

COMMUNITY-BASED ANIMAL HEALTH DELIVERY SYSTEMS: IMPROVING THE QUALITY OF VETERINARY SERVICE DELIVERY

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Abstract

This paper aims to give a brief introduction to community-based animal health workers (CAHW). It will refer the reader to sources of more detailed information not only on the modalities of establishing quality community-based animal health worker delivery systems but also on those CAHW issues that veterinary policy makers should appreciate in order to make rational decisions on improving the quality of veterinary services.

Referring to the OIE's guidelines on for the evaluation of veterinary services, the paper will utilise evidence produced by various authors and discuss how community-based animal health delivery systems can make a valuable contribution to improving veterinary services. The reader should be aware that all the examples and suggestions made in this paper refer to veterinary service delivery in the more remote and under-served livestock rearing areas of the developing world.

The paper describes how this contribution is primarily achieved through improved linkages between veterinary authorities and the livestock owners and results in provision of privatised clinical services to livestock owners, improved utilisation of veterinary pharmaceuticals, the efficient delivery of sanitary mandate tasks such as vaccination campaigns, disease surveillance and other aspects of epizootic disease control.

Finally some steps that veterinary administrations and authorities may consider in order to allow community-based animal health delivery systems to deliver these improvements, in a regulated manner, are highlighted.

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1. Introduction

The concept of community-based animal health workers (CAHWs) probably arose from experiences in the human health sector. The terminology “barefoots vets” (Halpin, 1981) seems to derive from China’s successful and on going use of “barefoot doctors” to bring basic services to the masses, as described by Chetley et al., 1995. In the early 1970s the World Bank advocated that livestock producers’ associations should include “grassroots level para-veterinarians” (de Haan and Nissen, 1985) this advice was influential and raised awareness. Since that time various groups have developed and refined CAHW systems, for example in Eastern Africa Non Governmental Organisations (NGO) and bilateral agencies have been particularly influential whereas in SE Asia Government veterinary services and been at the fore of their development (Leidl 1996).

McCorkle (2002) has reviewed literature and estimates that since the 1970s, CAHW initiatives have been implemented in 46 nations. A recent survey by the Pan African Programme for the Control of Epizootics (PACE) identified over 390 CAHW projects on Horn of Africa countries alone. Growing interest in CAHW systems is largely related to the high impact on animal health and human livelihoods resulting from improved basic veterinary care in rural communities. Examples of various types of impact are provided below:

Box 1. Some examples of the impact of CAHW Systems

Impact of human livelihoods

- ✓ In Malawi the saving from increased livestock production in areas where CAHWs were active was \$57,000 in the year 1998-99. Farmers with CAHW services were more likely to afford a tin roof, window glass, ox cart, plough and radio, than farmers without access to CAHW services (Hüttner, 2000).
- ✓ In Afghanistan CAHW programmes reduced mortality by 5% in calves, 10% in lambs and 38% in kids, compared with control areas without CAHWs. The benefits to farmers estimated to be \$120,000 per district per annum, while the costs of the programme were \$25,000 per district (Schreuder et al., 1995).
- ✓ In Kenya farmers without access to CAHWs reported 70% more cattle deaths than those farmers who had access to CAHWs. The decrease in mortality provided benefits worth \$48 a year to each farmer using CAHWs (Holden 1997a)
- ✓ A review of Oxfam UK/Ireland's CAHW project in north-east Kenya in 1998 compared livestock mortality in project and non project areas (Odhiambo et al., 1998). In non-project sites annual mortality in camels, cattle and sheep and goats was estimated at 31%, 32% and 25% respectively whereas in project sites annual mortality was 20%, 17% and 18%. The reduced loss of livestock was valued at Kenya Shillings 22,853 (approximately USD 350.00) for each household in the project area and this sum was sufficient to buy grain to feed 2 adults and 4 children for 250 days.
- ✓ Established in 1998, a CAHW project in Simanjiro District, Tanzania, was assessed in May 2001. The use of interviews and participatory methods showed how Maasai pastoralists associated the CAHW service with reductions in calf mortality of between 59 and 93%. This led to increased sizes of milking herds and more cows milked per household. For example, the average number of cows milked per household increased from 5.3 to 24.2 cows. Communities concluded that the increased milk availability had a huge impact on local food security (Nalitolela et al., 2001).

Impact on epizootic disease control

- ✓ In Somaliland CAHWs achieved 95% vaccination efficiency using heat stable rinderpest vaccine – the highest efficiency reported in Africa since the Pan African Rinderpest Campaign (PARC) began (Mariner et al 1994)
- ✓ In the Afar Region of Ethiopia, PARC demonstrated that CAHWs can carry out rinderpest vaccination rapidly effectively and cheaply. In 1995, in neighbouring districts of the Afar region, a CAHW project vaccinated 70,000 cattle using 22 CAHWs, 2 Ethiopian Veterinary Service Staff, 1 vehicle and no cold chain. The efficiency of vaccination³ was 84%. No outbreaks of rinderpest have been reported since this campaign and the area has now been declared provisionally free from disease. The conventional government vaccination teams vaccinated, concurrently, 140,000 cattle using 14 vehicles, 56 staff and a full cold chain. The efficiency of vaccination was 72%.

