

**U.S. Government Evidence Summit:
Community and Formal Health System Support for Enhanced Community Health
Worker Performance**

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Final Report of Evidence Review Team 3

Enhancing Community Health Worker Performance through Combining Community and Health Systems Approaches

A Review of the Evidence and of Expert Opinion with Recommendations for Policy, Practice and Research

Fall 2012

EVIDENCE SYNTHESIS PAPER

The views expressed in this document do not necessarily reflect the views of the agencies of the U.S. Government that employ the authors or of any of the sponsoring agencies for the Evidence Summit on Community and Formal Health System Support for Enhanced Community Health Worker Performance.

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EXECUTIVE SUMMARY

This draft working paper summarizes the review conducted by ERT 3 to date, and recommendations for policy, practice and research priorities in response to the following focal questions:

- Which combination of community and formal health system support activities improve the performance of community health workers?
- How are community and formal health system support activities structured and/or operationalized to improve CHW performance?

The hypothesis the team was charged with assessing was that the combined effect of community and formal health system support activities on improving CHW performance is greater than the effect of either alone in existing and future community health worker (CHW) programs in Low and Middle Income Countries (LMICs).

A literature search conducted by CDC, USAID and supplemented by ERT members were used to identify documents for review. Each document was reviewed for relevancy, quality and content with relevant content extracted into a literature matrix to inform analysis and the development of recommendations. The ERT defined CHW performance outcomes and pathways of intermediary outcomes through a group critical thinking process. Literature included in this review was examined for interactions and complementary support activities between the formal and community health systems on the intermediary outcomes of access, information, materials/tools/technology, competency and improvement. A total of 48 documents identified in the original review, 53 documents suggested by ERT members in the call for evidence and 15 documents recommended by Evidence Summit participants have been reviewed by ERT 3. Main limitations include the paucity of collected good data, the lack of adequate time to complete a full review of the data and validate the strength of recommendations and associated evidence.

While the available evidence alone does not provide comparative measurable results to support ERT 3's hypothesis, there are some examples in the literature. Despite the evidentiary shortcomings, the abundance of descriptive material combined with expert opinion from the ERT 3 team reinforces the overall hypothesis.

However, current evidence is insufficient to determine what combination of support activities to produce the best results. Improving CHW performance is complex and that there should be a combination is clear given the multiple conditions found by ERT3 to be important contributors to CHW performance that require intervention on the part of both community and formal health systems; exactly what that combination ought to be is less clear. ERT 3 proposes the following policy and practice recommendations and research priorities:

Recommendations for policy:

1. Ensure shared ownership of CHW programs
2. Consider fundamental linkages and interactions between support activities during program design and implementation
3. Combine an appropriate package of financial and non-financial incentives for increased sustainability and improved performance and retention

Recommendations for practice:

1. Utilize a combined approach to support CHW performance
2. Structure a practical information system to support CHW performance
3. Increase documentation and dissemination of design and implementation of CHW support activities

Priorities for research:

1. What mix of community and formal health system support activities improve CHW performance?
2. What is the effect of shared ownership of CHW programs?
3. What are the fundamental linkages and interactions between support activities?
4. What is the optimum structure of a practical information system to support CHW performance?
5. How are CHW support activities designed and implemented?

INTRODUCTION

Using evidence to achieve country-owned, sustainable improvements in health outcomes is a cornerstone of the USG’s Global Health Initiative. Consequently, USAID began hosting a series of Evidence Summits from 2011, bringing together researchers and development practitioners to address some of the world’s most difficult development challenges. One such challenge is how to alleviate the global shortage of competent, motivated, and supported health workers. To help alleviate this shortage and extend the reach of services to underserved populations, many countries are implementing large-scale Community Health Worker (CHW) programs.

Knowledge about the types of tasks that CHWs can undertake and the general types of support needed is fairly robust. However, there remains a lack of clarity about the state of evidence on the types of activities that support (henceforth referred to as *support* activities) the improvements in CHW performance . CHWs in many countries are viewed as a key actors at the intersection of the community and formal health system, providing an opportunity to improve the effectiveness of, and access to, curative and preventive services while also stimulating community ownership of health programs (Khassey et al. 1998). Table 1 summarizes possible community and formal health system actors considered in this review, recognizing that these actors may overlap in some cases. CHWs receive support from both of these two dynamic and overlapping systems. Yet, the interaction between the community and the formal health system and the complementary support activities provided by these systems to enhance effectiveness of community health workers are not well understood.

Table 1. Community and formal health systems actors

Community actors	Formal health system actors
<ul style="list-style-type: none">• Village health committees• Religious leaders• Social support networks• Community based organizations or Non-governmental organizations• Multi-sectoral organizations• Political and governance leaders/groups	<ul style="list-style-type: none">• Public and private sector health care workers• Ministry of Health personnel• Health care related training and academic institutions

Recognizing that greater clarity in this area may enhance existing and future CHW programs in low and middle income countries (LMICs), the US Government decided to host an Evidence Summit on Community and Formal Health System Support for Enhanced Community Health Worker Performance. To initiate the Summit process, 58 technical experts were brought together and divided into three evidence review teams (ERTs) and each was charged with reviewing evidence around specific focal questions. In addition to the goal of providing clarity on the evidence to inform support activities to improve performance, each ERT was asked to develop a set of recommendations around CHW policy and practice and a research agenda that will be presented and discussed at the Evidence Summit held on May 31st- June 1st

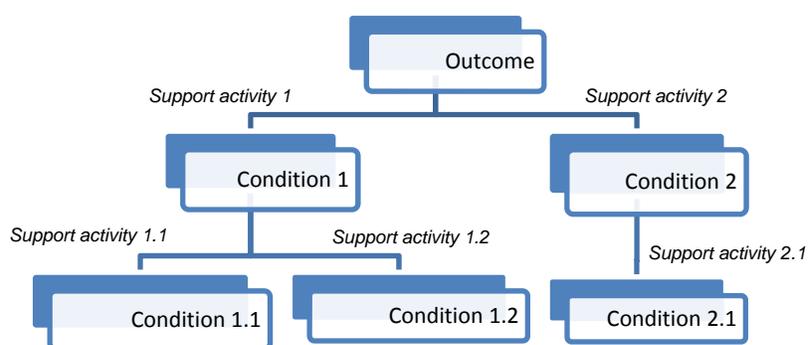
in Washington, DC. A working version of this paper was presented to over 100 participants at the Mat 2012 Summit. Feedback and additional reviews suggested by summit participants were incorporated into this paper which represents the findings of ERT 3 to date. ERT 3 was responsible for answering the following focal questions in its review process:

