



Epi Update



A publication of the Florida Department of Health, Bureau of Epidemiology

July 2008

In This Issue

- Rabid Raccoon in Clay County
- Hepatitis E Surveillance Update
- Tick-borne Disease Transmission in Florida
- Florida Year-to-Date Mosquito-Borne Disease Summary
- Announcements
- Upcoming Events
- Reportable Diseases in Florida
- This Month on EpiCom

Rabid Raccoon in Clay County

Connie Wolfe, B.S.N.

Recently, several Clay County residents were exposed to a baby raccoon that tested positive for rabies. This raccoon was found in another county and brought to Clay County for care. The baby raccoon became sick after one week, was euthanized by a local veterinarian, and tested for rabies.

Investigation by the epidemiology team began immediately upon notification of the positive lab results. Community collaboration was essential throughout the course of this investigation as it was difficult to identify contacts to the baby raccoon. The Public Health Officer at the U.S. Naval Hospital Jacksonville was instrumental in obtaining information in assisting with the investigation. Other collaborative partners included Clay County Animal Control, the County Manager's office, the local hospitals, Florida Fish and Wildlife Conservation Commission (FWC), St. Johns County Health Department (CHD), the Florida Department of Health (FDOH) Environmental Health, and the local media.



The investigation revealed a total of 16 human contacts. Eight of these contacts were considered to be exposed and required post-exposure prophylaxis with rabies immune globulin and rabies vaccinations. It is important to note that all eight of the exposed individuals have received treatment.

Exposure was defined as a person who was scratched or bitten by the raccoon, or had kissed the raccoon on the face, mouth, or nose. Another exposure included having the raccoon in bed, including sleeping with the raccoon.

The investigation revealed that there was also an adult pet raccoon located at the same premises with the baby raccoon. After client interviews, discussion with local animal control investigators, and consultation with the state veterinarian, it was determined that the adult raccoon was not exposed and no further follow-up was necessary. The FWC was also consulted regarding the proper permitting for the adult raccoon.

St. Johns CHD Epidemiology Program assisted with the investigation of the work site where the raccoon was found. No exposed individuals were identified during this investigation.

It was very important to provide information to the contacts as well as to the general public that a baby raccoon is not too young to have rabies. Also included in the education were steps to prevent exposure to rabies and

the fact that rabies is fatal in humans. According to the Florida Community Environmental Health website, <http://www.doh.state.fl.us/environment/community/rabies/rabies-charts.htm>, in Florida there are a total of 64 animals testing positive for rabies to date from January to June 2008. In 2007, there were a total of 124 cases of animal rabies in Florida. Raccoons are the majority, 54%, of reported cases.

Wildlife habitat is lost with the increasing number of communities, and this will continue to pose unique control problems for local authorities. It is important to understand that humans and wild animals will have increased contact. Increasing community awareness about the disease, prevention of the disease, and the negative outcomes for humans is essential to prevent exposures and negative outcomes.

Connie Wolfe is the program manager in the Communicable Diseases/Epidemiology program of the Clay County Health Department.

Hepatitis E Surveillance Update

Robyn S. Kay, M.P.H.

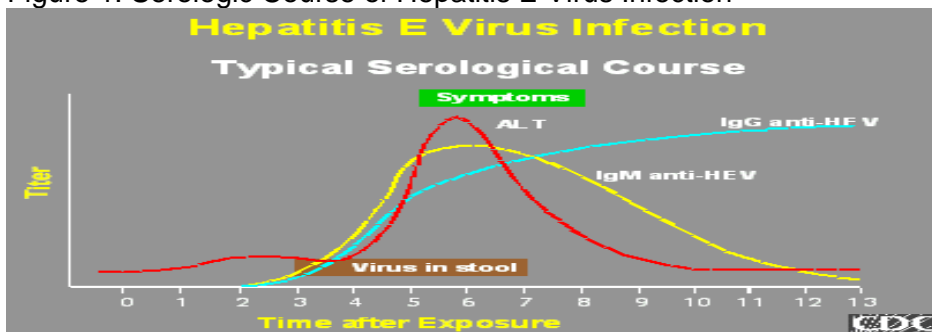
The Florida Department of Health Bureau of Epidemiology recently published the surveillance case definition for hepatitis E virus (HEV), which includes clinical and laboratory criteria. Recently, county health departments have investigated several people with positive serologic tests for HEV (i.e., IgM anti-HEV or total ANTI-HEV) whose illness was not consistent with the clinical criteria of the hepatitis E case definition. Testing of people with no clinical symptoms of acute viral hepatitis or known risk factors for HEV infection lowers the predictive value of hepatitis E tests.

