

LEISHMANIASIS

Leishmaniasis: Epidemiological Report of the Americas

PRESENTATION

Leishmaniasis are present in all continents and are endemic in 98 countries, with more than 350 million people at risk.

In the Americas, leishmaniasis represents a significant public health problem due to its high morbidity and wide geographic distribution. Its complex transmission cycle includes different species of parasites, vectors and reservoirs. Poor populations with difficult access to health services are most affected.

Strengthening surveillance and disease control against leishmaniasis was taken as a commitment by countries in the World Health Assembly, Resolution WHA 60.13¹, 2007. This commitment was reinforced in the Americas, by Pan American Health Organization (PAHO) Directing Council through the adoption of Resolution CD49.R19², 2009.

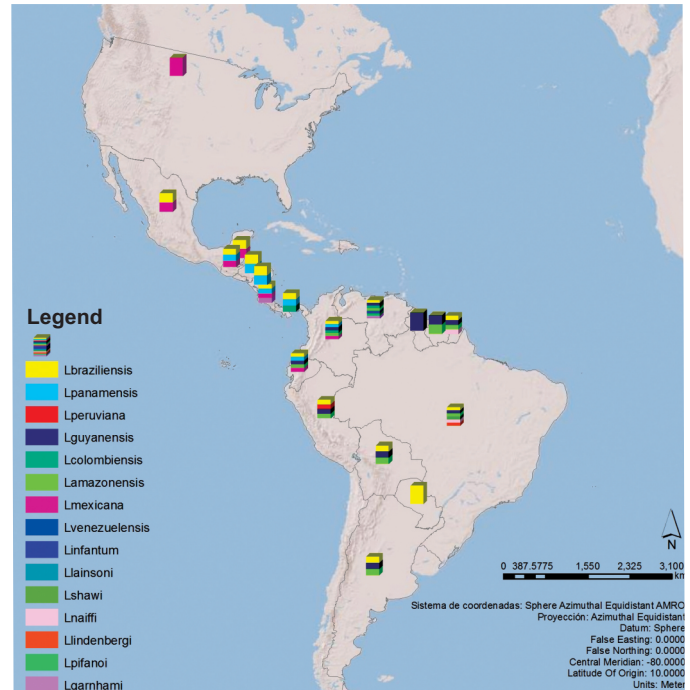
The PAHO through the Regional Program on Leishmaniasis contributes technical cooperation to the countries of the region. In particular, the Regional Program aims to improving access to diagnosis and treatment of affected persons, strengthening surveillance and control activities and processes for decision making, building capacity, and advancing communication between local health professionals and managers within the region.

This report presents the epidemiological situation of leishmaniasis in the region and is a joint effort of the National Programs on leishmaniasis. Despite some data limitations, a number of epidemiological parameters can be analyzed and discussed to inform efforts for the improvement of leishmaniasis surveillance in the Americas.

INTRODUCTION

In the Americas, leishmaniasis are zoonotic diseases caused by different species of *Leishmania* protozoa and

Figure 1. Distribution of *Leishmania* species in the Americas, 2009



Source: WHO-PAHO

transmitted to humans and animals by insects of the family Psychodidae. In humans it causes a set of clinical syndromes that may involve the skin, mucous membranes and viscera.

The parasite is a protozoan belonging to the Trypanosomatidae family. The genus *Leishmania* is divided into two subgenera, *Leishmania* and *Viannia*, and comprises 22 species pathogenic to man, of which 15 have been identified in the Americas, Figure 1.

Vectors of *Leishmania* parasites are hematophagous Diptera (Psychodidae family, subfamily Phlebotominae), commonly known as sand flies. In the Americas the genus *Lutzomyia* is the most important, with over 400 species identified. However, few more than 50 species are considered involved in the transmission of *Leishmania* in the region.

In the Americas, the cycle of transmission of leishmaniasis is zoonotic, requiring the presence of an animal reservoir

1 - http://www.who.int/neglected_diseases/mediacentre/WHA_60.13_Esp.pdf - 2 - <http://www2.paho.org/hq/dmdocuments/2009/CD49.R19-Eng.pdf>

for the maintenance of the parasite in the environment. Sylvatic reservoirs identified for different species of *Leishmania* include marsupials (*Didelphis spp.*), sloth (*Choloepus spp.*, *Bradypus spp.*), anteater (*Tamandua tetradactyla*), fox (*Cerdocyon thous*) and rodents (*Rattus spp.*, *Proechimys spp.*, *Nectomys spp.*, *Oryzomys spp.* etc.). In the urban environment, the dog is the main reservoir of *L. infantum chagasi*.

