



Emerging and Reemerging Infectious Diseases, Region of the Americas

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Dengue Outbreak in Paraguay: Follow-Up

Summary of the Current Situation in Paraguay

The nationwide epidemiological alert in Paraguayan continues, as per information provided by the Ministry of Public Health and Social Welfare of Paraguay ([MSPBS](#)).

Up to 14 March of 2007 (Epidemiological Week / EW No. 11), following up on the [February 9](#) update, official reports are as follows:

- 19,577 suspected cases of dengue
- 46 cases of dengue hemorrhagic
- 10 fatalities
- Case-fatality rate: 21.7%
- Serotype: DEN 3
- Affected areas:
Asunción, Central Department,
and other cities

Please see Graph 1 below for further details.

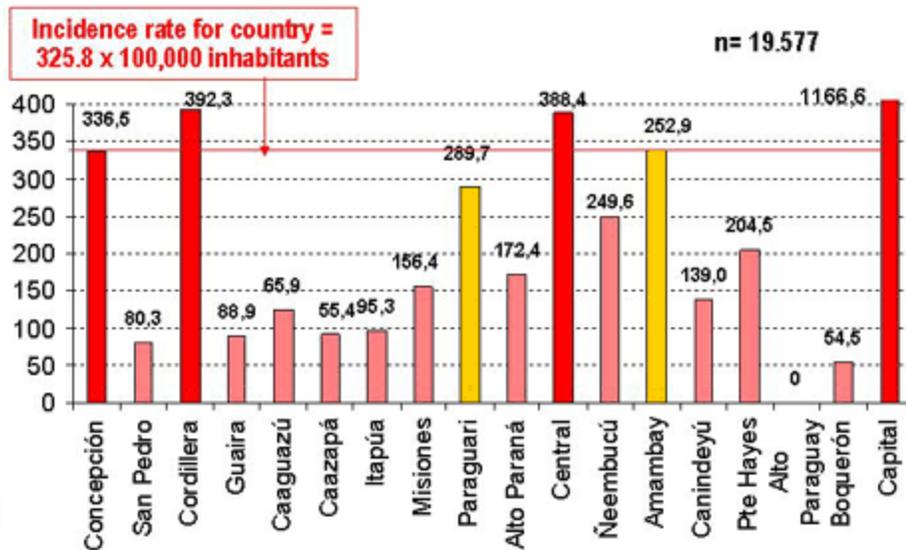


Graph 1: Distribution of Dengue Cases by Reporting Department, Paraguay, 14 March 2007

Rates by Department

The departments that exceed the national average incidence rate are Central, Capital, Cordillera and Concepción, followed in frequency by Paraguari and Amambay.

The average incidence rate for the country is 325.8 per 100,000 inhabitants.