- Which combination of community and formal health system support activities improve the performance of community health workers?
- How are community and formal health system support activities structured and/or operationalized to improve CHW performance?
-

DEFINING CONDITIONS FOR CHW PERFORMANCE

At the pre-summit meeting, ERT 3 members agreed that in addition to reviewing the literature, the group should work through a structured critical thinking process to reach a shared understanding of CHW performance outcomes, the pathway of intermediary outcomes (or conditions) that may be required in order for these outcomes to be achieved, and thus a broader understanding of support activities (or interventions) that enable the attainment of these outcomes (see figure 1).

Figure 1. Illustration of outcomes, pathway of conditions and support activities



The goal of this review was not to duplicate the reviews of ERT 1 or ERT 2, but rather to examine the literature for interactions between the community and formal health systems. By defining conditions that contribute to improved CHW performance, ERT 3 analyzed the literature for interactions and complementary support activities between these systems for each condition in an effort to understand the relationship between these and the mechanism by which they contributed to performance.

The term “conditions” or “preconditions” are used in this paper to denote intermediary outcomes, results, situations or circumstances that contribute towards improved CHW performance. For the purposes of this review, these conditions are not seen to be mutually exclusive or linear nor necessarily absolute prerequisites for performance in every context, but are rather seen to be dynamic, interlinked, context dependent contributors to CHW performance.

ERT 3 applied a “Theory of Change approach” (ToC) to map the pathway of conditions that contribute towards CHW performance outcomes. This approach guided the group’s critical thinking process over the course of three face-to-face sessions to identify and map conditions. The ToC is not a grand theory, nor is it a conceptual framework, but rather it is a critical thinking process that facilitated the group to define CHW performance outcomes and identify the pathway of

conditions required for CHWs to perform effectively. These pathways were mapped visually as a graphic representation of the shared understanding of the group.

Through three half day sessions between 11 April - 16 May, the group systematically:

1. defined the performance outcomes of interest,
2. defined the pathway of conditions that led to these,
3. identified support activities required to progress from one condition to the next, and
4. analyzed further reviewed literature to identify trends, gaps and develop recommendations.

This process not only engaged ERT3 members but also members of ERT 1 and ERT 2 to enhance joint thinking across the ERTs on combined community and formal health systems support activities. This resulted in the iterative mapping of outcomes and conditions which is represented visually in Annex 4 and briefly described below.

The group's goal was to define CHW performance outcomes of interest and identify conditions required to achieve these, with a view to analyzing the literature against this frame to develop recommendations for practice and policy and define research priorities. In defining CHW performance, the group agreed that there were three main measurable aspects of CHW performance, including how much and how well:

1. CHWs connect and refer community members to health and other services,
2. CHWs promote healthy actions, and
3. CHWs provide defined health care services.

The performance of CHWs was felt to contribute towards the improved functionality of community members by mobilizing communities to adopt health actions and facilitating communities to access and utilize quality health services when needed.

CONDITIONS FOR CHW PERFORMANCE

In order for CHWs to optimally perform, the group agreed that the following conditions should be met, recognizing that there are considerable influences across and within each set of conditions:

- 1. CHWs are retained and are accessible to communities, community members and health system actors.**
Accessibility as defined by the group went beyond physical access to also include social access. Retention of CHWs for the committed duration of service was also felt to be key. The group felt that equitable access required more than transport and that regular communication with stakeholders to reinforce and enhance social access was important. It was also deemed important that community members knew where and when to see the CHW in order to maximize access. Community and formal health systems engagement in decision making were foundational to effective accessibility, with input needed from both to ensure that the roles of CHWs were clearly defined, enable recognition of the need for CHWs, facilitate prospects for CHWs for self-development - together contributing towards CHWs that are motivated and engaged, and therefore more likely to be retained.
- 2. CHWs have access to appropriate medical materials, tools and technology to perform defined tasks.**
Access to the appropriate materials, tools and technology could be achieved if CHWs collect the supplies, supplies are stored properly and if the capacity to manage supplies exists.

3. Information is used by the health system, communities and CHWs to make decisions and improve community health.

The group recognized that CHWs need to have the capacity to submit and maintain records as well as the appropriate documentation materials in order to maintain and submit required documentation. However this was only felt to influence performance if this information was used to make decisions and improve health.

4. CHWs are competent to perform defined tasks.

This condition was in turn dependent on CHWs having access to learning opportunities and appropriate learning materials as well as access to appropriate and up to date treatment protocols. It also includes some form of supervised care depending on the country policies. These in turn require that the competency development needs of CHWs are known.

5. CHWs continuously improve their performance and quality of service provided.

In order for this condition to be met, the group agreed that CHWs should receive regular feedback on their performance (eg - from supervisors, community members, peers and clients). However in order to make improvements, CHWs not only need to have the capacity but also some authority to make changes.

Foundational to CHW performance and all pathways of conditions contributing to performance are appropriate policies, adequate resources, governance and management, conducive work environments, and country and community ownership. An important observation made by the group was that particular conditions needed to be met in order for other conditions to be achieved. This implied that support activities may not be effective unless they were appropriately sequenced and also indicated the multidimensional complexity of CHW performance. Neither the community nor the formal health system could address all the required conditions for CHW performance in isolation. The attainment of the conditions were deemed by the group to be achievable only through the combination of both community and formal health system support activities, and the effective interaction and coordination of these. Support activities identified in the literature that contributed to the attainment of these conditions are further described in the Recommendations section.

REVIEW PROCESS

ERT 3 developed a review process that sought to enable a rapid review of the relevant literature but also harnessed the expertise and experience of the team to develop recommendations. Conditions contributing to performance identified by the group's critical thinking process were used as themes for the analysis of interactions between community and formal health systems and the relationship between these support activities and performance.

