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**ELIMINATION OF HUMAN RABIES IN LATIN AMERICA:  
CURRENT STATUS**

## CONTENT

	<i>Page</i>
Introduction.....	3
Current Epidemiological Situation and Achievements Obtained.....	3
Control Measures.....	6
Care for People Exposed.....	6
Vaccination of Dogs.....	7
Epidemiological Surveillance.....	7
Final Considerations.....	8
REDIPRA Resolutions.....	8
References	

## Introduction

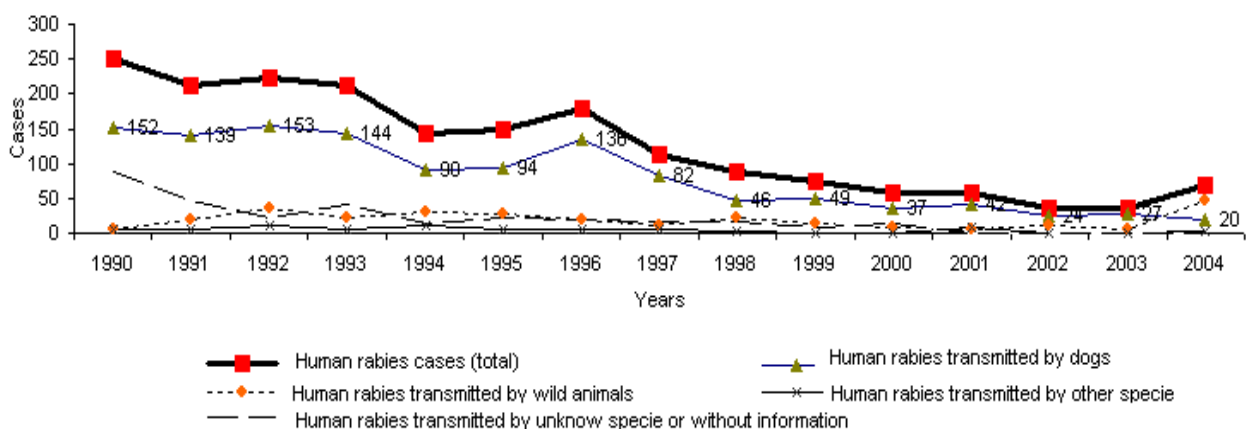
1. At the 3rd Inter-American Meeting, at the Ministerial Level, on Animal Health (RIMSA 3) and the Twenty-ninth Directing Council of the Pan American Health Organization (PAHO) held in 1983, the countries of the Americas committed to eliminating urban rabies from the principal cities of Latin America.

2. That mandate led to the first Meeting of Directors of Rabies Control Programs (REDIPRA 1) in Guayaquil, Ecuador (1983), where the strategies and Plan of Action for the Elimination of Urban Rabies were adopted (OPS, 1983). During REDIPRA 4 the objectives were expanded to include the elimination of rabies transmitted by dogs throughout the Region, including rural areas, with 2005 the target year for its achievement. This meeting also underscored the importance of sylvatic rabies surveillance.

## Current Epidemiological Situation and Achievements Obtained

3. In order to meet this goal, the countries have been successfully executing the Regional Program for the Elimination of Human Rabies Transmitted by Dogs in the Americas. The 20 years since its start-up have witnessed a substantial reduction in the number of cases: between 1982 and 2003 the number of human cases plummeted from 355 to 35, a 91% reduction, very similar to the decline in rabies in dogs, which was 93%, with cases decreasing from 15,686 to 1,131 (Figure 1).

**Figure 1. Human rabies trends, Latin America, 1990-2004.**



Source: PAHO from 1990 to 2000 and ministries of health of the Region from 2001 to 2003

4. Given the looming deadline for meeting the goal of eliminating human rabies transmitted by dogs, PAHO commissioned the study *Elimination of Human Rabies Transmitted by Dogs in Latin America* to evaluate the current rabies situation: what has been accomplished and what needs to be done to make progress toward meeting the goal (OPS, 2005). This study will be distributed in book form at the 14th Inter-American Meeting, at the Ministerial Level, on Health and Agriculture (RIMSA 14). The results will contribute to the technical underpinnings of a new Regional Plan for Rabies Elimination and fuel the political, social, and financial mobilization needed for its preparation.

5. In 65% of the human rabies cases noted, the importance of dogs as the primary source of infection was observed. The numbers fell by 82% during the period in question, with cases dropping from 152 in 1990 to 27 in 2003. In 2004, 20 cases of human rabies transmitted by dogs were confirmed in six countries, the lowest number since the launch of the Regional Program: Bolivia (4), Brazil (5), El Salvador (2), Haiti (5), Paraguay (1), and Venezuela (3) (Figure 2).

