



Regional Update on Dengue

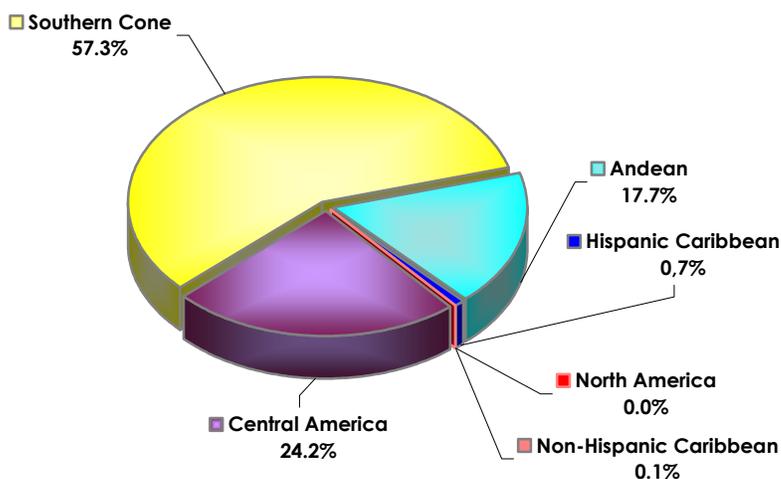
(17 March 2009)

Situation of Dengue in the Americas, 2008

Dengue is an endemic disease in most of the countries of the Americas and, over the past 20 years, has shown sustained cycles of outbreaks every 3 to 5 years.

Final case reports from 2008 are in the process of adjustment and review by the countries, which to date have reported 850,769 dengue cases, a figure representing a 5.5% reduction compared to the 900,754 cases reported in 2007. However, despite the decrease observed with regard to the total number of cases, there has been an increase in the number of deaths from dengue hemorrhagic fever (DHF) and acute forms of dengue. In 2008, there were 38,621 reported cases of DHF and acute forms of dengue, which corresponds to 46% of the increase compared to the 26,413 cases reported in 2007. Regarding deaths, in 2008 there were 584 reported fatalities from dengue: that is, 84% more than in 2007 (317). The Regional fatality rate¹ was 1.5% in 2008, compared to 1.2% in 2007.

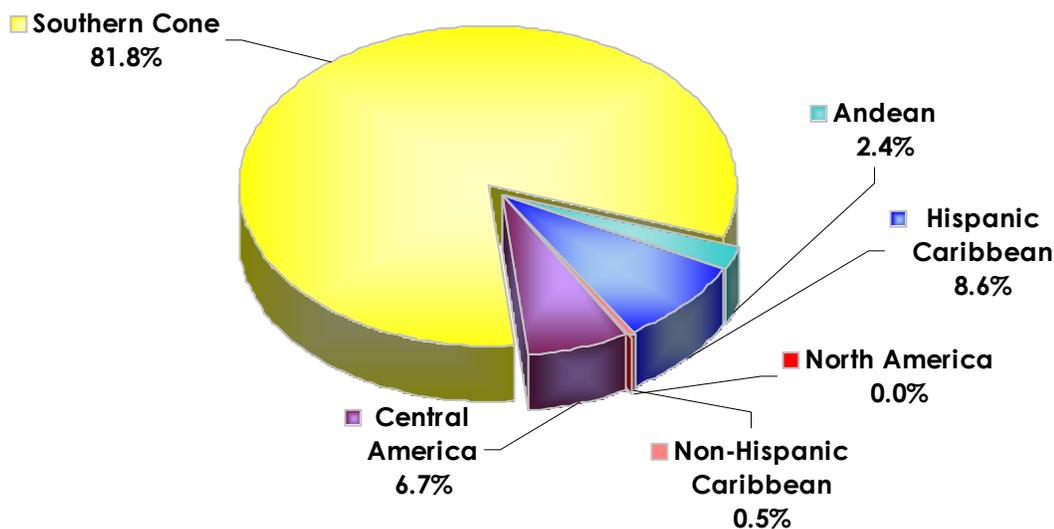
Figure 1: Case Distribution of Dengue Hemorrhagic Fever, in %, by subregion, 2008



**This includes cases of dengue with complications.*

¹ The fatality rate is calculated based on the number of deaths from among the number of dengue hemorrhagic fever and complicated dengue cases per 100.

