



Epidemiological Alert: Dengue Outbreaks in the Americas

Regional Program on Dengue

(7 July 2010)

ALERT DUE TO AN INCREASES OF DENGUE IN AMERICAS REGION

Throughout the first half of the year, the epidemiological situation of dengue has presented a very unstable feature, with severe outbreaks of dengue in several countries in the region. Weather conditions have been very flattering to the proliferation of the vector *Aedes aegypti* and some unusual changes in the seasonality of dengue have been registered affecting since the beginning of the year to Central America and the Caribbean islands during periods considered unusual.

The rainy season is coming in the Central American sub region and the Caribbean, so it is expected and is already seeing an increase in dengue transmission that can potentially affect large population groups even in areas where the problem was not either because they were often protected by cold weather conditions or because there was delay in the entry of the cold season, with which the vector could not survive.

In addition, the lack of a substantial change in health infrastructure, especially in endemic areas for dengue fever, persistent problems like irregular water supply that makes people storing water in a improperly way, poor sanitation environmental and presence of garbage (plastic containers) that hold water with the rains, the excess of used tires that have no proper disposal, means that they become excellent breeding of *Aedes aegypti* and often produces many adult mosquitoes that cause epidemics; the risk becomes more critical.

Through this epidemiological alert PAHO/WHO calls for intensified measures to control dengue and an integrated response by matching all actions in space and time to achieve greater impact. The health sector should make every effort in the diagnosis and treatment of dengue patients to prevent deaths while strengthening the structures of vector control, based on the principle that is not given a response from a unique sector, but in a comprehensive manner involving all health institutions, other ministries, NGOs, the private sector and the general population.

Simultaneously, it is necessary to continue the effort to advance the implementation of National Strategies for the Integrated Management of dengue prevention and control and strengthen those weaker components. PAHO/WHO will continue to provide technical support to countries for the prevention and control of outbreaks of dengue in the region by dengue expert group (GT-Dengue International) primarily in the areas of epidemiological surveillance, vector control, clinical management, laboratory diagnosis, environment and social communication and risk.

A quick notification of the status of cases and/or outbreaks provides to the Pan-American Health Organization, coordinate in a faster way the international cooperation to increase the responsiveness of the country affected. At the end of this report there is a set of recommendations to control outbreaks and epidemics of dengue.

Dengue Outbreaks in the Americas

The information contained in this update, has been obtained from data provided by the ministries of health of PAHO Member States either through reports sent to the Pan American Health Organization / World Health Organization (PAHO/WHO) or their respective websites.

Up to the date of this report, the countries of the Region reported a total of 1 009,576 cases of dengue, out of which 21, 213 were severe dengue. A total of 503 deaths have been reported, with a Regional case fatality rate of 2.3%.

Table 1. Dengue cases, severe dengue and deaths in the Region of the Americas, until EW 26, 2010

Subregion	Cases of Dengue	Incidence Rate per 100.000 pop.	Cases of Severe Dengue	Deaths	Fatality Rate (%)
Central America y Mexico	82,044	55,83	2,443	42	1,72
Andean Subregion	146,283	142,80	11,538	102	0,88
Southern Cone	742,411	306,17	6,475	336	5,19
Hispanic Caribbean	7,040	29,70	472	18	3,81
Non-Hispanic Caribbean	31,798	400,69	285	5	1.75
TOTAL	1 009,576	192,85	21,213	503	2,37

Central America and Mexico

COSTA RICA

Number of Cases: Up to Epidemiological Week (EW) 23, 2010, the Ministry of Health of Costa Rica reported 8,307 cases of dengue. Those cases reported across the country during the EW 1-23, 2010, exceeded the cases recorded during the same period last year by 408%, and there has been a rising trend in the number of cases over the past three weeks.

Severity: A total of seven cases of severe dengue have been confirmed. There have been 44 deaths reported.

Serotypes in Circulation: DEN-1, 2 and 3.

Affected Areas: Regions of Chorotega (Cañas, Carrillo, Abangares and Santa Cruz), Central Pacific (Peninsula, Puntarenas Canton and Rural), North Central (Alajuela) and Brunca with 84,9% of the total cumulative incidence. The national incidence rate of confirmed cases is 159,1 per 100,000 inhabitants.

