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HEALTH UPDATE

September 24, 2012

WEST NILE VIRUS (WNV)

This update provides information about WNV recognition, testing, reporting procedures, surveillance activities, and information resources for San Francisco. This update and additional information on WNV is posted on the SFDPH website: www.sfdph.org/cdcp ... click on "Health Alerts."

ACTIONS REQUESTED OF ALL CLINICIANS:

- 1. Be alert for human cases of WNV (See clinical description below).
- 2. WNV is legally reportable. Report suspect cases and positive test results to the San Francisco Communicable Disease Control Unit (CDCU) at (415) 554-2830. Fax the WNV Case History Form to (415) 554-2848.
- 3. If requesting WNV testing, obtain CDCU approval and follow guidelines (see below) for collecting and sending clinical specimens to the SFDPH Public Health Laboratory.

BACKGROUND INFORMATION

WNV, a flavivirus, is transmitted by a mosquito bite. Mosquitoes become infected when they feed on infected birds, the reservoir for WNV. Human-to-human transmission of WNV does not occur, except for rare cases of human WNV infection associated with blood transfusion, organ transplant, and transmission through breast milk and transplacentally. The incubation period for WNV infection ranges from about 2 to 14 days, although longer incubation periods have been documented in immunosuppressed persons.

CURRENT SITUATION IN SAN FRANCISCO

On 21 Sept, 2012, one human WNV case was reported in a San Francisco resident with no travel history, suggesting the disease was locally acquired. This is the first locally acquired human case reported in the City since 2005 when WNV first became reportable. In 2010 one SF resident became infected with WNV from an organ transplant. One dead bird in San Francisco recently tested positive for WNV, indicating that the virus is present in the local environment this year. This is only the third positive WNV positive bird since 2007.

Cases are increasing throughout California and across the nation. As of 21 Sept, 2012 California reported 147 cases of WNV in humans. Nationally 3,142 cases have been reported to the Centers for Disease Control and Prevention (CDC), making this year the highest number of cases reported year to date since 2003. Almost 40% of the reported cases are from Texas. Of the 134 deaths nationwide, six have occurred in California.

CLINICAL DESCRIPTION

Most persons (~80%) who become infected with West Nile virus (WNV) develop no clinical illness or symptoms. Among the ~20% of cases with WNV symptoms, most develop non-neuroinvasive disease (West Nile Fever) while a minority develop central nervous system (CNS) syndromes including WNV encephalitis, WNV meningitis, and WNV poliomyelitis.

Syndrome

West Nile Fever: $T \ge 38^{\circ}$ C, headache, fatigue; muscle pain or weakness which may persist for over 1 month. Other symptoms include anorexia, eye pain, rash, neck or joint pain, nausea, vomiting, and lymph node swelling.

<u>WNV Encephalitis</u>: fever, headache, altered mental status, often with seizures. 60-75% of neurological WNV cases present with encephalitis or meningoencephalitis.

<u>WNV Meningitis</u>: fever, headache, stiff neck, and pleocytosis in cerebral spinal fluid. 25-35% of neurological WNV cases present with meningitis.

<u>WNV Poliomyelitis</u>: acute onset of asymmetric limb weakness or paralysis in the absence of sensory loss, sometimes preceded by pain. Can occur in the absence of fever, headache, or other symptoms commonly seen in WNV infection. Respiratory failure may occur.

Reporting / Testing

Report suspect cases lasting ≥ 7 days and seen by a health care provider. Testing by the SF Public Health Lab (PHL) will be recommended on a case-by-case basis in consultation with the CDCU.

Report and pursue WNV testing in all cases of suspected WNV encephalitis.

Report all cases of meningitis, and pursue testing in suspect WNV cases that are 18+ years of age. In suspect cases less than 18 years please evaluate for enteroviruses prior to pursuing WNV testing.

Report and pursue WNV testing in all cases of suspected WNV poliomyelitis.

HUMAN CASE REPORTING

All suspected or laboratory-confirmed WNV infections are to be reported by California health care providers within 1 day of identification. This includes reporting of encephalitis, meningitis, WNV poliomyelitis or fever due to WNV (see table above). Encephalitis and meningitis from any etiology remain legally reportable according to Title 17, California Code of Regulations.

Report all suspected cases and all positive WNV test results from commercial and hospital labs to the CDCU (415) 554-2830, fax (415) 554-2848. Use the 2012 WNV Case History Form (available on our website at: http://sfcdcp.org/westnilevirus.html) to report suspected and laboratory confirmed cases and/or to request testing for WNV. Your reports help us to assess the burden of illness and to target mosquito control and public education activities.