Figure 2: Distribution of Deaths from Dengue, in %, by subregion, 2008



The extent of the 2008 increase was mainly due to the cases reported in the Southern Cone, specifically by Brazil, due to the epidemic outbreak that affected Rio de Janeiro, where 57% (n = 22,140) of all cases of dengue hemorrhagic fever and complicated dengue and 81% (n = 478) of all deaths in the Region were concentrated (see Figures 1 and 2).

Dengue Situation by Subregion

During the first trimester of 2009, outbreaks have been described in French Guiana, Aruba, Guyana, Bolivia, Paraguay, and Argentina. Climatic conditions, serious environmental sanitation problems (discarded plastic and tires), insufficient water supplies that call for water storage that in turn, when unprotected, are converted into vector breeding sites: all these continue to be key factors in the outbreaks.

Up to Epidemiological Week (EW) 11, 2009, a total of 113,758 cases of dengue have been reported, including 2,052 cases of dengue hemorrhagic fever and 42 deaths, with a Regional fatality rate of 2.05%. To date, 52% (n = 22) of the total number of deaths have been concentrated in Bolivia. Table 1 shows the data reported by the subregions.

**Table 1:
Rates and Number of Dengue Cases Reported to Epidemiological Week 10, 2009,
by subregion of the Americas***

Subregion of the Americas	Cases of dengue + dengue hemorrhagic fever (DHF)	Incidence Rate per 100,000 inhab.**	Cases of DHF and Complicated Dengue	Deaths	Fatality Rate (%)
Central America & Mexico	4,639	3.16	304	3	0.99
Andean	61,262	58.9	1,579	28	1.77
Southern Cone	45,515	20.36	143	7	4.89
Hispanic Caribbean	1,036	4.37	24	2	8.33
Non-Hispanic Caribbean	1,306	16.40	2	2	100
TOTAL	113,758	22.48	2,052	42	2.05

* According to the date reported to date by the Ministries of Health of the countries to the PAHO/WHO Regional Program on Dengue.

