

COMMUNITY-BASED ANIMAL HEALTH SERVICES IN SOUTHERN SUDAN: THE EXPERIENCE SO FAR

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ABSTRACT

The experience of facilitating community-based animal health services (CAHS) in southern Sudan is reviewed. Operation Lifeline Sudan livestock programme started a community-based rinderpest control programme in 1993. In 1994, the programme widened to control of other diseases through development of CAHS; activities included participatory baseline surveys, community dialogue to identify priorities and develop social contracts, training of community-based animal health workers, Animal Health Auxiliaries and Stockpersons, development of Veterinary Coordination Committees, and monitoring. Currently there are 1,057 animal health workers providing services to 80% of agro-pastoralist areas. There has been a 12% drop out rate. More than 1 million cattle have been vaccinated against rinderpest annually since 1993 and increasing numbers of other vaccinations and treatments provided for cattle, sheep, goats and poultry. Constraints include insecurity, poor access, lack of mobility, minimal infrastructure and trade, lack of veterinarians and climatic extremes. CAHS in an under-developed agro-pastoralist community such as southern Sudan is a viable method of delivering basic animal health services, and can form the base on which to build a sustainable private veterinarian-supervised CAHS.

1. INTRODUCTION

Leyland (1996,1997) highlighted the constraints and potential solutions to animal health service delivery in marginalised pastoral areas, recommending the use of community-based approaches, participatory methodologies and privatisation as the foundations for effective sustainable services. Leyland (1996) described initial experiences with animal health service delivery to southern Sudan using a participatory, community-based approach. This paper reviews experiences since 1993 of Operation Lifeline Sudan (OLS) livestock programme.

2. BACKGROUND

Southern Sudan has an area of approximately 650,000 square km, bordered by Central African Republic, Chad, Democratic Republic of Congo, Uganda, Kenya, and Ethiopia. It is divided into several ecological zones; rainforest, savannah forest, flood plains, swamp and semi-desert. Its estimated population of 5.5 million is made up of many tribes of which the Dinka, Nuer, Murle, Mundari, Toposa and Boya are the main agro-pastoralist groups, keeping cattle, goats and sheep, and chickens. The cattle population is estimated to be approximately 5 million with twice as many sheep and goats. Southern Sudan has a history of underdevelopment and conflict. Since independence was granted to Sudan in 1956, there has been almost continuous civil war. Millions of people have been killed, displaced or are refugees. Southern Sudan is controlled partly by the Government and mainly by several rebel groups. The prolonged conflict has created a chronic, complex emergency; no development, infrastructure destroyed, trade disrupted, no schools or health services, and

administrative structures are minimal and have few resources. Droughts have been exacerbated by the conflict, causing periodic famines.

3. PRE-1989 ANIMAL HEALTH SERVICES

In times of peace, animal health services were provided by the Directorate of Animal Resources through the Provincial Veterinary Departments. Each district in a province had a District Veterinary Officer who was assisted by Veterinary Assistants (VAs) to organise vaccination campaigns and provide treatments from the district headquarters. Stockmen and retainers were based in villages and carried out vaccination, treatments and disease reporting (Mogga 1986). These services faced many constraints; poor organisation and administration, lack of infrastructure and logistical problems. With the resumption of war in 1983, in the areas controlled by the Sudan Peoples Liberation Movement (SPLM) responsibility for livestock came under the Sudan Relief and Rehabilitation Association (SRRA) Chief Veterinary Co-ordinator. For each county a veterinary co-ordinator was appointed, usually ex-Government trained VAs of variable technical knowledge and no resources. In Government areas the animal health structure continued but had few resources and limited access to rural areas.

