoors. More detailed information on proper use of repellents and alternate products can be found at the following websites:

- [http://www.cdc.gov/ncidod/dvbid/westnile/ga/insect\\_repellent.htm](http://www.cdc.gov/ncidod/dvbid/westnile/ga/insect_repellent.htm);
- <http://www.cdc.gov/ncidod/dvbid/westnile/R/epellentUpdates.htm>.

Additional steps that can taken by individuals to protect themselves and their families from arboviral infections include:

- Wearing long-sleeved shirts, long pants and socks when outdoors;
- Mosquito-proofing homes by installing window and door screens;
- Staying indoors at dawn, dusk, and in the early evening, which are peak mosquito biting times, when temperatures are above 55°F or whenever mosquitoes are active;
- Draining sources of standing water such as rain gutters and birdbaths; and
- Placing mosquito netting over infants in carriers when outdoors.

“Bug zappers,” ultrasonic pest repellents, and other novelty methods are NOT known to be effective insect control measures and therefore not recommended.

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