

Chattanooga-Hamilton County Health Department EPIDEMIOLOGY NEWSLETTER

May 2008

Mosquito & Tickborne Illnesses

West Nile Virus

West Nile virus (WNV) is one of several mosquito-borne viruses in the United States that can infect people as well as birds and horses. The virus exists in nature primarily through a transmission cycle involving certain species of mosquitoes and birds. Mosquitoes become infected with WNV when they feed on birds infected with WNV.

West Nile virus emerged in the 1990s in temperate regions of Europe and North America and was introduced into New York City in 1999. The virus moved westward from New York to California and in 2003 was documented in 46 states.

Most people (about 80 percent) that are infected with WNV by the bite of an infected mosquito will have no symptoms and will not know they have been infected. Approximately 20 percent of the people that are infected may experience a range of flu-like symptoms which may include fever, headache, weakness, stiff neck, nausea, vomiting, muscle aches and pains, rash and in some cases diarrhea and sore throat. Less than one percent of people that are infected with WNV by the bite of an infected mosquito will develop severe illness. Persons over 50 years of age are at the highest risk of developing the most severe form of the disease and persons over the age of 70 with other health problems are at greatest risk for death.



Photo Courtesy of CDC

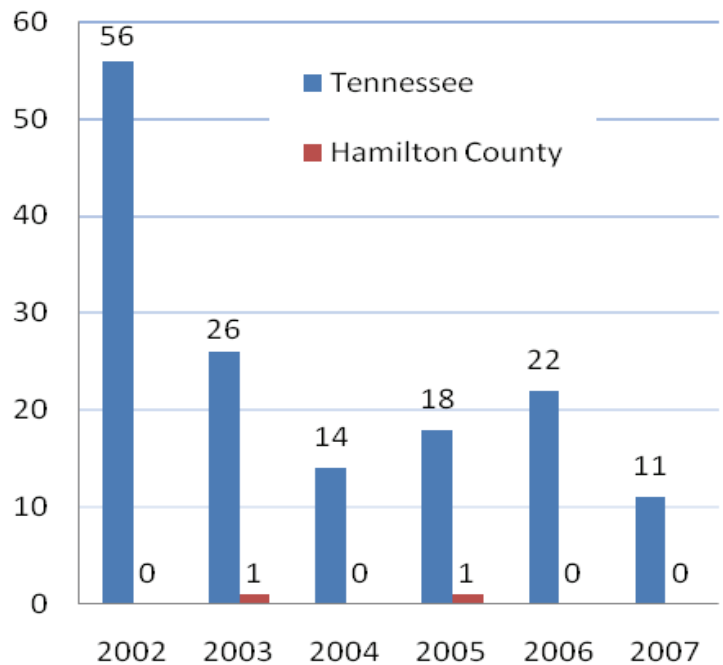
Additional WNV information for clinicians is available at: <http://www.cdc.gov/ncidod/dvbid/westnile/clinicians/index.htm>

Prevention and Control

As with any disease, the public should respond appropriately with increased awareness of WNV and focus on personal preventive measures. Individuals can significantly reduce their chances of acquiring West Nile virus by taking very basic precautions which include personal protective measures such as:

- wearing insect repellents containing DEET (use with caution on children) when in mosquito habitats, particularly between dusk and dawn
- wearing long pants and sleeves that will provide a physical barrier against mosquito bites
- inspect your yard and neighborhood for any stagnant water that may collect in a variety of containers, from bottle caps to abandoned swimming pools
- eliminate unwanted containers (tires, trash) or turn containers over so they will not collect water (wheelbarrows, kiddie pools)
- properly maintain wanted water sources (bird baths, ornamental ponds)

WNV Surveillance Human Cases



In Hamilton County, testing of mosquito breeding areas and of birds that may carry WNV (blue jays, crows, robins) contributes to the overall surveillance for this illness in our community. For more information about monitoring for this disease please visit the Environmental Health Services website: <http://health.hamiltontn.org/EnvHealth/wnvreview.htm>

Rocky Mountain Spotted Fever

Rocky Mountain spotted fever is the most severe and most frequently reported rickettsial illness in the United States. It also occurs in Mexico and in Central and South America. The disease is caused by *Rickettsia rickettsii*, a species of bacteria that is spread to humans by ixodid (hard) ticks. Initial signs and symptoms of the disease include sudden onset of fever, headache, and muscle pain, followed by development of rash. The disease can be difficult to diagnose in the early stages, and without prompt and appropriate treatment, can be fatal.

The rash first appears two to five days after the onset of fever and is often not present or may be very subtle when the patient is initially seen by a physician. Younger patients usually develop the rash earlier than older patients. Most often it begins as small, flat, pink, non-itchy spots (macules) on the wrists, forearms, and ankles. These spots turn pale when pressure is applied and eventually become raised on the skin.

A history of tick bite or exposure to tick-infested habitats is reported in approximately 60% of all cases of Rocky Mountain spotted fever. Over 90% of patients with Rocky Mountain spotted fever are infected between April and September.

Ehrlichiosis

Human ehrlichiosis due to *Ehrlichia chaffeensis* was first described in 1987. The disease occurs primarily in the southeastern and south central regions of the country and is primarily transmitted by the lone star tick, *Amblyomma americanum*. Ehrlichiosis can be a severe illness, especially if untreated, and as many as half of all patients require hospitalization. Severe manifestations of the disease may include prolonged fever, renal failure, disseminated intravascular coagulopathy, meningoencephalitis, adult respiratory distress syndrome, seizures, or coma.

