

San Francisco Department of Public Health- Mosquito-Borne Virus Surveillance and Response Activities

Most people infected with West Nile Virus (WNV) do not develop any illness. However, approximately 20% of people who become infected with WNV will develop mild symptoms. Mild symptoms may include: fever, headache, body aches, nausea, vomiting, eye pain, occasionally with a skin rash on the trunk of the body, and swollen lymph glands. It is estimated that 1 in 150 persons infected with WNV develops a more severe form of the disease. In general, individuals who are older than 50 years and probably those who are immunocompromised are at greatest risk of severe disease. Severe illness may include encephalitis, meningitis, meningoencephalitis, and acute flaccid paralysis. More severe symptoms may last several weeks and some permanent neurologic impairment may occur. Case fatalities among patients who were hospitalized in the U.S. with severe WNV illness have ranged from 10 to 14%. Currently there are no known specific treatments or cures for West Nile Virus (WNV). There is also no human vaccine available to prevent WNV.

The two primary sections of the San Francisco Health Department currently involved in West Nile Virus Surveillance and Control are the Community Health Epidemiology and Disease Control Section (CHEDC) and Environmental Health Services (EHS). Mosquito-borne disease prevention strategies must be based on a well-planned, area-wide integrated pest management (IPM) based program. The primary components of an IPM program include education, surveillance, and mosquito control.

Education

1. Provide education to the community.
 - a) Development of web page on DPH website with links for the lay community providing information on the following topics:
 - WNV symptoms and signs
 - personal protective measures such as the use of insect repellents or the wearing of long-sleeved clothing to reduce exposure to mosquitoes
 - reducing the number of adult mosquitoes by eliminating standing water that may support the development of immature mosquitoes.
 - b) Web-based Community Health and Safety Bulletin articles on WNV (October 2002.)
 - c) DHS has issued 3 press releases regarding WNV.
 - d) Environmental Health Services (EHS) provides guidance regarding eliminating mosquitoes and mosquito breeding sites.
 - e) Counsel concerned and infected persons on preventive measures, including mosquito abatement, handling dead animals, etc. As evidence for new routes of transmission is identified, incorporate messages into prevention and control education (e.g. blood transfusion, organ transplant, breast feeding etc.)
 - f) EHS has made presentations to community groups, senior centers, and other city departments.
2. Provide education to the medical community with information on how to recognize the symptoms of WNV and request proper laboratory testing for confirmation.
 - a) Sent out a fax alert to SF physicians and veterinarians utilizing the Health Advisory Notification Database (HAND) with information on diagnosis, symptoms, how to refer appropriate human specimens for testing and reporting encephalitis and meningitis cases.
 - b) Article with clinical information on WNV written for web-based Community Health and Safety Bulletin (October 2002).
 - c) Development of web page with links for the medical community providing information on WNV, where to refer appropriate specimens, and forms needed to submit specimens.

Surveillance

The California Department of Health Services (DHS) has overseen a statewide mosquito-borne encephalitis surveillance program since 1969 for Western Equine Encephalitis (WEE), St. Louis Encephalitis (SLE) and other arboviruses. In 2000, the program was expanded to enhance the ability to detect WNV. DHS has developed a comprehensive “Mosquito-Borne Virus Surveillance and Response Plan” available at the WNV Surveillance Information website, URL: <http://www.westnile.ca.gov>.

1. Mosquito Surveillance:

- a) Mosquitoes are collected, pooled and tested for the presence of WNV, WEE and SLE throughout California.

2. Sentinel chickens and wild birds:

- a) Approximately 300 chicken flocks are strategically placed around California and are routinely tested for evidence of viral infection.
- b) SF EHS is working with DHS to set up one flock of sentinel chickens for Spring 2003.
- c) SFDPH is participating in the statewide dead bird surveillance and testing program. Information is collected through a toll-free hotline, 1-877-WNV-BIRD. If the bird initially meets criteria for testing, SF EHS will pick up, evaluate and package the specimen for testing at DHS.

3. Human surveillance:

- a) Specimens from San Francisco residents diagnosed with aseptic meningitis or encephalitis are currently being tested at DHS for 15 core agents including WNV.
- b) F/u on all specimens referred for testing. Aseptic meningitis and encephalitis are both reportable, even if specimen is negative for WNV, it should be reported.
- c) F/u on any positive human specimens in order to obtain travel history to area where WNV has been identified, if no travel history, work with EHS and other designated city agencies to determine source of infection.

4. Equine surveillance:

- a) Well established passive surveillance program for equine encephalomyelitis currently being conducted statewide.

Mosquito Control

Mosquito control is the best method of protecting people and animals from WNV infections.

1. Currently EHS investigates complaints of mosquitoes, actual or potential mosquito breeding sites and enforces the San Francisco Health Code prohibiting mosquitoes on any premises.

Planned activities

Key to planning efforts is an emphasis on prevention.

1. Based on experience and recommendations of the CDC, DHS and the NY Department of Health, a coordinated approach for prevention and control activities should involve all appropriate city agencies. A city wide task force will be convened in order to determine appropriate roles, responsibilities and available resources. A list of member agencies should include Recreation and Parks Department, Public Utilities Commission, Department of the Environment, Mayor's Office of Emergency Services, Animal Care and Control, Department of Public Works and other State and Federal partners.
2. Determine level of response based on risk factors identified by DHS' “Mosquito Borne Virus Surveillance and Response Plan.”