To improve the predictive value of a positive hepatitis E test, testing should be limited to people testing negative for Hepatitis A, B, and C who have clinical findings typical of acute hepatitis, or to people with a compatible illness who have been exposed to settings where HEV transmission is suspected (i.e., recognized outbreaks or travel outside the United States).

Many commercial or private laboratories offer HEV testing, but no confirmatory testing is available by the Florida Bureau of Laboratories. Therefore, it is important to review the serology of HEV to understand the meaning of these tests. The IgM anti-HEV and the IgG anti-HEV are both elevated when an individual has acute HEV infection (Figure 1). The IgM anti-HEV will decline following acute infection.

If your county health department receives a positive laboratory report that meets clinical and laboratory criteria for HEV, or you have questions about positive tests results, please contact your regional epidemiologist. Information on the case will be reviewed and the regional epidemiologist will work with you to determine if it is necessary to send specimens to the Centers for Disease Control and Prevention (CDC) for confirmatory serologic testing and molecular viral characterization.

Figure 1. Serologic Course of Hepatitis E Virus Infection



Slide courtesy of the CDC. Time is in weeks.

Robyn S. Kay is a regional epidemiologist with the Florida Department of Health.

Tick-borne Disease in Florida

Rebecca Shultz, M.P.H.; Danielle Stanek, D.V.M.

Though cases are reported year-round in Florida, the summer months represent the peak transmission period for tick-borne diseases. Onset dates for Lyme disease, Rocky Mountain spotted fever (RMSF), and Ehrlichiosis/anaplasmosis cases all show increases during the warmer months when the vectors are most active.

Lyme disease is caused by the spirochete *Borrelia burgdorferi*; the primary vector in the eastern United States is *Ixodes scapularis*. Because of the vector's small size, attached ticks may go unnoticed; exposure is defined as having been in tick habitat. Symptoms for acute disease appear within one month of exposure and are frequently characterized by a single erythema migrans (EM) rash at the site of the tick bite (70%-80% of cases). The percentage of patients presenting with EM in Florida tends to be lower (57%). Other symptoms of acute disease may include fever, malaise, headache, mild neck stiffness, myalgia, and arthralgia. Several weeks following exposure, untreated cases may progress to a disseminated infection. Symptoms can include musculoskeletal and joint pain, multiple EMs, neurologic disease often affecting cranial nerves, and carditis (5%). Disseminated disease can occur without history of early disease. Late Lyme disease may develop months to several years later in untreated patients and symptoms may include arthritis (60%), which can be antibiotic refractory in 10% of cases, chronic neuroborreliosis (5%), and a skin disorder. Infections with different genospecies of the *B. burgdorferi* complex in Europe and Asia may result in somewhat different clinical presentations.

From 2002 to 2006, 224 cases of Lyme disease were documented in Florida, of which 76 (34%) were acquired locally. The majority of Florida-acquired cases (76.8%) resided in the central or northern regions* of peninsular Florida. Locally-acquired cases with symptom information report EM rash (57%), and arthritis (59%) as the most common presentations. In 2008 the Lyme disease case definition was revised to allow a single IgG+ Western blot/immunoblot to meet the laboratory criteria. The majority of patients with symptom onset of greater than one month duration would be expected to have detectable IgG according to the Infectious Diseases Society of America. For additional information on interpreting laboratory results for Lyme disease, please refer to pages F-9 and F-10 of the Surveillance and Control of Selected Arthropod-borne Diseases in Florida, 2008 Guidebook:

http://www.doh.state.fl.us/environment/community/arboviral/pdf_files/UpdatedArboguide.pdf.

