

The effectiveness of community-based animal health workers, for the poor, for communities and for public safety

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Summary

The development of community animal health (CAH) is an invaluable tool for addressing a series of challenges, particularly for the policy-maker, whose prime concern is public welfare. This paper examines three of the major challenges which confront governments, particularly the governments of less-developed countries, namely, the collapse of government services, the crucial issue of poverty reduction and the misuse of animal drugs.

Although CAH is a potentially powerful tool for approaching all of these problems, the authors argue that CAH can only be fully exploited on a macroscopic level by developing strong institutions to support and regulate such community initiatives. In some countries, developing such institutions depends upon accepting the more fundamental and controversial principle of legalising non-professional animal health service providers who work within the private sector.

In Section 1, the authors outline the three principal challenges which face governments, particularly in developing countries, and to which CAH offers a potential solution.

Sections 2 to 4 investigate the evidence relating to each of these challenges in turn.

Section 5 briefly draws on the lessons that have been generated by field experiences over the years, to propose how governments may develop CAH systems to their best advantage.

Keywords

Community animal health – Community-based animal health worker – Drug administration – Drug resistance – Livelihood – Medicine misuse – Poverty – Residue – Service.

Challenges to which community animal health offers a solution

Understanding of the impact, risks and potential of community animal health (CAH) initiatives has steadily improved, particularly since the mid-1990s. Initially, CAH schemes tended to invest as many resources as possible into implementation and support, and lamentably few into evaluating results (17). In recent years, however, it has been possible to move beyond individual, anecdotal examples of the success of such schemes to a significant and compelling body of evidence about CAH. This evidence demonstrates the potential of CAH as a tool for addressing some key challenges facing governments, particularly in developing countries.

This section details the impact of CAH on those challenges.

The authors broadly divide these challenges into three groups, as follows:

- the failure of government provision of Veterinary Services
- the reduction of poverty
- the prevention of the misuse of medicines.

The challenge of failed government services

Although it is possible to point to exceptions, an overwhelming trend in both rich and poor countries has made government provision of clinical Veterinary Services a thing of the past.

Depending on the country, this has been driven by a combination of the following elements:

- debt
- structural adjustment
- an economic model or paradigm which allocates the provision of 'private goods', such as Veterinary Services, to the private sector.

However, in the case of the poor, one does not see, and is unlikely to see, any real provision of animal health services by private veterinarians, or by anybody else who must provide a financially viable service over long distances.

Surprisingly to some, it is usually the case in extensive systems (i.e. systems in which the livestock-holder does not invest large amounts of capital in his enterprise) that conventional veterinary treatment by a veterinarian is not worth the cost to the herder, even when the result of the treatment is positive (27). The higher the income expectation of the service provider, in this case the veterinarian (who is at the expensive end of the scale), the fewer the number of cases which are financially worthwhile for the herder to treat (low-capital enterprises being at the less lucrative end of the scale).

Furthermore, the marginal areas where one sees the highest proportion of poor livestock-keepers are characterised by poor infrastructure, few vehicles and low population densities, all of which place considerable costs on both the service provider and the livestock owner who must contact them (15). Indeed, studies in Zimbabwe suggest that transaction costs are the major constraint in determining the expressed demand for animal health services (28).

Perhaps most striking in this respect is the work of Odeyemi (21). The model which he developed in Zimbabwe and Indonesia analysed the density and value of livestock and the income expectations of veterinarians to predict the viability of private veterinary provision in any given place. His findings show that there are vast areas (approximately 40%, in the case of Zimbabwe) which private Veterinary Services simply cannot service – mainly those inhabited by poor livestock-keepers.

The challenge is therefore one of an institutional vacuum at the point of service delivery, due to the decrease in the provision of government services, in combination with the inability of private veterinarians to fill the space left behind.

There is also reason to believe that the problem is particularly acute for the poor, due partly to demographics and partly to the economics of the supply of livestock services.

In Section 2, 'Community animal health as a way of addressing failed government services, especially in regard to the poor', below, the authors therefore examine the evidence that CAH

can provide a substitute for the absence of government services, paying particular attention to the provision of services for the poor.

Case study: veterinarians cannot supply economically sustainable services to over 38% of Zimbabwe

Livestock in Zimbabwe are served by veterinary centres in 63 towns, the majority of which are run by the state (20). Odeyemi conducted a study to model the impact of reduced state funding on the economic viability of these veterinary practices, and its effect on the health care coverage of the national, commercial and communal herds (20).

His model calculated their economic viability by comparing the minimum revenue required by a practice, called the veterinary coefficient (VC), to the income that the practice could feasibly generate.

The VC, calculated at the national level, includes average figures for practice running costs and the salaries of private veterinarians. The potential income of a practice depends on the number of livestock in its catchment, its distance from clients (i.e. travel costs), and the amount that farmers are willing to spend on veterinary services. These data are combined to give a practice viability index (PVI) for each veterinary centre. If the PVI is greater than or equal to one, the practice is deemed financially viable; if less than one it is considered unlikely to survive.

Using information gathered through questionnaires and government statistics, the study predicted that only 38 of the existing 63 practices would be commercially viable if State funding was discontinued.

In this scenario, only 47% of the national herd would be covered by veterinary health care. Two-thirds of the non-viable practices exclusively serve communal herds so, although 70% of the commercial herd would have health cover, less than 36% of the communal herd would be covered.

The study by Odeyemi indicates the regions in which private veterinary practices would not be viable (Fig. 1). However, CAH systems, with their lower income expectations, and the fact that the income is only part of the main income of the CAH worker (CAHW), can and do operate in unshaded areas of the map.

Geographically, regions that private veterinarians could not cover are shaded white in figure 1. Regions shaded light grey show where veterinary coverage would be reduced by a programme of privatisation, while in the dark areas veterinary practices would remain viable.

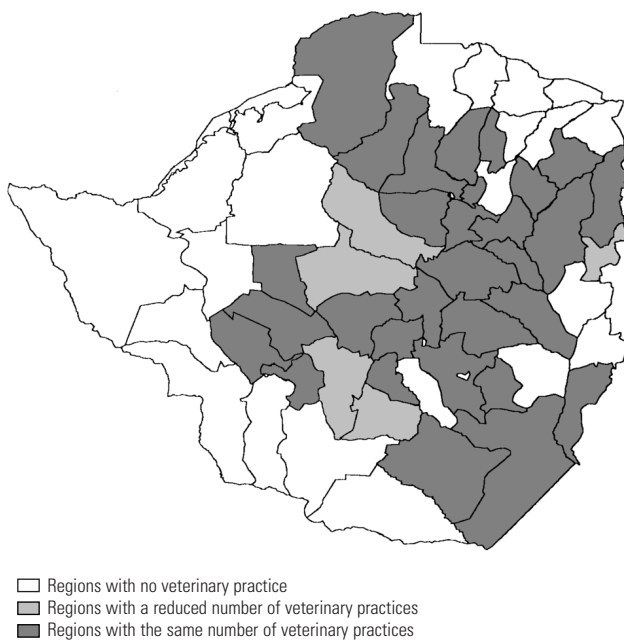


Fig. 1
Changes in the provision of veterinary services in Zimbabwe, following privatisation, 1996

Source: (20)

A similar study by Odeyemi and Setiono, which used the same model in Indonesia, also found that veterinarians could not supply clinical services throughout the study area without substantial government subsidy.

The challenge of poverty

The poverty levels of many countries remain high, despite long-term efforts to improve living standards. In some countries, particularly those of sub-Saharan Africa, the number of poor people is increasing, whilst in other regions of the world, such as South Asia, poverty numbers have remained constant despite relatively high levels of economic growth. The development challenge posed by these high levels of poverty is enormous. Governments and donors alike are now redoubling their efforts to reduce poverty through country-led poverty reduction strategies.

In relation to livestock, the authors estimate that, for some 700 million people worldwide, livestock potentially provides one of the few practical vehicles for escaping poverty (13). However, a review of more than 800 livestock projects concluded that eradicating poverty through this approach is not as easy as it may seem (13). Soberingly, years of interventions to directly improve the skills, technology and even the livestock holdings of the poor have, in most cases, yielded no real demonstrable effect. Community animal health programmes are one of the few approaches to date which have been shown to have a positive impact.

The authors expand on this by reviewing the literature and referring to specific research in Section 3, 'Community animal health as a tool for addressing poverty: the benefits to the poor', below.

The challenge of preventing medicine misuse

The incorrect use of medicines (dosage, duration or drug), notably antibiotics and worming treatments, increases the risk of bacterial resistance, and therefore presents an increased disease hazard to both animal and human populations. The difficulty faced by government and private veterinarians in penetrating, and therefore in regulating, areas where black markets provide drugs of unknown origin or quality to people with no training is clearly a cause for concern. The challenge here is whether the rudimentary training of CAH workers is sufficient to improve drug use in marginal areas. This issue is examined in detail in Section 4, 'Evidence that community animal health is a useful tool for addressing the misuse of medicines', below.

This paper now looks at the potential role of CAH in addressing each of these three challenges, in turn. A review of the literature has been used in every case. Furthermore, grouped sets of case studies, which are specifically designed to examine the challenges of poverty and the misuse of medicines, are presented in their respective sections.

Community animal health as a way of addressing failed government services, especially in regard to the poor

Willingness to pay

As CAHWs work in the private sector, it is not sufficient for the poor to want this service, they must be able to pay for it as well. The authors examine the financial sustainability of CAH below. However, to assess whether this service can be of practical use to the poor, one must first ask if the poor can afford to pay. The rationale for CAH is that, because these services are local (providing reduced transaction costs) and affordable (as CAHWs have lower income expectations), they will be more accessible to the poor.

Certainly, it would be a mistake to think that the poor do not generally pay for services. It would be exceptional to find a community where the poor are not accustomed to paying for a range of services which they receive on a daily basis from neighbours and itinerant service providers, even if these payments are not always made in cash.

Hooton and Moran (9) used both the available literature and original research in Tanzania to examine the willingness of the poor to pay for animal health services. The literature was sporadic, but provided several examples of the poor paying for CAH services. Encouragingly, where Hooton and Moran did find examples of the poor not paying for services, this was invariably due to these services having been free in the past, and therefore the poor expected them to remain so. Another reason was the reluctance of the poor to pay close family members for services. Both these issues can and should be addressed when initiating a CAH scheme.

The work of Hooton and Moran in Tanzania shed much light on how much people are willing to pay, indicating that the poor would pay no less than their richer neighbours. This confirms the findings of Holden (7), who examined the use of services by different wealth categories in Kenya. Hooton and Moran postulate a plausible reason for this, below.

