Public Health Update

A Bi-monthly Newsletter on Current Public Health Topics

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Public Health Update

August 2002

West Nile Virus

Guidelines for Emergency Departments and Health Case Providers
August 13, 2002

These guidelines are provided to assist health care providers with the recognition and diagnosis of serious illness due to West Nile virus (WNV).

As of August 12, 2002 there has been no WNV activity (evidence of infection in humans, horses, birds, mosquitoes) detected in Colorado. However, WNV activity has spread rapidly among states this summer and the status of WNV in Colorado could change at any time.

To date, the states closest to Colorado that have confirmed the presence of West Nile virus in either humans or birds are; Texas, Oklahoma, Nebraska, South Dakota, and North Dakota. It is possible that we could see this disease as soon as late summer or early fall of 2002. Local health departments across the state are monitoring for the disease by conducting surveillance of sentinel chicken flocks, dead bird surveillance, human surveillance, horse surveillance, and mosquito trapping and identification.

Frequently asked questions about West Nile virus:

Q. What is West Nile encephalitis?

A. West Nile encephalitis is an infection of the brain caused by West Nile virus, a flavivirus commonly found in Africa, West Asia, and the Middle East. The West Nile virus was first seen in the United States in 1999 in New York City.

Q. How do people get West Nile encephalitis?

A. People become infected by the bite of a mosquito infected with West Nile virus.

Q. What is the basic transmission cycle?

A. Mosquitoes become infected when they feed on infected birds. Infected mosquitoes can then transmit West Nile virus to humans and animals while biting to take blood. West Nile encephalitis is NOT transmitted from person-to-person or animal-to-person.

Q. Who is at risk for getting West Nile encephalitis?

A. All residents of areas where virus activity has been identified are at risk of getting West Nile encephalitis; persons over 50 years of age have the highest risk of severe disease. *As of August 12, 2002 there has been no WNV activity detected in Colorado.*

Q. What are the symptoms of West Nile encephalitis?

A. Most infections are mild, and symptoms include fever, headache, and body aches, occasionally with skin rash and swollen lymph glands. More severe infections may be marked by headache, high fever, neck stiffness, stupor, disorientation, coma, tremors, convulsions, muscle weakness, paralysis, and rarely death. Approximately 1 in 150 infected persons develop encephalitis and/or meningitis. Diffuse, flaccid paralysis occurred in 10% of New York City cases in 1999.

Signs/Symptoms of Severe WNV Illness*

Sign/Symptom	Percent
Fever	90
Weakness**	56
Nausea	53
Vomiting	51
Headache	47
Changes in mental status	46
Diarrhea	27
Rash+	19

* from 1999 New York City outbreak (n=59 cases)
** decreased muscle strength documented in 27%
+ maculopapular or "morbilliform" rash

Laboratory Findings in Severe WNV Illness*

Test	Mean	Range
Peripheral White-cell count ($x10^{-3}/mm^3$)	10.4	2.3 – 30.8
Cerebrospinal fluid White-cell count (per mm^3)	38	0 - 525
Lymphocytes (%)	47	4 - 92
Protein (mg/dl)	104	38 - 899
Glucose (mg/dl)	80	46 - 143

* from 1999 New York City outbreak (n=59 cases)

Head CT scans have typically shown no evidence of acute disease. Head MRI scans have shown meningeal / periventricular enhancement in some patients.

Q. What proportion of people with severe illness due to West Nile virus die?

A. Among those with severe illness, case-fatality rates range from 3% to 15% and are highest among the elderly. Less than 1% of persons infected with West Nile virus will develop severe illness.