Rocky Mountain spotted fever (RMSF) is caused by infection with the bacteria, *Rickettsia rickettsii*. The principal tick vector in Florida is the dog tick (*Dermacentor variabilis*), though several other tick species can also transmit the pathogen. Incubation period is less than two weeks. Symptoms include malaise, muscle pain, headache, and chills, along with changes in blood count and blood chemistries. In most cases, a mild febrile illness develops five to ten days after a tick bite. Approximately 80% of adults and 90% of children develop a characteristic rash. However, the rash may initially be subtle and distribution can be variable. Up to 20% of untreated cases and approximately 5%-10% of treated cases may be fatal. Risk groups for severe disease include advanced age, male gender, black race, and chronic alcohol abuse. From 2002 to 2006, 89 cases of RMSF were reported in Florida, 67 (75%) of which were acquired locally. Fifty-two cases (77.6%) resided in the northern peninsular region* or the panhandle region of the state. The surveillance case definition for RMSF also changed in 2008. It is important to note that IgM results alone should not be used for serodiagnosis of acute disease due to the likelihood of false positive results. Convalescent titers should be obtained for detection of a four-fold change in IgG antibodies.

Tick-borne bacteria in the genera *Ehrlichia* and *Anaplasma* can cause illnesses with fever in humans. *Ehrlichia chaffeensis* and *Anaplasma phagocytophilum* are responsible for most of these reported illnesses. Commercially available serologic assays for *E. chaffeensis* cross-react with *E. ewingii*, therefore reported cases may include either agent. Nonspecific clinical findings make ehrlichiosis and anaplasmosis difficult to diagnose. Incubation is less than two weeks for ehrlichiosis and up to three weeks for anaplasmosis. *Amblyomma americanum* (lone star tick) and possibly other ticks vector *E. chaffeensis*. The spectrum of illness (often referred to as Human Monocytic Ehrlichiosis, or HME) ranges from asymptomatic to fatal. Cases of HME are most frequently reported from south-central and southeastern states. Most cases have a

nonspecific febrile illness without rash, though about 15% have severe disease with 2%-3% mortality. From 2002 to 2006, 26 cases of HME were reported in Florida, with 19 (73.1%) acquired locally. Fifteen cases (78.9%) resided in the northern or panhandle regions* of the state. The primary tick vector for *A. phagocytophilum* is *Ixodes scapularis* (blacklegged tick) in the midwestern and eastern United States. This illness (also referred to as Human Granulocytic Anaplasmosis, or HGA) is reported most frequently in the northeast, north central, and focal areas of the west coast of the United States. Co-infection with the causative agent of Lyme disease has been reported. Illness caused by *A. phagocytophilum* usually presents as an undifferentiated fever without rash. Elderly patients are more likely to have severe disease. Mortality is less than 1%. From 2002 to 2006, 11 cases of HGA were reported in Florida. Of those cases, five (45.4%) were reported as acquired locally. The surveillance case definition for Ehrlichiosis/anaplasmosis was updated for 2008. As with RMSF, IgM antibody tests for these pathogens are not always specific, and the IgM response may be persistent. For these reasons, IgM antibody tests by themselves are not strongly supported for use in serodiagnosis of acute disease. It is important to obtain convalescent titers for detection of a four-fold change in IgG antibodies.

Prevention

The tick-borne diseases discussed here can be treated with doxycycline, though prevention of tick bites is the best way to avoid disease. Wear light-colored clothing so that ticks crawling on clothing are visible. Tuck pants legs into socks so that ticks cannot crawl inside clothing. Apply repellent 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. Search the body for ticks frequently when spending time in potentially tick-infested areas. If a tick is found, it should be removed as soon as possible. Controlling tick populations in the yard and on pets can also reduce the risk of disease transmission.

