

TWO DAY RABIES VACCINATION CAMPAIGN: A SUSTAINABLE INTERVENTION?

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Abstract

Information concerning the planning and implementation of a two day rabies vaccination campaign organised in Lusaka, Zambia, is presented. Factors which contributed to its realisation and issues regarding the sustainability of such campaigns are discussed. Sustainability, for the purpose at hand, is defined as the recurrent (yearly?) execution of a vaccination campaign with a coverage of at least 70 percent to control the disease in a predetermined area. A key to success of the Lusaka campaign might have been that motivated veterinarians managed to secure required resources by mobilising and activating different institutions and organisations such as the School of Veterinary Medicine, Department of Veterinary and Tsetse Control Services, Information Service of the Ministry of Health, charitable organisations and Non Governmental Organisations. Free rabies vaccination campaigns appear to be feasible even with tight government budgets, by making use of an intersectorial approach, using resources efficiently and by focusing control activities in problem areas. In order to make such campaigns sustainable different interacting factors need to be addressed which are mainly related to organisation and management issues.

Introduction

Dog rabies is spreading in many countries mainly due to increasing density and mobility of human and dog populations (Bögel *et al.* 1982). In Zambia, dogs account for over 70 percent of all confirmed rabies cases (Hussein *et al.* 1984). In the capital city, Lusaka, most persons bitten by dogs attend the outpatient clinic of the University Teaching Hospital. During approximately one year (4 December 1991 to 13 November 1992), 962 bites were recorded. Sixty-five percent of these patients belonged to the male sex and most bites (80 percent) had been inflicted either by unvaccinated dogs or by dogs of unknown vaccination status prior to the vaccination campaign. If available, patients bitten by such dogs received a costly rabies post-exposure vaccine free of charge. Otherwise, they were advised to purchase the vaccine on the free market from pharmacies or private clinics.

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As it has been recognised that the best way to reduce the rate of human exposure is by controlling the disease in the main host (Wandeler *et al.* 1988; WHO 1984) rabies vaccination of dogs and cats is compulsory in Zambia.

According to the World Rabies Survey (WHO 1992), a total of 78 785 dogs had been immunised in 1989 against rabies in Zambia. The vaccination coverage was estimated at 25 percent. Because of financial, logistical and organisational constraints the number of rabies vaccination campaigns conducted by the Department of Veterinary and Tsetse Control Services (DVTCS) have been insufficient to control the disease as a vaccination coverage of at least 70 percent is required (Beran 1991).

A dog population study was conducted in 1992 by the School of Veterinary Medicine in conjunction with the World Health Organization (WHO) and the DVTCS. The purpose of the study was to obtain information on the owned segment of the dog population and their accessibility to rabies vaccination (de Balogh *et al.* 1993). The information obtained was used as a baseline for the organisation of a massive two-day rabies vaccination campaign in Lusaka. Costs were reduced by using an intersectorial approach for the organisation of the campaign. The experience obtained from this campaign could be used for the planning and execution of future rabies vaccination campaigns in Zambia and elsewhere.

PREPARATIONS FOR THE CAMPAIGN

The financial constraints for the organisation of the vaccination campaign in Lusaka were overcome through the mobilisation of additional resources from charitable organisations and non-governmental organisations (NGOs). Personnel were recruited from the School of Veterinary Medicine (mainly veterinary students) and from the DVTCS. No specific funds had been allocated for this campaign by the Government of the Republic of Zambia. Money was raised from personal contributions, associations and donors to purchase equipment such as needles, syringes, disinfectants and paper for rabies certificates, and to cover the expenses of the rabies awareness campaign, including printing of posters and hiring of a vehicle with loudspeakers.

The plan to carry out a rabies vaccination campaign had been presented to a Lusaka based Rotary Club. The executive board of the club agreed to participate in the campaign as part of their community service activities. They provided transport for each vaccination team and financed packed lunches and a social activity at the end of the campaign as an acknowledgement. Since a very limited budget was available and the participants joined on a voluntary basis, it was opted for an intensive two day campaign.

The rabies vaccine had been imported by the DVTCS and was to be given free of charge during the campaign.

