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PART TWO- COMMUNITY-BASED ANIMAL HEALTH WORKERS IN THE HORN OF AFRICA

Julie McCarty: Thank you to all of you who have stuck around to anyone who joined us since the first part of our event. Again, my name is Julie McCarty and I'm a knowledge management specialist with the USAID Bureau for Food Security, and I am an activity manager for all thinks AgriLinks, the AgriLinks platform through which this event is being run. So if you have any questions at any point about seminars or webinars coming out of USAID or other knowledge sharing events, I'd be happy to answer those.

So we now have Andy, Andy Catley to discuss community-based animal health workers in the Horn of Africa, an evaluation for the US OFDA and for those of you who came a bit late this morning, I just wanted to mention again that Andy is the principal investigator for the USAID East Africa Resilience Learning Project and the USAID Ethiopia Agriculture, Knowledge, Learning Documentation and Policy Project, and he has lead since 2006 Tufts University's support to the LEGS manual, which you learned about this morning, and chairs the LEGS steering group. So I'll pass it along to Andy for his presentation, and then we'll pass the mic around for questions and answers once he is done like we did this morning.

Andy Catley: Thank you Julie. This is a briefing really on a recent evaluation of community-based animal health systems in the Horn of Africa. And these were mainly from 2014, 2013. Some quick background. Well, community-based animal health care systems really started to evolve in the mid to late 1980s in East Africa. Is everybody familiar with what a community-based animal health worker is or kind of looks like? If not, I can give you the brief overview. Okay, there's a few people who want that.

Well, essentially a community-based animal health worker is a basic level veterinary worker who is selected from a community, ideally by the community, for training in basic veterinary care, basic diagnosis of disease and treatment of selected animal health problems in that community. And this – these workers really evolved, and the reason behind it was because more remote areas in the Horn of Africa, particularly pastoral areas of the Horn, were not being reached by conventional veterinary services. And it was really, at the time, I guess, of

structure adjustment programs in Africa. There was downsizing of government services, so weakening government, to provide services and gaps in service provision.

And but bear in mind that these areas that we're talking about had never really received adequate veterinary services. In the colonial period and the post-colonial period when there was government _____. Can you hear me now? *[inaudible mumbling]* I'm going to have to speak right into the mic. So that was – one of the important aspects of the design of these approaches was a recognition, especially in pastoral areas, there was very well developed indigenous knowledge on livestock diseases.

So pastoralists had had a very rich technical and language for describing livestock diseases, they understood issues such as the – even the epidemiology of diseases which were spread by direct contact, the role of vectors in disease spread and so on. So any aspect that was observable, if you like, with the naked eye, they were very strong on. And one of the important kind of ideas in community-based animal health care was that we could use this indigenous knowledge, this existing knowledge, complement it with some more technical knowledge and particularly on the correct use of veterinary medicines.

So that was the whole idea of community-based veterinary care. It was basically to improve the accessibility to a trained veterinary worker in these remote areas. In 1980s, the experimentation, the piloting was largely done by NGOs. But there was a big shift in the early 1990s related to the rinderpest eradication campaign in African and globally. And in brief, what happened was there were areas of the Horn of Africa where conventional government vaccination teams couldn't reach to vaccinate animals for rinderpest, because these areas were insecure and so on. And what happened was that Tufts University developed a heat-stable rinderpest vaccine, which means that you no longer needed a cold _____.

And then we also transferred some of these community-based approaches into rinderpest eradication, and essentially trained community-based animal health workers to use rinderpest vaccine and deliver this vaccine in these difficult areas like South Sudan, Afar Region of Ethiopia. And one of the outcomes of that was there were dramatic results in terms of rinderpest eradication, but it also put community-based delivery systems on the radar in order to international organizations and governments, because rinderpest eradication was basically coordinated by these bodies.

And then later on, there was a lot of work done on well, these workers are all very nice, but how are we going to sustain them? What are the issues around making these workers a permanent fixture, because so far, it's all been NGO projects or short-term projects, and when the NGO pulls out, the systems were

collapsing. And that was partly due to the fact that the NGOs were putting in all the inputs, were supplying the medicine. So because of that, there was experimentation around private sector development linking community animal health workers to rural pharmacies, veterinary pharmacies and so on, and looking at ways of making the drug supply system more sustainable.