Educational Materials

Brochures on tick-borne disease in Florida are available from the Florida Department of Health by contacting Rebecca Shultz at Rebecca_shultz@doh.state.fl.us. Materials will be distributed free of charge while supplies last. The brochure can be viewed online at:

http://www.doh.state.fl.us/environment/community/arboviral/Tick_Borne_Diseases/PDFs/Education/Tick_brochure.pdf.

*For the purpose of this analysis, Florida counties were divided into regions as follows:

North: Alachua, Baker, Bradford, Citrus, Clay, Columbia, Dixie, Duval, Flagler, Gilchrist, Hamilton, Hernando, Lafayette, Lake, Levy, Madison, Marion, Nassau, Orange, Pasco, Putnam, Seminole, St. Johns, Sumter, Suwannee, Taylor, Union, Volusia.

Central: Brevard, DeSoto, Hardee, Highlands, Hillsborough, Indian River, Manatee, Okeechobee, Osceola, Pinellas, Polk, Sarasota, St. Lucie.

South: Broward, Charlotte, Collier, Glades, Hendry, Lee, Martin, Miami-Dade, Monroe, Palm Beach.

Panhandle: Bay, Calhoun, Escambia, Franklin, Gadsden, Gulf, Holmes, Jackson, Jefferson, Leon, Liberty, Okaloosa, Santa Rosa, Wakulla, Walton, Washington.

Additional Resources

Colleen O'Fallon and Rebecca Shultz. Five-year Summary Report of Tick-borne Disease Surveillance in Florida, 2002-2006 at:

http://www.doh.state.fl.us/environment/community/arboviral/Tick_Borne_Diseases/Tick_Summaries.html.

Florida Department of Health. Annual Morbidity Report, 1997-2006.

CDC. Diagnosis and management of tickborne rickettsial diseases: Rocky Mountain spotted fever, ehrlichiosis, and anaplasmosis-United States: a practical guide for physicians and other health-care and public health professionals. MMWR 2006;55(No. RR-4):1-29.

Dumler, J.S., J.E. Madigan, N. Pusterla, J.S. Bakken. Ehrlichiosis in Humans: Epidemiology, Clinical Presentation, Diagnosis, and Treatment. CID 2007; 45(Suppl 1):S45-S51.

Paddock, C.D., J.W. Sumner, J.A. Comer, S.R. Zaki, C.S. Goldsmith, J. Goddard, S.L.F. McLellan, C.L. Tamminga, C.A. Ohl. *Rickettsia parkeri*: a newly recognized cause of spotted fever rickettsiosis in the United States. CID 2004;38:805-11.

Parola, P., B. Davoust, D. Raoult. Tick- and flea-borne rickettsial emerging zoonoses. Vet. Res. 2005;36:469-92.

Sumner, J.W., L.A. Durden, J. Goddard, E.Y. Stromdahl, K.L. Clark, W.K. Reeves, C.D. Paddock. Gulf Coast ticks (*Amblyomma maculatum*) and *Rickettsia parkeri*, United States. Emerg Infect Dis. 2007;13(5):751-3.

Goodman, J.L., D.T. Dennis, D.E. Sonenshine, (ed). 2005. Tick-borne Diseases of Humans. Washington, D.C., ASM Press.

Wormser G.P., R.J. Dattwyler, E.D. Shapiro, J.J. Halperin, A.C. Steere, M.S. Klemperer, P.J. Krause, J.S. Bakken, F. Strle, G. Stanek, L. Bockenstedt, D. Fish, J.S. Dumler, R.B. Nadelman. The clinical assessment, treatment, and prevention of Lyme disease, human granulocytic anaplasmosis, and babesiosis: clinical practice guidelines by the Infectious Diseases Society of America. Clin Infect Dis 2006; 43(9):1089-134.