4. OPERATION LIFELINE SUDAN LIVESTOCK PROGRAMME

4.1 Overview

In 1989, Operation Lifeline Sudan, a consortium of UN agencies and NGOs, started to provide emergency relief to southern Sudan. In recognition of the importance of livestock to food security and child nutrition, one component of the UNICEF programme was vaccination of cattle against rinderpest. Vaccine was provided free of charge and vaccinators were trained, equipped and monitored by one veterinarian. During 1989 to 1992, an average of 280,750 cattle were vaccinated annually against rinderpest using heat labile vaccine and full cold chain. A total of 140 vaccinators were trained (Leyland 1993). The International Committee of the Red Cross (ICRC) also provided 1.3 million doses of rinderpest vaccine. Both agencies provided other cattle vaccines, and ICRC provided medicines free of charge. By the end of 1992 there was a split in the rebel groups and the Government regained control of parts of the south. The increased conflict disrupted vaccination activities and reduced road access from Kenya and Uganda.

In 1993, a livestock co-ordinator was seconded from Tufts University School of Veterinary Medicine (TUSVM) to UNICEF and a new programme to develop community-based, privatised animal health services started. The initial focus was on rinderpest control using thermostable vaccine, but activities gradually increased to control other major cattle, sheep, goat and poultry diseases. Treatments and vaccinations were provided by community-based animal health workers (CAHWs) on a cost recovery basis (Leyland 1996). The UNICEF/OLS southern sector (based in Kenya) worked in both Government and rebel-held areas until 1996 when UNICEF/OLS northern sector (based in Khartoum) with support from TUSVM started a livestock programme to complement the southern sector activities. It initially focussed on rinderpest vaccination and is now increasing activities to facilitation of CAHS. UNICEF/OLS northern sector works with Government counterparts, PARC Sudan and Government veterinary services, to establish CAHS in parts of the south and transition zone.

4.2 OLS Community-based Animal Health Programme 1993-98

The overall goal of the livestock programme is to improve and maintain the household food security of the pastoral people of southern Sudan by strengthening livestock resources and production. Based on participatory rural appraisal, the main constraint to livestock production was found to be disease. Of the many diseases present, rinderpest was identified as the most devastating (Leyland 1996). This led to the development of the following objectives; control and eventual eradication of rinderpest from southern Sudan, and establishment of sustainable, decentralised, community-based animal health services.

4.2.1 Rinderpest Control

During 1993-4, in response to the main priority of livestock owners rinderpest vaccination was the main activity of UNICEF/OLS and two NGOs. Due to lines of conflict, only parts of Equatoria region could be accessed by road from Kenya or Uganda. Most rebel-controlled areas had to be accessed by air from Kenya. Initially the number of places accessed was limited but increased as communities prepared bush airstrips and the Government of Sudan allowed increased flight access. When starting activities in new areas, an initial assessment was carried out to collect information on livestock numbers, distribution, movements, and disease. Meetings were held with local leaders and livestock owners to discuss livestock problems and to explain the rinderpest control programme. Existing animal health personnel, VAs and Stockmen trained before the war or vaccinators trained earlier by UNICEF or ICRC, were refresher trained in vaccination techniques. To increase the size and number of teams, additional vaccinators were selected by the community and trained. In each base, a fridge was set up and operators trained to maintain it. Thermostable rinderpest vaccine, vaccination equipment and protective clothing were supplied to each team. Thermostable vaccine allowed teams to carry vaccine without cold chain for up to one month, allowing wider coverage. The vaccination campaign was planned and carried out with VAs or Stockmen as team leaders and minimal support from UNICEF veterinarians. In some areas vehicles were available to support the vaccinators whilst in others they moved on foot. Vaccinators were paid food for work provided by World Food Programme (WFP).

4.2.2 Establishment of Community-based Animal Health Services (CAHS)

Due to the vaccination campaigns and subsequent reduction in rinderpest outbreaks, there was increased demand from livestock-owners for control of other diseases. From late 1993, the programme moved towards the establishment of CAHS. More NGOs were invited by UNICEF/OLS to become involved and currently there are nine NGOs facilitating CAHS in southern sector areas and four in northern sector areas. The methodology for establishment of CAHS in southern Sudan was based on experiences in Afghanistan (Leyland 1993a), but evolved as experience was gained by UNICEF, NGOs and counterparts. The main components of initiation and establishment of CAHS are detailed below.

Initial assessment: the agency initiates dialogue with the local leaders and livestock owners to gather basic information on the area. The agency confirms that animal health services are a priority in the area and that the community would like to facilitate a livestock programme.

