LEISHMANIASES
Epidemiological Report on the Region of the Americas

Click on the countries to access the infographic on the disease-endemic countries in the Region of the Americas.

Argentina
Implementation of internal quality control for microscopic diagnosis of CL

Bolivia (Plurinational State of)
Use of liposomal amphotericin B as the first-line treatment for VL; implementation of impregnated dog collars as a public health measure in a VL outbreak area

Brazil
Use of miltefosine as a first-line treatment for CL; implementation of impregnated dog collars as a public health measure for VL

Costa Rica
Update of the national therapeutic guidelines including intralesional treatment and use of miltefosine for CL

Cuba
Implementation of the use of miltefosine, and local treatment (thermotherapy and intralesional) for uncomplicated CL

Colombia
Implementation of a pilot plan to eliminate VL as a public health problem

Ecuador
Implementation of local treatment (thermotherapy and intralesional) for uncomplicated CL; internal quality control for CL microscopic diagnosis being carried out

El Salvador
Maintenance of leishmaniasis surveillance in the country

Guatemala
Implementation of local treatment (thermotherapy) in one department

Honduras
Implementation of local treatment (thermotherapy and intralesional) for uncomplicated CL; internal quality control for CL microscopic diagnosis being carried out

Nicaragua
Implementation of local treatment (thermotherapy and intralesional) for uncomplicated CL

Panama
Implementation of the use of miltefosine, and local treatment (thermotherapy and intralesional) for uncomplicated CL

Paraguay
Beginning of the reorganization of surveillance and control actions; internal quality control for CL microscopic diagnosis being carried out

Peru
Implementation of microscopic diagnostics for CL

Argentina
Implementation of microscopic diagnostics for CL

Guyana
Implementation of microscopic diagnostics for CL

Suriname
Did not report the 2022 data

Bolivia (Plurinational State of)
Use of liposomal amphotericin B as the first-line treatment for VL; implementation of impregnated dog collars as a public health measure in a VL outbreak area

Uruguay
Active surveillance (epidemiological, entomological, and domestic reservoirs) for VL being carried out

Note: CL: cutaneous leishmaniasis; ML: mucosal leishmaniasis; LV: visceral leishmaniasis.
Introduction

In the Americas, the Pan American Health Organization (PAHO), through the Neglected, Tropical and Vector-Borne Diseases unit, promotes and provides technical cooperation to Member States to strengthen surveillance and necessary measures to reduce occurrence of cases, severe forms of the disease, as well as to prevent deaths from visceral leishmaniasis (VL).

In 2017, the Leishmaniasis Pan of Action for the Americas 2017-2022 was published. This Plan is an instrument that consolidates the main lines of action for surveillance, patient care, and control of the disease in the Region. During the seven years of the Plan, the goals, and process, epidemiological and operational indicators were monitored and evaluated annually, allowing the identification of the progress and weaknesses for each thematic area. Technical cooperation was planned and discussed to improve and strengthen the actions, as well as the technical capacity of the countries to continue advancing in the organization of services, execution, and sustainability of the actions. On the other hand, it is important to note that the COVID-19 pandemic had a direct impact on health services and field activities, especially activities for active surveillance of human cases, vector surveillance and control, and VL domestic reservoirs.

With the approval of the PAHO’s Disease Elimination Initiative, the WHO Roadmap for 2030, and the cross-cutting resolutions: Plan of Action for Entomology and Vector Control 2018-2023 and One Health: A Comprehensive Approach for Addressing Health Threats, as well as analyses carried out, and evaluation of the progress made and challenges that still remain, the leishmaniasis Plan of Action was updated, discussed and agreed upon with endemic countries, specialists, collaborators and partners for 2023-2030. With this new Plan, it is expected to improve and strengthen surveillance and control actions to obtain better results, such as expand access and implementation of diagnostic methodologies, and treatment alternatives for affected people living in risk areas, also, execution of actions according to the risk stratification, reduction of vector contact, among others.

