Opportunities for One Health Integration of Community Animal and Community Health Workers

Main Report

"*They're basically living the idea of One Health. Their lives depend on their cattle, their health depends on the cattle and the environment… This One Health idea is the best idea to address pastoralist healthcare in the region.*"

"We've been having these discussions for decades that their services are weak, but with these recurrent emergencies, we need to design 'emergency interventions' that are sustainable - we have to incorporate these existing markets for services. Often during an emergency, we give things away and cripple local businesses. Now we live in emergencies all the time, and this old system of emergency management creates financial emergencies for these small economies. So how do we use PPCPs to incorporate them into response?"

Ethiopian Community OH Scenario Workshop Participants

Jeffrey C. Mariner, DVM PhD
Micol Fascendini, MD MPH
Gaia Bonini, MS

USAID FROM THE AMERICAN PEOPLE

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Table of Contents

ACKNOWLEDGEMENT **3**

EXECUTIVE SUMMARY **4**

ACRONYMS **7**

DEFINITION OF KEY TERMS USED IN THE DOCUMENT **8**

Integration *8*
One Health *8*
Community Health Workers *8*
Community Animal Health Workers *9*
Community-Level Health Workers *9*

INTRODUCTION **10**

METHODOLOGY **11**

Literature Review 11
Stakeholder Engagement 12
Site Visits 12
Scenario Workshops 13
Study Synthesis 13

SYNTHESIS OF MAIN FINDINGS **14**

Global Activities 14
Synthesis of Stakeholder Engagement 14
Summary of Country Results 17
Ethiopia *17*
Kenya *18*
Somalia *20*
South Sudan *21*
Niger *23*

THEMATIC DISCUSSION **25**

The Relief to Development Continuum 25
Resilience 25
Institutional Approach 25
Community-Based Programs vs. Community Programs 26
Gender 27
Accessibility to Services 28
Quality of Services 28
Range of Services 28
Selection of Community Workers 29
Certified Trainers for Community Worker Programs 30
In-Kind Distributions vs. Enabling Access 31
One Health Resupply 32
Co-payments, user fees and cost recovery 33
Business models and quantity-based incentives 35
Options for community level service delivery and approaches to OH integration 37
Sedentary versus Transhumant Community Services 38
Joint Planning and Shared Governance 38
Supervision of Community Workers 38

LESSONS LEARNT **40**

THE WAY FORWARD **41**
THE COMMUNITY OH SYSTEM IN EMERGENCY **44**
CONCLUSION **47**
ANNEXES **49**
Annex 1: Report of the Literature Review 49
Annex 2: Community One Health Implementation Guide 49
Annex 3: Community One Health Scenario Workshop Manual Guide 49
Annex 4: Community One Health Scenario Workshop Reports 49
Annex 5: Country Site Visit Reports 49
REFERENCES **50**

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Executive Summary

The study 'Opportunities for One Health Integration of Community Animal and Community Health Workers' looked at the intersection of human, animal and environmental health at the community level with the goal of improving access to One Health services in the context of humanitarian emergencies. The study collected the experiences and views of stakeholders from the community up to the level of senior decision-makers and international experts in human health, animal health and environmental health. The goal was to identify appropriate interventions and opportunities for improved One Health integration of Community Animal Health (CAHW), Community Health Workers (CHW) and environmental workers.

The study used four main methods to gather information and work with stakeholders to synthesize new knowledge:

- A literature review of formal and informal publications on topics related to the intersection of One Health and community human and animal health approaches,
- Engagement of stakeholder organizations to gather experiences and perspectives on the way forward,
- Site visits to fully explore programs, understand the perspective of community and frontline workers and discuss first-hand experiences and lessons,
- Engagement of stakeholders in participatory Community One Health Scenario Workshops to share lessons and develop a common vision of the way forward on One Health approaches to delivering community health in specific countries.

This final report of the study includes summaries of the methodologies and main findings, a thematic discussion to develop insights into key issues in OH services access, and practical recommendations for the way forward. The authors include veterinary, health and conservation medicine professionals with extensive experience in Africa and Asia in humanitarian aid, development and One Health. Detailed reports of the different activities conducted during the study are attached as Annexes:

- The report of the literature review (Annex 1)
- The Community One Health Implementation Guide namely the present document (Annex 2)
- The Community OH Scenario Workshop Manual which provides a suggested approach to implementing a workshop to develop a consensus strategy to improve OH services at the community level (Annex 3)
- The reports of the Community OH Scenario Workshops conducted in Ethiopia, Niger, Somalia and South Sudan (Annex 4)
- The reports of the Sites Visits conducted in Ethiopia and South Sudan (Annex 5)

Despite acknowledging the length and magnitude of the final report and its annexes, the authors believe that they provide strong evidence to the operationalization of One Health at the

community level and allow appreciating the challenges and opportunities to the transformation of community-level health systems through the OH lens.

The humanitarian sector takes a holistic approach to meeting immediate needs to save lives and livelihoods in emergencies recognizing that aid and development are inextricably intertwined. This is evident in documents such as Sphere (Sphere 2018), LEGS (LEGS 2014), the FAO Livestock Related Interventions During Emergencies – The How-To-Do-It Manual (FAO 2016) and the Bureau for Humanitarian Assistance Mission Statement (BHA 2023). The study has carefully reviewed existing guidelines and many other documents with an eye to moving forward into One Health. The way aid is delivered profoundly affects development and resilience and the risk of future emergencies and institutions and development strategies affect both the risk and impact of emergencies. A holistic approach is required.

Although formal institutionalization of One Health has mainly been limited to the higher levels of institutions, the communities have an innate, practical perception of health as one unified issue. In fact, rural stakeholders often find the division of health services into silos as confusing. For example, CAHWs are routinely asked to assist with human illness as well. Access to all One Health services revealed generally a major concern for communities. Health services focused on sedentary communities with fixed point clinics and community health workers largely selected from sedentary segments of the population. The lack of access to health services was especially acute for segments of the communities that practiced transhumance, typically 30-40% of the community.

An apparent bias in medical services to favor the selection of sedentary community health workers seems to be linked to a belief that community level workers need to be literate. Respondents in the study indicated that few individuals who completed education up to the 8th grade would choose to remain in cattle camps. They had higher career and life goals. At the same time, responsible adults in cattle camps from many ethnic groups can more than adequately describe the appropriate use of a range of livestock drugs. Mostly, non-literate CAHWs were trained to implement vaccination campaigns against rinderpest using a lyophilized vaccine that had to rehydrated, kept alive and properly injected. These CAHWs largely eradicated rinderpest from South Sudan, Ethiopia and Uganda (Mariner, House et al. 2012, Roeder, Mariner et al. 2013).

Logistics and management of resupply also revealed a major concern. Communities reported that fixed point delivery systems were often without supplies and had to refer patients (both human and animal) to private providers, often at a considerable distance, to obtain medicines. One model that offers a solution is community-based practices, like the one present in South Omo zone (Ethiopia) and the approach adopted in Niger for the delivery of all curative veterinary services and vaccination. The study's findings and the literature (FAO 2016, WHO 2022) suggest that public-private-community partnerships (PPCP) offer options to improve resupply and access to services in general.

Communities and field workers indicated the need of solutions that are appropriate to both emergency and non-emergency periods. The quotation on the cover page of this report is a clear example. In-kind distributions disrupt markets that provide long term access to services and can bankrupt successful OH services. In many emergencies, service providers are present and should be incorporated into the emergency response. In these situations, the critical gap is purchasing

power and methods such as cash transfers and vouchers can provide access to a sustained service solution that will continue to operate after the emergency aid is withdrawn.

In almost all community discussions and workshops organized during the study, the participants called for further investment in community-level workers as the most effective way of institutionalizing access to OH services. There was alignment on the need to increase access to basic health services in rural and remote communities, especially cattle camps and transhumant pastoralists. The most common approaches advocated for were the cross-training of community animal health workers and community health workers, the selection of community health workers from the segments of the community that live in the cattle camps, and the development of OH systems of supervision of community workers.

This study proposes that *minimum standards and core competencies for trainers* should be developed together with a certification process for trainers. This is potentially the best route to assuring that prior learning in the use of community OH worker approaches are utilized, and good training practices and minimum standards are adopted in the development of CAHW and CHW competency.

Different requirements, structures, services between community-level health and animal health workers do create challenges to integrating the two systems. Some of these are areas for learning and innovation. Others are differences that need to be recognized and respected. Animal agriculture is an economic activity whereas human health care is both a fundamental right and one of the largest industries in the world. Despite the challenges, there was a consensus among stakeholders on the opportunity and value on the integration of the three health systems (animals, environment and humans) at the community level.

This main report organizes all the information obtained throughout the study. The Community OH Implementation Guide provides a quick start guide to implementation of the approach recommended by the study. A major step in the process is convening OH stakeholders in Community OH Scenario Workshop to decide how they wish to implement OH in their communities and to proceed to implementation. The Annexes include four examples of Community OH Scenario Workshops and a manual to help organizations wishing to implement such a workshop.

Acronyms

CAHW	Community Animal Health Workers
CEW	Community Environment Workers
CHW	Community Health Workers
iCCM	Integrated Community Case Management
OH	One Health
ORS	Oral Rehydration Salts
PPCP	Public-Private-Community Partnership
RDT	Rapid Diagnostic Test

Definition of key terms used in the document

Integration

Integration of health systems refers to the linkage of existing structures in an effort to improve delivery of health interventions. This review uses the framework set forth by Grépin and Reich in 2008 to describe integration of health systems. Acknowledging that Grépin and Reich's framework was developed specifically to examine integration in the human health sector (particularly in the field of neglected tropical diseases), the authors adapted it to describe the cross-sectoral integration of service delivery where the needs of a community are identified and served by at least two health sectors with the goal of providing efficient, targeted and relevant services (Danielsen, Schelling et al. 2020). Establishing the domain, level, and degree of integration is necessary to understand how health services can be delivered jointly. Distinguishing the domain at which integration is occurring helps to explain *what* is being integrated, an activity, a policy, or entire organizations. Similarly, the level of integration, be it globally, regionally, nationally or locally, helps to discern *where* integration is occurring. Finally, to what degree is integration occurring defines if this is a matter of coordination, collaboration or consolidation (Grépin and Reich 2008).

One Health

While various definitions of One Health are offered through the literature, a general theme is that the field lies at the nexus of environmental, socio-economic, and ecological health and determinants of disease. Its application necessitates the collaborative efforts of multiple disciplines working locally, nationally and globally to attain optimal health for people, animals and the environment (AVMA 2008). Aimed to examine the literature that has posited or actualized interventions through a One Health lens, this study adopts the working definition recently proposed by the One Health High-Level Expert Panel (OHHLEP). This, in fact, focuses on the actual implementation of One Health, emphasizing how the approach addresses a wide range of health challenges, from health prevention and promotion to response and recovery from health crisis, and how it relies on shared governance, communication and coordination to identify equitable and sustainable solutions (OHLLEP 2021).

Community Health Workers

Community Health Workers (CHWs) are described in the literature as lay persons (AVMA 2008) trained to assist in the communication or provision of basic health services, but rarely holding paraprofessional certifications or a tertiary degree (Lewin, Munabi-Babigumira et al. 2010, Boyce and Katz 2019). The World Health Organization (WHO) provided the following definition for a CHW: "Community health workers should be members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organization, and have shorter training than professional workers" (WHO 1989)(pg. 6). CHWs can therefore be considered to have two distinct but overlapping roles: the provision of services and the promotion of health in the community (WHO, 1989). Primary health care interventions in which CHWs are commonly trained include family planning, maternal and child

health, detection of specific disease including zoonoses, and vaccination promotion (Scott, Beckham et al. 2018). Since the late 2000s, CHWs across several countries in Sub-Saharan Africa have been engaged in the integrated Community Case Management (iCCM) program. They are trained and equipped with amoxicillin, Artemisinin-based Combination Therapy (ACT) and Oral Rehydration Salts (ORS) to promptly treat pneumonia, malaria and diarrhea in children under-five (WHO/UNICEF 2012).

Community Animal Health Workers

Community Animal Health Workers (CAHWs) are members of a community trained in dealing with common livestock issues and diseases (Mariner, House et al. 2012). They are usually livestock owners who move with the livestock and selected, supported and supervised by the communities that they are part of. They also typically provide health services and generally charge for their services to cover the cost of the inputs and labor. Thus, there is an entrepreneurial aspect to their training and activities. In emergency settings, they may be provided with subsidized inputs and receive external support (LEGS 2014, FAO 2017, Hoots 2023). They are described in the literature by various names such as Community Livestock Worker, Village-based Livestock Worker and Livestock Vaccinator (Benzerrak and Tourette 2011) but this review will refer to them by the broadest term, Community Animal Health Workers or CAHWs.