** Rates calculated based on the population at risk in each country..

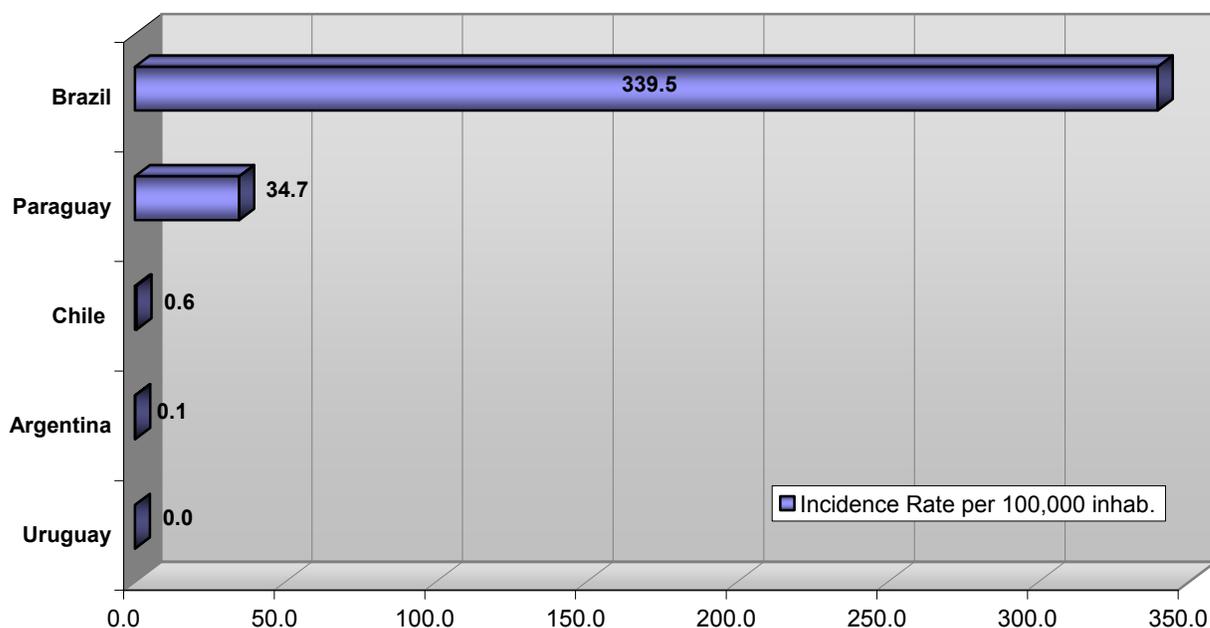
Southern Cone²

In the period from 2001 to 2007, the Southern Cone countries reported 64.6% (n = 2,798,601) of all dengue cases in the Americas. Of these, 6,733 were dengue hemorrhagic fever, with a total of 500 deaths. Brazil accounted for 98.5% of all the reported cases.

In 2008, the Southern Cone reported 587,787 cases of dengue, including 22,140 cases of DHF and complicated dengue and 478 deaths. The dengue outbreak in Rio de Janeiro marked a significant increase in the number of cases. In this outbreak, pediatric dengue cases prevailed, with deaths due to the more acute forms of dengue. Serotypes DEN-1, 2, and 3 showed the greatest spread in 2008 in this subregion. Brazil maintained the highest incidence rates in the subregion that year (see Figure 3).

² The Southern Cone includes Argentina, Brazil, Chile, Paraguay, and Uruguay.

Figure 3: National Incidence Rates for Dengue by 100,000 inhab.* in the Southern Cone Countries, 2008



* Rates calculated based on the population at risk in each country.

For 2009, 40.0% (n = 45,515) of all dengue cases have been reported in this subregion, with a reporting rate of 20.36 per 100,000 inhabitants. Cases of DHF represent 6.9% of the Regional total (n = 143) and deaths represent 16.6% (n = 7).

▪ Outbreaks in the Southern Cone, 2009

Outbreaks are currently being reported in the Southern Cone in Argentina, Brazil, and Paraguay.

- **Argentina:** Up to 16 March 2009, for Epidemiological Week 11, the Ministry of Health of Argentina reported 1,289 dengue cases confirmed either by laboratory or epidemiological link. The provinces most affected have been Salta (748 cases), Chaco (382 cases), Jujuy (113 cases), and Catamarca (46 cases). Three cases of DHF have been reported, along with 2 deaths due to dengue. The main serotype in circulation is DEN-1.
- **Brazil:** Up to EW 6, a total of 42,956 suspected dengue cases have been reported, including 141 cases of DHF and complicated dengue. There have been 5 confirmed deaths from dengue (for a fatality rate of 3.5%). The serotypes in circulation are DEN-1, DEN-2, and DEN-3. The states most affected are shown in Table 2.

**Table 2:
Reported Cases of Dengue and States Most Affected,
Epidemiological Weeks 1–6, Brazil, 2008 and 2009**

State	2008 Cases	2009 Cases	Municipalities on Alert (% of cases from the total reported at state level)
Bahia	2,998	9,003	Jequié (51%)
Minas Gerais	3,564	6,266	Belo Horizonte (25.4%) and Coronel Fabriciano (12.3%)
Espírito Santo	1,133	5,955	Baixo Guandu (13%), Serra (12.7%), Nova Venécia (15.1%), Montana (7.4%), and Vitória (6.8%)
Acre	261	5,562	Rio Branco (93.6%)
Roraima	361	1,153	Boa Vista (80.4%)

Source: Ministry of Health of Brazil.

- **Paraguay:** Up to 16 March 2009, Epidemiological Week 11, Paraguay has reported 1,270 cases of dengue confirmed either by laboratory or epidemiological link. The department where 30.4% of the cases are concentrated is Central (387 cases), following in descending order by Concepción (326 cases), Amambay (169 cases), and Asunción (128 cases). To date, no cases of DHF or deaths have been reported, and the serotypes in circulation are DEN-1 and 3.