Participatory baseline survey: this takes 2-4 weeks and uses participatory rural appraisal techniques such as group discussions, brainstorming, key informant interviews, ranking exercises, and participatory mapping. It is carried out in villages and cattle camps with different members of the community. Information is gathered on community structures, livestock numbers, management methods, movements, and knowledge of diseases and treatments. This is an opportunity for the agency personnel to familiarise themselves with the area, the livestock situation and the community. It collects baseline data against which future evaluations can be measured. The participatory methods used allow the priorities of the community to be expressed, their extensive knowledge of livestock husbandry and diseases to be highlighted and lay the basis for all community members to contribute to programme development.

Community dialogue: this is a continuous process throughout the programme, and takes the form of discussion of key issues in a variety of fora; formal or informal, small or large group meetings, and workshops. An introductory community dialogue workshop is organised and key members of the community invited; chiefs, civil administration, relief association, cattle camp leaders, livestock owners, and women's leaders. The workshop uses participatory methods, takes about 2 days and includes the following topics:

- identification and ranking of the needs of the area, and of problems related to livestock-keeping,

- livestock disease listing and ranking,
- importance of rinderpest and its control,
- training of local people to be CAHWs, identification of criteria for selection, numbers required,
- sustainability and cost recovery,
- roles and responsibilities of facilitating agency, CAHWs and community.

After the workshop one month is left to allow time for selection of appropriate people for training as CAHWs.

Rinderpest control: during the community dialogue workshop rinderpest is highlighted through discussion of local names for the disease, local knowledge of clinical signs, local strategies to control outbreaks and description of the last outbreak. The programme policies for rinderpest control are outlined; three annual vaccinations of all cattle and ear notching of all vaccinated cattle. Participants agree to assist by presenting all cattle for vaccination, restraining cattle, providing food for vaccinators, paying for vaccination and reporting all disease outbreaks. Collection of blood samples to monitor vaccination is explained.

Introducing sustainability and cost recovery: the disadvantages of free handouts are highlighted through role-plays, and the participants express the need for sustainability and self-reliance. This leads to the formation of a social contract, the listing of the expected roles and responsibilities of the different players in the project; community, animal health workers and agency, which includes payment for treatments and vaccinations. The prices and utilisation of the revenue are agreed. The need for a veterinary co-ordinating committee (VCC) to represent the livestock-owners, monitor the programme, resolve problems of inactive or dishonest CAHWs, take responsibility for the medicine revenue and decide on its use, and assist with community dialogue and mobilisation is discussed. The necessary composition to represent all sectors of the community is decided and usually consists of chiefs, a representative of the relief association, veterinary supervisor, women's representatives and other community representatives.

Training of CAHWs: guidelines for the basic CAHW training have been developed (UNICEF/OLS 1997). It includes the following topics; normal animal, organs and systems, diseases, history-taking, clinical examination, causes of disease, medicines, monitoring, cost recovery system, rinderpest vaccination, planning a vaccination campaign, reporting outbreaks, and dialogue and extension skills. Only control of the most important diseases as identified during community dialogue is covered in detail, and a limited range of medicines introduced. The training lasts 10-14 days and aims to build on the existing knowledge of the trainees using participatory learning methods. Theory sessions alternate with practicals, and the final three days of training are spent carrying out vaccination and treatments in the cattle camps. An oral and practical test is carried out before CAHWs are provided with a basic kit of syringes and needles, medicines and protective clothing. Refresher courses are carried out 6-12 months after the initial training. This is an opportunity for the CAHWs to share successes and failures, and for problems to be solved. Any area of the initial training that was not well understood is repeated.

Selection and training of supervisors/co-ordinators: as the area covered by the programme expanded and the number of CAHWs increased, the need for effective supervisors was identified. Some VAs and Stockmen were excellent team leaders whilst others were less effective. In 1996, two training centres were built and a four-month Animal Health Auxiliary (AHA) training course was started by VSF-Belgium. Trainees come from all parts of southern Sudan. The curriculum includes anatomy, physiology, pathology, animal production and health, disease control, extension and leadership skills, and basic management (VSF-Belgium 1997). Trainees are selected jointly by the local community, local authorities and the agency. Selection criteria include literacy, mathematical skills, honesty, hard working, patience, livestock experience, interest in livestock, etc. The AHAs return to their home areas to become supervisors of the CAHWs. Some of the best AHAs are now being given a further five months training to Stockperson level.

