History of rabies vaccination in Colombia: need for One Health approach (poster)

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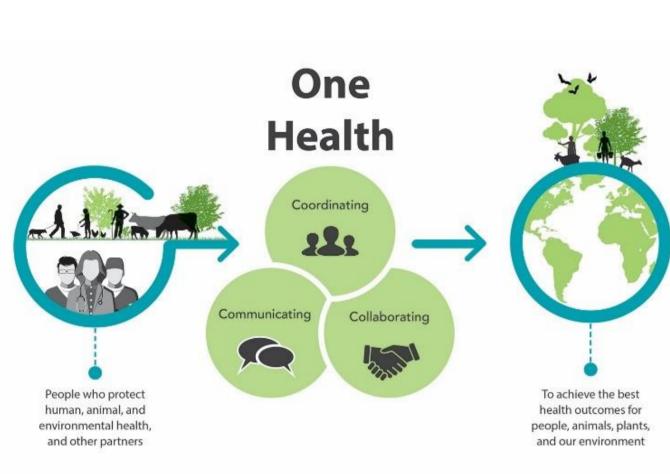
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History of rabies vaccination in Colombia: a current need for a One Health approach

Cediel, N.1; Restrepo, D.2.

¹ Epidemiology and Public Health Group, School of Agricultural Sciences, Universidad de La Salle, Bogota, Colombia. ² Observatorio Colombiano de Salud y Bienestar Animal (OCSBA), Universidad de La Salle, Bogota, Colombia

Introduction & Objective



The Colombian leadership in the vaccination campaigns against canine rabies was recognized in the Region of the Americas in the control of rabies transmitted by dogs. However, the decentralization of public health services generated a fragmentation of the national control of rabies in the country. We analyzed the history of rabies vaccination in Colombia to understand the strengths and weakness of the Program, evidencing the need for a One Health approach for long-term planning, thus integrating stakeholders belonging to the human-animalecosystem interface to the four C's: communicating, coordinating, collaborating and capacity building.

Materials & Methods

- 1. Literature review on rabies history in Colombia.
- 2. Developing a timeline for rabies vaccination in Colombia. See Figure 1 and 2.
- 3. Description of the strengths and weakness of the vaccination program in Colombia and the need for a One health approach.

Results

Figure 1. Colombian timeline of rabies vaccination history.

Second half of the 18th century

Isolated cases of canine rabies during the last stage of the colonial period. Rabies virus would arrive for the first time during the when European dog breeds were imported during colonization.

First 50 years of the 20th Century

Second decade of the 20th century. Was marked by research on canine rabies and human rabies vaccination began at the Colombian National

The progress in rabies research, rabies vaccination campaigns and rabies diagnosis was done with the support of international cooperation organizations from Europe (Boehring private laboratory and Zooprophilactic Institute in Brescia, Italy) but especially from The United States (Rockefeller Foundation, Kellogg's Foundation, Ford Foundation, Cornell University, Illinois University, Nebraska University, University of Texas).

Eduardo Fuenzalida and Raúl Palacios developed a vaccine in suckling mouse brains
Between 1967 and 1973, there were 21 cases of neuroparalytic reactions due to anti-rabies vaccination based on the nervous tissue of the suckling mouse brains. The vast majority of the cases were bitten by dogs and received between 4 and 18 doses of vaccines (post-exposure schedule) with a result of 11 fatal cases, which forced a decrease in the application of the number of doses from 21 to 14 and finally to 7 and from there the decrease in the presentation of cases. Some people died because of a lack of cold chain supply in vaccination campaigns.

Several institutions were funded to support rabies animal vaccines production

The Colombian Agricultural Institute (ICA) to do animal rabies diagnosis and the Colombian Vaccine Production (VECOL) in order to support rabies animal vaccines production. The Colombian leadership on dog rabies vaccination campaigns was recognized in The Americas Region controlling the rabies transmitted by dogs in about 90% of national human rabies transmitted by dog cases.

1970-1980.

By 1979, the laboratory where rabies vaccines were produced was renamed the National Institute of Health. There, 841,800 doses of canine rabies vaccine and 320,348 doses of human rabies vaccine were produced among many others. The national population was not the only beneficiary - twenty countries in Central America, South America, the Caribbean and Africa imported biological products against rabies produced in Colombia.

The first institutional rabies campaigns sponsored by the Health sector were reported in La Guajira, northern Colombia in the 1960s, to combat the bovine outbreaks because of the risk that animal carcasses were sent to human consumption. Outbreaks of wild rabies have occurred in the Darién plug with human mortality since the 1970s in the last century. The Ministry of Health trained agricultural veterinarians to take care of the rabies outbreaks. Colombian Agricultural Ministry and Instituto Colombiano Agropecuario (ICA) started a disease control program of bovine rabies considering four main activities: vaccination; vector control; tracking of outbreaks; and characterization of risk zones.



Between 1994 and 2000

The laboratories for the vaccine production for humans and animals were closed, due to the limited budget to sustain their operation and to adapt to the international standards.

Currently Colombia may have biological scarcity in rabies outbreak situations and studies have reported insufficient protection of post-vaccine response of canines and felines, specially in rural municipalities.

2000-2020

During 2012, pre-exposure vaccination plans, vaccination of dogs and cats and vector control were developed. Vaccination was not carried out in

Chocó and Cauca departments because of administrative and climatic problems.

Evident need of a One Health approach for the rabies control programme in Colombia.

Another important factor is the effectiveness of vaccination campaigns in dogs and cats. Recent studies show that vaccinated animals do not reach the necessary level of herd immunity, leading to the question of whether immunologically competent animals are protected, even without achieving the antibody titration proposed by the OIE, or if they are definitely unprotected. This highlights the importance of the cold chain, expiration date and supply chain of vaccines, which can often fail due to the complicated climatic, geographical and social conditions of some regions.

In 1965, in Valle del Cauca, Dr. Elmer Escobar achieved results as well: reduction from 25 to 0 human cases, reduction from 436 to 8 cases of animal rabies, reduction of 5,330 people bitten to 3,755 and reduction from 4,079 people vaccinated against rabies to 935. It was an advanced program created in Colombia, which was subsequently adopted in several countries throughout the continent. The participation of the private sector, the general community and the 4 C's of the One health approach: coordination, communication, collaboration and capacity building were essential for the successful results.

Figure 2. The successful "Cali Free of Canine Rabies" campaign adopted a motivating slogan that read: "A commitment from Cali, vaccinating 100,000 dogs against rabies".

(i). political support at the national, departmental, and local levels.

(ii). sufficient resources especially vaccines and the necessary supplies for their application.

(iii). adequate staff, trained and with great commitment especially at the operational level.

(iv). an excellent campaign of promotion and social communication.

(v). social control, exercised by children in schools. They ensure that their dogs and cats, as well as those of their relatives and acquaintances

were vaccinated.

(vi). external assessment of coverage achieved by university students.

(vii). identification of animals vaccinated with colored collars.

(viii). and massive and enthusiastic citizen participation.

Conclusions

Rabies is likely the best documented example for the added value of closer collaboration of human, veterinary medicine and environmental sciences. An effective One Health approach to eliminate rabies requires long-term planning, multisectoral communication, coordination, collaboration and sustained surveillance efforts. This approach must include the engagement of local involvement of the pharmaceutical industry, academia, the veterinary associations, NGOs, the education sector, the general community.