Identifying and Reviewing Literature

A literature search conducted prior to the formation of the Evidence Review Teams (ERTs) identified 147 documents for review. The initial literature search was conducted through two means. First, a subset of literature identified by a research team at the Centers for Disease Control (CDC) conducting a systematic review of literature on the effectiveness and costs of interventions to improve health care provider performance and related health outcomes in low- and middle- income countries published up to 31 May 2006. The database was limited to literature that met minimum study design criteria. With CDC's permission, USAID was able to utilize the literature found specific to CHWs. Secondly by USAID staff using PubMed to the search terms of community health workers and performance outcomes from 1 June

2006 to March 2012. Documents were screened and only documents that met the following criteria were selected: randomized controlled trial design (RCT), described at least one support activity to improve CHW performance, reported on one or more measures of CHW performance. Documents were then assigned to each ERT based on relevancy to the focal questions. Of the 147 identified documents, a total of 48 articles and reports were assigned to ERT 3 that were identified to include description of both community and formal health systems support activities.

In addition to the assigned literature, all ERT members were given an opportunity to submit additional literature that was not included in the core bibliography provided by USAID. Submitted literature was directed to the appropriate ERT for review based on relevancy. A further 53 documents were identified for ERT 3 to review through the call for evidence including peer reviewed articles describing quantitative and qualitative research (not limited to RCTs), literature reviews as well as grey literature. An additional 15 documents were included in the review following the suggestion by participants of the Evidence Summit.

To date, ERT3 has completed a total of 116 reviews including 48 assigned documents, 53 submitted documents and 15 documents recommended by Evidence Summit participants. Each document was reviewed using the following method:

- 1. Relevancy review:** Each document was reviewed for its relevancy to the ERT 3 focal questions using a rating scale developed by the ERT (Annex 1). Documents had to include mention of both community and formal support activities in order to be included in the review process. Excluded documents were referred where appropriate to other ERTs. Of the 116 documents reviewed by ERT3 to date, 32 were deemed not relevant.
- 2. Quality review:** Documents that met the relevancy criteria (Annex 2) were then reviewed for the quality of the research design, implementation, analysis and interpretation. All ERT members responded to a standardized set of questions administered through SurveyGizmo which yielded a quality score between 0 - 1 for each document. Quality reviews were completed for all relevant documents. The quality score of reviewed literature varied between 0.14 and 1, with a mean score of 0.7.
- 3. Content review:** ERT 3 members completed a content review of all 84 relevant documents and extracted any available information into the literature matrix (Annex 3) regarding:
 - a. Descriptions of community and formal health systems support activities
 - b. Weaknesses of support activities
 - c. Strengths of support activities
 - d. Performance measures and outcomes, and relationship between support activities to performance
 - e. Descriptions of how support activities were structured and operationalized
 - f. Descriptions of other important considerations that may have influenced support activities and/or performance (e.g. – contextual factors, sustainability, country ownership...)
 - g. Descriptions of observed gaps in evidence

Documents were also tagged with conditions identified through the ToCto facilitate analysis of the interactions between community and formal health systems.

Limitations

There were two main limitations for the ERT group 3: the lack of good data on the subject matter and lack of time.

Paucity of Good Data: The team looked into several articles. Almost all the articles were qualitative and not quantitative in nature, meaning we are only getting perceptions of benefit. Most describe specific training of community health workers, but fail to link the training to gaining competencies or improving performance. Also in many of the articles, impact evaluation of the training program that can link training to competency or performance was not conducted. There is also a gap in the literature in showing how the community either had input into the training, or participated in it, or linked to it. The training in most cases (not all), largely appeared to be designed and delivered by the formal health system. Part of this may be a documentation problem in that there may have been areas of input, but they were either inferred to or not included in the documents. In addition to providing training, the formal health system also includes establishing scopes of work, policies on in-service training, interaction with local government bodies, linkages to the referral system, and issues relates to the labor force. There were hardly any good articles that address this in a comprehensive or holistic manner. It is important to note that most of the existing research (whether high or low quality) has not been designed to answer the focal questions. Also ,all of the identified literatures were in the English language . There are excellent examples on the topic in countries in Latin America and Asia, but the team was not able to get these articles because of the languages, other than English, that these countries publish in. The implication of this gap is that descriptions of what we would label support activities are either somewhat sparingly described or missing, and that there are only rare instances where there was a focus on measurement of a linkage between a support activity and desired CHW performance. Given this situation and although the literature has still provided valuable information, we have been heavily reliant on expert opinion in developing our recommendations.

Time constraints: The team acknowledges that the above mentioned governmental and/or non-governmental agency documents may exist at country level, but because of time limitations, the team was not able to contact different sources in different countries to locate, retrieve and analyze these documents. Also, the time constraints and methodology issues did not permit the rigorous incorporation of relevancy and quality ratings for the evidence narratives for each recommendation. Thus, recommendations have not yet been rated individually and the trends that were identified in the literature were not designed to answer the focal questions. This information will be important to the discussions that will be held after ERT 3 presents its findings at the Summit and to the evidence to action sessions which will focus on developing next steps for policy, practice, and research. ERT 3 will complete processes to rate the strength of recommendations and related relevance after the Summit.

RECOMMENDATIONS FOR ACTION

The ERT 3 team was asked to answer the following focal questions and to develop recommendations for both CHW policy and practice based on the synthesis of the literature.

- Which combination of community and formal health system support activities improve the performance of community health workers?
- How are community and formal health system, support activities structured and/or operationalized to improve CHW performance?

As the other ERT teams focused on looking at the both the community and formal health system support activities individually, the ERT 3 team narrowed their focus on where the systems support activities both interact or are found in combination. It is important to note that the ERT 3 team did not intend to look at both systems support activities

comprehensively. Using the Theory of Change as a tool to apply the literature, the ERT 3 team identified common themes in the literature that provided the basis of the recommendations for both policy and practice relating to combining both community and formal health system support activities. As the literature is lacking in studies that have been designed to measure impact of combinations of support activities, this process enabled the identification of the types of combinations that are seen throughout the literature and important linkages amongst the activities that may not be presented in a packaged way.