³ Efficiency = % of ear notched cattle which are sero-positive for rinderpest antibody

Impact of disease reporting and surveillance

- ✓ A study of the activities of over 1000 CAHWs in Ghana found over half were having good to excellent impact on animal health service delivery. CAHWs provide a regular flow of information to veterinary professionals including reporting disease outbreaks (anthrax, peste des petits ruminant and newcastle disease) and the referral of difficult cases (Hanks et al 1999).
- ✓ CAHWs in pastoralist areas have good diagnostic skills. e.g. 1998 Rinderpest outbreak in S. Sudan information rapidly went from Livestock owner → CAHW → Supervisor → radio message to the UNICEF veterinary programme. The outbreak was dealt with quickly using CAHWs. (Jones et al 1998)
- ✓ In the 1980s and early 1990s, Ethiopia received very few reports of rinderpest from the Afar pastoral area due to the paucity of staff in the region and limited contact between the veterinary services and the pastoral community. Numerous reports of epidemic rinderpest were received from more sedentary communities surrounding the Afar, who had more regular access to services. This information bias led authorities to further focus rinderpest control resources around the Afar area but not in the Afar area. When it was realized, through active surveillance, that the Afar was the endemic area, a CAHW system was introduced that resulted in appropriate surveillance and vaccination control efforts. Rinderpest was eradicated from Afar and the surrounding communities within 3 years. (Mariner 2002).
- ✓ In Somalia, the GTZ “Central Rangelands Development Project” used basic information supplied by CAHWs to increase understanding of the epidemiology of contagious caprine pleuro pneumonia (CCPP) (Baumann 1993).
- ✓ In Ethiopia in 1996 an unknown respiratory disease of camels was first reported by an Afar CAHW to local PARC authorities. The disease subsequently spread to the Ogaden, Somalia and northern Kenya.

It is evident from Box 1 that CAHWs can not only provide valuable veterinary care, but also act as reporters of disease outbreaks and contribute to disease surveillance systems. Considering CAHWs from an economic perspective, the issue of transaction costs is paramount. Ly (2002) described research in Senegal started in 1995 and concluded that “the comparative advantage of CAHWs is so strong in many areas, that in the current economic climate, they appear to be the only economically viable mechanism for delivering veterinary services”. He also describes the emerging institutional linkages between private veterinarians to CAHWs and discusses how these offer a mechanism for extending the ethical commitment of the veterinary profession into remote areas, and of reducing the government’s transaction costs in coordinating CAHWs to provide public goods. If we accept this evidence and similar research concerning more remote and underserved livestock rearing areas of developing countries (Leonard 2000; Ly 2000; Odeyemi 1996), CAHW systems are the most economically efficient way to provide privatised veterinary services. Despite evidence of the impact of CAHWs, relatively few countries have officially recognised this level of worker or support community-based animal health delivery systems through appropriate policies and legislation (Young and Woodford, 2002). The following sections of this paper use the OIE guidelines on the evaluation of veterinary services to show how CAHWs can complement public sector veterinary activities and also help to develop private sector veterinary services under professional supervision.

2. Effective and sustainable community-based animal health delivery systems

Although CAHWs can provide very useful primary veterinary care to livestock keepers, many projects have failed to address important technical, social and sustainability issues. Indeed, a very wide range of modes of project designs and implementation are currently used and with varying levels of success. Common problems include failure to fully involve communities in analysis of problems and solutions, and limited attention to financial sustainability (McCorkle 2002).

Within Africa, many years of experience now shows the importance of establishing CAHW systems as partnerships between communities, government and the private sector. The key requirements for establishing sustainable CAHW projects are summarised in Box 2 and the relationships between the various actors are illustrated in Figure 1. In the example in Figure 1, the ‘project’ only exists when the system is being established and gradually phases out as linkages between the community, CAHWs, private clinic and government are strengthened. It can be noted that this system provides scope for government to contract out certain public sector duties to the private sector. Such duties include vaccination campaigns and disease surveillance, and can be implemented using teams of CAHWs under professional supervision.