Monitoring and Supervision of CAHWs: once trained, the CAHWs return to their communities and carry out treatment of livestock on payment by the livestock owners. During vaccination campaigns the CAHWs come together to form teams and move amongst the cattle camps carrying out vaccination. Experience shows that regular follow up is required for the CAHWs to perform well. Supervisors visit CAHWs in their home area to see them carrying out their work, and to correct any mistakes in diagnosis, dosing, charging or monitoring. This is an opportunity for community dialogue, to support the CAHW in explaining the policies of the programme, and to understand the attitude of the community towards the CAHW. The CAHWs visit the base monthly to submit reports, revenue and collect medicine supplies. This is another opportunity to identify and discuss problems, and revise training if necessary. A system of recording vaccinations, treatments, revenue and outbreaks has been developed which includes pictorial monitoring forms and vaccination punch cards to allow recording by illiterate CAHWs. These are collated by supervisors and entered on a central computerised database.

Cost Recovery: from the start of the CAHS, cost recovery for animal health services has been discussed and applied. Although this is an emergency relief programme, donors, agencies and counterparts see the advantages of charging for services; avoidance of dependency, CAHWs are remunerated, private pharmacies could operate, and veterinarians might, when peace comes, establish private pastoral veterinary practices (Leyland and Akabwai 1999). The cost recovery system varies between areas but the basic model is as follows. The CAHW charges for all vaccinations and treatments, returns the money to the supervisor and is paid 20 % for his/her work. A percentage is paid to the supervisors (5%) and co-ordinators (2%), and the balance is remitted to the VCC. In principle the revenue held by the VCC is used to purchase more medicines but this is only possible if the money can be changed into Kenyan or Ugandan currency. At present this is rarely possible so it is used to support local initiatives within or outside the livestock sector; building of veterinary stores and offices, schools, clinics, and wells. Due to its temporary nature, the revenue is not used to pay recurrent costs e.g. salaries.

The livestock programme co-ordination meetings set recommended prices for southern Sudan. Initially prices were heavily subsidized at about 80% but this subsidy has been reduced in stages. Currently prices are at approximately 75% full price as delivered to the livestock owner. Full price is calculated as purchase price in Nairobi plus 20% for transport and 20% for the CAHW. It was decided during 1997 to move prices to full cost in 1998, but this has been delayed due to the severe famine currently affecting much of southern Sudan. When rinderpest vaccination started vaccine was provided free of charge and this continued in the CAHS. With the cessation of food for work provided by WFP, the need for CAHW remuneration for vaccination was identified. A charge (30% cost) was introduced for each vaccination, of which the CAHW received 40%. This has been gradually introduced to all areas during 1997 and 1998. Whether this will have a major impact on livestock-owner acceptance of rinderpest vaccination cannot yet be determined because of many other factors affecting vaccination figures. The policy will be monitored and reviewed as necessary. In UNICEF/OLS northern sector, the approach is based on that of southern sector, but is adapted to working with Government counterparts in its implementation. There are existing opportunities for privatized medicine trade so the use of revenue for local initiatives has not been necessary and VCCs have not been formed.

5. RESULTS

5.1 Rinderpest Control

Rinderpest vaccination figures are shown in fig.1. There is an increase in numbers of cattle vaccinated from 1993 onwards, with more than one million cattle vaccinated each year except 1997. The total cattle population in the rebel-held areas is estimated to be 4 million, therefore the coverage in the years 1993-7 averaged 31%. This can be compared with the campaigns during peacetime in the late 1970s that vaccinated 15% of the population (Majok et al 1991). The increased coverage is due to the increased numbers of vaccinators, use of thermostable vaccine, and community participation in

