

LEISHMANIASIS

Epidemiological Report of the Americas

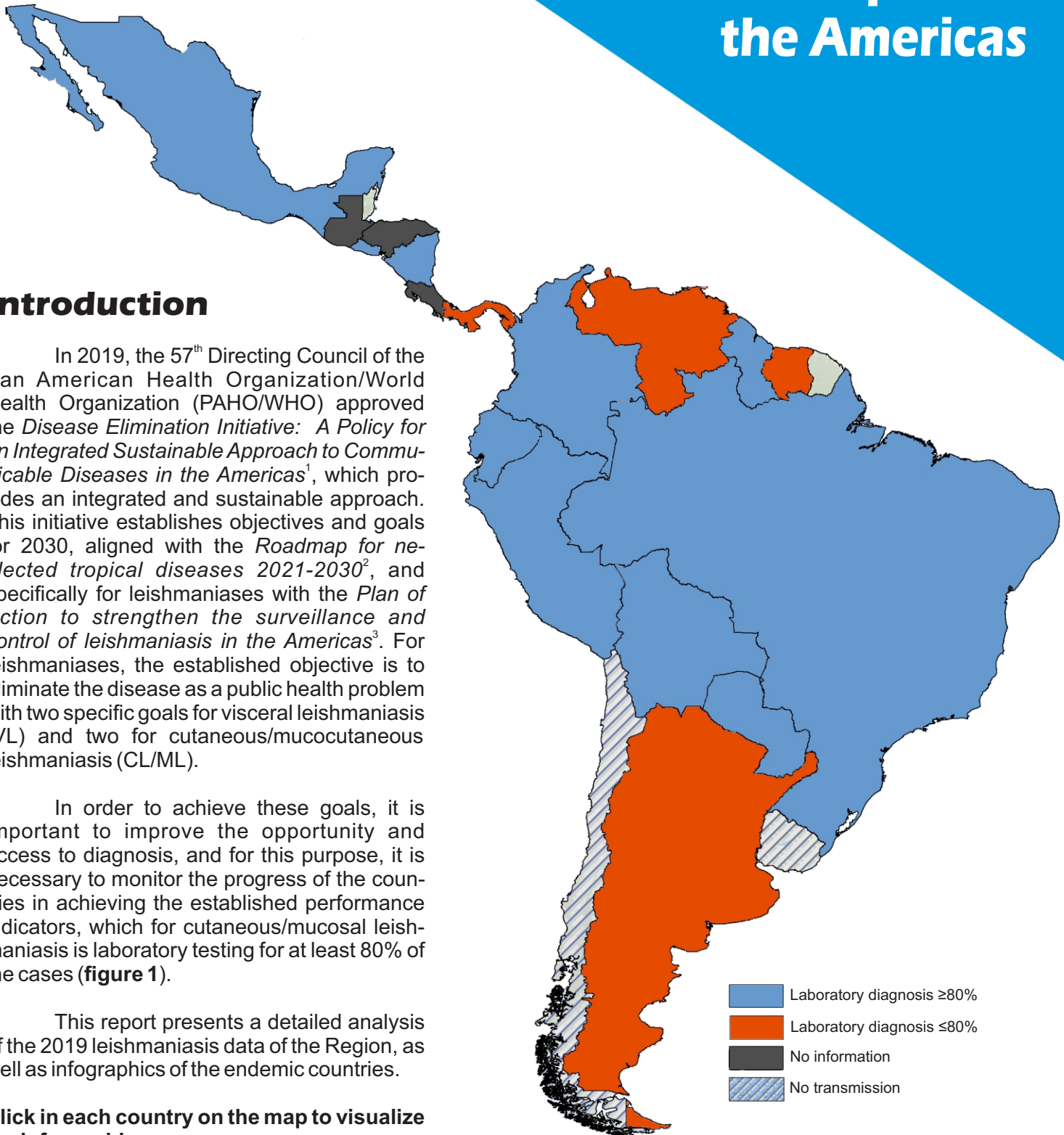
PAHO



Pan American
Health
Organization



World Health
Organization
REGIONAL OFFICE FOR THE
AMERICAS



Introduction

In 2019, the 57th Directing Council of the Pan American Health Organization/World Health Organization (PAHO/WHO) approved the *Disease Elimination Initiative: A Policy for an Integrated Sustainable Approach to Communicable Diseases in the Americas*¹, which provides an integrated and sustainable approach. This initiative establishes objectives and goals for 2030, aligned with the *Roadmap for neglected tropical diseases 2021-2030*², and specifically for leishmaniasis with the *Plan of Action to strengthen the surveillance and control of leishmaniasis in the Americas*³. For leishmaniasis, the established objective is to eliminate the disease as a public health problem with two specific goals for visceral leishmaniasis (VL) and two for cutaneous/mucocutaneous leishmaniasis (CL/ML).

In order to achieve these goals, it is important to improve the opportunity and access to diagnosis, and for this purpose, it is necessary to monitor the progress of the countries in achieving the established performance indicators, which for cutaneous/mucosal leishmaniasis is laboratory testing for at least 80% of the cases (**figure 1**).

This report presents a detailed analysis of the 2019 leishmaniasis data of the Region, as well as infographics of the endemic countries.

Click in each country on the map to visualize the infographics.

Figure 1. Diagnosis by laboratory testing performance indicator for cutaneous leishmaniasis by country, Region of the Americas, 2019.