Community-Level Health Workers

Community-level health workers is the term used throughout this review when referring to an integrated community-level model of health delivery. The term, thus, encompasses both CAHWs and CHWs. The authors chose to use community-level rather than community-based, as the latter implies ownership by the community. While many community-level health workers are indeed community-based, this term does not necessitate their ownership by the community, or by that regard any associated government or NGO-affiliated program.

Introduction

One Health and community health (animal and human) are two advances in health service delivery whose potential remains to be fully tapped. Due to the perceived successes of the programs, many organizations with varying levels of expertise have established a diverse range of programs. Often the programs are in the context of complex emergencies, reaching beyond the boundaries of human or animal medicine and into One Health (intersecting environmental, socio-economic, and ecological issues), in locations where failure of governance is a feature of the emergency. One Health concepts are being translated into exciting innovations in the way community health services are delivered.

The purpose of this study is to look at the intersection of these two models and identify opportunities for improved One Health engagement of community animal health (CAHW) and community health workers (CHW) through a better understanding of experiences and lessons learned especially in reference to disaster mitigation.

This document is the main report of the study. It is structured in seven chapters. The *Methodology* describes the different methods and activities employed to approach and answer the research question. The results of the study are presented in the *Synthesis of the Main Findings* providing first a global perspective of the problem and then detailing challenges and opportunities of the operationalization of One Health at the community level in the five countries target of the study. The *Thematic Discussion* describes the most significant themes emerged during the study. These are then summarized in the *Lessons Learnt* that have been used to propose the *Way Forward* to guide the One Health integration of community health and community animal health. In the *Community OH System in Emergency*, the authors provide a practical guidance towards the establishment of an integrated service delivery model at the community level in the context of humanitarian emergencies. Final considerations are reported in the *Conclusion*. Five annexes complement the report summarizing the results of specific study activities (the *Literature Review* in Annex 1, the *Country Scenario Workshops* in Annex 4 and the *Country Site Visits* in Annex 5) and providing practical guidance to move forward to One Health integration at community level (the *Community One Health Integration Guide* in Annex 2 and the *Community One Health Scenario Workshop Manual Guide* in Annex 3).

Methodology

The study complied with Tufts University Internal Review Board (IRB) requirements and was determined to be exempt after a review. In its early stages, the project also complied with an internal COVID-19 review on the need to travel and conduct in-presence meetings. Meetings were conducted online and, when possible, travels arranged upon the lift of movements restrictions.

The study methodology has 5 main activities. These were:

- Systematic, scoping literature review,
- Stakeholder engagement with individuals identified form the literature review, as well as project visits and networking activities,
- Site visits to four regions where relevant experiences were described to interview stakeholders at the field level including participants and implementation staff as well as decision-makers from local to national level,
- Community OH Scenario Workshops designed to bring together local to national stakeholders in four countries,
- Synthesis of the results of the 4 study activities.

Literature Review

The scoping literature review focuses on experiences in and opportunities for the One Health integration of community health structures in sub-Saharan Africa. It aims to capture and review the scope of the existing literature in this context and answer the research question:

"Can One Health engagement of CAHWs and CHWs benefit communities and if so, what are the opportunities to advance One Health integration of community-level health programs?"

The purpose of the literature review was to help guide the engagement interviews with key stakeholders who work with CAHWs and CHWs and the field activities of the study. The review helped orient and deepen discussion on the challenges and opportunities for One Health integration of community animal and community health workers and contribute to the development of strategies for implementation in the development-emergency continuum.

Due to the exploratory nature of the research question and the need to synthesize potentially disparate bodies of literature, a scoping review was used as the research approach for the systematic desk-based review. The strength of a scoping review is the ability to: 1) systematically collect and synthesize existing research evidence; 2) map the existing literature to determine successes, gaps, and opportunities in integrated One Health approaches; and 3) characterize the types, sources, and quality of existing evidence (Daudt, van Mossel et al. 2013). Arksey and O'Malley's (Arksey and O'Malley 2005) framework was used to develop the methodology for the review and delineated five key phases: 1) developing the research question, sub-questions, and objectives; 2) identifying relevant literature through a standardized and systematic search protocol developed *a priori*; 3) screening and selecting

literature through the application of inclusion and exclusion criteria developed *a priori*; 4) mapping data extracted from the literature; and 5) synthesizing and summarizing the results.

The research team systematically searched three academic databases for recent relevant literature: Pubmed, MEDLINE, and ProQuest. The search was conducted between November 2019 and January 2020. The complete literature review is attached as Annex 1 and summarized in the Synthesis of Main Findings.

Stakeholder Engagement

Interviews were conducted with key informants at the international, national and local levels. The interviews were semi-structured, followed a checklist of topics and last about 1 hour.

Initial interviews during the period when the COVID-19 pandemic restricted travels were conducted on Zoom and focused on higher level key informants as these were mainly those were accessible. However, the researchers noticed a relatively low response rate (11%) which could be due to COVID-19 disruptions, intense online work of key informants or still inadequate knowledge or interest in the study topic. About 200 key stakeholders were reached via email but the researchers managed to interview only 21. Interviewed experts were relatively balanced in terms of gender (55% female), with higher representation from the Global North (59%) and the animal health sector (64%). Interviews took place online, mostly between September 2020 and November 2021 and a few in the first months of 2023.

Site Visits

Site visits were initial planned for 6 countries, Ethiopia, Mali, Niger, Somalia, South Sudan and Sudan. The site visits were planned for after completion of the literature review and as interviews were being completed. During the period of implementation both Mali and Sudan experienced severe security that included changes of governance. Local partners indicated that obtaining visas would be challenging and even if obtained, travel outside of the capital would not be permitted. As the situation had not resolved by the end of the project, these two countries were not visited. Niger also experienced security issues. Visas were feasible but local partners were not willing to facilitate travel on international experts outside the capital. It was agreed to hold the scenario workshop in Niamey and bring stakeholders to the meeting.

However, Kenya was added as a site visit country during the course of project implementation. Thus, site visits were completed in a total of 4 countries: South Sudan (Juba, Bor and Bentiu), Ethiopia (Addis, Afar, SNNP and Oromia regions), Kenya (Isiolo county) and Somalia (Gedo region). Two site visit missions were completed to Ethiopia. The first covered South Omo and Borana (May 2022) and the second was to interview stakeholders at the national level in Addis Ababa and in the Afar region (October 2022). In South Sudan the mission was conducted in February-March 2022, in Somalia in November 2022, and in Kenya in February 2023. A comprehensive report of the mission in Ethiopia and South Sudan is in Annex 5, whereas key outcomes from the short missions in Somalia and Kenya are integrated in the Summary of Country Results.

Scenario Workshops

The Community OH Scenario Workshops were designed to bring together OH stakeholders from local to national level in countries where the project had done site visits. The three-day agenda asked the participants to characterize of the current service delivery situation, discussion options for OH integration and enhancement of services and then to map the way forward for community level service delivery in development and emergency settings. The countries where the workshops were implemented all experienced chronic or repeated cycles of emergency over the past decades. As the participatory workshops evolved, it became apparent that most participants viewed development and humanitarian aid as inextricably linked.

At a minimum the workshop strived to include representatives concerned with health, animal health and the environment. A major goal was to have community workers and elders interacting with authorities especially local departments and OH focal points at the national level. The workshop approach is described in detail in the Community One Health Scenario Workshop Manual at as Annex 3.

Originally, three scenario workshops were planned: Ethiopia (February 2023), Niger (November 2022) and South Sudan (October 2022). The project was unable to do the site visit prior to the Niger workshop but felt it would be valuable to hold the workshop. The opportunity to hold a fourth workshop occurred when VSF Suisse offered to facilitate a workshop in Mogadishu. Given the complexity of travel in Somalia, this was viewed as an option for obtaining broader involvement from Somalia. The fourth workshop was approved for Somalia as part of the no cost extension of the project and held in April 2023.

The reports of the four scenario workshops provided the summary of views of the participants on the way forward (Annexes 4). As such, the reports have two purposes. They capture the opinions, plans and decisions of the participants and provide participants with a tentative roadmap for the future. They also inform the study as to the plans of national stakeholders. This information is ‘data’ for the study synthesis being completed by the project team. It highlights areas needing attention and points to solutions that stakeholders are willing to adopt.

Study Synthesis

The study synthesis proceeded by tabulating and reviewing all the data obtained from the four activities. This review highlighted questions for which the team further wished to review the transcripts and consult the literature.

The study team identified discussion themes occurring in the four sets of data and then proceeded to synthesize information along thematic lines. This analysis brought together the literature, stakeholders’ input and the experience of the study team. In discussing the themes, the authors have strived to distinguish the three types of input. The goal was to allow distinction of statements from others from input from the study team. This is brought out in the Thematic Discussion Chapter and followed by a section on Lessons Learnt which are basic observations on the trends in the source information.

Synthesis of Main Findings

Global Activities

The projects main approach was one of 'participatory analysis' where the issues arising from the literature and interviews were raised during site visits and the scenario workshops. The participants raised additional key issues. The study report gives two types of 'results' of equal importance. The first is the views of the communities and OH stakeholders on the way forward in the integration and enhancement of services and emergency response in the age of One Health. The second is the observations and recommendations of the study. Although the participants' result is open to further clarification and study, it should be noted that it cannot be changed at this stage. The analysis and results of the study team are points for robust discussion and evolution.

The structured literature review and international interviews on OH at the community level provided good textual information on OH, but to a large extent these sources did not reflect the challenges and opportunities at the community level. The information tended to focus on generic advantages of OH. On the other hand, sources and guidance documents such as SPHERE, LEGS and WHO reviews on community interventions and workers addressed community issues in detail, highlighted challenges and suggested ways forward. For the most part, these documents did not mention OH. The study sought to integrate these sources in the discussion of the literature review. Analysis of the literature revealed a variety of themes associated with the integration of community-level health models. While relatively few articles discussed, even theoretically, the direct integration of community health and community animal health structures, relevant One Health strategies, requirements, benefits, challenges and recommendations could be extrapolated from the texts. The benefits of an integrated system noted in the literature included financial savings for program operators, and an increase in disease surveillance, trust in the system and service coverage within the community. Challenges faced by integrated systems primarily are a lack of sustainable funding, issues associated with disciplinary silos and a lack of an integrated or comprehensive training structure. Strategies identified to support the integration of community-level health programs include providing a comprehensive training to community actors, identifying their roles within the community, supporting those roles at the policy level and providing gendered service delivery. The published literature on the integration of community human- and animal health models is mainly presented from the animal health perspective, with an evident gap in human-health driven One Health interventions at the community level. Surprisingly, recent reviews on community health programs and the role that CHWs could play in achieving universal health coverage, do not even mention One Health as a possible strategy to reshape service delivery among hard-to-reach communities and contribute to the global goal of universal health coverage. Areas of priority for future research include gendered applications to integrated health services and the role of integrated health systems in disaster and emergencies. The detailed report of the Literature Review is in Annex 1.

Synthesis of Stakeholder Engagement

There is wide recognition of the critical role played by community workers in reference to the provision of both health and veterinary services. Community workers are considered a key link between the community and the system and key stakeholders in reaching and maintaining a

contact with households and community members. Community workers can convey information and support community awareness and education, provide vaccination, gather and share data contributing to disease surveillance.

> "*It's completely right that those people can convey information to people. They are not vaccinating only, they can be a kind of link*" (Veterinary expert from Global South)

Main concerns raised by a few informants refer to their training and supervision. CAHWs, for example, have been blamed for overdosing antibiotics and hence contributing to antimicrobial resistance. Community workers are often introduced and supported by international agencies and non-governmental organizations, with the government not being fully engaged in their payment or motivation and thus limiting their sustainability and involvement in the health delivery system in the long term.

> "*CHW/CAHW are needed in many countries, but there are real problems with [their] supervision*" (Veterinary expert from Global North)

There is limited experience on the integration of CAHWs and CHWs on the ground. Stakeholders confirmed the presence of National One Health Committees which, however, are rarely cascaded at the community level.

> *"You are touching on an issue that in terms of conceptual framework is advanced but on the ground is much less than we think"* (Veterinary expert from Global South)

Integration experiences seem to be happening in response to ad hoc needs on the ground and not following a formal structure. In South Sudan, for example, VSF and MSF collaborated in responding to an increasing number of dog bites and rabies events showing how community workers could work together for the same cause. Collaboration happens also by sharing resources and assets, such as the use of the cold chain in the Health Centre to store both the human and animal vaccines. Human health network and community actors have been reportedly engaged in the surveillance of Rinderpest and CAHWs engaged to support vaccination coverage among children in cattle camps.

However, the lack of a formal structure for integration can hinder the collaboration of community workers as witnessed, for example, by VSF in South Omo (Ethiopia). While vaccinating livestock for anthrax, VSF realized that people had contracted the cutaneous form of the disease from using the hides of infected animals. Community members had rightly understood that their animals had died of anthrax, and they had burned the meat, but had still used the hides to sleep on causing human infection. The appropriate authorities were immediately informed, but it was not possible to provide any other service or treatment to the local communities, delaying a comprehensive response to the anthrax outbreak.