Andean Subregion³

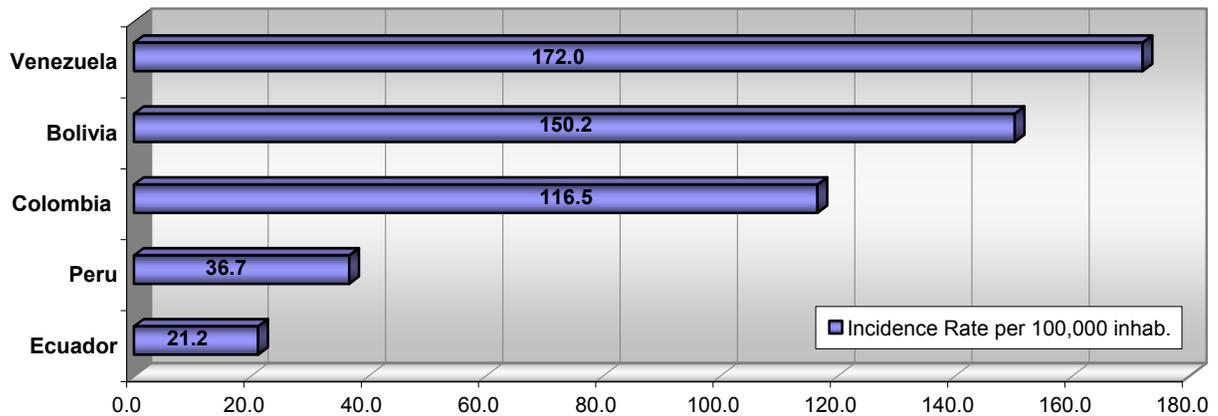
This subregion accounted for 19% (n = 819,466) of dengue cases in the Americas between 2001 and 2007. It is the subregion that reported the highest number of cases of dengue hemorrhagic fever, with 58% (n = 61,341) of the total number of reported cases in the Americas concentrated there. During the same period, 306 deaths were reported.

In 2008, the Andean subregion reported 90,902 dengue cases, including 6,837 cases of DHF and complicated dengue, as well as 14 deaths. Serotypes DEN-1, 2, 3, and 4 were in circulation. Venezuela, Bolivia, and Colombia maintained the highest incidence rates for dengue in 2008 (see Figure 4).

For 2009, this subregion has reported 53% (n = 61,262) of the total number of cases in the Americas, with the highest incidence rate (58.9 per 100,000 inhabitants). Of the total number of reported cases in the Region, DHF cases represent 76.9% (n = 1,579); and deaths, 66% (n = 28).

³ The Andean subregion includes Bolivia, Colombia, Ecuador, Peru, and Venezuela.

Figure 4: National Incidence Rates for Dengue per 100,00 inhabitants for the Countries of the Andean Subregion, 2008*



* Rates calculated based on the population at risk in each country.

■ Outbreaks in the Andean Subregion, 2009

An important dengue outbreak has been reported in Bolivia.

- **Bolivia:** Up to EW 10, 45,907 suspected cases of classic dengue have been reported, including 113 cases of DHF and 22 deaths (fatality rate, 19.4%), with the department of Santa Cruz de la Sierra most affected, with 32,856 suspected cases of dengue reported. The serotypes in circulation are DEN-1, 2, and 3. More details can be found on the website of the Ministry of Health and Sports of Bolivia at <http://www.sns.gov.bo/snis/default.aspx> or on that of the PAHO/WHO Country Office in Bolivia at <http://www.ops.org.bo>.

Central America and Mexico⁴

During the period from 2001 to 2007, 545,049 cases of classic dengue were reported in this subregion (12.5% of the total number of dengue cases reported in the Americas), with 35,746 cases of dengue hemorrhagic fever and 209 deaths. Honduras, Mexico, and Costa Rica reported the highest number of cases during this period. DEN-1, 2, and 3 were the main serotypes identified.

In 2008, Central America and Mexico reported 157,933 dengue cases, with 9,347 cases of DHF and 39 deaths. The countries with the highest incidence rates per 100,000 inhabitants were Honduras (288.0), Costa Rica (255.2), and Mexico (108.5) (see Figure 5).