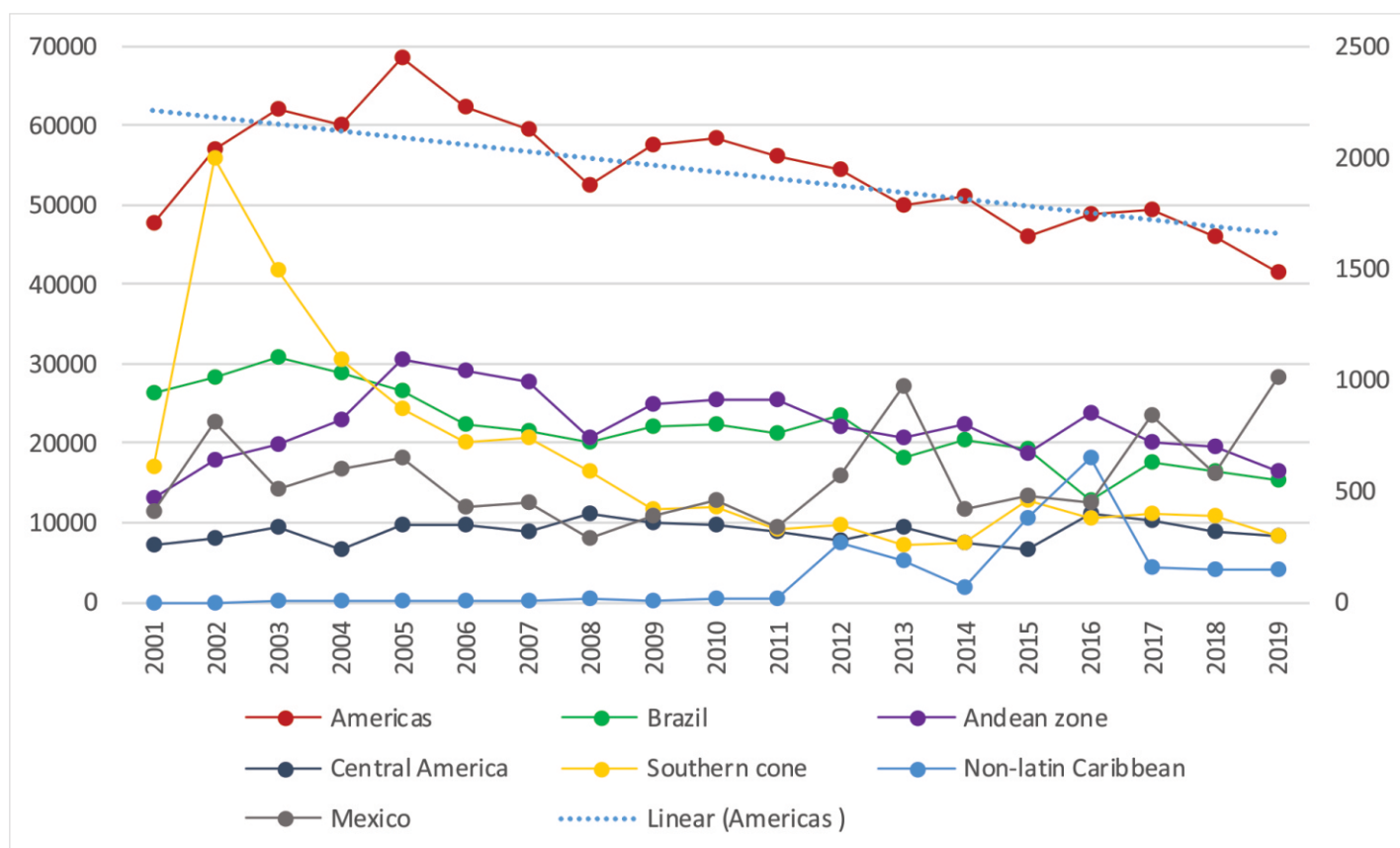
Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services.

Epidemiological status

Cutaneous and mucosal leishmaniasis

From 2001 to 2019, 1,028,054 CL/ML cases were notified to PAHO by 17 of the 18 endemic countries of the Americas (with an exception of French Guyana that continues reporting directly to France), with an average of 54,108 cases per year. Since 2015, in which the highest number of cases (67,949) was recorded, there has been a declining tendency of the cases, reaching in 2019 the smallest number of cases (41,617), which represents a 9% decrease compared to the previous year. This reduction is due the decline of cases in 12 of the 17 countries (Argentina, Bolivia [Plurinational State of], Brazil, Colombia, Costa Rica, Ecuador, Guyana, Nicaragua, Panama, Paraguay, Peru and Venezuela [Bolivarian Republic of]). On the other hand, 5 countries (El Salvador, Guatemala, Honduras, Mexico and Suriname) had a growth, highlighting Mexico and El Salvador with a 76% and 360% increase, respectively.

Figure 2. Number of cutaneous and mucosal leishmaniasis cases in the Region and Subregions of the Americas, 2001-2019



Note: Andean zone, Brazil, Central America and Region of the Americas at the left axle; Mexico, Non-latin Caribbean and Southern cone, in the right axle.

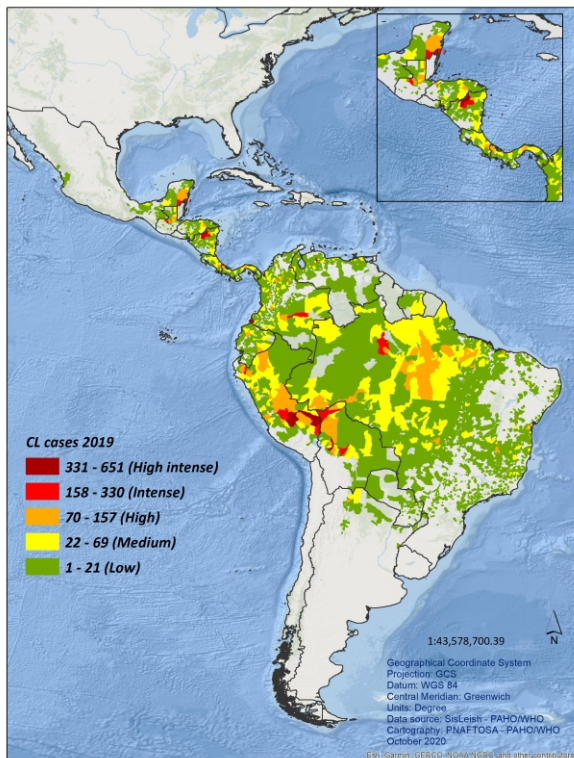
Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

In 2019, the countries with the highest number of notified cases were: Brazil (15,484), Colombia (5,907), Peru (5,349), Nicaragua (3,321) and Bolivia (Plurinational State of) (2,052), which summed together represent 77% of the cases in the Region. The overall incidence rate was 18.78 cases per 100,000 population, seeing that Guyana (5.71/100,000 pop.), Costa Rica (11.33/100,000 pop.), Paraguay (2.61/100,000 pop.) and Bolivia (Plurinational State of) (33.67/100,000 pop.) had a decrease of 73%, 57%, 55% and 38%, respectively. Differently, El Salvador (48.51/100,000 pop.), Colombia (94.23/100,000 pop.) and Mexico (13.27/100,000 hab.) had a great growth of the incidence rate, when compared to 2018, with 285%, 260% and 110% increase, respectively.

Despite the case reduction in 2019, there was an increase in the number of first (departments, states, regions, provinces, according to each countries' division) and second (municipalities, cantons, provinces, districts, etc.) political administrative subnational levels, indicating a geographic expansion of the disease. The proportion of cases at the International borders have maintained like 2018, with 20.5% (8,535) of the cases, however, there was a slight increase in the number of international border administrative units with cases notified.