Why poor households are as willing to pay for services as wealthier households

As Hooton and Moran show (9), those farmers with only a few cattle run a far higher risk of livestock disease causing a significant impact on their total holding, and thus have a great incentive to prevent any loss. Wealthier households can better afford occasional losses, and the relative value of CAHW services is no greater for these farmers than for the poorer cattle-owners (when willingness to pay is expressed per head of cattle).

In the case of poultry keepers and Newcastle disease (ND), poor households, owning only chickens or having lost all their chickens, were those for whom vaccination would have the greatest relative benefit. Wealthier household heads often showed little interest in their chickens. Thus, while poorer households clearly had less disposable cash, the value of the intervention was relatively greater for them (9).

The extent to which animal health services are used by rich and poor

C.M. McCorkle, in association with the In Development Limited (IDL) Group, reviewed CAH projects in Tanzania, Kenya and the Philippines, comparing the data from sites which have established CAH schemes with data from similar sites with no schemes. The conclusions of this study show the extent to which animal health services are used by different wealth groups, and the types of services which each wealth group demands (11).

It was found that livestock-keepers access services from a wide range of suppliers (Table I). The range of suppliers and the frequency with which they are used vary among the study sites. For example, in Kenya, in villages without CAHWs, the most frequent source of animal health services is drug stores whereas,

Table I
Frequency with which different types of animal health services were used by farmers (number of times in previous year) in three case studies: Kenya (1997), the Philippines (2001) and Tanzania (2001)

Type of animal health service	Villages with and without CAHWs					
	Kenya		Philippines		Tanzania	
	With	Without	With	Without	With	Without
CAHW	1.65	0.00	2.34	0.00	5.90	0.00
Traditional doctor	0.46	0.22	0.87	1.05	2.33	3.19
AHA/VEO	0.21	0.00	0.7	0.66	1.14	4.32
Drug store	2.1	3.61	0.00	0.03	0.86	2.68
Owner			1.58	2.55	0.48	0.43
Veterinarian			0.56	0.92		
Local expert			0.54	0.65		

CAHW : community animal health worker

AHA/VEO : animal health assistant/veterinary extension officer

in neighbouring Tanzania, the most common source of advice is government animal health staff. In the Philippines, most people without access to CAHWs treat their animals themselves.

The frequency with which different kinds of services are used is greatly altered by the presence of a CAHW (Table I). In villages with CAHWs, livestock-keepers use CAHWs more frequently than any other service provider. The exception is in Kenya where, despite an increased use of CAHWs, drug stores remain the most frequent source of advice and treatment. However, drug stores are used less frequently by livestock-keepers with access to CAHWs than by those who do not have access to CAHWs.

These data confirm that, in areas where there are CAHWs, livestock-keepers make regular use of their services, often in preference to the services of other animal health providers. In addition, reportedly lower levels of livestock mortality appear to be correlated to the frequency with which these livestock-keepers use the services of CAHWs.

Rich and poor livestock-keepers tend to use different types of animal health service providers (Table II). When an average figure is taken across all villages, poorer farmers in Kenya and the Philippines use CAHWs more frequently than any other health provider. However, richer farmers make greater use of drug stores and government personnel.

These data strongly suggest that poor farmers are indeed willing to pay for the services of CAHWs and that, furthermore, the services of CAHWs are readily accessible by these poorer farmers.

Table II
Frequency with which different types of animal health services were used by wealthy and poor farmers (number of times in previous year) in three case studies: Kenya (1997), the Philippines (2001) and Tanzania (2001)

Average figures have been taken across all villages in each case study, both those with and without access to a community animal health worker (CAHW)

Type of animal health service	Kenya		Philippines		Tanzania	
	Wealthy farmers	Poor farmers	Wealthy farmers	Poor farmers	Wealthy farmers	Poor farmers
CAHW	1.74	1.35	1.13	1.20	4.28	1.80
Traditional doctor			1.50	0.70	2.93	2.44
AHA/veterinarian	0.63	0.18	1.95	0.93	2.05	3.33
Drug store	3.16	0.88			2.23	1.08
Other			1.40	2.70	0.60	0.33

AHA : animal health assistant

The effectiveness of community-based animal health in compensating for reduced government services

Livestock-keepers clearly value the services of CAHWs. More than 70% of livestock-keepers who lived in villages which had CAHWs ranked these workers as their preferred animal health service provider (Table III). Interestingly, in Kenya, when these results were disaggregated by wealth, findings indicated that CAHWs were of even greater importance to the poor than they were to the richer groups (Table IV).

The reasons given by livestock-keepers in Tanzania for preferring a particular kind of animal health service provider

Table III
Preferred animal health service providers in three case studies: Kenya (1997), the Philippines (2001) and Tanzania (2001), in regions where community animal health workers were available

Country of case study	Type of service provider (percentage of respondents who ranked this type as most preferred)				
	CAHW	Drug store	Traditional doctor	GOK vet/AHA	Other
Kenya	82%	11%	2%	4%	0%
Philippines	88%	0%	5%	5%	0%
Tanzania	71%	2%	12%	15%	0%

CAHW : community animal health worker

GOK vet/AHA : Government of Kenya veterinarian or animal health auxiliary

Table IV
Number of times sample farmers used their preferred animal health service provider in the previous year, categorised by wealth, and aggregated across the Kenya, Philippines and Tanzania studies

(Results were of a similar order from all locations)

Financial status of farmer	CAHW	Government employed service provider	Drug store
Wealthy	1.74	0.63	3.16
Poor	1.35	0.18	0.88

CAHW : community animal health worker

suggest that such preferences are based on a combination of the following:

- the proximity of the service provider to the livestock-keeper
- the ability of the service provider to treat animals.

Although most farmers consider that better-trained animal health assistants and veterinarians provide a more 'professional' service, these 'professionals' were often considered to be 'too far away' to be useful. A similar finding was observed in Kenya.

The choice of service provider does not appear to be driven solely by cost. Drug stores, for example, were acknowledged as being cheaper than other service providers, but only 2% of respondents in Tanzania ranked drug stores as their preferred supplier of animal health services.

Vaccination provides some of the strongest examples of CAH delivering animal health services more effectively than the State. Animal health workers trained by the Decentralisation of Livestock Services in the Eastern Regions of Indonesia (DELIVERI) project in the Indonesian province of North Sulawesi, for instance, successfully vaccinated village chickens against ND in ten of the twelve villages where they were working. Government extension and assistance programmes, on the other hand, had frequently failed. Following vaccination, the incidence of possible ND outbreaks in all villages involved in this project decreased from 30 (reported for the preceding year) to two unconfirmed instances. Reasons for the success of the project, given during an evaluation, were as follows:

– CAHWs were more able to provide a timely service (both in terms of delivering the complex course of vaccination on the appropriate date, and supplying the service after dark, when the chickens were penned)

– CAH provided the ability to mobilise sufficient numbers of chicken-keepers to make it financially worthwhile to make the journey to obtain the vaccine from neighbouring towns (C. Lexmono, unpublished findings, 1998).

Another example comes from the Pan African Rinderpest Campaign, which compared the efficiency and cost of vaccination provided by CAHWs with those provided by government vaccination teams, using thermostable rinderpest vaccine in the Afar region of Ethiopia. Community animal health workers achieved a vaccination coverage rate of 84%, compared to 72% for the government teams. Furthermore, CAHWs stopped the circulation of the rinderpest virus after a single vaccination campaign, whereas the areas served by government vaccination teams continued to experience outbreaks. The comparative success of the CAHWs is further underlined by the fact that the team of 20 CAHWs, supervised by two veterinarians, moved on foot, and vaccinated a total of 73,000 cattle in one season. However, more than three times as many government vaccinators, using 14 vehicles, vaccinated only 140,000 cattle over the same period (2).

Community animal health as a tool for addressing poverty: the benefits to the poor

If one accepts the available evidence that CAH services can and do reach poor livestock-keepers, one must then examine the scale of their benefits to assess their value as a tool for addressing poverty. Are the cheaper services offered by CAH sufficient to improve herd health significantly? And is this improvement large enough to have any impact upon the livelihoods of the poor?

The theory of community animal health as a tool to reduce poverty

Theory would suggest that the animal health services provided by CAH should certainly have an important influence on the living standards of the poor, if one analyses the potential role that livestock have in building the livelihoods of the poor, and the degree to which disease undermines that potential. The authors therefore briefly expand on these theoretical aspects, before examining the evidence from field studies.

In assessing the impact of CAH, it is tempting to look at the productive capacity of livestock in isolation. Indeed, the effect of CAH on productivity and mortality is easier to quantify than its influence on other, less tangible, benefits.

Such quantification, however, is likely to provide a dramatic underestimation of the impact of CAH. Some authors consider the productive capacity of livestock to be of minor importance to the poor, compared to the other benefits which such livestock provide (1). 'The role of livestock in reducing poverty', below, details the ways in which livestock are fundamental to the lives of many poor, in addition to their classic roles as producers of meat, eggs and milk.

The role of livestock in reducing poverty

Livestock play a valuable role in supporting the livelihoods of many poor people. Estimates suggest that over 50% of rural people who live on US\$1 per day or less rear some form of livestock, often in the form of poultry, sheep and goats, pigs or donkeys (26).

Livestock contribute towards the livelihoods of poor people in many different ways, as follows:

- Livestock produce high-value products (eggs, milk, meat) which can be sold or consumed. The demand for livestock products, unlike that for many other agricultural products, is rising rapidly as urban incomes rise, making livestock production a particularly attractive livelihood option for poor people.

- Livestock generate manure and draught power which provide contributions to or 'inputs' into cropping and transportation services. The integration of livestock into crop farming greatly increases the 'outputs' (results) and sustainability of crop production, particularly in rain-fed areas where the majority of poor people live.

- Livestock are a financial asset. They are a common means of savings which accumulate over time, often at a faster rate than they would in a bank, but which can readily be sold to meet large or unexpected cash costs, such as medical or school expenses, or during times of crisis.

- Livestock graze on open-access common resources. This enables poor people who have no land to convert public resources (such as common grazing) into high-value private products, such as meat and milk, which can be sold.

- Livestock enable poor people to diversify and so better manage risk.

- Livestock reinforce social networks. Socially related activities such as these are often seen as 'unproductive' but, in practice, are highly valued for their ability to secure social capital which can play an important role in future livelihood security, especially for the vulnerable.

These attributes make livestock production particularly attractive to poor people. Many poor people see livestock enterprises as a means of escaping poverty. Livestock, for example, are the most popular form of investment for people (especially women) who participate in credit programmes, and are commonly cited by poor people as their best option for improving livelihoods (14).

