

# LEISHMANIASIS

## Epidemiological Report of the Americas

### Introduction

The leishmaniasis are diseases with elevated incidence rate and wide geographic distribution in the Americas. They remain a challenge for national and regional programs, since they require a technical, operative and political effort to sustain the systematic development of surveillance, prevention and control actions towards these diseases.

In 2017, delegates of the endemic countries, who attended the Regional Leishmaniasis Meeting, approved the Leishmaniasis Plan of Action 2017-2022 for the Americas, which details the goals, indicators and actions to reinforce the commitments of PAHO's Directing Council Resolution CD55.R9 of 2016.

The objective of the Plan is to reduce morbidity and mortality by leishmaniasis in the Region through strengthening of the diagnosis, treatment, rehabilitation, prevention, surveillance and control. It also has four regional goals which are to be reached by 2022: 1) Reduce the visceral leishmaniasis fatality rate by 50%; 2) reduce cutaneous/mucosal leishmaniasis deaths by 90%; 3) reduce the proportion of cutaneous leishmaniasis in children under 10 years old by 50%; and 4) reduce the visceral leishmaniasis incidence according to the epidemiological scenario of each country.

Regarding visceral leishmaniasis, 96% of the cases of the region are reported in Brazil and we highlight that the number of deaths by this disease has increased since 2012 and the fatality rate of the Americas has reached 7.9% in 2016, which is the highest rate compared to other continents. The proportion of cutaneous leishmaniasis in children under 10 years old has also reached its highest value in 2016 (15.5%), with some countries registering over 40% of the cases in this age group (Figure 1).

In the map below, it is possible to see the cutaneous and mucosal leishmaniasis infographic, which contains detail information on the epidemiological profile, and surveillance, control and assistance data of each country. **Click each country to access the infographic.**