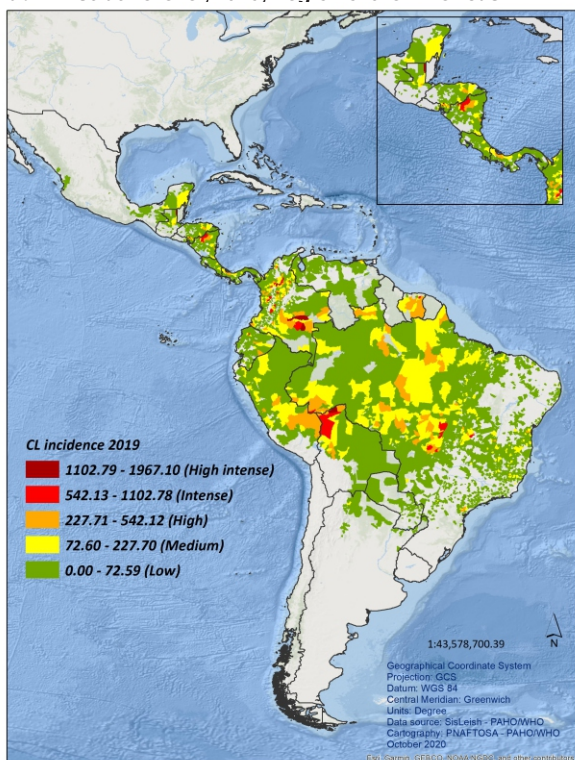
Figures 3 and 4 show the regional analysis of the CL/ML data, which are disaggregated at the second administrative level, according to the 2019 number of cases and incidence.

Figure 3. Number of cases of cutaneous/mucosal leishmaniasis by second subnational administrative level, 2019, Region of the Americas.



Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

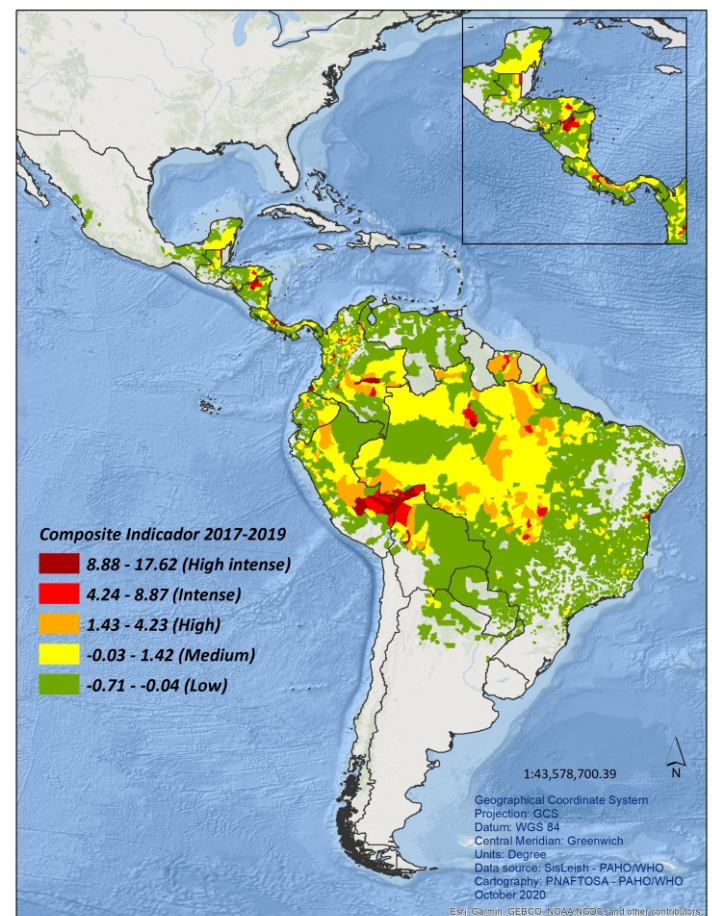
Figure 4. Cutaneous/mucosal leishmaniasis incidence per 100,000 population, by second subnational administrative level, 2019, Region of the Americas.



Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

Figure 5 presents the risk stratification map generated by the triennium composite indicator.

Figure 5. Composite indicator* stratified by risk of transmission at the second subnational administrative level, Region of the Americas, 2017-2019.**



Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

*TLCIc: Triennium Cutaneous leishmaniasis composite indicator, representing the average of cases and incidence (cases/100,000 pop.) of the 2017-2019.

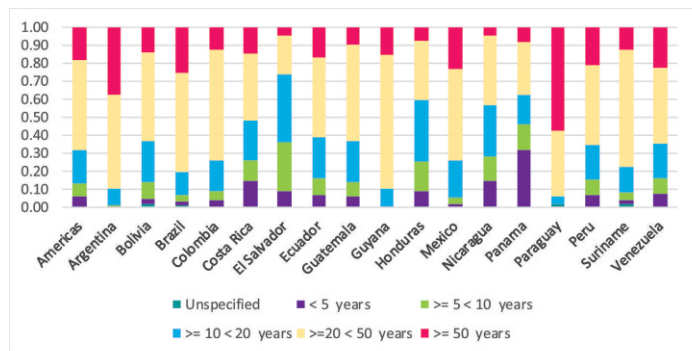
** Guyana is not represented in the figure because their data is only available at the first administrative level (Regions).

Of all the cases notified to SisLeish, 99.9% (41,609) had the sex variable available, which 70% of them occurred in males; however, 8 countries registered more than 35% of the cases in women (Bolivia [Plurinational State of], Costa Rica, Ecuador, El Salvador, Honduras, Nicaragua, Panama and Venezuela [Bolivarian Republic of]), indicating a possible intradomicile transmission.

As for age, 99.5% (41,387) of the cases informed the age group, where children under 10 years old represented 13.6% (5,656) of the cases, demonstrating a 7% increase compared to 2018; Argentina, Bolivia [Plurinational State of], Brazil, Costa Rica, Ecuador, El Salvador, Guyana, Honduras, México and Paraguay had a decrease of the case proportion in this age group, nevertheless, many countries still have

proportions over 10% (10-20%: Bolivia, Ecuador, Guatemala, Peru and Venezuela [Bolivarian Republic of]; 20-30%: Costa Rica, Honduras and Nicaragua; >30% El Salvador and Panama) (figure 6).

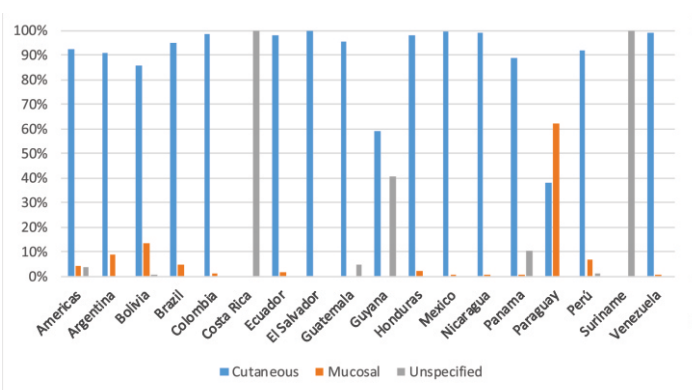
Figure 6. Cutaneous and mucosal Leishmaniasis case proportion, by age group, Region of the Americas, 2019.



Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

Regarding clinical form, 98.5% (41,002) of the records had this variable available, which represents an improvement of this information (96.4% notified in 2018). Of the total, 4.3% (1,781) were of the mucosal/mucocutaneous form (LM), so that the proportion of this clinical form remained constant in the Region. Brazil (825), Peru (439) and Bolivia (Plurinational State of) (292) continue reporting 86.5% of the mucosal cases in the Region, however, Paraguay reported the highest case proportion (52%), despite having notified a decrease compared to the previous year (61.9%). Also, 293 cases of atypical cutaneous leishmaniasis were notified, seeing that 63 were from Nicaragua and 230 from El Salvador, this information was unavailable in Honduras and Costa Rica, countries that have registered this clinical form previously (figure 7).

Figure 7. Proportion of cutaneous and mucosal leishmaniasis cases by clinical form and country, Region of the Americas, 2019.

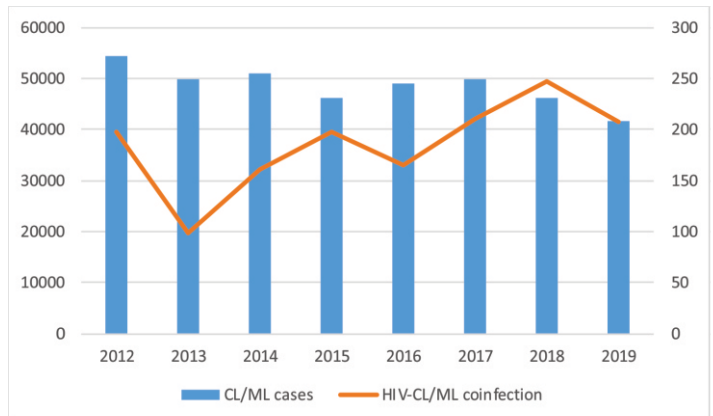


Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

In the last few years there has been an ascending tendency of the CL/ML and HIV coinfection. Nonetheless, in 2019, there was a 16% decrease in the number of cases (207) compared to 2018 (278). Five countries notified coinfection cases: Bolivia (Pluri-

national State of) (2), Brazil (136), Colombia (66), Mexico (2) and Paraguay (1) (figure 8).

Figure 8. Cutaneous/mucosal leishmaniasis cases and proportion of HIV co-infection, Region of the Americas, 2012-2019.



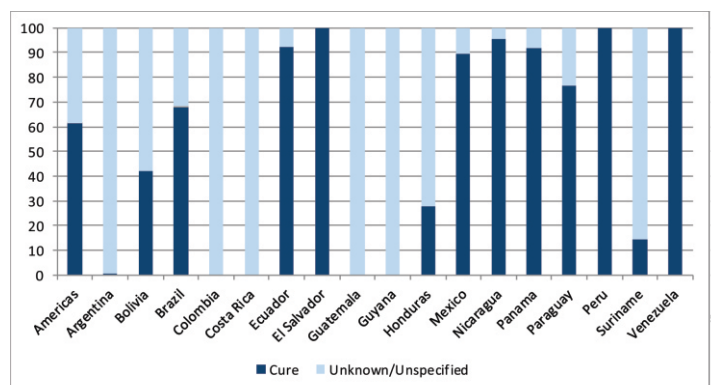
Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

For the diagnosis criteria, 79.6% (33,128) of the cases were diagnosed by laboratory testing, which represents a 4.8% decline as to 2018; 10.85% (4,516) were diagnosed by clinical and epidemiological criteria and 9.55% (3,973) did not report this information.

This information was 100% unavailable in SisLeish for Costa Rica, Guatemala and Honduras, as well as 56.4% for Argentina and 23% for Suriname. Panama had 64% of the cases confirmed by clinical and epidemiological criteria.

Regarding disease progression, in 38.5% of the cases this information was not informed; where, 100% of the information was unavailable in 5 countries (Argentina, Colombia, Costa Rica, Guatemala and Guyana), and between 50-90% in 3 countries (Bolivia, [Plurinational State of] Honduras and Suriname). Of the total, 61.3% (25,520) of the cases progressed to cure (figure 9). Eighty deaths were registered, of which 20 were associated to CL/ML with 65% of them in people over 50 years old.

Figure 9. Proportion of cutaneous and mucosal leishmaniasis cases by clinical progression and country, Region of the Americas, 2019.



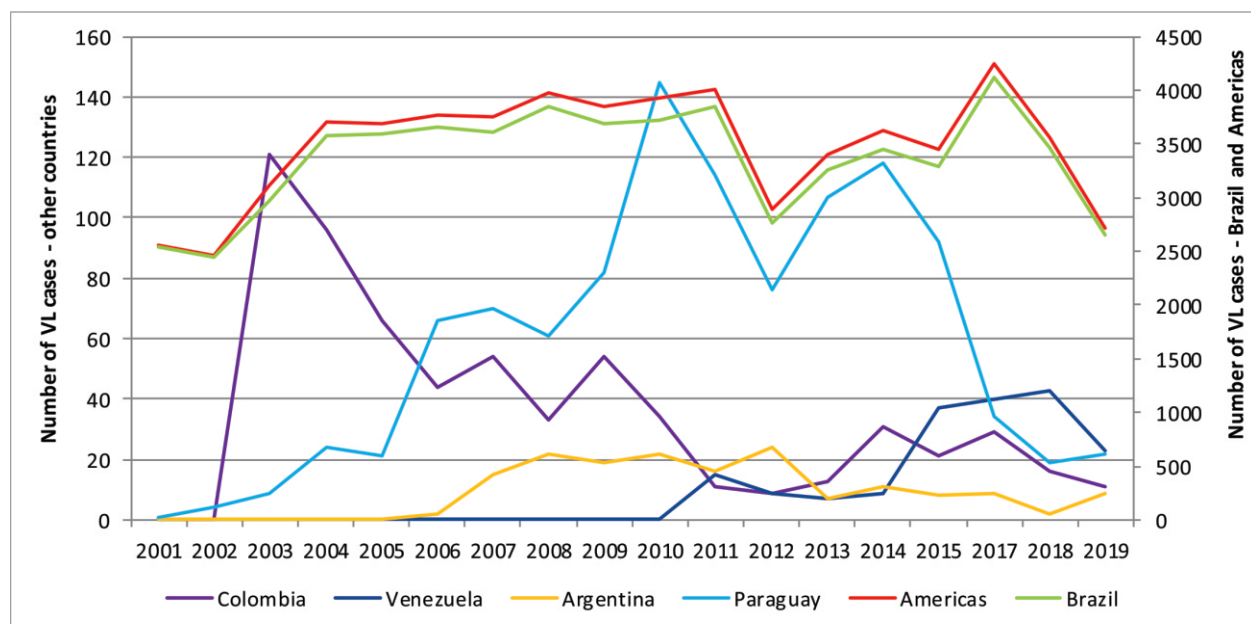
Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

Visceral leishmaniasis

Visceral Leishmaniasis (VL) is a systemic disease that mainly affects children under 5 years old, it can be associated to malnutrition, immunosuppression such as HIV-AIDS and other comorbidities. It is endemic in 13 countries of the Americas, where 65,934 new cases were recorded between 2001 and 2019, with an average of 3,470 cases per year, (figure 10). In 2019, of the total of cases, 97% (2,529) were from Brazil, and the remaining cases from Argentina, Bolivia (Plurinational State of), Colombia, Guatemala, Honduras, Mexico, Paraguay, Venezuela (Bolivarian Republic of) and Uruguay (table 1).