Additionally, the ERT 3 team was asked to verify the principle Evidence Summit hypothesis which is stated as follows: “The combined effect of community and formal health system support activities on improving CHW performance is greater than the effect of either alone”. While, through the review process, the ERT 3 team found that the available evidence alone does not provide comparative measurable results to support the hypothesis, there are many examples in the literature that identify how components from both the formal health system and the community are combined to achieve particular CHW program goals. Despite the evidentiary shortcomings, the abundance of descriptive material when combined with expert opinion from the ERT 3 team reinforces the overall hypothesis. Moreover, the Theory of Change process undertaken by the ERTs described in a previous section of the paper also helps to substantiate the effectiveness of the combined approach by clearly showing that the various CHW support activities performed by the formal health system and the community work best when linked and integrated. As such, our policy, practice and research recommendations are consistent with, build on, and will help create a combined formal health system and community approach to improving CHW performance.

Recommendations for Policy

1. Ensure shared ownership of CHW programs by the formal health system and the community

The best methodology to ensure shared ownership would likely begin with a collaborative approach to CHW program design that involves key stakeholders from both the formal health system and the community. Most of the reviewed articles, however, described CHW programs that were in some way or other designed and initiated mainly by the formal health system (or a project, a research team, or a NGO). In many instances, while the original initiative came from the formal system, it was apparent there was some level of community participation designed into the program, often at the very beginning. Examples include support activities such as the following: community health committees are set up (Bhutta, 2008; Wangalwa, 2011; Clarke, 2007; Debpuur, Phillips, 2002); communities are engaged in the CHW selection process and/or CHWs are selected from the villages (Clarke; 2005; Phillips, 1982; Ro, Treadwell, 2003; What Works for Children (UNICEF), 2004); there are plans to begin the program with community meetings to describe the program and the role of the CHW (Ayele, 1993); there are initial discussions with community leaders to agree on ways to provide support to CHWs to facilitate their work and enhance motivation (Amare, 2009), and so on. As a result of a combination of factors like these examples, over time, the community took a larger and larger ownership role.

While this is certainly a positive trend, it is important for policy makers to continue pushing towards collaboration in the design process to achieve what might be called program ‘co-creation’, as this enhances shared ownership from the beginning, provided community members’ ideas are put into practice (Bhattacharyya et al. 2001). It is through this kind of shared ownership that mutual responsibilities can best be linked productively in assessing the needs of the community, determining the role and function of the CHW, selecting suitable candidates, providing support once in place, and evaluating their performance.

However, it should be acknowledged that efforts to move towards shared ownership of CHW programs represent an important paradigm shift and a change in the existing power dynamics. It will take substantial effort to assure that both

'owners' are well prepared to make this duality work. On the part of the community, effort may be required to help mobilize appropriate levels of leadership and participation, and to put workable structures in place to act in its best interest. In terms of the formal health system, it is likely that leaders and practitioners will need to learn or enhance the skills necessary to work well with community leaders and facilitate appropriate program design and decision making processes (instead of using a more traditional top down approach). Already, many countries are engaged in a process of attempting to decentralize decision making, resource allocation and power; to the extent this has happened effectively in a particular country, it is a trend that will help the process of producing shared ownership at the community level. It is also important to bring the other key stakeholders into the planning process early on, such as the nursing councils and associations. All of these efforts are justified, as the ERT 3 deemed shared ownership as a fundamental component for producing trust and acceptance and, ultimately, program sustainability. When the community is not engaged from the beginning, CHWs generally experience low morale, preventing a sense of shared ownership from developing and triggering a distance from community participation in the program, ultimately leading to high attrition rates (Bhattacharyya et al. 2001).

2. Incorporate fundamental linkages and interactions between support activities during program design and implementation

The theory of change process undertaken by the ERTs suggests fundamental linkages that exist between CHW support activities and highlights interactions that may impact the intended effect on performance. Types of community and formal health system support intended to improve CHW performance should not be considered in isolation or developed as independent activities. Consideration of the relationships between support activities during program design and implementation will strengthen the intended effect on performance and sustainability of programs and help mitigate unintended consequences.

For example, in referring to the conditions outlined through the theory of change process, there are at least two linkage areas that can strongly impact the effectiveness of CHW supervision and feedback. The *level of recognition* that CHWs have from both the community and formal health system and the *establishment of a system for collecting information* are integral to well-functioning systems for empowering CHWs, planning their work, feedback and supervision (Kane et al. 2010). According to Kane, communities that recognize the efforts of CHWs make them feel valued, trigger a sense of improvement in CHWs' social status, and contribute to making CHWs relate to the community and feel accountable to community members. On the health systems side, clear linkages between the CHW and the health system improve the CHWs credibility in the community, make the CHW feel like he or she is adequately trained and has referral support and also lead to a perception of improvement in social status (Kane et al. 2010). If CHWs have not initially established relationships and gained acceptance and trust, community feedback on CHW performance or supervision from the health system may be flawed from the outset. When CHWs are not chosen by communities but rather by local elites or the political establishment, CHWs can lose their sense of relatedness and accountability to communities, diminishing their motivation to perform (Kane et al. 2010). Additionally, lack of routine data collection and utilization will decrease the utility of supervision and feedback on CHW performance.

Such linkages are mostly inferred in the literature. Documenting the linkages and measuring impact on CHW performance does not appear to be of primary consideration in CHW program design and implementation. Community support is often not a major (or well documented) focus in program design, yet it is recognized that support activities such as community recognition of CHWs works greatly to influence CHW performance (Robinson et al., 1990.) On the other hand, routine shortage of supplies and lack of logistical support from the formal health system is sometimes attributed to the poor utilization of CHW services by the community, thus directly impacting performance (Teklehaimanot et al., 2007.) On one hand, community support will be enhanced by having input into CHW selection

and having a thoughtful entry process once selected (i.e., conducting a meeting(s) where the CHW is introduced, the role defined, and a connection made to the formal health system). On the other hand, this community support will be reinforced if there is a simple information system tracking supplies and logistics that would indicate to the community that the CHW is tied closely into – and supported by – the formal health system. If these pre-conditions were in place, it is then more likely that the CHW would be able to begin quickly with some ‘small victories’ (the ‘spark of success’) that would further enhance effectiveness and status from the very beginning.