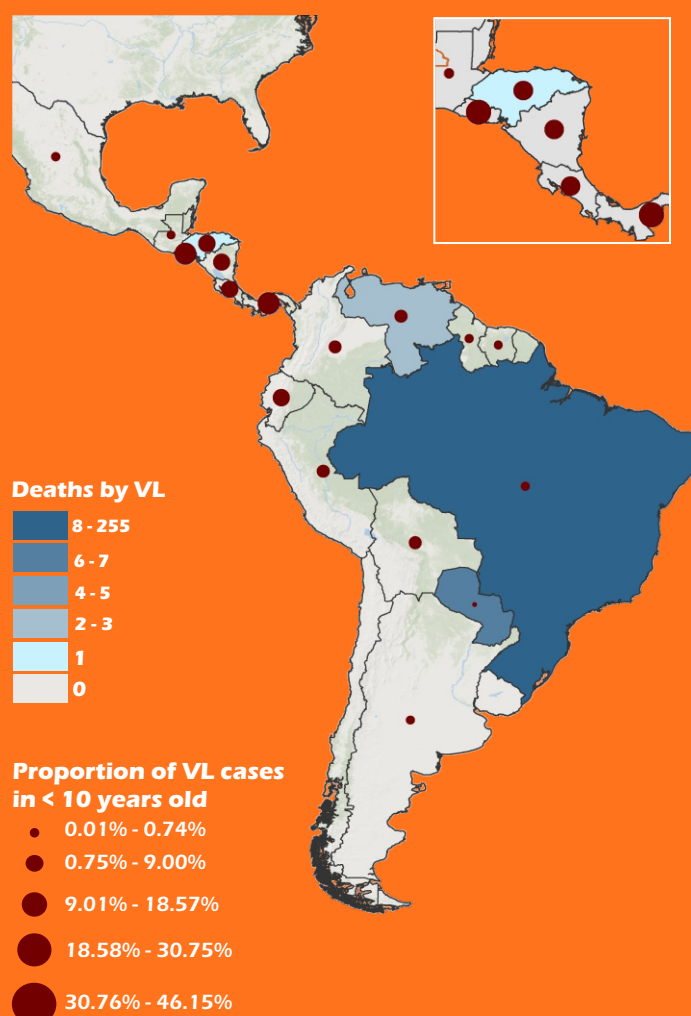


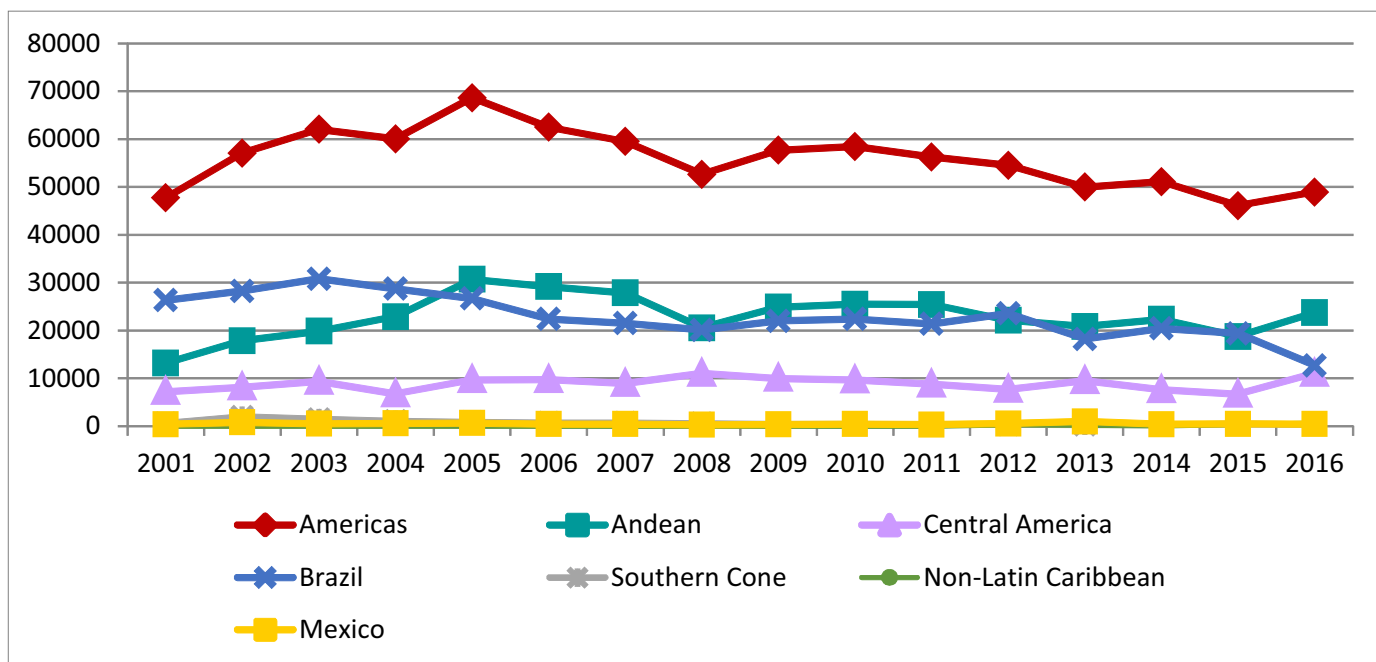
Figure 1. Proportion of cutaneous leishmaniasis cases in children under 10 years old and number of deaths due to visceral leishmaniasis, Americas, 2016

Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services  
Accessed in: December 1st 2017.

# Epidemiological status

## Cutaneous and mucosal leishmaniasis

Cutaneous and mucosal leishmaniasis (CL/ML) is endemic in 18 countries of the Americas; however, the cases reported to the Pan American Health Organization (PAHO/WHO) did not include data from French Guyana, which reports directly to France. From 2001-2016, 892,846 new CL cases distributed in 17 of the 18 endemic countries were reported to PAHO/WHO. The historical series shows a reduction of cases from 2009-2015 in the region; nevertheless, 2016 registered an increase of 6.15% when compared to the previous year; an increase was observed in the Central America (66%) and Andean (27%) sub regions (**Figure 2**).