selection of vaccinators and planning campaigns. After 1994 annual vaccination reduced due to reduced demand for vaccination in areas where outbreaks had ceased, and owners not presenting animals for revaccination. The programme also broadened its activities to provide other vaccinations and treatments and invested time in community dialogue and training as the groundwork for the CAHS. Also some of the main cattle areas were inaccessible due to increased insecurity. Southern sector vaccination figures dropped again in 1997 for a number of reasons; repeated annual campaigns in some areas meant that only young animals were being presented, insecurity preventing access to major cattle areas, drought disrupted seasonal movements, and lack of funds prevented timely purchase and delivery of vaccine and equipment. Part of the 1997 drop in southern sector figures is compensated for by the northern sector figures. Northern sector now has access to areas that in 1993 and 1994 were serviced from southern sector. During the current famine, large numbers of cattle have been slaughtered or sold to Uganda and Kenya, seasonal livestock movements have altered, and both livestock owners and CAHWs have been occupied in seeking food causing campaigns to be postponed.

Fig. 1 Number of cattle vaccinated against rinderpest 1989 to 1997 in southern Sudan

UNICEF/OLS northern sector vaccinated 751,560 cattle against rinderpest between Jan 1997 and June 1998 using thermostable vaccine. Of these 174,560 were carried out by community-based vaccinators and CAHWs in the southern region, whilst 577,000 were carried out in the transition zone by mobile Government vaccination teams.

Efficacy of vaccination has been monitored to a limited extent in southern sector through collection of sera from cattle camps where vaccination has been carried out. Table 1 shows the results of rinderpest antibody ELISA tests carried out by National Veterinary Laboratory, Muguga, Kenya on serum collected from a variety of locations between 1995-1997. Although the sample size is small, the results indicate that vaccine handling and injection is being carried out effectively by CAHWs. The percentage of sero-positive vaccinated animals averages 76% compared to 31% in unvaccinated animals. This can be compared with sero-positive rates in conventional vaccination programmes which ranged from 50-80 % in different parts of Africa (FAO/IAEA, 1992).

Table 1. Results of rinderpest antibody ELISA on sera collected from southern Sudan 1995-1997

Region	% sero-positive of total cattle sampled	% sero-positive of vaccinated cattle	% sero-positive of unvaccinated cattle
Bahr el Ghazal	76 (n=231)	82 (n=192)	- (n=0)
Upper Nile/Jonglei	69 (n=220)	71 (n=130)	14 (n=22)
Equatoria	69 (n=395)	74 (n=227)	38 (n=55)
All regions	71 (n=846)	76 (n=549)	31 (n=77)

The number of rinderpest outbreaks confirmed clinically or in the laboratory have greatly decreased from 12 in 1993 to 2 in 1998. In 1993 rinderpest outbreak reports were numerous and outbreaks covered large areas. As vaccination continued reports reduced and outbreaks tend to be focal and easily controlled with vaccination. An exception has been the Torit outbreak in 1998 in an area where vaccination had been limited creating a large susceptible population. In Government areas of southern Sudan, PARC Sudan is responsible for reporting rinderpest outbreaks and UNICEF/OLS northern sector facilitates their investigation of rinderpest rumours.

5.2 Establishment of community-based animal health services

CAHS have been initiated in approximately 80% of the rebel-held agro-pastoralist areas. Some areas are not covered due to lack of agency capacity and other areas are not accessible due to insecurity. In OLS southern sector 621 CAHWs and 95 supervisors have been trained. Six months to three years after training 88% of CAHWs are still active, indicating that selection is effective. The number of

CAHWs required for an area is agreed through community dialogue and is related to the livestock population and their distribution. The overall ratio of CAHWs to livestock unit (LU) is 1:7704, but in areas where trained personnel are meeting needs, the ratio per LU is 1: 4,000-5,000. In other areas the ratio is lower and more personnel are required. There are 33 NGO/UNICEF veterinarians and the ratio per LU is 1:151,515, which is too low for the current intensive phase of community dialogue, training, and capacity building. However, once adequate supervisors have been trained and are working effectively a ratio of 1:100,000 LU could be adequate if access and mobility are not too restricted.