Each year, PAHO updates the leishmaniasis information of the Region of the Americas and, therefore, presents in this report the 2022 epidemiological profile. Furthermore, it presents the analyses of the goals and main indicators of the Leishmaniasis Plan of Action 2017-2022 with the performance and achievements of the endemic countries, comparing 2022 with 2017, considering the average between 2012-2015 as baseline.
Cutaneous and mucosal leishmaniasis

During the period of implementation of the Leishmaniasis Plan of Action 2017 to 2022, 252,998 cases of cutaneous (CL) and mucosal (ML) leishmaniasis were reported, with an annual average of 42,166 cases. Of these, about 97% of the cases occurred in the following subregions: Andean area (41%), Brazil (37%) and Central America (19%) (Table 1).

Epidemiological scenario 2022

- A total of 37,890 cases of CL and ML were reported from 16 countries (French Guiana reports directly to France and Suriname did not report the 2022 data).

- The data in the Region remains the same compared to 2021, however, a significant increase was observed in Mexico (146%), Nicaragua (94%), Honduras (41%), and Guatemala (35%). On the other hand, there was a considerable reduction in Argentina (65%), Ecuador (30%), El Salvador (22%), Brazil (14%) and Costa Rica (13%).

- The incidence was 17.42 cases per 100,000 inhabitants, representing a 10% increase compared to 2021.

- Men were the most affected with 71% of the cases; 39% were of men in the working age group (20–50 years old), suggesting a sylvatic transmission pattern related to work activities.
  - Six countries reported a higher percentage of cases in women: El Salvador (54%), Panama (45.6%), Costa Rica (40.5%), Nicaragua (39.5%), Venezuela (37%) and Ecuador (36.8%).

- The most affected age groups were people between 20 and 50 years old (51.3%), followed by those over 50 years old (21.1%) and 10–20 years old (17.4%).
  - In 2022, the lowest number of cases in children under 10 years old was reported (9.8%) since 2012.

- Of the total cases of CL and ML, 6.2% (32,661) were diagnosed by laboratory, representing a 7% improvement compared to 2021.
  - From the total, 9.9% (3,756) were diagnosed by clinical-epidemiological criteria.
  - In 3.9% (1,473) of the cases this information was unavailable.

Table 1. Historical series of the number of new cases of cutaneous and mucosal leishmaniasis, Region of the Americas, 2017-2022.

<table>
<thead>
<tr>
<th>Region of the Americas</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>306</td>
<td>303</td>
<td>241</td>
<td>182</td>
<td>337</td>
<td>117</td>
</tr>
<tr>
<td>Bolivia (Plurinational State of)</td>
<td>2283</td>
<td>3127</td>
<td>2052</td>
<td>2059</td>
<td>2166</td>
<td>2197</td>
</tr>
<tr>
<td>Brazil</td>
<td>17,526</td>
<td>16,432</td>
<td>15,484</td>
<td>16,432</td>
<td>15,023</td>
<td>12,878</td>
</tr>
<tr>
<td>Colombia</td>
<td>7,764</td>
<td>6,362</td>
<td>5,907</td>
<td>6,161</td>
<td>6,175</td>
<td>5,685</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>2,224</td>
<td>1,247</td>
<td>601</td>
<td>528</td>
<td>563</td>
<td>492</td>
</tr>
<tr>
<td>Ecuador</td>
<td>1,632</td>
<td>1,237</td>
<td>1,104</td>
<td>1,047</td>
<td>1,251</td>
<td>875</td>
</tr>
<tr>
<td>El Salvador</td>
<td>44</td>
<td>50</td>
<td>230</td>
<td>39</td>
<td>50</td>
<td>39</td>
</tr>
<tr>
<td>Guatemala</td>
<td>775</td>
<td>1044</td>
<td>1,167</td>
<td>1,121</td>
<td>836</td>
<td>1,134</td>
</tr>
<tr>
<td>Guyana</td>
<td>21</td>
<td>27</td>
<td>19</td>
<td>12</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Honduras</td>
<td>1,854</td>
<td>1,636</td>
<td>1,985</td>
<td>1,467</td>
<td>1,119</td>
<td>1,580</td>
</tr>
<tr>
<td>Mexico</td>
<td>842</td>
<td>576</td>
<td>1,014</td>
<td>324</td>
<td>520</td>
<td>1,281</td>
</tr>
<tr>
<td>Nicaragua</td>
<td>4,343</td>
<td>3,722</td>
<td>3,321</td>
<td>3,443</td>
<td>1,251</td>
<td>2,423</td>
</tr>
<tr>
<td>Panama</td>
<td>1,164</td>
<td>1,143</td>
<td>920</td>
<td>938</td>
<td>1,286</td>
<td>1,339</td>
</tr>
<tr>
<td>Paraguay</td>
<td>92</td>
<td>84</td>
<td>52</td>
<td>54</td>
<td>53</td>
<td>59</td>
</tr>
<tr>
<td>Peru</td>
<td>6,631</td>
<td>6,321</td>
<td>5,349</td>
<td>4,178</td>
<td>5,201</td>
<td>5,756</td>
</tr>
<tr>
<td>Suriname</td>
<td>132</td>
<td>118</td>
<td>130</td>
<td>122</td>
<td>144</td>
<td>-</td>
</tr>
<tr>
<td>Venezuela (Bolivarian Republic of)</td>
<td>2,326</td>
<td>2,612</td>
<td>2,041</td>
<td>1,598</td>
<td>1,808</td>
<td>2,030</td>
</tr>
</tbody>
</table>