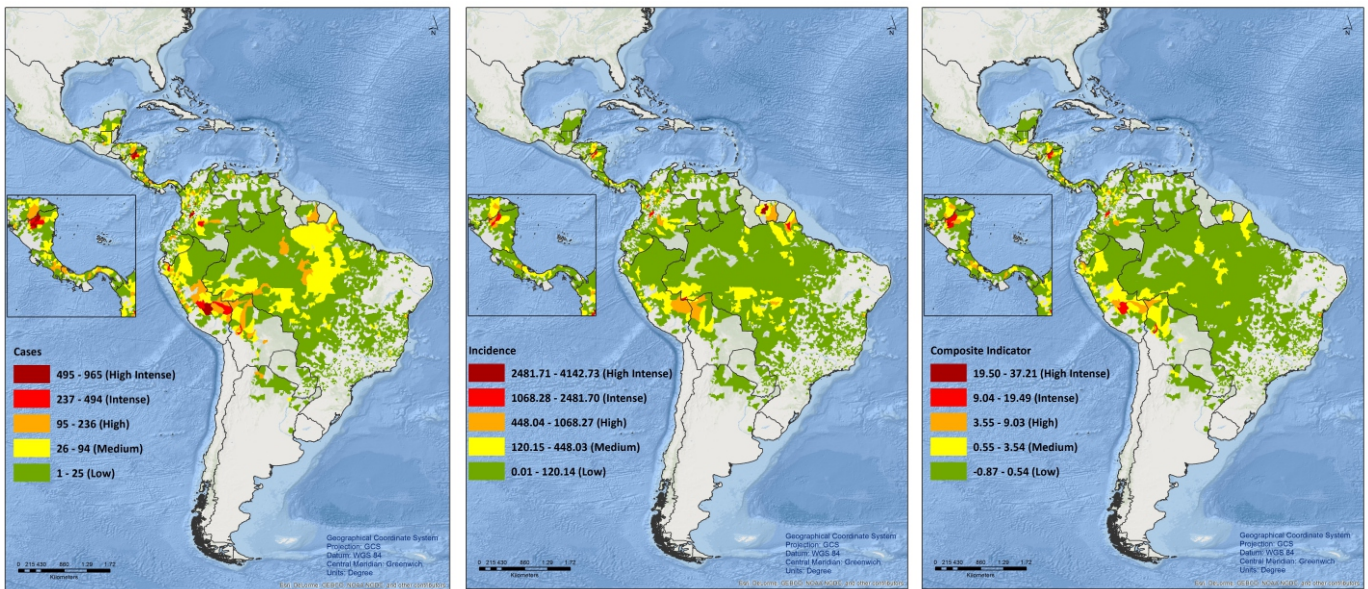


**Figure 2. Number of cutaneous and mucosal leishmaniasis cases in the sub regions and in selected countries of the Americas, 2001-2016.**  
Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services  
Accessed in: December 1st 2017.

In 2016, 17 endemic countries reported 48,915 CL/ML cases to the PAHO/WHO. The highest numbers were registered by Brazil (12,690), Colombia (10,966), Nicaragua (5,423) and Peru (7,271), which together account for 74.3% of the total number of cases in the region. The increase of just over 5% of CL/ML cases, when compared to the previous year, is caused by the increase in the number of reported cases in Colombia (31.3%), Peru (33%), Nicaragua (181.8%) and other countries, while, on the other hand, a reduction of approximately 34% (6,705) occurred in Brazil, which has a direct impact on the regional data. The incidence rate was 21.71 cases per 100,000 population, which is higher than the rate from 2015 (18.35 cases per 100,000 population). The highest incidence rates were registered in Suriname (267.9/100,000 population), Nicaragua (197.2/100,000 population) and Colombia (52.93/100,000 population), highlighting that there was a 157% rise of the incidence in Nicaragua, when compared to the incidence in the previous year (76.6/100,000 population).

In the Americas, CL cases were registered in 223 (70.8%) units of the first political administrative subnational level (departments, states, regions or provinces, according to each individual country division) and in 2,877 (23.9%) units of the second political administrative subnational level (municipalities, cantons, provinces, districts, etc.), of which 333 of them were units bordering with other countries with a total of 8,953 (18.3%) reported cases. Some countries, such as Argentina and Guatemala, presented more than 40% of their CL cases in border areas.

**Figure 3** shows the CL data by second administrative subnational level. For the analyses we used the data consolidation of the region, which was stratified and categorized by cases, incidence and CL composite indicator. The infographics (**Figure 1**) show the individual risk stratification of each country, taking into account only the data at the national level.



**Figure 3. Cutaneous leishmaniasis cases, incidence and composite indicator\*, stratified by risk of transmission at the second subnational administrative level\*\*, Americas, 2016.**

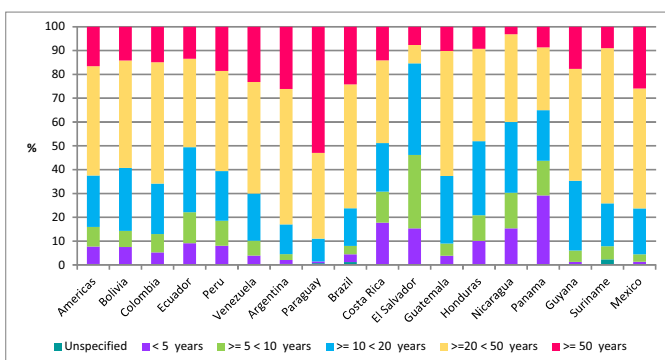
\* LCI: Cutaneous leishmaniasis composite indicator represented by cases, incidence and density rates.

\*\* Guyana is not represented because its data is only available at the first subnational administrative level (Regions).

Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services

Accessed in: December 1st 2017.

