EPI-LOG

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- **Human West Nile Virus: Will 2008 Be Our Year?**

Human West Nile Virus: Will 2008 be Our Year?

Washington remains one of the few states in the continental US that have not had a large outbreak of human West Nile disease. Although WNV in birds, mosquito pools and animals has been documented intermittently since 2002 in Washington, only a small number of human cases were reported in 2006 (3), while our neighboring states have had significant human West Nile activity. In 2006, Oregon saw human cases increase from 7 in 2005 to 69 cases with 2 deaths, while Idaho jumped from 13 in 2005 to 996 cases with 21 deaths. In 2007, case numbers went down in both Oregon (26 cases and no deaths) and Idaho (132 cases and 1 death). Although there were no locally-acquired cases reported from Washington State in 2007, WNV was documented in 8 horses, 1 bird and 1 dog.

WNV Clinical Presentation: The majority (80%) of WNV infections are mild or clinically unapparent. Approximately 20% of infected persons develop West Nile fever, which may include fever, malaise, anorexia, nausea, vomiting, headache, body aches, rash, and swollen lymph glands. The incubation period is typically 3 to 6 days (range 3 to 14 days) with symptoms lasting 3 to 6 days or longer. Approximately 1 in 150 infected persons develop severe neuroinvasive disease, including encephalitis and meningitis.

Neuroinvasive disease is associated with a range of neurologic and systemic manifestations including headache, high fever, gastrointestinal symptoms, neck stiffness, stupor, disorientation, cranial nerve abnormalities, ataxia, coma, tremors, convulsions, muscle weakness, paralysis, and, rarely, death. People over the age of 50 have the highest risk of severe forms of WNV and up to 30% of cases in persons over 70 years of age with neuroinvasive disease are fatal. Persons with diabetes may also be at increased risk. **Consider WNV in the differential diagnosis of all patients with encephalitis of unknown etiology during mosquito season, particularly in elderly patients presenting with weakness or flaccid paralysis.**

WNV Laboratory Diagnosis: The Washington State Public Health Laboratory (PHL) will only test patients who meet the following criteria, after consultation with Public Health - Seattle & King County:

- Patients with suspected WNV neuoroinvasive disease (fever and change in mental status, cerebrospinal fluid pleocytosis, or other acute central or peripheral neurologic dysfunction)
- Symptomatic pregnant or breastfeeding women
- Neonates or breastfeeding infants of infected mothers
- Recent blood, tissue, or organ donors or recipients suspected to have WNV infection
- Person with commercial laboratory evidence of WNV infection to confirm the diagnosis

The PHL tests for WNV-specific IgM antibody in serum or CSF by capture enzyme immunoassay (EIA) and Microsphere Immunoassay (MIA). This is the most sensitive test for WNV infection in immunocompetent patients, as more than 90% of those infected will have detectible serum IgM eight days after onset, and CSF antibody may be present even earlier. Positive specimens will be forwarded to the CDC for confirmatory testing. Because PCR lacks sensitivity, and immunocompetent patients typically clear the virus shortly after symptom onset, **PCR testing is not recommended for routine diagnosis of WNV.** PCR may be more useful for immune deficient individuals who clear the virus more slowly, and can be done by the PHL on either CSF or blood.

Specimens from patients who do not meet the Washington State PHL WNV testing criteria can be tested at the Public Health - Seattle & King County Laboratory on a fee-for-service basis (WNV IgM testing but not PCR), or at a commercial laboratory.

Because WNV cannot be distinguished clinically from other causes of meningoencephalitis, concurrent testing for common causes of aseptic meningitis and encephalitis (including cultures and/or PCR testing for enteroviruses and herpes viruses) is encouraged. Also consider additional testing if a patient's travel history is suggestive of other arboviral exposure.

WNV Test Interpretation: IgM antibody develops by day 8, and IgG antibody within 3 weeks after illness onset. Because IgM does not cross the blood-brain barrier, its presence in CSF indicates neuroinvasive disease. When indicated, a convalescent serum specimen should be drawn about 3-4 weeks after the acute specimen. Negative results on any specimen obtained less than 8 days after onset of illness are inconclusive and require follow-up with a convalescent serum specimen obtained at least 2 weeks after the first specimen. For interpretation of positive serum WNV IgM results, there are two caveats: First, the test may cross-react with antibody from other causes of arboviral encephalitis including yellow fever, Japanese encephalitis (from disease or vaccination), and dengue fever. Second, IgM antibody can persist for more than a year, so the presence of IgM could be indicative of past arboviral infection rather than acute disease.

WNV: What's New This Year? One new mosquito repellent called IR3535 was recently approved by the Environmental Protection Agency for use on skin and clothing, bringing the total number of approved mosquito repellents to four, including:

- DEET (Chemical Name: N,N-diethyl-m-toluamide or N,N-diethly-3-methyl-benzamide)
- Picaridin (KBR 3023, Chemical Name: 2-(2-hydroxyethyl)-1-piperidinecarboxylic acid 1-methylpropyl ester)

- Oil of Lemon Eucalyptus or PMD (Chemical Name: para-Menthane-3,8-diol) the synthesized version of oil of lemon eucalyptus
- IR3535 (Chemical Name: 3-[N-Butyl-N-acetyl]-aminopropionic acid, ethyl ester)

In addition, permethrin is approved for mosquito repellent use on clothing, shoes, bed nets, camping gear, etc.