If one considers that the poor so often live in the very areas most affected by pests and diseases, the multi-dimensional impact of disease becomes a generic problem affecting large numbers of the rural poor. In Africa, for example, it is estimated that there are approximately 67 million poor livestock-keepers living in areas affected by tsetse fly, and 28 million living in areas affected by East Coast fever (10). Losses from disease can be

high, particularly in areas where livestock-keepers are unable to gain access to animal health services. Data presented in the section entitled 'Evidence from other surveys' suggest that livestock-keepers without ready access to veterinary services can expect to lose up to 25% of their stock every year through disease.

Whereas high animal mortality rates and impaired productivity contribute to poverty and increase the vulnerability of the farmer, the case study from Uganda, below, illustrates how the impact of disease is magnified by its effects on other elements of the livelihood of the livestock-owner.

Case study: the impact of disease on livestock-related livelihoods in Uganda

This case study comes from Mbale (a district in Uganda). In the context of existing livestock-keeping strategies and the multiple roles that livestock play, mortality rates represent not only a loss in savings, but also create many wider consequences.

An outbreak of cattle disease in 1995 reduced the availability of draught power for cattle owners, but also increased its price for households who relied on hired draught for cultivation, affecting the poor disproportionately and putting draught power out of the reach of most. This led to a renewed reliance on hand hoes for cultivation, from which the area has still not recovered. It also reduced the amount of manure available, affecting crop yields for those who could not afford inorganic fertilisers.

Furthermore, ND in poultry has reduced the numbers of chickens, and consequently affected the role that they play in livestock and wider asset accumulation strategies.

These problems have together discouraged many from investing in livestock, in addition to influencing the social institutions around livestock, which are themselves very important for the poor (1).

It is important to note that the increased vulnerability caused by disease discourages people from keeping livestock, although, ironically, the poor often consider livestock to be their most practical route out of poverty (see 'The role of livestock in reducing poverty', above). The risk of disease is a key factor which shapes decisions on investing in livestock. The choice of species and breeds, the management systems under which the animals are reared and, indeed, the level of investment itself all reflect, to a large degree, the extent to which livestock are vulnerable to disease. People whose livestock are particularly at risk will either avoid owning livestock, or else they are restricted to low-input, low-output livestock enterprises (i.e. low investment, low gain). It is therefore not surprising that many poor people consider better access to veterinary services as a crucial area for action if they are to improve their livelihoods.

Nevertheless, to achieve improvements in livestock health, reduce disease-related vulnerability and thereby increase livestock holdings, the services provided by CAHWs must clearly be effective. Although rudimentary training cannot cover all eventualities, trainees are equipped with the knowledge to treat simple and common conditions. It would be surprising if this knowledge were not sufficient to have some impact and, indeed, below, McCorkle argues that CAHWs may in fact be better placed than veterinarians to have a significant effect upon important diseases (11).

A changing landscape of livestock disease

As a result of the increased adoption of effective vaccines (among other health improvements), pandemics no longer represent the major health constraint to livestock production. Rather, as Perry *et al.* (23) convincingly demonstrate, the principal constraint now comprises parasitic, respiratory, deficiency and multifactorial diseases, linked to production factors which heighten stresses on animal health and nutrition. This changing landscape reduces the need for large numbers of veterinary professionals. Instead, it calls for relatively simple but regular and more targeted attention to individual herds and animals. Governments are hardly in a position to provide such individualised attention; nor should they be. But neither are private professionals working alone under conditions in most developing countries (11).

Thus, those involved in CAH have always believed that CAH has a clear impact on poverty. However, until recently, the evidence has been based on valuable, but sporadic, anecdotal and often subjective cases. Some of the more useful examples of these are detailed below, in 'Evidence from other surveys'. For a more systematic approach, the authors again return to the work of the IDL Group and McCorkle in Tanzania, Kenya and the Philippines (11).

Evidence from other surveys

A project conducted by Oxfam (United Kingdom and Ireland) in Kenya found the following mortality rates in communities with CAHWs, as opposed to those without:

- mortality rate of camels in communities with CAHWs: 20%
- mortality rate of camels in communities without CAHWs: 31%
- mortality rate of cattle in communities with CAHWs: 17%
- mortality rate of cattle in communities without CAHWs: 32%
- mortality rate of small ruminants in communities with CAHWs: 18%
- mortality rate of small ruminants in communities without CAHWs: 25% (22).

In the Simanjiro District of northern Tanzania, as part of the VETAID Participatory Animal Health Programme, CAHW interventions reduced calf mortalities from East Coast fever

from pre-intervention levels of 50% to 60% down to levels of 0% to 5% in client households.

On a project led by the Food and Agriculture Organization of the United Nations in Afghanistan, a study of overall annual mortality found significantly lower mortality rates in both young and adult ruminants in districts which had CAHWs. Mortality rates for calves, lambs and kids were 25%, 30%, and 22% lower, respectively, in districts with CAHWs, while the rates for cattle, sheep, and goats were 3%, 40%, and 60% lower, respectively (25).

In Andhra Pradesh State, in India, the resource group Anthra, founded by a team of women veterinary scientists, went into partnership with a 'grassroots' organisation and another local non-governmental organisation (NGO) to train female CAHWs. These CAHWs, in turn, trained village women to combat poultry diseases, using herbal and homoeopathic remedies as well as conventional healthcare and husbandry methods (3). As a result, flock mortality decreased from an average rate of 70% to 17% in one year (1998). In the following year, 1999, flock mortality further decreased to 11%. Furthermore, most regions achieved a mortality rate of only 5% by the year 2000. These first-year gains alone translated into annual household savings of 30,000 Indian rupees (INR) to INR 50,000. As of November 2000, 200 women in 20 villages were participating in this effort (3).

On a poultry project in Burkina Faso, CAHW-delivered vaccinations were sufficient to staunch the epidemics that had previously killed up to 60% of poultry in the region. In consequence, village production in the region increased by approximately 1,000 tonnes per year (11).

World Bank projects which instituted CAHW components in the Central African Republic and the Democratic Republic of the Congo (former Zaire) increased meat yields by 1,500 to 2,000 tonnes, with an economic rate of return of 15% and 36%, respectively. Upon full development, these projects were expected to show gains of 10,000 to 15,000 tonnes (29).

Evidence from field studies in Kenya, Tanzania and the Philippines

The three following case studies are presented together, as they were designed to a standard format, to enable generic conclusions to be more easily drawn across all sites.

The study sites

Kenya – 1997

Data on the impact of CAHWs in Kenya were collected from Kathekani district, a semi-arid region mid-way along the highway from Nairobi to Mombassa. This area has been settled relatively recently, by migrants from more densely populated

regions of Kenya. Most people are involved in a mixture of activities, including farming, livestock rearing and part-time work in commercial enterprises. Livestock in this region are vulnerable to trypanosomosis and tick-borne diseases. Veterinary services were provided through a government veterinarian, posted some 80 km from the site. A decline in public resources had, however, greatly limited the extent to which the public veterinarian was able to service the needs of the community he served. Privately operated drug stores had opened within the study site and a number of untrained individuals were attempting to provide treatments and drugs to livestock-keepers.

In an effort to improve access to quality animal health services, an NGO called the Intermediate Technology Development Group (ITDG) trained 30 CAHWs to serve the farming communities. At the time of the study, these CAHWs had been working in the area for more than ten years.

Tanzania – 2001

The study site in Tanzania is located within the Babati Division. The Babati Division covers 832 km² and has a total human population of 78,300 (1997 estimate). The exact numbers of livestock in this division are not known, but the recent rinderpest vaccination programme gave a figure of 105,068 cattle. Tick-borne diseases are also prevalent in the area. As in the case of Kenya, economic recession has curtailed the activities of the extension workers. In an effort to remedy this situation, in 1995, an NGO called Farm Africa trained 47 CAHWs to provide services to 22 villages of the Babati Division.

The Philippines – 2001

The NGO Heifer Project International, an organisation that helps poor farmers to acquire livestock, has established a programme at the third study site, on the island of Mindanao in the Philippines. Civil unrest has isolated Mindanao from the rest of the country and levels of poverty are high on the island. Poverty, lack of access to resources and armed conflict affect the livelihoods of over 90% of the rural population. Many people in the area are dependent on agriculture, but farm landholdings are becoming smaller. Livestock ownership is not widespread. The Heifer Project International programme comprises a livestock credit programme, to enable poor farming families to acquire livestock for draught purposes, to provide manure for crop-based activities, and as a means of diversifying their sources of income. This programme also established a trained network of para-veterinarians to promote the health and productivity of the animals acquired on credit, and to reduce the incidence of zoonotic diseases.

Common features of these community animal health worker programmes

The three study sites followed similar procedures in the selection, training and monitoring of CAHWs. All CAHWs

were nominated by their community for training, and received from two to three weeks of training in:

- the diagnosis and treatment of common diseases and conditions, including worms, wounds, foot rot, abscesses, bloat, diarrhoea and retained placenta
- disease prevention through, for example, regular deworming and spraying of acaricides
- improved animal husbandry, including dehorning, disbudding and hoof trimming
- improved animal management skills such as farm hygiene, bedding, ventilation, quality of feed and forage and stocking rates.

Once the CAHWs had been trained, they were equipped with basic veterinary equipment and drug supplies. The CAHWs were allowed to charge for the services they provided, and the fees earned were used to replenish drug supplies. The NGOs monitored the activities of the CAHWs and provided occasional refresher training courses.

In Tanzania, a memorandum of understanding was established between the local government veterinary officer and the CAHWs to ensure that the CAHWs operated under the supervision of the government veterinarian.

At all three sites, CAHWs were expected to (and did) refer more difficult cases to the government veterinarian.

Methodology

The objective of the surveys was to quantify the impact of CAHWs on the mortality and morbidity of livestock, and to assess the economic and livelihood benefits associated with the presence of CAHWs.

The impact of CAHWs was assessed by comparing livestock-keepers with access to the services of a CAHW with similar livestock-keepers who lived in areas without access to a CAHW. A random sample of livestock-keepers was selected from villages with and without CAHWs, with equal numbers of participants drawn from rich and poor households. At each study site, a total of 80 families were interviewed. Forty families came from villages with CAHWs (20 of whom were rich, 20 of whom were poor). Forty families were also selected from villages without CAHWs, and these families were, again, equally divided between rich and poor.