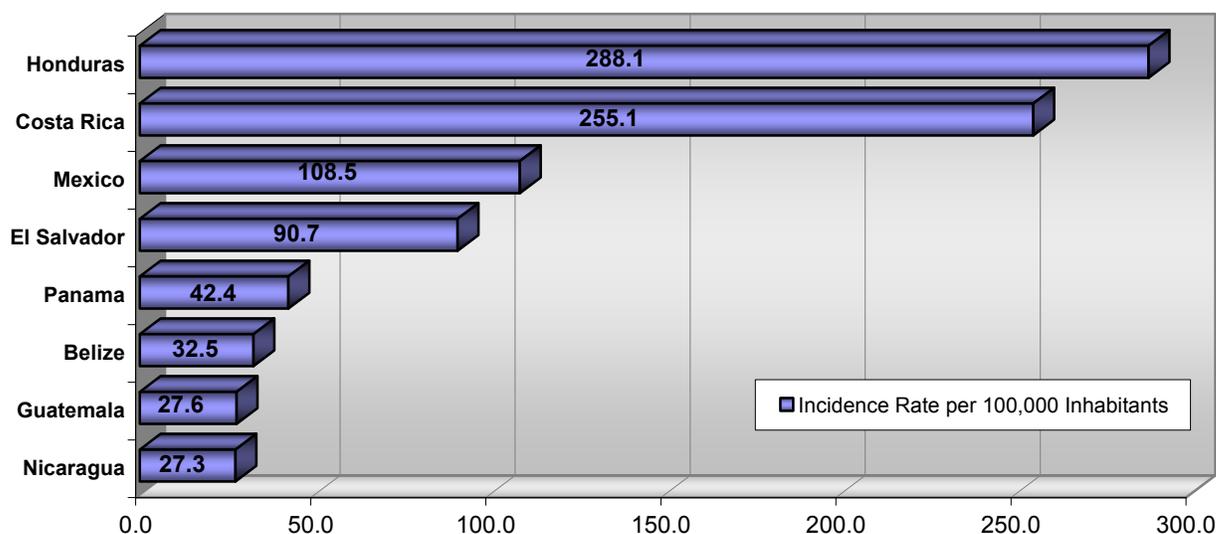
For 2009, 4,639 cases of dengue have been reported throughout the Caribbean, including 304 cases of DHF and 3 deaths.

⁴ Central America includes Belize, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

▪ Outbreaks in Central America and Mexico, 2009

To date, no outbreaks of dengue have been reported in Central America. In this subregion, most dengue transmission starts with the beginning of the rainy season, from the month of May onwards, and usually ends between October and November.

Figure 5: National Incidence Rates for Dengue per 100,000 Inhabitants, Central American Countries, 2008



* Rates calculated based on the population at risk in each country.

Caribbean Subregion⁵

This subregion accounted for 3.9% (n = 168,819) of the total number of cases reported in the Region between 2001 and 2007, with 2,217 cases of dengue hemorrhagic fever and 284 deaths concentrated in the Dominican Republic, where 77% of the deaths (n = 220) occurred. During this period in the Hispanic Caribbean, the countries with the most cases were Puerto Rico and the Dominican Republic; while during the same period in the non-Hispanic Caribbean, French Guiana, Guyana, Martinique, and Trinidad and Tobago reported the highest number of cases.

The four serotypes circulated in the Caribbean, but DEN-1 and 2 predominated.