And these workers were not government employees, they were private sector operators. And so for them, their income and their interest in doing this work was very much related to how much money they might make providing a service. So there was the financial economic aspect of it, but there was also a policy and legislative aspect to it. Which was these workers were not officially recognized in the countries where they were operating. So they were not part of veterinary legislation or veterinary policy.

And of course, if you want to make a system of a reasonable quality, it has to be licensed, quality controlled and so on, and that means integrating it in some way into veterinary services, et cetera. And community animal health workers, at least from OFDA's point of view, were also used to provide emergency veterinary care in droughts, in situations of complex emergency.

In the late 1990s, OFDA, by that time, had invested a lot in community-based animal health worker projects in places like South Sudan and other areas. And I was involved in a review of experiences back in 1998 of what was happening. And one of the recommendations of that review was really these systems can work fine, but the challenges are in making these systems more sustainable in terms of private sector development and in terms of policy and institutional support. And then 2013, OFDA came back to us and said, well, where are we now 15 years later, what's actually happened with these systems? Have they received the kind of support that we wanted and if not, why not and what are the options for improving them?

So these were the questions that OFDA wanted us to look at. Were community animal health workers actually improving health husband husbandry, were they improving accessibility, in other words, physical distance between livestock keeper and animal health worker, easier to reach. Was there evidence that disease control was actually translating into improved livelihoods, and what were the areas, the gaps that we still needed to think about and work on?

Methodology, well, literature review and then three country assessments in Kenya, Ethiopia and South Sudan, which involved field visits to six community-based animal health projects, and use of standardized participatory methods to understand community level perceptions of what was happening with these systems.

And an important aspect of that methodology was that it was comparative. So what people were asked to do was to compare community animal health workers with other kinds of veterinary service providers, governments, private pharmacies, traditional healers and so on. So it was a comparative methodology that was largely used. That was complemented with key informant interviews with government officials, veterinary boards, veterinary associations and so on. And then there were also national workshops run to bring together different stakeholders to present back to them some of the draft findings from the field work, to validate it in some way, but also to understand gaps and other issues that people wanted to bring in.

So the findings, well, as I mentioned, we did use this comparative approach where informants at community level were asked to compare community animal health workers with other kinds of veterinary service. And generally, across the three countries, community animal health workers are highly valued and generally outscored or outperformed other kinds of veterinary service provider. In terms of accessibility, so that's the physical distance to your veterinary service provider, in terms of the quality of the service, in other words, outcomes of treating or preventing disease, their availability, particularly in terms of providing advice and guidance to livestock keepers, and acceptance. And acceptance is a term that captures issues such as their cultural acceptance, their ability to speak local languages, are they recognized as a trustworthy person in the community and so on. It captures those kinds of issues.

And this is an example of the kinds of results that you come up with using this approach. This is just looking at accessibility across the three countries and against the different types of service provider. So you can see in that example that community animal health workers generally scored very highly in terms of accessibility. And the report that's available online basically has all of these results in a lot more detail. There are probably 15 or 16 graphs and tables and so on. But I don't want to show you all of that, I'll just give you the overview.

So community animal health workers, they are highly regarded and appreciated. The evaluation team looked at the technical competence of community animal health workers, their ability to diagnose disease, their ability to correctly administer the veterinary medicines, and found that around 70 percent of them were judged to be good in terms of their technical competence.

And this actually fits quite well with other studies and research that has been done on the technical competence of well-trained community animal health workers. Generally, levels of competence are quite high. And of course, it also triangulates quite nicely with the quality issue. When livestock keepers on the ground said that a quality of service is good, well, partly it's because they are pretty good at diagnosing disease and using medicines correctly.

We looked at differences between male and female community animal health workers in terms of what they were doing. There were no major differences in terms of technical competence. And very interesting, there were no major differences between literate or illiterate community animal health workers, which is good, because when these systems first started, in some areas it was almost impossible to find people who were literate for training, or communities did not actually select literate people for training because those people weren't seen locally as the right people.

