



Florida/Caribbean AIDS Education and Training Center

HIV CareLink

A Newsletter for HIV/AIDS Primary Care Providers

ABOUT US

The Florida/Caribbean AIDS Education and Training Center provides state-of-the-art HIV education, consultation, and resource materials to health care providers in Florida, Puerto Rico and the US Virgin Islands.

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Dengue Fever Re-Emergence in Florida

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Since the 1970s, dengue transmission and frequency of dengue epidemics has increased significantly in most tropical countries in the American region. Recently, the first confirmed cases of dengue transmission in Florida since the 1930s were found in Key West. Rare outside of endemic regions, some patients presenting with dengue fever will develop dengue hemorrhagic fever (DHF), a severe and occasionally fatal type of the disease. DHF has been reported to hasten the development of liver cancer in persons with cirrhosis due to hepatitis C. Dengue virus has been added to the Centers for Disease Control and Prevention's (CDC) National Notifiable Diseases Surveillance System list. The case definition for dengue fever has been expanded to include dengue shock syndrome (DSS); data for confirmed, probable, and suspected cases should be reported to the State Department of Health. Dengue has not been shown to follow a different clinical course in HIV-infected patients; however, healthcare workers taking care of HIV-infected patients in affected areas must be aware of the potential of dengue as a cause of unexplained fever.

DENGUE RE-EMERGES IN FLORIDA

A CDC/State of Florida survey of 240 healthy residents of Old Town, Key West showed a significant percentage of persons with recent (IgM -3%) or remote (IgG-38%) exposure to dengue virus. Twenty-two cases of dengue were confirmed in Key West between July and October of 2009; the first in Florida since the 1930s.

Dengue is a member of the flavivirus group. Other members of this group include the causative agents of West Nile fever, St. Louis encephalitis, and yellow fever. Dengue is endemic throughout the tropics. Considered the second most important mosquito-transmitted disease after malaria, dengue represents a major public health threat due to its swift spread and potential for complications. Outbreaks usually occur every 6 to 8 months in endemic areas.

The clinical presentation of dengue ranges from asymptomatic disease diagnosed serologically to an intense febrile, flu-like illness characterized by intense bony pain ("break bone fever"). DHF (most common in endemic areas) begins like regular dengue but can advance to increased vascular permeability, plasma leakage, hemorrhage and shock. DHF typically is the result of a new

infection in individuals who have previously been infected with a different serotype of the virus.

The dengue-transmitting *Aedes aegypti* and *Aedes albopictus* mosquito spread the disease to other individuals after an incubation period of 8-10 days. Four serotypes (DEN 1-4) of dengue exist and infection with one results only in immunity to that serotype. If infected with a second serotype, antibody-dependent enhancement occurs resulting in the prior serotypes antibodies binding to the newly infecting serotype, but failing to neutralize the infection. The result is the new serotype can more easily enter cells and replicate causing more severe disease (e.g. DHF).

Aedes aegypti made a comeback in the American region after a large-scale campaign to eradicate the mosquito had been halted in the 1970s. Renewed epidemics followed and new strains of dengue were introduced including DEN-1 in 1977 and DEN-4 in 1981. Whereas subsequent infection with DEN-3 may be more likely to result in DHF, the type isolated in Key West was DEN-1, which might be less likely to predispose to DHF. To date there is no vaccine for dengue.

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DENGUE (BREAK BONE FEVER) SYMPTOMS

- Acute onset high fever (3-14 days after mosquito bite)
- Severe frontal headache
- Bone pain
- Retro-orbital pain
- Myalgias
- Arthralgias
- Hemorrhagic manifestations
- Nausea or vomiting
- Rash
- Low white-cell blood count

Acute symptoms last about 1 week but weakness, malaise and anorexia may continue for several weeks. Potential complications include febrile seizures and dehydration. Most though have no symptoms or minimal symptoms.

DENGUE HEMORRHAGIC FEVER WARNING SIGNS

(Onset 3-7 days after symptoms begin)

- Severe abdominal pain
- Change from fever to hypothermia
- Hemorrhagic manifestations
- Black stools
- Pale, cold skin
- Extreme thirst
- Persistent vomiting
- Irritability, confusion, or obtundation

A few individuals with dengue fever will develop DHF. At the time the fever begins to subside (3-7 days after onset of symptoms) severe warning signs may begin.

DHF criteria defined by World Health Organization (WHO):

- Fever or recent history of fever duration 2-7 days
- Any hemorrhagic manifestation
- Platelet count <100,000/mm³)
- Evidence of increased vascular permeability

Patients with DHF, can progress to DSS if not identified and treated immediately.