According to one of the key informants, the limited collaboration and integration of CAHWs and CHWs could also be due to donors. Funding opportunities are still structured in siloes and it is often challenging proposing cross-sector collaborations and integration.

Benefits of the CAHW/CHW collaboration at the community level is expected in an intensification of awareness campaigns and reduction of operational costs. Clear evidence on the economic benefit of a more integrated approach could also help in mobilizing resources and getting more donor support. According to a few key informants, integration of the two cadres would particularly benefit the remote rural and pastoral areas where the veterinary and health systems are not working as they should.

Most of key informants agreed that there is still limited understanding of One Health among partners and stakeholders but concurred that community actors could play an essential role in putting the approach into action. The community has an "*innate understanding of One Health*' (Veterinary expert from Global South), mainly in reference to animal and human health though community workers could easily take over and integrate the environmental component as well.

> *"The practice of the community is already doing this in One Health – but the support from the agencies is not actually there. The community is more ahead than the agencies"* (Veterinary expert from Global South)

CAHWs and CHWs belong to the same community, they know each other, and could easily collaborate. An integrated approach could help them to learn from each other and better respond to the community needs. Because of the literacy requirements in the selection criteria, CAHWs and CHWs could also happen to be the same person, and this would obviously ease the integration of different tasks.

Challenges to the CAHWs and CHWs integration have mainly been identified in the different structure, standards and requirements of the health and veterinary systems. CHWs are usually static, attached to a health facility and living in a specific village, whereas CAHWs move with the livestock providing their services mainly in camps. Moreover, the two cadres receive different training and have different responsibilities hindering the establishment of an effective collaboration.

> *"[...] whilst we did share fridges for vaccines, it really went against their rules that you weren't supposed to store animal vaccines in the fridge with human vaccines"* (Veterinary expert from Global North)

> *"They tended to train human health workers at a much higher level and required much more literacy than we needed"* (Veterinary expert from Global North)

According to the key informants, there is need to define the system and detail the practical terms of their collaboration/integration in One Health actions. Community workers could play a critical role in emergencies, but the system would need to be clearly defined and tested in a non-emergency situation to be properly activated in the time of a crisis. The system should be created from the ground, responding to the local needs and involving the community workers. *"Community engagement from the outset is essential"* (Veterinary expert from Global North). CAHWs and CHWs should be involved in the definition of the collaborative approach as well as in the design of their training materials.

> *"[CHW and CAHW could work together but] you'd have to develop and define the system. […] You can do a lot of things, but it must be built as a system from the ground up"* (Health expert from Global South)

> *"Perhaps [community workers] should be involved in [the] decision making [process of whether it is] worth combining or keeping [them] separate"* (Veterinary expert from Global North)

A few key informants suggested a joint training to initiate and maintain their collaboration at the community level. Others proposed to add some human health elements to the CAHWs training and some animal health elements to the CHWs training. Some suggested a focus on a specific disease (e.g., rabies) to create a practical opportunity for CAHWs and CHWs to work together. In terms of sustainability, one of the key informants also suggested considering the introduction of a fee-for-service model to ensure the established system maintains itself in the long term.

Summary of Country Results

This section summarizes the knowledge gained from both site visits and the scenario workshops in the five countries target by the research.

Ethiopia

The site visits in Ethiopia covered three pastoralist regions (Afar, Borana and South Omo) and Addis Ababa. South Omo is a diverse region, and 4 different ethnic communities were visited (Annex 5). A scenario workshop was held with national participation and local and community stakeholders from all three of the regions visited. All areas have been affected by chronic emergencies and the south (South Omo and Afar) was still in the grips of a multi-year drought at the time of the mission.

A wide range of CAHWs had been trained over the years by a variety of NGOs. Some programs benefited from very experienced personnel and implementing agencies, such as VSF-Germany, whereas interviews with CAHWs indicated that some programs lacked experienced leadership. A number of CAHWs with long service records were interviewed. There was clear evidence that they continued on to provide some level of services over the long term despite inconsistent and intermittent support.

One activity that stood out was the community veterinary practices established by VSF Germany, where a private veterinary hub supported CAHWs in Omorate (South Omo). The business was profitable, and the owner/operator had built strong relationship with the CAHW network. This experience can serve as model for replication also in the human health sector. It would be interesting to develop a community-based health practice based on a supply and supervision hub supporting trained local workers.

Activities observed in Borana were more of a project-based nature. The VSF HEAL Project had established Multistakeholder Innovative Platforms (MSIP) in two communities along the highway that functioned as community level OH platforms including many of the village elites. At the start of the project, the significant security issues limited site selection to along the highway. The activities implemented were based on public sector management of in-kind distributions or revolving fund models. These are hard to sustain and have a high probability to lead to service gaps after the end of the project. It would be better to explore PPCP to manage resupply and supervision and focus on enhancing the communities purchasing power through cash distributions or voucher programs. Discussion with community members outside of the MISP revealed that the MSIP is a valuable approach to OH management, but given the presence of community elites, should not serve as the sole point of community dialogue.

The study mission also visited communities in two woredas that had not participated in the HEAL project at a distance of about 15 kms from the main road. True to the participatory concepts of road and project bias, the situation was much different. In one woreda, the health extensions workers were active, but had no supplies. In the second woreda, there were limited supplies. This was explained as differences in budget priorities and management at the woreda level. In any event, most members of the public were obliged to travel to distant towns to procure medicines prescribed by the HEW.

At the time of the study visit, the drought had been on-going for several years. One farmer reported he hadn't had a harvest in four years. The rural community had essentially no purchasing power. In discussion, they wished to be empowered with accessible community level services and purchasing power.

In Afar, local community vaccinators, CAHW and Animal Health Assistants (AHAs) were interviewed in addition to woreda and zonal staff. It was noted by the AHA that most CAHWs had evolved in project-based workers and had lost their entrepreneurial spirit. This was the result of payment of stipends rather than using quantity-based incentives. Newly established female community vaccinators were working for quantity-based incentives paid by the herders. They indicated that private human health services were preferred when money was available to pay.

The Community OH Scenario Workshop stressed the chronic nature of emergencies in Ethiopia and that relief and development are one continuum or cycle where a holistic strategy is needed to move forward.

"We've been having these discussions for decades that their services are weak, but with these recurrent emergencies, we need to design 'emergency interventions' that are sustainable - we have to incorporate these existing markets for services. Often during an emergency, we give things away and cripple local businesses. Now we live in emergencies all the time, and this old system of emergency management creates financial emergencies for these small economies.
So how do we use PPCPs to incorporate them into response?"

Workshop Participant

PPCP in both animal and human health were identified as the way forward to break out of the inefficiencies of public sector management of supplies and recurring trap of lack of access to services. The participants noted the bias in the availability of community health to sedentary populations and the service gaps in transhumant populations.

The meeting advocated for a OH service approach where community workers were integrated in one service delivery network supervised by a OH unit that included human, animal and environmental needs and built on public-private-community partnerships for supply and supervision. In general, the meeting advocated for community animal health workers and an updated human health worker model who was able to treat basic health problems consistent with international trends and with enhancements over the health volunteer approach. These two types of staff would be cross trained on shared tasks and jointly trained on tasks that required a close degree of coordination like response to zoonosis.

Given the chronic nature of environmental and security challenges in Ethiopia, participants advocated for what could be appropriately termed developmental relief approaches.

Kenya

Kenya has been active in OH innovation at both the national and sub-national government and community level. As part of another project, the study team participated in community level animal health interventions in West Pokot and Turkana Counties. Despite these were not part of the study, the engagement did provide opportunities to explore OH relationships and broadened the studies experience in the arid and semi-arid lands (ASAL) of Kenya. Turkana district has established a OH strategy at the district and sub-district level that calls for human, animal health and environmental workers to be coordinated in one network supervised by OH Units at the sub-

district level. A County OH Unit has been established as part of the strategy (Turkana Strategy, 2023).

In February 2023, the study made one short site visit to Isiolo County, hosted by VSF Suisse, which consisted of interviews with County OH stakeholders and field visits to attend a community dialogue meeting in the rural town of Kulamawe and visit pastoralist corals at two water points. In Isiolo, County and local OH Units have also been recently established and community workers in Kulamawe were coordinating their activities and attending joint trainings. VSF Suisse is facilitating the work.

Interesting points made by professional stakeholders included:

- OH is more than zoonoses. It includes wildlife and environmental and rangeland health
- Pastoralism is evolving with motorized transport (trucks and motorbikes) increasing. Pastoralists are using motorbikes and cell phones. Cattle raiders are moving by motorbike and communicating by cell phone.
- Pregnant women and women with small children used to move with cattle but do so less today. “Children have forgotten milk.”
- Samburu have traditional grazing committees and reserve pasture for dry season grazing. There are valuable traditional institutions for rangeland management
- The Kenya Veterinary Board had ‘demonized’ CAHWs leading to the restriction of their activities and redesignation as Community Disease Reporters (CDR). This has created a gap and grey zone where informal practices flourish. After 15 years, there has been no influx of professionals or upgrading of CDRs to AHAs. An attempt to introduce a SIDAI private practice ended when project subsidies were discontinued. This has been a policy and service delivery failure for the ASAL Counties.
- Climate change is a major source of conflict and should be addressed in both emergency and development interventions.

Key issues emerged from the community dialogue meeting and water point visits:

- Community Health Volunteers (CHVs), CDRs, and grazing committee members have benefited from joint trainings.
- OH workers who provided services related to zoonoses were being established.
- CHWs and CDRs were monitoring weather stations.
- The Sub-County MoH summarized that they couldn’t build structures or undertake outreach (mobile clinics) and advocated for CHVs tracking cattle camps and integrated services as a solution within reach. Drought made people go far suggesting long range service solutions were needed for emergency interventions.
- The community workers were motivated to increase access of the camps to OH services. They suggested motorbike transport as a way to access cattle camps. Note, pastoralist practices are shifting to make use of motorbikes (see above).
- They perceived training of cattle camp members as a more appropriate solution to access issues than motorbikes. Similarly, herders at watering points who had travelled as far as 200 kms, definitely felt training cattle camp members was the best approach to expanding access to services.

- CDRs and livestock owners could reliably explain the application and dosing of anthelmintics, antibiotics and trypanocidal drugs when asked.
- CHVs are authorized to provide basic treatments where CDRs are not.
- OH workers may offer a solution to service access issues resulting from the restrictions placed on CDRs.

The discussions with communities and professionals showed good alignment and reflection. In general, the emphasis at all levels was on increasing the coordination, number and range of services offered by community workers. The emphasis was on interventions the community could sustain. The discussion on motorcycles and the willingness of CHVs and others to get out to the cattle camps and watering holes was positive and given that the pastoralists are becoming motorized takes on greater relevance. Cross training and joint training were already underway. Although, the conventional CHV, CDR and rangeland committee and rangeland scouts featured in the discussion, shared responsibilities, delivery of services across silos and OH workers was the trend. All this under the guidance of OH Units.

Somalia

The project experience in Somalia included a short site visit to the Dollo town and Sugurdud village and a Community OH Health Scenario Workshop in Mogadishu with participation from several areas of Somalia (Annex 4). Somaliland and Puntland were invited but could not attend unless the meeting was held in a third country.

VSF-Suisse was the local partner facilitating the visit and the scenario workshop. They are implementing the HEAL Project in areas of Ethiopia, Kenya and Somalia. As in other project sites, VSF-Suisse had set up a Multistakeholder Innovative Platform (MSIP) which is a form of OH committee at the community level. The MSIP involves both formal and community institutions that have OH related roles. The program had set up a health post/pharmacy and engaged human and animal health workers who were operating as volunteers. All medicines were provided as in-kind humanitarian aid. Traditional community institutions participating in the MSIP had a strong role in managing the community discussions and supervising the delivery of integrated health services.

The community reported that it had been 4 years since a good harvest, and they had lost all their cattle. Some goats and camels remained, but pastoralists had to purchase forage from the river areas to sustain them. The community was receiving unconditional cash payments and were very happy with the MSIP and health post. The community discussed sustainability and indicated that they would contribute to sustain the OH activity when the rains returned.

In the dialogue, it was acknowledged that the community had no purchasing power at present. The question was posed on how to transition to a more sustainable model in preparation of moving out of emergency status. That community thought that cash transfers targeting health care and vouchers would be a step in the right direction.

At the end of the dialogue, the women's group, a traditional community institution, was encountered doing group work. They engaged in income generating activities and received no outside support. Why not have the women's group manage the health post?

This visit informed the Community OH Scenario Workshop. The challenge was how to transform the current activities away from charity models to more sustainable approaches bearing in mind that the communities had been in crisis for years and lacked almost all purchasing power. How to move forward in a situation where humanitarian emergency had become the normal state. The Somali stakeholders were eager to accept this challenge.