EL SALVADOR

Number of Cases: Up to EW 26, 2010, the Ministry of Health of El Salvador reported 13,712 cases of dengue. A number of 5,955 were laboratory confirmed.

Severity: A total of 91 cases of severe dengue cases were laboratory confirmed. No fatal cases have been recorded.

Serotypes in Circulation: DEN-1, 2.

Affected Areas: The highest incidence rates of confirmed cases by the Health System for every 100,000 inhabitants are: Cabañas (220, 4), Oriente de San Salvador (201, 7), Chalatenango (191,3), Santa Ana (190,2), Cuscatlan (187,2) and La Paz (157,1).

Measures Taken: The rainy season has increased the risk of expanding the larval levels of *Aedes aegypti*. A schedule has been set up for the next few weeks for the national cleaning operation.

GUATEMALA

Number of Cases: Up to EW 25, 2010, the Ministry of Health of Guatemala reported 6,190 clinical cases of dengue, of which 679 have been laboratory confirmed.

Severity: There were 98 confirmed cases of severe dengue and 13 deaths.

Serotypes in Circulation: DEN-1, 2.

Affected Areas: Zacapa, Chiquimula, Escuintla and Santa Rosa.

Measures Taken: The Ministry of Health continues to carry out vector control activities in most affected municipalities, and they continue with training workshops to health personnel for the management of patients with dengue.

HONDURAS

Number of Cases: Up to EW 25, 2010, the Ministry of Health of Honduras reported 12,385 clinical cases of dengue and 1,066 were laboratory confirmed. The trend of the cases in the past six weeks has been on the rise.

Severity: There were 475 cases confirmed of severe dengue and 13 deaths.

Serotypes in Circulation: DEN-1, 2.

Affected Areas: Metropolitana MDC 276 (56%), Metropolitana SPS 70 (14%), Yoro 21 (4%), Comayagua 17 (3%) and Olancho 17 (3%). These five regions accumulated 85% of these cases.

Measures Taken: In June 22, the Honduran government declared a national emergency by following the increase in dengue cases. An Inter-institutional Commission was conformed, and it is coordinated by the Ministry of Health, which is responsible for developing a plan to address the emergency. The PAHO/WHO Country Office in Honduras is supporting the measures based on the recommendations made by the dengue team that visited the country in March 2010 (GT-Dengue). During the week from 5 to July 9, 2010 are being carried out training workshops at national level, with the support of PAHO/WHO GT-dengue expert . The trainings are oriented to the management of severe dengue in children.

MEXICO

Number of Cases: Up to EW 24, 2010, the Secretary of Health of Mexico reported 7,491 confirmed cases of dengue.

Severity: There have been 1, 648 confirmed cases of severe dengue and 13 deaths.

Serotypes in Circulation: DEN-1 and 2, with a predominance of DEN-2.

Affected Areas: The most affected states are: Guerrero, Colima and Jalisco. At the national level the number of confirmed cases is lower compared to the previous year and the trend of the disease remains as expected.

Measures Taken: Efforts are being made for a vector control, and environmental, improvement strategy with patio cleaning and education to the population.

Andean Subregion

COLOMBIA

Number of Cases: Up to EW 23, 2010, the National Surveillance System (SIVIGILA) received a notification of a total of 90,360 probable cases of dengue, of which 36,744 have been laboratory confirmed

Severity: Of these cases, 6,852 were severe dengue out of which 3,632 have been laboratory confirmed. There have been 99 deaths reported from dengue and 29 others are under investigation.

Serotypes in Circulation: DEN-1, 2, 3 and 4. DEN-2 predominating.

Affected Areas: At the national level, the endemic channel continued in area of epidemic with a trend to decline. However, during this week an upward trend of cases was observed in the departments of Antioquia, Arauca, Bolívar, Cundinamarca and Huila.

Measures Taken: In this week the National Institute of Health and the National Directorate of Quality of Ministry of Health conducted a technical assistance related to the quality of care to the department of Quindio. Next week will be held the same activity in Vaupés and Arauca, in order to follow up the dengue contingency plan.

VENEZUELA

Number of Cases: Up to EW 24, 2010, the Ministry of Health of Venezuela reported a total of 48,581 cases of dengue. The channel continues in epidemic zone with trend of sustained upward of cases in recent weeks (17-24). The trend for this week will remain the same.

