Epidemiologic Situation of Human Rabies in Latin America in 2004

Current Epidemiologic Situation
The elimination of human rabies transmitted by dogs in the Region of the Americas by 2005 was a decision made by all Pan American Health Organization (PAHO) Member States in the 1980s. Since then, this mandate has become a regional technical cooperation priority.

The results in the two ensuing decades confirm the enormous effort made by countries. Consequently, analysis of the trend in rabies cases during the period 1982-2003 reveals a decline in the number of human cases from 355 to 35, a 91% drop. This figure reflects the trend of rabies in dogs, which decreased from 15,686 cases to 1,131, equivalent to 93%, in the same period. From 1990 to 2003, dogs were the source of infection in 65% of reported human cases, which fell from 152 to 27 (Figure 1).

In 2004, 20 rabies human cases transmitted by dogs were reported in six countries (Figure 2). Unfortunately, in that same year, cases of human rabies transmitted by other species increased to 71, most of them (46) transmitted by hematophagous bats, in four countries of Latin America (Figure 3). Among them, the epidemic outbreaks of Brazil (22 human cases), Colombia (14), and Peru (8) should be cited. In 2004, important findings were made: fewer cases of human rabies transmitted by dogs since the start of the Regional Program; a larger number of human cases transmitted by bats; and, for the first time in the history of the Program, cases transmitted by wildlife surpassed cases transmitted by dogs.

According to a PAHO study (2005), the areas with the greatest concentration of human cases between 2001 and 2003 were low-income population groups located on the outskirts of large cities such as Port-au-Prince in Haiti, San Salvador in El Salvador, and Fortaleza in Brazil. These areas normally have a high density of stray dogs not reached by vaccination campaigns. Furthermore, the difficult living and working conditions of residents hinder access to treatment for themselves and their children. In 2004, the rabies canine epidemiology in Bolivia had considerably worsened, with outbreaks in La Paz, Cochabamba, and Santa Cruz. The state of Zulia in Venezuela was also worsening last year.

Given the current rabies situation in the Region, epidemiologic surveillance is fundamental. In the same study (OPS, 2005), an analysis of the frequency of canine rabies cases in relation to epidemiologic surveillance efforts by second-level geopolitical units (state, department, province) in the 2001-2003 period made it possible to classify the Region into five different epidemiologic areas: 1) no canine cases in the last 10 years; 2) no cases in the last three years, with excellent epidemiologic surveillance (annual samples of 0.1% of the estimated canine population); 3) no cases in the last three years, with regular epidemiologic surveillance (annual samples of 0.09% to 0.01%); 4) no cases in the last three years, without epidemiologic surveillance (silent area, samples of less than 0.01% sent); 5) circulation of viral variants 1 and 2 in the canine population.

Areas that have been free of canine rabies for more than 10 years are Panama and Costa Rica in Central America; most of the Southern Cone, including Chile, Uruguay, Argentina, except for the area bordering on Bolivia; and all southern areas of Brazil, including the states of São Paulo and Rio de Janeiro, and some departments of Peru (Figure 4). At the other extreme is an area with active circulation of the rabies virus in canine species, focalized in specific geographic areas like the Bolivia-Argentina and Bolivia-Peru borders, most of Bolivia, north and northeast Brazil, the state of Zulia in Venezuela, areas of El Salvador and Guatemala, and the Guatemala–Mexico border area. Several areas that have had no cases of rabies in the last three years and that have properly functioning epidemiologic surveillance systems will probably be considered free of canine rabies in a few years. Some states in Mexico are in the process of being certified as areas free of canine rabies. Few areas at the first geopolitical level are considered silent in Latin America; the majority of these are located in the Andean subregion.
In 2004, 975 canine cases were reported in 14 countries of the Region, the highest number in Bolivia (355), followed by El Salvador (194), Venezuela (142), and Brazil (104).

How has this reduction been achieved?
In 1983, the countries of the Region of the Americas, with the support of PAHO, made a commitment to eliminate human rabies transmitted by dogs. Since then, these countries have made major efforts to eliminate this disease, with marked success, within the framework of the Regional Program for the Elimination of Human Rabies Transmitted by Dogs.