The smallest number of VL cases since 2003 was registered in 2019, due to the 27% (937) reduction of cases in Brazil, besides in Colombia, Guatemala, Honduras and Venezuela (Bolivarian Republic of). Differently, Argentina, Paraguay and Uruguay had an increase in the number of cases, and Bolivia (Plurinational State of) notified to SisLeish a VL case for the first time, even though autochthonous transmission has been confirmed in previous years.

Figure 10. Visceral leishmaniasis cases in countries with the highest number of cases, Region of the Americas, 2001-2019.



Note: Brazil and Region of the Americas at the right axle; Argentina, Colombia, Paraguay and Venezuela (Bolivarian Republic of) at the left axle.

Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services.

Accessed on 01 November 2020

The cases were recorded in 10 of the 13 countries with transmission, distributed in 52 first subnational administrative level units and 860 second level units (table 1). The VL incidence rate in the Americas was 2.96 and 0.47 cases per 100,000 population, considering the transmission area population and total population, respectively. Four countries had a decline in the VL incidence rate (Brazil, Guatemala, Paraguay and Venezuela [Bolivarian Republic of]), while, 6 countries had an increase (Argentina, Bolivia [Plurinational State of], Colombia, Honduras, Mexico and Uruguay).

Table 1. Number of cases and incidence* of visceral leishmaniasis by countries, Region of the Americas, 2017-2019.

Countries	2017				2018				2019			
	N°	%	Risk Pop. Incid. ¹	General Inc. ²	N°	%	Risk Pop. Incid. ¹	General Inc. ²	N°	%	Risk Pop. Incid. ¹	General Inc. ²
Argentina	9	0.21	1.07	0.02	2	0.06	0.49	0.00	9	0.35	0.94	0.02
Bolivia	0	0.00	0.0	0.00	0	0.00	0.00	0.00	1	0.04	1.54	0.01
Brazil	4114	97.05	5.53	1.98	3466	97.30	5.05	1.66	2529	97.16	3.08	1.20
Colombia	29	0.68	3.44	0.06	16	0.45	2.65	0.03	11	0.42	6.99	0.09
El Salvador	2	0.05	4.4	0.03	3	0.08	1.16	0.05	0	0.00	0.00	0.00
Guatemala	2	0.0471809	5.36	0.01	4	0.1	2.6	0.0	1	0.0	2.0	0.01
Honduras	8	0.19	2.48	0.09	8	0.22	8.35	0.09	3	0.12	11.16	0.03
Mexico	1	0.02	5.4	0.00	0	0.00	0.00	0.00	1	0.04	0.16	0.00
Paraguay	34	0.80	2.1	0.53	19	0.53	1.47	0.29	22	0.85	1.35	0.33
Uruguay	0	0.00	0	0.00	1	0.03	0.75	0.03	3	0.12	2.25	0.09
Venezuela	40	0.94	1.33	0.13	43	1.21	1.64	0.14	23	0.88	1.08	0.07
Total	4239	99.06	5.23	0.74	3562	100.00	4.80	0.62	2603	100.00	2.96	0.47

Note: *Incidence rate = number of cases per 100,000 population

¹ Population from transmission areas; ² Total population

Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services.

Accessed on 01 November 2020

Figures 11-13 show the VL case distribution, incidence per 100,000 population and case density estimation (50km radius). The highest occurrences were in Brazil in the municipalities of Fortaleza (Ceará State) Sao Luis (Maranhão), Campo Grande (Mato Grosso do Sul), Belo Horizonte (Minas Gerais), Teresina (Piauí), Marabá and Paraupbas (Pará), and Araguaina (Tocantins). Furthermore, the highest incidence rates were in: Brazil – Ipaporanga (Ceará), Catingueira (Paraíba), São Francisco (Sergipe), São Félix do Tocantins (Tocantins)—, Colombia —San Jacinto (Bolívar)— and Paraguay —Dr. Botrell (Guaira)—.

Figure 11. Visceral Leishmaniasis cases by second administrative level, Region of the Americas, 2019.

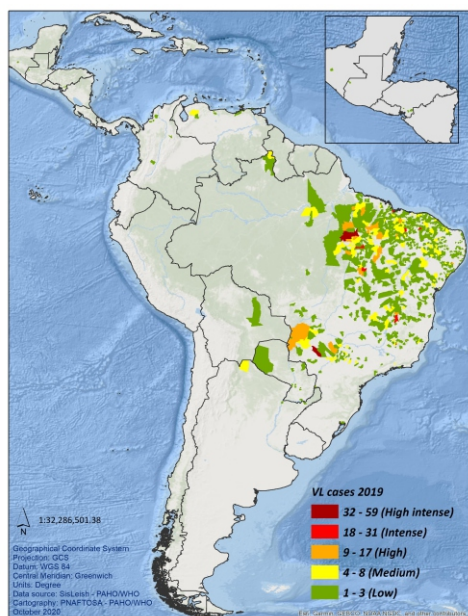


Figure 12. Incidence (per 100,000 population) of visceral leishmaniasis by second administrative level, Region of the Americas, 2019.



Figure 13. Case density estimation for visceral leishmaniasis (50km radius) by second sub-national administrative level, Region of the Americas, 2019.



Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

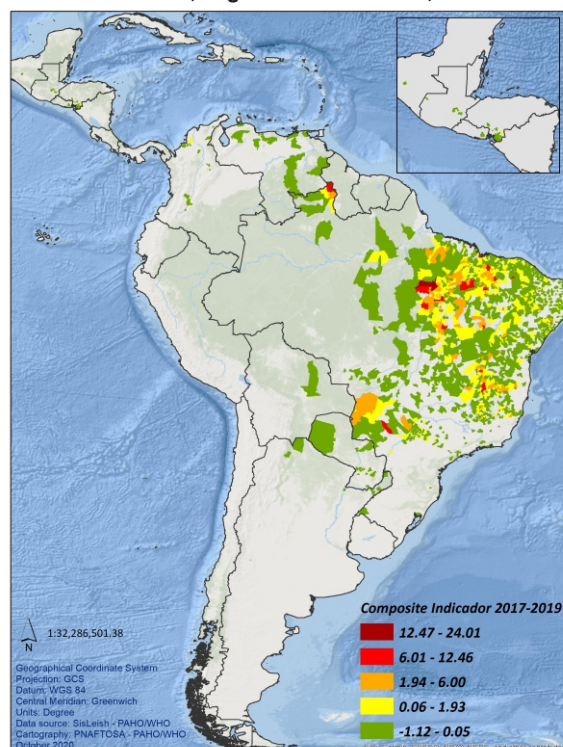
Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

Figure 14 shows the VL risk stratification in the Americas by second subnational administrative level, according to the triennium composite indicator 2017-2019. In this period, VL occurred in 1,573 municipalities, where 2 second level units were classified as very intense transmission (2 municipalities from Pará [Brazil]), 21 as intense transmission (all from Brazil), 89 as high transmission (all from Brazil), 344 as moderate transmission (3 from Colombia, 1 from Paraguay and Honduras and the rest from Brazil), and 1,117 as low transmission distributed in 10 countries (Argentina, Bolivia [Plurinational State of], Brazil, Colombia, El Salvador, Guatemala, Honduras, Mexico, Paraguay and Venezuela [Bolivarian Republic of]).