So there was a lot of I think quite nice development in the early days of training approaches for illiterate trainees. So no use of written text, no handouts, very different kinds of training approaches, very practical, and pretty efficient in terms of transferring new skills and knowledge to these people.

And generally across the three countries, when we asked people to describe and score impacts of community animal health work activities on livestock diseases and how those translated into livelihoods benefits, such as reduced livestock mortality, improved milk production and so on, it was very clear that these were perceived as having a positive impact. And again, this fits. This triangulates well with quite a large number, actually, of other studies looking at disease control and livelihoods impacts from these workers.

In terms of PVP, so that's private veterinary pharmacies, and the extent to which they had come up in these areas, you remember I talked about sustainability and private sector activity, it was pretty mixed across the three countries. In South Sudan, which I'll talk about in a moment, not much going on, all fairly logical. But in other areas of the Horn, some quite dramatic changes.

The best example being the Somali region of Ethiopia, that actually Andrew mentioned earlier. In 1997, there was one private veterinary practitioner in the Somali region of Ethiopia, essentially running a pharmacy. Wasn't really a clinician, he was a pharmacy owner, a veterinary pharmacy owner. By 2013, there were 37 private veterinary pharmacies in Somali region of Ethiopia, linked in various ways to community animal health workers and other types of para-professionals.

A massive growth in the private sector in this particular part of the region. So it was happening very dynamically in some parts of the region and not at all in other areas. In terms of policy level findings, I'd first like to go back to a 1998 evaluation, 15 – more than 15 years ago now, which concluded this, although attitudes are changing, there's still considerable work to be done in terms of policy reform, formal recognition of community animal health workers and veterinary privatization.

CHAW, privatized approaches are a long way from being mainstream legislated component of veterinary services. Although numerous NGO projects use government staff to assist with monitoring and supervision, in general, governments have limited capacity to conduct these activities on a long term, sustainable basis. That was 15, 16 years ago. What has happened since then?

Well, it depends on the country and the local context. In Ethiopia, the government developed new legislation to recognize these workers back in 2002-2003, they developed government minimum standards and guidelines for selection, training, monitoring and so on of private sector community animal health workers. And they also have government guidelines which talk about the use of these workers in drought response. So some institutional progress there in Ethiopia.

South Sudan, also good progress, I think particularly in view of the context of South Sudan. Remember that South Sudan only came into existence in 2005 as a new state. Clearly has had a lot of issues to deal with as the new administration government came up. It had started to develop policies for livestock, and within those new policies were – was support to community animal health workers, and the new first policy framework for livestock developments actually included this. And it also has a standardized curriculum for training. But things, of course, are on hold, if you wish, at the moment, due to the current problems in South Sudan, and were on hold at that time of this evaluation.

So some of the thinking is there and the commitment, it's partly a question, I think, of timing and when government can really revisit some of these issues. In terms of humanitarian response, which of course is what OFDA is especially interested in, there's also been some good progress. And one of the interesting developments has been this use of veterinary voucher systems during drought. And the idea here is that instead of government or NGO providing free veterinary care, instead they provide a voucher to targeted households, the most vulnerable households, ideally, and people can then take that voucher to a community animal health worker, or in fact, another worker, depending on who's available, and receive veterinary care up to the value of the voucher.

Which is a much more flexible way of providing veterinary care, and also, I think, supports the private sector rather than undermining it. So some growing experience with the use of these schemes in some countries, especially in Ethiopia. In Kenya, some use of community animal health workers in emergency response and also in South Sudan.

So what were the challenges? Well, I've talked about the performance, if you like, of community-based workers, the fact that they were highly regarded by

communities. And that happened even though there are major problems with the supply of veterinary medicines to these workers across the region. So in other words, in many areas, community animal health workers could not get hold of the medicines that they needed to do the work that they wanted to do, through weaknesses in input supply through the private sector.

