

EPI Update for Friday, September 23, 2005

Center For Acute Disease Epidemiology

Iowa Department of Public Health

Items in this week's EPI Update include:

- **IgG vs. IgM**
- **Community Acquired MRSA: an emerging threat worldwide**
- **Arboviruses: Thinking beyond West Nile**
- **DIA Food Safety Overview**
- **Meeting Announcement and Training Opportunities**

IgG vs. IgM

Certain diseases can be detected through antibody testing. When responding to infection, several different types of antibody types can be produced by the body, with IgG and IgM being the most important. IgM appears early after the onset of infection and then generally disappears after the person recovers. Whereas, IgG appears later in the course of infection, and is detectable for a long period of time after recovery. To determine if a patient currently or very recently had a disease, the patient usually has a positive IgM or a fourfold rise in IgG over a several week period. A positive IgG alone, usually means that the patient does not currently have the disease, but probably had the disease at some point in the past, or for some diseases, had been vaccinated against it in the past. A total antibody test that measures IgG and IgM together has very little value. It does not reveal whether the person is actively infected or had the disease a long time ago and recovered.

Recently IDPH has received some questions regarding the use of IgG and IgM in diagnosing certain diseases. In one situation, a physician was trying to determine if a patient (who was a food service worker with symptoms comparable with those of hepatitis A) actually had hepatitis A. The lab where the testing was done was not able to do IgM testing, so a total IgG/IgM antibody test was done. It was positive, so the patient was reported to IDPH as a case of hepatitis A. Unfortunately, this testing only proved that the patient, at some time in the past, had had hepatitis A, but could tell us nothing about his present condition (i.e., whether or not he was infectious). The University Hygienic Laboratory is able to perform a hepatitis A IgM test, which does determine if he or any other patient has acute hepatitis A (i.e., hepatitis A at the present time). Obviously, it is very important to know if a food service worker presently has hepatitis A, as they could be spreading it to the public, and as the public may need to be prophylactically treated to prevent them from getting ill. In this situation, doing the appropriate test initially would have saved a lot of time and money, and would have allowed the initiation of prophylactic treatment in a timely manner.

In another situation a physician reported to IDPH that she had a case of mumps. However, it turned out that the patient did not have a positive IgM; she had a positive IgG and had an alternative diagnosis of mononucleosis, as shown by a positive “monospot” test. Her positive IgG indicated that either she had had mumps in the past or, more likely, had been vaccinated against mumps for school entry.

Additionally, there are practitioners who want us to count as cases of West Nile virus their patients who do not have a positive IgM test, but only a positive IgG. Remember that most people with West Nile infection have no symptoms, and thus are not counted as cases of West Nile fever or encephalitis, but will have a positive IgG test. In addition, the West Nile virus IgG test is not very specific, and could mean either that the patient had WNV in the past, OR that the patient has cross reacting antibodies with another virus or rheumatoid factor.

Bottom line: to diagnose acute disease, use the IgM specific test.

Community-acquired MRSA: An Emerging Threat Worldwide

Methicillin-resistant *Staphylococcus aureus* (MRSA) has posed a major threat as a health care-acquired (nosocomial pathogen), since the 1970's. Until recently, MRSA has rarely posed a public health threat outside of the health care system. MRSA infections that occur in persons who have not been recently (within one year) hospitalized or had a medical procedure (such as dialysis, surgery, catheters), etc. are known as community associated (CA-MRSA) infections. MRSA infections in the community are usually manifested as skin infections, such as pimples and boils, and occur in otherwise healthy people. Reports of CA-MRSA are increasing, including fatal cases. The majority of CA-MRSA isolates, involved skin and soft tissue infection or abscess. Reports indicate that CA-MRSA is present in Iowa. In fact, several years ago, Iowa had an outbreak of MRSA in high school wrestlers.