Leishmaniasis show clinical polymorphism, depending on the species of *Leishmania* and the immune response mounted by the host. Clinical manifestation ranges from benign and self-limiting cutaneous leishmaniasis, to grave forms such as mucosal leishmaniasis, diffuse cutaneous leishmaniasis and visceral leishmaniasis.

EPIDEMIOLOGICAL SITUATION

Cutaneous and Mucosal Leishmaniasis

Eighteen countries of the region reported cases of cutaneous and mucosal leishmaniasis to PAHO-WHO in the period 2001 to 2011. Mexico and Venezuela reported data only for 2011 (Table 1).

Between 2001 and 2011, 638,702 cases were reported in the region, with an annual average of 58,063 cases and 2005 reported the highest number of cases, Table 1.

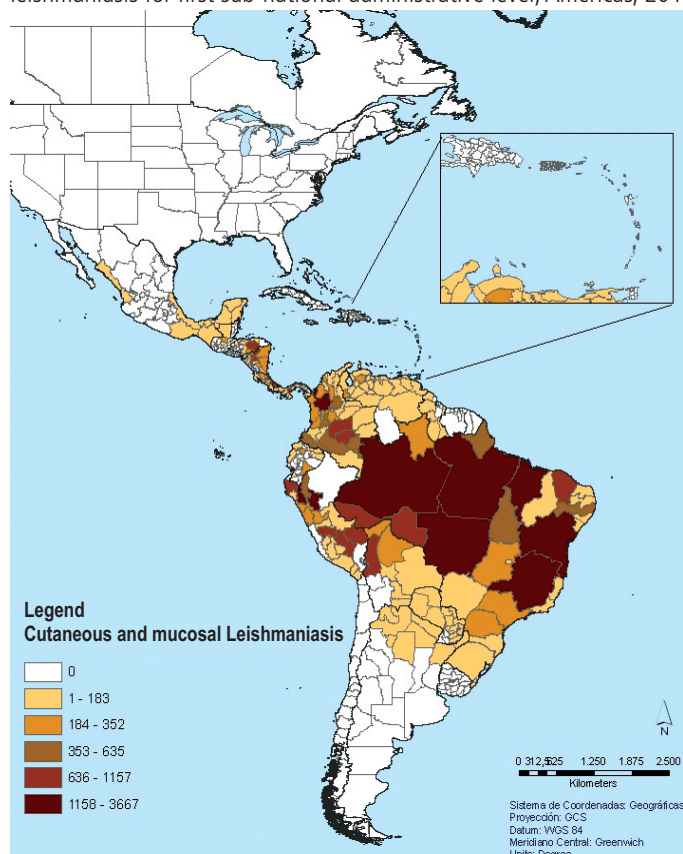
Table 1 shows that, for the period 2001 to 2011, 257,812

Table 1 - Cases of cutaneous and mucosal leishmaniasis, by country and sub-region, the Americas 2001-2011

Sub-region/ Countries	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Americas	47.286	56.243	61.518	59.439	67.949	62.017	59.027	52.324	57.265	58.347	57.287
México	-	-	-	-	-	-	-	-	-	-	468
Andean Area	13.165	17.841	19.864	22.860	30.697	29.177	27.852	20.562	24.886	25.868	25.040
Bolivia	2.043	2.518	2.452	2.819	2.657	3.152	3.153	1.838	1.218	1.809	1.636
Colombia	4.130	7.038	9.267	10.698	18.043	16.241	13.331	9.595	15.420	14.818	9.684
Ecuador	1.754	1.253	1.336	2.494	1.925	1.536	1.185	1.479	1.735	1.629	965
Peru	5.238	7.032	6.809	6.849	8.072	8.248	10.183	7.650	6.513	7.612	11.204
Venezuela	-	-	-	-	-	-	-	-	-	-	1.551
Central America	7.186	8.135	9.336	6.744	9.687	9.717	8.903	11.037	9.959	9.637	10.134
Costa Rica	425	690	948	1.061	1.676	1.870	1.807	818	2.025	1.143	1.376
El Salvador	18	46	24	76	24	46	36	31	-	4	17
Guatemala	-	1.549	1.143	870	1.243	602	287	494	519	410	549
Honduras	957	1.260	1.684	797	1.574	1.300	855	1.759	1.502	1.362	1.736
Nicaragua	2.924	2.200	3.716	2.103	3.521	2.125	3.719	5.826	4.047	3.497	3.235
Panama	2.862	2.390	1.821	1.837	1.649	3.774	2.199	2.109	1.866	3.221	3.221
Brazil	26.328	28.268	30.812	28.737	26.685	22.397	21.530	20.123	21.989	22.397	21.306
Southern Cone	607	1.999	1.496	1.089	873	720	736	588	422	430	324
Argentina	157	748	348	358	282	257	201	208	163	166	140
Paraguay	450	1.251	1.148	731	591	463	535	380	259	264	184
No-Latin Caribbean	-	-	10	9	7	6	6	14	9	15	15
Guyana	-	-	10	9	7	6	6	14	9	15	15