The result of the Community OH Scenario Workshop was an action-oriented roadmap to establishing OH integrated community services that prioritized meeting overwhelming immediate needs while working to build resilient OH systems (Annex 4). The objective of the roadmap was to support effective, sustainable, community owned OH integration of services accessible to all stakeholders to support development and emergency relief. The approach of the roadmap was to create more business-like models based on public-private-community partnerships organized as a OH network supervised by a OH Supervisor based in a Primary OH Unit. The roadmap called for three types of community workers: CAHWs, CHWs and Community Environment Workers (CEW). Community workers will be cross-trained in their roles and receive joint-training on topics requiring integrated action like zoonosis. Traditional community institutions (*guddiga tuulada*) will select candidate workers and contribute to supervising workers in relation to the operational and social components of their work (e.g., level of activity, providing equal access, appropriate behavior, etc.). Relief interventions move away from in-kind distributions and focus on providing purchasing power through voucher and cash transfer approaches. The participants concluded:

"*The OH sector should move away from purely free services and seek methods that build sustainable, market-based service infrastructure. Models that include the involvement of private practitioners and private supply networks and approaches such as provision of vouchers to obtain services and inputs should be explored. Given the intensity of need, it is often not possible that the service user is the ultimate source of payment. However, the sector needs to move away from a charity-based model to market systems that are adapted to recurrent humanitarian crises."*

Community OH Scenario Workshop Final Report

South Sudan

In South Sudan a site visit was carried out that in Juba, Bor and Bentiu. In Bor and Bentiu, one-day workshops were held with participation from all the OH stakeholders. There after a Community OH Scenario Workshop was carried out bringing together representative from the national, state and community level from the three locations. Flooding had been a recent emergency in Bor and floods had persisted in Bentiu for over three years. In effect, chronic emergency was a near normal state.

The site visits revealed that South Sudan's long standing Community Animal Health program was operational and that many CAHWs had been carrying-on service for decades through various periods and gaps in project support from a variety of sources. They very much identified as CAHWs and took great pride in their community selection. On the human health side, the Boma Health Initiative created human health workers over the last three years. Boma Health Workers (BHW) were selected by Boma authorities to serve sedentary communities. Selection criteria for human health workers did not include a willingness to serve nomadic camps as was the case for CAHWs. Health workers were paid a small stipend and followed a defined schedule of household visits. They were treated more as employees and viewed themselves as employees.

Unlike the CAHWs, if the BHI supervision and support system ended, the BHWs suspend their activities. CAHWs were set up as self-sustaining entrepreneurs, not employees. In the past, CAHWs had occasionally been utilized to fill the health service gap in cattle camps.

Emergencies had both security and climatic drivers. The persistent flooding in Bentiu had more the character of landscape change driven by climate change. The flooding appeared to be the new normal, which suggested major shifts in population and livelihoods were an appropriate response. Stakeholders raised concerns about the flooding of the oil fields and potential chemical exposures. These environmental powerful drivers highlight the need to have environmental health as a full partner in Community OH both in development and emergency settings.

One Health and inter-sectoral communication appeared not highly developed within the public sector. Inside discussion at the scenario workshop, it was remarkable that the Advisor to the Minister of Public Health, the individual who spear-headed the design of the Boma Health Initiative, was not aware that South Sudan had a community animal health program. The NGO's such as VSF were actively promoting the concept. The International Agencies promoted inspectoral collaboration, but planning was often built around sectoral committees. VSF employed a medical doctor who was advocating for OH outreach. The study joined in an outreach session where a higher-level health service was provided for problems that CHWs would not be able to address. Observing the outreach visit and interviewing participants was moving. The high cost of the approach (vehicles and professional allowances) meant that visits would be rare. The study observation was that CHWs were needed for more consistent access. In fact, the outreach service done during our study visit was the last the team was able to undertake as of writing of this report.

The Community OH Scenario Workshops brought together local and national stakeholders. In general, the results of stakeholder consultations in Bor and Bentiu were well aligned with the Scenario Workshop. Participants indicated that:

- The BHI has created access to human health services in the sedentary communities of South Sudan.
- The human health sector had limited awareness of the successes of community-based animal health in South Sudan and have limited awareness of the situation in the cattle camps. Engagement of the health sector will be important to establishing systems that can respond to health emergencies.
- The way forward is to establish one integrated system to support BHW and CAHW.
- The BHI needs to incorporate community-based approaches to selection of trainees, include cattle camp populations, and include the communities in the systems of support and supervision of BHWs to enhance the sustainability of the program.
- CAHWs should be cross trained on BHW functions and supported to delivery basic health services in cattle camps.

As noted, one integrated supervision and support system was the way forward. It should be noted that health personnel are less accustomed to travel under harsh conditions than animal health personnel. The supervisory system for remote community workers often depends on the worker to come into the center for resupply and supervision. On the health side, a system of incentives that are generated from the work will be needed for this to work. Quantity-based incentives such as a payment per child dewormed could be adopted. This concern was not resolved in the

meeting, and it is suggested that approaches to incentives as part of the move to OH should be explored in pilots for action research.

The consultations noted that the main gap for emergencies interventions was the lack of human health services in cattle camps. During a OH focus group discussion in Bor, a detailed proportion piling exercise was conducted where OH authorities and community leaders gave clear indications that the main health services gap was in the cattle camps. The exercise and discussion indicated that cross-training of CAHWs as health workers was the best way forward as the CAHWs had demonstrated that they were a sustained service provider in the camps. The results of the piling exercises are reported in detail in the South Sudan Country Report (Annex 5) and summarized in the South Sudan Community OH Workshop Report (Annex 4). The participants felt that the elements that were identified above could be piloted in emergency interventions. In fact, most of the innovations that the study visited were NGO led action research funded by emergency aid.

Niger

Due to security constraints, the project implemented a Community OH Scenario Workshop (Annex 4) without conducting site visits in advance. The study team was aware of many interesting lessons on OH service delivery in Niger and felt that the Workshop would add valuable information to the study despite the inability to visit sites first-hand. The entire animal health system of Niger is based on public-private-community partnerships. The public sector focuses on regulation and coordination and all treatment and vaccination is implemented by community-based veterinary practices working with CAHWs (*Agents Communitaire Sante Animal*). Another innovation that had been piloted was joint CHV (*Relais Communitaire*) and CAHW meetings where CHWs and CAHWs networked and solved challenges jointly. These meetings revealed that the two types of community workers shared interests and could support each other in the field.

The scenario workshop brought together community workers and supervisors, elders and national stakeholders including the One Health focal points from the three ministries participating in the OH Platform. The platform has been reconstituted under the Office of the Prime with leadership by an inter-ministerial committee with equal representation from *Ministere de la Sante Publique*, *Ministere de l'Elevage*, and *Ministere de l'Environment*. The mandate of the platform takes a limited view of OH focused on zoonoses and has had limited impact at the community level.

The national and local participants were aligned on the need to establish OH supervision and networking at the community level and established a roadmap with key action and actors. They proposed that commune level workers and staff should receive OH training and be cross-trained on their respective functions and jointly trained on topics such as surveillance and zoonosis management. Participants were optimistic that the road map would serve as the core of a concept note for the development of projects to pilot OH community strategy.

The workshop considered three different emergency scenarios in independent working groups: large scale population displacement due to insecurity, drought, and an infectious disease outbreak. All working groups converged on the formation of OH coordination and cross training of first responders as part of the emergency response. The plans included integration of

interventions in the traditional sectors along OH lines. The Nigerien stakeholders are well aware of the realities of emergency responses related to climate and insecurity. Their scenarios indicated adoption of a fully integrated OH approach was appropriate to humanitarian responses.

Thematic Discussion

The Relief to Development Continuum

Although the literature review and the dialogue undertaken were broad and diverse in terms of geographic scope, the study site visits and scenario workshops focused on areas where emergencies are chronic.

The main reviews and policy documents on human, animal and environmental interventions recognize the shared relationships and impact that emergency and development actions have on the needs and well-being of communities through their effects on resilience and vulnerability. Participants in interviews and scenario workshops highlighted these effects in both conceptual and practical terms.

The study approach treated the relief to development continuum as one holistic challenge.

Resilience

The vulnerability of communities to external shocks is exacerbated by lack of access to markets and services. The manner in which relief aid is delivered has far reaching effects on the future availability and accessibility of the community to goods and services required to meet basic needs.

Sphere core principle No. 8 provides the following general principle.

> "Relief aid must strive to reduce the future vulnerabilities to disasters as well as meeting basic needs" (Sphere 2018).

Similar principles are contained in Livestock and Emergencies Guidance and Standards (LEGS 2014) and the FAO emergencies manual (FAO 2016).

Many areas of the globe are characterized by chronic cycles of emergency interspersed with periods of recovery and development. Stakeholders highlighted the need for strategies that worked for both emergency and development settings. Relief can set the stage for development and development actions can mitigate shocks that tend to drive or deepen crises.

Institutional Approach

Institutions are an important concept in social science. In general sense, institutions are the formal and informal rules that govern human interactions and activities. There is a range of definitions that are useful and that vary in their complexity and formality. These range from institutions defined as customary practice to all-encompassing descriptions of formal and informal structures and practices.

For example one definition focuses on behavior such as social institutions that are "stable, valued, recurring patterns of behavior" (Huntington 1996). A more comprehensive definition is that an institution is all the actors, organizations, structures as well as the formal and informal practices, customs, values, expectations, laws, regulations that guide their interactions that come together to meet a social need (Turner 1997). This report takes this comprehensive view.

The transition to OH is a process of transformation of a set of related institutions into one organic whole. In this report, we will use the term *OH institutions* as the set of related institutions that are currently evolving along a OH pathway. Each country, and the global system, is to a certain extent finding their own way based on their respective contexts and are at different points in this journey. These institutions begin at the level of the community and are rooted in traditional culture. A good example of these structures is the community institutions over seeing humanitarian and development aid at the village level in Somalia described in the Scenario Workshop. At another level, professional institutions vary between countries, often a legacy of colonial models. They also can have a role to play in the operationalization of One Health at the community level, providing technical inputs and support in the development of training and supervision programs of community-level workers.

Relief and development aid programs working on sectors encompassed by OH are part of the OH institutions. Relief aid impacts the institutions of health and will both influence and be influenced by the transition to OH institutions. One factor in resilience is access to appropriate OH services. At the level of OH institutions, our goal is to minimize the negative impacts and where possible to enhance the positive impact of relief aid on OH institutions.

At the level of community OH programs, community institutions are part of the OH institutions. Community-based programs need to partner with and empower already existing community institutions in the implementation and supervision of community programs. In Somalia, the scenario workshop stated that village elders and village committees, *guddigga tuulada*, were responsible for overseeing community programs and workers. Senior decisions makers from the OH ministries recognized that these village institutions were at the foundation of Somali institutions and valuing their role was essential for the success and long-term sustainability of OH programs.

The views of stakeholders in interviews, site visits and scenario workshops often reflected these concepts in very practical terms. The overarching desire was to integrating programing of relief and development activities to achieve maximum synergies.

Community-Based Programs vs. Community Programs

It is important to distinguish between community workers and community-based workers.

Community-based services are service networks owned by the community and at least in part funded by the community. The networks have a shared supervision system where community-based agents are technically supervised by formally trained health professionals while they are answerable to their communities for their level of activity, as well as issues such as the quality, equity and timeliness of services. Increasingly, animal health community-based networks are public-private-community partnerships (PPCP) where the public sector supervises surveillance and disease control functions while the private practitioners operate resupply, offer diagnostic support and technical supervision relative to the treatment of endemic disease. Community health workers on the other hand tend to be selected from the community by local elites and external programs. They are usually provided with incentives from external sources and often treated as a form of staff. For CHWs, ‘community embeddedness’ has been used as a way to describe some of the same concerns captured in the term community-based. A WHO review dedicates two pages to discussing the importance, benefits and means to establishing community embeddedness of the CHW programs to enable its long-term success (WHO 2020).

In practice, community-based workers and community workers are not sharply defined categories but instead two poles on spectrum of possible combinations of characteristics. In considering programs, it is important to get beyond jargon and clearly visualize the details of the strategy employed ensuring it builds on the already existing institutions and aligns with the local context.

An Interesting trend in the interviews was that CAHWs tended to identify themselves as CAHWs regardless of the presence of on-going projects or government support for their activities. Many had persisted in their service to communities across several project lifespans and prolonged gaps in outside support. The study team noted that being a CAHW, as opposed to job, was a part of the individual's identity.

The distinction between community-based and community-embed approaches lies in institutional objectives. Successful community-based development leads to the creation of new community institutions. This is why community-based approaches are sustainable and continue after the loss of external support. The community-embed approach would appear to allow the implementing organization to retain ownership and have more control. The trade-off is that community-embedded workers are dependent on external support. In the case of CHW, this is often derived from international aid.

This study will use the term community-level worker to refer to all community workers regardless of where they lie on the spectrum from community-based to community employees, and of which discipline they belong to (human or animal health, or environment).