The emergence of CA-MRSA is multifactorial, with some having probably nosocomial origins and others emerging in the community due to pressure from beta-lactam antibiotics (i.e., amoxicillin). Reports of infections with CA-MRSA come from day care centers, prisons, health clubs, athletic teams and other activities. CA-MRSA strains usually have an antibiotic susceptibility pattern from that is distinct from that of traditionally nosocomial strains: CA-MRSA are typically more susceptible to other antibiotics than nosocomial MRSA. (For example, CA-MRSA typically have resistance only to the beta-lactam antibiotics.) A key virulence factor, which makes CA-MRSA strains successful pathogens, is the production of a toxin called Pantone Valentine Leukocidin (PVL). To identify an MRSA organism isolated from a patient as a probable CA-MRSA, the laboratory looks for PVL, the presence of a genetic element called “staphylococcal chromosomal cassette *mec* type IV,” and the antibiotic susceptibility pattern. The importance of good hygiene, including hand washing, in the prevention of both CA-MRSA and nosocomial MRSA cannot be over emphasized.

Arboviruses: Thinking Beyond West Nile

This time of year we often focus on West Nile virus and forget that there are other mosquito-transmitted viruses present within the state such as LaCrosse encephalitis virus. LaCrosse encephalitis virus is the leading cause of pediatric arboviral encephalitis in the United States, including Iowa. About 70 human LaCrosse cases occur annually in the U.S. The disease occurs predominantly in the mid-western states, and children are at greatest risk. The original early 1960's outbreaks of LaCrosse encephalitis were seen in children whose families had built homes in the forest bluffs around LaCrosse, Wisconsin. The virus was later named "LaCrosse" following the tradition of naming these viruses after the place it was first described.

The LaCrosse encephalitis virus has a complex life cycle involving chipmunks and squirrels and a specific type of woodland mosquito (*Aedes triseriatus*). The *Aedes triseriatus* mosquito breeds in tree holes and manmade containers (like discarded tires and tin cans) and bites during the day. Public health measures used in LaCrosse to decrease the risk of infection included eradicating discarded tires. People are not an important part of the life cycle of the virus but can become infected when they infringe on forested areas where the virus is present.

LaCrosse encephalitis is usually an asymptomatic or very mild illness with fever, headache, nausea, vomiting and tiredness. Rarely severe disease occurs; usually in children and can result in seizures, coma, paralysis and lasting brain damage.

Iowa State University's Entomology Department continues to find *Aedes triseriatus* mosquitoes in their traps at various locations across the state, as recently as within the last week. These mosquitoes are distributed across the state in environments that support their development, i.e., forested areas. Most often, LaCrosse cases are seen in the eastern half of the state (particularly northeastern), but there have been reports of cases as far west as Woodbury County. Iowa reported two LaCrosse cases last year, both were residents of northeastern Iowa.

DIA Food Safety Overview

The Iowa Department of Inspections and Appeals (DIA) has administrative and regulatory oversight for the inspection and licensing of food and lodging establishments in the State of Iowa. Currently, there are approximately 24,000 licensed food establishments in Iowa, including restaurants, grocery stores, mobile food units, temporary stands, convenience stores, vending machines, home food establishments, egg handlers, warehouses and food processing plants. In addition to food establishments, there are 950 licensed hotels in the state.

Within the next month, the DIA will be hosting a new website to allow the public to view inspection reports of licensed food and lodging establishments on line. In addition, the website will also allow the public to file complaints against food and lodging establishments. Iowa will be the first state in the surrounding area to have this type of website. Watch for the announcement!

Meeting Announcement and Training Opportunities

The brochure for the fall *Epidemiology Updates* is now online at the Iowa Department of Public Health's Web site at: <http://www.idph.state.ia.us/conferences.asp>.

8th Annual Iowa HIV/AIDS Conference - October 11-12, 2005. The conference brochure is available at:
<http://www.trainingresources.org/displayconvention.cfm?conventionnbr=1472>.

Parasites from pets and wildlife, an emerging public health issue,” seminar on Friday, Sept. 30 in Ames. 8-9:30 a.m. at the Scheman Building at Iowa State University.

Presenter: Dr. Kevin R. Kazacos, professor of Veterinary Parasitology and director of the Clinical Parasitology Laboratory at Purdue University. Cost for this seminar is \$25. For more information, call Dr. Tom Johnson, executive director of the Iowa Veterinary Medical Association, at (515) 965-9237.