



The Dengue Update



A CDC Update on a Critical Disease Threat

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CDC's Dengue Branch in Puerto Rico provides global leadership for dengue surveillance, diagnostics, case management, and prevention.

Visit www.cdc.gov/dengue for more information

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2010: LARGEST DENGUE OUTBREAK IN PUERTO RICO HISTORY

Dengue cases reached historically high levels in 2010 in parts of southern Florida, and in the US territories of Puerto Rico and the US Virgin Islands (USVI), bringing the global dengue resurgence even closer to home. Central and South America were similarly afflicted. Puerto Rico experienced the largest outbreak in its history (Figure 1), recording over 21,000 reported cases. About 75% of the reported cases could be laboratory confirmed and, because mild cases are often not reported, the incidence was probably at least several times higher. Cases were reported throughout the island, with highest incidence in the northwestern region. Among confirmed cases the majority were either dengue 1 or dengue 4; relatively-few cases of dengue 2 were found. The previous major epidemic occurred only three years earlier, in 2007 when more than 10,500 cases were reported.

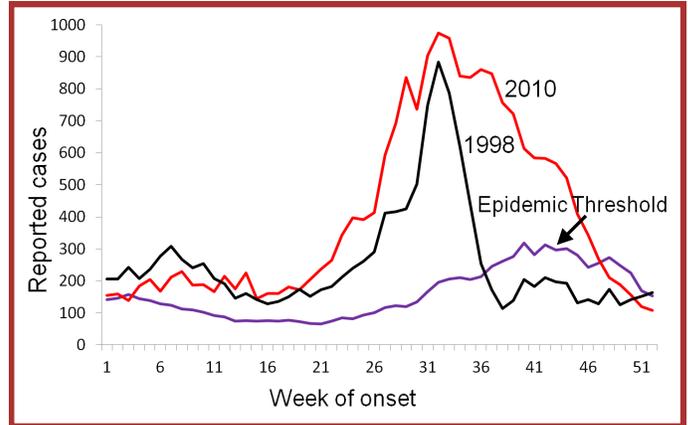


Figure 1. Reported dengue cases in Puerto Rico, 1998 and 2010

In 2009, Florida reported the first cases of local dengue transmission in 75 years, within Old Town, Key West. A serosurvey of residents suggested an infection rate of 5%, indicating serious risk of transmission. Despite thorough control efforts carried out by the county and state in early 2010, by the end of 2010, Florida had reported an additional 65 locally acquired dengue cases. All the cases were in Key West, except two cases in two more northerly counties. Local health and mosquito control officials are now assessing strategies for the coming season.

Dengue has been a reoccurring public health problem for the USVI since the early 1800s, including in three of the past six years. During 2010, at least 100 suspected and 30 laboratory confirmed cases have been reported. As the epidemic potential became clear, the USVI Department of Health, with help from CDC, conducted public and health care provider education campaigns and increased mosquito control measures throughout the territory.

These examples highlight the potential threat of dengue and chikungunya viruses to regions of the US where mosquito vectors, *Ae. aegypti* and *Ae. albopictus* occur. We describe the emerging threat of chikungunya below.

SCIENTISTS MEET TO DISCUSS DENGUE RESEARCH



A 3-day scientific meeting will take place at the Conrad San Juan Condado Plaza in Puerto Rico February 2011 to discuss the latest dengue research, identify research gaps and priorities and promote future research collaborations among government agencies, research institutions and universities across the Americas. This meeting will be hosted by NIH/National Institute of Allergy and Infectious Diseases, CDC, and the Pan American Health Organization (PAHO).