Q. What is the incubation period of West Nile virus?

A. 3 – 14 days

Q. How do I diagnose my patient for West Nile virus?

A. Diagnosis is based on clinical suspicion and serologic testing of CSF and serum. Serologic testing for WNV (and other arboviruses) is performed at the **Colorado Department of Public Health and Environment Laboratory.**

- Demonstration of WNV IgM antibody (using a "capture" assay) in **CSF** is diagnostic.
- Demonstration of WNV IgM antibody (using a "capture" assay) and IgG antibody in **serum** is diagnostic (however, confirmatory testing at CDC is needed to rule out false positives)

Requests for WNV serologic testing through the Colorado Department of Public Health and Environment Laboratory should be targeted to suspect cases of WNV encephalitis/meningitis (febrile illness plus neurologic syndrome).

Note: *this time of year, the majority of aseptic meningitis cases are caused by enteroviruses; CSF testing by PCR for enterovirus is recommended through your hospital lab's "send out" service.*

WNV Specimen Submission Instructions for State Laboratory   Phone: (303) 692-3485

- Submit acute **CSF** sample (collected within 7 days of illness onset).
- Submit acute **serum** sample (collected within 7 days of illness onset).
- Specimens should be sent refrigerated (i.e. with cold packs) via your hospital/clinical lab.

Q. How is West Nile encephalitis treated?

A. There is no specific therapy. In more severe cases, intensive supportive therapy is indicated, often involving hospitalization, intravenous fluids, airway management, respiratory support (ventilator), and prevention of secondary infections (pneumonia, urinary tract, etc.).

Q. If a person contracts West Nile virus, does that person develop a natural immunity to future infection by the virus?

A. It is assumed that immunity will be lifelong; however, it may wane in later years.

Q. Is there a vaccine against West Nile encephalitis?

A. No, but several companies are working toward developing a vaccine.

Q. What can I tell a patient who wants to reduce their risk of becoming infected with West Nile virus?

A.

- Stay indoors at dawn, dusk, and in the early evening.
- Wear long-sleeved shirts and long pants whenever outdoors.
- Spray clothing with repellent containing DEET (N, N-diethyl-meta-toluamide) since mosquitoes may bite through thin clothing.
- Apply insect repellent sparingly to exposed skin. An effective repellent will contain 35% DEET. Use lower concentrations on children. DEET in high concentrations (greater than 35%) provides no additional protection and may cause complications.
- Repellents may irritate the eyes and mouth, so avoid applying repellents to the hands of children. Whenever an insecticide or insect repellent are used, be sure to read and follow the manufacturer's "directions for use," as printed on the product.
- Install or repair window and door screens so that mosquitoes cannot get indoors.
- Remove sources of standing water.

REPORT suspect cases of WNV encephalitis/meningitis to the state or local health department:

Tri-County Health Department

(303) 220-9200

Colorado Department of Public Health and Environment

Communicable Disease Epidemiology Program

(303) 692-2700

(303) 370-9395 (after hours)

For more information on West Nile virus:

