Community Health Workers and Universal Health Coverage

Knowledge gaps and a need based Global Research agenda by 2015

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This paper is one of three Working Papers commissioned by Global Health Workforce Alliance to provide a platform for discussion around how better to capture synergies, harmonize support and address knowledge gaps in planning, developing and delivering on Community Health Worker (CHW) programs. Collectively, the papers will inform the Third Global Forum on Human Resources for Health side-event entitled "CHWs and other Front Line Health Workers (FLHW): Moving from Fragmentation to Synergy to Achieve Universal Health Coverage (UHC)"

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I. Context

CHWs are increasingly being recognized as an essential cadre for achievement of the MDGs, Universal Health Coverage (UHC), and the post-2015 health agenda. However, realization of CHW's full potential will require greater integration within a country's health system and human resources for health strategic plans [1, 2]. Improved stewardship and better synergies across the diversity of CHW partners' efforts at both global and country levels are needed to enable a more harmonized response [1]. A key aspect of this effort includes expanding the evidence base for CHWs. Though a wealth of knowledge and evidence is available on key aspects of CHWs, there are still critical knowledge gaps requiring attention. Fostering a stronger evidence base is needed for answering challenging and outstanding questions of policy and programmatic significance for CHW programs operating at scale.

Several CHW initiatives in recent years have identified outstanding CHW knowledge gaps and have made recommendations for placing more focus in conducting research in these areas. Currently there is no means of keeping track of efforts that aim to fill these gaps, or a forum to disseminate and exchange new information and evidence. This paper attempts to identify all CHW knowledge gaps and outlines recommendations for the way in which research should be conducted to enable greater benefit and utilization of results. It does not attempt to prioritize the various areas in which additional research is needed. The paper proposes ways to enable greater exchange of research activity information and findings and collaboration at both the global and country level.

This paper is one of three Working Papers commissioned by Global Health Workforce Alliance to provide a platform for discussion around how better to capture synergies, harmonize support and address knowledge gaps in planning, developing and delivering on Community Health Worker (CHW) programs[1]. Collectively, the papers will inform the Third Global Forum on Human Resources for Health side-event entitled "CHWs and other Front Line Health Workers (FLHW): Moving from Fragmentation to Synergy to Achieve Universal Health Coverage (UHC)".

[1] The three background documents include: Framework for partners' harmonized support to the countries, Co-authored by Sigrun Møgedal (Norwegian Knowledge Center for the Health Services), Shona Wynd (UNAIDS) and Muhammad Mahmood Afzal (GHWA); Monitoring and accountability framework (MAF), Co-authored by Allison Annette Foster (USAID-ASSIST project), Kate Tulenko (USAID CapacityPlus) and Edward Broughton (USAID-ASSIST project); Identifying knowledge gaps and defining a need based Global Research Agenda, Co-authored by Diana Frymus (USAID), Maryse Kok (KIT), Korrie de Koning (KIT), Estelle Quain (USAID).

II. Identified Gaps in CHW Research

Over the past decade, a substantial amount of research has been conducted on community-based health interventions carried out by Community Health Providers[2] (CHPs). Yet, many of the outstanding knowledge gaps that remain are areas identified as challenges in the literature from the late 1980s. The outstanding knowledge gaps identified in this background paper are drawn primarily from (systematic) reviews of Community Health Worker (CHW) programs [1-10]. Results of technical consultations and reviews in progress (but not yet published) that informed the WHO recommendations for optimizing health worker roles to improve maternal and newborn health [11] and the meeting reports of technical consultations on CHPs as summarized in a synthesis paper of the Global Health Workforce Alliance (GHWA) [1] have also been included. In addition, this paper draws on knowledge gaps identified in the literature review conducted by the Royal Tropical Institute in collaboration with the Liverpool School of Tropical Medicine (publication forthcoming 2013) in the context of the EU project 'Reaching out and linking in: health systems and close to the community services' that reviewed effectiveness and barriers and facilitators to performance of close to the community providers.

There is growing evidence on effectiveness of CHWs in relation to evolving tasks and responsibilities of CHWs from preventive and promotional activities to increasing diagnostic and clinical responsibilities. The evidence from systematic reviews identifies the following broad areas of evidence and gaps in knowledge on 1) effectiveness of CHWs in relation to specific tasks and responsibilities and 2) systems and broad contextual factors that influence CHWs and their performance. These two thematic areas cover outstanding questions related to what CHWs can do that support broader health goals and UHC and how to design and strengthen systems that support overall CHW performance. The first thematic area is discussed shortly based on robust systematic reviews, primarily from Lewin et al (2010) and the results of systematic reviews and technical advisory groups that developed WHO recommendations for optimizing Maternal and Neonatal Health [8, 11]. The second thematic area is discussed more thoroughly, as the research gaps on factors influencing CHW performance are covered in various sources of different nature and are less defined yet.

Effectiveness related to Roles and Responsibilities of CHWs

[2] Community health providers include community health workers and frontline health workers.