Now, in an area like South Sudan, that is understandable, given the conflict context and where it would be pretty difficult for the private sector to invest in veterinary pharmacies. So there's a kind of logic there in South Sudan. In Ethiopia, Somali region is fairly on track, if you wish, but in other parts of the country, there's still a big problem because government is continuing to provide services at the same time as the private sector, and confusion about roles and responsibilities. And generally speaking, the government provision of services is subsidized and undercuts the private sector, or at best, creates confusion about what the prices of medicine should be and so on.

So there is still that problem in Ethiopia to sort out, a kind of policy-level definition of really who should be doing what. And then in Kenya, probably a much deeper problem which is that community animal health workers are still illegal and have not been recognized by policy or legislation. And what's interesting here is that over 15 or 16 years of efforts, of evidence gathering by universities, by NGOs, of lobbying by all kinds of organizations from FAO, Civil Society and so on, the Kenyan government has adamantly refused to accept community-based animal health workers. And at the same time, seems to have no alternative in terms of how are we going to deliver veterinary services to these remote areas.

And one of the implications of the failures in veterinary medicine supply is, of course, that community animal health workers were not able to earn the income that they wanted to stay in the business of animal health care. And so alarming dropouts, if you wish, of people falling out of the system simply because they couldn't get medicines and therefore earn a living. And again, South Sudan this is a particular problem with large dropouts of community-based workers since 2004.

So we tried to summarize some of these what we call policy and institutional challenges using some key indicators. So you can have legislation in place, you can have minimum standards and guidelines, you can have government quality control of the workers. You can have quality control of medicines. You can look at the use of community animal health workers in public good functions such as disease surveillance, zoonosis control and so on, are they used in emergencies and are there guidelines.

Well, in Ethiopia, as I've alluded to, there's been good progress over the last 15 years or so, in general. In Kenya, there's actually probably been a decline in policy and institutional support to these workers. And a kind of weird situation, which has actually been there for a long time, of on the ground, you see a situation where government officers will actually use community animal health workers to help them deliver emergency response, vaccination programs, but the workers are illegal.

And then in South Sudan, a very different context. Some progress but as you would expect, fairly limited in terms of actually translating policy on community animal health workers into practice. And all of this, as I say, is described in detail in the report. Now, I talked about Ethiopia where there's probably most progress in terms of policy and institutional support, but there are still problems. And these problems really are about moving beyond simply allowing these workers to exist to actually providing them with tangible support, refresher training, quality control, relicensing, involving them in disease surveillance, involving them in zoonosis programs and so on.

And really, I think, a lot of that issue relates to funding and priorities within government veterinary services. Because this doesn't just related to community animal health workers, it cuts across government veterinary services in general. So it's a general issue of budgeting, availability of funds, priority setting and so on within government, as well as this chronic problem of clearly delineating what should the private sector do, what should government do. So although they are legal and working, they are not actively supported.

Well, obviously pastoralism is still very important in the Horn of Africa. These systems can perform very well and they can outperform other options. There's been good progress overall, including provide veterinary pharmacies, in some areas but not others. But it's kind of two steps forward, one step back. And the key weaknesses are still in areas of veterinary governance. Real capacity to support these kinds of workers with policy and legislation, and turn that into action.

So really, it's partly a question, I think, of unrealized potential in terms of better clinical care and better disease control, but also unrealized potential in terms of disease surveillance and zoonosis control and so on. And remember that if we're going to use these workers for surveillance and public good tasks, they are private sector workers. So you're talking about contracting out, you're talking about providing financial incentives for these workers to contribute. And without these kinds of incentives, and especially in a weak policy and legislative context, people simply aren't going to do this work. We have to be realistic.

Recommendations are depending on who you are, really. What we've found amongst the NGOs who were supporting community animal health workers was a wide range of quality in terms of training, support to these projects, and still quite a wide range of attitudes and I guess and commitment to working with the private sector to develop these systems, rather than NGOs going in and providing the medicines as a kind of an automatic response.

So NGOs, I think, need to pay more attention to good practice in the design of these systems, and good practice is available, it's well documented, it's out there. The new – the good practice itself needs to be updated. It's actually quite old on community animal health care. It's – it needs updating on issues of – particularly of private sector development and good approaches like the use of voucher schemes in emergencies.