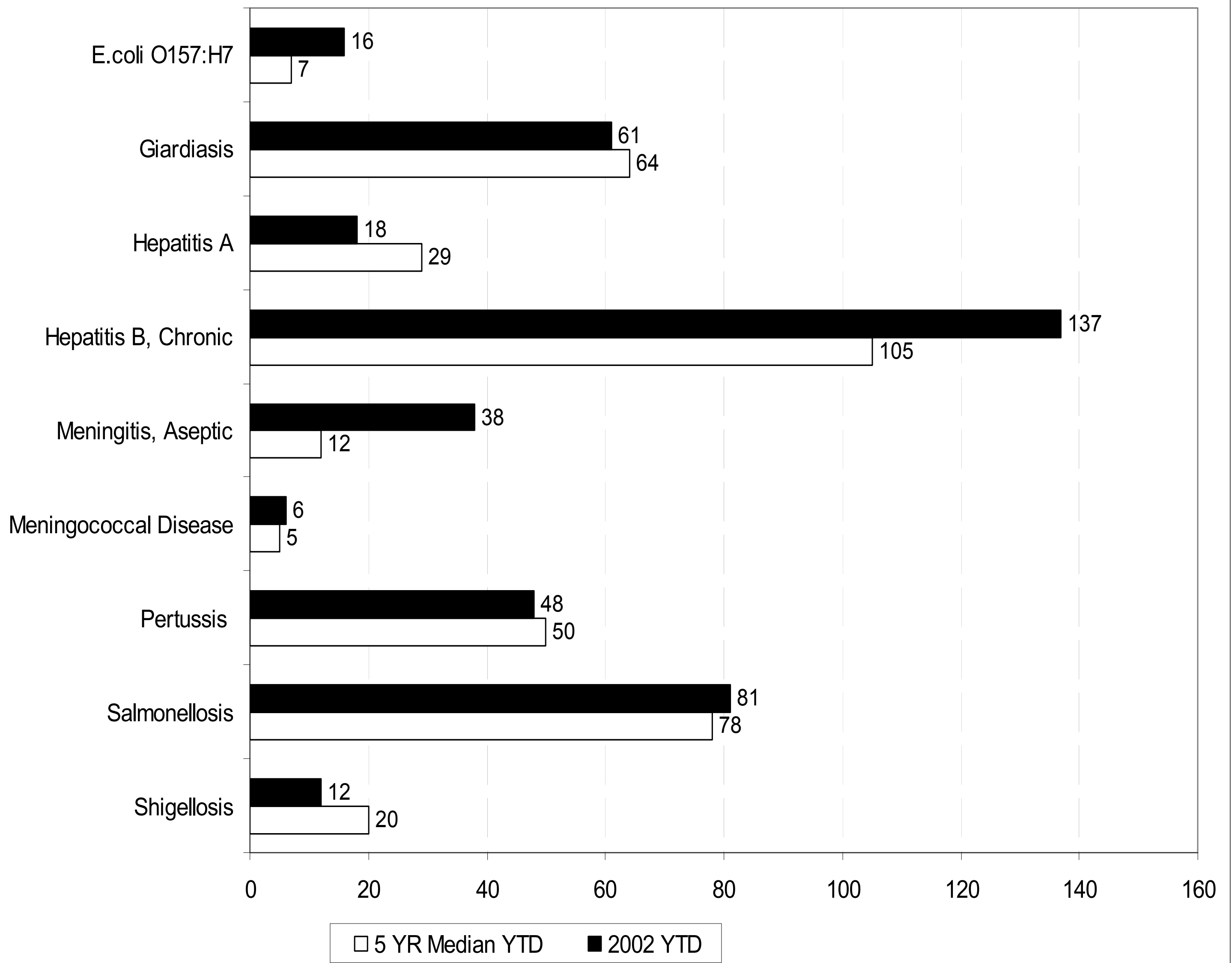
http://www.tchd.org

http://www.cdphe.state.co.us/dc/zoonosis/zoonosis.asp

http://www.cdc.gov/ncidod/dvbid/westnile/index.htm

References:

Peterson LR, Marfin AA. West Nile Virus: A Primer for the Clinician. Ann Intern Med 2002;137:173-9.
Nash D et al. The outbreak of West Nile Virus infection in the New York City area in 1999. NEJM 2001;344:1807-14.
Weiss D et al. Clinical findings of West Nile Virus infection in hospitalized patients, New York and New Jersey, 2000. Emerg Infect Dis 2000;7:654-8.


Tri-County Health Department
Selected Diseases by Date of Report
Adams, Arapahoe, and Douglas Counties
2002 Year-to-date Through July
E.coli O157:H7
16
7
Giardiasis
61
64
Hepatitis A
18
29
Hepatitis B, Chronic
137
105
Meningitis, Aseptic
38
12
Meningococcal Disease
6
5
Pertussis
48
50
Salmonellosis
81
78
Shigellosis
12
20
0
20
40
60
80
100
120
140
160
5 YR Median YTD
2002 YTD