The majority of literature reviewed is linked to more than two pre-conditions developed through the theory of change process. This not only demonstrates that there is usually a combination of support being delivered to CHWs but that there are many opportunities to look more closely at how such linkages and interactions can best be integrated to optimize their impact on CHW performance and program sustainability.

3. Combine an appropriate package of financial and non-financial incentives for increased sustainability and improved performance and retention

CHW performance and retention can be improved by a combination of financial and non-financial incentives, and each partner – the formal health system and the community – has complementary roles to play in providing these incentives (Glenton Scheel, 2010). ERT 3 members felt it is important to consider the timing of the provision of financial and non-financial incentives (i.e. utilization of a tiered approach) as this will likely impact sustained improvement in CHW performance and retention. In terms of financial incentives, for CHWs who have a series of performance expectations that require 20-40 hours of work a week, it is recognized that, they should be compensated in some way for their work as there is little evidence that volunteerism is sustainable for long (Bhutta et al, 2010). It has also been found that volunteer CHW attrition tends to be high and is often linked to exploitation of poor communities, especially women. The use of part-time volunteer CHWs who receive income from other sources may also lead to high turnover, and the demand for their services can often outstrip their availability. While communities ought to be involved in selecting and supporting CHW services, it is ill-advised to finance CHWs directly through the communities they serve. This approach is rarely successful and the prevailing evidence reflects failure of related community financing schemes. Additionally, the attrition rate of CHWs can be twice as high for community-paid CHWs as compared to those paid through government (Bhattacharyya et al. 2001).

However, while the formal health system ought to be responsible for providing financial incentives, the community plays a critical and complementary role in providing non-financial incentives. These can include CHW support actions such as the following: increased community recognition; positive change in the health behavior and status of community members in response to health messages delivered by CHWs; feedback from the community (especially appreciation); faith and responsibility placed in them by the community, and so on (Bhattacharyya et al. 2001; Marquez, 1987; Meyer-Capps, 2011; Rahman, 2010; Kane et al., 2010). It is important to add that the formal health system also contributes to non-financial incentives in ways like the following: offering some kind of career potential or growth, mentoring by supervisors which increases skills and also enhances standing in the community, ongoing structured training, and reviews of performance (Amare, 2009; Maggwa, 2001; Future Generations, 2009; Marquez, 1987, Kane et al. 2010). These kinds of non-financial incentives are very important, and an effective CHW program would be designed in such a way that there would be knowledge of – and coordination between – key formal system and community actors to optimize impact.

Recommendations for Practice

1. Utilize a combined approach to support CHW performance

The ToC narrative and diagram describes a number of ways in which key actors from the community and formal health system can work together to support CHWs' performance and continued improvement once they are in place. However, it is clear that historically this support has been provided mainly through supervision and that this is usually delivered by the formal health system (Ayele, 1993; Sadler, 2011; Taklehaimanot, Kitaw, 2007; What Works for Children (UNICEF), 2004; Marquez, 1987; Meyer-Capps, 2011; Nair, 2010; Phillips, 2006; Rahman 2010). When done in a timely and effective manner, supervision enhances CHW performance by providing a clear link to the formal health system (which – among other benefits – helps build status in the community) and by providing performance feedback and mentoring (Maggwa, 2001). It is also important to add that in many cases, while the intentions are good, the actual supervision is often seen as ineffective, weak, or too sporadic in nature to be useful (Gilroy, Winch, 2006; Robinson, Larssen, 1990). If supervision interactions between CHWs and the health system are more punitive than supportive, as they too often are, such supervision will not contribute to motivate CHWs to improve performance or make them feel a valuable part of the health system (Bhattacharyya et al. 2001). In addition, it appears that supervision presents a missed opportunity for a combined approach, as there are only a few published examples where the community is actively involved in the supervision visits. Going forward, we strongly recommended that simple mechanisms be put in place to link in the community to contribute to the supervision process, either by using village health committees or some other appropriate community input process. This mechanism could be used to contribute program and individual feedback to the supervisor and to the CHW. Whether this was done directly or through the supervisor would depend on the community context and the program design agreements.

In contrast to supervision, there are some examples where the community was involved in providing support to CHWs, by helping to distribute medications (Community directed-treatment, WHO, 2000); giving feedback on evaluations (Kroeger, Meyer, 1996); pilot testing communication tools (Omer, Mhatre, 2006), and by providing recognition (Amare, 2006). We believe this area represents an opportunity for increasing CHW program sustainability by making the community a more prominent player in supporting CHW performance and continuous improvement, and could be done in cooperation with the formal health system supervision support. CHW peer support structures are another type of support activity that can be used to provide feedback and suggestions for continuous improvement. Bhattacharyya (2001) includes descriptions of peer support and networks -- pairing of CHWs, teamwork, and group meetings/support groups.

It is also important to stress that there is a need to expand the ways in which the community and the formal health system can work together to support high CHW performance and continuous improvement. In addition to what is in the literature, the TOC offers guidance on what might be done to design and implement more combined support activities. If more CHW programs begin to initiate support activities like these, better documentation is needed to describe more clearly what these support activities are, and which combinations work best to support high performance and continuous improvement. This type of documentation can then provide guidance and lessons learned in ways that other users could understand so that they could replicate or adapt for use on a global scale.

This type of documentation can then provide guidance and lessons learned in ways that other users could understand so that they could replicate or adapt for use on a global scale.

2. Structure a practical information system to support CHW performance

Information systems should be recognized as an integral source of support for CHW performance. Whether information is gathered to specifically track and monitor individual or program level outcomes, CHW performance will be ultimately compromised if data are not collected and utilized. A practical and light-weight system that includes collecting and providing information to both the community and the formal health system should be developed. Established information sharing amongst both systems can engender local ownership of CHW programs if data are used.

A practical information system is one composed of the most essential sources of data to help inform decision-making. Data is collected more frequently from the formal health system (i.e. from home visit forms, review of health records, supervisor observations) but there are other sources of data that should be incorporated and utilized more regularly to inform improved performance. These sources include community feedback (i.e. from community leaders, clients, community groups like village health committees) and individual CHW feedback on performance – their own as well as program feedback. Other types of data such as information on the availability and supply of materials, tools and technology can also be incorporated.

