Southern Nevada Health District · Office of Epidemiology – 24/7 Phone (702) 759-1300

Epidemiology Newsletter
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August 2006 – West Nile Virus Update

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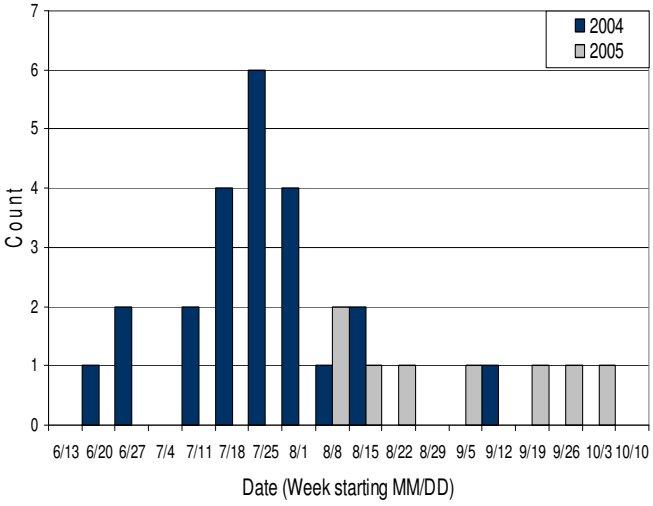
2004-2005 Clark County West Nile Virus Synopsis:

Clark County's first human case of West Nile Virus (WNV) infection was reported in June 2004. By the end of that season, 23 cases had been reported in Clark County, followed by only 8 cases in 2005. Demographic information and the clinical classification of these cases are included in Table 1 below. The temporal distribution of the cases is shown in Figure 1. It can be seen from these figures that not only were there fewer cases reported in 2005 than 2004, but that those of 2005 were also reported later in the season.

Table 1. West Nile Virus Case Count and Demographics; Clark County, 2004-2005

	2004	2005
Total Cases	23	8
West Nile Fever	10	2
Neuroinvasive Disease	13	5
Other Syndrome	0	1
Age range; median (years)	14-84; 55	8-68; 57
Male: Female	13:10	6:2

Figure 1. West Nile Virus Cases by Date of Onset; Clark County, 2004-2005



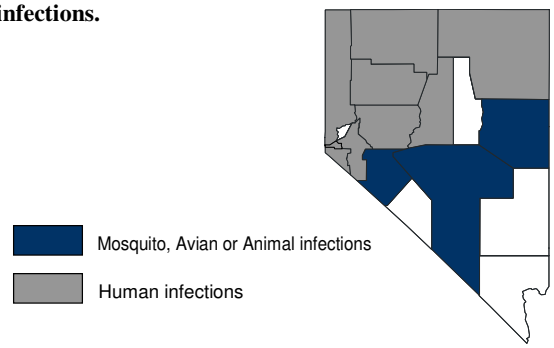
2006 Surveillance:

In March, Southern Nevada Health District (SNHD) staff began this season's mosquito surveillance, which covers Clark, Lincoln, Nye and White Pine counties. In addition to West Nile Virus, mosquito pool specimens are tested for St. Louis Encephalitis (SLE) and Western Equine Encephalitis (WEE). To date, over 31,000 mosquitoes have been submitted by SNHD for analysis. No mosquito specimens from Clark County have been positive for WNV, SLE or WEE, although there have been positive results in other areas of the state.

Public health staff is also testing dead birds of specific species for WNV, SLE and WEE, as had been done in 2004 and 2005. Although one bird tested positive for SLE in Clark County in January, none has tested positive for WNV or WEE this year. The sentinel chicken flock component of the surveillance program, in which chickens were routinely tested for seroconversion, was discontinued at the end of the 2005 season.

No human cases of WNV have been reported in Clark County in 2006 at the time of this newsletter. Few human cases of West Nile Virus have been reported nationwide. Figure 2 is a map of WNV activity in Nevada as reported by the Nevada State Health Division (Human cases, 8/11/2006) and the Nevada Department of Agriculture (Mosquito, Bird, Horse infections, 7/21/2006). A total of 26 human cases have been reported in Nevada from Carson City and Churchill, Douglas, Elko, Humboldt, Lander, Lyon, Pershing and Washoe Counties.

