

Dengue Hitting U.S., Mostly in Texas and Florida

BY DAMIAN McNAMARA
Miami Bureau

MIAMI — From 1977 to 2004, there were 3,806 suspected cases of dengue imported to the United States, according to the Centers for Disease Control and Prevention.

“Many more cases probably go unreported each year because surveillance in the United States is passive and relies on physicians to recognize the disease, inquire about the patient’s travel history, obtain proper diagnostic samples, and report

The range of the Asian tiger mosquito, a secondary dengue vector related to *Aedes aegypti*, has been expanding globally at an alarming rate.

the case,” according to the CDC. “We are starting to see more and more cases of dengue fever,” said Dr. Christian C. Patrick at a pediatric update sponsored by Miami Children’s Hospital, “particularly in south Texas.”

Following a case report of a woman in Brownsville, Tex., infected with dengue without traveling in July 2005 and an outbreak of 1,251 reported cases in Tamaulipas, Mexico, an investigation identified 24 additional cases in Texas in October, including 2 more infections not associated with travel (MMWR 2007;56:785-9). A review of hospitalization records in December revealed that 16 of 25 (64%) eventual infections in Texas developed the more serious dengue hemorrhagic fever, compared with 34 of 104 cases (33%) identified in Mexico.

Results of another study suggest dengue is endemic along the southern Texas–Mexico border (Emerg. Infect. Dis. 2007;13:1477-83). Investigators found 2% of Brownsville residents had serologic evidence of recent dengue infection, compared with 7.3% of residents in the bordering city of Matamoros in Tamaulipas in 2004. The cross-sectional survey with 600 participants also showed that 40% of Brownsville residents and 78% of Matamoros residents had a past dengue infec-

tion. Relevant mosquito larvae were found in 30% of households in both cities, they reported.

The emergence of dengue is a particular problem in the Americas. “We are starting to see an increase in Central America, Puerto Rico, and Cuba,” Dr. Patrick said. The *Aedes aegypti* mosquito that spreads this disease is now found throughout the central and southern United States, he said.

Dr. David Morens and Dr. Anthony Fau-

ci also described dengue and hemorrhagic fever as a potential public health threat to residents of the continental United States in a commentary in JAMA (2008; 299:214-6). Dr. Fauci is the director of the National Institute of Allergy and Infectious Diseases, where Dr. Morens is the dengue program officer.

“The range of *Aedes albopictus* (the Asian tiger mosquito), a secondary dengue vector related to the classical vector, *Aedes aegypti*, has been expanding globally at an

alarming rate. Since its introduction into the United States in 1985, *Aedes albopictus* has spread to 36 states,” they wrote. “Worldwide, dengue is among the most important reemerging infectious diseases with an estimated 50 million to 100 million annual cases and, by WHO estimates, 22,000 deaths, mostly in children.”

“We don’t talk much about [dengue] in the United States, but we have it in our differential,” said Dr. Patrick, chief medical officer and senior vice president for med-

multiple serotypes

a pentavalent vaccine

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Source: Focus® Medical/Surgical December 2007, Table 1002 Pediatrics Office

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Artist’s rendering; actual rotavirus particles do not vary in appearance; for illustration purposes only

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ical and academic affairs, Miami Children's Hospital.

In 1997-1998, there were 18 cases of confirmed imported dengue reported in Florida, higher than the previously reported 10-year mean of 1.3 cases per year (MMWR 1999;48:1150-2).

The incubation period for dengue fever generally is 4-7 days after a mosquito bite (range, 3-14 days) with a characteristic high fever. "Temperature and the virus go hand in hand," Dr. Patrick said.

Infected patients also typically experience abrupt headaches, retrobulbar eye pain, marked muscle and joint pain, and a variety of rashes, both macular and mac-

ulopapular. Respiratory symptoms include cough, sore throat, and congestion; each is observed in approximately one-third of patients, he said.

A meeting attendee asked how Dr. Patrick would decide which patients to test. "There are a lot of patients who do not have dengue fever. But the retrobulbar pain is pretty distinctive." Epidemiology also is helpful, he said, and recommended testing any patient with a febrile illness who has traveled to a high-risk region within 2 weeks of presentation. The differential diagnosis includes influenza, typhoid fever, malaria, measles, and rubella.

Diagnosis of dengue is mainly serology

based. An IgM immunoassay is recommended, although the timing can be tricky. Most people present while acutely febrile, a time when the IgM serology usually is negative, Dr. Patrick said.

Leucopenia and thrombocytopenia also indicate dengue infection, as does transaminase values 2-5 times the upper limit of normal.

Dengue fever is the most common mosquito-borne viral disease. The *A. aegypti* mosquito is a daytime biter that resides near domestic areas. A secondary vector, the *A. albopictus* mosquito, is a more aggressive biter and is better adapted to colder environments. This characteristic

may portend a shift in the epidemiology of dengue northward, Dr. Patrick said.

Vaccines to prevent dengue infection are in preclinical trials. Although an immunized person could have lifelong protection, dengue is an RNA virus with four distinct subtypes. "And there is no crossover immunity if a person is infected with a [different] strain," Dr. Patrick said. There is a trivalent vaccine being investigated now in field trials, he added. ■

The CDC's "Protect Yourself from Mosquito Bites and Dengue" patient brochure can be downloaded free of charge at www.cdc.gov/ncidod/dvbid/dengue.

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^aRotavirus Efficacy and Safety Trial

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Reference: 1. Vesikari T, Matson DO, Dennehy P, et al. Safety and efficacy of a pentavalent human-bovine (WC3) reassortant rotavirus vaccine. *N Engl J Med*. 2006;354:23-33.