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Summary Results from 2004 West Nile Virus Surveillance in Alaska

Human West Nile Virus cases in the U.S.

As of November 2, 2004, over 2,200 human cases and 76 deaths from West Nile virus (WNV) were reported in the United States for the 2004 season. For the same time period, Health Canada reported 29 cases and no deaths. Compared to the previous 2 years, there were significantly fewer cases recorded in 2004 (Table 1).

Table 1. West Nile Virus Cases and Deaths – United States, 1999-2004.¹

Year(s)	Number of cases	Number of deaths (% of cases)
2004	2,241	76 (3%)
2003	9,862	166 (2%)
2002	4,156	284 (7%)
1999-2001	149	18 (12%)

In 2004, California and Arizona reported the largest numbers of cases with 710 and 381, respectively. In 2003, Colorado and Nebraska reported the largest numbers with 2,947 and 1,942, respectively. Since 1999 when WNV was first detected in the U.S. in New York, the epicenter of disease has shifted west in each subsequent season.

WNV testing at ASVL

The Alaska State Virology Laboratory (ASVL) in Fairbanks developed WNV laboratory capacity for both human and avian specimens in 2003. Human specimen testing involves assessing serum or cerebrospinal fluid for presence of IgM antibodies by MAC ELISA. 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 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 – one travel-associated case

As of November 2, ASVL has evaluated a single serum specimen for WNV. This specimen came from a California resident who sought medical attention while visiting Alaska. The patient lives in an area of CA known to have WNV activity; however, his serum was negative for WNV IgM antibodies. The patient was not hospitalized.

Because the national standards for case reporting are based upon a person's residency, Alaska will record a single case of WNV for 2004. This case-patient is an Alaska resident who had been living in Arizona and had onset of mild symptoms while still there. Blood submitted to a national laboratory tested positive for WNV antibodies. By convention, this case-patient is counted as an Alaska case. Because the exposure to mosquitoes was outside of Alaska,

this case report does not reflect the risk of acquiring WNV in Alaska. To date, Alaska has yet to record a locally-acquired human case of WNV.

Blood Banks testing results – no evidence of WNV

Nationwide testing of the blood supply for WNV began in 2003. All donated units were screened for WNV using a very sensitive nucleic acid test. 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.

In 2004, none of the blood banking entities in Alaska reported any WNV infections detected in units donated by Alaskans. Nationwide, WNV was detected in over 190 persons who donated blood.

Avian testing results – no evidence of WNV

Of the 17 dead birds tested at ASVL, none were positive for WNV by PCR (Table 2). In 2003, 22 birds were tested; none were positive.

Table 2. Birds Submitted to ASVL for WNV Evaluation, 2004.

Type of bird	Number tested	Location in Alaska (# of birds tested)
Raven	7	Fairbanks (5) Fort Greely (1) M. 57 Elliott Hwy (1)
Magpie	5	Anchorage (4) Eagle River (1)
Crow	2	Juneau (2)
Sharp-shinned hawk	1	Fairbanks (1)
Gyrfalcon	1	Fairbanks (1)
Merlin	1	Fairbanks (1)

Summary

In 2004, no evidence of local existence or transmission of WNV was found among birds or humans. A travel-associated human case was detected but does not inform the risk of acquiring WNV in Alaska. WNV appears to have become an endemic disease for much of the North American continent, although the burden of disease in 2004 was markedly less than in prior years. No one can be sure whether Alaska will continue to remain free of WNV. Locally-acquired WNV could only occur if viremic migratory birds arrive in Alaska when the appropriate species of mosquitoes are active and when temperatures would permit adequate amplification of virus. (For a fuller discussion of whether WNV is likely to be detected in Alaska, see *Epidemiology Bulletin* No. 9, May 6, 2003.) The Alaska Division of Public Health plans to continue work with our partners to conduct WNV surveillance in Alaska for the 2005 season.

Acknowledgments:

The Section of Epidemiology would like to thank all persons who assisted with collecting and testing dead birds.

Reference:

¹Statistics from CDC West Nile Virus surveillance website:
<http://www.cdc.gov/ncidod/dvbid/westnile/background.htm>.