Gender

Gender is an important consideration from the perspective of the nature of services needed, access to services, and the ability to act as service providers. In the area of health, maternal child needs and service delivery preferences are the obvious area were women need full involvement. It was noted in the study that some countries were moving away from Traditional Birth Attendants (TBA) but were unable to offer realistic alternatives. Much like CAHWs, TBA identified as TBAs regardless of external support or sanction for their activities.

A recent review of Community Animal Health Work notes that discussions with community on the gender dimensions of a program should occur during program design and before CAHW selection (Hoots 2023).

The participation of women in transhumant camps various by cultural group. For some communities, the camps largely consist of young men. For others, the camps are much more diverse with the very young and old, who are less mobile, being the only groups lightly represented. In West Africa, Arab and Fulani 'home' villages may completely empty during the season of transhumance. However, transhumance is evolving, and several reports were received in East Africa that movement for animals and people is now motorized allowing communities to travel further and more family members to participate. Women are often the first to observe illness both in the family and herd. Their involvement in feeding, milking and caring for young gives them insight.

It has been observed that there are differences between men and women in terms of their ability to manage small investments and address issues of credit. Generally, women are credited with

having the longer view. Related to this is the social issues around women's right to control resources and problems that may arise as the value of resources increases. These issues can have important advantages or untoward risks for involvement of women in community OH programs. The important point is not to make assumptions, either positive or negative, but rather to engage the community in dialogue to identify the best roles and mix of female vs. male community workers in the community where the program is working.

Accessibility to Services

In regard to health services, Sphere defines accessible as: "available, acceptable, affordable and of good quality (Sphere 2018)." Obrist provides a similar list of five attributes "availability, affordability, accessibility, adequacy and acceptability (Obrist, Iteba et al. 2007)." However, these attributes are continuous variables that are best describe on a scale rather than as present or absent. In reality, the relative success in achieving these attributes need to be balanced in order to optimize accessibility. Empowered community health worker programs expand accessibility to vulnerable communities (WHO 2020). Free services that are only sporadically available are perhaps not the best approach to assuring accessibility.

Quality of service has been identified as the primary concern in health service uptake by pastoralists in comprehensive review of the literature. It outranked geographic accessibility as a factor in health service uptake (Gammino, Diaz et al. 2020). Detailed descriptions of the quality issues observed by pastoralist are available in the literature (Abakar, Seli et al. 2018). The interviews and discussions during the site visits and the Community OH Health Scenario Workshops stressed the importance of the accessibility of services and a willingness to try solutions that worked towards sustained service access.

Quality of Services

CHW supervision, mentoring, supplies, training, referral system and linkages were described as necessary to providing quality service. Frequent stock-outs were reported to be an important disincentive for CHWs. (WHO 2020). Well trained and supported CHWs are reported to use diagnostic and treatment tools effectively to reduce mortality from malaria (WHO 2005).

In the project interviews and workshops, quality of service was identified as a key concern. Stock-outs were a major issue in all three areas of Ethiopia visited. Women community vaccinators in Afar, Ethiopia indicated that private services were preferred over subsidized public services due to the perceived higher quality of private services. In Borana, it was reported that those in grazing camps would sometimes arrange private services by motorcycle.

Range of Services

Integrated Community Case Management (iCCM) protocols give a good indication of the range of services and human health treatments that community workers should be authorized to carry out (WHO/UNICEF 2012). In South Sudan, health workers are reported to have a central role in the iCCM program that targets malaria, diarrhea and pneumonia in children under 5. CHWs are authorized to treat malaria with artensunate amodiaquine , diarrhea with oral rehydration salts and presumptive pneumonia with amoxicillin (Kozuki, Ericson et al. 2017). Recommendations

for iCCM and the role of CHWs in humanitarian settings are available (Koepsell and Zunong 2019). Where applicable, the protocol foresees that CHWs use the Rapid Diagnostic Tests (RDT) to confirm malaria before starting the specific treatment.

Community animal health workers generally treat the major health treats to livestock in their area of operation. This typical involves the use of anthelmintics, antibiotics (usually oxytetratcyclines), and trypanocidal and drugs against other hemoparasites in the area. They have also been very active in vaccination campaigns organizing and carrying out vaccination. These activities are done under the supervision of veterinarians, but this does not mean that the veterinarians are physically present when the treatments and vaccinations are done. Usually, the CAHW works alone or in small groups in the field and periodically reports to veterinarians or veterinarian assistants. Community animal health workers played a crucial role in the eradication or rinderpest (Mariner, House et al. 2012, Hoots 2023).These examples show that CHWs and CAHWs are both capable of carrying out complex tasks such as vaccination and diagnostic testing with rapid tests. In many cases, the workers are not literate. In a recent training workshop facilitated by one of this study's authors, over 20 Community Disease Reporters (CDRs) (former CAHWs) in Northern Kenya who were identified to support peste des petits ruminants vaccination in teams with animal health assistants, all CDR participants could correctly demonstrate how to hydrate vaccine, calibrate automatic syringes and vaccinate with the correct dose at the outset of the training prior to any explanation. Many of the CDRs were not literate.

In the site visit in Bentiu (South Sudan), non-literate, un-trained livestock owners were asked to present any medicines that they had on hand. These included anthelmintics, oxytetracycline and a variety of trypanocidal drugs. They correctly described the use and route of administration for all drugs. Their answers for oxytetracycline suggested that some under-dosing may have been occurring. The study's view is that embracing and building on the community's knowledge is the best route to assuring good practice, especially in regard to antimicrobial resistance.

Selection of Community Workers

The selection criteria for community worker candidates was found to differ between animal health and health programs in two important regards. Human health community workers were selected from sedentary components of the communities whereas movement with livestock was an important criterion in all animal health programs (Ethiopia, Kenya, Somalia, South Sudan, and Uganda). With a few exceptions, most communities reported that human health community workers did not visit the cattle camps.

Level of education is a criterion that has important impacts on access to services. A review of CHW reported education criteria was a 'doubled edged sword' (WHO 2020). There is a perception among some experts that community workers need to be able to read drug labels and instructional materials, especially for human health workers. On the other hand, illiterate community members and community animal health workers usually described livestock drugs uses and their application correctly. Non-literate workers were also trained to carry out vaccination with lyophilized live vaccines during the Global Rinderpest Eradication Program and successfully eradicated the disease from areas of Ethiopia, South Sudan, Kenya and Uganda with vaccination success rates comparable to professionally delivered campaigns and no recorded untoward events (Mariner, House et al. 2012).

There is a need to balance selection criteria. More educated CHWs tend to drop out after deployment (WHO 2020). The same is true for CAHWs. As noted in this study, livestock owners reported in interviews that literate trainees for community worker roles would not remain in the community. A review of CAHWs reported that literacy criteria severally limit the number of potential candidates. However, minimum literacy is often requested (Hoots 2023).

In the author's experience, literate candidates have higher life goals and view community worker training as an entry pathway or steppingstone to regular employment. Of non-literate CAHWs trained by the Pan Africa Rinderpest Campaign (PARC) in the 1990s in Karamoja, some were noted to be still active as recently as 2017. Of the one group of PARC CAHW trainees in Karamoja where completion of some level of secondary school was required, most had moved to other activities, usually employment, within one year of their training. In the selection of community workers, it is essential to select individuals who are fully integrated and committed to life in the community (Mariner 1996).

Certified Trainers for Community Worker Programs

Considerable attention has been focused on training content and competencies of community workers, but very little attention has been given to the qualifications and experience levels of trainers and managers of community OH workers A certified trainer approach should be developed for community OH workers based on participatory approaches and adult learning methods.

A lot has been written on approaches to developing effective community-based programs and training of community workers (Hoots 2023). There is considerable turnover in relief and development personnel. Usually, those on the ground are less experienced staff. In relief settings, volunteers and new employees make up a considerable part of the work force. There is also a trend towards development of standards and competencies for community workers. Despite good written guidance being available, there still seems to be a lot of learning by trial-and-error with organizations, teams and individuals establishing or extending programs according to the local contexts. Although the process looks deceptively simple, there are a lot of lessons from the extensive body of experience in the relief and development community.

Training adults is a specialized skill. Often those conducting the training of community workers have limited credentials and experience in training adults. Training of trainer programs often focus on content and do not provide much guidance on the training processes and subsequent supervision of trainee. This study proposes that *minimum standards and core competencies for trainers* should be developed together with a certification process for trainers. These certified trainers could support organizations to establish programs and develop competency. This is potentially the best route to assuring that prior learning in the use of community OH worker approaches are utilized and good training practices and minimum standards are adopted in the development of CAHW and CHW competency.

Figure 1 below summarizes the similarities and differences between CAHWs and CHWs. These have emerged through the literature and the consultations with stakeholders at the local, national and global level. Similarities and difference between the two professionals mainly concern their 'embeddedness' in the local community, their training and ability to delivery services, their workstation and movement along with the community, and their income.

In-Kind Distributions vs. Enabling Access

It is often said that famine results from a lack of purchasing power rather than a lack of food. Food is almost always available for purchase, although the price may be higher due to scarcity. Health and animal health services can be viewed through a similar lens. Pharmacies and clinics are often present and operating, where security is not a major component of the emergency, but the poor do not have the resources to access and purchase services. On the other hand, in conflict and displacement situations, health systems can be severely disrupted and services and inputs may not be available (Koepsell and Zunong 2019). Realistic assessments of available services should inform the approaches needed in acute emergencies. In protracted emergencies or recovery settings, reconstitution of services should be a goal in parallel to meeting immediate needs.

An example from an area of known for protracted crisis is the Afar region of Ethiopia. In our field visits, respondents in the Afar region indicated that private services were preferable to the government health services, if one could pay. The reason given was that the private services were of higher quality and more reliable in terms of medicines in stock. Rather than support in-kind distribution of free inputs and services through the public sector, programs could look for approaches to empower stakeholders to access quality services. Ethiopia is turning to third party suppliers to improve supply logistics in health (Health 2015)

Cash transfers directly address the absence of purchasing power. They can be used where services are available. Conditional cash transfers require recipients to take an action or comply with a requirement. The requirement can be to participant in preventive health programs such as human health check-ups or childhood vaccination (FAO 2016). Vouchers are a form of conditional transfer with specific services or commodities are targeted.

An interesting area of innovation could be combinations of conditional cash transfer and vouchers targeting OH services (human, animal and environmental) combined with interventions to strengthen service markets. This strategy has the potential to meet immediate basic needs while making the community less vulnerable to future shocks. In the thematic section on ‘Co-payments, user fees and cost recovery’, an automatic voucher approach to enrolling families into health insurance schemes is described.

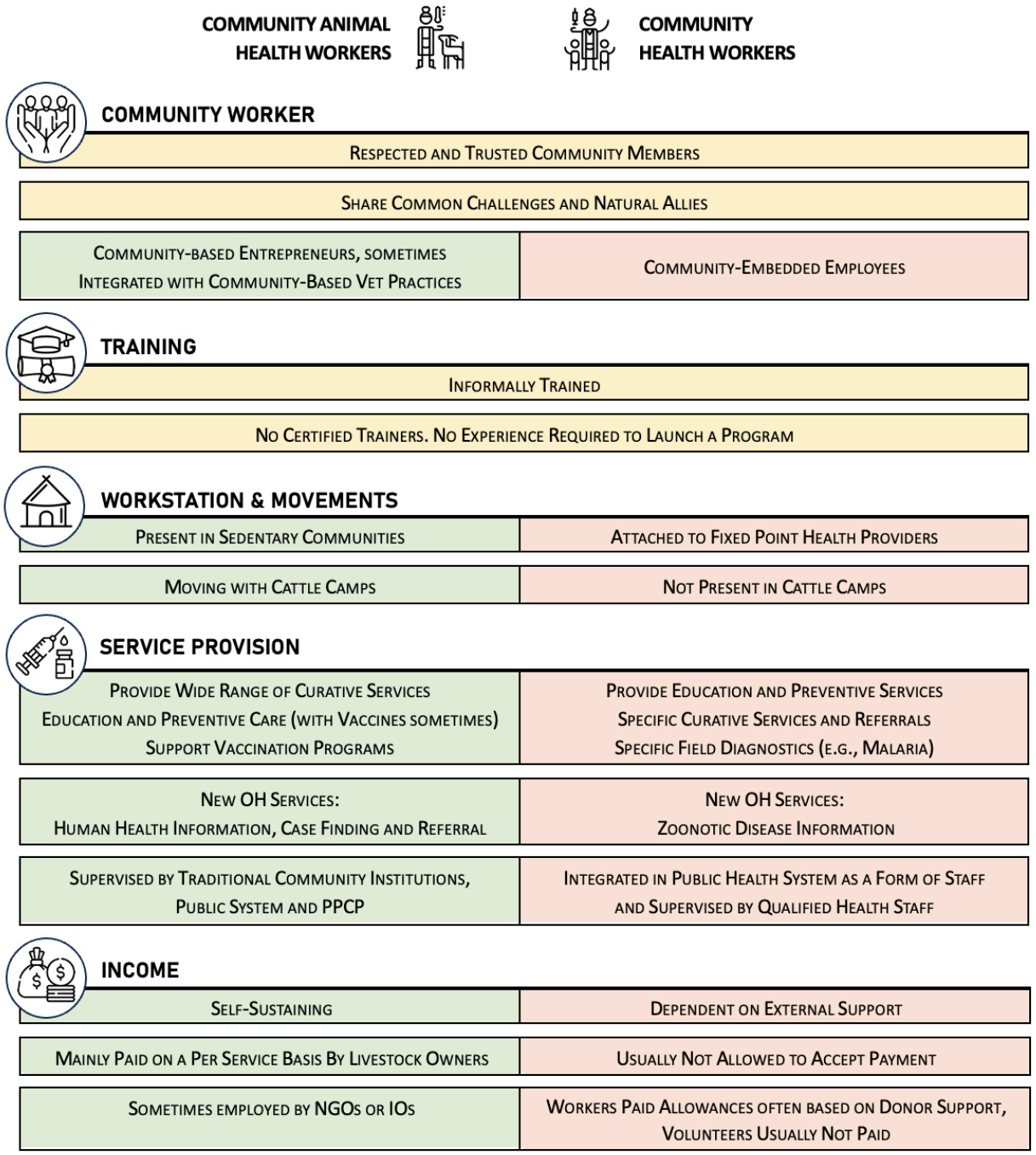


Figure 1: Overview of similarities and differences between CAHWs and CHWs (icons from Flaticon)