Teams of local enumerators were used to conduct the survey. The enumerators were trained in the use of a pre-designed questionnaire, which they then adapted to reflect local circumstances and linguistic nuances. The enumerators used a variety of participatory techniques, such as the use of progeny histories, to aid in the recall of key events (sales, births and deaths) that occurred among the livestock. These data were triangulated with existing livestock numbers, to ensure that the

recall of past events tallied with existing numbers of animals. The frequency with which households used the services of different types of animal health providers (government, private, informal) and the kinds of treatment used were also recorded. Ranking and proportional piling (a participatory rural appraisal technique, by which preferences are indicated by the proportion of counters assigned to a specific variable) were used to help quantify farmer preferences for different animal health providers, as well as the perceptions held by the livestock-keepers of their relative quality of life and the sustainability of their livelihoods.

The impact of community animal health workers on livestock health and family livelihoods

The importance of livestock to farm livelihoods

All the sample households owned some form of livestock, although the number and type of livestock varied with the wealth and location of the respondents (Table V). Average herd/flock sizes were considerably larger in Tanzania (11 cattle and 16 small ruminants), compared to those in Kenya (3 cattle and 16 small ruminants) and the Philippines (2 cattle and 5 goats or pigs).

Table V
Number and type of livestock reared by sample households in Kenya, the Philippines and Tanzania

Country	Wealthy farmers			Poor farmers		
	Cattle	Sheep/ goats/pigs	Poultry	Cattle	Sheep/ goats/pigs	Poultry
Kenya	5	19	7	0	12	6
Philippines	2	6	16	1	3	15
Tanzania	16	23	14	6	8	9

Despite large variations in the number of livestock owned at each site, as well as among the different study sites, the relative importance of livestock to family income was broadly similar (Table VI). Even if one does not include the important broader role of livestock in farming livelihoods, livestock contributed, on average, between 28% and 42% of household income, with relatively little variation between rich and poor families. Together with cropping activities, the production function alone of livestock was the most significant component of farming livelihoods. These findings suggest that interventions which strengthen the contribution of livestock to livelihoods are likely to have a marked and positive impact on poverty.

Disease as a constraint on livestock production

The data gathered through memory recall of progeny histories suggest that disease-related mortalities in Kenya and Tanzania (Table VII) are relatively high. At these two study sites, families without access to CAHWs lost between 15% and 25% of their

Table VI
The relative importance of livestock to household income in sample households in Kenya, the Philippines and Tanzania

Contribution to household income*	Kenya	Philippines	Tanzania
Crop income	30%	31%	32%
Livestock income	42%	28%	28%
Waged labour	15%	25%	13%
Petty trading	13%	10%	12%
Various forms of service provision to neighbours		3%	8%
Various handicrafts		3%	7%

* The findings are broadly similar among wealth categories

herd or flock each year. These high levels of mortality are a significant source of risk for herders and severely erode the productive capacity of the herd. The direct financial losses alone from such high death rates ranged from US\$120 to US\$180 per family per year (Table VIII). It should also be noted that, since livestock make other contributions to the livelihoods of these families, this figure is likely to be an underestimation.

These losses represent a major drain on resources in regions where the average *per capita* gross domestic product is just US\$265 (29).

Table VII
Average livestock mortality rates per annum on sample farms with and without access to community animal health workers in Kenya, the Philippines and Tanzania

Country	Farms without access to CAHWs		Farms with access to CAHWs	
	Cattle	Sheep/goats	Cattle	Sheep/goats
Kenya	19%	22%	11%	7%
Philippines	3%	12%	0%	6%
Tanzania	15%	25%	9%	17%

CAHWs : community animal health workers

Table VIII
Average losses from livestock mortality per sample household per year, in United States dollars, in Kenya, the Philippines and Tanzania

Country	Farms without access to CAHWs	Farms with access to CAHWs	Financial benefit of CAHWs
Kenya	\$161	\$74	\$87
Philippines	\$119	\$19	\$100
Tanzania*	\$183	\$82	\$101

CAHWs: community animal health workers
*drug expenses are the same for each group

The impact of community animal health workers on losses through disease

The CAHWs appear to have a significant effect in reducing the losses associated with high levels of mortality. The mortality rates reported for large and small stock were considerably lower in villages with CAHWs, when compared to the rates of similar villages without CAHWs (Table VII). When the average was taken across the three study sites, mortality rates for large and small species were approximately halved in villages with access to a CAHW. The scale of this impact on mortality does not appear to vary greatly with wealth (Table IX). Mortality rates on poor farms in villages with CAHWs were reduced by a similar order to those on wealthier farms.

Table IX
Mortality rates in sheep, goats and poultry (per annum) on wealthy and poor sample farms, with and without access to community animal health workers, in Kenya, the Philippines and Tanzania

Country	Wealthy farms		Poor farms	
	Without access to CAHWs	With access to CAHWs	Without access to CAHWs	With access to CAHWs
Kenya	24%	5%	19%	11%
Philippines	18%	8%	6%	3%
Tanzania	17%	17%*	33%	15%

CAHWs : community animal health workers

* There are differences in cattle mortality rates on richer farms between those villages with community animal health workers and those without (14% as opposed to 9%, respectively)

Using information on local livestock prices, the direct reductions in mortality alone which are associated with the services of CAHWs translate into an average financial gain of between US\$87 and US\$101 per household per year (Table VIII). Given that many of the sampled households are living on less than one dollar per day per person, such gains in income through CAHWs represent a significant increase.

The impact of community animal health workers on livelihoods

The positive impact of CAHWs on disease losses appears to have had a consequential beneficial effect on the livelihood strategies of livestock-keepers.

Households in villages with CAHWs were indeed more willing to rear livestock because the risk of losses caused by disease was perceived to be lower. In Kenya, detailed livestock census data showed that, on average, in villages with an active CAHW, over 90% of families reared cattle or small ruminants, whereas, in villages without CAHWs, less than 70% of the village engaged in livestock production. This benefit was felt most by the poorer members of the village. In villages without CAHWs, none of the poorest quartile of the village engaged in ruminant (i.e. cattle, sheep or goat) production. In villages with CAHWs,

approximately 64% of the poorest quartile owned or reared at least one ruminant animal.

The impact of CAHWs on disease losses also translates into qualitative improvements in the non-financial dimensions of the livelihoods of farmers. People perceived that the quality of their livelihoods was markedly higher in communities with access to CAHWs, as measured by the following:

- a) quality of life
- b) the ability of these livestock-keepers to withstand drought.

People with access to CAHWs scored their 'quality of life', on average, as being 15% higher than those without access to CAHWs, out of a score of one hundred (Table X). The effect on vulnerability to drought was even more marked: scores for ability to withstand drought were, on average, over 33% higher for communities which had access to CAHWs.

Table X
Benefits to the livelihoods of sample farms with and without access to community animal health workers in Kenya, the Philippines and Tanzania (scores out of one hundred)

Livelihood benefit	Without access to CAHWs	With access to CAHWs
Ability to survive drought		
Philippines	56	56
Kenya	30	70
Tanzania	58	66
Average	48	64
Quality of life		
Philippines	58	60
Kenya	40	60
Tanzania	66	70
Average	55	63

CAHWs : community animal health workers

This evidence points to a potentially strong role for CAH in supporting the livelihoods of the poor. Before drawing any conclusions, however, one must also ask: what does it cost to reap all of the benefits attributed to CAHW initiatives? As before, precise data on this question are scant. However, a few projects have researched and reported the costs of CAHW training and the initial equipping of workers. In general, these costs are very modest. For example, when Zambia created its nationwide network of CAHWs, this figure was estimated at US\$500 per animal health worker, including 'transport, resource persons, accommodation, and development of training packages and drug purchase for a start-up kit' (12).

Projects implemented more independently by NGOs report even lower costs. The figures calculated for Heifer Project International in the Philippines and ITDG projects in Africa, evaluated during field studies (C.M. McCorkle, unpublished findings, 2000), were US\$200 and US\$250, respectively. These

calculations included all the variables cited for the project in Zambia, plus an appropriate share of the salaries of all NGO professional staff and consultants involved in the CAHW programme. One reason why NGO costs are lower is because these organisations work harder to encourage the CAHWs themselves and their communities to contribute to training expenses in the form of cash, payment in kind (i.e. in goods and/or services) or labour. For instance, CAHWs may pay for their own training manuals or subscription fees. Their communities may pay for their transportation to and from training, provide food and lodging for the trainees, and sometimes provide or even build meeting-places for the trainees and/or CAHWs. Villagers may also care for the children, farms and herds of CAHWs while they are away at training (26).

Even if one uses the higher figure of US\$500 to train each worker, it is clear that the cost of training a CAHW 'pales into insignificance' (i.e. is negligible) when compared to the benefits that CAHW will bring to the many families whose animals they will treat in future years. Even assuming that as few as just one in three CAHWs will remain active after their first year of training (although, in fact, drop-out rates below 15% are common), and that one CAHW will service only 70 families, then, over a ten-year period, the total net benefits (discounted at 15%) would amount to approximately US\$40,000 per CAHW trained.

Evidence that community animal health is a useful tool for addressing the misuse of medicines

Since the advent of CAH, drug administration has been a complex and controversial issue, with concern being expressed about the use of medicines by people with only basic training.

Conversely, others who work in the field in some developing countries are acutely aware of the existing misuse of medicines. These medicines are of dubious quality and origin, enter communities through the non-regulated or 'black' market, and are administered by people with no training. These field workers see CAH as a means of addressing an existing problem.

Below, the authors summarise the work of Oakeley *et al.*, who examined this issue in Ghana and Mozambique (19).

The two following case studies are presented together, since they were designed to a standard format so that generic conclusions could be drawn across both sites.

These studies identify some worrying concerns about the realities of drug administration in the field. Incorrect dosing and inappropriate withdrawal practices predominate, particularly in regions where the infrastructure and market demand have stimulated the growth of a sizeable market for drugs.

Moreover, the authors identify areas where the training and supervision of CAHWs are deficient. More fundamentally, they reveal how decisions on treatment are strongly influenced by the producer, who is, in turn, heavily influenced by the cost of treatment. Under such circumstances, veterinarians, technicians and CAHWs alike all find themselves compromised in their ability to follow the recommended protocols of drug administration.

Furthermore, the findings of Oakeley *et al.* show that the vast majority of drugs are directly purchased from pharmacies by the producers, who invariably underdose and fail to administer a full course of treatment.

Encouragingly, Oakeley *et al.* also find that, when a CAHW is responsible for the treatment, their standards of drug administration are considerably higher than those of the producer. These authors therefore argue that it is the CAHWs who have the greatest potential for reducing the inappropriate use of drugs in the field, and that improved training and access to technology would enhance this role.