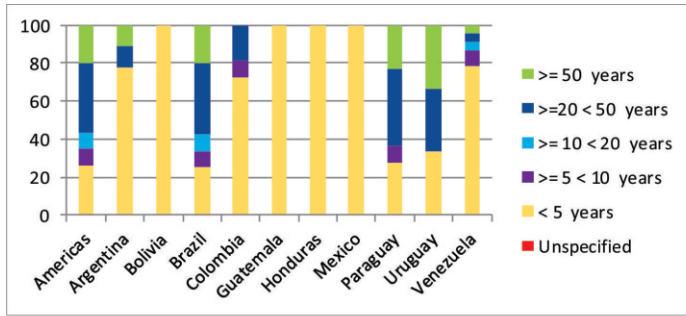
Of the total of notified cases, 100% presented the sex variable, where 65.4% were males; 99.7% had information on age group, where the most affected group was $\geq 20 < 50$ (37.2%), followed by children under 5 years old (25.1%) and people over 50 years old (20.1%). In Brazil, there was a decrease of 18% of the cases in children under 5 years old and an increase in the groups over 20 years old, which is a similar pattern as of Paraguay and Uruguay, however, in 7 countries the proportion of cases in children under 5 years old was higher than 70% (Argentina, Bolivia [Plurinational State of], Colombia, Guatemala, Honduras, México y Venezuela [Bolivarian Republic of]) (**figure 15**).

Figure 14. Visceral leishmaniasis composite indicator* stratified by risk of transmission at the second* subnational administrative level, Region of the Americas, 2017-2019.



Note: *TLClv: Triennium Visceral leishmaniasis composite indicator, representing the average of cases and incidence (cases/100,000 pop.) of 2017-2019 triennium. Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

Figure 15. Visceral Leishmaniasis case proportion, by age group, Region of the Americas, 2019.



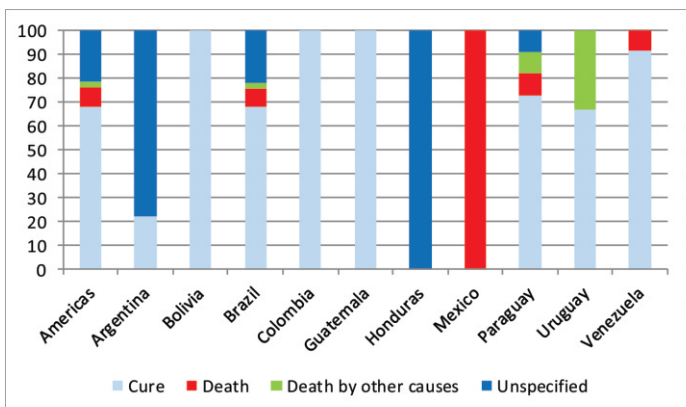
Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

As for VL and HIV coinfection, 284 (10.9%) cases were notified in 2019, which represents a 55% growth of the case proportion compared to the previous year (7.02%). From the notified cases, 280 (98.6%) were from Brazil, 1 (0.3%) from Colombia and 3 (1%) from Paraguay. Nevertheless, the highest case proportion of VL and HIV coinfection was registered in Paraguay (13.6%), followed by Brazil (11.1%) and Colombia (9.1%).

In 99.9% of the cases informed the confirmation criteria, where 86.4% (2,250) were diagnosed by laboratory testing and 13.5% (350) by clinical and epidemiological criteria, which represents a 1% decrease of the laboratory confirmation compared to 2018. Of the total, 22% did not present the case follow up information; in Honduras and Argentina, this information was 100% and 78% unavailable, respectively. Of the 10 countries that had VL cases in 2019, 6 have reached the performance goal of at least 95% of the cases diagnosed by laboratory testing (figure 16).

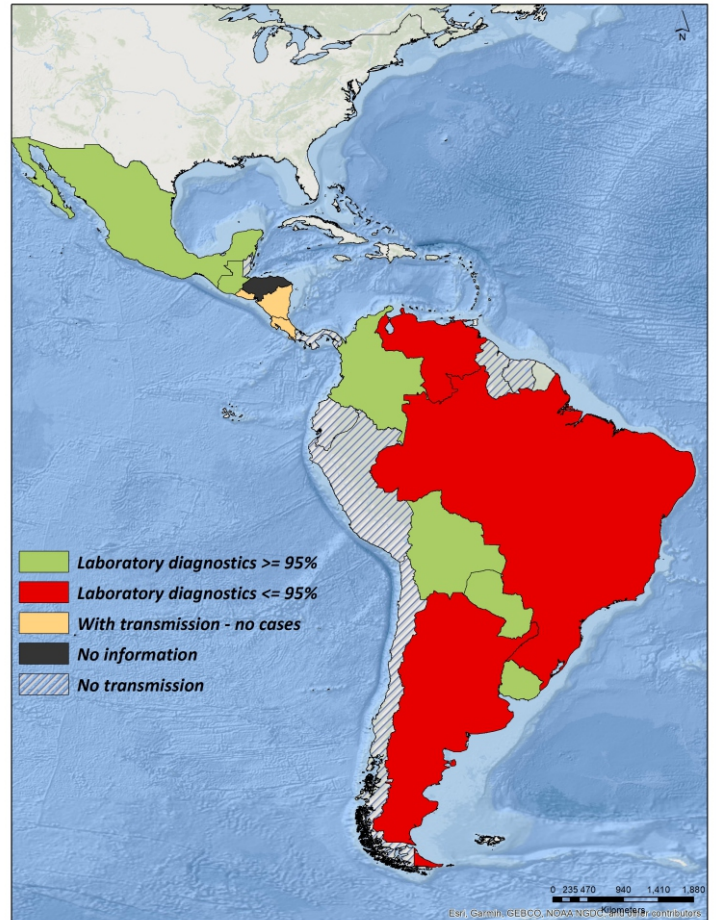
Furthermore, 68,2% of the cases progressed to cure, 7.7% died by the disease and 2.3% died by other causes (figure 17). The fatality rate in the Americas was 7.7%, which represents a slight decrease compared to 2018 (8%), with a reduction of 84 deaths by VL in the Region (figure 18). Of the people that died by VL, males were the most affected (68.7%) and those older than 50 years old (43.3%), followed by $\geq 20 \leq 50$ (32.8%) and ≤ 5 years old (15.4%).