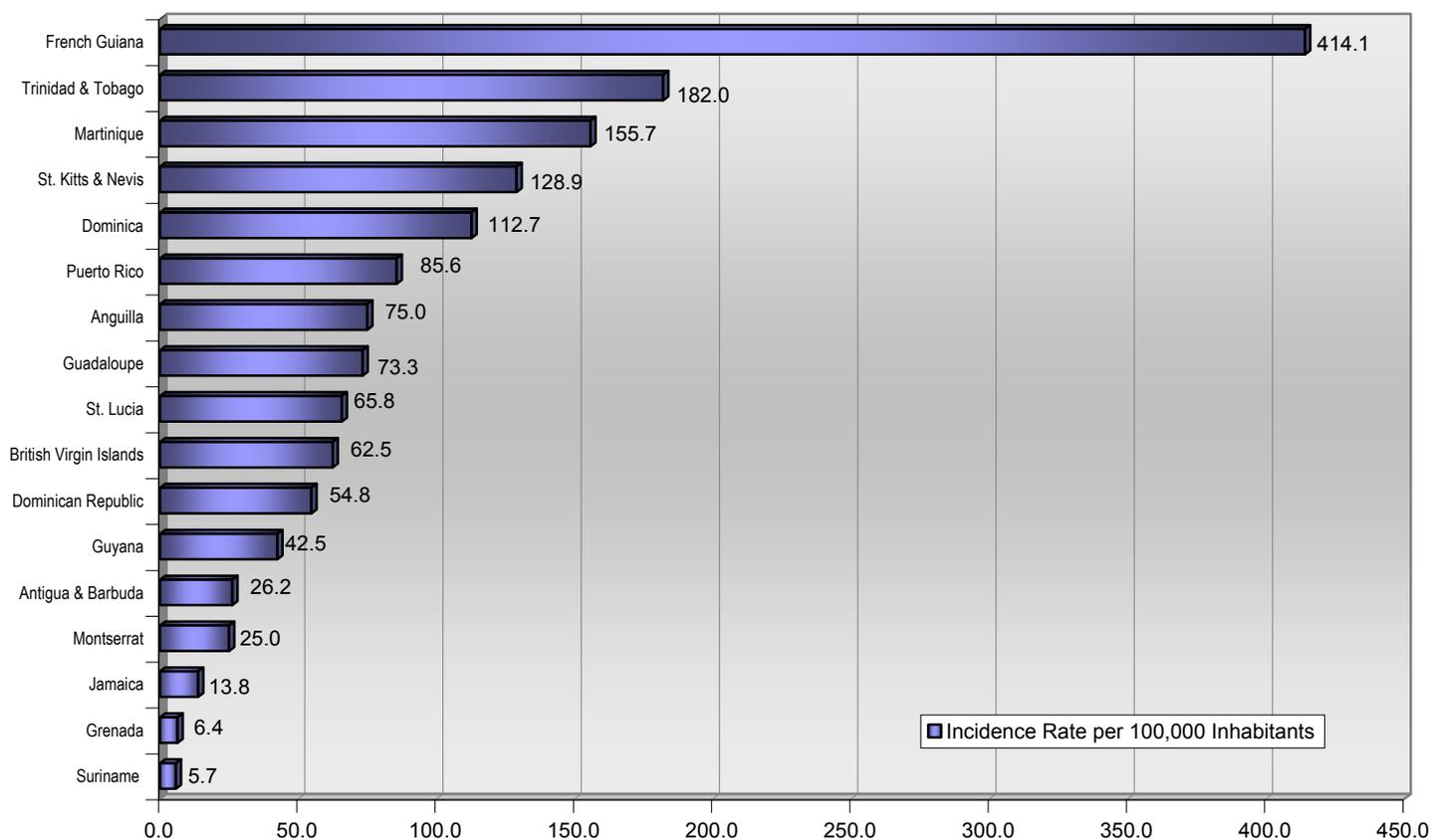
⁵ The Hispanic Caribbean includes Cuba, the Dominican Republic, and Puerto Rico.

The non-Hispanic Caribbean includes Anguilla, Antigua and Barbuda, Aruba, Bahamas, Barbados, Bermuda, British Virgin Islands, Cayman Islands, Curacao, Dominica, French Guiana, Grenada, Guadeloupe, Guyana, Haiti, Jamaica, Martinique, Montserrat, Netherlands Antilles, St. Bartholomew, St. Kitts and Nevis, St. Lucia, St. Martin, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, Turks and Caicos Islands, and US Virgin Islands.

In 2008, 8,038 cases were reported in the Hispanic Caribbean, and 6,009 cases in the non-Hispanic Caribbean. The total number of cases of DHF reported in the Hispanic Caribbean was 273, with 50 deaths; while in the non-Hispanic Caribbean, there were 24 DHF cases and 3 deaths. Of the total of 53 deaths, 91% (n = 48) occurred in the Dominican Republic. The countries with the highest incidence rates in 2008 were French Guiana, Trinidad and Tobago, and Martinique (see Figure 6).

For 2009, a total of 2,342 dengue cases have been reported throughout the Caribbean, with 26 cases of DHF and 4 deaths.

Figure 6: National Incidence Rates for Dengue per 100,000 Inhabitants, Caribbean Countries, 2008



* Rates calculated based on the population at risk in each country.

■ Outbreaks in the Caribbean, 2009

Most epidemic activity for dengue in this subregion usually starts with the rainy Season during the second semester of each year. However, this year a different pattern was observed with continuing rain in several countries. French Guiana is currently experiencing an outbreak, and Aruba and Guyana have requested technical support for vector control.