According to the data available in SisLeish, gender was registered in 99.9% (48,905) of the cases and 67.2% (32,886) of them were male. Regarding age, in 99.6% (48,702) of the cases this information is available and children under 10 years old represent 15.5% (7,583) of the records. Nonetheless, in some countries this proportion is over 30% of the cases, such as El Salvador (46.74%), Panama (43.7%), Costa Rica (30.75%) and Nicaragua (30.13%) (**Figures 1 and 4**). The reduction of CL in this age group is one of the goals of the Leishmaniasis Plan of Action and it requires the development of entomological surveillance actions, seeing that the proven intra or peridomicile transmission demands prevention,

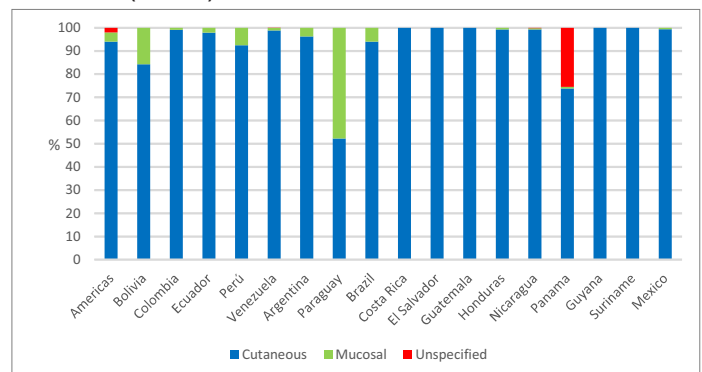


**Figure 4. Proportion of cutaneous and mucosal leishmaniasis by age and country, Americas, 2016.**

Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services. Accessed in: December 1st 2017.

surveillance and control actions.

The clinical form of the disease was reported in 98% (47,947) of the cases. Of the total, 1,940 (3.9%) of the cases were of the mucosal/muco-cutaneous form (ML), which is considered the most severe clinical form because if not promptly diagnosed and treated it can produce clinical complications, disabilities and mutilations. The countries that reported 85.5% of the ML cases were: Brazil (762), Peru (547) and Bolivia (349); Paraguay registered the highest proportion of ML cases (47.8%), as shown in **Figure 5**. The atypical cutaneous form was observed in 817 cases distributed in Honduras (93.2%), Nicaragua (5.4%) and El Salvador (1.4%).



**Figure 5. Proportion of cutaneous and mucosal leishmaniasis by clinical form and country, Americas, 2016.**

Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services. Accessed in: December 1st 2017.

Concerning confirmation criteria, 89.5% (43,805) of the cases were confirmed by laboratory diagnosis (**Figure 6**), which represents a 8% increase compared to 2015 (83.2%). The Leishmania/HIV coinfection occurred in 165 cases (0.34%) of different cutaneous and mucosal leishmaniasis forms, 56 of the cases from Colombia and the rest from Brazil.

From the total of 48,915 cases, 19,966 (40.8%) cured, 92 (0.19%) died and in 20,058 (59%) the outcome was not reported, representing a deterioration in the registration of outcomes as compared to 2015. From the total of deaths, 11 were associated to leishmaniasis, which could be a consequence of complications caused by the severe forms, adverse effects or inadequate use of the specific treatment for these diseases. The information on case outcome is not available in SisLeish for Bolivia, Colombia, Peru, Argentina, Panama and Guyana (Figure 7).

Figure 8 displays the monthly occurrence distribution of cutaneous and visceral leishmaniasis in the Americas. Even though there are limitations regarding this information, due to the long incubation period of the disease, lack of data from Nicaragua and Guyana, diverse forms of case registration and also different organization of the leishmaniasis surveillance services in the countries, these reports represent a progress in data analyses, given that for the first time monthly consolidates for the Region are shown.

It can be observed that, in 2016, leishmaniasis cases were diagnosed every month of the year, which is consistent with previous studies from different countries showing presence of the vector throughout the year. The monthly presentation for cutaneous leishmaniasis is more stable during the whole year in all 15 analyzed countries, while for visceral leishmaniasis, represented almost entirely by Brazil (96%), there was an increase mainly during the warmest and rainiest months.

## Visceral Leishmaniasis

Visceral Leishmaniasis (VL) is a potentially fatal disease with worldwide distribution in 76 countries, being endemic in 12 countries of the Americas. Approximately 96% of the cases registered in the Region are concentrated in Brazil; however, there has been a geographic expansion in Argentina, Colombia, Paraguay and Venezuela.

During 2001-2016, 55,530 humans VL cases were reported in the Americas, with an annual average of 3,457 cases. In 2016, there was a 67% reduction in the number of cases in Paraguay when compared to 2013. In this same period, Colombia and Venezuela had an increase of cases from 13 to 37 and 7 to 33 cases/year, respectively (Figure 9).