Figure 17. Proportion of visceral leishmaniasis cases by disease progression, Region of the Americas, 2019.



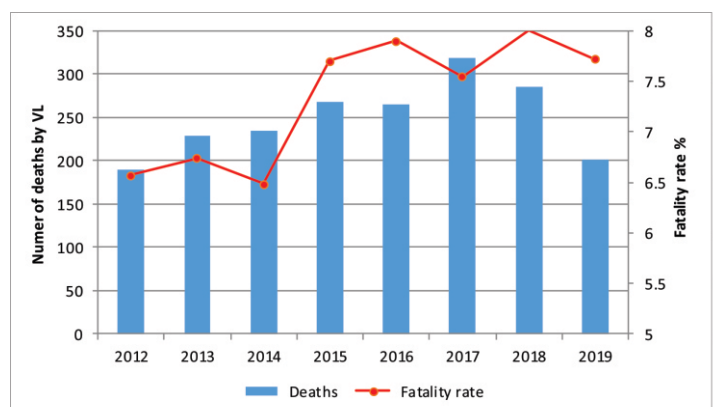
Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

Figure 16. Diagnosis by laboratory testing performance indicator for visceral leishmaniasis by country, Region of the Americas, 2019.



Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

Figure 18. Number of deaths and fatality rate for visceral leishmaniasis, Region of the Americas, 2012-2019.



Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

Performance indicators

PAHO/WHO, through the Regional Program for Leishmaniasis, works with the endemic countries to strengthen the surveillance and control actions, and to achieve the objectives of the *Plan of Action to strengthen the surveillance and control of leishmaniasis in the Americas*³; the PAHO's *Disease Elimination Initiative*¹ and the objectives of the *Roadmap for neglected tropical diseases 2021-2030*² at the global level.

The performance indicators of the Leishmaniasis Plan of Action provide information to evaluate the progress at a national and regional level as well as to monitor the proposed indicators. Likewise, the countries need to monitor and evaluate the epidemiological and operational indicators of their leishmaniasis control programs. **Figures 19 and 20** show the assessment of the main performance indicators for CL/ML and VL in the Region.

Since the beginning of SisLeish in 2012, the case confirmation indicator (at least 80% of the CL/ML cases diagnosed by laboratory testing) has been achieved for CL/ML in the past 5 years, however, in 2019 it was 79.6%. On the other hand, the VL case confirmation indicator (at least 95% of the CL/ML cases diagnosed by laboratory testing) has not been achieved, at the regional level, as of yet (**figure 21**).

Figure 19. Performance indicators of Plan of Action to strengthen the surveillance and control of leishmaniasis in the Americas for cutaneous/mucosal leishmaniasis, by country, Region of the Americas, 2019.

	Reduce CL deaths by 90% by 2022 ¹	Reduce the proportion of CL in children under 10 years old by 50% by 2022 ¹	Diagnosis of at least 80% of the cases by laboratory testing ²	Cure of at least 80% of the treated patients ²	Participation of the PEED ²	Opportune reporting to SisLeish ²
Argentina	●	●	●	●	●	●
Bolivia	●	●	●	●	●	●
Brazil	●	●	●	●	●	●
Colombia	●	●	●	●	●	●
Costa Rica	●	●	●	●	●	●
Ecuador	●	●	●	●	●	●
El Salvador	●	●	●	●	●	●
Guatemala	●	●	●	●	●	●
Guyana	●	●	●	●	●	●
Honduras	●	●	●	●	●	●
Mexico	●	●	●	●	●	●
Nicaragua	●	●	●	●	●	●
Panama	●	●	●	●	●	●
Paraguay	●	●	●	●	●	●
Perú	●	●	●	●	●	●
Suriname	●	●	●	●	●	●
Venezuela	●	●	●	●	●	●

¹ ● Improvement of the proportion; ● Decline of the proportion - comparison between 2018
² ● Achieved; ● Not achieved; ● No information; ●

Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

Figure 20. Performance indicators of Plan of Action to strengthen the surveillance and control of leishmaniasis in the Americas for visceral leishmaniasis, by country, Region of the Americas, 2019.

	Reduce fatality rate by 50% by 2022 ¹	Reduce incidence by 50% or not increase by 2022 ¹	Diagnosis of at least 95% of the cases by laboratory testing ²	Cure of at least 95% of the treated patients ²	Opportune reporting to SisLeish ²	Opportune reporting of VL border alerts ²
Argentina	●	●	●	●	●	●
Bolivia	●	●	●	●	●	●
Brazil	●	●	●	●	●	●
Colombia	●	●	●	●	●	●
Costa Rica	●	●	●	●	●	●
El Salvador	●	●	●	●	●	●
Guatemala	●	●	●	●	●	●
Honduras	●	●	●	●	●	●
Mexico	●	●	●	●	●	●
Nicaragua	●	●	●	●	●	●
Paraguay	●	●	●	●	●	●
Uruguay	●	●	●	●	●	●
Venezuela	●	●	●	●	●	●

¹ ● Improvement of the proportion; ● Decline of the proportion - comparison between 2018
² ● Achieved; ● Not achieved; ● No information; ● No VL cases in 2019; ● No 2019 data to be reported at the borders

Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

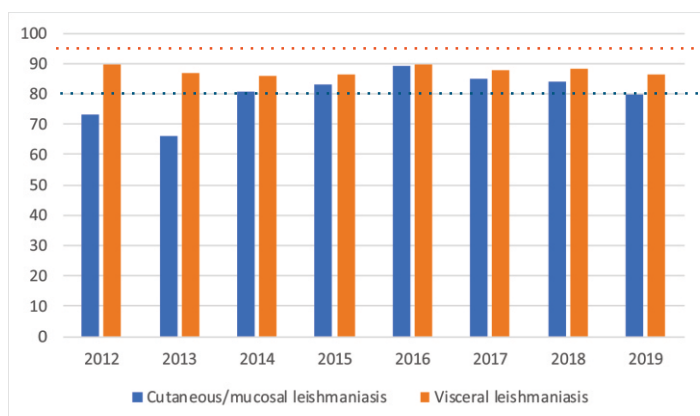


Figure 21. Proportion of cutaneous/mucosal and visceral leishmaniasis cases confirmed by laboratory testing, Region of the Americas, 2012-2019

Source: SisLeish - PAHO/WHO - Data notified by the national leishmaniasis surveillance programs/ surveillance services. Accessed on 01 November 2020

Note:
 Dotted Orange line – goal of at least 80% of CL/ML cases diagnosed by laboratory testing
 Dotted Blue line – goal of at least 95% of VL cases diagnosed by laboratory testing