This ratio is relatively low because each supervisor will have a network of CAHWs covering the area. In OLS northern sector 291 community-based vaccinators and 117 CAHWs have been trained. With an estimated cattle population in the Government-controlled areas of 1-2 million, the ratio of CAHWs to LU is very low. In addition 62 community-based vaccinators and 15 CAHWs have been trained in Kordofan, in the transition zone. The number of veterinarians in the Government-controlled areas of the south is 25, employed by PARC Sudan, Government, UNICEF/OLS and NGOs giving a ratio of 1: 40-80,000 vets per head of cattle.

Cattle vaccinations are also provided to control outbreaks of anthrax, CBPP and HS; between 40-60,000 cattle are vaccinated each year. The data presented in table 2 indicate the main disease problems treated in southern Sudan and the activities of the CAHWs, as reported via standard monitoring reports. The figures presented do not reflect either CAHW capacity or livestock-owner demand, but rather the medicine and vaccine supply capacity of the programme. Severe funding constraints in 1997 caused vaccine stocks to finish and medicine supplies to be rationed. This highlights the need to develop a sustainable medicine supply system.

Table 2. Livestock treatments carried out by CAHWs/supervisors - 1997 OLS southern sector

Cattle treatments		Sheep and goat treatments	
Blackquarter	1,156	CCPP/pneumonia	18,578
CBPP/pneumonia	31,119	External parasites	12,264
External parasites	14,969	Internal parasites	27,543
Haemorrhagic septicaemia	1,894	Orf	2,345
Internal parasites	30,113	Skin disease	1,202
Trypanosomiasis	77,051		
Skin disease	1,413		
Other diseases	1,194	Other diseases	379
Total	158,909	Total	124,087

5.3 Household Food Security

The impact of the CAHS on household food security, the goal of the programme, is difficult to monitor. There are many confounding factors affecting livestock productivity; access to grazing and water, droughts, floods, insecurity, and cattle raiding. However communities express their appreciation of the programme's impact on livestock health; the control of rinderpest brings security of livelihood assets and is highly valued. During the 1998 famine, the least vulnerable people are those with livestock to produce milk, meat, or be sold for other foods.

6. DISCUSSION

Animal health services in southern Sudan before the war and in the period of peace 1972-1983 were not effective. Mogga (1986) comments that there were no adequate disease control measures, and that efforts to control rinderpest and CBPP in the south were a failure. Rinderpest vaccination campaigns by JP15 and by German Government-supported teams achieved low vaccination coverage (Majok et al 1991) and met with owner resistance in many areas (Mogga 1986). Mogga (1986) recommended the selection of community representatives who could be trained to provide treatments for common

local diseases and carry out disease reporting. Schwabe and Kuojok (1981) documented the extensive ethno-veterinary knowledge of Dinka traditional healers and Schwabe (1980) recommends their integration into animal health services. Mogga (1986) also recommended that communication between vet services and livestock owners should be improved, veterinary medicines could be supplied at cost through local pharmacies, and vaccination should be charged for since the main problem for livestock owners related to vaccination and veterinary medicines was their availability not their cost. The OLS livestock programme is putting into practice many of these recommendations. The OLS livestock programme is operating in a chronic complex emergency and is part of a multi-sectoral emergency humanitarian relief operation. There is pressure from all stakeholders to achieve quick results, especially from communities in need and donors with short funding cycles (3-12 months). The initial focus on rinderpest vaccination provided rapid results, but fostering of full community participation is a slower process. There continues to be pressure for quick results, conflicting with the time-consuming participatory approach.

In southern Sudan, as in many remote, pastoralist areas, there are many constraints; insecurity, problems of access, poor infrastructure, poor communication systems, lack of trained personnel, and collapsed economy. The chronic complex emergency causes additional difficulties such as loss of resources and trained personnel when programme areas are overtaken by conflict, dependency on flight access for many areas, and control of access of agency staff to certain areas by different parties in the conflict.