SUPPORTATIVE TREATMENT

- Fluid and electrolyte therapy
- Management of hemorrhagic complications
- Antipyretics for fever control (avoid using aspirin and other nonsteroidal anti-inflammatory medications as they may increase risk for hemorrhage)
- Patients should be advised to increase fluid intake especially when high fever is present

DIAGNOSIS OF DENGUE INFECTION

- Isolating virus or by identifying dengue-specific antibodies
- Acute phase (within 5 days of symptoms) and convalescent-phase (≥ 6 days after symptom onset) serum should be sent to State Department of Health or CDC. (Contact lab for specimen requirements).

PREVENTION OF DENGUE VIRUS

- Intact windows, screens, air conditioning protective clothing and insect repellent
- Avoid sitting outdoors unprotected at dawn and dusk
- Eliminate standing water
- Remove outside containers which could hold standing water

SUMMARY

- Dengue fever represents a major public health threat due to rapid spread and potential for complications
- *Aedes aegypti* and *Aedes albopictus* mosquito can transmit disease to other persons after incubation period of 8 to 10 days
- Immunity to serotypes of dengue may be accountable for DHF
- DEN-1 was serotype isolated in Key West and may be less likely to predispose to DHF
- DHF speeds development of liver cancer in individuals with cirrhosis due to hepatitis C
- Currently there is no vaccine for dengue

References

1. Freeman C, Marinos G, et al. Immunopathogenesis of hepatitis C virus infection. *Immunology and Cell Biology*, (2001) 79, 515-536.
2. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention. Dengue and Dengue Hemorrhagic Fever.
3. Radke, E. Dengue Fever in Key West, 2009. Florida Dept. of Health, Bureau of Environmental Public Health Medicine.
4. Dengue Fever Returns to the Keys; Whiteside, M; Solares Hill; Vol.30;No.44; p. 1, 3, 6; 11/8/2009.
5. 2010 Changes to the National Notifiable Diseases Surveillance System. Department of Health and Human Services. December 22, 2009.
6. Infectious Disease Pharmacokinetics Laboratory at University of Florida. Available at <http://idpl.copwp.copdom.cop.ufl.edu>.
7. Recker, M. Immunological serotype interactions and their effect on the epidemiological pattern of dengue. April 15, 2009. Proceedings of the Royal Society. 276/1667/2541.

Drug Levels Update for Antimycobacterial Agents

NOTE: This update relates to a previously published HIV CareLink dated December 21, 2009.

http://www.fcaetc.org/PDF/Newsletter/Newsletter-Volume10-2009/HIVCareLink-12-21-09-v10_i15-em-Rifabutin_and_Lopinavir-Ritonavir_Interaction.pdf

Drug concentration monitoring for antimycobacterial agents including rifabutin and isoniazid can also be done at the Infectious



Diseases Pharmacokinetics Laboratory at UF and Shands in Gainesville. The cost of the testing is \$80 per sample or \$140 for a pair of samples (e.g. 3-hour and 7-hour rifabutin levels). Individualized dosing recommendations as well as a clinician consultation service via phone or email are provided. For more information and to download required forms, go to <http://idpl.copwp.copdom.cop.ufl.edu>. Clinics need to provide information to the laboratory in order to be billed directly for this clinical lab testing.

Editorial Comment: Todd S. Wills, MD

The reports of transmission of dengue within our state remind us that in an era of rapid transportation, international travel and immigration, diseases for which we have only a historical memory are more and more likely to return. Both *Aedes aegypti* and *Aedes albopictus*, the vectors for dengue, are found in our state and a re-emergence of dengue such as that seen in Key West is not a question of if, but when.

In cases of other mosquito-borne disease outbreaks, taking care to avoid activities at dawn and dusk is an effective preventive measure, as these are the feeding times for many mosquito species. In contrast, the vectors which transmit dengue are day-feeders, making avoidance more difficult. Effective control of dengue requires thorough source-control. This means that breeding areas for mosquitoes must be eliminated. Any receptacle with standing water is a potential breeding ground. A water collection within a discarded aluminum can has the potential to serve as a breeding site. Such exhaustive control measures require the dedication of public health officials with staff on the ground, as well as a comprehensive surveillance system to determine the breadth of the areas affected. As anticipated, this episode of local transmission ended in the late fall when weather changes decreased the rate of mosquito breeding. As weather warms in the spring and summer, extra vigilance for a re-emergence is paramount.

For the many HIV care providers in the state, this adds another disease to consider in our patients presenting with an unexplained fever. Early diagnosis of dengue may help to direct appropriate supportive care for our patients and alert public health officials of the potential of new local transmission. Although there is no clear evidence that the presentation of dengue is more severe in HIV disease, patients with multiple co-morbidities may be more at risk for poor outcomes, especially if affected by DHF.

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