Source: PAHO-WHO: Data reported by Leishmaniasis programs of countries of the Region of the Americas.

Figure 2. Distribution of cases of cutaneous and mucosal leishmaniasis for first sub-national administrative level, Americas, 2011.



Source: PAHO-WHO: Data reported by Leishmaniasis programs of countries of the Region of the Americas.

cases (40.36%) were registered in the Andean region, and 100,475 cases (15.73%) in Central America. Three countries, Brazil with 270,572 cases (42.36%), Colombia with 128,535 cases (20.08%) and Peru with 85,410 cases (13.37%) contributed with 75.8% of all the cases reported in the period 2001-2011 in the region.

For 2011 only, we analyzed the epidemiological attributes of the disease and those operational indicators relating to leishmaniasis surveillance. We also analyzed the geographical distribution of cases of cutaneous and mucosal leishmaniasis at the first sub-national administrative level (departments, states, provinces, regions, etc.), Figure 2.

In 2011 57,287 cases were registered in the Americas with an incidence rate of 16.51 cases per 100,000 population. Colombia (9,684 cases), Peru (11,204 cases) and Brazil (21,306 cases) reported the highest number of cases, although the highest incidence

rates were observed in Panama (90.54 / 100,000 pop.) and Nicaragua (65.38 / 100,000 pop.), Figure 3.

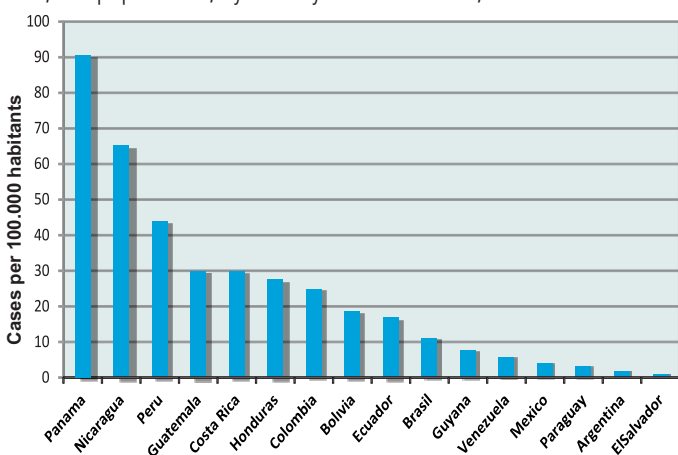
In 2011, out of 52,629 cases with information available on clinical forms, 95,7% corresponded to the cutaneous form and 4,3% to the mucosal or mucocutaneous form. The countries with the highest proportion of cases of mucosal leishmaniasis were Paraguay with 44,6% of cases, Bolivia with 16,2% and Argentina with 11,4%. It is worth mentioning that Panama did not report information on clinical forms, and Ecuador did only for half of the cases.

44,082 cases (76.9%) reported in 2011 had data available on gender. Of these, 70.6% were male. In Panama, Costa Rica and Nicaragua the distribution of cases by gender was even.

52,410 cases (91.5%) reported in 2011 had data available on age. Of these, 36,670 cases (70%) were in the age group 10 to 50 years old. The predominance of cases in this age group was observed in all sub-regions and countries, except for some Central American countries, such as Nicaragua and Panama that reported a greater proportion of cases in children under 10 years of age (49.1% and 55.0%, respectively). Notably, Paraguay (40.8%), Argentina (32.6%), Mexico (21.4%) and Brazil (19.7%) reported the highest proportion of cases in people over 50 years of age. This is important as this age group requires greater care in the prescription and monitoring of treatment due to drug toxicity and increased vulnerability due to pre-existing conditions.