- **French Guiana:** Up to Epidemiological Week 9, some 5,515 clinical cases of classic dengue were reported, with one case of dengue hemorrhagic fever and one death. The serotypes in circulation are DEN-1, 2, and 4; and the municipalities most affected include Sur l'île de Cayenne, Korou, and Saint Laurent. Vector control measures have been intensified through the application of insecticides and larvicides. At the same time, there have been education and communication campaigns.

▪ North America (United States and Canada)

Most of the reported cases of dengue in the United States and Canada are imported, coming from the endemic zones of Asia, the Caribbean, Central America, and South America (CDC, 2006). From 2001 to 2007, the United States reported 796 cases of dengue, most of them imported. However, dengue outbreaks have been reported in Hawaii, and sporadic outbreaks with local transmission have occurred in Texas on the Mexican border. In 2008, the United States reported 100 imported cases of dengue; this figure is still being revised and is subject to final adjustments.

▪ Activities at the Individual and Community Level

PAHO/WHO continues to provide technical support for the prevention and control of dengue outbreaks in the Region through its group of experts who make up the GT⁶-Dengue International Task Force, mainly in the areas of epidemiological surveillance, vector control, clinical patient management, and risk communication.

However, community mobilization and participation are needed to prevent and control dengue. Actions taken within households and in the immediate vicinity must be promoted and implemented. Among them, the following can be cited:

- Keeping any receptacles for water storage closed or covered.
- Washing out the inside of water storage containers or at least changing the water once a week (in tanks, sinks, and barrels). This keeps the larval stages of the mosquito from reaching adulthood.
- Changing the water in aquatic plants and vases once a week; and, if possible, eliminating these from the home.
- Destroying or eliminating any useless object that might accumulate water, such as bottles, cans, buckets, and carafes.
- Eliminating anything that might keep water from running from household water pipes, thus avoiding standing water.



⁶ GT: *Grupo Técnico*, or Technical Group.

- Keeping the patio and the area around the house free of trash and any other objects that might accumulate water and that act as potential vector breeding sites.
- Used tires should be eliminated or protected so as to keep them from accumulating water, since *Aedes aegypti* can use them as an efficient breeding site for mosquito reproduction.

Social communication messages on how to destroy or eliminate breeding sites need to be aimed at those sites that, in technical terms, have shown themselves to be the most productive in producing the greatest amount of adult mosquitoes. This information should be provided by the vector control team.

• Meetings and Activities

- Integrated MERCOSUR meeting on dengue, yellow fever, and rubella, scheduled to take place 1–2 April 2009 in Asunción, Paraguay.
- Monitoring and evaluation visit of the Integrated Management Strategy for Dengue Prevention and Control in Nicaragua (EGI⁷-Dengue Nicaragua), scheduled to take place 11–15 May 2009 in Managua, Nicaragua.
- Workshop to formulate the Integrated Management Strategy for Dengue Prevention and Control in Puerto Rico (EGI-Dengue Puerto Rico), scheduled to take place 18–22 May 2009 in San Juan, Puerto Rico.
- Workshop to strengthen the national dengue program in Cuba. Congress to commemorate the 70th anniversary of the founding of the Pedro Kourí Institute of Tropical Medicine (IPK), a PAHO/WHO Collaborating Center for dengue, an event that—together with the 7th Cuban Congress of Microbiology and Parasitology and the 4th National Congress of Tropical Medicine—will take place 1–4 June 2009 in Havana, Cuba.
- Workshop to formulate the Integrated Management Strategy for Dengue Prevention and Control in the Caribbean (EGI-Dengue Caribbean), scheduled to take place 8–12 June 2009 in Martinique.
- Monitoring and evaluation visit to formulate the Integrated Management Strategy for Dengue Prevention and Control in the Dominican Republic (EGI-Dengue Dominican Republic), scheduled to take place from 29 June to 3 July 2009 in Santo Domingo, Dominican Republic.
- 9th International Course on Dengue, scheduled to take place 10–21 August 2009 in Havana, Cuba. During this course will be held the 2nd meeting of the Dengue Laboratory Network of the Americas (*Red de laboratorios de dengue de las Américas / RELDA*).

⁷ EGI: *Estrategia de gestión integrada*, or integrated management strategy.