Source: Pan American Health Organization. Regional Information System on Leishmaniasis (SisLeish) [Internet]. Washington, D.C.: PAHO; 2023 [accessed 01 October 2023]. Limited access.
The countries with the highest proportion of cases diagnosed by clinical-epidemiological criteria were Panama (37.6%), Argentina (20.5%), Brazil (17.9%) and Mexico (16.6%); Costa Rica is still the only country that does not report this information.

From the total, 92% (34,889) were cutaneous and 5.3% (2004) were mucosal form (ML or MCL), which represents an increase of 18.8% compared to 2021, and of 6.4% compared to 2017.

The countries with the highest number of ML cases continue to be Brazil (785), Peru (628) and the Plurinational State of Bolivia (296), however, a significant increase in the proportion of ML cases was observed in Colombia (18.3%), Paraguay (120%) and Peru (50%). This rise may be the result of an improvement of the clinical information and case reporting or a real increase in the number of patients with ML that may be a consequence of late diagnosis of CL cases.

A total of 87 cases of atypical cutaneous leishmaniasis (ACL) were reported: 39 in El Salvador, 3 in Honduras, and 45 in Nicaragua.

In 54.1% (20,505) of the cases, data on patient follow-up was unavailable, which represents a 65% worsening compared to the previous year, reflected by the large percentage of cases without this information in: Ecuador (75%), Guyana (80%), Panama (82%), Honduras (84%), Argentina (90%), and Colombia, Costa Rica, and Peru (100%).

The high percentage of patients without follow-up results directly in a 32% worsening of the proportion of reported cured cases (17,299), which represented 45% of the total cases. A total of 12 deaths by CL were reported in Brazil, 83.3% of which were of people over 50 years old, which requires investigation by the designated area.

Below is an analysis of the CL and ML goals and main indicators of the 2017-2022 Plan of action to assess and monitor the disease, and the progress made in surveillance and patient care by the countries.
Goals

Goal 1: Reduce deaths due to cutaneous and mucosal leishmaniasis by 90% in the Region by 2022

Although the progressive goal of 2 deaths by CL in 2022 has not been reached at the regional level, a decrease of 25% in number of deaths was observed when comparing the beginning of the plan in 2017 (Figure 2). Except for Brazil, all countries reached the proposed goal, considering that an average of 92% of deaths were reported by Brazil in the evaluated period.

Deaths by CL can be the result of toxicity or inadequate use of the drug, often due to lack of close monitoring of the patient, so all deaths must be reported and investigated by the surveillance or pharmacovigilance service in the country, to identify possible causes and take measures, if necessary.