One Health Resupply

It is now a common practice in community animal health programs to integrate veterinary pharmacies and veterinary practices into the early stages of program establishment. These have been called community-based veterinary practices. The most recent review of CAHWs advocates for pharmacy and private veterinarian participation in the training and mentoring of CAHWs (Hoots 2023). It is important to establish these linkages early so that the private practitioners establish partnerships based on shared goals. Private enterprise is of course seeking profits.

Private sector actors can benefit from training on business models that partner with the communities and work with community workers as local agents. Public trust and respect are business assets.

Partnerships for management of the supply networks is an area of evolution in the health sector. Health workers link with private pharmacies now as a response to stock outs. In Ethiopia, respondents noted that rural Health Extension Workers provide prescriptions and guidance on where to purchase and price. The Ministry of Health acknowledges that public private partnerships are necessary to deliver health (Health 2015). In fact, about 15% of Ethiopian health facilities now contracted with third parties to cover the supplies required to meet current service needs (WHO 2022).

In the progression towards OH integration, difference in approach between the sectors need to be respectfully acknowledged and managed (Abbas, Shorten et al. 2022). There will be opportunities for learning both in terms of accepting appropriate differences and recognizing opportunities for innovation.

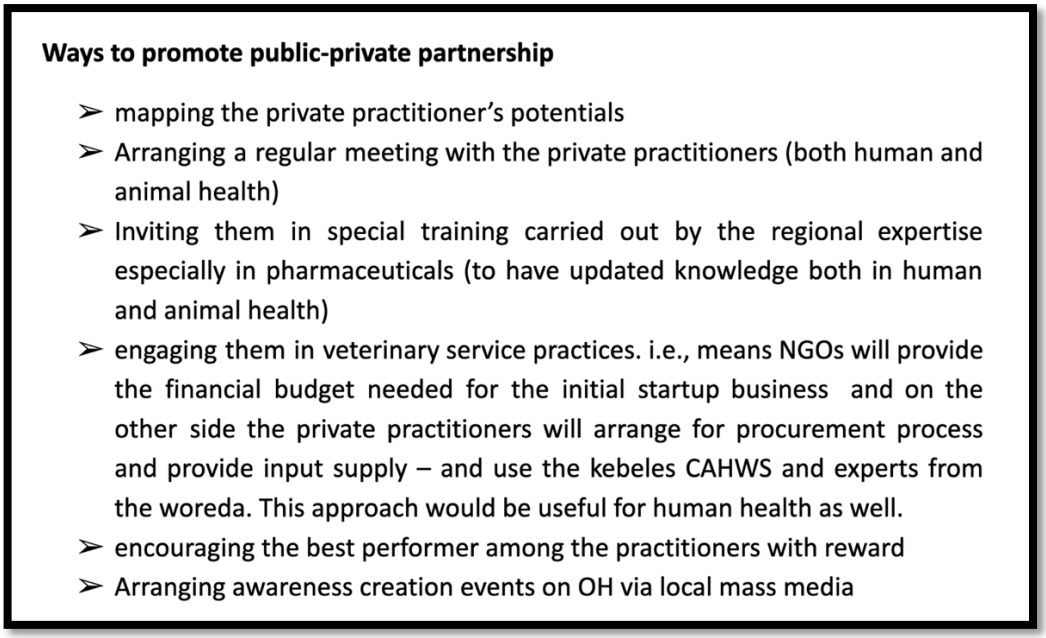


Figure 2: Presentation of the Borana Group, Ethiopia Community OH Scenario Workshop

Co-payments, user fees and cost recovery

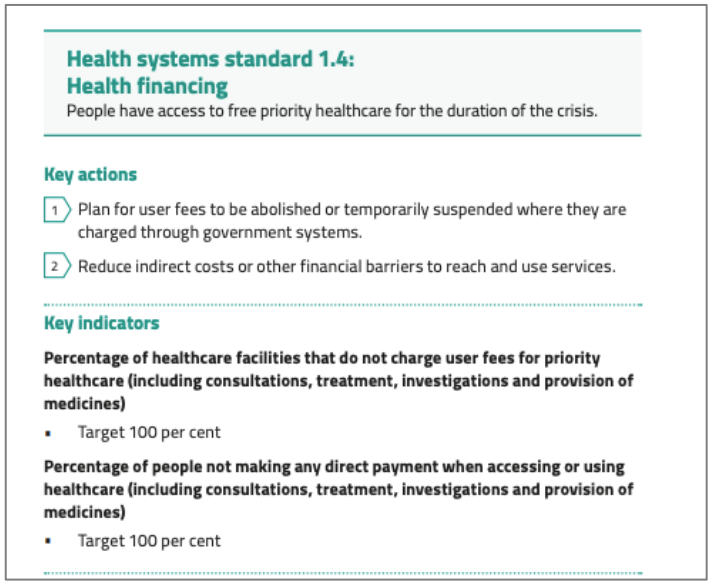
It is important to distinguish between co-payments that go to organizations or the state to offset costs and payment made to service providers as incentives for the act of service and that are retained by the individual providing the service. Co-payments to the state could act as a disincentive to services uptake, whereas incentive payments to service providers often have positive effects on the quality and availability of services that are non-monetary incentives to the user and eventually outweigh the cost disincentive. This section is about co-payments to

organizations or the state. Incentives payments to service personnel will be discussed in the section on 'Business models and quantity-based incentives'.

The Turkana County One Health Strategy 2023-2027 noted the high level of dependence on external sources of funding as one of the main threats to One Health (Government 2023). That is the main threat to human, animal and environmental health.

This is an evolving area that concerns core values. For example, Ethiopia requires users to subscribe to a modest insurance scheme on an annual basis to access public services without payment and describes this a 'prepayment' to build more accessible services (Health 2023). It is an honest recognition that the financial participation of the users is required if the service is to make progress and sustain in meeting their needs.

Surprisingly, Sphere *prescribes* that user fees should be "abolished or temporarily suspended" in the name of removing barriers to health care in emergency settings (Sphere 2018). There will often be situations where the urgency and immediate need to save lives outweighs potential longer term-impacts of free service delivery. However, it is also apparent that much can be done to mitigate untoward impacts of relief on the reliance and through methodologies that reinforce local institutions and coping mechanisms. The focus should be on context and appropriate outcomes consistent with Sphere's core principles rather than prescriptions. Removing one barrier, can create another – absence of services and empty shelves.



Health systems standard 1.4:
Health financing

People have access to free priority healthcare for the duration of the crisis.

Key actions

1. Plan for user fees to be abolished or temporarily suspended where they are charged through government systems.
2. Reduce indirect costs or other financial barriers to reach and use services.

Key indicators

Percentage of healthcare facilities that do not charge user fees for priority healthcare (including consultations, treatment, investigations and provision of medicines)

- Target 100 per cent

Percentage of people not making any direct payment when accessing or using healthcare (including consultations, treatment, investigations and provision of medicines)

- Target 100 per cent

Figure 3: Image of Sphere's Key Actions and Indicators for Human Health Financing, A prescription for dismantling longer term access to care

Actually, Sphere's message is needlessly destructive when constructive options are easy to conceive and implement. Consider the Ethiopian Community Based Health Insurance scheme. Members have prepaid their user fees and are entitled to subsidized services, but the national average level of membership was only about 47% in 2018 and lower in rural areas than urban areas (Health 2018). An emergency program could provide vouchers to all health facilities that are available to be distributed to all who visit a post or clinic in the affected area. The voucher would be turned in immediately and cover costs of the year's subscription for the family and they would be immediately enrolled. The donor would reimburse the health insurance scheme for the value of the voucher. Thus, Sphere's second prescribed objective of 100% subsidized services for those at risk in an emergency setting would be met. However, in line with Sphere's core principles, this approach would cover immediate basic needs and increase health service participation and, at the same time, reinforce existing health systems sustainability and access to services in general.

In regard to human and animal health emergency interventions, a participant in the Ethiopia Community OH Scenario Workshop stated:

"We've been having these discussions for decades that their services are weak, but with these recurrent emergencies, we need to design 'emergency interventions' that are sustainable - we have to incorporate these existing markets for services. Often during an emergency, we give things away and cripple local businesses. Now we live in emergencies all the time, and this old system of emergency management creates financial emergencies for these small economies.
So how do we use PPCPs to incorporate them into response?"

Workshop Participant

In the animal health world, most curative treatment has been devolved to public-private-community partnerships (PPCP). The public sector remains involved in vaccination programs, usually for disease targeted for eradication or progressive control. Emergency Guidelines advocate for cash transfer and voucher programs implemented through PPCP as a way to meet immediate basic needs in an emergency that will have positive long term effects on resilience (LEGS 2014, FAO 2016). A recent review of CAHWs (Hoots 2023) (page 61) had one recommendation under the heading emergency relief:

"*Design of emergency and humanitarian interventions should use market-based modalities (e.g., vouchers, cash) that support and minimize the negative impacts on private sector animal health service providers, when these exist.*"

The same document made the following recommendation in the section on CAHWs as entrepreneurs:

"Donor projects, public veterinary services, and politicians should strongly discourage provision of animal health care free of charge or at heavily subsidized rates. Exceptions to this policy may be made for certain priority diseases such as rabies or anthrax. When free or subsidized animal health services are deemed necessary, such as in response to a disaster or to reach extremely poor households, then a voucher system should be considered. Drugs and other inputs should be procured through local suppliers when possible and existing local service providers such as CAHWs should be contracted to assist with the activities. This should make these private sector actors stronger, not weaker, at the end of the intervention."

Thus, business models and emergency relief are related topics.

Business models and quantity-based incentives

Payments for services that are retained by the service provider act as incentives. As opposed to allowances, this form of quantity-based incentive is directly linked to the level of activity.

The community animal health worker programs are based on a business model (Hoots 2023) that is frequently designed as a public-private-partnership. The public sector has regulatory authority and coordinate CAHWs which participate in public programs like disease eradication. The private sector handles resupply of medicines and may be involved in supervision activities. The CAHWs operate as small businesses and purchase medicines and deliver treatments at a small mark up over cost. The CAHW generates his own incentives and must maintain his capital and stock. When CAHWs participate in disease control programs, they are general supplied with vaccines and equipment. They may charge small fees for their service in delivering the vaccine or they may be paid an allowance or day wage by the program organizers. The payment of allowances and day wages can lead the CAHW to become dependency and undermine the sustainability of the system (Hoots 2023). Incentive systems based on quantity of services delivered are believed to have fewer untoward effects.

When establishing new CAHWs, organizers should be cautious in the level of support given. Although public investment is warranted in program start-ups, CAHWs should share in the cost of initial kits (Hoots 2023). Otherwise, CAHWs may get in to trouble with the provision of credit and run out of supplies. The best way to avoid this is for the CAHW to pay towards the cost of the kit and to ensure that the community is aware that the kit was purchased.

This is an area where it is important to be clear and avoid jargon. Community health programs lack clarity on the issue of incentives. For example, a recent review of the sustainability of health volunteers intermixed the terms health worker and health volunteer (Rajaa and Palanisamy 2022). Citing 11 references, the article made the following statement:

> *"A majority of the studies reported lack of financial incentives as an important determinant of sustainability of a CHV model. This proves that the term "volunteer" does not wholly translate into free work. The CHVs who render services to the communities outside their working hours expect a basic remuneration to keep them motivated."*

However, we are left with the question as to how to source sustainably source basic remuneration for health care workers. Developing a business model for community health workers could be a game changer in terms of availability and accessibility of health services.