The governments of the Region endorsed the political decision to eliminate this disease, allocating nearly US$ 40 million annually for this purpose. Equally important are the efforts to train personnel to implement rabies control and surveillance measures.

The success reported is due fundamentally to a plan of action based on mass canine rabies vaccination campaigns and on timely prophylactic treatment of the people exposed. In Latin America, about 44 million dogs are vaccinated every year and approximately 1 million people at risk of contracting the disease are tended to, 25% of them receiving post-exposure treatment. The decentralization of rabies treatment consists of the availability of a health post for every 34,000 inhabitants. For purposes of diagnosis and surveillance, more than 100 national and regional laboratories make up the rabies diagnosis network and process nearly 74,000 canine samples per year.

Rabies in the current approach of PAHO technical cooperation
The current rabies situation in the Region, viewed from epidemiologic, economic, and social perspectives, determines the epidemiologic profile of the most vulnerable population groups and is consistent with the underlying premises of PAHO technical cooperation priorities, in which the concepts of unfinished agenda, consolidation of achievements, and facing new challenges are an important part.

In the six countries where canine-transmitted cases of human rabies still occur, it is necessary to work strategically with greater intensity and targeting to achieve the objectives of the unfinished agenda. It is unacceptable that people in Latin America continue to die of rabies transmitted by dogs. As reported in the PAHO (2005) study, in 2003 the 27 cases of human rabies transmitted by dogs in Latin American countries occurred in only 0.2% of second-level units. This suggests that if the countries identify priority areas and intensify and diversify control measures, with provision of human treatment, mass vaccination campaigns, epidemiological surveillance, educational actions, and canine population control, they will likely achieve excellent results.

It is important to emphasize that circulation of the rabies virus in the canine population has been eliminated in parts of Latin America. In these areas, the recommended technical cooperation strategy is to consolidate achievements--that is, to ensure the continuity of the political, technical, and budgetary support necessary to execute control measures in outbreaks and epidemiologic surveillance.
Recently, human rabies transmitted by hematophagous bat has become epidemiologically important and can be considered a new challenge. While not a new form of transmission, the number of cases increased in 2004. Human rabies transmitted by bats requires more complex control strategies than those used in rabies transmitted by dogs. In general, the disease occurs in remote areas, often jungle regions where access to health services is difficult. In order to prevent such outbreaks, joint strategies with other sectors such as agriculture, education, and environment must be sought to define situations of risk and act preventively. Care must be provided for the growing number of people and population groups attacked by bats.

**Final comments**

Some countries such as Haiti and Bolivia, which currently have the highest number of human and canine rabies cases, are considered key countries requiring priority attention from PAHO.

Since 1983, when the countries of the Region committed to eliminating canine-transmitted human rabies, there have been significant changes, not only in terms of the epidemiologic situation discussed in this study, but of scientific advances. Viral typing tests using monoclonal antibodies are now routinely used in diverse institutions and make it possible to know the species of the transmitting animal. Furthermore, most countries are using cell-culture vaccines to prevent and control rabies, which has reduced the risk associated with suckling-mouse-brain vaccines.

The availability of rabies control strategies validated by decades of use and successful experiences in most countries, in addition to the historical bonds of solidarity forged between countries with the support of the scientific community, are evidence that we can aspire to eliminating rabies soon. The final effort to confront the obstacles identified and sustain the results obtained is the key to eliminating human rabies transmitted by dogs in Latin America. The new challenge is human rabies transmitted by wildlife.

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**References**


A): PAHO through the Pan American Foot-and-Mouth Disease Center (PANAFTOSA) coordinates the Regional Information System for Epidemiological Surveillance of Rabies (SIRVERA), which receives the report of the cases of canine and human rabies that occur in the countries of the Region. This system began in the 1960s and has kept records until today. http://siepi.panaftosa.org.br/wbf_painel.aspx.

B): Criteria based on a study by Schneider (1990) in Brazil indicating that good epidemiologic surveillance required the submission of a minimum number of samples equivalent to nearly 0.2% of the estimated canine population, or one sample every three months in small areas (4 samples annually). This indicator was revised and it was considered that 0.1% of the estimated canine population is a sufficient number of samples to be submitted.