It is important to highlight that in 2022, of the 16 countries that did not report deaths by CL, the patient follow-up information was unavailable in Colombia, Costa Rica, and Peru, and over than 75% of this information was lacking in Ecuador, Guyana, Panama, Honduras, and Argentina.

Goal 2: Reduce the cutaneous leishmaniasis proportion in children under 10 years old by 50% in the Region by 2022

The regional estimated goal of 6.05% of CL cases in children under 10 years old was not reached (9.8%) in 2022, however, when compared to 2017, a reduction of 31% is observed. When the data is analyzed by country, Ecuador, Guyana, and Paraguay reached their expected goals, 9 countries (Plurinational State of Bolivia, Brazil, Colombia, Costa Rica, Guatemala, Honduras, Nicaragua, Panama and Peru) presented a significant reduction in the proportion of CL cases in children under 10 years old despite not reaching the goal.

Costa Rica, Ecuador, El Salvador, Honduras, Nicaragua, Panama, Peru, and Venezuela (Bolivarian Republic of) still report more than 10% of CL cases in this age group and need to intensify their efforts to investigate cases, carry out entomological surveillance and vector control with necessary interventions, since this indicator suggests that transmission may be occurring in intradomiciliary or peridomiciliary (Figure 3).
Indicators

Indicator 1: Number of endemic countries that diagnose at least 80% of cutaneous or mucosal leishmaniasis cases by laboratory

This indicator was achieved at the regional level with 86.2% of the CL/ML cases diagnosed by laboratory testing (Figure 4). By analyzing the indicator for each country, 12 (70%) reached the target, with a significant improvement, in the evaluated period, by Guatemala and Honduras. Likewise, Argentina had an important advance reaching 79.49%, as well as Venezuela (Bolivarian Republic of) with 72.2%. Panama is far from the target with 22.9% and this indicator was not evaluated for Costa Rica since the information was unavailable.

This indicator makes it possible to assess the patient access to diagnostic services in countries, as well as the quality of patient care. If the proportion of leishmaniasis cases diagnosed by laboratory is below the expected percentage, it is necessary to review and evaluate the functioning and operability of the laboratory network in the country to take the necessary corrective measures, since it may be related to issues that can vary from lack of information registration to unavailability of the service.

The variable “Number of patients treated for cutaneous leishmaniasis” was incorporated in the regional information system in 2018, year in which the following indicators began to be monitored:

Indicator 2: Number of endemic countries that treat at least 95% of diagnosed cases of cutaneous/mucosal leishmaniasis.

At the regional level, the highest proportion (61%) was reached in 2020, and the lowest (41.3%) in 2018 (Figure 5). In 2022, when analyzed individually, five countries (Argentina, Brazil, Mexico, Panama, and the Bolivarian Republic of Venezuela) reached the goal. The low proportion of treated cases reflects the high rate of incompleteness of this variable in SisLeish, seeing that 11 of the 17 countries did not report this information (Figure 6).
Indicator 3: Number of endemic countries that report at least 80% of cured cases of cutaneous or mucosal leishmaniasis among those treated

The best result achieved was in 2018 with 99%, followed by 2021 with 83.4%. However, it is important to note that, over the years, only about 40% of the countries reported the variables necessary to calculate this indicator (Figure 7).

In 2022, of the 16 countries that reported cases, six reported the two variables required for the analysis of this indicator, of which, only 2 countries (Paraguay and the Bolivarian Republic of Venezuela) reached the target (Figure 8).

These indicators allow monitoring of the progress towards access to treatment for diagnosed cases by the countries, to reduce the risk of progression and occurrence of more severe forms, deformities, mutilations, and to avoid possible deaths. When these indicators do not reach the expected results, it is necessary to review the data records, availability of medication, access and timeliness of the diagnosis, and availability of services and health personnel trained to diagnose, treat, and follow up on cases.

Figure 6. Proportion of treated cutaneous leishmaniasis patients among those diagnosed, Region of the Americas, 2022.