2. Timing and selection of vaccination areas

Prior to the selection of the vaccination areas, records on dog-bites reported to the University Teaching Hospital were evaluated. Almost all cases originated from the medium to low income areas which corresponded to the more densely populated areas of the city. High income, low density areas of Lusaka were not included in this vaccination campaign, as the dogs in these areas would be less at risk of contracting rabies. This was based on the assumption that most dogs in these areas were not able to leave the fenced premises and hence would have less contact with other dogs. Moreover, the owners are in a better position to take their dogs to veterinary clinics for vaccinations.

The vaccination campaign was scheduled for the 13th and 14th of September 1992. This date was selected as it was a week-end at the beginning of the new school term and still during the dry season.

From the previously conducted dog population study in Lusaka (de Balogh *et al.* 1993), a central point vaccination had proven to be more cost-effective in comparison with a door to door campaign for the urban area. In the low income, densely populated area of Lusaka where the dog population study had been carried out a dog to human ratio of 1:44 had been calculated. This ratio was used in conjunction with the 1990 human population census data to roughly estimate the dog population for each area. A larger number of dogs per inhabitants was expected to be present in the medium class areas. In the illegal squatter settlements less than 1 dog per 44 inhabitants was expected. The number of vaccination sites per compound were selected according to the estimated dog population for each area. A total of 10 000 dogs were estimated to live in the area to be covered by the campaign. Therefore a total of 45 vaccination sites were chosen. Schools, especially primary schools, were most frequently selected as vaccination sites. Other vaccination points were located in front of market places and at a shopping centre.

3. Manpower

The DVTCS provided part of the manpower. The students of the School of Veterinary medicine were encouraged to participate in the campaign allowing them to gain first hand experience in a disease control activity. A total of 13 vaccination teams consisting of 5 persons per team were formed with a total of 70 persons participating. Besides the representative of the Veterinary Department, each team contained one final year, one 5th year and one 4th year veterinary student, and a member of the Rotary club who assisted the team by transporting them to their respective vaccination sites. During the campaign, the general task-force of each team consisted of two persons vaccinating, two persons writing the certificates and one person organising the queues and assisting in controlling the dogs and preparing them for vaccination.

Each team was to be visited several times during the day by the organisers to monitor the activities, replenish the supplies of vaccine, certificates, needles and disinfectants and distribute the packed lunches.

4. Public information

Two weeks prior to the set date a rabies awareness campaign was launched with the assistance of the information Department of the Ministry of Health. Several interviews were arranged on television and radio programmes. Radio programmes, in which the public could call in and ask questions, were very informative, especially for the organisers, as misconceptions about rabies and related issues could be clarified. The costs involved in radio announcements could be avoided by disseminating the information through interviews in established programmes in English and in several local languages.

In the target areas, radio was considered the most effective medium for information dissemination as television and newspapers only reach those sectors of the public with a higher income. Nevertheless, interviews with newspapers were arranged and sponsors were found for advertising the campaign.

Through the District Education Officer, 43 schools were contacted to serve as vaccination sites in addition to two market places and a shopping centre. The headmasters of the schools were informed about the campaign and some background information was provided for dissemination among the pupils. It was further suggested to use the weekly parade to make the announcements. Posters were printed encouraging people to have their dogs vaccinated and indicating the time and location of each vaccination site. These posters were distributed through the schools to be displayed on their premises and at different public places in the area.

A vehicle with loudspeakers from the Information Service of the Ministry of Health made announcements of the campaign in the different target areas.

THE CAMPAIGN

A short briefing session was held for the participants on the morning of the first vaccination day. Issues concerning which dogs should be vaccinated (depending on their age, health status and previous vaccinations), methods of restraint and the issuing of a vaccination certificate, were presented. The danger of transmitting parvovirus, distemper and other infectious diseases was emphasised during the briefing session. The limited availability of equipment such as needles and syringes demanded their re-use after a careful and proper disinfection with formalin and rinsing with distilled water.

A total of 9 174 dogs were vaccinated over the week-end at 45 different vaccination sites, in the low and medium income areas of Lusaka. Some monkeys were brought to the vaccination sites for rabies inoculation. As the vaccine was not adequate for this species they were not vaccinated. No cats were presented for vaccination.