The severity of ehrlichiosis may be related in part to the immune status of the patient. Persons with compromised immunity caused by immunosuppressive therapies (e.g., corticosteroids or cancer chemotherapy), HIV infection, or splenectomy appear to develop more severe disease, and case-fatality ratios for these individuals are characteristically higher than case-fatality ratios reported for the general population.

Tickborne Rickettsial Diseases Summary				
	Rocky Mountain spotted fever		Ehrlichiosis	
Tick Vector	American dog tick		Lone star tick	
Signs & Symptoms	Fever, nausea, vomiting, myalgia, anorexia, headache		Fever, headache, malaise, myalgia	
Rash	Adults: 50%-80% Children: >90%		Adults: <30% Children: 60%	
Incubation Period	2 – 14 days		5 – 14 days	
Lab Findings	Thrombocytopenia, hyponatremia, elevated hepatic transaminase		Leukopenia, thrombocytopenia, elevated liver transaminase	
Reportable Disease in TN	Yes		Yes	
Reported Cases	Tennessee	Hamilton County	Tennessee	Hamilton County
2002	78	7	26	0
2003	73	5	31	1
2004	98	2	16	1
2005	138	11	16	1
2006	263	15	29	4
2007	186	6	39	1

Reference: Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever, ehrlichioses, and anaplasmosis — United States: a practical guide for physicians and other health-care and public health professionals. MMWR 2006;55(No. RR-4):[3].

Limiting exposure to ticks is the most effective way to reduce the likelihood of Rocky Mountain spotted fever infection. In persons exposed to tick-infested habitats, prompt careful inspection and removal of crawling or attached ticks is an important method of preventing disease. It may take extended attachment time before organisms are transmitted from the tick to the host. Currently, no licensed human vaccine is available for prevention of Rocky Mountain spotted fever.

Personal Protection Against Ticks

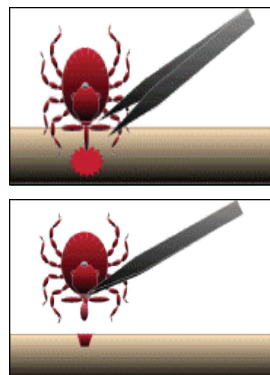
- Wear light-colored clothing which allows you to see ticks that are crawling on your clothing.
- Tuck your pants legs into your socks so that ticks cannot crawl up the inside of your pants legs.
- Apply repellents to discourage tick attachment. Repellents containing permethrin can be sprayed on boots and clothing, and will last for several days. Repellents containing DEET can be applied to the skin, but will last only a few hours before reapplication is necessary. Use DEET with caution on children. Application of large amounts of DEET on children has been associated with adverse reactions.
- Conduct a body check upon return from potentially tick-infested areas by searching your entire body for ticks. Use a hand-held or full-length mirror to view all parts of your body. Remove any tick you find on your body.
- Parents should check their children for ticks, especially in the hair, when returning from potentially tick-infested areas. Ticks may also be carried into the household on clothing and pets and only attach later, so both should be examined carefully to exclude the ticks.

Source: <http://www.cdc.gov/ncidod/dvrd/rmsf/index.htm>



American dog tick
Photo courtesy of the CDC

Hamilton County Diseases Reported	Cases
Campylobacteriosis	4
Cryptosporidiosis	0
Ehrlichiosis	0
Giardiasis	4
Group A Streptococcus, invasive	2
Group B Streptococcus, invasive	14
Guillain-Barre syndrome	2
Haemophilus influenzae, invasive	4
Hepatitis B*, acute	4
Hepatitis C*, acute	1
Legionellosis	2
Lyme disease	1
Malaria	0
MRSA (S.aureus, methicillin resistant), invasive	52
Neisseria meningitidis, invasive	0
Rocky Mountain spotted fever	0
Salmonellosis	8
Shigellosis	6
STEC (Shiga toxin-producing Escherichia coli)	0
Strep pneumoniae, drug resistant, invasive	12
Strep pneumoniae, invasive	33
VRE (Vancomycin-Resistant Enterococcus), invasive	2
Yersiniosis	0
Other Programs:	
Perinatal Hepatitis B Program	7
Restaurant Complaints Investigated	55
2007 Foodborne Outbreaks	6
*The majority of Hepatitis B & C reports received and investigated are non-acute and not reportable, and are not represented here.	



Appropriate Tick Removal

- Use fine-tipped tweezers or a notched tick extractor, and protect your fingers with a tissue, paper towel, or latex gloves. Persons should avoid removing ticks with bare hands.
- Grasp the tick as close to the skin surface as possible and pull upward with steady, even pressure. Do not twist or jerk the tick; this may cause the mouthparts to break off and remain in the skin.
- After removing the tick, thoroughly disinfect the bite site and wash your hands with soap and water.
- Do not squeeze, crush, or puncture the body of the tick because its fluids may contain infectious organisms. Skin accidentally exposed to tick fluids can be disinfected with iodine scrub, rubbing alcohol, or water containing detergents.

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Mission:

To monitor and investigate epidemiologic trends and diseases to protect the health of the community.

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