Severity: There have been 4,676 cases of severe dengue. No fatalities were reported by health authorities of Venezuela, but there are two under investigation.

Serotypes in Circulation: DEN-1, 2, 3 and 4.

Affected Areas: The national incidence rate is 132,4 per 100,000 inhabitants, of which is exceeded by 10 departments (Amazonas, Merida, Tachira, Monagas, Nueva Esparta, Miranda, Trujillo, Guarico, Barinas and Federal District).

Measures Taken: In May, the PAHO/WHO Regional Advisor on Dengue made a visit at the request of the country and provided training in social communication. The PAHO/WHO Country Office in Venezuela provides permanent technical support and advice to the Ministry of Health of Venezuela.

Southern Cone

ARGENTINA

Number of Cases: Up to EW 22, 2010, all notifications of suspected dengue cases were 1,184. The trend of cases has remained without significant increases in recent weeks.

Severity: There are no confirmed deaths.

Serotypes in Circulation: DEN-1, 2 and 4.

Affected Areas: Buenos Aires, Capital Federal, Catamarca, Chaco, Chubut, Corrientes, Entre Rios, Formosa, Jujuy, La Pampa, Mendoza, Misiones, Salta, Santa Fe, and Santiago del Estero.

Measures Taken: Strengthening the network care services and control measures in affected municipalities. These actions include clean-up, outbreaks control, destruction of breeding sites

using larvicides, spraying activities on the area near the homes of those people affected and spatial searches for patients showing symptoms of dengue fever.

BRAZIL

Number of Cases: Up to EW 27, 2010, the Ministry of Health of Brazil, reported 730,587 suspected cases of dengue and 203,197 have been confirmed.

Severity: There were 6,438 confirmed cases of severe dengue with 321 deaths. The fatality rate is 4.9%.

Serotypes in Circulation: DEN-1, 2 and 3.

Affected Areas: The southeast region of the country have reported more than 419,385 clinical cases, 2,457 cases of dengue and 172 deaths. The states of Minas Gerais and Sao Paulo have the highest number of cases. Currently, the trend in all regions of the country is the decline in cases.

Measures Taken: Ongoing monitoring of the situation in the country. The PAHO/WHO Country Office in Brazil is currently supporting the Ministry of Health, through the temporary assignment of national professional for the dengue, thus take actions along the Special Technical Group for dengue for the Health Surveillance Secretariat of the Ministry of Health (SVS / MS).

Direct technical support have been done to SVS / MS and the State and Municipal Secretariats of Health in actions to combat the epidemic in cities such as Goiás (Goiânia and Aparecida de Goiânia), Minas Gerais (Belo Horizonte). Additionally, strategic supplies have been supported (adulticiding) through the revolving fund PAHO / WHO, funded by the 40th Term Cooperation, ensuring regularity in the domestic supply of these inputs.

PARAGUAY

Number of Cases: Up to EW 22, 2010, total of all notifications of suspected dengue cases admitted to the surveillance system amounts to 17,530. Confirmed cases amounted to 8,277 the 16,4% of all confirmed cases are under 15 years. The epidemic is considered of great intensity to exceed the rate of 100 cases per 100 000 inhabitants (cumulative cases), but the trend of cases is now declining.

Severity: 15 deaths have been confirmed.

Serotypes in Circulation: DEN-1, 2 and 3.

Affected Areas: Alto Paraná, Central, Capital and Concepcion are the Regions that still continue with active circulation of low intensity, according to recent regional reports.

Measures Taken: The country curve continues with a strong tendency to decrease and the circulation may be eliminated in certain regions of Paraguay. A search was conducted for febrile cases, destruction of breeding sites, and community education was provided in the affected areas.

Hispanic Caribbean

PUERTO RICO

Number of Cases: Up to EW 22, 2010, the Secretary of Health of Puerto Rico reported 3,541 cases of dengue, of which 1,658 have been laboratory confirmed. According to the endemic channel, cases continue to be reported in epidemic areas.

Severity: There have been 20 cases of severe dengue and two deaths confirmed.

Serotypes in Circulation: DEN-1, 2, 4.

Measures Taken: The Secretary of Health is carrying out continual and intensified vector and diseases control activities and alerting the public as to preventive measures.