WNV Prevention Advice

- Use insect repellents containing DEET, picaridin, oil of lemon eucalyptus, or IR3535.
- Avoid being outdoors when mosquitoes are most active. Wear long sleeve shirts, long pants, and a hat to reduce bites.
- Check screen doors and windows for openings that might allow mosquitoes indoors.
- Decrease standing water to the greatest extent possible, particularly around the home.

For links to WNV patient resources, including streaming video, brochures, factsheets in multiple languages, external links, etc., see:
www.metrokc.gov/HEALTH/westnile/

Information about WNV for health care providers can be found at:
www.metrokc.gov/health/providers/wnv-clinicians.htm

Disease Reporting

AIDS/HIV	(206) 296-4645
STDs	(206) 731-3954
TB	(206) 731-4579
All Other Notifiable Communicable Diseases (24 hours a day)	(206) 296-4774
Automated reporting line for conditions not immediately notifiable	(206) 296-4782

Hotlines

Communicable Disease	(206) 296-4949
HIV/STD	(206) 205-STDS

Public Health-Seattle & King County Online Resources

Home Page: www.metrokc.gov/health/
The *EPI-LOG*: www.metrokc.gov/health/providers
Communicable Disease listserv (PHSKC INFO-X) at:
mailman.u.washington.edu/mailman/listinfo/phskc-info-x

West Nile Virus Disease Reporting Guidelines

Suspected or confirmed cases of WNV should be reported to PHSKC within three business days by calling (206) 296-4774.[1] Healthcare providers, hospitals, and laboratories should report patients with any of the following:

Suspected or confirmed WNV neuroinvasive disease:
Fever (in the absence of a more likely diagnosis) in a patient with at least one of the following:
- ✓ Acute change in mental status (e.g., disorientation, obtundation, stupor, or coma)
- ✓ Other acute central or peripheral neurological dysfunction (e.g., paresis, paralysis nerve palsies, sensory deficits, abnormal reflexes, seizures, or movement disorders)
- ✓ CSF pleocytosis associated with an illness compatible with meningitis
- ✓ WNV-specific IgM antibodies measured by any serologic testing method or detection of viral nucleic acid in CSF

West Nile fever in a patient who has laboratory evidence of WNV disease:
- ✓ WNV-specific IgM antibodies in serum measured by any serologic testing method, or
- ✓ Isolation of WNV from, or detection of viral nucleic acid in blood

Acute flaccid paralysis or presumed Guillain-Barré syndrome even in the absence of fever and other neurologic symptoms

Suspected WNV disease or asymptomatic WNV infection with laboratory evidence of WNV in the following patients, even in the absence of fever and other neurologic symptoms:
- ✓ A pregnant woman
- ✓ A neonate or breastfeeding infant of a WNV infected mother
- ✓ Someone who donated or received blood products in the previous month
- ✓ Someone who donated or received a tissue or organ transplant in the previous month
- ✓ Someone who has had occupational exposure to WNV

[1] Health care provider reporting of notifiable conditions is required by state law (WAC 246-101)

Reported Cases of Selected Diseases, Seattle & King County 2007

	Cases Reported in May		Cases Reported Through May	
	2007	2006	2007	2006
Campylobacteriosis	26	12	119	77
Cryptosporidiosis	5	3	14	14
Chlamydial infections	475	457	2,484	2,498
Enterohemorrhagic *E. coli* (non-O157)	0	0	0	2
***E. coli* O157: H7**	1	0	4	6
Giardiasis	11	11	43	58
Gonorrhea	145	100	674	558
***Haemophilus influenzae* (cases <6 years of age)**	0	1	2	2
Hepatitis A	2	4	11	5
Hepatitis B (acute)	1	12	5	13
Hepatitis B (chronic)	61	404	73	349
Hepatitis C (acute)	2	6	1	4
Hepatitis C (chronic, confirmed/probable)	126	555	103	579
Hepatitis C (chronic, possible)	28	154	27	127
Herpes, genital (primary)	51	51	66	235
HIV and AIDS (including simultaneous diagnoses with AIDS)	NA	NA	NA	NA
Measles	0	0	0	1
Meningococcal Disease	0	0	2	2
Mumps	1	1	1	3
Pertussis	4	9	28	20
Rubella	0	0	0	0
Rubella, congenital	0	0	0	0
Salmonellosis	15	22	78	94
Shigellosis	3	1	22	24
Syphilis	9	32	58	85
Syphilis, congenital	0	0	0	0
Syphilis, late	7	18	32	40
Tuberculosis	11	20	36	66

The *EPI-LOG* is available in alternate formats upon request.