<u>Blood Bank Reporting of WNV-Infected Donors:</u> West Nile virus infections, both confirmed infections and presumptively viremic donors (PVD) detected by blood banks, are to be reported by the blood bank directly to the local health department. Further investigation may be necessary in order to determine if the donor was symptomatic. If a person identified with WNV donated blood or organs within 2 weeks of illness, the blood collection facility/hospital will be notified in order to track the infected blood products or organs.

HUMAN DIAGNOSTIC TESTING

Testing for WNV infection is based on clinical suspicion and risk for exposure such as residence, travel, or outdoor activity in an area with WNV activity. Although nucleic acid amplification tests (e.g., Polymerase Chain Reaction, PCR) are used to screen blood donations, they have limited usefulness in diagnosing clinically evident infections because WNV viremia may be transient and low level. **Serology is the preferred clinical diagnostic test.** Paired acute and convalescent serum samples should be collected whenever WNV is suspected. Although a single acute serum may provide evidence of recent WNV infection, a negative acute serum may not rule out infection if collected too early to demonstrate antibody response. Thus, if WNV is highly suspected, request a 2nd acute serum sample to be collected 3-5 days after the 1st acute serum sample.

The SFDPH Public Health Lab (PHL) will forward specimens to the state Viral and Rickettsial Diseases Lab for WNV antibody and confirmatory testing. If a CSF sample is available, it will be forwarded for testing at the CDC. Results will be available from CDC after a few weeks. The CDCU at SFDPH must approve requests for WNV testing by the PHL and receive a completed Case History Form. The "WNV Lab Testing

Guidelines" including details regarding specimen collection and transport, are available at: http://sfcdcp.org/westnilevirus.html.

Interpretation of West Nile Virus antibody test results*

Tests	Results	Interpretation
IgM	negative	Antibody not detected
IgG	negative	
IgM	negative	Infection with a flavivirus at undetermined time
IgG	positive	
IgM	positive	Possible evidence of recent or current infection; further
IgG	negative	confirmatory testing necessary**
IgM	positive	Evidence of recent or current infection
IgG	positive	
IgM	indeterminate	Inconclusive; recommend testing convalescent serum ***
IgG	negative	

^{*} Due to heterotypic antibody responses and/or cross-reactions, serologic results should be interpreted on the basis of clinical and epidemiological information

TREATMENT

Treatment is supportive and includes hospitalization, intravenous fluids, and respiratory support. Potential therapies being studied include interferon- α , high-titer anti-WNV immunoglobulin (IG), and 3^{rd} generation anti-sense (viral replication inhibitor).

ANIMAL SURVEILLANCE

Animal surveillance for WNV in California includes testing of mosquitoes, sentinel chickens, live and dead wild birds, tree squirrels, and horses with encephalitis. To report a dead bird, please call **1-877-WNV-BIRD**. For current information on WNV surveillance in California visit www.westnile.ca.gov

PREVENTION

Currently no human vaccine is available, although several are in trials. WNV prevention relies on controlling mosquito sources and educating the public to avoid exposure to mosquitoes. Individuals can significantly reduce their risk of disease if they follow the recommendations below.

- Drain standing water; as little as a tablespoon of water can support mosquito breeding.
 - o Report significant mosquito activity or standing water in San Francisco to DPH by calling 3-1-1
 - o Report dead birds to the State WNV hotline at 1(877)WNV-BIRD (1-877-968-2473)
- Install or repair screens on doors and windows.
- Avoid outdoor activity when mosquitoes are most active (dawn and dusk).
- Wear protective clothing with long pants and long sleeves. Treat clothing, hats, and mosquito netting with Permethrin insecticide to further discourage mosquitoes.
- Apply an insect repellent containing at least 20% DEET or 20% Picaridin to exposed skin when mosquitoes are active. For guidance on use of DEET on children, refer to the CDC website below.

INFORMATIONAL LINKS

- SF Department of Public Health: http://sfcdcp.org/westnilevirus.html
- California Dept Public Health WNV Website: http://westnile.ca.gov/
- **CDC:** www.**cdc**.gov/**westnile**/
- US Geological Survey Maps of WNV activity: http://westnilemaps.usgs.gov

^{**} False positive IgM results may occur

^{***} Paired acute and convalescent serum samples may demonstrate seroconversion