**Figure 2. Cases of human rabies transmitted by dogs, Latin America, 2004.**



6. This success is basically attributable to a strategy grounded in campaigns for the mass vaccination of dogs against rabies and on timely prophylaxis for the people exposed (Belotto, 2004).

7. Unfortunately, in 2004 the number of human rabies cases transmitted by different species rose to 70. In the majority of these cases (48) wildlife were the source of the infection, which is unusual considering that historically, the greatest number of rabies cases were always associated with dogs.

8. In recent years, human rabies transmitted by dogs has been concentrated in just a few countries, and in specific areas in those countries coinciding with lower levels of social and economic development or situated on the outskirts of major cities in low-income human populations, such as Port-au-Prince in Haiti, San Salvador in El Salvador, and cities in the northeast of Brazil; and La Paz and Cochabamba in Bolivia. These areas usually have a high population of stray dogs, which facilitates the persistent circulation of the virus due to low and irregular vaccination coverage; the populations of these areas also have difficulty accessing pre- or post-exposure medical care, associated with transportation costs and time lost from work (OPS, 2005).

9. With regard to canine rabies, in 2003 1,131 seropositive animals were reported, the majority of them in a handful of countries--Argentina, Bolivia, Brazil, El Salvador, Guatemala, Mexico, and Venezuela--most of which, however, had only a few cases, considering their large dog population. However, like human rabies, these cases were concentrated in 68 of the 414 first-level geopolitical units (16.4%), which also correspond to socially and economically depressed areas, namely some states in northeast Brazil, such as Bahia; Jujuy State in northern Argentina along the border with Bolivia; and Zulia State in Venezuela, in addition to Bolivia, El Salvador, and Guatemala, countries where the disease was also present in 2001 and 2002 (OPS, 2005). In 2004, 903 cases of rabies in dogs (OPS/SIRVERA, 2005) were reported.

10. The decrease in canine rabies is indicative of the Regional Program's efficiency in eliminating the main source of the infection in man.

11. Analysis of the frequency of canine rabies cases by first-level units during the period 2001-2003, the Region can be divided into five different epidemiological areas. Among them is the area that has been disease-free for over 10 years, consisting of: Panama and Costa Rica in Central America; most of the Southern Cone in South America—that is, Chile, Uruguay, Argentina, except for border with Bolivia, and all of southern Brazil, including the states of São Paulo and Rio de Janeiro; and some departments in Peru. At the other extreme is an area with active circulation of the rabies virus in dogs, concentrated in limited geographical areas like the Bolivia-Argentina and Bolivia-Peru borders, most of Bolivia, northern and northeastern Brazil, Zulia State in

Venezuela, San Salvador, Guatemala, and the Guatemala-Mexico border. The other areas are characterized by medium and low epidemiological risk, with epidemiological surveillance systems functioning properly in the majority of them. Several states in Mexico are in the process of certifying areas as free of canine rabies (OPS, 2005).

12. Nevertheless, human rabies transmitted by wildlife—75% of the cases attributable to bats—is an issue that is becoming increasingly important, with constant epidemic outbreaks in tropical and subtropical areas of the Region that have turned into health emergencies. In 2004, 46 cases of rabies transmitted by vampire bats were reported in five countries of the Region, associated primarily with outbreaks in Brazil, (22 human cases), Colombia (14), and Peru (8) (OPS/SIRVERA, 2005).

13. The main risks and impediments to the prevention of sylvatic rabies in the communities in question include: changes in the environment; economic activities in tropical and subtropical areas that encourage migration to vulnerable zones without risk mitigation; extreme poverty, limited health services, and access barriers; the absence of livestock; the resignation of residents to attacks by *Desmodus rotundus*; the length and cost of the prophylactic treatment currently available; inadequate interaction between the health, agriculture, and natural resources sectors to monitor risk (Schneider, 1995).

### **Control Measures**

14. The main activities of the *Regional Program* are proper care for people exposed, which includes pre or post-exposure treatment, mass vaccination of dogs, and epidemiological surveillance--activities whose efficiency is directly linked with access to vaccines and immunobiologicals of recognized quality and their availability, focus control, the creation of diagnostic laboratory networks, and the use of mass communication strategies based on community mobilization and participation.

### ***Care for People Exposed***

15. In Latin America, nearly 1 million people a year are exposed to the risk of rabies. In some countries, one the main reasons for medical consultations is attacks by animals suspected of carrying rabies, associated with the high number of stray dogs in major urban centers. The emphasis in the national programs has therefore been on decentralizing prophylactic treatment and ensuring a supply of quality immunobiologicals in order to guarantee access to care for the people exposed.