Box 2. Key requirements for sustainable and effective community-based animal health delivery systems

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- ❑ Livestock owners perceive they have an animal health problem
- ❑ Local communities participate in an inter-active way in all aspects of service development. This includes defining the problem, planning, contribution of time and resources, defining criteria for selection of CAHWs, agreeing a prescribed relationship with private vets i.e. this includes payment of full cost for services rendered by CAHWs and the government vets who regulate and monitor, selection of CAHWs, post training reviews, monitoring, de-selecting CAHWs who perform poorly, recognising refresher training etc..
- ❑ The CAHW system is based on sound business principles in terms of capitalisation, loans, turn-over, re-investment and profit generation.
- ❑ Training is based on participatory and adult-learning methods, , standardised but flexible to respond to needs within different communities.
- ❑ The roles and reporting relationships of the cadres of worker “CAHW” and “Animal Health Technician” (the term paraveterinary professional is defined later in this paper) and “veterinarians” are described and recognised by the veterinary authorities. This includes geographical definition of where CAHWs are allowed to operate, that is, where they will and will not be licensed to operate⁵.
- ❑ The opportunity for private veterinary practitioners to be awarded contracts for provision of public good services (vaccination, disease surveillance) the so called “sanitary mandate” is availed.
- ❑ The policies and strategies of the veterinary authorities toward CAHS are in line with practice and enforcement of veterinary professional legislation including pharmaceutical supply laws.

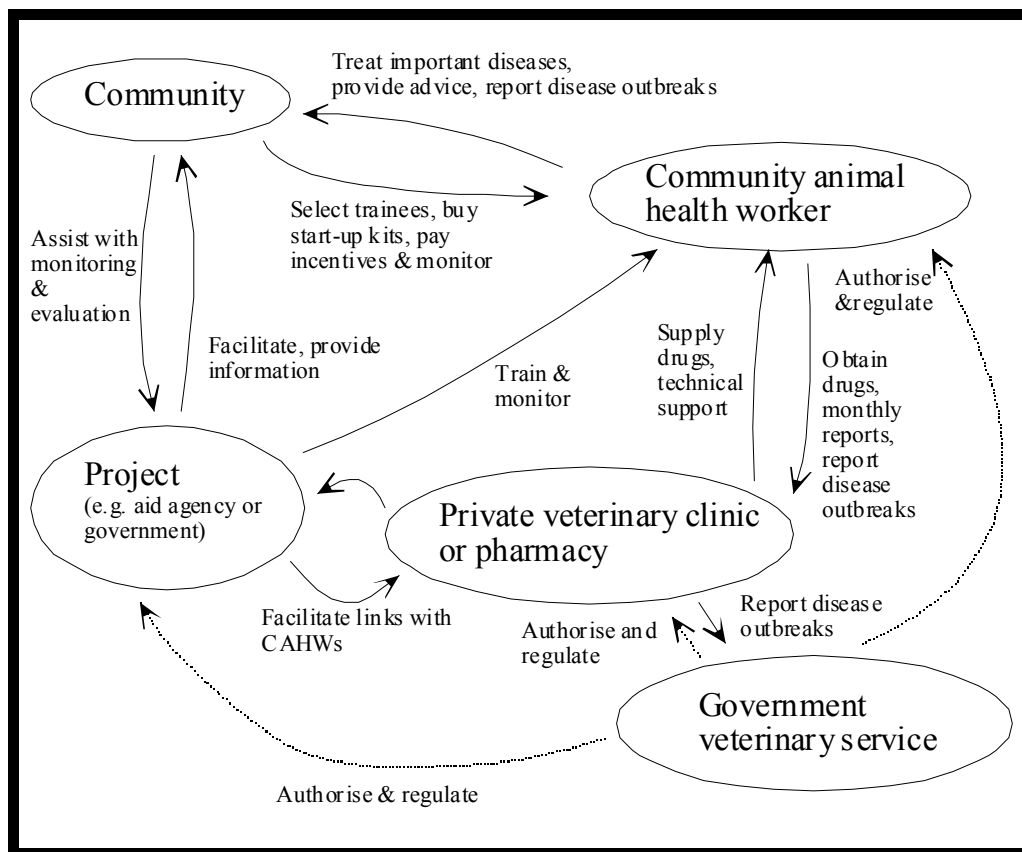
Combining all the above parameters into one initiative that improves the quality of veterinary service delivery nationally is a complex task. It does need long term strategic and operational plans that are regularly reviewed, commitment and initiative. It requires strong vertical linkages between field veterinary workers and veterinary authorities. It does require veterinary administrations to define the roles, relationships (legal and administrative) of the various cadres of veterinary worker to each other and to the national Veterinary Services. It certainly requires the ability to enforce appropriate legislation that deals with the veterinary profession and the supply of veterinary pharmaceuticals. These requirements are all basic evaluation criteria as described in the OIE’s guidelines for the evaluation of veterinary services.