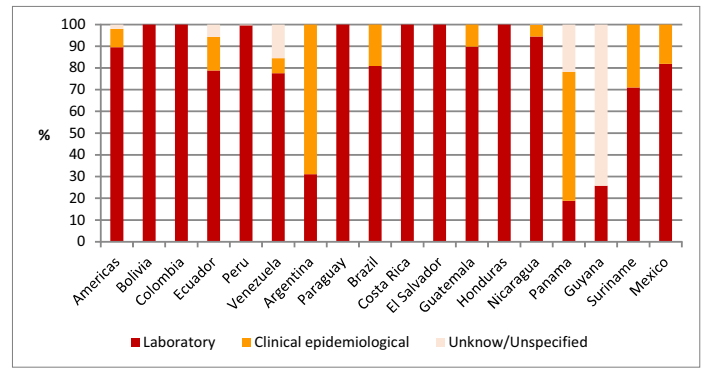


Figure 6. Proportion of cutaneous and mucosal leishmaniasis by confirmation criteria and country, Americas, 2016.

Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services. Accessed in: December 1st 2017.

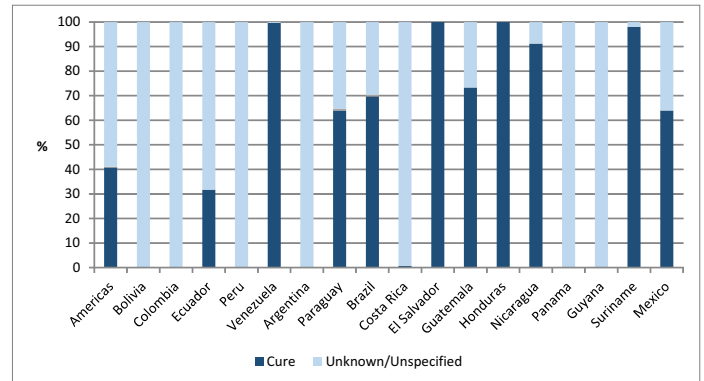


Figure 7. Cutaneous and mucosal leishmaniasis case outcome by country, Americas, 2016.

Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services. Accessed in: December 1st 2017.

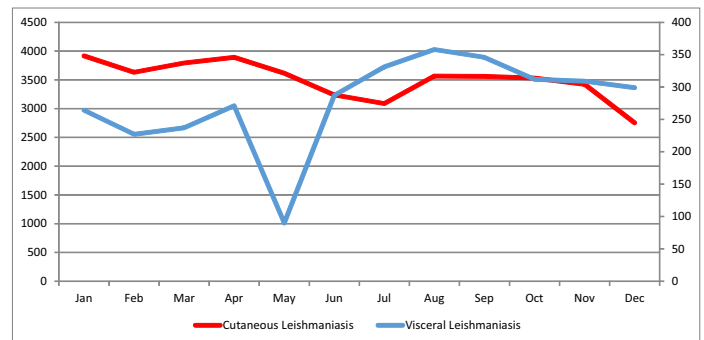


Figure 8. Cutaneous and visceral leishmaniasis monthly occurrence distribution, Americas, 2016

Right axis: visceral leishmaniasis; left axis: cutaneous leishmaniasis  
Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services  
Accessed in: December 1st 2017.

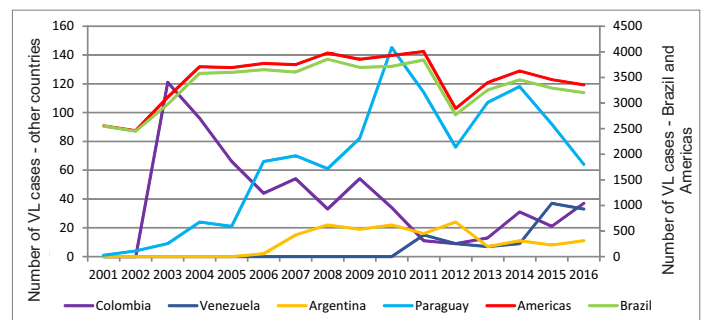


Figure 9. Countries with the highest number of visceral leishmaniasis cases, Americas, 2001-2016.

Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services  
Accessed in: December 1st 2017.

In 2016, 3,354 cases of visceral leishmaniasis were registered in the Americas with an incidence rate of 1.04 and 4.51 cases per 100,000 population, taking into account the total population and the population in the transmission area, respectively. Cases were reported in seven countries distributed in 54 departments/states and 935 municipalities (1-89 cases). There was a slight decrease in the total number of VL cases in the region compared to the previous year; nevertheless, Paraguay had a 43.7% reduction of cases while Colombia had a 76% increase (Table 1).