On the first day of the campaign mainly the southern belt of Lusaka and a few locations in the north-east were selected. The second vaccination day covered the northern belt of Lusaka. The vaccination teams operated from 0900 - 1200 hours and from 1400 - 1630 hours. Most vaccination points functioned either in the morning or in the afternoon with the exception of

some busy locations which remained operational during the whole day. More dogs were brought during the morning than during the afternoon and the number of dogs per location varied significantly. Up to 450 dogs were vaccinated in a day by one team whereas in other less busy locations only up to 45 dogs were vaccinated in one afternoon.

An average of 9.4 person-minutes was calculated for the vaccination of one dog and the issuing of a vaccination certificate. As the vaccinated dogs had not been marked, the vaccination coverage could not be quantified. Neither could the foregoing rabies awareness campaign be quantitatively assessed in its effectiveness but the response of the public indicated that the information must have reached large numbers of the target group. Apparently, the public welcomed the opportunity to have their dogs vaccinated free of charge near their homes. The long distances to the veterinary clinics and the costs involved were given as the main reasons which had previously withheld dog owners from having their dogs vaccinated.

It was observed that most of the dogs were brought to the vaccination sites by children, mainly boys. Only in a few cases were the dogs difficult to handle and the use of a dog catcher had to be used for restraint. However, dogs that were difficult to handle were most likely not brought to the vaccination points. Generally the public was co-operative in allowing an orderly execution of the vaccinations, by keeping in a line and avoiding dog fights.

The total costs for the printing of posters, information material and vaccination certificates as well as for equipment food and drinks were calculated at 250 .000 Zambian Kwacha (exchange rate in 1992 was US\$ 1.00 = ZK 200). This amount does not include the cost of the vaccine. Costs for manpower can be neglected as all participants joined on a voluntary basis.

DISCUSSION

Control of rabies in developing countries is directly related to the management of the dog population (Joshi and Bögel 1988). Previous experiences of rabies vaccination campaigns in other parts of the world have indicated that the success of such campaigns depend on the willingness of dog owners to have their dogs vaccinated, government commitment and the availability of resources, qualified personnel and infrastructure to organise such campaigns (Escobar 1988). These key issues with relation to the execution of the campaign and sustainability are briefly addressed. Sustainability, for the purpose at hand, is defined as the recurrent (yearly?) execution of a vaccination campaign with a coverage of at least 70 percent to control the disease in a predetermined area.

For the realisation of rabies control activities, there has to exist a clear commitment at the national level with the appropriate legislative support. Rabies control cannot be self-supporting and requires a certain degree of government support. Government commitment could be assessed by the quantity of funds made available and its commitment not to divert such funds for other disease control activities. Unfortunately, the budgets of developing countries are usually constrained and often insufficient funds can be made available for

rabies vaccination campaigns. Hence, additional funds must be secured. The 'Lusaka experience' showed that this is not too difficult.

Small amounts of money could easily be obtained through informal channels without putting to action lengthy public relations mechanisms. NGOs, international donors and the private sector were motivated to contribute to the campaign as they recognised the importance of controlling rabies. These organisations have substantially contributed to the success of the campaigns in Lusaka. Their funds were used to purchase consumables and information material. In fact most of the funds were acquired outside any regular budget.

The continuity of rabies control has not only failed due to deficient government funding but also due to a lack of clear designation of responsibilities. An institutional strategy is called for in which responsibilities are clearly defined and described. Rabies control is often one of the many disease control activities designated to a person within a ministry. The appointment of a Rabies Control Officer would be very desirable. Such an officer could manage the organisation of rabies vaccination campaigns and liaise with the different institutions involved, improve the forwarding of samples from suspected rabid dogs, the feedback of results to the field and the organisation of training courses and awareness programmes. Unfortunately, the creation of a new position in the government structure is a long process.

