RABIES CONTROL IN DOGS IN ZIMBABWE

W.N. Madzima

Department of Veterinary Services, Harare, Zimbabwe

Introduction

Rabies was first diagnosed in the country in 1902 (Sinclair 1922) and its presence continued until 1913. Between 1913 till 1950 there were no outbreaks of rabies, except for two dogs imported from Zambia which developed the disease while still in quarantine in 1938 (cited by Swanepoel and Foggin 1978). The apparent disappearance of the disease may have been partially due to a low dog population at the time.

On 6 September 1950 rabies re-emerged in the Beitbridge area and rapidly spread into Masvingo and Bulawayo areas such that by 1951 there had been 117 cases in domestic animals. The disease was present in neighbouring northern Transvaal and Botswana, from where infection is believed to have spread. Vaccination of dogs was initiated in 1950, but by 1952 the disease was also diagnosed in wild carnivores.

During the first ten years after which vaccination had been legislated, 1.1 million dogs were vaccinated and eradication of rabies seemed a realistic objective (Foggin 1988). However, a combination of two factors resulted in a vicious cycle which precluded the eradication of the disease, namely, the periodic fall in the number of dogs presented for vaccination and the resultant spill-over of infection into the jackal population. This situation was always exacerbated by cross-border transmission of the disease. As a result the average incidence continued at approximately 120 confirmed cases per year until 1976, as shown in Figure 1. Also shown in Figure 1 is the sudden increase in the number of rabies cases around 1978 that followed a sudden drop in the number of dog vaccinations. This epidemic co-incided with a period of civil disturbances that culminated in independence in 1980. Thereafter, the epidemic was effectively brought under control and although dog vaccinations have progressively improved there has not been a corresponding decrease in the number of cases. Other factors such as other major disease outbreaks have put a strain on available manpower and transport resources and periodically impacted negatively on the extent of vaccination coverage. This was the case in 1989 during a major foot-and-mouth disease outbreak and again in 1994 when the country experienced a major outbreak of Newcastle disease.

Epidemiology of Dog Rabies in Zimbabwe

The incidence of rabies in dogs appears to be influenced by a number of closely linked factors, chief among which are percentage vaccination coverage, land use, human/dog population density, jackal population and proximity to international borders.
As shown in Figure 1, a good vaccination coverage has been followed by a drop in the number of rabies cases, irrespective of the trend in the incidence of the disease at the time. In 1986 Brooks (1990) estimated that there were 1.3 million dogs in Zimbabwe of which 90 percent were in the communal (subsistence) farming areas. The highest coverage was in 1991 when just over 500 000 (3.8 percent) dogs were vaccinated in communal farming areas.

![Figure 1](image)

**Figure 1.** Levels of rabies and rabies vaccinations in Zimbabwe since 1950, showing total cases, dog cases and number of dogs vaccinated.

The incidence of rabies also varies according to land use. Approximately 75 percent of confirmed rabid dogs originate from commercial farming areas and urban areas (Foggin 1988), perhaps more a reflection of better knowledge about the disease, hence better reporting. However, it is believed that there are more cases of rabies in communal farming areas but there is under-reporting. This is evidenced by the increasing trend of confirmed cases in spite of an increasing vaccination coverage.

Communal farming areas are generally over-populated and have poor vegetation cover which makes them less suitable as a habitat for jackals, but they have a high population of roaming unconfined dogs. Thus, dog rabies is the problem of communal farming areas. In contrast, commercial farming areas have abundant vegetation cover and account for 87 percent of cases of jackal rabies. The presence of jackals results in a self-sustaining cycle of infection between dogs and jackals. Thus, although dog vaccination coverage is considered good in commercial farming areas, it is apparently not high enough to prevent maintenance of the dog-jackal rabies cycle.
Rabies in dogs occurs throughout the country (see "Rabies in Zimbabwe" page 53), but over the years there have been more cases along the eastern border, presumably as a result of migration of dogs from Mozambique.