Table 1. Number, proportion of cases and incidence<sup>1,2</sup> of visceral leishmaniasis by country, Americas, 2013-2016

Countries	2013				2014				2015				2016			
	N°	%	Risk pop incidence <sup>1</sup>	Total Incid. <sup>2</sup>	N°	%	Risk pop incidence <sup>1</sup>	Total Incid. <sup>2</sup>	N°	%	Risk pop incidence <sup>1</sup>	Total Incid. <sup>2</sup>	N°	%	Risk pop incidence <sup>1</sup>	Total Incid. <sup>2</sup>
Brazil	3,253	95,8	4,35	2,71	3,453	95,2	5,21	2,62	3,289	95,2	4,09	2,54	3200	95,41	4,88	1,55
Paraguay	107	3,2	3,85	3,27	118	3,3	4,06	2,68	92	2,7	3,01	2,36	64	1,91	2,42	1,02
Venezuela	7	0,2	0,58	0,10	9	0,2	1,55	0,24	37	1,1	1,24	0,34	33	0,98	1,03	0,11
Colombia	13	0,4	2,65	0,29	31	0,9	3,3	0,41	21	0,6	7,04	0,63	37	1,10	3,54	0,34
Argentina	7	0,2	0,61	0,19	11	0,3	1,75	0,96	8	0,2	0,89	0,67	11	0,33	0,72	0,03
Honduras	3	0,1	1,21	0,67	2	0,1	3,12	0,31	6	0,2	2,4	0,34	7	0,21	2,25	0,08
El Salvador	1	0,05	2,74	0,90	0	0,0	0,0	0,0	0	0,0	0,0	0,0	0	0,00	0,0	0,00
Guatemala	1	0,05	2,58	1,98	0	0,0	0,0	0,0	2	0,1	1,9	1,9	2	0,06	2,2	0,01
Mexico	4	0,1	0,59	0,22	0	0,0	0,0	0,0	1	0,0	4,3	0,1	0	0,00	0,0	0,00
<b>Total</b>	<b>3.396</b>	<b>100,0</b>	<b>4,17</b>	<b>2,40</b>	<b>3.624</b>	<b>100,0</b>	<b>5,07</b>	<b>2,42</b>	<b>3.456</b>	<b>100,0</b>	<b>5,07</b>	<b>2,42</b>	<b>3354</b>	<b>100,00</b>	<b>4,51</b>	<b>1,04</b>

1- Incidence per 100,000 population considering the VL transmission area population in countries and regions.

2- Incidence per 100,000 population considering the total population of the countries with VL transmission

Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services. Accessed in: December 1st 2017.

Regarding gender, of the total number of VL cases 66.3% (2,223) were male. Concerning age, the most affected age group was children < 10 years old with 39.1% (1,313), followed by the ≥ 20 < 50 years old (34.7%) and the over 50 years old (16.96%) age groups. In Colombia, Honduras and Venezuela children under 5 years old were the most affected with 83.7%, 71.43% and 66.67% of the cases, respectively. Furthermore, the only two cases which occurred in Guatemala were of this same age group (Figure 10).

There was also a 32% increase in the number of VL/HIV coinfection cases with a total of 340 (10.14%) cases; 316 were registered in Brazil, 19 in Paraguay, 4 in Colombia and 1 in Venezuela (Figure 11).

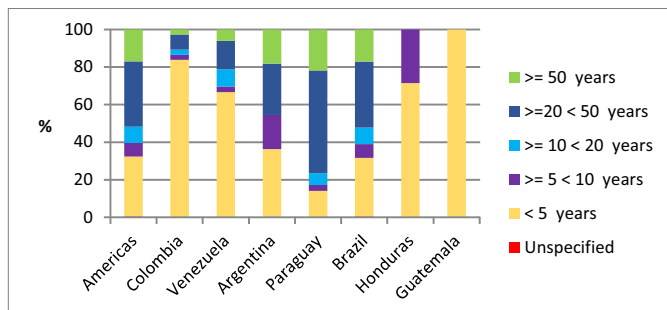


Figure 10. Proportion of visceral leishmaniasis by age group and country, Americas, 2016. Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services Accessed in: December 1st 2017.

Similar to 2015, there were no registered cases with unknown or unspecified information for the confirmation criteria. In 2016, 89.2% (2,993) of the cases were confirmed by laboratory diagnosis and 10.7% (361) by clinical and epidemiological criteria, showing an improvement in the laboratory diagnosis compared to the previous year (85.5%). The recovery rate was 70% (2,349) of the cases, representing a slight increase compared to 2015 (68.6%). The 2016 fatality rate was 7.9% which is the highest rate recorded in the Region since 2012. During the period of 2012-2016, 1,187 deaths by VL were reported to SisLeish, resulting in an average proportion of 7.09% deaths (Figure 12).

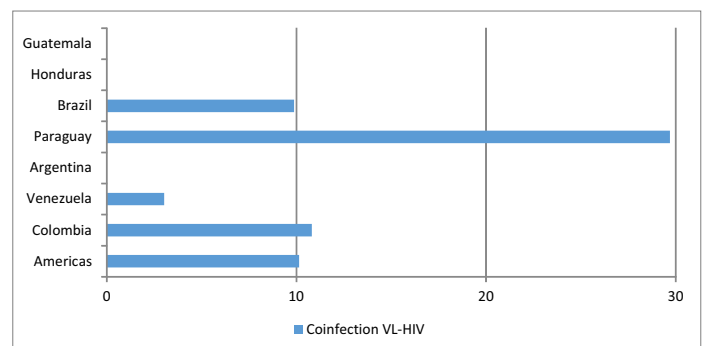


Figura 11. Proportion of VL/HIV coinfection cases by country, Americas, 2016. Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services Accessed in: December 1st 2017.