Source: DIVET-DGVS

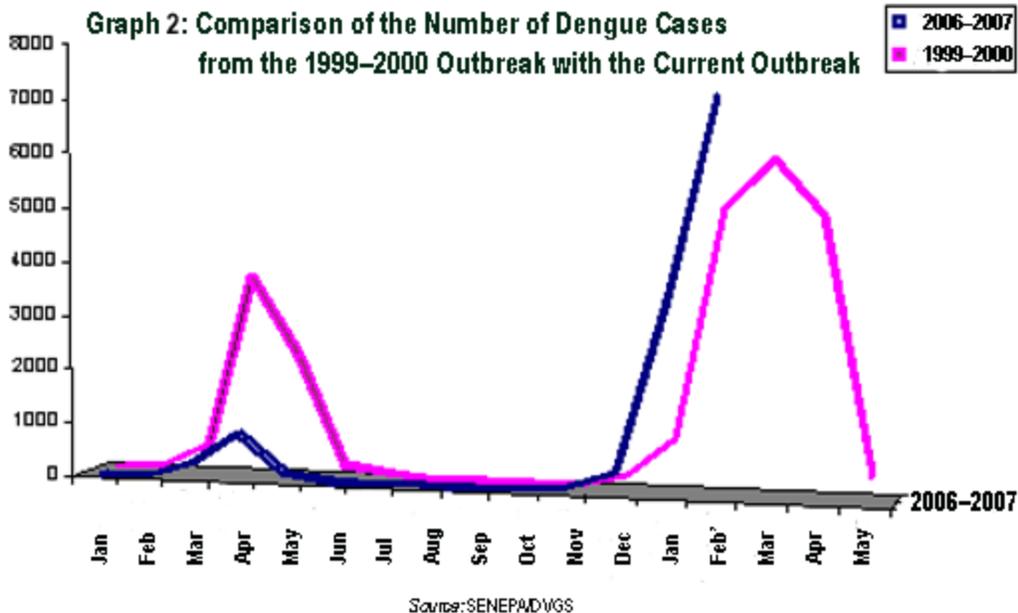
Background

The current dengue outbreak in Paraguay caused by serotype DEN 3 was preceded by the circulation of the DEN 1 and DEN 2 serotypes in 2002. The disease reappeared in 2003, 2004, and 2006 with the DEN 3 serotype being the most prominent. Details can be seen in Table 1 and Graph 2 below.

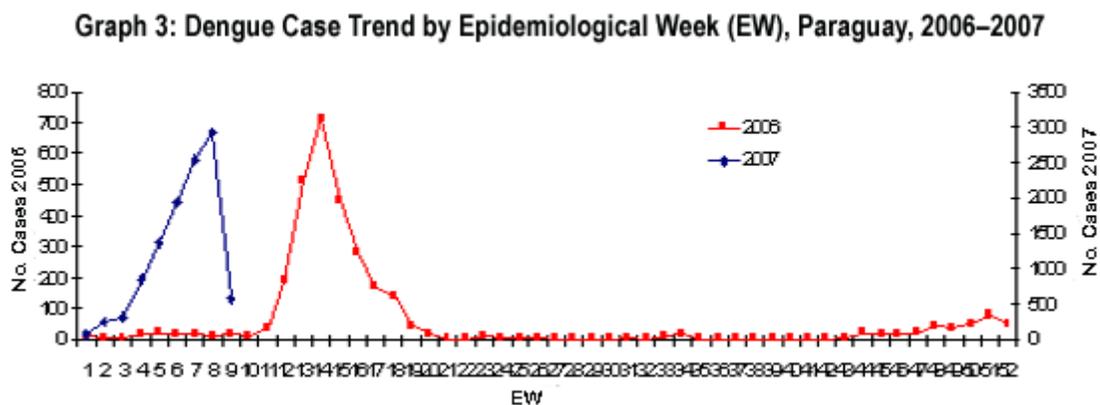
Table 1: Dengue in Paraguay (up to Epidemiological Week /EW 11/2007)

Years	No. of Dengue Cases Reported to PAHO/WHO	No. of Dengue Hemorrhagic Cases Reported to PAHO/WHO	Serotypes in Circulation Reported to PAHO/WHO	Serotypes with Previous Circulation
2002	1,871	0	DEN 1, 2, 3	Ninguno
2003	137	0	DEN 3	DEN 1, 2
2004	164	0	DEN 3	DEN 1, 2
2005	405	0	DEN 2	DEN 1, 2
2006	4,271	0	DEN 3	DEN 1, 2
2007	19,577	46	DEN 3	DEN 1, 2

Source: Data obtained by PAHO/WHO from the Ministry of Public Health and Social Welfare (MSPBS) of Paraguay.



During the 2006 outbreak in Asunción, 4,271 cases of dengue serotype DEN 3 were reported. The country managed to control the outbreak and kept transmission at low levels until October, when the number of cases began to increase. For more detail, see Graph 3 below.



Current Situation

Up to Thursday, 14 March 2007, 19,577 recorded cases of dengue were reported, along with 46 cases of dengue hemorrhagic (DH) and 10 deaths: 3 from DH, 5 from atypical forms, and 2 from undetermined causes. The national average incidence rate is 325.8 per 100,000 inhabitants (*Source: Mercosur and MSPBS*).

- The dengue outbreak is concentrated in the capital city of Asunción and in four departments: Capital (incidence rate = 1166.6 x 100,000), Cordillera (392.3), Central (388.4), and Concepción (336.5). Other affected departments include Amambay and Paraguari.