Voucher schemes have – are coming up, and what would be quite useful would be a specific review or evaluation of those. There's been many done in Ethiopia, a little bit in Kenya. We don't really know much still about female community animal health workers. They seem to be performing in a very similar way to men, and they seem to be as valued as male community animal health workers. I a way, there doesn't seem to be any major issue about the use of community animal health workers, as long as during the selection and design of the projects, of course, that is clearly put there as an important component of the project.

We don't know much about new technologies and how new technology could contributed to these systems, mobile phones being the obvious one, but there may be other things coming up, pen-side diagnostic tests being one someone reminded me about just this morning. New tricks and tools that we might be able to use to strengthen some of these systems in difficult areas.

And then a major concern, really, with – not only is veterinary medicine supply weak, in terms of physically getting medicines from A to B, it's weak probably in terms of quality, because quality control of veterinary medicines is a great concern. It partly relates to privatization, with increasing private sector importation, and the private sector can import from anywhere. And at national level, the systems for ensuring the quality control of these imports are underdeveloped. There's been some progress, but still they are very weak.

In addition, there is a local manufacturer of veterinary medicines in some countries with similar quality control concerns. And this is important, because it's not really an issue just for community animal health workers. It's an issue for veterinary services in general in these countries.

This is easy to say, of course, government veterinary services need to do more. They need to actively try and support community animal health workers through

better monitoring, through better supervision, through strengthening drug inspectorates, as I've just mentioned. In Ethiopia and South Sudan, there are moves to create veterinary statutory bodies, under which the quality control of community animal health workers and other veterinary workers would fall. In Kenya, of course, there's – they are still way behind in terms of what's happening. But with constitutional change in Kenya, there's greater – a shift of control in governance to provinces, and empowerment of local governance. And there, that may be an opportunity to shift the legislation, because it basically means that the pastoral areas of the country will have a greater say in what happens. Or there may be opportunities for local bylaws or local legislation which allows the use of these workers. And still, there's a long way to go in terms of veterinary privatization at different levels.

There is also still a role for the regional bodies at the policy level. There are the regional economic communities like EGAD, EAC, _____ would be relevant, who at the moment, don't seem to say very much about community animal health workers or even veterinary services in general. AU-IBAR, which is really the Africa-wide policymaking body on livestock development in Africa, has been, in the past, a great supporter of community-based systems, and IBAR was heavily involved in rinderpest eradication and so on. But activity around these systems has dropped off, and so at the moment, it's difficult to find much going on, either in the regional bodies or in IBAR, which is actively promoting these systems, raising awareness, encouraging debate, encouraging policy dialogue, helping countries to think about how they may strengthen policy legislation and supervision and so on.

So a mixed picture. Some good progress with progress at community level. We can train these workers. Communities can select them. Communities are willing to pay for veterinary medicines. They want the service. The main failures are at the level of what I'd call veterinary governance at institutional levels still, and still a lot of work to do at that level.

For OFDA and other emergency donors, well, LEGS is there and it includes guidance on veterinary voucher schemes and other approaches in emergencies, which relate to community animal health workers. LEGS also says where these workers are in place, they're often a good option for delivering veterinary care in emergencies. And what LEGS doesn't comment on very much, of course, is what happens if these workers are illegal in the country where you happen to be. That's a tricky one.

And really what might OFDA and USAID do? Well, I think one of the challenges for us as an evaluation team is that OFDA is an emergency donor, and it's kind of done what it's supposed to do, really. It has supported experimentation and provision of veterinary services in emergencies using

community-based approaches. But the weaknesses are more on the development side of things in terms of policy and institutional support, which of course is not something that you would normally expect OFDA to get involved with. But it is an area, of course, for USAID to think about and to look at how is USAID perhaps supporting these processes in the region.

And if that could be done, it makes OFDA's job a lot easier, I guess, in terms of implementing these projects, as well as having benefits for veterinary services more generally. There is a need really to look at the whole issue of quality of veterinary medicines. Again, it's not specific to community animal health workers, it relates to veterinary services across the board. The risk, of course, is the a lot of our investments may fall off in veterinary service development if we cannot ensure the quality of pharmaceuticals in these countries in some way, through working with national inspectorates, regional bodies and so on to try and work out what is happening with quality control.