Some commentators observe that a CAHW system in which farmers organisations are the main partners to veterinary authorities offer more accountability and ability to regulate service quality than other models particularly if those organisations are made responsible for granting operating licenses to para-veterinary staff (CAHWs and Animal Health Technicians). The argument states that as the members of farmers organisations become more educated they will automatically discard people with limited training (CAHWs) and opt for more technical services, thereby increasing quality. This is a valid perception and certainly worth investigating. Unfortunately there is little evidence to support this view, indeed the trend appears to toward the establishment of private individual veterinary businesses (McCorkle 2002) that are more viable for many documented reasons (Leonard 2000; Ly 2002). These reasons include their internal management (stock control and communication), potential for growth (motivation/commitment, ability/experience, idea and resource bases), external environment (institutional support framework, policy and legal framework, competition, infrastructure, soci-cultural factors, technological factors) and options for diversification (Okwiri et al 2002). As summarised in Box 1 numerous impact assessments have shown that CAHW systems based on individual initiative do improve production and relieve poverty in areas where they operate other such reports include Leyland 1993, Blakeway 1995, Holden 1997b, Catley 1997, Barrett et al 1998, Oakley 1998, Kaberia 1998, Catley 1999, Catley et al 2001, Admassu 2002. Box 1 refers to case studies of CAHWs being the primary and first reporters of notifiable and unknown disease outbreaks, other examples include Mariner, J.C. 2000, Leyland et al 1998. Furthermore CAHW systems have an enviable record in terms of high coverage and immunity rates in vaccination campaigns (FAO/IAEA. 1992, Mariner et al 1994, Jones et al 1998, Jost et al 1998, Leyland 1996).

⁴ Currently available in English only; a French version should be available by the end of 2002.

⁵ The criteria for where community-based animal health delivery systems (CAHS) should function well largely relate to areas where conventional private practices would be uneconomic. For example CAHS should be allowed in remote, extensive grazing areas but not necessarily in peri-urban dairy, pig and poultry areas where conventional practices could be viable

Figure 1. Relationships between the key actors in a CAHW system (source: Hadrill et al., 2002)



3. Community-based animal health care, national veterinary services and the OIE

If we accept the evidence presented in this paper that CAHW systems can improve livestock productivity and contribute towards disease surveillance then there is a strong argument to incorporate CAHW systems into national veterinary services in developing countries. This process does not require CAHWs to become a permanent feature of veterinary policies and legislation, because legislation can be structured to allow for long-term economic development (Cooper 2002). For example, increasing levels of income and education among livestock keepers may lead to demand for, and ability to support more sophisticated veterinary inputs. When considering how to provide official support to CAHW systems, policy makers need to consider international issues and specifically, OIE guidelines on the evaluation of national veterinary services.

This section uses OIE guidelines to show how CAHW systems can improve the quality of national veterinary services. The OIE Animal Health Code's guidelines for the evaluation of veterinary services states that '*Veterinary Services shall conform to certain fundamental principles, regardless of the political, economic or social situation of their country*'. Evaluations are either to assist a national authority in the decision-making process regarding priorities to be given to its own Veterinary Services (self-evaluation) or to assist the process of risk analysis in international trade in animals and animal-derived products to which official sanitary and/or zoonosanitary controls apply. In both situations, the evaluation should demonstrate that the Veterinary Services have the capability for effective control of the sanitary and zoonosanitary status of animals and animal products. Because the quality control of animal products works at a particular level (veterinary certification, slaughter and quarantine procedures), CAHW systems are primarily concerned with the zoonosanitary status of the animals.

The OIE evaluation guidelines are organised into eight major categories. The sections below discuss how CAHW systems can assist veterinary services to meet the requirements of each category, with particular attention given to under-served areas of developing countries.

3.1 Organisation And Structure Of The Veterinary Services

In this category the OIE code advises that:

'Veterinary Services should define and set out ...in detail...their policy, objectives and commitment to quality systems and standards. This will include descriptions of 'lines of command' and 'formal relationships with statutory authorities' and the 'roles, relationship (legal and administrative) of veterinary authorities at regional level to each other and to the national Veterinary Services'. Furthermore, those responsible for key capabilities need to be described and the key capabilities include 'epidemiological surveillance, disease control, import controls, animal disease reporting systems, animal identification systems, traceability systems, animal movement control systems, communication of epidemiological information and inspection and certification. Laboratory and field systems and their organisational relationships should be described. Once systems are in place the OIE advises that in order to 'reinforce the reliability and credibility of their services, the Veterinary Services may have set up quality systems that correspond with their fields of activity and to the nature and scale of activities that they carry out. Evaluation of such systems should be as objective as possible.

Based on evidence presented earlier in this paper it can be argued that CAHW systems have a key role in strengthening the capabilities (epidemiological surveillance, disease control, animal disease reporting systems) of veterinary services in remote and under-served areas (Box 1). Community-based animal health delivery systems can also assist with animal identification systems, traceability systems, animal movement control systems. In remote areas of developing countries where infrastructure and enforcement of regulations is weak, CAHWs have an important, but as yet untapped role to play in raising awareness on the need for these capabilities. Community-based Animal Health Workers have already proven to be excellent entry points for human health, relief and conflict management issues in such areas (Minear, 2002).