- The presence of serotype DEN 3 in Asunción could lead to an outbreak of massive proportions among populations groups susceptible to this serotype if response is not timely and if the necessary control measures are not taken.
- Climate in the form of continuous rainfall has played a major role in this outbreak.

Clinical Cases of Atypical Dengue

The National Commission of Physicians (*Comisión Nacional de Médicos de Cierre de Casos*) has clinically diagnosed dengue with such severe unusual manifestations as serious visceral involvement, called "classic dengue with severe unusual manifestations." This has been well described in the literature and has become important now because most of the fatal cases have fit this condition. Classic dengue with severe unusual manifestations has affected patients who apparently have dengue but who developed severe cardiac involvement in the form of myocarditis, liver failure due to viral hepatitis, pulmonary involvement due to viral pneumonitis, and involvement of the nervous system resulting in unconsciousness.



Technical Collaboration Activities Effectively Carried Out and Facilitated by PAHO/WHO

- **PAHO/WHO provided direct technical assistance in the areas of patient care, mass communication, and health services** to strengthen capacities, timely diagnostic guidelines, adequate case management, and collaboration in "Dengue Day" (*Día D*), among others.
- **A mission from Argentina** headed by Dr. Elena Pedroni, Director of [Statistics and Health Information](#) at the [Ministry of Health](#), and Dr. Enrique Vásquez, Consultant at [PAHO-Argentina](#), and later by a high-level team from the Ministry, offered support for combatting the epidemic, namely by providing vehicles for chemical control agents, epidemiologists to operate the Situation Room (from their Epidemiology Division), and a specialist to work at the border area. Three Argentinian field epidemiologists have also been assigned to the country.
- **A mission from Uruguay** composed of communicators from their [Ministry of Public Health](#) and from [PAHO-Uruguay](#) is providing support for implementing the Mass Communication Plan for the dengue epidemic.
- **Another mission from Peru** consisted of a solid-waste expert who can analyze the situation *vis-à-vis* breeding sites.

Proposal for Immediate PAHO Technical Cooperation

- Visit by Dr. Roddy Camino, [PAHO-Ecuador](#), to conduct an **analysis of the current situation** together with the MSPBS from 1 to 8 March 2007.
- Visit by Dr. José Luis San Martín, Regional Advisor from the [PAHO Regional Program on Dengue](#) based in Panama, from 6 to 10 March 2007.
- Visits by patient-care expert Dr. Ernesto Pleites from Benjamin Bloom Hospital in **El Salvador** for the period of one month, requested via ministerial letter; Dr. Pleites arrived on Monday, 5 March 2007.
- Deploying another expert in the clinical aspects of dengue, Dr. Eric Martínez from the [Ministry of Public Health](#) of **Cuba**, for a one-week period beginning 7 March 2007.
- Sending samples for diagnostic confirmation, sequencing, and viral genotyping to the National Reference Laboratories in Pergamino, **Argentina** (National Institute

- for Human Viral Diseases / *Instituto Nacional de Enfermedades Virales Humanas / INEVH*), or in Curitiba, **Brazil** ([FIOCRUZ](#)); in addition, technical staff members from Paraguay will receive hands-on training at these centers.
- Currently under negotiation with resources from the Inter-American Development Bank ([IDB](#)) is a second stage of the above, sending a technician from INEVH in Pergamino with the goal of building capacity in Paraguay, including biosafety and training, once they are in the physical and technical condition to do so.
 - Conducting a **technical consultation** on *Organization of Health Service Networks* for a two-month period beginning 12 March 2007, focusing on the most affected areas.
 - Assessment with the Ministry of Health on the possibility of receiving **support in entomology for vector control and epidemiology**; other equipment and pesticide needs have not been reported yet and the country's current reserves need to be assessed.
 - PAHO and the Ministry of Health collaboratively assessing vector control and epidemiology, equipment needs, and country reserves.

Source: Information obtained by the [PAHO Regional Program on Dengue](#) through the PAHO Country Office in Paraguay ([PAHO-Paraguay](#)), based on data from the central database [Centro de Cómputos DIVET](#) run by the Ministry of Public Health and Social Welfare (*Ministerio de Salud Pública y Bienestar Social / MSPBS*) of Paraguay and MERCOSUR.