Aguero-Rosenfeld, M.A., G. Wang, I. Schwartz, G.P. Wormser. Diagnosis of Lyme Borreliosis. Clinical Microbiology Reviews. 2005; 18(3):484-509.

CDC. Lyme Disease --- United States, 2003--2005. MMWR 2007; 56(23); 573-6.

CDC. Recommendations for test performance and interpretation from the Second National Conference on Serologic Diagnosis of Lyme Disease. MMWR 1995; 44:590-1.

CDC. Notice to readers: caution regarding testing for Lyme disease. MMWR 2005; 54:125-6.

Dressler, F., J.A. Whalen, B.N. Reinhardt, A.C. Steere. Western blotting in the serodiagnosis of Lyme disease. J Infect Dis 1993; 167:392-400.

Engstrom, S.M., E. Shoop, R.C. Johnson. Immunoblot interpretation criteria for serodiagnosis of early Lyme disease. J Clin Microbiol 1995; 33:419-27.

Rebecca G. Shultz is the Arthropod-borne Disease Surveillance Coordinator with the Bureau of Community Environmental Health, DOH. Dr. Stanek is a medical epidemiologist in the Division of Environmental Health.

Florida Year-to-Date Mosquito-Borne Disease Summary Through July 19, 2008

Rebecca Shultz, M.P.H., Caroline Collins, Danielle Stanek, D.V.M., Carina Blackmore, D.V.M., Ph.D.

During the period from January 1 to July 19, 2008, the following arboviral activity was recorded in Florida: Eastern equine encephalitis virus (EEEV), West Nile virus (WNV), St. Louis encephalitis virus (SLEV), Highlands J virus (HJV), and California encephalitis group viruses (CEV).

EEEV Activity

Positive samples from 61 horses, 54 sentinel chickens, one canine, three dead birds, and 34 live wild birds were received from 34 counties. EEEV was cultured from a pool of 50 *Culex salinarius* and a pool of 50 *Cx. nigripalpus*, both collected on February 13 in Volusia County and two pools of 50 *Culiseta melanura* collected on March 19 and May 7 in Flagler County. Six counties (Holmes, Jackson, Jefferson, Volusia, Walton, and Washington) have declared a mosquito-borne illness advisory due to increased arboviral activity reported in areas of their counties.

WNV/SLEV Activity

Positive samples of WNV antibody from two sentinel chickens were received from Putnam and Walton counties, and one horse from Madison County, with an onset of April 15. Flavivirus-reactive samples from two live wild birds were received from Hillsborough and Santa Rosa counties. It was not determined whether the wild bird samples were reactive specifically to SLEV or WNV.

HJV Activity

Positive samples from 32 sentinel chickens were received from 11 counties. HJV was isolated from three pools of 50 *Culex nigripalpus* collected on February 22, February 26, and March 28 in Volusia County and two pools of *Cs. melanura* collected on March 19 and May 7 in Flagler County.

CEV Activity

A confirmed case of CEV was reported in a Hillsborough County resident with recent travel history to North Carolina.

Dead Bird Reports

The FWC collects reports of dead birds, which can be an indication of arbovirus circulation in an area. Since January 1, 335 reports representing a total of 833 dead birds (26 crows, 37 jays, 33 raptors, and 737 others) were received from 51 of Florida's 67 counties.

Please note that the FWC collects reports of birds that have died from a variety of causes, not only arboviruses. Dead birds should be reported to www.myfwc.com/bird/.

See the following web site for more information:

<http://www.doh.state.fl.us/environment/community/arboviral/index.html>. The Department of Health Disease Outbreak Information Hotline offers recorded updates on the latest medical alerts issued and surveillance information at 888.880.5782.