Figure 4 below summarizes the key features of approaches that lead to community vulnerability or to community resilience. The latter appears to be achieved through approaches that build on demand-driven service delivery, employ community-based workers, establish PPCP for the supply and resupply system and, overall, promote the community's purchasing power through voucher systems or income-generating activities.

Figure 4: Key features of approaches that lead to community vulnerability vs resilience (icons from Flaticon)

Options for community level service delivery and approaches to OH integration

Fixed-point clinics: This refers to stationary clinics or posts that offer a basic range of health services and refer more complicated cases to district centers or hospitals. These usually employ a paraprofessional with some level of formal training. Fixed point facilities have an effective range of 5 to 10 kms. If based in a market center, they may serve a broader community that utilizes the market. Resupply of fixed-point services is often a persistent problem.

Outreach or mobile services: Mobile clinics bring services to remote areas, may involve qualified professionals and offer a broader range of services than many health posts or community worker systems. The professional mobile service involves transportation costs and allowances that result in greater costs than most health systems can usually sustain without outside donor support.

Community-level services: Community service approach involves community agents trained to deliver basic services. The agents are selected from the local population and are trained and authorized to provide specific services that may include education, mobilization, surveillance, case referral and treatment of a short list of common uncomplicated diseases. In this model, the community agents are incentivized by the government system and are a form of government employee.

Community-based services: Community-based services are service networks owned by the community and at least in part funded by the community. The networks have a shared supervision system where community-based agents are technically supervised by formally trained health professionals while they are answerable to their communities. Increasingly, community-based networks are public-private-community partnerships (PPCP) where the public sector supervises surveillance and disease control functions while the private practitioners operate resupply and offer diagnostic support.

The following are the principal options for **community-level integration of health services**:

- One network with different types of community-level workers engaged in distinct activities; Each type of worker continues with their distinct activities but is part of a OH network of community workers
- One network with different types of community-level workers engaged in some common activities and sharing the same responsibilities
- One network with One Health community-level workers fully trained to conduct both human, animal health and environmental activities
- OH Integrated supervision; A OH Post approach where the supervisors of community workers are trained to support human, animal and environmental health workers
- Cross-training different types of workers to duplicate some of each other's services
- Joint-training to assure complimentary and synergistic response to challenges.

Interviewees often identified the positive value of peer interactions and support. This was true with CAHW and CHW groups, and when joint community workers workshops and meetings were organized. This suggests that the networking and creation of associations can have positive effects on community workers satisfaction, knowledge and performance. CAHW associations was one of the recommendations of a recent literature review on CAHW programs (Hoots 2023).

All four Community OH Scenario Workshops proposed to keep different types of community workers with some shared and joint activities but supervised by a OH supervisor. Thus, supervision was proposed to be fully integrated.

Sedentary versus Transhumant Community Services

A significant portion of the population of semi-arid areas practices transhumance. It was a recurrent theme in all field and workshop dialogue that CAHWs were present in the cattle camps, but CHWs were not. Transhumant groups had the least access to primary health care. More urban health authorities indicated that they should have access to services in the communities they passed through. Rural authorities and herders were clear that this form of access was sporadic at best.

CAHWs programs have tended to evolve locally whereas CHW programs are often national initiatives. Locally developed programs have more opportunity to conduct community dialogue and respond to local needs. The Turkana County One Health Strategy 2023-2027 well illustrates this concept. The strategy was developed entirely by district staff and promotes the recruitment and training of nomadic community health workers to support health service delivery in pastoralist and nomadic settlements (Government 2023). Moreover, the Strategy calls for the creation of sub-county OH units to ensure a locally-managed management and supervision of community health workers, community disease reports and community environment workers (Government 2023)**.**

As was discussed in the section on 'Selection of Community Workers', the most important step to assuring successful transhumant health workers is engaging the transhumant community in the selection of their health worker candidates and requiring a level of education appropriate to the community

Joint Planning and Shared Governance

Participatory design is at the core of community-based programs. Once selected, CHW/CAHW are stakeholders at start up and throughout the implementation of the action.

Community-based service delivery utilizes shared governance approaches where the community and government act together to supervise and manage the program. The recent review of CAHWs stresses that CAWHs should be linked to OH networks (Hoots 2023). Often, the private sector has a role in technical supervision of community-based workers if they are linked to their practice or pharmacy. The governments core role is investment, regulation, and coordination. They need to ensure the policy framework that guides local action. Sadly, insufficient policy and regulatory frameworks have been identified as a constraint that limits the effectiveness of programs and requires attention (WHO 2020, Hoots 2023).

Supervision of Community Workers

Supervision is critical for both maintaining quality and motivation of community-level workers. Although communities indicated that they wanted to retain different kinds of designated professionals such as animal health, human health and environmental workers with various

levels of cross-training and shared responsibilities, they were aligned around the suitability of organizing them in OH networks under a common OH supervisory systems.

Community workers face similar managerial, logistic and social challenges and can assist and support each other in their work. On the other hand, human and animal health services have gravitated towards different models of community work which will need to be thought through in establishing OH networks and supervision. It is not that all components of One Health will need to converge on a single approach. Local actors and stakeholders will need to recognize where common approaches will create new benefits and acknowledge where differences in approach are fit-for-purpose.

Lessons Learnt

- The OH sectors share the humanitarian aid objective of saving lives and meeting basic needs while reducing the risk of future emergencies through preserving and enhancing resilience.
- In areas prone to chronic or repeated cycles of humanitarian emergencies, development and humanitarian aid issues are inextricably linked.
- Community workers and their support systems are core activities in the OH components of resilience.
- The OH sectors are characterized by similarities and potential synergies while at the same time manifesting important differences in terms of objectives, assumptions, culture, and ethics.
- These differences are opportunities for learning that need to be carefully assessed to identify where convergence could result in benefits.
- Stakeholders indicated that the environmental component was a key factor in emergencies and development challenges and required to be fully integrated and strengthened in community level OH.
- Progress on the development of appropriate community services is intimately associated with the process of decolonialization of OH services.
- The non-governmental sector has been an important innovator in service delivery both in terms of proposing new solutions and taking risks to pilot new ideas.
- There is significant flexibility and a broad range of services that can be effectively provided through community or community-based workers. An increased coordination, number and reach of services provided by community workers would ease healthcare accessibility.
- Selection criteria for community and community-based workers shape the range of community groups and individuals who will be able to receive services and determine who will be marginalized.
- Training and supervision are key factors that determine the appropriate range of services provided by the community and community-based workers.
- Stakeholders did not perceive barriers to community and community-based workers operating along OH lines, but rather only challenges that can be overtaken through an accurate and collaborative planning.
- In general, stakeholders tended to prefer to maintain workers with primary responsibilities along traditional sector lines and advocated for empowering workers to perform OH services based on cross and joint training, operating in a OH network using a OH model of supervision.
- Building on existing local institutions to networking community services along OH lines is the entry point for OH integration of community level services.

The Way Forward

The sub-Saharan region, focus of the present study, is prone to chronic or repeated cycles of natural and human-made disasters. In this context, humanitarian and development issues are inextricably linked and it is difficult to address the former while forgetting the latter. A response at the humanitarian-development nexus is necessary to save lives and enhancing resilience.

The literature is clear in showing that complex and challenging problems are emerging at the animal-human-environment interface (e.g., antimicrobial resistance, emergence and re-emergence of zoonotic disease) and that feasible, effective and sustainable solutions can be discussed and designed at the same interface, through a collaborative approach across disciplines (OHLLEP 2021). Stakeholders from the global, national and local level interviewed during the study through online interviews, site visits and scenario workshops, all agree on the value and potentials of One Health. However, the approach is still restricted to national strategic plans and legal frameworks with limited operationalization at the community level, despite communities could easily put One Health into action through already existing and functioning local systems; "community is more ahead than the agencies*",* as one key informant put it.

The outcomes of this study support the establishment of an integrated community health system that is context-specific, builds on local institutions, develops during non-emergency period and adapts to effectively respond to emergencies. Based on the inputs retrieved from the literature and discussed during interviews, site visits and scenario workshops, eight features have been identified to describe the model (Figure 5).

Flexibility. The model needs to meet the demands of both emergency and non-emergency scenarios and opportunities exist to make progress on developing and implementing the new model during both emergency and non-emergency periods. Certainly, there are times where relief has to focus solely on meeting the needs of acute emergencies, but there are appropriate opportunities where relief interventions can contribute to drive positive long-term change. Ideally non-emergency periods provide time to design and set-up the model, when stakeholders can focus on establishing the new intervention, creating/reinforcing the multisectoral coordination mechanism and investing on a common system for communication and data sharing, without being distracted by the pressing needs of the emergency response. On the other hand, for some countries relief aid is a major source of funding and one of the few opportunities available to invest in new strategies. There are also countries suffering from protracted crises and they also want to move forward to reduce vulnerability as part of the process of escaping chronic emergency. The flexibility of the model will support its adaptation to a sudden change in the current situation when community actors will be engaged in the emergency response, while still collaborating across disciplines.

Context-specific. The model will differ between countries and communities, as it will need to respond to local needs and integrate in the local context. Mobile integrated community systems, for example, could perfectly respond to the challenges faced by transhumant communities, whereas fixed integrated systems would better address the needs of settled rural communities which can easily access facility-based services.

Shared governance. The success of the proposed model lies in an early and effective engagement of key stakeholders, including local communities, local authorities, public and private actors that are supporting the health systems in the areas of intervention. This will

encourage local ownership of the model and promote its sustainability in the long run. Shared governance requires the community-level service providers (CAHW and CHW) to be involved in the decision-making processes and in the identification of the integration approach that best suits their community, as a key stakeholder put it. A community-led project will have more chances to succeed and thrive through the challenges of recurrent emergencies.

Figure 5: Integrated community health model (icons from Flaticon)

Local institutions. The scenario workshops clearly revealed the value of local traditional institutions in the management of both relief and development issues. In Somalia, for example, councils of elders are responsible to decide issues related to both emergency services and development activities, as well as resolve disputes emerging at the village level. Building on the existing local institutions and infrastructure ensures the institutionalization and operationalization of the new model of service delivery at the community level.

Service integration. Review of the literature and insights from key informants providing a global, national and local perspective, reveals the value and economic and health benefits of service integration at the community level. There are different approaches to integration with the following three being the more reasonable and feasible: i) creation of one network in which community-level service providers are jointly trained, maintain specific roles and responsibilities in their distinct disciplines and work together under a common coordination mechanism; ii) careful selection of shared responsibilities that both CAHWs and CHWs (and potentially CEWs) carry out as part of their daily duties. These could include health education on basic preventive, hygiene and animal husbandry practices, as well as the recognition and management of common infectious diseases in both animals (e.g., infectious respiratory and intestinal infections, internal

and external parasites, and hemoparasites) and humans (e.g., diarrhea, malaria and respiratory diseases); iii) cross-training program to allow the same community-level worker to provide healthcare services to both animals and humans.

Technical supervision. Inadequate supervision of community-level health services is reported as critical feature to the program effectiveness of both CAHWs (Hoots 2023) and CHWs (WHO 2020). Lack or limited technical supervision can have significant impact on the quality of care provided, ultimately affecting the trust and utilization of services by local communities. Investments are needed to standardize the training program of community-level health workers and ensure it is accompanied by a rigorous and regular supervision schedule through a One Health Coordinator which oversees and supports both the provision and the integration of services at the community level, as proposed during the scenario workshops in Niger and Somalia.

Business model. A critical issue to the sustainability of any health program in resource limited countries is the excessive dependence to external funding. This is also the case for CAHW and CHW programs that, when not fully integrated in the national system and relying on international projects, can collapse because of the sudden loss of external funding (WHO 2020, Hoots 2023). Leveraging the good practices and lessons learnt through the CAHW programs in sub-Saharan Africa (Hoots 2023), the integrated community health system should consider developing a business model to s. Increasing the entrepreneurial skills of the community-level workers will be necessary to ensure the success of the business model.

PPCP. National and local stakeholders explored the concept of Public-Private-Community Partnership during the scenario workshops and had the opportunity to discuss its potentials in enhancing and maintaining the quality of health services in the most remote and vulnerable areas of resources limited countries. Building the integrated community health model through a PPCP could guarantee the quality and continuity of services at the community level but will require a detailed definition of roles and responsibilities of each actor involved (e.g., technical supervision by public system, supply and re-supply by private actors, system overview and cost contribution by community).

The Community OH System in Emergency

This section builds on the lesson learnt during the project and applies the Way Forward detailed in the section above to situations of emergency that require humanitarian aid interventions. It provides practical guidance to establish an integrated One Health system at the community level to support the response to emergencies while promoting resilience and building local development.