DOMINICAN REPUBLIC

Number of Cases: Up to EW 22, the Ministry of Health of the Dominican Republic reported 3,499 cases of dengue, of which 1,705 have been laboratory confirmed.

Severity: There were 452 confirmed cases of severe dengue and 16 deaths.

Serotypes in Circulation: DEN-1, 2, 4.

Measures Taken: A review of national standards has been conducted, with emphasis on care dengue patient with the support of the GT-dengue expert PAHO / WHO. In addition, there has been an intensification of the disposal of hatchery and vector control spraying for adult mosquitoes. In those municipalities in which dengue deaths were recorded discussion meetings were held at the local level, in order to identify and correct problems related to the quality of care.

French Territories

La Cellule d'Epidemiologie interrégionale des Antilles (CIRE), notified through its epidemiological bulletin, the occurrence of dengue outbreaks in French Guiana, Guadeloupe and Martineque.

In **Guyana**, up to EW 23, 2010, 6300 suspected cases of dengue were reported, of which 1,920 were laboratory confirmed. A death was reported. The serotypes in circulation were DEN-1, 2 and 4.

In **Guadeloupe**, up to EW 24, there were 11,320 cases of dengue reported of which 1,833 were confirmed. The number of cases requiring hospitalization was 143. The serotype in circulation was DEN-1, 2, 4. To date, no deaths have been reported.

In **Martinique**, up to EW 25, there were 7,990 cases of dengue, of which 1,593 were confirmed. The number of cases requiring hospitalization was 102. The serotypes in circulation were DEN-1, 4 and so far there are three deaths from dengue.

Technical Comments That Are Required to take in Account to Control Outbreaks and Epidemics of Dengue

Given that some countries in the region are currently being affected by a dengue outbreak and have intensified their prevention and control, we recommend taking into account the following technical elements:

- Dengue is primarily a problem of domestic sanitation as the disposals of vector breeding sites are most important.
- It is necessary to define areas of high transmission risk (risk stratification) and prioritize where there are concentrations of people (schools, terminals, hospitals, health centers, etc.) Must be eliminated the presence of the mosquito to a diameter of at least 300 mts.
- In areas with active transmission, spraying to kill adult mosquitoes infested and cut the transmission, is of great importance.
- The critical factors for effective use of adulticide treatment (fumigation) include:
 - Proper selection of the insecticide, its formulation and to know the susceptibility of mosquito populations to the insecticide.
 - Check the dosage and preparation of the mixture.
 - Ensure the size of the particle (droplet) spray, optimum 8-15 millimicrons MVD (Medium Volume Diameter), otherwise it will not impact the mosquito.
 - The schedule implementation should be in peak periods of mosquito flight.
 - Take into account optimal weather conditions; do not apply extra-house spraying in rain, high winds, etc.
 - The greatest impact is achieved with domiciliary spraying, using individual equipment..
 - At least three fumigation treatments in an intervals of seven days is highly recommended for a complete virus elimination from both the human and the mosquito
 - The degree of reduction of the population of adult females and survival of them must be assessed resulting from the applications to determine whether the suspension occurred in the transmission.
 - A misused fumigation strategy can mean the dispersal of adult mosquitoes to unaffected areas of the city.
- The monitoring and control actions (quality control), the field work of operators are essential, both for focal treatment as adulticide treatment (fumigation).
- The strategy of social communication for behavior change must be very well targeted to the major vector breeding sites and the most productive, should not lose time with other garbage that does not produce mosquitoes (waste of trees, debris etc.).
- As the action become match for vector control in space and time (adulticide and larval control by trained personnel, sanitation measures and the promotion of community actions) impact will be greater and lesser time.
- We must maintain high clinical and epidemiological surveillance. It is important to disseminate the warning signs of severe dengue among the population, thus they can be treated on time avoiding delayed diagnoses, severity and death.
- There must be a guide and an updated flowchart for a proper management of suspected dengue cases and severe dengue at all care levels, including the private sector, this will have a direct impact on preventing deaths.
- It is necessary and fundamental to involve other sectors, since many of the actions that can be taken are within other ministries or organizations, such as the environment, hydrology, community, police, municipality, fire department, ministries of Education and the Tourism, among others.

Finally, it should be noted that countries have developed a National Strategy for Integrated Management for the Dengue prevention and control and it is a solid technical support to be implemented with all its components.