Figure 7. Proportion of cured cutaneous leishmaniasis patients among those treated and proportion of countries that reported the indicator, Region of the Americas, 2018-2022.

Figure 8. Proportion of cured cutaneous leishmaniasis patients among those treated, Region of the Americas, 2022.
 Likewise, we highlight the need to systematically analyze the incompleteness of the variables "Number of patients treated for CL" and "Progression of patients with CL", since they have a direct impact on these indicators (Figure 9). For the analyses, countries that did not report any of these variables were eliminated.

Figure 9. Proportion of incompleteness of the variables "Number of patients treated for CL" and "Progression of CL", Region of the Americas, 2018-2022.

When comparing the average results of the Kappa index of the last six cycles (2017-2022) (Figure 10), a variation in the performance of the laboratories is observed. The average of the cycles represents a "good" performance of the Region, where it is possible to observe that 2018, 2019 and 2021 were above this average, with a "very good" performance, followed by 2017 and 2020 with similar averages and 2022 with "moderate" performance, representing the worst result of the Region in this period. In this particular year, there was a greater degree of difficulty of the panel, drawing the attention of the Laboratories for an internal evaluation and strengthening of the capacities of the technical staff and equipment.

Figure 10. Distribution diagram of the results of the PEED by year, Region of the Americas, 2017-2022.

Source: Pan American Health Organization. Regional Information System on Leishmaniasis (SisLeish) [Internet]. Washington, D.C.: PAHO; 2023 [accessed 01 October 2023]. Limited access.

Indicator 4: Number of countries participating in the Direct External Evaluation Program of Performance (PEED, acronym in Spanish) for the microscopic diagnosis of cutaneous leishmaniasis.

The PEED is an annual program, with the purpose of evaluating the performance of the national reference laboratories of the Region, through the shipment of a slide panel representing different situations encountered in the routine of the service, as well as different species of *Leishmania*. This indicator is important to gain knowledge and ensure better quality of the microscopic diagnosis, since actions, orientations and technical cooperation are carried out, when any technical, operational or maintenance necessity are detected. Since 2021, 21 reference laboratories from 18 countries in the Region have participated.

When comparing the average results of the Kappa index of the last six cycles (2017-2022) (Figure 10), a variation in the performance of the laboratories is observed. The average of the cycles represents a "good" performance of the Region, where it is possible to observe that 2018, 2019 and 2021 were above this average, with a "very good" performance, followed by 2017 and 2020 with similar averages and 2022 with "moderate" performance, representing the worst result of the Region in this period. In this particular year, there was a greater degree of difficulty of the panel, drawing the attention of the Laboratories for an internal evaluation and strengthening of the capacities of the technical staff and equipment.

Figure 10. Distribution diagram of the results of the PEED by year, Region of the Americas, 2017-2022.

Source: Pan American Health Organization. Regional Information System on Leishmaniasis (SisLeish) [Internet]. Washington, D.C.: PAHO; 2023 [accessed 01 October 2023]. Limited access.
Visceral leishmaniasis

In 2017, 4,228 new cases of visceral leishmaniasis were reported, the highest figure recorded in the Americas since 2001. When compared to 2022, we see a 57% reduction that reflects the 59% case reduction in Brazil, which reported the lowest number of cases of the historical series in 2021 and 2022. In the other countries with stable transmission, there is a 66% case reduction in Colombia and 20% in Venezuela (Bolivarian Republic of). On the other hand, there is an increase in cases reported in Paraguay, which in addition to more than doubling the number of VL cases, is the only country with more VL cases than CL. Since 2015, Guatemala has gone from a country with sporadic transmission to having continuous transmission, reporting at least one VL case per year, except for 2020. Uruguay and Bolivia (Plurinational State of) officially registered the first autochthonous VL cases in 2018 and 2019, respectively, following with an annual reporting of cases up until this moment. Moreover, in 2022, Bolivia (Plurinational State of) reported an outbreak in a municipality with no previous transmission on the border with Argentina (figure 11).