The two essential lessons gained from the discussions held with key stakeholders during the site visits, online interviews and scenario workshops, is that community-level OH workers can work together and share responsibilities and that integrated community services can increase the accessibility (and utilization) of basic health services in vulnerable and remote communities. It is up to the partners and stakeholders to clearly articulate the program objectives and make sure the training and supervision of community health workers is appropriate to the task. Mobile populations, for example, are better served by CAHWs and rarely have health workers. This can be addressed by cross training CAHWs or selecting CHWs based on their presence in cattle camps. Traditional Birth Attendants (TBAs), for instance, are in a similar situation to CAHWs and usually present in cattle camps as they are more community-based or embedded than most other forms of CHWs. In certain areas, they could therefore be involved in the community health network and appointed to specific OH activities. The thematic section on 'Options for community level service delivery and approaches to OH integration' provides guidance on the organization and roles.

The community OH system can be an effective response to emergency. As shown also in the literature, community workers are at the fore front of the emergency. They can ensure the provision of basic health services, create community awareness, engage in disease surveillance and support the health professionals, reducing the burden on already stretched health systems. The acuteness and nature of the emergency will determine the relative feasibility and timeline for actions. Often humanitarian aid interventions are used to reinforce or even start community-level services and become opportunities to create long term impact. For example, rinderpest was eradicated from South Sudan when the NGO sector programmed 6-month funding packages from a mixture of donors to meet both immediate and long-term needs (Mariner, House et al. 2012). Outreach services such as mobile clinics can offer higher levels of care but should not take precedence over the foundation of access to basic services. In acute emergencies, mobile clinics are essential short-term solutions that, however, should be organized with the final goal of establishing and reinforcing community-level solutions.

A five-step process (Figure 6) is suggested to establish the Community OH System in emergency situations with the goal of saving lives and increasing accessibility to basic health services, while putting the foundations for integrated community services that evolve and sustain in the long term.

Step 1 – Situation Analysis. For any kind of emergency, appropriate interventions require a first and thorough understanding of the local context in terms of size and distribution of affected human and animal populations, present or potential disease risks for animals and humans, environmental components of the emergency, local needs and community priorities, and existing resources such as available expertise and human resources, coordination and supervision system, resource supply network. Mapping services and actors that already exist and operate in the area will ensure that the new service delivery model fully integrates in the local structures, avoiding

the establishment of parallel systems that are not sustainable in the long run. The initial assessment will allow identifying and building on similarities and differences of the local public health, veterinary and environmental systems to harness potential synergies and create opportunities for effective coordination and collaboration.

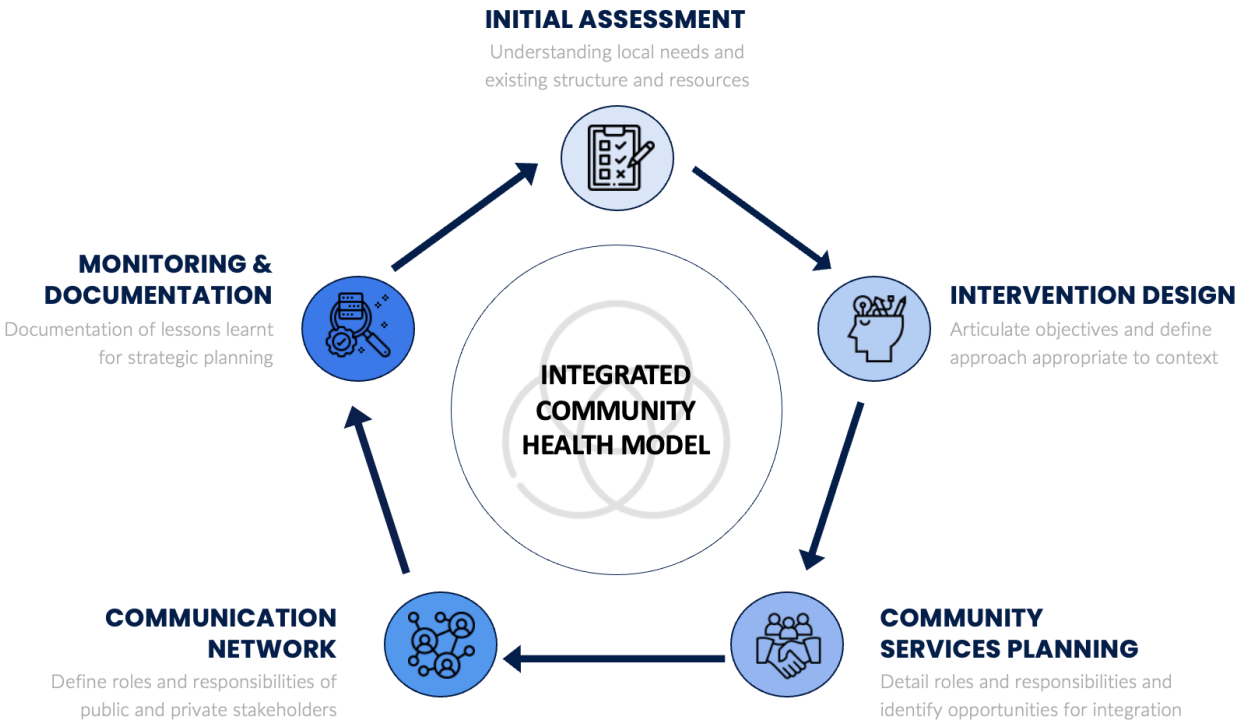


Figure 6: Five-step approach to establish a Community OH System in Emergency (icons from Flaticon)

Step 2 – Intervention Design. A key lesson from the project is that 'one size does not fit all'. It is impractical providing direct instructions on how to establish the Community OH System in a specific area. Rather, it is critical selecting the emergency intervention that best responds to the local needs and, at the same time, builds on already existing capacities and resources at the community level. Several options for the community level service delivery and approaches to OH integration have been provided in the chapter above. It is recommended that these are reviewed and analyzed in light of the results of the initial assessment. The Community One Health Scenario Workshop can be an excellent tool for the scope. It will bring together stakeholders from the national to local level, community members, service providers and policymakers, to discuss and articulate a road map to OH integration at the community level. The workshop methodology assumes that no single approach to OH will be appropriate to all countries and empowers stakeholders to identify those aspects of OH that best suit the local context and how to proceed with the process of change. The Community One Health Scenario Workshop will help to:

- articulate objectives and strategies that address both basic needs and resilience

- explore opportunity for refreshing and resupplying existing community workers in the short-term, and expanding their capacities and roles
- explore opportunities (and challenges) for integrating human, animal and environmental health services at the community level
- explore opportunity for updating existing supervision systems in the context of OH through integrated networks and evolution of supervisors' capacities and roles
- redefine local supply networks integrating supply networks into OH community worker networks

Step 3 – Community Services Planning. The success of the emergency intervention and its impact on local development in the long term depend on the empowerment and engagement of local actors in the design of the community level action and a clear definition of their roles and responsibilities. Partners and stakeholders will need to detail roles and responsibilities of community-level service providers and, possibly, expanding their abilities and capacities to prevent, detect and manage diseases and ailments, while remaining in the national legal frameworks. The analysis of international practices and policies and review of experiences of communities and frontline workers suggest that community workers should be trained and equipped to provide a minimum package of services.

- CHWs should be able to provide health education and advice on health and personal hygiene, treatment for primary health concerns (e.g., malaria, diarrhea, and respiratory diseases), maternal pre- and post-natal care, and referral of more complicated cases
- CAHWs should be able to provide advice on animal husbandry and animal health, treatment for principle endemic diseases (e.g., infectious respiratory and intestinal infections, internal and external parasites, and hemoparasites), vaccination for endemic diseases in accordance with the national strategy and using thermotolerant vaccines where available

Specific packages of medicines (types and concentrations) should be developed to simplify training and supervision of community-level workers. Human medications should include specific topical and oral preparations (e.g., antimalarials and RDTs, antibiotics, ORS); veterinary medications should include topical, oral and injectable preparations (e.g., acaracides, anthelmintics, antibiotics, trypanocidal drugs).

Partners and stakeholders will have to define the integration approach building on the existing systems. The approaches described above – one network of jointly trained community-level providers, one network of community-level providers sharing responsibilities, cross-trained community-level workers that provide healthcare services to both animals and humans – could help to define the system that best suits local structures and needs. Moreover, when planning the community service, it will be essential exploring the opportunity to develop a business model that builds on the good practices and lessons learnt in previous experiences and integrates in the local systems and infrastructures. The experience of local institutions with PPCP, for example, could assist the identification of the best approach to supporting purchasing power like the veterinary health vouchers.

Step 4 – Coordination and Communication Network. The Community OH System requires effective and continuous communication and collaboration among actors and across sectors.

Public and private stakeholders from the local to the national levels should be involved in the design, management and maintenance of the community OH system, through a shared definition of their roles and responsibilities. Private pharmacies and drug stores, for example, could support the supply and re-supply of the OH network, whereas the local public system could ensure the technical supervision and support to community-level workers.

Step 5 – Monitoring and Documentation. In view of building a resilient Community OH System, practices from the field must be clearly documented and lessons learnt capitalized for future strategic planning. The establishment of the Community OH System to address an emergency can create the basis to develop a more resilient approach to health threats at the animal-human-environment interface. Lessons learnt and practices developed during the emergency will inform the evolution and amelioration of the system, transforming service delivery into a more effective and responsive model for vulnerable and remote communities.

Conclusion

The process of adopting One Health at the community level is one of evolution. As institutions begin to consider change, it is at first difficult for many to understand what is possible and what it not. At each successive step, new ideas emerge and what was once considered a radical change becomes common place. New approaches should be piloted and jointly evaluated by both service providers and beneficiaries. For the same reason, it is appropriate to review the implementation of One Health every one to two years as perceptions and attitudes regarding good and effective practices will change as new experience is gained.

It is the tendency of the communities to view health of all species and the environment as one practice and interlinked. Several field level participants shared this view. Pastoral life is a demonstration of the interconnectedness of human, animal and environmental health.

Samples of ideas for piloting include:

- Cross-training of CAHW and empowerment to address basic human health challenges
- Selection of CHW candidates from transhumant populations to enhance health access for nomadic pastoral communities
- Community-level health practices linking pharmacies to CHWs
- Combine CAHWs, CHW and environmental workers in One Network with shared responsibilities and OH supervision.

The study has strived to present the results in an institutional context. Successful community-based work leads to new community institutions. The study found numerous examples of CAHWs who continued working after project and government support systems have packed up.

This study proposes that rather than attempt to set standards for training community-level workers, the focus should be on establishing *minimum standards and core competencies for trainers.* This should be combined with a trainer certification process. Certified trainers could support organizations to establish programs and develop competency. This is potentially the best route to assuring that prior learning on community OH worker approaches are utilized.

Noting holistic approaches to humanitarian aid that seek to build resilience while preventing loss of life are a shared aspiration among the humanitarian aid community, aid should contribute to building institutions that reduce vulnerability and contribute to resilience. This requires a vision greater than just saving lives and livelihoods. The study recognized several interventions that aimed to institution building in the context of recurrent emergencies. These should be taken as example to further expand the approach.

- Community-based animal health system established with participation of 23 NGOs under UNICEF coordination that eradicated rinderpest from South Sudan during the second civil war,
- The Boma Health Initiative in South Sudan that has made significant progress to improve community access to health in a standardized manner across remote communities in South Sudan,
- The system of PPCP in Niger where all national curative and preventive animal health services are provided by CAHWs linked to private veterinary practices,
- The Ethiopian Health Insurance Scheme intended to sustainably improve health care access and public engagement with the health care system.

The Community One Health Scenario Workshops are participatory processes to build consensus on the implementation of One Health at the community level. The project implemented these to inform the study on how ready countries were to move ahead with the operationalization of One Health at the community level and to explore the extent to which they could align around specific plans. All four of the implemented Workshops successfully developed road maps and action points that enjoyed the support of the full meeting. These included important ideas for intervention that can be piloted in small actions and evaluated to support expansion at a wider scale. The results of pilots are, in fact, good evidence to support change. Seeing something work drives change. Many of the interventions identified could be piloted in an emergency setting. Implementation of these plans will require champions who are ready to follow-up the agenda. The Workshop participants were excited to have the results of the meetings and thought they help them to launch new initiatives. It is hoped that this will lead to the emergence of champions for the process.

The study hopes that it has contributed to the evidence base and tools needed to develop national visions for operationalizing One Health at the community level. This is not OH for OH's sake. The goal is to enhance access to all OH services for those in some of the most challenging settings. To realize this opportunity, both development and humanitarian actors will need to step up and agree on a vision to guide investment and implementation.

Annexes

Annex 1: Report of the Literature Review

Annex 2: Community One Health Implementation Guide

Annex 3: Community One Health Scenario Workshop Manual Guide

Annex 4: Community One Health Scenario Workshop Reports

Annex 5: Country Site Visit Reports

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