IRL INFORMS…newsletter

Volume 3, Issue 3
Q3, 2010

Dengue Testing Guidelines

~ Dr. Aida Casiano-Colon, Clinical Director, Microbiology

Dengue is a mosquito-borne disease caused by an RNA Flavivirus which is transmitted from person to person by infected Aedes aegypti mosquitoes. It is currently the most frequent cause of acute febrile illness among returning U.S. travelers from the Caribbean, Central and South America, and Asia. Epidemic levels have been reported in parts of the Caribbean and Central America. Dengue may occur in people of all ages, disease severity may be increased among infants and elderly people. The incubation period in humans is 3 to 14 days with an acute febrile lasting 3 to 7 days.

Clinicians should include dengue in the differential diagnosis of acute febrile illness in patients who live in or have recently traveled to subtropical areas of the United States or to the tropics. Cases of dengue must be accurately and promptly diagnosed.

Dengue infection is often asymptomatic (up to 53-89% of cases) or nonspecific.
The most common clinical presentation (dengue fever) includes fever, (usually self-limited, but sometimes incapacitating requiring hospitalization), and intense headache, retro-orbital pain, joint and muscle pain. A rash on the feet or legs three to four days after the beginning of the fever may also be observed.

A severe, life-threatening hemorrhagic form of dengue fever, dengue hemorrhagic fever (DHF) or dengue shock syndrome (DSS) is rare (2-4% of cases), but may be fatal. DHF is associated with loss of appetite, vomiting, high fever, headache and abdominal pain. Shock, hypotension and circulatory failure may occur. Untreated cases of hemorrhagic dengue result in death in up to 50% of cases. Patients at increased risk for hemorrhagic fever: patients previously infected with another dengue serotype, diabetes mellitus, pregnant women, chronic renal failure, infants, and obesity

There are four serotypes of dengue virus (DEN-1, 2, 3, 4), infection with one serotype provides immunity to that serotype for life, but does not protect against other serotypes. Thus, a person can be infected as many as four times, once with each serotype.

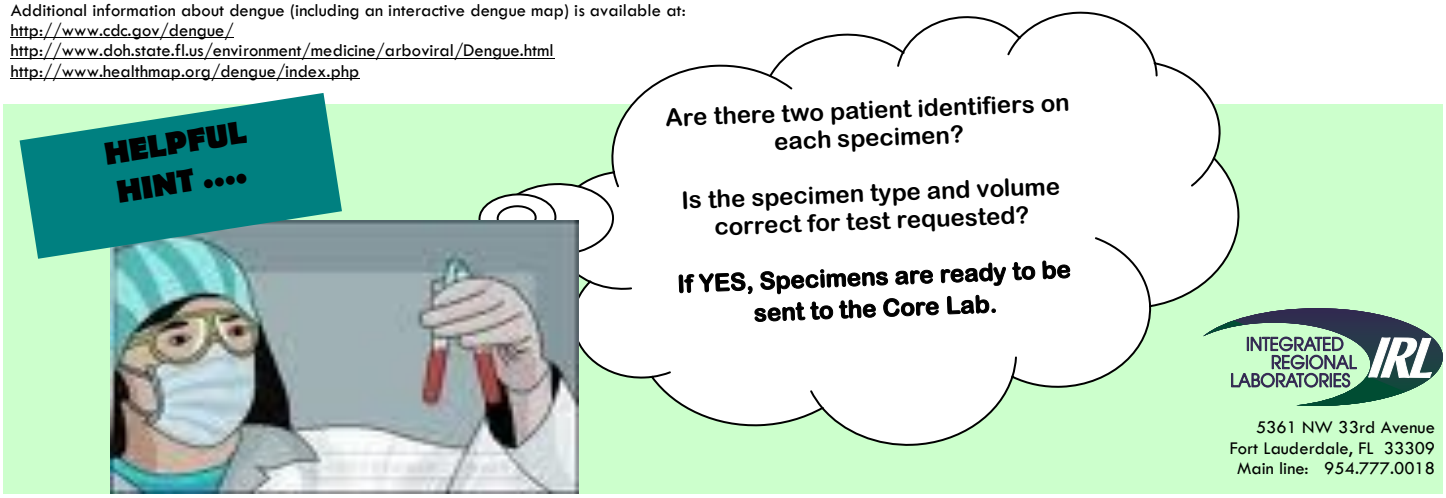
Whenever possible, paired acute and convalescent samples should be submitted to the laboratory to facilitate optimal diagnostic testing. Serology is not as useful for clinical management (testing is for public health reasons), therefore, **initiation of supportive care should not be delayed pending results of laboratory testing**.

Dengue PCR must be done within 5 days of fever (virus nucleic RNA)

The Florida Department of Health State Laboratory has posted specimen submission guidelines for testing, and they may be found at: (http://www.doh.state.fl.us/lab/PDF_Files/doh_form.pdf).