Rebecca G. Shultz is the Arthropod-borne Disease Surveillance Coordinator with the Bureau of Community Environmental Health, FDOH. Caroline Collins is an arbovirus program specialist with the Bureau of Community Environmental Health, FDOH. Dr. Stanek is a medical epidemiologist in the Division of Environmental Health, FDOH. Dr. Blackmore is the State Public Health Veterinarian and the State Environmental Epidemiologist in the Division of Environmental Health, FDOH.

Announcements

2008 Epidemiology Statewide Seminar Presentations Now Available

Many of the attendees of this year's annual Epidemiology Statewide Seminar requested a copy of the PowerPoint presentation from one or more of the breakout sessions. Most of the speakers have provided their presentation materials and those are now available on the Bureau of Epidemiology website. A link to the presentation web page can be found at:

http://www.doh.state.fl.us/disease_ctrl/epi/Statewide/Conference_Materials/Index.html.

Thank you, again, to all of the excellent speakers who made this year's seminar such a success!

Upcoming Events

Bureau of Epidemiology Monthly Grand Rounds

Date: Last Tuesday of each month

Time: 10 a.m.-11 a.m.

Location: Building 2585, Room 310A

Dial-In Number: 877.646.8762 (password: Grand Rounds)

Upcoming Topics:

August 26 – “Gene Sequencing Methods Allow for the Surveillance and Characterization of Strain Type of Norovirus Infection in Outbreaks of Gastroenteritis”, presented by Danielle Stanek, D.V.M.

September 30 – “Fetal Death Cluster in Bay County”, presented by Bill Sappenfield, M.D., M.P.H. and Sohyun Park, Ph.D., M.S., R.D./K.D.A.

Reportable Diseases in Florida

Up-to-date information about the occurrence of reportable diseases in Florida, based on the Merlin surveillance information system, is available at the following site: <http://www.floridacharts.com/merlin/freg rpt.asp>. Counts can be displayed by disease, diagnosis status, county, age group, gender, or time period.

This Month on EpiCom

Christie Luce



EpiCom is located within the Florida Department of Health’s Emergency Notification System (FDENS). The Bureau of Epidemiology encourages *Epi Update* readers not only to register on the EpiCom system by emailing the Florida Department of Health Emergency Notification System Helpdesk at FDENS-help@doh.state.fl.us, but to sign up for features such as automatic notification of certain events. Users are invited to contribute appropriate public health observations related to any suspicious or unusual occurrences or circumstances through the system. EpiCom is the primary method of

communication between the Bureau of Epidemiology and other state medical agencies during emergency situations. Following are selected recent postings:

- Three separate Ciguatera outbreak investigations, Palm Beach County
- Ciguatera outbreak, Nassau County
- Possible E.coli (shigatoxin+) in a child who participated in a summer camp in Eustis, Lee County
- E Coli 0157:H7, Escambia County
- Pertussis cases, Collier and Duval counties
- Suspected foodborne illness, Osceola County
- EEE case identified in Alabama, adjacent to Escambia County
- Possible amebic meningoencephalitis in an older man, Sarasota County
- Lab-confirmed rabies in a raccoon, Clay County
- Cluster of gastrointestinal (GI) illnesses in a group who traveled to Guatemala, Nassau County
- Possible outbreak of GI illness in a long term care facility, St. Johns County
- Lead Paint Standard violations and recalls online:

http://www.doh.state.fl.us/environment/community/lead/The_Lead_Alert_Network.htm.

Christie Luce is the Surveillance Systems Administrator for the Bureau of Epidemiology..

Epi Update is the peer-reviewed journal of the Florida Department of Health, Bureau of Epidemiology, and is published monthly on the Internet. Current and past issues of *Epi Update* are available online:

http://www.doh.state.fl.us/disease_ctrl/epi/Epi_Updates/index.html. The current issue of *Epi Update* is available online: http://www.doh.state.fl.us/disease_ctrl/epi/Epi_Updates/2008/July2008EpiUpdate.pdf. For submission guidelines or questions regarding *Epi Update*, please contact Gail Morales at Gail_Morales@doh.state.fl.us.