16. The ratio of inhabitants/health posts that provide treatment in the Region was 34,383 inhabitants per post, with a median of 16,397 and a range of between 4,300 inhabitants in Peru to 148,043 per health post in Paraguay. In some units in the Southern Cone, surely because rabies is no longer a major threat, treatment is less decentralized. In

2003, of the 961,195 people in Latin America tended to after animal attacks, an average of 25.4% received post-exposure treatment. The median ratio of people treated to people seen in health posts in the Region was 21.6%, with the figure ranging from 3.2% in Cuba to 58.4% in Brazil (OPS, 2005).

17. In the period 2001-2003, approximately 2,500,000 doses of rabies vaccine for human use were distributed throughout the Region. The majority of the countries of the Region, especially Brazil and Mexico, use vaccines produced on cell culture; however seven still use the CRL vaccine. Immunoglobulin is prescribed as part of the treatment for serious cases, in line with WHO technical standards, but only seven of the countries (33%) provide it, making this a serious limitation of the national programs (OPS, 2004).

### ***Vaccination of Dogs***

18. The vaccination of dogs is the most important control strategy for interrupting circulation of the virus. The strategy is based on intensive one- or two-day vaccination campaigns with active community participation.

19. In Latin America around 44 million dogs are vaccinated each year, with the Brazil and Mexico programs vaccinating the largest number (17 million and 16 million, respectively). In 2001-2003, the average annual vaccination coverage for the Region as a whole was 68%. However, in some countries and areas the coverage was almost 100%, and in others, less than the average. A vast area comprised of the majority of states in Brazil and Mexico and some departments in Peru boasts over 80% coverage (OPS, 2005).

20. In view of their current epidemiological situation, some of the countries have suspended canine vaccination in all or part of their territory while at the same time strengthening their epidemiological surveillance systems.

### ***Epidemiological Surveillance***

21. Epidemiological surveillance is fundamental during this period of rabies control in Latin America. In epidemiologically silent areas characterized by the lack of systems for reporting rabies cases, the Regional Program has stressed the need for scientific evidence that this situation is due to the absence of viral circulation and not to poor surveillance.

22. To obtain some idea of the quality of epidemiological surveillance, the analytical base reference used as the indicator of an adequate number of samples for diagnosis in the estimated canine population is 0.1%, which suggests that, generally speaking, there is very good epidemiological surveillance in the countries, since four of them—Argentina, Brazil, Mexico, and Peru—far exceed the national average of 0.1% (OPS, 2005). This

evaluation shows that in first-level units, countries such as Bolivia, Peru, most of Argentina, Brazil, Chile, and Mexico have reliable epidemiological surveillance.

23. In some areas of the Southern Cone and Central America that no longer report circulation of the virus or have made considerable progress in controlling the disease, the number of samples collected for diagnosis is minimal, which weakens the epidemiological surveillance.

24. In 2003, 73,752 samples from dogs were processed in 138 rabies diagnostic laboratories in Latin America, half of them located in Brazil and Mexico. In some countries, such as Argentina, Colombia, Cuba, Ecuador, and Peru, diagnosis is decentralized and performed in laboratories in the country's interior.

### **Final Considerations**

25. The principal strengths that made possible this progress in human and canine rabies control include the following:

- a) In the Americas, unlike other regions, rabies is not a neglected disease. All cases reported to the health systems receive care, are the object of an epidemiological investigation, and trigger corrective measures.
- b) There is a tradition and an evolution in science that has made possible a critical mass of highly skilled human resources armed with the necessary technical instruments for controlling the disease.
- c) There is solidarity among the countries that results in international cooperation, expressed in not a few cases in the mobilization of human resources and material (immunobiologicals).
- d) Rabies transmitted by dogs is a problem limited to a few municipios, which makes it possible to concentrate efforts.
- e) The majority of the countries, especially those with larger populations, have a sufficient supply of biologicals (vaccines produced on cell culture).
- f) The Ministers of Health and Agriculture have made the political decision to coordinate efforts in the prevention of rabies transmitted by wildlife.

### **REDIPRA Resolutions**

26. Given the current rabies situation, the last Meeting of Directors of National Rabies Control Programs in Latin America (REDIPRA 10), held in Santo Domingo, the Dominican Republic, from 28 to 30 October 2004, issued a number of recommendations, including the following:

- a) Prepare a regional proposal for the final phase of rabies elimination for presentation at RIMSA 14 in Mexico City.
- b) Certify areas as free of canine rabies, under standard guidelines drawn up by PAHO/WHO based on Mexico's experience.
- c) Ensure access to and the availability of effective treatment against rabies for all inhabitants of the Region.
- d) Strengthen cooperation between the Ministers of Health and Agriculture and with other sectors for the prevention of human cases of sylvatic rabies. To accomplish this, REDIPRA 14 reiterated the need to define risk areas and craft specific strategies that included an active search for people attacked by vampire bats, ensuring the mass availability of immunogens, protection of the cold chain, and pre- and post-exposure treatment in areas at risk.

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