To make the best use of CAHWs, they need to be brought under the control, responsibility and guidance of the veterinary authorities both at regional and national level. To achieve this, authorities need to define the roles of the various cadres of 'para-veterinarian' in revised legislation. Para-veterinarians are people who carry out certain veterinary professional tasks according to the recommendations of the relevant statutory body (usually the veterinary board or council) and delegated to them under the supervision or direction of a registered veterinary surgeon or a specific notice. Therefore in legal terminology, the commonly-used term 'paraveterinary professional' includes animal health assistants, livestock technicians, CAHWs and other veterinary workers who are not veterinarians. Examples of clear legislation are available, such as the Veterinary Surgeons and Para-Professionals Act in South Africa (Cooper, 2002). Once the roles, levels of supervision and reporting relationships are defined, national veterinary services should be able to describe 'lines of command' and 'formal relationships'.

A challenge to some veterinary authorities is the development of the 'quality systems that correspond with their fields of activity and to the nature and scale of activities that they carry out'. This may require the re-structuring veterinary departments and retraining staff to ensure that quality systems are objective and transparent. Development of such systems certainly require the use of performance indicators and these have already been developed for epidemiological surveillance (Mariner et al., 2002). Well designed CAH projects normally use verifiable indicators and the quality of CAHWs can be continuously checked and upgraded through statutory accreditation and refresher training.

3.2 Quality Systems

The OIE's guidelines on internal quality control system are not particularly detailed. For example,

'Where the Veterinary Services undergoing evaluation make large use of formal quality systems in the delivery of their services, it is appropriate that greater emphasis be placed on the outcomes of evaluation of these quality systems than on the resource and infrastructural components of the services'. The nature of the quality systems are largely determined by national veterinary services.

It will be important to ensure that quality control procedures for CAHW systems are declared by national veterinary services. For example, the system of accreditation, monitoring and supervision of CAHWs should be detailed. In Ghana and Indonesia CAHWs require annual license renewal by the Regional Director of Agriculture. In Zambia

preparations are underway to license CAHWs nationally. The basis for licensing is that regulatory bodies have the power to remove licenses from CAHWs who contravene regulations.

If evaluations are to be “*more interested in the outcomes of evaluations of quality systems*” then there is scope to include impact assessment in quality control. Participatory methodologies for CAHW systems have been developed (Catley, 2002).

3.3 Human Resources

This category in the OIE code is important for CAHW systems and states that,

‘Veterinary Services should demonstrate that their human resource component includes an integral core of full-time civil service employees. This core must include graduate veterinarians. It should also include other qualified professional officers, administrative officials and technical support staff. This does not exclude the possibility of employing, in addition, part-time veterinary and para-veterinary staff and private sector veterinarians. It is essential that all the above categories of staff be subject to legal disciplinary provisions. Data relating to the resource base of the Veterinary Services undergoing evaluation should be available’. Furthermore the ‘functions of the various categories of staff in the Veterinary Services should be described in detail’ in order to allow ‘analysis and estimation of the appropriateness of the application of qualified skills to the tasks undertaken by the Veterinary Services and may be relevant, for example, to the roles of veterinary and animal health technical assistants in field services’. This component of evaluation is to ensure that ‘disease monitoring is being conducted by a sufficient number of qualified, experienced field veterinarians who are directly involved in farm visits ; there should not be an over-reliance on technical assistant staff for this task’.

This advice is required for an ‘*estimate of the a potential of the Veterinary Services to have reliable knowledge of the state of animal health in the country and to support an optimal level of animal disease control programmes*’ The guide suggests that to ensure the private sector reports disease outbreaks, ‘*legislation (e.g. compulsory reporting of notifiable diseases) and administrative (e.g. official animal health surveillance and reporting systems) mechanisms*’ need to be in place.

These statements are clear in their intention. If veterinary services are to utilise para-veterinary workers then roles must be clearly defined both administratively and legally. Although this is feasible, in many countries CAHW systems still operate outside the law. They are tolerated because they meet an important local demand or authorities are powerless to stop them, or both. In these circumstances livestock owners have no redress for poor service or negligence. Issues of public health, medicine control, animal welfare, veterinary law and ethics are not properly regulated.

The process of legal recognition and regulation of CAHWs has started in several countries:

- In Uganda, CAHWs may be licensed for specific geographical areas and the veterinary board can define CAHW activities specify training and supervision requirements. Similar enabling legislation is in place in Namibia and South Africa.
- In the Republic of Tanzania, a review of the Veterinary Surgeons Ordinance has made considerable progress. Draft legislation states that the term “Para-Veterinary Professional” is used to describe any person to whom certain veterinary professional acts have been delegated under the (defined) supervision of a registered veterinary surgeon.
- In 1997 Kenya held a series workshops to define roles of paraveterinary staff including CAHWs. Subsequently, the Kenya Veterinary Board approved a CAHW curriculum that defines the minimum knowledge that any CAHW must possess in order to be accredited. The curriculum not only discusses the technical content of CAHW training courses but also, some of the support mechanisms for implementation by training agencies. These mechanisms include adequate community involvement, sustainable drug supply and reporting relationships. Kenya is currently formulating a training manual for trainers of CAHWs and discussing how best to licence CAHW trainers. The practicalities of accrediting CAHWs with their supervisors or veterinary managers in defined geographical areas are also under discussion.