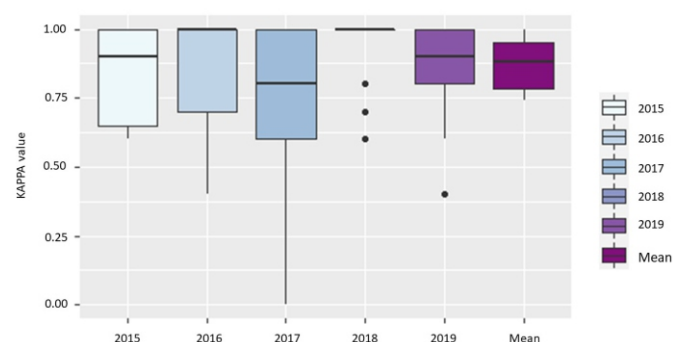
Regional external evaluation program for the performance of microscopic diagnosis of cutaneous leishmaniasis

One of the performance indicators is the participation of the countries in the PEED. This program has standardized the techniques and methodologies for the microscopic diagnosis, and its goal is to evaluate the National Reference Laboratories, with the purpose of improving the internal quality and strengthen the CL diagnosis in the Region. This Program is supported by the Colombian National Institute of Health (NIH), which has developed the standard protocol to produce the panels sent annually to the national laboratories, and the Leishmaniasis Research Laboratory of the Oswaldo Cruz Institute, which evaluates all the PEED's processes, and the performance of the NIH as the Colombia's national reference laboratory.

Currently, the Program is in its 6th cycle, and in 2019 the 5th cycle was concluded, with the participation of 20 National Reference Laboratories from 18 countries with leishmaniasis transmission in the Region. According to the results of the participating laboratories: 1 (5%) had a Weak level of concordance; 3 (15%) Moderate level of concordance; 6 (30%) had a Good level of concordance; and 10 (50%) achieved the maximum level of concordance, Very Good. The general average of the Kappa index among the twenty (20) participating laboratories of the 2019 cycle was: 0.9, which corresponds to a Very Good level of concordance.

By comparing the results from the 5 rounds (2015-2019), there has been a gradual improvement in the performance of Reference Laboratories with its best performance in 2018. There was a slight worsening of the performance in 2019, compared to 2018, however, it can be explained by the deliberated increase of difficulty generated by the manufacturer. However, despite the overall worsening of the laboratories' performance, it is still above the average of the 5 years (**figure 22**).

Figure 22. Distribution diagram of the results of the PEED by year (2015-2019), Region of the Americas.



Final considerations

The opportune diagnosis by laboratory testing and adequate treatment of leishmaniases cases in the Americas are indicators that allow health managers to direct actions to strengthen the surveillance and control of the disease in the Region, in order to achieve the impact indicators that have been proposed to the country, to the Region and the world.

Diagnosis by laboratory testing is very important when it comes to diseases with a broad clinical spectrum that present differential diagnosis with several dermatological and systemic diseases, as well as treatment with high toxicity drugs. Therefore, it is necessary to continue monitoring this indicator. In 2019, 4 countries (Argentina, Panamá, Suriname and Venezuela [Bolivarian Republic of]) have not reached the goal of at least 80% of the CL/ML cases diagnosed by laboratory testing; likewise, 3 countries (Argentina, Brazil and Venezuela [Bolivarian Republic of]) did not reach the goal for VL, of at least 95% of the cases diagnosed by laboratory testing.

Currently, CL/ML cases have been declining in the Region, however, in some countries it continues stable or increasing, that is why it is important to study the environmental, social and economic determinants to support the better understanding of the differences that are occurring in the countries.

The occurrence of CL cases in women and children under 10 years old is an indicative of a possible intra or peridomiciliary transmission, for this reason, the strengthening of epidemiological and entomological surveillance actions in countries that have cases in these groups is very important for the better understanding of the transmission pattern and to intervene when the vector is confirmed in these environments, according the proposed recommendations. Despite the progressive improvement of the disease progression indicator at the regional level, in some countries such as Argentina, Colombia, Costa Rica, Guatemala and Guyana this information was 100% unavailable. In these cases, a joint work between the surveillance and health services is very important to advance in a proposal to provide this data, seeing that these are indicators for evaluation and monitoring, at a regional and global level.

The VL case number and incidence rate continue declining in the Region, due to a 27% decrease in Brazil, which corresponds to 97% of the cases in the Americas. Studies are needed to verify this decrease, seeing that this is not a result of specific actions or new interventions.

Children under 5 years old and people over 50 years old are still the most vulnerable groups for VL occurrence, notwithstanding, the proportion of cases in the $\geq 20 < 50$ age group has increase along the years, reaching, in 2019, 36.7% of cases.

The VL fatality rate is still a great challenge in the Region. Between the five countries with the highest number of VL cases in 2019 (Brazil, Ethiopia, India, Sudan and South Sudan) Brazil is the country with the highest fatality rate (7.7%), followed by South Sudan (5%) and Ethiopia (2.5%). Even though there are several factors that are associated to the disease progress and risk of death by VL, the access and availability of safe short duration first line drugs could be a strong ally to reduce the fatality rate.

References

¹ Pan American Health Organization. PAHO initiative for disease elimination: policy for an Integrated Sustainable Approach to Communicable Diseases in the Americas [Internet]. PAHO 57th Directing Council, 71st session of the WHO regional committee for the Americas; from September 30 to October 4, 2019; Washington, D.C. Washington, D.C.: PAHO; 2019 (Document CD57 / 7). Available at: <https://iris.paho.org/bitstream/handle/10665.2/51612/CD57-7-s.pdf?sequence=2&isAllowed=y>.

² World Health Organization. Ending the neglect to attain the sustainable development goals: a road map for neglected tropical diseases 2021–2030. Geneva: WHO; 2020. Available at: <https://apps.who.int/iris/handle/10665/332421>.

³ Pan American Health Organization. Plan of action to strengthen surveillance and control of leishmaniasis in the Americas 2017-2022 [Internet]. Washington D.C.: PAHO; 2017. Available at: <http://iris.paho.org/xmlui/handle/123456789/34144>.

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Acknowledgments: We wish to express our gratitude to the professionals of the national leishmaniasis and epidemiological surveillance programs in endemic countries who participate directly and indirectly in the strengthening of leishmaniasis surveillance and control measures in the Americas. Likewise, we extend our gratitude to Felipe Rocha, from the Department of Zoonoses of the Pan American Foot-and-Mouth Disease Center and Veterinary Public Health of the Pan American Health Organization, for the elaboration of figure 22.

Citation suggestion: Pan American Health Organization. Leishmaniasis: Epidemiological Report in the Americas. Number 9, December 2020. Washington, D.C.: PAHO; 2020. Available at: <https://iris.paho.org/handle/10665.2/51742>

PAHO/CDE/VT/20-0041

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