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10,483 CLINICIANS IN PUERTO RICO TRAINED BY CDC

Although dengue has been endemic in Puerto Rico for several decades, there has never been systematic education of health care providers on the clinical management of dengue – until now. In collaboration with Puerto Rico Department of Health, the College of Physicians-Surgeons of Puerto Rico, PAHO, Puerto Rico Academy of Family Physicians, Puerto Rico Pediatric Society, and the Medical Association of Puerto Rico, the CDC’s Dengue Branch has conducted dozens of seminars on the *Clinical Case Management of Dengue*. CDC is also offering a



maximum of 4.0 American Medical Association PRA Category 1 credits for this activity. The goal of the physician 4-hour seminar is to reduce medical complications and mortality from dengue by improving health care providers knowledge of dengue and proper clinical management practices. There is a 3-hour seminar for nurses on the same topic.

There was an Administrative Order issued by the Puerto Rico Secretary of Health in 2010 requiring that emergency room physicians, obstetricians and gynecologists, intensive care physicians, hospitalists, family physicians, pediatricians, internists, and general medicine physicians take or register for the seminar prior to October 2010. Physicians not specifically listed in the order have until their birthday in 2013 to complete the seminar. Physicians, nurses, and other health care providers may register for this course on-line at www.cdc.gov/dengue/educationtraining. Since 2009, 8,306 physicians and 2,177 nurses have been trained in Puerto Rico. The CDC Dengue Branch plans to evaluate the effects of this training effort in 2011. For more information, visit www.cdc.gov/dengue/clinicalLab/index.html.

POSSIBILITY OF CHIKUNGUNYA OUTBREAK IN THE AMERICAS AND THE CARIBBEAN?

The danger of Chikungunya virus being introduced into the Americas is increasingly real. Chikungunya (CHIKV) is an emerging viral disease transmitted by the same mosquito vectors, *Ae. aegypti* and *Ae. albopictus*, which transmit dengue virus. Discovered in Africa in 1956, CHIKV was relatively rare until an explosive epidemic swept through East Africa, India and Southeast Asia beginning in 2006. More than two million people have been infected in those regions and many isolated cases were found in returning travelers to Europe and the Western Hemisphere, including 106 in the US. In 2007 an outbreak infecting more than 200 people occurred in northern Italy. The impetus for the epidemic and the cause for concern is that a mutation has occurred in the virus that makes it even more likely to be transmitted by *Ae. albopictus*, which is more widespread in cool climates than is *Ae. aegypti*.

Recommendations for CHIKV Preparedness

- ✓ Adapt guidelines for preparedness and response to CHIKV outbreaks to be applicable in each country.
- ✓ Train laboratory staff for testing, medical entomology and vector control.
- ✓ Collaborate among regional partners to share materials and testing capacity for CHIKV.
- ✓ Develop protocols and plans for patient treatment and hospital surge capacity.
- ✓ Deliver fact-based information to the public.

The clinical disease caused by CHIKV can be similar to that of dengue with fever, joint pain, and maculopapular rash. The similarity can lead to misdiagnosis where dengue occurs. There is no vaccine for CHIKV and because residents of the Americas have never been naturally exposed and the vectors are common, the epidemic potential is great.

In July, 2010 CDC and PAHO convened a group of experts in Lima, Peru to write a preparedness plan in anticipation of a possible CHIK introduction to the Americas to raise awareness and alert public health officials about possible CHIKV introduction

in the Americas. Scientists and public health officials from Argentina, Brazil, Canada, Chile, Colombia, Cuba, El Salvador, Mexico, Peru, Venezuela, France and the US participated. The consensus-recommendations for case definition, surveillance, a laboratory diagnoses, vector management, and a multidisciplinary communications plan can be found at www.cdc.gov/ncidod/dvbid/chikungunya.

HELPFUL LINKS

A GUIDE FOR DIAGNOSTIC EVALUATION FOR DENGUE,
www.nature.com/nrmicro/supplements

Nature Reviews Microbiology published a supplement in 2010; 8:12, related to dengue diagnostics, providing four articles from the WHO Diagnostic Evaluation Expert Panel as well as an overview of dengue as a continuing global threat.



DENGUEMAP, www.cdc.gov/dengue

An interactive, web-based map that shows CDC-defined areas of endemic dengue risk and reports of recent dengue activity collected from professional and media sources by HealthMap.