Epidemiological scenario 2022

- Of the 13 countries with VL transmission, 8 countries (Argentina, Plurinational State of Bolivia, Brazil, Colombia, Guatemala, Paraguay, Uruguay and the Bolivarian Republic of Venezuela) reported a total of 1834 cases, distributed in 654 units of the second administrative level and 55 units of the first administrative level.
- Brazil accounted for 92% of the reported cases.
- The most affected group were men aged 20–50 years (33%), followed by those over 50 years (17%) and under 5 years old (15%).
  - Analysis excluding Brazil: the most affected group are children under 5 years old with 39% of the cases, with no difference between sex, followed by men aged 20–50 years and over 50 years old, being 16 and 11 times more affected than women, respectively.
- A total of 297 (16%) cases of VL-HIV coinfection were reported, despite not being the highest figure registered, it represents the highest proportion since 2012, maintaining the growing trend observed since 2018; from the total cases, 280 (17%) were from Brazil, 16 (22%) from Paraguay and 1 (10%) from Colombia.
- A total of 88% (1612) cases were diagnosed by laboratory and 12% (222) by clinical-epidemiological criteria.
- From the total, 65% (1194) progressed to cure, 9.4% (172) to death due to VL and 4% (71) due to other causes. The proportion of cases where this information was unavailable remains around 22% (397).
- The highest proportion of deaths were of men over 50 years old, followed by those between 20–50, both being about 3 times higher than in women. The third group most affected were children under 5 years old with a slight difference between sexes.

Figure 11. Countries with the highest number of visceral leishmaniasis cases, Region of the Americas, 2017-2022

Source: Pan American Health Organization. Regional Information System on Leishmaniasis (SisLeish) [Internet]. Washington, D.C.: PAHO; 2023 [accessed 01 October 2023]. Limited access.
By comparing 2017–2022, despite verifying a 35% decrease among the total number of units of the second subnational administrative level with VL transmission, a geographic expansion is observed, since, of the 655 municipalities with transmission reported in 2022, 411 are municipalities that had no previous VL cases in 2017 (Figure 12).

Figure 12. Estimation of visceral leishmaniasis case density of at the second subnational administrative level, (within a radius of 50 km), Region of the Americas, 2017(A) and 2022 (B).

Source: Pan American Health Organization. Regional Information System on Leishmaniasis (SisLeish) [Internet]. Washington, D.C.: PAHO; 2023 [accessed 01 October 2023]. Limited access.

Goals

Goal 1: Reduce fatality by visceral leishmaniasis by 50% in the Region by 2022

From a regional point of view, this goal was not reached and the case fatality rate (9.38%) in 2022 was 2.7 times higher than the established goal (3.45%), and there was even a 24% increase compared to 2017. This reflects the rate reported by Brazil (9.8%), which had a 27% increase compared to 2017. Regarding the other countries with transmission, nine reached the goal in 2022: 5 countries did not report any VL case (Costa Rica, El Salvador, Honduras, Mexico, and Nicaragua) and 4 countries (Argentina, Colombia, Guatemala, and Uruguay) did not report deaths by VL. Although, Paraguay (4.2%) and the Bolivarian Republic of Venezuela (6.3%) did not reach the target, they have decreased the case fatality rate in relation to the baseline (2012-2016) (Figure 13). It is important to note that SisLeish does not capture relapse cases, so in some countries the case fatality rate from VL may be higher than that reported to the system.

Figure 13. Goal and visceral leishmaniasis fatality rate, Brazil, Paraguay, the Bolivarian Republic of Venezuela and the Region of the Americas, 2017-2022.

Source: Pan American Health Organization. Regional Information System on Leishmaniasis (SisLeish) [Internet]. Washington, D.C.: PAHO; 2023 [accessed 01 October 2023]. Limited access.
Deaths from visceral leishmaniasis are caused by a variety of factors, including late diagnosis, comorbidity, VL-HIV coinfection, individual patient response, and high-risk age groups (children under 5 and adults over 50 years old). This is an important indicator that must be periodically monitored to gain knowledge and analyze the causes of death, which may be lack of clinical suspicion in first medical encounters, inadequate patient management or complications.

