State of Alaska Epidemiology **Bulletin**

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Summary Results from 2003 West Nile Virus Surveillance in Alaska

Background

As of October 29, over 7,700 human cases and 166 deaths from West Nile virus (WNV) were reported in the U.S. for the 2003 season. For the same time period, Health Canada reported 443 confirmed cases and 10 deaths. The U.S. 2003 case count surpassed the 2002 count of 4,156 cases, previously the highest annual count since WNV was first detected in the U.S. in 1999. However, the number of deaths (n=166) recorded to date in 2003 is much lower than for 2002 (n=284). For both years, the earliest illness onset was in late May, with case reports peaking in September. One notable difference of WNV's impact in 2003 compared to 2002 was the geographic epicenter of activity. In 2002, Illinois by far recorded the largest number of cases (n=884) of all states. In 2003, hardest hit states were further west, with Colorado recording over 2,100 cases, Nebraska over 1,500 and South Dakota over 900.

WNV testing at ASVL

As announced in *Bulletin* No. 9 (May 6, 2003), in 2003 the Alaska State Virology Laboratory (ASVL) in Fairbanks developed WNV laboratory capacity for both human and avian specimens. Human specimen testing involves assessing serum or cerebrospinal fluid for presence of IgM antibodies by MAC ELISA. In addition to the traditional method, a commercial assay (PanBio) became available and was initially used by ASVL. Because it yielded false positives in laboratories around the U.S., it is no longer part of the ASVL testing algorithm. All specimens positive via MAC ELISA at ASVL are forwarded to the Centers for Disease Control and Prevention (CDC) in Fort Collins, Colorado, for confirmatory testing via a plaque reduction neutralization test (PRNT). Although IgM levels have been shown to remain elevated in some cases for over a year, detectable WNV IgM usually indicates acute infection.

Avian testing at ASVL involves assessing brain tissue from dead birds for presence of viral RNA via real time polymerase chain reaction (PCR) methods. Positive results indicate that WNV was present in the bird at the time of death.

Human testing results – two nonresident cases

As of October 30, sera from three patients have been tested for WNV in Alaska. Patient A, an Alaska resident, tested positive by PanBio at ASVL, but was not confirmed as a case by CDC. Patient B was positive by PanBio and PRNT. Patient C was positive by PanBio at an out-of state laboratory and positive by MAC ELISA (ASVL) and by PRNT (CDC). None of the three persons were exposed to WNV in Alaska. Although Patients B and C were confirmed by CDC to have WNV, they are not Alaska residents and, therefore, are not officially recorded as Alaska cases. Alaska has yet to record a human case of WNV.

Patient	PanBio at ASVL	PRNT at CDC	Exposure Location
A	Positive	Negative	Florida
B	Positive	Positive	Nebraska
C	Positive*	Positive	Montana

*PanBio test conducted at an out-of-state laboratory.
WNV MAC ELISA at ASVL was also positive.

Blood Bank testing results – no evidence of WNV

Nationwide testing of the blood supply for WNV began in 2003. All donated units were recommended to be screened for WNV using a very sensitive nucleic acid test (NAT). Additionally, potential donors were deferred if they reported having febrile illness 2 weeks prior to donating, and units from persons reporting febrile illness within 7 days of donation were discarded. For more information, see http://www.fda.gov/cber/safety/wnvbld.htm.

The Blood Bank of Alaska (BBAK) began testing all units on July 13, 2003. As of October 10, none of the 6,198 units screened via NAT were positive for WNV. For more information, see http://www.bloodbankofalaska.org.

Avian testing results – no evidence of WNV

Of the 22 dead birds tested at ASVL, none were positive for WNV by PCR. Birds were submitted from around the state: six from Fairbanks; three each from Anchorage and Sitka; two each from McGrath, Denali Park and Palmer; and one each from Seward, Barrow, Chatanika and Cordova. Seven ravens, four magpies, three gray jays, two crows, two pine siskens; and one bald eagle, kestral, goshawk, and snowy owl were submitted.

Additionally, several specimens from four birds were submitted to the National Wildlife Health Center in Wisconsin and tested for WNV along with a battery of other tests performed as part of a full diagnostic work-up. None of the specimens from the four birds submitted were positive for WNV.

Mosquito testing results – no evidence of WNV

In 2003, the U.S. Army Center for Health Promotion and Preventive Medicine-West (USACHPPM-W) conducted a large western U.S. entomological survey, trapping mosquitoes and evaluating mosquito pools for presence of WNV. In June and July, a limited number of pools were collected at Forts Richardson and Wainwright; none tested positive for WNV. Additionally, the mosquito species identified in the Alaska pools tested were not major WNV vector species.

Summary

For the 2003 season, WNV surveillance in Alaska involved testing of humans, birds, and mosquitoes. No evidence of local existence or transmission of WNV was found. As expected, imported human cases were detected in Alaska but do not reflect risk of acquiring WNV in Alaska. In the lower 48 and Canada, WNV appears to be spreading westward and is likely to become an endemic disease for much of the North American continent. No one can be sure whether Alaska will remain free of WNV in the future. Current plans are to continue with WNV surveillance in Alaska for the 2004 season.

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