Supervision and responsibility are issues that require careful consideration. We should not ignore the circumstances in some of the more remote and marginalised areas of developing countries and be realistic in terms of what can be economically expected.

The United Kingdom has attempted to define the levels of supervision according to the veterinary procedure to be used. This principle can be developed for CAHWs. For example, a CAHW deworming a flock of goats in a remote place in Africa is unlikely to require the same level of supervision as required by an African CAHW taking part in a vaccination campaign using a heat labile vaccine. At the end of the day nearly everyone is agreed that registered veterinary surgeons must control para-veterinary staff. Quality assurance and ethical supervision is an important element in the veterinary profession's role in the provision of veterinary services and given the legislative power this could be added to CAHW systems. If this is to occur a range of legal mechanisms must exist to accommodate the provision of services by paraveterinarians and these must be under the control of the veterinary profession.

Some commentators argue that legalising CAHWs will create a sub standard service in isolation of the veterinary profession. Furthermore, it is said that veterinarians are unable to compete with the less expensive service offered by CAHWs, as is the case in some West African countries. However, in those areas where CAHWs are working legally but independently, it seems that legislation is flawed. With careful consideration to legal structure, stakeholder analysis and with a long term perspective it is feasible to build flexibility into legislation by using mechanisms such as primary and subsidiary legislation.

Primary legislation is the provisions of the main statute and is only changed by parliament – a lengthy and costly process. Subsidiary legislation can be changed by a Minister (of Agriculture) under the guidance of a veterinary board or council and as defined in the primary legislation. For example, if the roles and responsibilities of paraveterinary professionals are defined in subsidiary legislation, these roles can be amended by a Minister as advised by a veterinary board or council. Such a mechanism allows for the potential removal or phasing out of a category of paraveterinary professional from the legislation.

A further level of flexibility occurs in many countries as the veterinary profession is usually granted the power (through boards or councils) to regulate their affairs and supervise the professional conduct of their membership through procedures for the investigation of complaints and a disciplinary committee. This can allow constant assessment of the roles and impact of para-professionals. For example, the South African Veterinary Council, has the ability to register both veterinarians and paraveterinary professionals and there by control their activities.

Despite the potential to use revised and well-structured legislation as an enabling mechanism for CAHW systems, developing countries cannot ignore the commonly held view that their capacity to enforce policies and laws (new or old) is decreasing. In the authors' experience this capacity is increasing as government veterinary authorities re-assess their roles and strengthen their ability to regulate. However enforcement does remain a prime issue in many areas. The argument that we should not develop strategies, operational plans and legislation because the resources are not there to implement or enforce them is unlikely to impress external evaluators of the quality of veterinary services! It may be the case that resources available in developing countries are unequal to those in developed countries but optimal use of existing and available resources should be applied. It has been argued that CAHW systems actually make the best use of limited resources (Ly, 2002).

3.4 Material Resources

This section of the OIE code emphasises the need for adequate communications '*within the field services components of these programmes*' and the availability of '*reliable transport facilities*' ... '*particularly to the field services components of animal health activities (e.g. emergency response visits)*'. The section also comments on the need for adequate cold chain facilities '*to provide suitable low temperature protection for laboratory samples in transit or awaiting analysis, as well as veterinary medical products (e.g. vaccines)*'.

In the more remote and marginalised areas of developing countries, particularly in Africa, roads and communications are poorly developed (for example, see Table 1).

Table 1. People, land, infrastructure and communications: a comparison of the USA and Horn of Africa (source: CIA Fact Book, 1999)

	USA	Horn of Africa
Human population	272.6 million	157.2 million
Geographical area	9.62 million km ²	5.21 million km ²
Population density	28.27/km ²	30.17/km ²
Roads - total	1.50/km ²	0.03/km ²
Roads - paved	0.41/km ²	0.004/km ²
Telephones/1000 people	626	4.3

In these conditions veterinary services need to be able to show that despite communication difficulties they maintain ‘reliable knowledge of the state of animal health’ and the ability to implement ‘animal disease control programmes’ in a given zone. Community-based animal health delivery systems have proven to be useful for improving both disease surveillance and disease control in such areas (see Box 1). Oakley (2002) has reported the opinions of farmers and service providers in Ghana and Mozambique and noted how advice or help often arrived too late because veterinarians were inaccessible. He concluded that the speed of initial advice and diagnosis was greatly enhanced in areas where CAHWs operated.

Considering this part of the OIE code, CAHWs provide an opportunity for national veterinary services to demonstrate that they are supporting services that can operate in remote and marginalised areas. The development of infrastructure and communications in such areas is outside the control of veterinary services.