The study sites

The two countries visited were selected partly because of their differences. In this section, the authors will first outline the context in which livestock are reared in Ghana and Mozambique, then explain the methodology used to investigate this potentially sensitive subject.

Ghana

The Ghanaian livestock sector is a diverse mix of small and large-scale systems. Much of the rural population remains reliant on smallholder, mixed farming with cash crop activities dominating farm priorities. However, livestock (cattle, small ruminants, pigs and poultry) are becoming increasingly important for many smallholders. The relative importance of these species, especially cattle and small ruminants, varies. Large-scale cattle production, including pastoral systems, is more important in the North and eastern areas of Ghana.

Policy towards the service sectors in Ghana is currently dominated by three processes – privatisation, decentralisation and public sector unification – which have had a major impact on the provision of livestock services. Public-sector services have been restructured as a response to former unsustainable levels of public expenditure, but also to encourage private enterprise. Large numbers of support staff have been retrenched and an incentive programme introduced to

encourage veterinarians to establish private practices. Animal health services are currently provided by the following groups:

- government veterinarians
- private veterinarians
- veterinary technicians with at least three years of animal health training
- agricultural extension agents (with levels of animal health training varying from no training at all to three or more years)
- community-based animal health workers.

The training and support of CAHWs (known in Ghana as ‘community livestock workers’) has become an important part of this process, since CAHWs work within the private sector and offer an effective means of filling the gap left by the reduction of public services.

Decentralisation and unification have also significantly affected animal health services. Direct responsibility for providing these services now rests at the district level, and the allocation of resources to agricultural services now reflects district, rather than national, priorities. Thus, resource allocation may vary between districts. In addition to this process, subject-specific field extension and technical staff have been combined under the generic title of ‘agricultural extension agents’ (AEA). Animal health specialists are now involved in all dimensions of agricultural extension and, in most districts, have been allocated a distinct ‘operational zone’ which may or may not be a livestock-intensive production area. Similarly, specialist AEAs are now involved in providing animal health extension advice within their operational areas.

Mozambique

Agricultural production in Mozambique is characterised by smallholder subsistence-based systems. While large-scale production units exist throughout the country, this sector is smaller than that found in Ghana. Large-scale pastoral livestock production can be found in the North of the country, involving either cattle or goats, and there are a limited number of commercial cattle units near urban centres. Most farmers practise mixed farming of food and/or cash crops, supplemented for some by livestock or off-farm activities. Cattle are the most important species in Mozambique from both an economic and a socio-economic perspective, and are raised for meat and milk products but also as draught power for cultivation. Other livestock include sheep, goats, pigs and poultry (mainly chickens).

Throughout the livestock sector, levels of resource investment in animal health care are low. This may be due to multiple factors, including the following:

- limited public services and resources
- the remote and dispersed location of smallholders

- low farm incomes
- poor infrastructure and communications.

Marketing opportunities are limited in more remote rural communities, and this has encouraged the supply of low-value products and a tendency towards minimal levels of resource investment. Only in the commercial sector are animal health inputs of greater significance, but this sector is concentrated near urban centres and, in many instances, individual producers have developed their own specific arrangements for the provision of animal health services.

The provision of livestock services in Mozambique is characterised by a diverse array of professionals and non-professionals.

Public-sector providers include the following:

- veterinary surgeons
- technicians with at least three years of animal health training
- assistants with basic training (known as ‘delagados’)
- local attendants trained to operate village dip-tank facilities
- CAHWs.

A number of NGOs have been training CAHWs (known in Mozambique as ‘promoters’) in different provinces, with varying levels of co-ordination and co-operation with public-sector providers. These initiatives have developed from the need to supplement public services weakened by protracted civil unrest. Public animal health services have been struggling to cope since the re-establishment of the livestock population by numerous re-stocking programmes.

The provision of services is relatively decentralised in Mozambique, with responsibilities resting at both the provincial and district levels. However, constraints on public-sector resources mean that field-level public services are largely limited to selected vaccination programmes. The legislative and regulatory structures governing animal health service provision do not reflect the changes in the sector over recent years, and a comprehensive review of policies and institutional structures is currently under way.

Methodology

Each case study consisted of a random survey of stakeholders in the provision of veterinary medicines in at least two locations. Participating stakeholders included the following:

- CAHWs
- livestock producers
- extension workers
- veterinary technicians and assistants
- veterinary surgeons

- pharmacists and traders
- key experts and advisors on animal health service policy and development.

Although the study focused on the operations of CAHWs, the practices of other service providers – including the producers – were incorporated into the data to enable comparative analysis. It is important to emphasise that the study did not aim to measure the skills of one group against another, since the range of training and circumstances in which individual workers operate would render such measurements meaningless. Instead, the study examined options for drug administration in the field when CAHWs are present and when they are not.

The primary objective was to establish the knowledge and practice skill levels of service providers when administering veterinary medicines. Individual skill levels are a sensitive subject, particularly for outsiders, and it was felt that direct testing of skills and knowledge would be inappropriate, time-consuming and likely to have a negative effect on co-operation and motivation.

The study employed a range of informal interview techniques, including key informant interviews, informal individual interviews and group interviews. Techniques were chosen according to convenience and the preferences of the respondents. While no strict structure was applied to any interview, discussions were guided by previously prepared checklists, which outlined the issues to be covered with each stakeholder. In this way, respondents were able to discuss the issues at their leisure and in their own order of preference, while still providing comparable data across both case studies. The study generated a mixture of qualitative and quantitative data, providing information of a general nature alongside specific case histories.

Drug administration on the farm

Disease knowledge and diagnosis

The main disease constraints to production found in each case study were largely consistent, with tick-borne diseases, diarrhoea and skin conditions common to both.

Respondents were encouraged to discuss symptoms of common diseases, with particular emphasis given to the recollection and description of specific case histories.

Clinical examination of case histories was not possible but triangulation methods were employed to cross-check symptoms and diagnoses of these and other case histories with the producers. Diagnoses were assessed on the consistency of the symptoms described and diagnosis made, as well as on the confidence and clarity of description. Responses were categorised into diagnoses that appeared good (appropriate);

average (appropriate but based on basic understanding); poor (inappropriate or unsubstantiated); and inconclusive (Fig. 2).

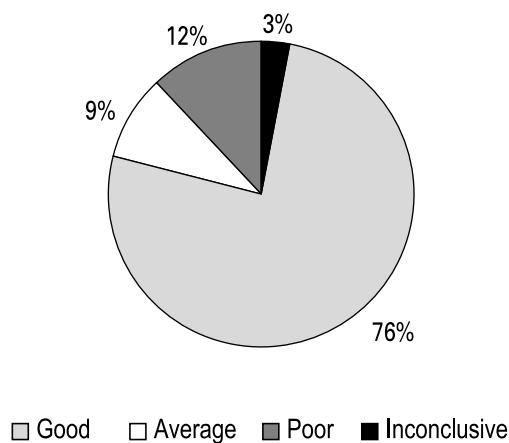


Fig. 2
Overall diagnostic capacity of community animal health workers

Average diagnostic skills of community animal health workers across the range of common diseases. Some 85% of diagnoses made were apparently accurate and appropriate, while 12% could be described as poor or incomplete and 3% as inconclusive

The diagnostic skills of veterinarians and technicians were found to be, as expected, extremely good, with no evidence of inappropriate or inaccurate diagnoses found amongst this group. Within this group, even those with limited technical training tended to have many years of experience of the prevailing symptoms and diseases.

The impressive diagnostic capacities of all service providers should also be viewed in light of the absence of effective diagnostic facilities in all of the localities studied (18). For CAHWs, as well as for many professionals, equipment is basic and orientated towards treatment rather than diagnosis. Only a minority of workers possess even a thermometer. This is a concern for problems such as diarrhoea, for which there are multiple causes not easily diagnosed in the field. In practice, all providers tend to make an initial diagnosis of worm infestation and look for alternative causes only if treatment fails. This is a practical if not ideal approach, given the lack of diagnostic facilities, but is of concern in Ghana where the use of injectable de-wormer has become commonplace, and the blanket (i.e., indiscriminate) use of these therapeutic drugs inevitably runs the risk of stimulating drug resistance.

Of relevance to this study is the conclusion that, irrespective of the skills of the service providers, the ability of all stakeholders to administer the correct therapy is equally limited by the technology and handling facilities available at the time.

A further dimension to the problem of diagnosis is when it is conducted by non-professionals; that is, by the producers

themselves or by untrained pharmacists, based on the description of the case by the producer. There was widespread evidence of producers diagnosing and subsequently treating diseases without the advice of trained animal health service providers. Traders and pharmacists identified farmers as their main clients, accounting for at least 80% to 90% of drug sales, and many commonly asked for specific medicines without reference to a prescription.

Most producers were reluctant to discuss these activities, although some Fulani cattle herders, known for their animal husbandry skills in parts of Ghana, were more candid during interviews. The Fulani interviewed exhibited variable diagnostic ability, particularly for ailments requiring therapeutic treatment. Whilst diarrhoea and skin conditions were widely recognised, there was little understanding of diseases, and diagnoses were based on the feeding habits of stock. Specifically, any animal which lost appetite for two days or more was given a course of oxytetracycline as standard procedure. Only in cases involving larger groups of stock or more valuable animals did herders admit to seeking professional advice. For most diseases, antibiotics were given without any real attempt at a diagnosis, unless the stock was of an unusually high value.

Drug quality

The sources, quality and handling of medicines were discussed with all stakeholders to build a picture of the market and management of drugs.

Source

Officially, restrictions exist in both Ghana and Mozambique on the purchase and supply of veterinary medicines by non-professionals. In both cases, however, restrictions are rarely adhered to and the majority of CAHWs interviewed regularly used a range of veterinary medicines, including various therapeutic drugs. These practices, whilst of concern among some professionals, are increasingly acknowledged as inevitable, particularly by animal health providers in the field.

A number of constraints limit the general market, flow and accessibility of veterinary medicines in Mozambique, compared to those in Ghana. Poor infrastructure and variable demand from predominantly small-scale production units have restricted both public and private sector supplies of drugs in Mozambique. The primary sources of supply in many rural areas are NGOs which support livestock-specific initiatives. The private sector in Ghana, by contrast, provides a relatively strong supply of veterinary medicines and general demand has encouraged a growing array of pharmacies and traders in most district capitals, as well as in some larger towns beyond. In areas which are heavily populated with livestock, mobile traders can also be found selling drugs directly to farmers. Import regulations exist in both countries but, in practice, enforcement is difficult.