The three countries are very different, and we have a whole raft of country-specific issues and recommendations in the report, which is available online. Thank you very much.

QUESTIONS AND ANSWERS, PART TWO

Julie McCarty: Thank you, Andy. We have a bit of time for questions and comments from our audience, and so I'll go ahead and pass the mic around, and also please state your name and organization.

Audience: Hi, I'm with USAID. I have two related questions. One is what's the rationale of the Kenyan government in having community animal health workers be illegal, and kind of what efforts have been done to change that? And then relatedly, in places like Ethiopia, is the problem in veterinary governance more due to sort of capacity issues or political will issues, in your opinion? Is it a question of it not being important or just a lack of capacity?

Andy Catley: Okay, well in Kenya – why hasn't Kenya changed? It's fascinating, isn't is, because late '90s, early 2000s, there was actually a massive evidence collected through an AU-IBAR project on community animal health workers looking at technical competence, looking at their impacts on disease control, looking at the economics of delivery systems, looking at the role of community animal health workers in disease surveillance and how they could strengthen that. A raft of peer-reviewed studies, papers in the *OIE Journal*, *World Animal Health Organization Journal*, FAO on board. The OIE actually changed its code community-based animal health workers. So you had an evidence base.

Now, what's fascinating is that different countries have taken different pathways *[laughter]* from the same evidence base, with Ethiopia and Kenya being two extremes, even though they're next to each other. So it's a good question. And I think the question relates to veterinary governance and how the veterinary boards, veterinary associations, are led, and the attitudes and the thinking that takes place, and the leadership. Veterinary associations, of course, will kind of say that they're there for the public good and promoting livestock and animals and so on for the – for societal benefits.

Well, that's one narrative. The other narrative is they're actually trade unions of veterinarians. And they can be protectionist, and they don't want anyone else to be providing veterinary services, even if they can't, which is essentially what's happened in Kenya. In Ethiopia, what happened was there was a chairman of the Ethiopian Veterinary Association who was actually one of the pioneers of community-based animal health care in Ethiopia, and he was one of the people who showed the vets that we could use these people for rinderpest eradication, he was on the ground doing it at the time. And he, as chairman of the EVA, said look, it's not a problem. Let's look at the evidence. Let's collect new evidence if we need to, instead of arguing about it. Wasn't easy, took time, but through processes of leadership, they went off in a different direction. They then engaged the government of Ethiopia, they were convinced, it led to change. And so very different kind of pathways, then, to what happened.

But a lot of it's down to individuals within these organizations. The evidence base is good to have, but you have to do a lot more things there. And in terms of what's happening in Ethiopia now, I think there are still, you know, severe budgetary constraints. There are still issues around what is the profile of livestock in the development of Ethiopia at the government level. It's come up a lot. There's now a new state minister for livestock, and I think things will continue to improve. It'll be slow. And the regional governments, particularly the regional governments in the pastoralist regions, will, over time, have more capacity to actually deliver this kind of support.

But what about public good functions like disease surveillance and and zoonosis control? Bottom line is there doesn't seem to be much money to do this kind of work in the government coffers. And that partly relates to a bigger policy question for livestock, which is that something like if government is actually doing quite well by exporting livestock, which Ethiopia is doing at the moment, it's exporting a lot of livestock and a lot of meat, and getting foreign exchange, and I said to them, well, what you need to do is better disease surveillance. They'll say to me, show us the added value economically. Won't be the ministry of agricultural, it'll be the ministry of finance and planning. Show us the return on better surveillance, better disease control, better certification, relative to what we're making now. It's a reasonable question. And the challenge isn't really for

the emergency people, it's for on the development side, it's the economic analysis which actually shows you why should they invest in that and get no returns.

And remember that they are – their primary driver is about exports and livestock exports, in this case. So you have to work all that out in the mix, I think.

Julie McCarty: All right, in terms of running overtime today, I think we'll just take two more questions. So we'll start with one from our online audience.