3.5 Functional Capabilities And Legislative Support

This section of the OIE code states that:

The Veterinary Services should be able to demonstrate that they have the capacity, supported by appropriate legislation, to exercise control over all animal health matters. And the animal health matters include among others ‘appropriate, compulsory notification of prescribed animal diseases’ ‘controls over the use of veterinary medicines’, etc. Furthermore ‘arrangements should exist for co-operation with the veterinary authorities of the neighbouring countries for the control of animal diseases in border areas.

Legislation has been discussed in detail above with a view to the inclusion of CAHW systems in the veterinary legislation as one category of paraveterinary professional.

In Africa and elsewhere, nomadic and trans-humant pastoralists cross international borders during traditional migrations. Such movements are often essential to the very survival of these people but at the same time, present problems for national veterinary authorities in terms of disease control, movement control and traceability. Community-based animal health delivery systems can alleviate these problems if neighbouring countries agree common strategies in remote border regions. Community-based animal health workers have proven to be a valuable source of information in remote border areas where conventional veterinary services are usually scarce. They are able to provide rapid disease surveillance information and assist with disease control activities. Not least, they can certainly act as an entry point to pastoralist communities and provide extension messages on movement control and sustainability issues. Without the collaboration of the livestock owners, government has little chance of establishing movement controls in the most remote areas.

A further challenge for national veterinary services is to work with neighbours to ensure mutual recognition of CAHWs who work across borders. Such recognition would ensure that CAHWs can provide disease information to veterinary authorities regardless of their location at a particular time. Registers of CAHWs in border areas could be shared by neighbouring veterinary services and CAHWs could be identified using an identity card which is recognised on both sides of an international boundary.

3.6 Animal Health Controls

One of the key requirements for the OIE is that:

‘an exporting country should be able to provide further, detailed elaboration of any elements of its animal disease status as reported to the OIE. The ability of the Veterinary Services to substantiate elements of their animal disease status reports with surveillance data, results of monitoring programmes and details of disease history is highly relevant to the evaluation. An evaluation should look at any on going disease control programmes in terms of ‘programme plans, incidence and prevalence data, resource commitments, interim results and programme review reports’ along with the ‘presence of a functional animal disease reporting system’. It is possible for the veterinary administration to zone the country and in this scenario variation in disease reporting systems between zones is acceptable considering other factors such as ‘the ability to satisfy trading partners that sound animal health controls exist to prevent the introduction of disease or export products from regions of lesser veterinary control’.

Mariner (2002) has described in detail the role of CAHWs in disease surveillance and reporting systems. But to what degree are veterinary services using CAHW systems in an organised and supervised manner? In Chad over 3000 CAHWs have been trained in the last 25 years. There is a standardised curriculum and a ministry department mandated to supervise CAHW training and activities (Grace, 2001). However there appears to be little record of their role in disease surveillance. One problem appears to be the implementation of many CAHW systems by non governmental organisations (NGOs) and the poor links between these projects and government reporting systems. The PACE Programme is currently working to ensure better integration of NGO activities with the disease reporting needs of national veterinary services.

Should importing countries feel that CAHW systems though appropriate to conditions on the ground in remote, extensive grazing areas are not sufficient in terms of animal health controls, there remains an option for veterinary administrations to zone their countries. For example, export animals can be moved from areas where CAHW systems operate using defined procedures to “disease free” or “export” zones” where there is a sufficient density of veterinarians to monitor their disease status, to the standard required by the importing country.

3.7 Veterinary Public Health Controls

The control of chemical residues in exported animals, animal products and feedstuffs is a major concern for any nation intent on increasing its export trade. The OIE code states that residue surveillance *‘programmes should be coordinated nationwide’*. The OIE acknowledges that *‘primary control over veterinary medicinal products may not rest with the veterinary authorities in some countries, owing to differences between governments in the division of legislative responsibilities’*. But in terms of quality, veterinary services should be *‘able to demonstrate the existence of effective controls (including nationwide consistency of application) over the registration, supply and use of veterinary medicines, biologicals and diagnostic reagents ...as the...the control of veterinary medicines has direct relevance to the areas of animal health and public health’*.

A common argument against CAHW systems is that they result in the uncontrolled use of veterinary pharmaceuticals leading to drug resistance, residues and export bans. The sentiments behind this argument are sincere. Unfortunately the actual situation in many developing countries, particularly sub-Saharan Africa is that there is, already, very little control of veterinary pharmaceutical use in rural areas. However, research in Ghana and Mozambique shows how CAHW systems are one of the few means to provide better information to livestock keepers on proper drug usage (Oakley, 2002). This finding agreed with other reports that note how CAHWs regarded by livestock owners, particularly poor livestock owners, as a source of advice (Holden 1997a; Hüttner 2000; McCorkle 2002; Oakley 2002). This research also showed that the ability of producers to pay for veterinary drugs was a key influence on whether a full course or partial course of treatment was given and consequently underdosing was common. This issue affected the behaviour of all service providers, including private veterinary professionals. However, CAHWs were better at providing complete treatment courses than either extension staff or farmers. Other research in Tanzania also shows that CAHWs assessed by a team of veterinarians provided adequate diagnostic and curative services, and used veterinary drugs correctly (Woodford, 2002).