Quality

In Ghana, there is evidence of cheap copied medicines entering the country, although the volume of this trade is impossible to estimate. The considerable demand for medicines, however, suggests that the trade is probably significant, particularly since the price of drugs is a major determinant of animal health-care decision-making (see 'Choice of action', below). The market in Mozambique offers fewer commercial opportunities for entrepreneurs, and pharmacies are found only in the larger provincial capitals and in Maputo itself. There is little evidence of fake medicines in Mozambique. Of more concern is the sale and use of expired drugs, due to the slow nature of the market.

Handling

The handling and storage of veterinary medicines are potential risk factors in both countries, although no evidence of damaged materials was uncovered. Cold chain and storage facilities are poor in Mozambique, and the storage history of drugs that reach the farm cannot be guaranteed. Whilst facilities in Ghana are better, the large number of traders involved, and the fact that few are trained or indeed monitored, means that the storage and handling history of medicines is equally uncertain. The level of risk posed by this differs, according to the type of drug in question, but the potential for mishandling and thus efficacy-related problems is real.

Of more immediate concern is the management of drugs at the point of administration, particularly when administered by producers themselves. The Fulani herders carried all their drug supplies with them while travelling long distances and in all seasons. The effects of vibration and heat on these drugs are not easily gauged, but these factors are known to adversely affect drug efficacy. Trained service providers, including CAHWs, veterinarians and technicians, demonstrated a far better understanding of handling protocols, and all these workers routinely stored drug supplies in enclosed and relatively cool places, even though this was primarily for security reasons.

A distinct picture emerges from these two case studies. The busy and open market for veterinary drugs in Ghana offers scope for poor-quality medicines to flow in to meet demand and for inappropriate handling by untrained traders and producers to adversely affect the reliability of some drugs. The slower market in Mozambique does not present the same risks but there remains potential for a similar situation to develop if and when demand expands.

Appropriateness of treatment

Following an accurate diagnosis, the appropriateness of treatment depends on its timeliness, the choice of action and/or medicine and the administrative skills with which the chosen treatment is applied.

Timeliness

The study uncovered numerous anecdotal examples from farmers and animal health service providers of advice and help

arriving too late, and of professional service providers often being inaccessible. This study confirmed findings of an earlier review which showed that, in areas where CAHWs were active, the speed of the initial advice and diagnosis was greatly enhanced and treatment either by the CAHW or professional providers followed much more quickly (5). In Mozambique, the limited infrastructure and public-sector resources continued to delay some treatments, but the support infrastructure offered by various NGOs played a crucial role in ensuring more timely treatment than in many cases in Ghana. Timeliness was also determined by the speed with which producers identified a problem and sought advice. Many providers were called to animals which had been ill for some time or were already being treated by their owners. Nevertheless, from the point at which producers decided to seek advice, locally based CAHWs were universally regarded as more accessible than other service providers.

Choice of action

A common range of medicines was used on a regular basis by animal health service providers. This study and its subsequent analyses focused on four drugs, selected for their widespread use and the potential risks associated with their misuse. These drugs were, as follows:

- the antibiotic oxytetracycline (long-acting and short-acting)
- the trypanocide berenil (diminazine aceturate)
- assorted acaricides
- injectable de-wormer.

It must be emphasised that the analysis relied on qualitative information to verify the choice of drugs available to the service providers at specific times. Where evidence of an inappropriate drug choice was found, this has been incorporated into the assessment of appropriateness of treatment (see 'Treatment skills' below).

In fact, CAHWs in Ghana enjoyed greater choice over the drugs used than their counterparts in Mozambique. Supplies were relatively accessible in Ghana, and pharmacies and traders offered a choice of long and short-acting antibiotics and multiple brands of acaricides and other materials. It was, however, price rather than treatment requirements which determined drug choice. Few CAHWs used long-acting antibiotics because they were more expensive, particularly when sold to farmers on a 'per dose' basis. Similarly, while pour-on acaricides were available and well regarded by both providers and producers, their cost prohibited widespread use in both countries.

In Mozambique, the limited supply of medicines did not offer a significant choice of drugs, and CAHWs supported by the United Kingdom-based NGO, VETAID, were supplied with a simple selection of supplies together with a manual of treatment instructions. This approach may restrict the ability of

CAHWs to select the ideal drug of choice, but it also minimises the risk of using an inappropriate drug.

As mentioned above, 80% to 90% of drug sales were made directly to producers and, while some CAHWs were subsequently asked to administer the drugs which had been purchased, many drugs were clearly administered by the producers, in the knowledge that the CAHWs themselves (particularly those in Ghana) had no formal training in injection techniques. None of the drug outlets examined in Ghana was regularly staffed by trained personnel, despite strict licensing regulations, but this did not prevent the untrained sales staff offering advice on the selection and administration of drugs, when requested by producers.

Treatment skills

The capacity of CAHWs to translate diagnosis into appropriate treatment was examined primarily through discussion and expert evaluation of specific case histories. This information has been analysed first in general terms, to assess the quality of the treatment process as a whole, encompassing all advice and action taken, the medicine chosen and its administration, and any continuing or 'follow-up' treatment provided. Subsequent analysis then addresses the administration of specific drugs.

These data, while cause for concern, provide an incomplete picture of treatment by CAHWs in both Ghana and Mozambique. The incidence of clear incompetence amongst CAHWs was low. Isolated examples of inappropriate treatment included the injection of an intra-muscular drug subcutaneously; the death of a litter of piglets after de-wormer injections; and the extensive scraping of mange scabs before application of an acaricide. Similar incidents, however, also occurred among untrained AEAs in Ghana. The majority of 'poor' CAHW treatments, as identified in Figure 3, refer not to treatment that was wholly inappropriate, but rather to imperfect dosage calculations or incomplete treatment courses.

Throughout the study, the issues of dosage and course length were discussed with all respondents. Responses were again qualitative but, where possible, triangulation methods were used to ascertain the dosages which were regularly given according to age, size and/or estimated animal weight. There was an overwhelming tendency towards underdosing, both in terms of low levels of injected antibiotics and de-wormers and weak solutions of applied acaricides. Due to the reasons detailed in this paper (cost, language problems, lack of trust, distance, etc.), only a few of the veterinarians interviewed were regularly involved in treating animals, and Figure 4 focuses on the use of drugs by CAHWs, farmers and technicians/extension staff.

Underdosing of antibiotics, de-wormers and acaricides is widespread amongst these providers, and two distinct reasons for this emerged. In Ghana, underdosing is primarily attributed to economic concerns amongst animal health service providers,

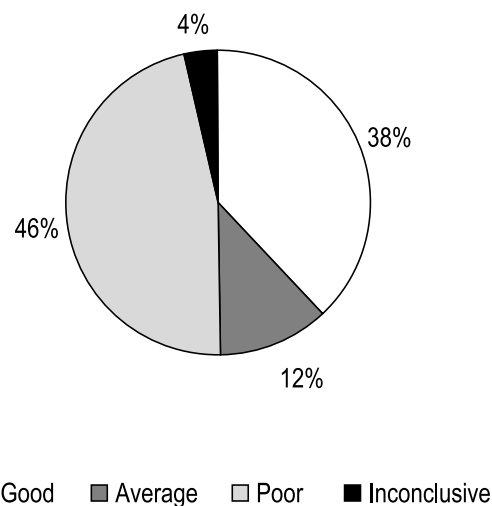


Fig. 3
Disease treatment skills among community animal health workers

Quality of treatment across the range of commonly encountered diseases. There is a marked fall in the quality of the treatment skills of community animal health workers, as compared to their diagnostic abilities, with 46% of treatments assessed as all or partially inappropriate or ineffective. Half of all treatments, however, were regarded as good to average in quality

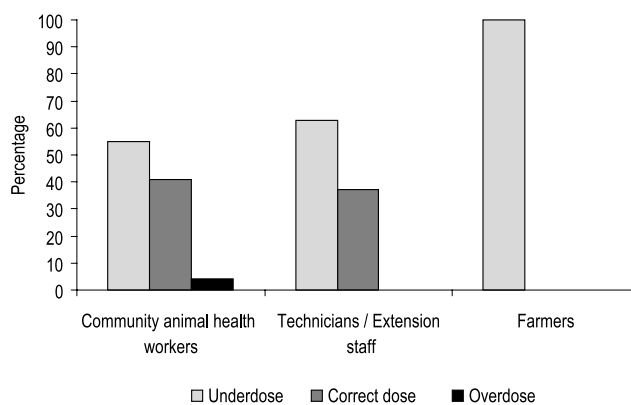


Fig. 4
Application rates for antibiotics, acaricides and de-wormers used by community animal health workers, technicians/extension staff and farmers

as the prices of many drugs have increased three to four-fold in the last two years. Reducing individual doses is seen as a way of making drugs last longer, as well as minimising the cost per dose, which is seen as prohibitive for many producers. In Mozambique, where many CAHWs are still provided with free drugs under an emergency programme, underdosing can be attributed more to widespread underestimation of animal weight and thus incorrect dosage calculation. This has been confirmed by other investigations (6). It seems likely, however, that the desire to 'stretch' drug supplies also plays a role.

Similar results were generated in an examination of the use of oxytetracycline by agro-pastoralists in Mozambique (4). A survey of producer practice found that, in the treatment of adult and young cattle, 90% and 57%, respectively, received moderate or serious underdoses of the antibiotic. The analysis indicates that the incidence of underdosing is higher in small herds and thus is linked to levels of disposable income. In contrast to these data, an examination of the use of trypanocides by Maasai pastoralists in Kenya found a prevalence of overdosing, by an average of 1.7 times the dose recommended by the manufacturers (8). Both studies, however, indicate the widespread role of producers in drug administration, and the levels of inappropriate doses administered by them.

The tendency to give incomplete courses of treatment, as depicted in Figure 5, is as widespread as underdosing. When CAHWs, technicians, extension staff and producers administered oxytetracycline and berenil, an average 84% of drug courses were not completed. It became evident in discussions with many veterinarians that they too delivered incomplete courses. The primary reason for this is that producers invariably determine the length of course based on their cash resources and/or observation of recovery in the animal. If signs of improvement are observed or cash is unavailable it is universal practice to stop treatment. This often occurs after only one or two applications, particularly since payment is on a 'per dose' and not 'per course' basis.