In the literature reviewed, information is more commonly used and collected to measure performance- such as using community feedback and review of health records as statistically relevant predictors of performance (Robinson et al, 1990). The literature does not formally address information systems as a means of CHW performance support nor directly measure the relationship between establishment of practical information systems and CHW performance. This is an important area to place more of a focus on in the future.

3. Increase documentation and dissemination of design and implementation of CHW support activities

Detailed descriptions of how support activities are designed and implemented can be highly instructive to those engaged in similar work or wanting to replicate approaches used. Despite some strong examples to highlight (Omer, 2008; Fiedler, 2003; Bhattacharyya, 2001; Amare, 2009), there is an overall gap in documentation of exactly how support activities are designed and implemented in the literature reviewed. Understanding how support activities impact on performance is of limited utility to program developers and implementers unless it is combined with a detailed description of the various steps and components that were used to achieve the impact. This also includes providing information or reasonable estimates related to cost analysis of support activities.

Increased documentation needs to be coupled with a more focused dissemination and application effort. Greater dissemination will allow for global learning and perhaps set up networks of practitioners that can provide assistance to one another to help apply lessons learned in new contexts. Currently, published research is more readily accessible compared to project documents and unpublished reports. The latter needs to be disseminated more widely and presented in a more easily digestible useful format. Additionally, a shift in focus of documentation efforts is needed from primary focus on outcomes to more emphasis on process, especially linking steps or actions taken to specific impact on performance. Academics and development practitioners need to commit to filling this void in the literature. This is essential with the increased focus on building CHW program capacity and sustainability.

Priorities for Research and Suggested Research Hypotheses

1. What mix of community and formal health system support activities improve CHW performance?

As noted in the Recommendations sections, most existing research to date has not been designed or structured to answer the focal questions. This is a significant gap in the evidence base, and therefore warrants an overarching priority for future research, namely, that future studies should provide detailed descriptions of support activities, how they were conducted, and test the presence and strength of linkages between each support activity and desired CHW performance outcomes. A range of methodologies, both quantitative and qualitative, will be required to address this shortfall. More documentation is needed to clearly describe what these support activities are, and which combinations work best to support high CHW performance, continuous improvement, and retention.

Suggested research hypothesis:

CHW performance, longitudinal improvement, and retention are maximized to greatest effect (e.g., improved quality of care, CHW reliability, improved patient health outcomes, etc.) when strong community AND formal health systems support are present, compared to CHW support from either system in isolation.

2. What is the effect of shared ownership of CHW programs?

One area for future research is to measure, assess, and test the extent of community involvement in CHW program design and decision making, as a measure of community support, on CHW performance and on program sustainability. Although the majority of the existing research references some level of community participation designed into programs initiated by the formal health system (or a project, research team, or NGO) – such as the establishing of community health committees, community engagement in the CHW selection process, and participation of community leaders in defining the role of the CHW – this participation is rarely evaluated. For instance, no studies measured the effectiveness of this as an approach, or compared this approach to a program in which external actors selected the CHWs. This paper posits that shared ownership is a fundamental component for producing trust and acceptance and, ultimately, program sustainability.

Suggested research hypothesis:

CHWs who are selected with significant participation by local community leaders are more likely to provide higher quality of care, enjoy better patient health outcomes, be viewed more favorably by community members, and demonstrate higher job retention, etc., compared with CHWs who are selected only by the formal health system, with little or no participation by local community leaders.

3. What are the fundamental linkages and interactions between support activities?

Future research should aim to document linkages and interactions between community and formal health system support activities, and to measure impact insofar as feasible. The preceding Recommendations section named two examples of linkages that can strongly impact the effectiveness of CHW supervision and feedback: the level of recognition that CHWs have from both the community and formal health system, and the development of a well-functioning information system that informs decision making. The body of evidence will be of greater benefit to policy-makers with closer examination of how such linkages and interactions can best be integrated to optimize their impact on CHW performance.

Suggested research hypothesis:

CHWs who are regularly supervised and provided constructive feedback and recognition for service well done, by community leaders AND the next tier formal health system supervisor, will provide higher quality of service when compared with CHWs who are not regularly supervised by EITHER community leaders OR the next tier formal health system supervisor.

4. What is the optimum structure of a practical information system to support CHW performance?

Another area for improved evidence should address the role of information systems as a source of support for CHW performance. Future research should systematically measure the relationship between establishment of practical information systems and CHW performance, particularly via the pathway of supportive supervision. The existing evidence base only emphasizes routine, rudimentary information collected and used to measure CHW performance. Future research should draw upon sources of data beyond those commonly collected through the health system, to include community and individual CHW feedback on performance, as well as availability and supply of medical materials, tools, and technology.

Suggested research hypothesis:

CHWs who use a simple and effective health information system, which could include, but not be limited to, data on patient encounters, birth and death registries, medicine and medical material supplies and usage, etc., are more likely to provide higher quality of service when compared with CHWs that do not benefit from a health information system or a system that is poorly designed (e.g., overly complex).

5. How are CHW support activities designed and implemented?

This paper recognizes there is a gap in the literature that documents, in sufficient and specific detail, how CHW support activities are designed and implemented. Concrete descriptions of the design and implementation of support activities, including cost analyses, can be highly instructive in replicating and scaling up methods for CHW support. In order to maximize the utility of evidence addressing the “what” and “how” such support activities impact CHW performance, future research should include more precisely defined process indicators as end-points and include detailed descriptions of the steps taken to measure impact of CHW support activities.

Suggested research hypothesis:

CHW training programs that emphasize CHW support (e.g., supervision, materials, tools, and technologies, etc.) are more likely to produce higher quality of service by CHWs when compared with CHW training programs that do not emphasize CHW support activities.

CONCLUSIONS

Through the review of the literature, it is the conclusion of the ERT 3 team that there is simply not enough evidence available yet to determine what the best combination of support activities is to produce the best results. That there should be a combination is clear; exactly what that combination ought to be is less clear. Besides encouraging further research in this area (qualitative as well as quantitative), it is likely that what will be most useful to policy makers and practitioners is a ‘basket’ or menu of support activities that are linked between the community and formal health system that can be chosen and adapted based on local needs, resources and context.