Figure 2. 2006 Nevada West Nile Virus Activity
Note: Counties that are shaded to reflect reported human cases may have also reported mosquito, avian or animal infections.



The detection of West Nile Virus in mosquitoes this season, along with the report of human cases in 2004, 2005 and 2006 indicates that West Nile Virus is currently endemic in the state. Although the Southern Nevada Health District conducts surveillance programs, the medical community also plays an essential role in identifying human cases. It is important for medical practitioners to consider West Nile Virus in the differential diagnosis of individuals reporting symptoms consistent with West Nile Virus (as seen in Table 2 below), even if the patient denies exposure to mosquitoes or mosquito bites. A survey of cases in 2004 indicated that only 8 of 21 cases recalled a bite, and none of these individuals had additional risk factors for West Nile Virus (e.g. blood transfusions, organ transplants, etc).

Most individuals infected with WNV (80%) experience no symptoms. Nearly 20% of those infected develop a syndrome referred to as West Nile fever, and only 1 in 150 infections results in severe neurological disease. Individuals over the age of 50 years are at increased risk of developing severe neurological disease; however these symptoms have occurred in individuals of all ages.

Table 2. Symptomatology of West Nile Virus infection

West Nile Fever	West Nile encephalitis/meningitis
Fever	Fever
Anorexia	Muscle weakness
Nausea	Gastrointestinal Symptoms
Vomiting	Change in mental status
Eye Pain	Flaccid paralysis
Headache	Cranial nerve abnormalities
Myalgia	Myelitis
Rash	Optic neuritis
Lymphadenopathy	Polyradiculitis
Malaise	Seizures
	Ataxia and extrapyramidal signs

Laboratory findings among patients in recent outbreaks include:

- Peripheral blood total leukocyte counts were mostly normal or elevated, with lymphocytopenia and anemia also occurring.
- Hyponatremia was sometimes present, particularly among patients with encephalitis.
- CSF pleocytosis, usually with a predominance of lymphocytes.
- CSF protein was elevated and glucose was normal.
- CT scans of the brain did not show evidence of acute disease in most cases. In approximately one-third of patients, MRI revealed enhancement of the leptomeninges, the periventricular areas, or both.

The recommended diagnostic analyses for patients suspected of having West Nile Virus infection include tests for both IgM and IgG West Nile Virus serum antibodies. Specimens for IgM analysis should be collected within 8-14 days of symptom onset. Cerebrospinal fluid can also be analyzed if available from patients with neuroinvasive disease, but must be tested in conjunction with serum. These tests are available through commercial laboratories.

In addition to identifying and confirming cases of West Nile Virus, healthcare providers can also play a role in minimizing the number of WNV cases by educating patients about the disease and encouraging them to take protective measures against infection. Several cases reported in the United States in 2005 were associated with receipt of organs from donors infected with West Nile Virus. However, such instances are rare, and mosquito bites are still considered the primary mode of transmission. Surveys from cases in 2004 and 2005 indicated that although most cases were familiar with West Nile Virus and how it was transmitted, few took action to protect themselves against infection. Thus, in an effort to prevent the spread of WNV, it is important for individuals to receive education on simple measures that can be taken to minimize exposure to mosquitoes. Examples of such measures are included in Box 1 below:

Box 1. Protective Measures Against Mosquito Bites

- When outdoors, use insect repellents containing DEET, Picaridin, or oil of lemon eucalyptus, according to manufacturer's instructions.
- Wear pants and long-sleeved shirts when outdoors.
- Avoid spending time outside at dawn and dusk, when mosquitoes are most active.
- Eliminate areas of standing water, including bird baths and unmaintained swimming pools.
- Make sure doors and windows have tight-fitting screens without tears or holes.

WNV information for patients is available in English and Spanish on the Southern Nevada Health District Website at: www.southernnevadahealthdistrict.org. Additional information on WNV can be found at the following websites:

- *Centers for Disease Control and Prevention West Nile Virus Website:* http://www.cdc.gov/ncidod/dvbid/westnile/index.htm
- *Nevada State Health Division West Nile Virus Homepage:* http://health2k.state.nv.us/php/WNVCurrent/index.htm
- *Nevada Department of Agriculture website:* http://agri.nv.gov/Animal2_west_nile_virus_new.htm

Report positive results to the SNHD Office of Epidemiology at 759-1300.