The financial aspect of decisions made in animal health care was of primary concern to all producers who were interviewed. The desire to minimise cost, particularly in the face of spiralling drug prices in Ghana, has had a direct and significant impact on both the dosages and length of courses administered. This issue crucially influenced the administration of drugs by all animal health service providers. In most cases, the ability and willingness of the producers to pay for drugs took priority over the technical considerations of recommended dosage and

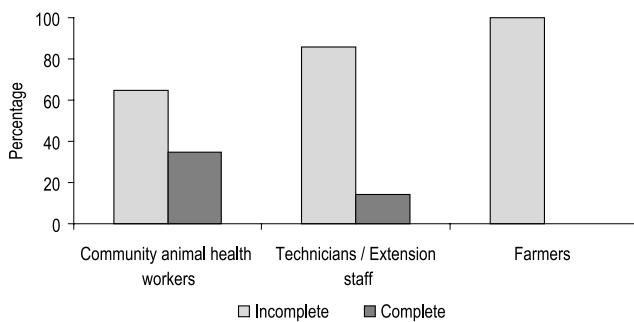


Fig. 5
Provision of full and partial courses of oxytetracycline and berenil by community animal health workers, technicians/extension staff and farmers

course length. Although veterinarians and technicians continued to calculate appropriate doses, all (n = 23) acknowledged that, in practice, they would not administer full treatment courses unless producers were prepared to pay, and that, in the majority of cases, courses were cut short. The wishes of clients overrode the recommended administration protocols, even amongst the most experienced professionals. Indeed, the greater the experience of the veterinarian or technician, the more pragmatic their attitude towards the financial constraints of clients.

Risks associated with drug residues

Where relevant, the discussions encompassed the advice given in conjunction with any treatment or prescription, focusing on two questions:

a) What advice was offered on the withdrawal of products from livestock under treatment to avoid the presence of drug residues, and what evidence was there of this advice being followed?

b) What was the practice for the consumption or destruction of animals which died, whether these animals were being treated or not?

Figure 6 shows the inherent problems faced by CAHWs when providing withdrawal advice to producers to avoid the presence of drug residues in the animals. In 92% of cases, the withdrawal advice was either incorrect or ignored, or none was given at all. All 46% of the cases in which incorrect advice was offered involved a withdrawal period shorter than that advised by the manufacturers. Many CAHWs were advising on withdrawal periods only during actual treatment and, in most cases, this advice was being provided with the knowledge of supervisors and trainers.

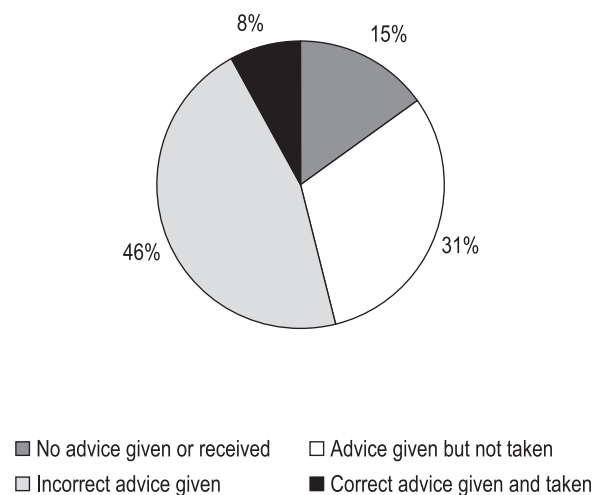


Fig. 6
Effectiveness of advice given by community animal health workers to farmers on the withdrawal of products to avoid drug residues in livestock

Veterinarians and technicians all admitted that, irrespective of advice, there was considerable evidence that farmers did not follow the recommended product withdrawal period, since this was regarded as a loss of income, especially when added to the initial cost of treatment. As a result, most veterinarians and technicians had ceased providing such advice. In Ghana, CAHWs are not trained in the administration of drugs, and are therefore entirely uninformed on product withdrawal periods or the need for them, while in Mozambique training manuals do not include detailed withdrawal information. However, the fact that well-informed veterinarians are failing to influence the practices of many producers suggests that more knowledge still does not address the issue of producer resistance to product withdrawal protocol.

It was widely believed that significant quantities of eggs, milk and meat were consumed and marketed while drug residues remained present. However, no practical method of monitoring or quantifying the residue levels in these products or the potential risks posed to the human population was in force.

Similar financial concerns determined decisions on the disposal, sale or consumption of dead stock, irrespective of whether animals were being treated with drugs at the time of death. Apart from in those communities where the consumption of dead stock is taboo, many producers – in particular, cattle owners – were reluctant to dispose of carcasses unless the meat was visually unattractive or a dangerous illness such as anthrax was suspected. For other conditions – and this included those found in small ruminants and fowl – having already spent money on failed treatments, producers were reluctant to ‘lose out’ a second time by destroying the carcass. Of the 65 animal health service providers and producers who responded to the queries on prevailing practices for carcasses, 54% had first-hand (i.e. personal) experience of carcasses being consumed or sold before the completion of withdrawal periods. The perception of most service providers was that the true figure may be far higher than this, particularly amongst cattle producers. The bulk of animals are slaughtered privately in both Ghana and Mozambique, and so, even where abattoirs are effectively monitored, there is no practical method for monitoring the full extent of residues in livestock products.

Community animal health workers in regard to the medicine-misuse problem

Both case studies provided evidence of significant risk of drug resistance in animals and drug residues in livestock products. There is no evidence, however, that these risks are exacerbated by the activities of CAHWs in either country. Indeed, the findings indicate precisely the opposite. As most treatments are administered by untrained producers, the presence of CAHWs serves to reduce – not increase – the level of misuse. Further analysis has identified the following points at which risk occurs:

- appropriate diagnosis
- management of drug supplies

- timeliness of action
- dosage levels
- length of treatment courses
- withdrawal of livestock products.

The diagnoses made by CAHWs in both countries are competent, demonstrating that these skills have been effectively transferred through the training and supervision of veterinarians and technicians. Initial diagnoses, however, are often made by the producers, who seek advice only when illness reaches an advanced stage. Education and extension offer the only effective tools for addressing this problem and, since there are decreasing numbers of public-sector animal health advisors in the field, CAHWs are an increasingly important medium for raising awareness and knowledge among livestock producers.

Stronger extension messages are also required to address the risks associated with the handling and storage of drugs by producers in Ghana. The process of privatisation has had a considerable impact on drug administration in the field, with increasing numbers of untrained traders and producers regularly handling veterinary medicines. Practical methods of monitoring these activities must be identified, together with capacity-building initiatives for all those people handling drugs, aimed not just at building knowledge, but also attitude and practice. One can immediately identify CAHWs as an obvious medium through which knowledge can be increased, but only if the CAHWs themselves are given access to that knowledge and technology.

A delay in the timing of treatment is a constraint affecting producers and animal health service providers. This is often caused by delayed decision-making on the farm, while producers decide if and when they can afford to call on veterinarians or CAHWs for advice. Effective advice has become much more accessible, due to the activities of CAHWs, but it is still constrained where lines of communication between CAHWs and the wider service sector remain weak. The commitment of resources to support and supervisory structures for CAHW initiatives is vital to the speed and effectiveness of treatment and drug administration, as emphasised by the success of NGO-supported operatives in Mozambique. Elsewhere, however, support structures are inadequate and under-resourced, and have adversely affected the quality and timeliness of CAHW activities.

The greatest risk of drug administration and residue problems lies in health care practices on the farm. While current risk levels are limited by the minimal use of drugs in Mozambique, Ghana faces a more common dilemma as the demand for animal health care inputs expands and diversifies. Many privatisation initiatives have been successful in returning decision-making on animal health care matters to the primary stakeholders: the producers. It is of concern, however, that

many producers lack access to the knowledge and information that they need to make properly informed decisions. In the absence of such knowledge, it is common to find decisions based primarily on financial considerations, rather than on the technical and environmental aspects of health care and drug administration.

The underdosing of antibiotics and the application of weak solutions of acaricide are clear examples of a drug administration problem which affects producers, CAHWs, technicians and veterinarians alike. The fact that veterinarians are also influenced by the desire among producers to make savings on dosage rates and treatment regimes underlines the point that this problem is not associated simply with CAHWs. Instead, the problem lies with the pressures facing producers as they attempt to reconcile their profit margins with the increasing costs of livestock production, particularly the costs of veterinary treatment.

The considerable challenge confronting policy-makers as they address the issue of veterinary treatment costs in private market systems, such as in Ghana, is obvious but its implications for drug administration cannot be ignored. The same market forces can be seen behind the reluctance of producers to adhere to full drug withdrawal periods, despite their knowledge – or at least the knowledge of their advisors – of the risks associated with drug residues in livestock products.

One clear lesson, however, may be drawn from this analysis. From the perspective of the producer, the economic incentive in ignoring recommendations for drug treatment regimes and withdrawal periods is strong and immediate, while the risks posed to the consumer are far less tangible. While better education may improve the situation, quantifiable information on the risks posed to human health remains a priority if public awareness is to be raised effectively. Awareness will remain limited, however, as long as front-line animal health service providers such as CAHWs are not given the necessary tools and information, and professional providers continue to apply inappropriate practices or accept them from producers.

The lessons offered by the case studies of Ghana and Mozambique are that well-supported CAHW initiatives offer no greater risk to the administration of veterinary medicines than that which already exists as a result of the more open market for drugs found throughout much of Africa today.

The role that CAHWs play in reducing drug misuse is certainly poorly recognised, and most probably underexploited.

There is a clear need for better information and awareness among both producers and consumers of livestock products. A network of CAHWs, armed with a better understanding of drug administration practices in the field, offers one of the few effective means for achieving this.

The potential role of community animal health

In conclusion, the authors return to the challenges introduced at the beginning of this paper:

- the challenge of poverty
- the challenge of failed government services
- the challenge of misuse of medicines

to find that CAH provides a potentially powerful and cost-effective instrument for addressing all three.

Many CAH programmes have, however, failed in the past. The failures of such early programmes have contributed to the hard-earned knowledge which has improved the success rate of more recent programmes. This paper cannot examine all of the lessons learned during that process. Below, the authors focus on a few key messages.

Community-based programmes

Modern programmes are community based, meaning that they are owned, maintained and managed by communities. Attempts to bypass the central role of the community or cut short the lengthy period of consultation associated with such schemes have never been successful.

Clearly, lessons from previous CAH initiatives about how best to manage a programme or decide upon the selection criteria for CAHWs cannot be ignored. However, the decision-making process must remain the unambiguous right of the community in question.

Selection criteria

Dr C.M. McCorkle has extensively examined the particular question of selection criteria for CAHWs. With her permission, the authors would like to quote from her analysis (16).