As recommended in the practice section above, there is a critical documentation effort needed in order to address the second focal question as much of the literature did not describe in sufficient detail how support activities were structured or operationalized. There are some exceptions to this, and these came more from project documents than

research reports, and this leads us to the conclusion that there may be more project documents (and other grey literature) that could provide better descriptive material now and in the future.

In terms of research and documentation going forward, it may be unrealistic to expect that there will ever be a practical and fundable way to use quantitative RCT-type methodologies to compare CHW programs with and without combined support activities but the development and use of innovative research methodologies is needed for addressing these questions. Perhaps the field should also strengthen efforts in documentation of program descriptions to learn more which combination of support might work best.

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ANNEX

Annex 1: Relevancy Rating Scale

The following scale was used to rate the relevancy of each document reviewed by ERT 3:

1. Support activities were not mentioned
2. Support activities were mentioned but details of how activities conducted were not described
3. Support activities were described but not evaluated
4. Support activities were evaluated but relationship to performance was not analyzed
5. Support activities were described and evaluated and relationship to performance was analyzed

Annex 2: Quality Scale

Quality of documents was assessed through seven quality questions. The questions covered the following areas:

1. Study design appropriate for hypothesis
2. Implemented with fidelity
3. Equivalence of groups
4. Endpoints valid and relevant
5. Appropriateness of analysis
6. Generalizability of results
7. Sustainability addressed

Responses were transposed into dichotomous responses, 0 and 1 (with 1 being the highest quality, 0 the lowest quality). A quality question that received a non-response was given a 0. The summary quality score reflects an average of the question responses.

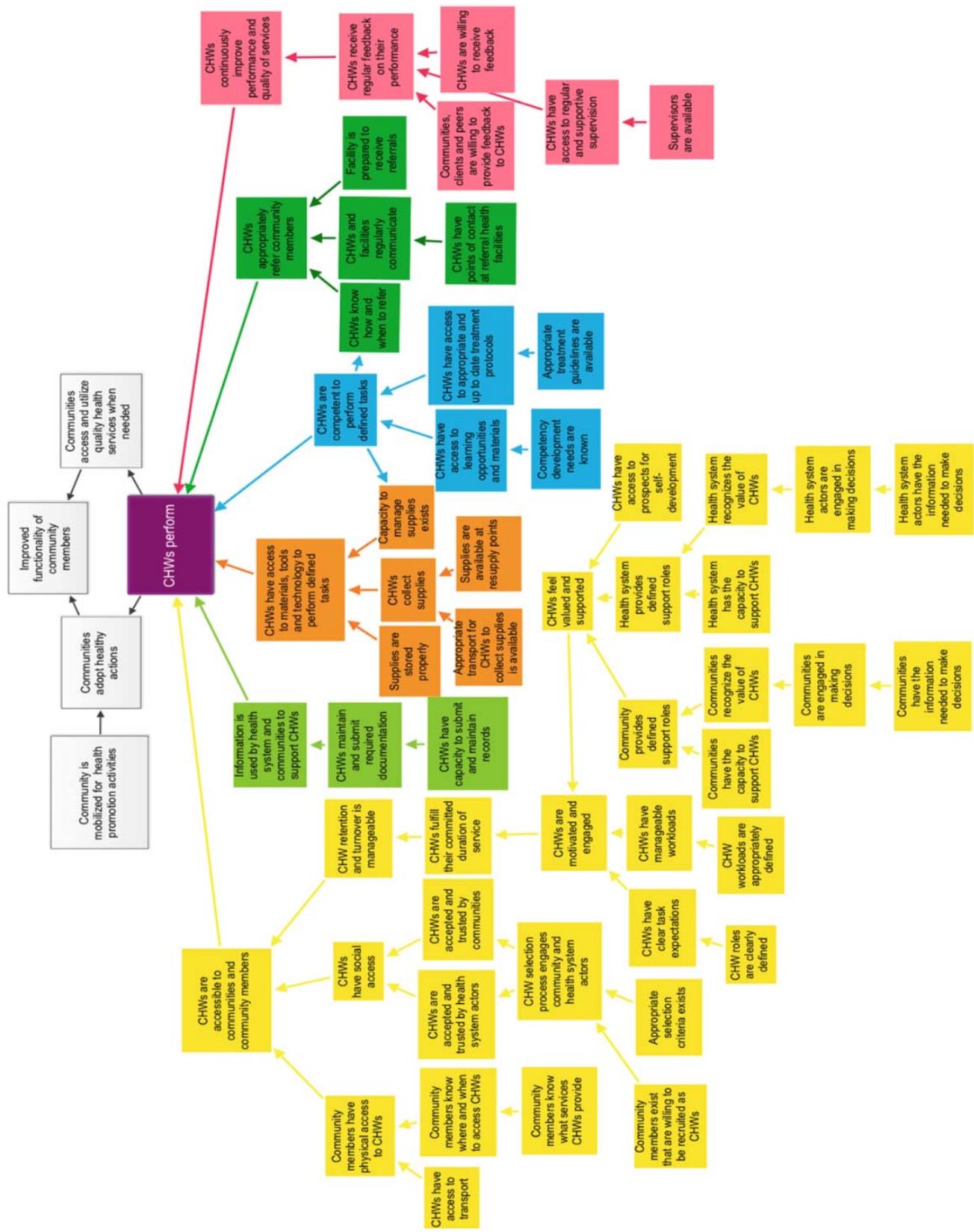
Annex 3: Evidence Review Matrix

(Snapshot of modified version of original matrix.)

