

Isolation of Dengue Type 3 Virus Prompts Concern and Action

In late 1994, for the first time in 17 years, dengue type 3 virus (DEN-3) was isolated from autochthonous dengue cases in the Americas. Two confirmed DEN-3 cases occurred in children in Managua, Nicaragua, in October of last year, and two others in patients in Panama (in the provinces of Chiriquí and Panamá) in October and November. Genetic typing of the first DEN-3 isolate from Panama by the Centers for Disease Control and Prevention (CDC) identified the virus as the Sri Lanka/India genotype, which was responsible for a major epidemic of dengue hemorrhagic fever (DHF) in Sri Lanka and India between 1989 and 1992.

Dengue, an acute viral disease transmitted by mosquitoes, has made a dramatic comeback in the Region of the Americas in the last two decades, as its vector, *Aedes aegypti*, has reinvaded its former range and expanded into new areas. In 1994, outbreaks were reported in Brazil, Costa Rica, Dominican Republic, Haiti, Mexico, Puerto Rico, and Venezuela in addition to Nicaragua and Panama. However, in all the epidemics and outbreaks during the 1980s and early 1990s, only dengue serotypes 1, 2, and 4 were involved.

DEN-3 was first isolated in the Region in Puerto Rico in 1963, a year in which it caused epidemics in Jamaica and the eastern Caribbean. It was last isolated from an autochthonous case in the Americas in 1977, although since that time DEN-3

has been found in persons who contracted dengue while traveling in other regions.

The reappearance of DEN-3 in the Americas is seen as a serious threat. Although infection with one dengue virus serotype confers life-long immunity against reinfection with that specific type, it confers only partial and temporary protection against infection with other types. Since DEN-3 has been absent for so many years, a high percentage of the population has never been exposed to it, creating a real potential for epidemic outbreaks. Moreover, in persons who have previously had dengue, subsequent exposure to a different serotype has been shown to be strongly associated with an increased risk of developing the more serious, and sometimes fatal, forms of dengue: DHF and dengue shock syndrome (DSS).

Aware of the potential for reintroduction of DEN-3 into the Americas, health agencies had developed a contingency plan in 1993 for dealing with this occurrence. The plan highlighted the importance of effective laboratory-based surveillance programs for dengue and DHF. In April–May 1994, PAHO alerted its member countries to the increase in DEN-3 activity in other regions and the repeated isolations of this serotype from travelers returning to the Americas, and provided recommendations for the actions that should follow identification of any autochthonous DEN-3 case. Those actions included prompt investigation to define the magnitude and distribution of the DEN-3 virus in the country. If the distribution was found to be limited and well-defined, efforts to eradicate mosquitoes in the affected area were recommended.

Sources: (1) CDC. Dengue type 3 infection—Nicaragua and Panama, October–November 1994. *Morb Mortal Wkly Rep* 1995;44(2):21–24. (2) PAHO/CARICOM. Caribbean on dengue alert; need for greater sense of urgency. *CCH Update* [Caribbean Cooperation in Health] 1994;7(3):1–2.

Even before the isolation of DEN-3, the Ministry of Health of Nicaragua had begun a multifaceted campaign to control *Ae. aegypti*, in response to the increased numbers of dengue cases in Managua. Insecticide was used against adult mosquitoes and larvicide against immature forms, and a national, community-based campaign, supported by public education efforts, was mounted to eliminate breeding sites ("source reduction"). By the last week in November, the weekly number of reported cases had decreased substantially. However, on 25 November the Ministry announced the isolation of DEN-3. An international team sponsored by PAHO went to Nicaragua in late November to help reinforce laboratory capabilities, obtain epidemiologic information, evaluate the severity of the disease caused by DEN-3, and assist national authorities in their efforts to control the outbreak.

At about the same time (23–24 November), the Project Advisory Committee of the Caribbean Cooperation in Health/Government of Italy Project on Integrated Control of *Aedes aegypti* was meet-

ing in Kingstown, Saint Vincent. The Committee advised that because of high *Ae. aegypti* infestation rates in the Caribbean subregion, a greater sense of urgency regarding dengue prevention and control was needed. That recommendation was reinforced by the announcement of DEN-3 activity. Over the next year, the project will help countries accelerate community participation initiatives for source reduction.

In recognition of the rapid change in the dengue situation that has occurred in the Region in recent years, PAHO has published updated guidelines for the prevention and control of dengue and DHF. During the 1992–1994 period, these guidelines were presented by PAHO to national representatives of *Ae. aegypti*-infested countries in the Americas, and during 1994, PAHO teams reviewed national dengue control programs in selected countries and assisted national authorities in preparing or updating contingency plans to deal with outbreaks. It is hoped that this preparation will limit the impact of the renewed circulation of DEN-3 in the Americas.



Bolivian Hemorrhagic Fever Reappears

An outbreak of seven cases of Bolivian hemorrhagic fever (BHF) occurred in July–August 1994 in El Beni Department in northeastern Bolivia. These cases followed several suspected cases of BHF earlier in the year, two of which were

confirmed serologically by the U.S. Centers for Disease Control and Prevention (CDC). Two other unrelated cases were subsequently identified and confirmed in September. With the exception of one fatal case in 1993, the disease had not been identified in Bolivia—the only known endemic area—since 1975.

Bolivian hemorrhagic fever was first described in 1959. It is caused by the Machupo virus, for which the reservoir in nature is the rodent *Calomys callosus*. The

Sources: (1) CDC. Bolivian hemorrhagic fever—El Beni Department, Bolivia, 1994. *Morb Mortal Wkly Rep* 1994;43(50):943–946. (2) Re-emergence of Bolivian hemorrhagic fever. *Epidemiol Bull [PAHO]* 1994;15(4):4–5.