‘Perhaps the most intensively discussed topic in the literature is trainee selection. In this regard, key criteria for rapid project start-up, client acceptance, and long-term sustainability appear to be:

- again, genuine grassroots participation in the selection process
- candidates’ local origin and residency; equally important, their standing as a concerned, responsible, and honest individual; and consequently strong community support for the candidates and their work
- virtually all projects also stipulate prior stockraising experience as a trainee pre-requisite
- 1990s projects tend also to take into account an individual’s repute as a local livestock healer

– a number of projects have also included (or helped create) storekeepers and mobile-but-community-member merchants who sell veterinary drugs, training them to advise customers on drug choice, handling, and dosage.

‘With some notable exceptions (e.g., poultry vaccination, care of settlement stock, drug sales), few early projects included many women trainees. Yet the literature clearly suggests that, depending upon their culturally assigned roles in animal health and husbandry, women can be key to the broader outreach and sustainability of CAHWs. By the 1990s, this lesson was better appreciated. Some projects thus provide specialised training to men and women CAHWs according to these roles. A few train husband-wife teams. Others now ask communities to select one male and one female for training.

‘As to age criteria, on balance the literature indicates that more mature trainees work better than young ones. Likewise for married as versus unmarried candidates. No clear patterns emerge for other socio-economic statuses such as wealth or kinship. However, personal attributes such as ‘honesty’, ‘responsible and trustworthy’, ‘interested in the work’, ‘efficient and committed’, and ‘willing to walk long distances’ or ‘readiness to move with the pastoralists in all seasons’ are unfailingly mentioned as important selection criteria.

‘Literacy and formal education are of course deemed helpful characteristics of trainees; and some projects set minimum requirements in these regards. But over all, the literature indicates that these attributes are not essential to CAHW success, depending on the particular mix of CAHW tasks and candidates’ pre-existing stockraising expertise. Indeed, T.J. Leyland (personal communication), with reference to East Africa, indicated that rates of attrition tend to be higher among literate trainees, as they are more likely to look for employment opportunities outside their communities. A number of projects have designed innovative pictographic systems for illiterate CAHWs’ record-keeping and epidemiological reporting.’

The private sector

Community animal health workers are members of the private sector. Attempts to provide them with salaries have been unsuccessful. Supplying CAHWs with cheap drugs creates problems when the drugs run out, and can undermine other CAH programmes. Similarly, attempts to control the fees of CAHWs have damaged their sustainability. Although CAHWs may need training in how to calculate fees that allow them to restock their medicines sustainably, they should be allowed to operate in the market free of interference.

Regulation and support

It is the responsibility of the government to ensure quality. In the case of highly trained veterinarians, this is achieved by regulation in one form or another. For CAHWs, regulation

must be combined with training, support and a referral system. This means that the CAHW needs an institutional ‘home’. The most appropriate model for this is probably a private veterinarian who also sells medicines through a network of CAHWs, and is therefore involved in a profitable partnership with the CAHWs. Other models, involving supervision by more highly trained lay service providers, such as animal health auxiliaries, are also active. There have also been anecdotal reports of the regulation of CAHWs by farmer groups in West and Central Africa, but the authors have not been able to substantiate these.

Supervision by a veterinarian is attractive for many reasons. As the most highly trained of animal health service providers, they are in the strongest position to provide technical support or ‘backstopping’ and training. When the revenue they receive is sufficient (primarily from drug sales to CAHWs and performing government contracts), the ‘institutional vacuum’ that has prevented veterinarians from penetrating marginal areas is, at least in part, overcome. Furthermore, the structures have then been established for the CAHWs to become part of the network of formal disease surveillance systems.

The case for such a model is not yet proven in all areas. Certainly, there are areas, remote by any standards, where the combination of livestock density, mobility, security and disease incidence is sufficient to support a veterinarian who is linked to a network of CAHWs (15). But it is not yet clear whether or not this model can be applied in all marginal areas.

In the event that it is not possible, there are several options.

The first is for CAHWs to be directly supervised by paraveterinarians, who are in turn supervised by a veterinarian. This model has enjoyed some success in South Africa (P. Kloock, personal communication), and a recent review of CAH in Mwingi District, Kenya, indicates that such mechanisms can be successful (24). However, it introduces another layer into the structure, and it is again unclear whether the revenue generated by CAHWs will always be sufficient to support all those above them.

The second option is for the government to acknowledge that many services can and should be provided by the private sector, and contract these services out to veterinarians who are linked to CAHWs. A good example of this is vaccination. In such cases, the government becomes the client of the veterinarian/CAHW. In Europe, it was just such a contracting out of government services (particularly the control of brucellosis and tuberculosis in ruminants) that marked an expansion of private veterinarians in rural areas in the 1950s and 1960s.

The third choice is for governments to recognise that many of the services that are provided by a veterinarian are not likely to be paid for by the individual livestock-keepers themselves, as

the benefits do not accrue directly to them. These services, such as disease surveillance, or the overall quality of the Veterinary Service, are public goods, meaning that they are more appropriately funded by the population of a country, through the tax and revenue system. To rely on the revenue from clinical services provided by CAHWs to pay for or 'piggy-back' such public goods is to under-deliver them. Supervision and support to CAHW networks may well come under the category of public goods, and governments may choose to fund such activities centrally, rather than allow the 'institutional vacuum' at field level to persist. In practice, in many countries, the equivalent of a district veterinary officer already exists. If supervision and support are to be given by paraveterinarians (as in option 1 above), final veterinary supervision could be provided by this veterinarian.

Legal recognition

It is now clear that, over a period of some thirty years, the desire of communities to have access to basic, affordable animal health care has remained undiminished, as have the economic and institutional forces which have led to the demand being met through CAH.

What has changed is the forum for the debate. Topical issues have moved from technical and institutional issues at the community level, often through confrontation with the veterinary establishment and government, to a growing recognition both nationally and internationally of the potential of CAH to deliver the important policy objectives discussed in this paper.

Furthermore, it is issues of regulation, which define the relationship between CAH systems and the larger animal health network, that will most probably determine the pace of change for the foreseeable future.

Community animal health is now legal in several countries. In some countries, such as Nepal, CAH was accommodated without having to defer to the legislature. For others, including Sudan, South Africa and Namibia, the present legislation is sufficient. In other countries, CAH may be made possible by Ministerial decree, without the need for lengthy periods of legal reform, as has been achieved in Ethiopia. In Zimbabwe, Eritrea, Zambia and Vietnam, legislation is now under review. For countries which have recently decided to further institutionalise CAH, such as Eritrea, Tanzania and Uganda, the process is at the consultation stage.

In other countries, perversely, the illegal status of CAHWs undermines the ability of governments to regulate them or make full use of their services, while denying stockholder and CAHW alike the protection of the law.

Veterinary health now finds itself in a dynamic but uncertain situation where institutions and policy lag behind the technical and economic reality of CAH. The authors therefore welcome the moves of those countries which have combined support and regulation for CAHWs with a revision of the law to encourage their operation.

Institutional and policy reform takes a good deal of effort. For many countries, the next step is therefore to decide whether or not they really want it.

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L'efficacité des auxiliaires communautaires de santé animale à l'égard des populations à faibles revenus, des communautés locales et de la sécurité publique

D. Peeling & S. Holden

Résumé

Le développement de la santé animale communautaire constitue un outil inestimable pour relever plusieurs défis, en particulier ceux qu'ont à affronter les décideurs politiques, dont le principal souci est de préserver le bien-être des populations. Les auteurs examinent trois défis majeurs pour les gouvernements et notamment ceux des pays les moins développés, à savoir, l'effondrement des services publics, la question cruciale de la réduction de la pauvreté et la mauvaise utilisation des médicaments vétérinaires.

Tout en reconnaissant l'indéniable potentiel de la santé animale communautaire pour aborder ces problèmes, les auteurs sont d'avis qu'elle ne sera pleinement performante au niveau macroscopique que si des institutions solides sont mises en place pour soutenir et réglementer les efforts de ces initiatives communautaires. Dans certains pays, la mise en place de telles institutions requiert d'accepter le principe plus fondamental, quoique controversé, de la normalisation du statut des paraprofessionnels prestataires de services zoosanitaires opérant dans le secteur privé.

Dans la section 1, les auteurs décrivent les trois principaux enjeux auxquels les gouvernements sont confrontés, particulièrement dans les pays en développement, et qui peuvent trouver dans la santé animale communautaire une solution potentielle.

Les sections 2 à 4 examinent successivement les données pertinentes concernant chacun de ces enjeux.

Dans la section 5, les auteurs résument les leçons des expériences conduites sur le terrain ces dernières années, et formulent quelques propositions pour aider les gouvernements à mettre en œuvre les systèmes de santé animale communautaire les plus avantageux.

Mots-clés

Administration de médicaments – Auxiliaire communautaire de santé animale – Mésusage des médicaments – Moyen de subsistance – Pauvreté – Résidu – Résistance aux médicaments – Santé animale communautaire – Service.



Eficacia del personal zosanitario de ámbito comunitario para los pobres, las comunidades y en términos de seguridad pública

D. Peeling & S. Holden

Resumen

La creación de sistemas de atención zosanitaria de ámbito comunitario representa un instrumento de gran utilidad para dar respuesta a una serie de problemas, en particular para el planificador, cuya preocupación primera es el bienestar público. Los autores examinan tres de las principales dificultades a las que hacen frente los gobiernos, sobre todo los de países menos desarrollados: el

colapso de los servicios gubernamentales, el tema crucial de la reducción de la pobreza y el uso incorrecto de medicamentos veterinarios.

Aunque los servicios zoonosarios comunitarios son, en potencia, un instrumento muy valioso para abordar todos esos problemas, los autores mantienen que tales servicios sólo serán realmente útiles a gran escala en la medida en que se creen instituciones fuertes que apoyen y regulen esas iniciativas comunitarias. En algunos países, la creación de instituciones semejantes depende de la aceptación de un principio más profundo y controvertido: la legalización del personal zoonosario no profesional en ejercicio privado.

En la Sección 1, los autores describen a grandes rasgos los tres grandes problemas a los que se enfrentan los gobiernos, sobre todo en los países en desarrollo, y a los que el personal zoonosario comunitario puede ofrecer solución.

En las Secciones 2 a 4 se examinan sucesivamente los datos relativos a cada uno de esos tres problemas.

En la Sección 5 se examinan brevemente las enseñanzas obtenidas a lo largo de los años a partir de experiencias sobre el terreno, y se proponen procedimientos para que los gobiernos puedan crear sistemas de atención zoonosaria comunitaria que les resulten de la mayor utilidad posible.

Palabras clave

Administración de medicamentos – Medios de vida – Personal zoonosario de ámbito comunitario – Pobreza – Residuo – Resistencia a medicamentos – Sanidad animal comunitaria – Servicios – Uso incorrecto de medicamentos.



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