**Goal 2: Reduce visceral leishmaniasis incidence in the Region by 2022: in countries with expanding and stable transmission by 50%; and in countries with sporadic transmission, no increase in the incidence.**

Although the target (2.17 cases per 100 000 inhabitants) has not been reached regionally, there was a 49% reduction in the 2022 incidence (2.57 cases per 100 000 inhabitants) compared to 2017 (5.23 cases per 100 000 inhabitants). Individually, only Colombia reached the goal in 2022, on the other hand, Brazil, despite not having reached the goal, presented a 53% reduction in incidence compared to 2017, year in which an increase in incidence was observed compared to the baseline. Paraguay and Venezuela (Bolivarian Republic of) showed an increase of 52% and 14%, respectively, and although it is not possible to assess the progress towards the goal of countries with recent or sporadic transmission, since it is not possible to calculate the baseline, in 2022, Bolivia (Plurinational State of) presented a high incidence of 39.5 cases per 100 000 inhabitants as result of an outbreak.

**Indicators**

**Indicator 1: Number of countries reporting visceral leishmaniasis–HIV coinfection cases.**

Since 2017, there has been a progressive decrease in VL cases, however, the number of VL-HIV coinfection cases has remained the same since 2019, resulting in an increase of the proportion of coinfected cases. In 2022, the highest proportion was reported (16.2%), which is double the proportion reported in 2017 (Figure 14). In the period evaluated, the coinfection cases were mostly reported by Brazil and Paraguay, in addition to sporadic cases in Argentina, Colombia and Uruguay. The proportion of VL-HIV coinfection cases in the Region and Brazil is almost the same, as Brazil represents about 92% of VL cases in the Americas, however, when analyzing the data individually, Paraguay presented the highest proportion with 38.2% in 2017 and 24.1% in 2021, with a reduction in 2022 (22.2%), but still presenting a proportion higher than the Region (Figure 15).
This indicator should be monitored and analyzed, since patients with VL-HIV coinfection and inherent immunological conditions increase the risk of death by the disease, so all coinfected cases should be systematically followed-up with administration of secondary therapeutical prophylaxis to avoid relapses and deaths. In addition, monitoring this indicator is important to aid in the planning and procurement of medications, considering that these cases require long-term treatment for visceral leishmaniasis.

**Indicator 2: Number of endemic countries that diagnose at least 95% of visceral leishmaniasis cases by laboratory**

The indicator was not reached at the regional level, with 88% of VL cases diagnosed by laboratory. During the evaluated period, regionally, the proportion has been maintained over the years, with an average of 87.8%, which is the result of the pattern observed in Brazil. Individually, of the 8 countries that reported cases in 2022, 5 (Colombia, Guatemala, Paraguay, Uruguay, and the Bolivarian Republic of Venezuela) reached the goal (Figure 16).

The countries that did not reach the goals (Argentina and Brazil), must review the flows and laboratory network to take corrective measures to improve access to diagnostics.

The variable number of patients treated for visceral leishmaniasis was incorporated into the regional information system in 2018, year in which the following indicators began to be monitored:

**Indicator 3: Number of endemic countries that treat 100% of diagnosed cases of visceral leishmaniasis**

Regionally, the target was not reached, also, the lowest proportion (81%) of cases treated among those diagnoses since 2018 was reported in 2022 (Figure 17). Again, this matches the percentage found in Brazil, which also shows a slight reduction, with the lowest figure reported in 2022. Four countries (the Plurinational State of Bolivia, Colombia, Guatemala, and Uruguay) did not report this variable, so their progress could not be assessed. Of the countries where this information was available, Argentina and Venezuela (Bolivarian Republic of) reached the goal with 100% of the cases treated among those diagnosed. Paraguay had an improvement in 2022 (73.6%) compared to 2021, which was the lowest figure (60.3%) reported.