Source	Relevance Score (1-5)	Quality Rating (0-1)	Description of Support Activities		Weaknesses of support activity(ies)	Strengths of support activity(ies)	Performance measures, outcomes, and relationship between support activity(ies)	Structure and operationalization of support activities	Other important considerations	Observed evidence gaps
			Formal Health Systems Support Activity(ies)	Community Support Activity(ies)						
Bhutta_Memon_2008	3	0.86	The Lady Health Worker and TBAs (Dias), liaised closely with medical staff at basic health units or rural health centers for some activities	Community volunteers helped set up community health committees for maternal and newborn care in close liaison with LHWs; committees supported LHWs in conducting 3-monthly group education sessions and to establish an emergency transport fund for mothers and newborns; Dias (TBAs) were encouraged to attend LHW-led education sessions	no supervision from the HF staff; also no supervision from the community health committees which were actually subordinate to the CHWs (LHWs), i.e. provided assistance to the CHWs, rather than having any oversight	Support activities provided training for the CHWs (LHWs); CHWs liaised with HF workers and the community committees	Performance measures for support to the CHWs were limited to the community, i.e. no measures for support from the HF. The measures included: proportion of villages establishing community health committees (86% of 150 villages) and proportion of villages setting up emergency transportation and treatment funds (31% of 150 villages); comparisons with control found that a LWH was present at delivery in 5.3% of families in the intervention areas and 1.4% in control, 64.5% of intervention families reported that a LWH had visited them within one week of the birth and 56% within the first 48 hours. 875 community group education sessions were held in interventions clusters, and average of 1 per CHW every 4 months, reaching about 18,500 individuals; control had no education sessions as none were planned for.	established community committees worked with the CHWs to carry out health education sessions and establish emergency funds.	TBAs (Dais) and CHWs (LHW) were already established and included as part of the government system; training for the LHWs included other aspects but not newborn and maternal care; this was a pilot to demonstrate that expansion of the use of CHWs for newborn and maternal care was effective; given that these workers are already part of the government system this expansion of responsibilities has a strong possibility of being sustainable.	the study was not powered to achieve conclusive results and was seen as a trial that would need to be repeated on a larger scale
Amare 2009	3		The formal health system here are the HEWs. Support activities to vCHWs: mentoring, training, follow-up, certification, performance reviews, family health booklet,	Support by kebele (community) and woreda (district) leaders. Social prestige: acceptance from the community, recognition, respect and credibility. Feedback from	1) Questions raised on the adequacy of the family health booklet. 2) Kebele leaders were not always as supportive as the community itself. 3) Additional support from funeral associations, churches and	The ultimate goal of all support activities detailed here is to strengthen the motivation of the vCHWs. Noteworthy, the lack of payment did not reduce the	Performance are measured at individual level. List of performance measured: improvement of health practices, increase in latrine construction and ditch drainage, uptake of long-term	Training: done by HEWs in their got or kebele, 1-4 days, continued training in monthly meetings. HEWs also visit the localities that vCHWs worked with to: follow-up on their work, provide advice, treat illnesses and	Conflict between households / agricultural responsibilities and voluntary work can frustrate and reduce motivation. Sustainability of the vCHW programme is	The correlation between support activities and performance is not addressed here as the main point of the study is to find incentives to

			<p>teaching material.</p> <p>Suggestion of support activities: rewards, celebrations, badges / ID / uniforms, photographs at public places, refreshments during performance review meetings.</p>	<p>the community.</p> <p>Other community actors were mentioned: funeral associations help transmit health messages, promote community recognition, arrange celebrations; churches/ priests speak on health issue and allow the vCHWs to speak during church meetings; same in mosques; youth and women's associations help transmit health messages to children and women: wash cloth, keep hygiene, space births.</p>	<p>mosques in terms of encouragement, follow up, and promotion of community acceptance was variable or limited and needed strengthening".</p> <p>"The supportive and motivating role of youth and women's associations was even more limited, but with future potential." 4) Work visits made by HEWs to vCHW's sites of operation should be strengthened.</p>	<p>vCHWs motivation because they had been clearly informed at the beginning, therefore, their initial motivation was a real desire to help the community.</p>	<p>contraception.</p> <p>The training has an immediate benefit on the health practice of the vCHW and its family/ neighbors/ community.</p>	<p>garner support and feedback from the community</p>	<p>the focus of the paper: exploring the potential of non-financial incentives in strengthening volunteerism. Scalability of the programme is also directly treated here as the volunteer CHW programme is an extension of the HEW programme.</p>	<p>preserve the motivation of volunteer health workers.</p>
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Annex 4: Theory of Change



CHWs perform

CHWs are accessible to communities and community members

CHW retention and turnover is manageable

CHWs fulfill their committed duration of service

CHWs are motivated and engaged

CHWs have manageable workloads

CHW workloads are appropriately defined

CHW roles are clearly defined

CHWs are accessible to communities and community members

CHWs have social access

CHWs are accepted and trusted by communities

CHWs are accepted and trusted by health system actors

CHW selection process engages community and health system actors

CHWs have clear task expectations

Appropriate selection criteria exists

Community members exist that are willing to be recruited as CHWs

Community members know what services CHWs provide

Community members know where and when to access CHWs

Community members have physical access to CHWs

CHWs have access to transport

CHWs have access to materials, tools and technology to perform defined tasks

Supplies are stored properly

CHWs collect supplies

Capacity to manage supplies exists

Supplies are available at resupply points

Appropriate transport for CHWs to collect supplies is available

CHWs feel valued and supported

Health system provides defined support roles

Health system has the capacity to support CHWs

Health system recognizes the value of CHWs

Health system actors are engaged in making decisions

Health system actors have the information needed to make decisions

Community provides defined support roles

Communities recognize the value of CHWs

Communities have the capacity to support CHWs

Communities are engaged in making decisions

Communities have the information needed to make decisions

CHWs appropriately refer community members

CHWs know how and when to refer

CHWs and facilities regularly communicate

Facility is prepared to receive referrals

CHWs have access to appropriate and up-to-date treatment protocols

Appropriate development needs are known

CHWs have access to learning opportunities and materials

CHWs have access to prospects for self-development

Health system recognizes the value of CHWs

Health system actors are engaged in making decisions

Health system actors have the information needed to make decisions

CHWs continuously improve performance and quality of services

CHWs receive regular feedback on their performance

CHWs are willing to receive feedback

Communities, clients and peers are willing to provide feedback to CHWs

CHWs have access to regular and supportive supervision

Supervisors are available

Community is mobilized for health promotion activities

Communities adopt healthy actions

Improved functionality of community members

Communities access and utilize quality health services when needed