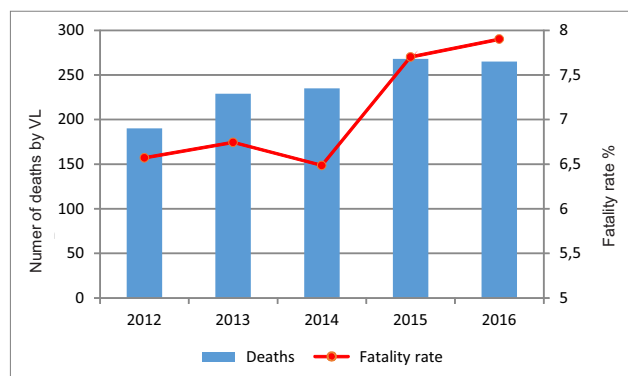
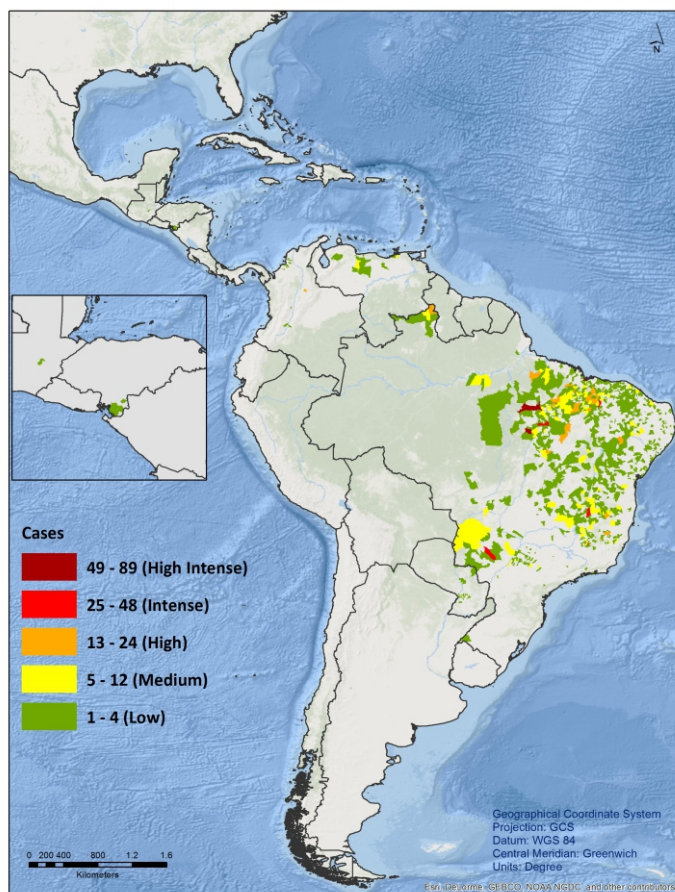


Figure 12. Number of deaths and fatality rate by visceral leishmaniasis, Americas, 2016. Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services Accessed in: December 1st 2017.

Visceral leishmaniasis continues to present a wide geographic distribution of human cases in Brazil, where the Northeast, Southeast and Mid-West regions stand out. Furthermore, the geographic dispersion is occurring in Paraguay and Argentina, in the borders with Brazil and Uruguay. In 2016, an expansion was observed in Roraima, North region of Brazil, where VL cases were registered at the border with Venezuela, which requires more attention and strengthening of surveillance in these municipalities (**Figure 13**).