Dengue is a reportable disease in the state of Florida. Cases of suspected dengue fever, should be promptly reported to the Florida Department of Health.

Additional information about dengue (including an interactive dengue map) is available at:
http://www.cdc.gov/dengue/
http://www.doh.state.fl.us/environment/medicine/arboviral/Dengue.html
http://www.healthmap.org/dengue/index.php



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It's about time.

VOLUME 3, ISSUE 3

SEPTEMBER is National Cholesterol Education Month
September 23rd - First day of Autumn

LABORATORY TESTS FOR HIV IN NEWBORNS

~ Dr. Aida Casiano-Colon
Clinical Director, Microbiology

The diagnosis of HIV-1 infection in infants and children who are younger than 18 months differs from that of older children, adolescents, and adults. Most infants born to HIV-infected mothers are born with passively acquired maternal anti-HIV IgG and will test antibody positive for up to 18 months of age. Uninfected infants will gradually lose maternally derived antibody, whereas infected infants generally remain antibody positive.

Important factors that must be considered when selecting HIV-1 diagnostic assays for pediatric patients and when choosing the timing of such assays include the age of the child, the potential timing of infection of the child, whether the infection status of the child's mother is known or unknown, the antiretroviral exposure history of the mother and the child, and characteristics of the virus (1).

Definitive diagnosis of HIV infection in infants requires the use of assays for virus or viral components (virologic tests). Specific molecular HIV testing such as **HIV-1 DNA assay by polymerase chain reaction (PCR)** represents the gold standard for diagnostic testing of infants and children younger than 18 months. With such testing, the diagnosis of HIV-1 infection (as well as the presumptive exclusion of HIV-1 infection) can be established within the first several weeks of life among non-breastfed infants.

According to the official journal of the American Academy of Pediatrics (1), if the mother's HIV-1 serostatus is unknown, rapid HIV-1 antibody testing of the mother or the newborn infant to identify HIV-1 exposure of the infant is essential so that antiretroviral prophylaxis can be initiated within the first 12 hours of life. For HIV-1– exposed infants (identified by positive maternal testing or by positive antibody testing of the infant shortly after birth), it has been recommended that diagnostic testing with **HIV-1 DNA** or RNA assays be performed within the first 14 days of life, at 1 to 2 months of age, and at 3 to 6 months of age. If any of these test results are positive, repeat testing is recommended to confirm the diagnosis of HIV-1 infection.

Confirmation of HIV infection should be based on two positive virologic tests from separate blood samples (2). Definitive exclusion of HIV infection should be based on at least two negative virologic tests (one at >1 month and one at >4 months of age). For both presumptive and definitive exclusion of HIV infection, the child must have no other laboratory (e.g., no positive virologic test results or low CD4 count/percent) or clinical evidence of HIV infection.

Plasma HIV RNA viral load detection (HIV RNA by PCR) may also indicate HIV infection, and numerous studies of the use of HIV-1 RNA assays for the diagnosis of HIV-1 infection in pediatric populations have been conducted. The reported sensitivities of HIV RNA by PCR in this patient population range from **25% to 50%** within the first few days of life to **100%** by 6 to 12 weeks of age. However, at this time, experience in using this test for diagnosis of HIV infection in infants is limited and currently, **the test is not FDA approved for this purpose**. A negative HIV-1 RNA PCR viral load test by itself does not exclude HIV infection.

References:

- Diagnosis of HIV-1 Infection in Children Younger Than 18 Months in the United States. Jennifer S. Read, MD, MS, MPH, DTM&H and the Committee on Pediatric AIDS PEDIATRICS Volume 120, Number 6, December 2007. Available at http://pediatrics.aappublications.org/cgi/reprint/120/6/e1547
- Panel on Antiretroviral Therapy and Medical Management of HIV-Infected Children. Guidelines for the Use of Antiretroviral Agents in Pediatric HIV Infection. August 16, 2010; pp 1-219. Available at http://aidsinfo.nih.gov/ContentFiles/PediatricGuidelines.pdf

BIOPLEX 2200

~ Laraine Hickey, MLT
IRL Core Lab (Midlow)

New Technology; EBV and HSV1&2 IgG testing using Biorad's Bioplex 2200.

The BioPlex 2200 is a fully automated system that performs infectious disease panels and detects autoimmune antibodies using multiplex bead technology. In order to determine the levels of different analytes, beads within each immunoassay are coated with various fluorescent dyes. Each colored bead is then coated with a specific antigen, antibody, or analyte specific to that particular assay. These beads are combined into one reagent pack allowing the detection of many analytes from a single sample. The Bioplex 2200 analyzes each bead using a dual laser that identifies the various analytes and analyte concentration in each sample.

The use of multiplex bead technology for infectious disease panels and autoimmune antibodies provides many advantages, such as improved turn-around-time. This platform also allows us to add additional immunoassays to the Bioplex 2200; for example, ANA's and Syphilis IgG.

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