**Figure 17. Proportion of treated visceral leishmaniasis cases among those diagnosed, Region of the Americas, 2018-2022.**

Source: Pan American Health Organization. Regional Information System on Leishmaniasis (SisLeish) [Internet]. Washington, D.C.: PAHO; 2023 [accessed 01 October 2023]. Limited access.
Indicator 4: Number of endemic countries that report at least 95% of cured cases of visceral leishmaniasis among those treated

It should be noted that incompleteness has a direct impact on this indicator, since for its calculation it is necessary to have information about the number of patients treated for VL and the number of cured VL patients. For the analyses, the countries (the Plurinational State of Bolivia, Colombia, Guatemala, and Uruguay) that did not report one of these variables were eliminated.

The target was not achieved regionally or individually by the countries. The Region, as well as Brazil and Venezuela (Bolivarian Republic of), had a slight improvement in this indicator, while Paraguay presented a 49% worsening of this indicator in 2022 compared to 2021, year in which 100% of the treated cases were cured (Figure 18).

Figure 18. Proportion of cured visceral leishmaniasis cases among those treated, Region of the Americas, Brazil, Paraguay and the Bolivarian Republic of Venezuela, 2018-2022.

Final Considerations

In 2022, apart from Suriname, the 16 endemic countries continue to report the leishmaniasis cases in a timely manner in the PAHO Regional Information System - SisLeish, however, the completeness of the surveillance, control and assistance variables need to be improved by 11 of the 17 endemic countries, since only Argentina, Brazil, Mexico, Panama, Paraguay, and Venezuela (Bolivarian Republic of) fully included the data. Similarly, only five countries (the Plurinational State of Bolivia, El Salvador, Nicaragua, Paraguay, and Uruguay) have included *Leishmania* species at the most disaggregated subnational administrative level, as well as nine countries (the Plurinational State of Bolivia, Brazil, Ecuador, El Salvador, Guatemala, Mexico, Nicaragua, Paraguay and Uruguay) for identified vector species.

The trend of CL and VL cases in the Americas continues to be towards reduction, however, some countries had a significant increase in CL cases compared to 2021, such as Guatemala (35%), Honduras (41%), Nicaragua (94%) and Mexico (146%). Likewise, when the data was analyzed individually, the same increase was observed for VL in the Plurinational State of Bolivia (1000%, due to an outbreak), Colombia (43%), Paraguay (24%) and the Bolivarian Republic of Venezuela (6.7%).

The cutaneous and visceral leishmaniasis pattern of transmission was maintained over the years, but it is worth highlighting the CL endemic countries with more than 20% of cases occurring in children under 10 years old, such as Nicaragua (21%), Panama (36%) and El Salvador (56%), treatment alternatives are required to improve patient adherence, since the currently available options are for intravenous use. Furthermore, epidemiological, and entomological research with specific control measures associated with health education is required, when the vector is adapted to the intradomiciliary or peridomiciliary environment. For VL, it is observed that, except for Brazil, the most affected age group are children under five years old, with 39% of the cases. The case fatality rate of primary VL continues to be the greatest concern and is the biggest challenge to be faced.
by Brazil, Paraguay, and Venezuela (Bolivarian Republic of), which have rates of 9.8%, 4.2% and 6.3% respectively.

The goals and indicators analysis of the Leishmaniasis Plan of Action 2017–2022 show that at the regional level they were not fully achieved, but when analyzed individually by country, important progress was observed, which show commitment and effort by the Ministries of Health with respect to the surveillance, patient care and control of the diseases.

References


Editors: Ana Nilce Silveira Maia-Elkhoury, Samantha Yuri Oshiro Valadas Rocha, Lia Puppim Buzanovsky

Correspondence: aelkhoury@paho.org

Acknowledgments: PAHO thanks the professionals of the national leishmaniasis and epidemiological surveillance programs in disease-endemic countries who participate directly and indirectly in strengthening leishmaniasis surveillance, prevention, and control in the Region of the Americas so that people with this disease have access to better care.


PAHO/CDE/AFT/24-0001
© Pan American Health Organization, 2023. Some rights reserved. This work is available under license CC BY-NC-SA 3.0 IGO.