The programme aims to facilitate the development of an animal health service that uses a network of CAHWs. During the war this structure can provide basic animal health services to all areas. When peace comes, it can be a basis on which a future Government can build its animal health services. UNICEF/OLS is interacting with potential future decision-makers in north and south, and creating awareness of the community-based system, linked to private veterinarians and pharmacists. Co-ordination meetings attended by UNICEF, NGOs and counterparts are held three times per year. They provide a venue for sharing information, problem solving, standardising cost recovery and prices, and developing disease control and medicine policies.

The CAHS is based on the principles of participation of all sectors of the community, fostered through ongoing community dialogue. The need for regular contact with all parts of the community is essential for this approach, however this is not always possible in conflict situations and inevitably programmes in some areas progress more slowly. Ethno-veterinary knowledge (EVK) is at the core of the CAHS. Sudanese pastoralists have extensive knowledge of animal management and disease in the environment in which they live (Schwabe and Kuojok 1981). In order to utilise the best of both worlds for the benefit of livestock health, the programme seeks to reaffirm their existing knowledge and complement it with modern methods.

The CAHW training method has been developed over several years' experience by UNICEF, NGOs and counterparts (UNICEF/OLS 1997). Most of the CAHWs trained have never received any formal education and are illiterate. Participatory and practical training methods are therefore very important. Repetition of training points is necessary during the training, supervision and refresher training to reinforce knowledge. UNICEF/OLS has organised workshops on adult training and participatory training methodologies to increase the ability of agency veterinarians and counterparts to facilitate community dialogue and carry out CAHW training.

The cost recovery system is accepted in principle by communities, agencies and donors, however putting it into practice can be problematic in southern Sudan. In hindsight, full cost recovery should have been put in place from the outset. Gradually increasing prices has caused confusion amongst livestock owners. The collapsed economy means that different currencies function in different areas and exchange rates are very variable. In some areas currency has no value or there is none circulating, necessitating payment in kind (cereals, goats, chickens, tobacco) with the complications of setting prices in commodities, monetisation of commodities, or their storage.

The current cost recovery system aims to prepare for a privatised animal health service, where livestock owners pay full cost for services to CAHWs. The CAHWs make a profit from their services and are supervised by AHAs who in turn are supervised by private veterinarians. The veterinarians carry out community dialogue to identify needs and involve the community in the development of animal health services, provide training and follow up of the CAHWs, and run pharmacies to supply medicines to the CAHWs (Leyland 1997, Leyland and Akabwai 1998). The role of the government

animal health service would be policy development and regulation of the private system to ensure that animal health services and pharmacists meet technical standards. In southern Sudan, for this system to develop the infrastructure and economy need to be sufficiently developed to allow importation of medicines and equipment. At present export trade in livestock is being re-established to Uganda and Kenya and there is an increase in importation of basic commodities, including small quantities of human and veterinary medicines. These are unregulated, allowing sale of medicines in the open market. For private veterinary practices to succeed regulations must be in place to ensure quality of medicines and restrict their administration and sale to appropriately trained people. For the system to be fully sustainable there needs to be peace.

Significant advances have been made in the control of rinderpest, due to use of thermostable vaccine and the hard work of hundreds of CAHWs. However rinderpest is still endemic in many areas, and control efforts must be maintained. Rinderpest vaccination and outbreak reporting are key topics in community dialogue. The programme, with the assistance of OAU/IBAR/PARC, is committed to moving towards eradication of rinderpest by initially focusing on the west side of the Nile and border areas with Ethiopia and Kenya. OAU/IBAR has channelled funds through UNICEF/OLS northern and southern sectors to increase capacity to put this into practice. OLS southern sector is currently working to formalise an outbreak reporting and investigation system to be carried out at field level by CAHWs and AHAs. In addition an active surveillance system is being developed to be included in community dialogue. Rinderpest control is co-ordinated with northern sector through agreements on coverage, policy standardisation, and sharing of information on suspected outbreaks and investigations.

CAHS in a under-developed agro-pastoralist community such as southern Sudan is a viable method of delivering basic essential animal health services. It appears to be a cost-effective method of providing these services to a community dependent on livestock for household food security. The system is not only applicable in a conflict situation but is appropriate anywhere where local constraints (transport, climate, terrain, access) prevent effective coverage by more conventional government animal health delivery systems.

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