Since 1950 to date, approximately 47 percent (4287 out of 9091) of all confirmed rabies cases were in dogs followed by jackal rabies (24 percent) and cattle rabies (19 percent). Based on figures collected between 1987 till 1991, 58 percent of positive rabies cases in dogs involved human contact followed by cattle (42 percent) and jackals (38 percent) (Bingham 1993). Thus, from a public health point of view, dog rabies is of greatest significance. Cattle rabies is usually associated with bites by rabid jackals, but in communal farming areas dog bites also play a role.

**Control of Rabies in Dogs**

Control policy

The Animal Health (Rabies) Regulations, 1966, make it compulsory for an owner of a dog to have it vaccinated against rabies within one month of attaining the age of three months, followed by a second vaccination at 12-15 months of age and within every three years thereafter. Alternatively, if anyone acquires a dog whose vaccination history in not known, the dog must be vaccinated within seven days of its acquisition and again after six months and within every three years thereafter. In the Animal Health (General) Regulations, 1994, rabies is a notifiable disease and as such it must be reported to the Department of Veterinary Services. In the event of a serious rabies outbreak, the Director of Veterinary Services may declare any place as a rabies area by issue of an Animal Health (Rabies Areas) Order. The order enables veterinary staff to take additional measures to control the outbreak, such as the issuing of tie-up orders in affected areas and destruction of dogs which are not secured or closely confined.

Additionally, the Animal Health (Import) Regulations, 1989, require that, before bringing a dog into Zimbabwe, a veterinary import permit is obtained, subject to certain conditions as the Director of Veterinary Services may impose. In the Southern African Development Community (SADC) the conditions of importation have been standardised, thereby facilitating movement of dogs and cats between member countries.

Vaccination strategy

In urban areas dog owners may produce their dogs for vaccination on any day during working hours at Government Veterinary Offices or private veterinary surgeries. Additionally, Government Veterinary Offices have set aside every Friday afternoon as a time when owners can bring their dogs for vaccination by a team on standby for the purpose. The Department routinely mounts vaccination campaigns annually at dipping tanks throughout the communal farming areas. A similar mass vaccination campaign is carried out annually at designated points at shopping centres in urban areas. The annual vaccination campaigns are necessitated by the high turn-over in the dog population as a result of high mortality in
puppies (parasites, disease) and uncontrolled breeding, especially in communal farming areas and among dogs of the urban poor.

At every vaccination, every dog receives a tattoo bearing that year's unit number, initially in the left ear, and subsequently in the right ear. If the owner requires a certificate of vaccination, a fee of Z$3.00 is charged. Thus, in general, vaccination by government is carried out free as a contribution to public health.

Rabies vaccine

The vaccine used in dogs consists of inactivated cell culture vaccine. All the vaccine used in Zimbabwe is imported. There are several proprietary rabies vaccines on the local market which must all be registered with the Drugs Control Council in terms of the Drugs and Allied Substances Control Act and its regulations. The Department of Veterinary Services procures vaccine through an annual government tender. Rabies vaccine is only imported by the Department of Veterinary Services who sell to veterinary private practitioners. This measure assists in determination of the amount of rabies vaccine used in the country.

Reporting of human contacts

All dog-bites must be reported to veterinary staff who will promptly check whether the dog in question has an up-to-date vaccination history. In the event that this is not the case, the dog is detained for observation for a period of at least seven days for signs of the disease to appear. In the meantime the person who has been bitten is referred to a hospital for treatment.

Client Education on Rabies

During mass vaccination campaigns against rabies, opportunity is taken to educate the public through the distribution of leaflets and the use of a loud-hailer mounted on a mobile unit. The mobile unit also makes use of films on rabies, which are shown at agricultural shows and at schools. Posters on rabies are also displayed in every Veterinary Office, veterinary surgery and human clinic. Additionally, veterinary staff go on radio and television, and issue articles in papers and magazines.

References