Agrilinks: Okay, for this first question, I'll provide a bit of context. We have Mohammed Afzal in Pakistan who says that large number of veterinary assistants are employed by the governments and they consider the community animal health care workers as their competitors. And then Ms. Balakrishnan said that from her experience with FAO in Asia, it's the same. At the point of delivery of service, there's a conflict between the government and alternative service providers, so how we do address these conflicts and competition?

Andy Catley: This is really about what happens when you get competition, I guess, between say veterinarians and other veterinary workers. There are a number, I think, of issues. One is that in the Horn of Africa context that we've been talking about, these systems evolve because veterinarians weren't there and didn't want to be there. So there was a genuine gap in terms of any service provider being on the ground. So that's one context. And in that situation, the direct competition between community animal health workers and vets doesn't really arise in terms of what's happening on the ground. The other aspect of this is that we want community animal health worker systems to be properly supervised, to be supplied with medicines of good quality and be, ideally, private sector. So the models that have been developed to do this has essentially been a model of a provide veterinary pharmacy in an urban center, a small town, run by or owned by a better trained veterinary worker. It may be a veterinarian, it may be a diploma holder or certificate holder. And community animal health workers are then linked to that private veterinary pharmacy and get their drugs from that and also advice on the correct use of drugs when new products appear and so on. It's that kind of thinking. Sounds good.

When you do a business plan for that, you do a business plan for a rural private veterinary pharmacy in one of these areas, and you do it with and without community animal health workers, and you look at the business plan in terms of drug turnover, your community animal health workers essentially represent a really cheap drug distribution system. And the viability of that business depends on drug turnover. So the difference between viability, business viability is having community animal health workers or not. In other words, there is actually a synergy or should be a positive relationship between your veterinarian or pharmacy owner and your network of community animal health workers. If

you're really into private sector development. The difficulty is, of course, there are grey areas in terms of commitment to private sector development at the policy level in other ways.

In Ethiopia, government's still providing government clinical veterinary services, being the one example. But if you are in a studio where on the ground, you've got both vets and community animal health workers, you'd have to be asking the question, well, why? Why is that happening? Because if the vets are there and delivering service, you don't need community health workers, if they're – especially if they're private. If they're government, the question would be is this an efficient way of doing it. And surely the provision of clinical veterinary services is a private good and the private sector can do it a hell of a lot more efficiently than the government. So it's again, it's a question of privatization, I think.

Julie McCarty: One last question or comment in person? Since I'll – I'll grab you for our final question.

Audience: Thank you. Michael from Aware. I'm just curious, there are models of community knowledge workers and things like that, Grameen Foundation and Mercy Corps has systems and I'm curious about the role of technology with regard to these animal health workers and what that looks like. We're finding that being able to transmit information out to people on mobile phones and so forth is a – is hugely beneficial, and similarly, it's an excellent way to get information back into a system. So I just wondered what that looks like. Didn't seem like there was much mention of that in the presentation. Thank you.

Andy Catley: I kind of agree with you that I think there's a lot of potential to examine and test and look at ways of using new technologies, whether it's mobile phones, whether it's assisting with disease diagnosis, whether it's disease surveillance and so on. And certainly mobile phones are commonplace, even in fairly remote parts of the Horn of Africa. So that's a clear thing to explore. Even with mobile phones, though, and say if you were thinking of a disease surveillance system, where community animal health can text in a report or take a photograph and send it in, there's also the issue of incentives. Why should I be bothered? And particularly why should I be bothered if there's not going to be a response because government veterinary services are weak, or the response is actually a bad response, such as movement control, quarantine or a kind of disease control activity which actually people on the ground don't really like very much.

So again, there's – it relates – there's all those kinds of issues to weave into this, and that's going to take quite a bit of figuring out. So the technology is nice, if it's the technical bit of it. But the institutional arrangements are complicated.

Julie McCarty: Well, thank you very much, Andy, and thank you to all of our participants in person and online. We're really happy that you joined us. Help us improve future events, if you don't mind, by filling out the survey and either leaving it on your chair or on the front table out there, and we hope to see you at future AgriLinks and USAID events. Thank you.

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