Regarding the criteria for confirmation of cases in 2011, 75.6% were diagnosed by laboratory tests, but for 16.4% of these it was not possible to determine the criteria used by the health services for the confirmation of the diagnosis.

Figure 3. Incidence rate of cutaneous and mucosal leishmaniasis per 100,000 populations, by country of the Americas, 2011.



Source: PAHO-WHO: Data reported by Leishmaniasis programs of countries of the Region of the Americas.

This was the case for Argentina, Bolivia, Costa Rica and Panama.

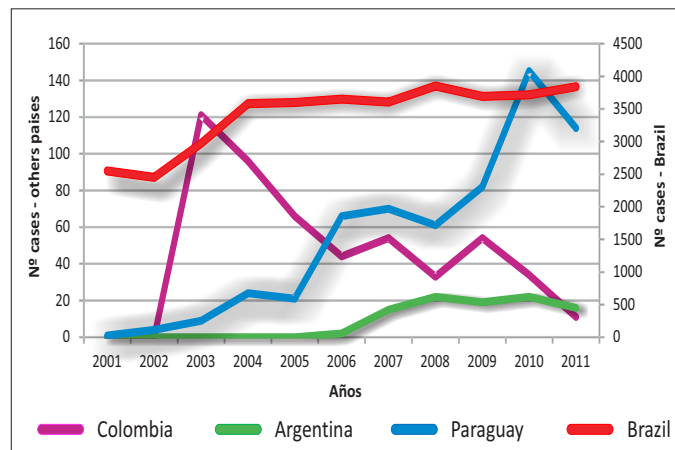
Of all the cases in 2011, only 29.9% (17,148 cases) had information on clinical course. Of these, clinical cure was reported for 16,928 (98.7%) cases, and death for 220 cases (1.2%) reported by Brazil (113), Peru (105) and Paraguay (2). Venezuela and Mexico were the countries that had a higher percentage of cases for which information was available on the clinical course (99.2% and 92.3%, respectively), followed by Honduras (84%), Nicaragua (79.9%), Brazil (50.1%), Paraguay (22.3%) and Ecuador (20.3%). This information was not available for other countries.

VISCERAL LEISHMANIASIS

38,808 cases of visceral leishmaniasis were recorded in the Americas in the period 2001 to 2011 (Mexico and Venezuela only reported data for 2011). Although 37,503 of these (96.6%) were reported by Brazil, we observe an increase in the number of cases of visceral leishmaniasis in some countries of the Region in recent years.

In the period 2001 to 2011, more than 10 countries

Figure 4. Visceral leishmaniasis cases by country, Americas, 2001 to 2011.

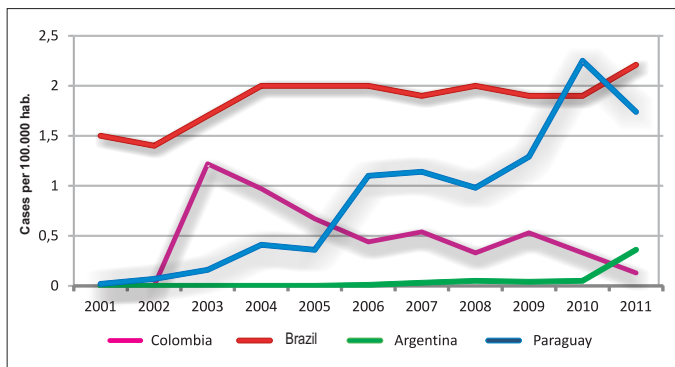


Source: PAHO-WHO: Data reported by Leishmaniasis programs of countries of the Region of the Americas.

reported cases of visceral leishmaniasis. Figure 4 shows the increasing numbers over the years in Paraguay (597 total period) and Argentina (96 total period). Colombia reported a total of 513 cases in the period, mostly contributed by a large surge in 2003 (Figure 4). The other seven countries that reported cases in the period were: Honduras (40), Nicaragua (26), El Salvador (12), Guatemala (4), Venezuela (15), Bolivia (1) and Mexico (1). Figure 5 shows similar time trends for the incidence rates.