As an alternative, the organisation of local vaccination activities could be seconded to institutions outside of the DVTCS such as Veterinary faculties, Veterinary/Animal Husbandry Training Institutions and Veterinary Research Institutes. In such institutions rabies working groups could be initiated. Veterinary students, extension workers, technicians and qualified veterinarians would regularly participate in the vaccination activities. Further, these working groups could more readily initiate rabies related research such as dog ecology studies, surveys on vaccination coverage and development of information material.

Community oriented organisations are often enthusiastic to contribute to such campaigns either in kind or by providing manpower. Non-veterinary/health personnel such as the police, military, students and school teachers have also been successfully integrated in massive one day rabies campaigns in Brazil (Belotto 1988).

In any campaign the participation of the local community is a crucial factor for achieving the desired results. It is believed that the high degree of participation in Lusaka was mainly due to:

- a targeted intensive public awareness campaign preceding the actual vaccination campaign indicating all advantages of having dogs vaccinated and informing the public about rabies in general
- provision of free vaccination of dogs against rabies
- strategic selection of vaccination sites near the homes of the target group
- the issuing of vaccination certificates
- the timing of the campaign

Initiatives to organise large rabies vaccination campaigns without issuing rabies vaccination certificates are questionable, as the public is generally aware of the importance of the

certificate as it proves the validity of the vaccination. Although fraud with false certificates does not seem to occur in Zambia, alternative methods to clearly identify vaccinated dogs should be considered. The use of a durable collar, issuing of a tag or the use of permanent dye to facilitate the identification of the vaccination status of the dog in case it has bitten somebody are to be assessed.

If persons and vehicles of different sectors are to be involved in the execution of a massive campaign, short intensive vaccination periods are called for. This ensures motivation and will avoid interference with their regular activities (Belotto 1988). Implementing massive campaigns on a yearly basis and on a fixed date could largely reduce the costs of the preceding information campaign once it becomes institutionalised.

In Zambia, dogs are cared for mostly by the young boys in the household and most dogs were brought by them to the vaccination points. The use of schools for the dissemination of information is often used in Zambia. In this case the information about rabies directly reached one of the main target groups, school age children. Furthermore, the main advantages of using schools as vaccination sites are:

- they are well known locations
- the main target group, young boys, are all gathered together
- facilities (desks, chairs, water) are available
- they are generally accessible and parking facilities are often available

The main disadvantages are:

- the vaccination points should be operational outside of school hours, for example, over week-ends. This, however, does not coincide with the working hours of most civil servants.
- dogs may soil the school premises.

Schools were found very suitable vaccination sites as compared to, for example, market places. Although markets are also well known to the public these are considered less suitable due to their size and by having various entrances. Furthermore., the presence of big crowds had a disturbing effect on the orderly execution of the vaccinations.

An alternative to be considered would be to organise these campaigns during the school term and to execute the vaccinations at the beginning of the holidays.

Vaccination campaigns should be conducted during the dry season, when roads are easily accessible and the risk of rains preventing people arriving at the vaccination sites is absent. After each campaign the suitability of the vaccination site should be evaluated.

It may be clear that under the prevailing unstable economic and institutional conditions in many developing countries sustainability remains difficult to foretell and continuous debates are required. Based on the Lusaka experience it seems that the following factors enhance successful implementation of a campaign and may to a certain extent contribute to sustainability:

- some motivated initiators
- recurrent involvement of NGOs, charitable organisations and the private sector to secure financial inputs
- effective public awareness campaigns
- participation of the target group
- the issuing of a 'formal document' (certificate)
- the timing and area selection
- a certain degree of government commitment to assure the regular organisation of such campaigns
- the guaranteed supply of vaccines

A key to success might have been that motivated veterinarians managed to secure required resources by mobilising and activating different institutions and organisations such as the School of Veterinary Medicine, Extension Services of the DVTCS, Information Service of the Ministry of Health, charitable organisations and NGOs.

Free rabies vaccination campaigns appear to be feasible even with tight government budgets by making use of an intersectorial approach by concentrating resources (Bögel and Meslin 1990) and focusing controlled activities in problem areas. An evaluation of the campaign is required to readjust strategies. In order to make such campaigns sustainable different interacting factors need to be addressed which are mainly related to organisation and management issues.

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