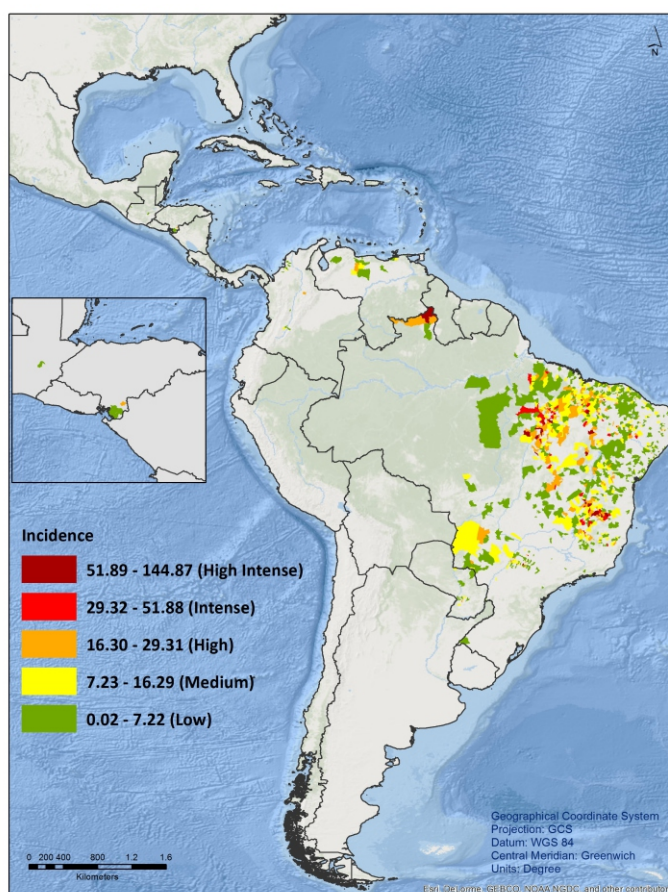
Since 2015, autochthonous cases (33) of canine visceral leishmaniasis (CVL) have been reported in Uruguay; however, there are still no records of human VL. Actions for surveillance and vector and domestic reservoir control, as well as search for human cases, keep being carried out in vulnerable and receptive transmission areas. In 2016, 215 CVL cases were reported to SisLeish, where 172 were from Salto Department and 43 from Artigas Department, place where the first CVL case was reported in July of the same year.

The maps shown in **Figure 14** display VL incidence at the second subnational administrative level. The individual use of this indicator has demonstrated some limitations, regarding guidance for surveillance and control actions to reach a big reduction of VL cases, due to the urbanization of this disease to large urban centers, where the largest number of cases occur in Brazil. Through the analyses of the regional data, the 5 biggest VL incidences were reported in Brazil in the following municipalities: Uiramutã – RR (144.87 cases/100.000 population); Nova Guataporanga – SP (87.11 cases/100.000 population); Redenção – PA (80.84 cases/100.000 population); Carmolandia – TO (79.02 cases /100.000 population) and Avelino Lopes – PI (78.46 cases /100.000 population).



**Figure 13. Visceral leishmaniasis cases at the second administrative level, Americas, 2016.**

Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services  
 Accessed in: December 1st 2017.



**Figure 14. Visceral leishmaniasis incidence\* at the second administrative level, Americas, 2016.**

\*Incidence per 100.000 population.  
 Source: SisLeish – PAHO/WHO: Data reported by the National Leishmaniasis Programs / Surveillance Services  
 Accessed in: December 1st 2017.

## Final Considerations

The analysis of leishmaniasis surveillance in 2016 had an overall improvement in the data, generating better quality indicators. However, we recognize that there are some limitations, such as the under-reporting of cases inherent to the countries' surveillance system, as well as an operational restraint of the system that does not allow the inclusion of “unknown municipalities” resulting in the exclusion of some cases from Colombia.

In the Americas there was a 5% increase in the number of cases due to increased numbers of this disease in Colombia, Peru and Nicaragua, while Brazil presented a 34% decrease for cutaneous leishmaniasis. In particular, Nicaragua had a 157% rise in its incidence rate resulting in the highest rate in the region due to an outbreak in the Cua municipality (Jinotega).

Abrupt changes in the number of cases, incidence or density rates have a direct effect on the analysis of the leishmaniasis composite index in the regional context, given that they have a direct impact on the intervals which is reflected on the risk stratification, as can be observed in the composite indicators maps from 2015 and 2016.

Since 2014, the VL data have shown a slight reduction in the region. Nevertheless, they have been rising in Colombia and Venezuela. We also draw attention to the 32% increase of VL-HIV coinfection cases compared to the previous year. This increase was mostly seen in Paraguay, which might be associated to the improvement of the diagnosis and availability of rapid tests for the early detection of HIV in people infected with VL. Furthermore, there was a progress in the proportion of VL cases diagnosed by laboratory methods and on information on the disease outcome. The VL fatality rate in the region is still a challenge due to the continuous rise since 2014, reaching the highest recorded rate in 2016.

Despite the known challenges there are still no available tools which could have a direct impact on the reduction of cases and deaths caused by leishmaniasis. We expect that with the efforts of the program managers, professionals and the population we can continue moving forward to achieve the goals of the Leishmaniasis Plan of Action for the Americas 2017-2022.

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PAHO/WHO Data, Maps and Statistics

- Epidemiological Report of the Americas; 2017
- Informe Epidemiológico das Américas; 2017 (Portuguese only)

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- 4a Reunión de los Programas Nacionales de Leishmaniasis en las Américas. Resumen Ejecutivo. RePLLeish; 2017 (Spanish only)
- Leishmaniasis Regional Program, Americas 2010 - 2017; 2017

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