In 2011 alone, 58 first sub-national administrative units

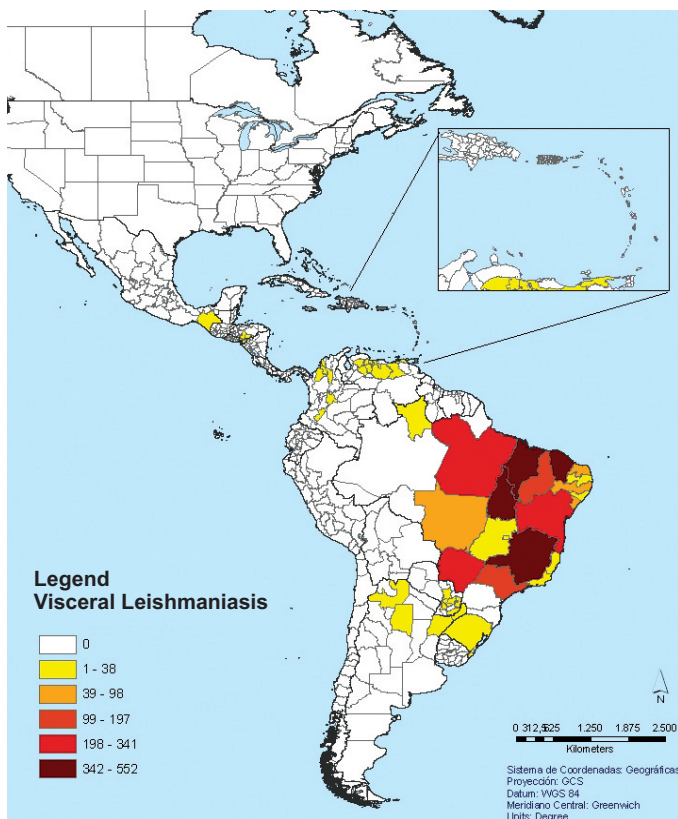
Figure 5. Incidence of visceral leishmaniasis by countries, Americas, 2001 to 2011.



Source: PAHO-WHO: Data reported by Leishmaniases programs of countries of the Region of the Americas.

(departments, provinces, states or regions depending on the administrative division in each country) in 8 countries reported 4004 cases of visceral leishmaniasis, (Figure 6). The incidence rate of the disease in the region in 2011 was 2.05 cases per 100,000 population. The largest number of

Figure 6. Distribution of cases of visceral leishmaniasis by country and first sub-national administrative level, Americas, 2011.



Source: PAHO-WHO: Data reported by Leishmaniases programs of countries of the Region of the Americas.

cases was reported in men with 61.7% (2,469) of cases. Children under 5 years of age were mostly affected (1,456 cases, 36.6%), followed by the age group 20 to 50 years old, with 1,230 cases (30.9%).

3,519 (87.8%) cases of visceral leishmaniasis were confirmed by laboratory testing. Information on the clinical course was available for 20,6% of the cases and only five countries (Argentina, Brazil, Mexico, Paraguay and Venezuela) of the 8 countries that reported in 2011. Overall, the recovery rate in the region was 71% (2845 cases) and the fatality rate was 8.4% (335 cases).

FINAL REMARKS

Despite advances in leishmaniasis surveillance in the region, significant challenges remain, in particular relating to the quality of data and data-related processes, analyses, and methodologies for decision making.

This epidemiological report presents a simple descriptive analysis of leishmaniases in the region. In doing so, it shows basic weaknesses of the regional information systems, such as lack of epidemiological data and that on surveillance related processes for some countries. Other studies on leishmaniases in the Region have also shown the occurrence of case underreporting.

A large effort is being carried out to consolidate leishmaniases data into a regional information system to facilitate access by all countries to standardized data and indicators. This is expected to improve surveillance design, decision making and interventions planning (health services organization, training health professionals for monitoring and care, improved diagnosis, acquisition of necessary medicines, etc.). The ultimate goal is to improve the access of those affected by leishmaniases to quality diagnostic and treatment services. Moreover, access to better epidemiological information will guide technical cooperation activities and help in the definition of research priorities on leishmaniases.

ACKNOWLEDGEMENTS

To all professionals of Leishmaniases National Programs and epidemiological surveillance services in the Region, PAHO Neglected Infectious Diseases team, disease control focal points in each country and Panaftosa, who have worked in conjunction with the Regional Program on Leishmaniases to strengthen the supervision and control of the disease in the Region.