Oakley also found that farmers, for good economic reasons, were normally unwilling to heed advice on drug withdrawal periods or to condemn carcasses of treated animals. This may reflect the reason why very little advice on withdrawal periods is supplied by para-veterinary professionals including CAHWs. However, it is believed that because CAHWs are from local communities, respected and contactable they could be used to raise awareness on the importance of not only drug withdrawal but also the need to complete treatments and dose correctly. In deed, AU/IBAR has repeatedly

shown that as livestock owners realise, through CAHWs, that a complete course of treatment using a quality drug has a greater chance of a long term cure, they start to insist upon it. The commonest example of this, is the use of long acting 20% oxytetracycline injections. All AU/IBAR linked CAHW projects use this antibiotic for obvious reasons. Initially owners are resistant to its use because it is more expensive, the injection size is relatively large, and they cannot differentiate between 20%, 10% and 5% oxytetracyclines. However in most projects, the owners will after a few months, realise the cost effectiveness and insist upon the 20% formulation.

3.8 Performance Assessment and Audit Programmes

With respect to the evaluation of quality, the OIE guidelines recommend that veterinary services develop and publish an '*official strategic plan*' that is '*regularly updated*'. The guidelines recommend that any strategic plan be complemented with an '*operational plan*' that includes '*performance indicators*' as '*veterinary services which use strategic and operational plans may be better able to demonstrate effective management than countries without such plans*'. This sound advice fits with many CAHW projects because these projects are designed and monitored according to the requirements of international aid donors. Consequently, performance indicators, logical frameworks and other monitoring and design procedures are often well developed. Performance indicators specific to CAHW systems are described in detail by Catley (2002). With the correct linkages, it should be relatively easy to fit CAHW systems into the plans and frameworks of veterinary services. In Kenya the Director of Veterinary Services is now insisting that every NGO wishing to work in the field of animal health agrees a memorandum of understanding with the department. Once the Kenya Veterinary Board starts licensing CAHWs, any individual or organisation using CAHWs will also have to apply for and register their activities with the board. It is at this stage that the state veterinary service can ensure new initiatives are in line with their strategic plan and performance indicators.

4. Conclusions

The OIE in collaboration with the World Trade Organisation (WTO), the UN Food and Agriculture Organization, the World Health Organization (WHO), and the World Bank, has a stated aim of working to strengthen developing countries' capacity to establish and implement sanitary and phytosanitary (SPS) measures. The OIE animal health code is one part of these measures.

The OIE guidelines for evaluating veterinary services offer clear opportunities for developing countries to demonstrate improved services and surveillance in marginalised areas via support to CAHW systems. Although this paper cannot discuss all issues in sufficient detail, there is a need to ensure continued debate, research and development of CAHW systems. In the next years veterinary services are likely to be increasingly challenged to provide evidence of quality services and disease status in areas with severe operational and resource constraints. This paper concludes that developing countries' chances of attaining quality veterinary services as guided by the OIE are enhanced by the adoption of well planned and regulated CAHW systems.

National veterinary planners and policy makers need to ensure that community-based animal health care is written into the national strategy and plans. This will require the allocation of time and staff to deal specifically with CAHW issues. Key activities for national veterinary services include:

- ***Define the roles of CAHWs***
This will involve stakeholder analysis, standardising training curriculum and establishing procedures for licensing and supervising CAHW systems.
- ***Review legislation***
This will ensure that para-professional veterinary workers are brought under the control of veterinary authorities. Any review must have a long term perspective and result in appropriate primary and subsidiary legislation to ensure optimal flexibility.
- ***Strengthen linkages***
Ensure that linkages between veterinarians (public and private) and para-veterinary professionals are well defined and supported

- **Support privatisation**
Assist privatisation of veterinary services in remote areas by developing a strategy and guidelines for contracting out “sanitary mandate” tasks to the private sector.

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⁷ An international conference on Primary Animal Health Care: Policy, Legislation and Institutions will take place in Mombasa, Kenya from the 15th – 18th October 2002. Proceedings will be available from the Interafrican Bureau for Animal Resources of the African Union.

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[MSOffice1]Just as vet services and vet administration are defined in the code - we need to come up with a definition of Para-veterinary and part time staff, animal health technical assistants etc

[MSOffice2]Add ? - or their agents for whom they are responsible eg the para-veterinarians

This could be worded along the lines of "veterinary services should be able to show that technical assistants are adequately supervised and that disease monitoring information supplied by technical assistant staff is

[MSOffice3]cross checked

[MSOffice4]Why is this underlined

[MSOffice5]Regionalisation could come in here