Lewin et al. (2010) show evidence of moderate quality of CHW's effectiveness in promoting immunization uptake in children, increasing breastfeeding and improving tuberculosis (TB) cure rates, when compared to usual care. There is moderate quality evidence that CHW support has little or no effect on TB preventive treatment completion. Furthermore, there is low quality evidence of the effectiveness of CHWs in reducing child morbidity, in reducing child and neonatal mortality, and in increasing the likelihood of seeking care for childhood illnesses. For other health issues, evidence was insufficient to draw conclusions regarding the effectiveness of CHWs [8]. Therefore, more research is needed on effectiveness of CHWs in different fields or regarding different specific interventions. The WHO recommendations for optimizing Maternal and Neonatal Health (2012) identify key interventions in maternal and newborn health where more evidence is needed, for example: the management of puerperal sepsis by using different types of antibiotics by CHWs and many others. For a detailed overview of all specific knowledge gaps see the paper published on the WHO website [11]. Additionally despite the wide array of CHW cadres developed to address HIV/AIDS there is very limited empirical information on the effectiveness of CHWs in HIV/AIDS prevention and care [5]. Some studies investigating the effectiveness of community support to adherence to ARV identified the need to explore relationships between adherence reporting and virological outcomes (Arem et al. (2011) [12]) and the need for longitudinal research to clarify the complex interrelationship between community support and ART outcomes (Wouters et al. (2009) [13]).

Although much is known already about effectiveness of CHWs in the field of health education, promotion and management of diseases, the effectiveness of CHWs compared with professional health care providers in the same setting and regarding the same intervention is often not researched (outcomes of CHW interventions are often compared with outcomes of no intervention) [8].

Nature and workload of CHWs

The CHW work package varies in different settings. Some CHWs work in vertical programs with specific and often singular tasks, while many CHWs carry out a broad range of activities and fulfill multiple roles. Studies are needed that compare the effectiveness of CHW conducting multiple and singular tasks and roles and the implications of shifting and expanding the role of CHWs from health promotion / prevention activities to curative work, especially for maternal and newborn health [2]. CHWs are more often involved in curative services and several studies found out that curative tasks increase credibility of CHWs (communities demand for more curative services, for example for

Community Medicine Distributors in Uganda [14] and Health Extension Workers in Ethiopia [15, 16]). With the extended role of CHWs in curative care, appropriate use of drugs by CHWs is an area of attention, related to the impact of drug use on resistance patterns [6]. The specificity and appropriateness of job descriptions or task assignments for CHWs is mentioned repeatedly in the literature. No specific breadth or depth of work is proposed however. More research should be conducted to investigate the optimal work package and level of productivity for CHWs in specific settings (given a certain level of training and support). Workload of both CHW and supervisor should be considered [17].The optimal geographical/ population focus is another point of attention, which will differ depending on the setting [2]. More insight in the above mentioned areas would enable the design of community-based health programs that avoid multiple workloads and take into consideration the number of CHWs needed for effective programming.

Systems that Support CHWs and their Performance

There are many studies focused on investigating the effectiveness of CHWs to deliver certain services, but little good quality studies cover factors (such as community, health systems, intervention design and broad contextual factors) influencing effectiveness. Many of these knowledge gaps are interconnected which makes it difficult to hone in on one particular area separately.

Health system factors

The need for a clear relationship between the CHW and health system is a consistent theme in the literature. Different visions of this relationship exist, however. In some countries, CHWs are seen as part of the formal health system (extending services into the community). In a contrasting vision, CHWs are seen primarily as community members managing the interface with the formal health system [4, 10]. The literature is replete with normative statements about what types of health system support are needed for success in CHW programs. When CHW program performance does not meet expectations, this is typically attributed mainly to one or several general shortcomings in the health system and (often secondarily) to shortcomings in intervention design of CHW programs (see below). Yet, there is little evidence of interventions to strengthen specific health systems support activities resulting in improved CHW performance at scale. Technical (including supply chains) and social support from health system structures, such as health facilities, district health management teams and local and national government entities could be an area for further research. CHWs are, to different extents, linked to the health system by referral and supervision structures. This link should be further studied. For example, operationalization of referral linkages settings with

weak transport and communication is an important area of study and different mechanisms of supportive supervision should be evaluated. Also, more research is needed on the potential role that CHW-associations can play in improving CHW performance [3-5].

Community factors

A lot of the literature discusses the importance of the role of the community in CHW programs but interventions are usually not elaborated upon or a focus in research. Lewin et al. (2010) report that few studies involving local people in the development of the intervention, the selection of CHWs, or the support of CHW programs are available [8]. There has also been increased focus and dialogue around further investigation directed specifically at how communities influence CHW performance [3, 10]. There are examples of CHW programs in which community support led to improved CHW performance [18-20] or retention [21], but it is unclear if this association is always positive and the influence of community support on CHW performance is seldom the focus of research. The following areas of community support are areas that warrant more research attention: community involvement in CHW selection and design, management, implementation, monitoring and evaluation of CHW programs; technical and social support from formal community structures; and community incentives (non-financial, in-kind and financial) [3,10].

Combined health system and community support

Many knowledge gaps for interventions that are meant to support CHWs (e.g. supervision, incentives) are relevant to the roles of both the community and health system. Future research should aim to document linkages and interactions between the role of community and health system for supporting CHWs, and to measure impact insofar as feasible. This perspective has been largely missing from the literature and is essential in providing a better understanding of how to optimize and strengthen the value of the inputs and processes from both community and formal health systems to enhance CHW performance [1,4, 10]

Intervention design factors

Many factors in the design of an intervention can influence performance of CHWs. These intervention design factors are better presented in the current literature yet gaps remain. As stated previously, health system and community factors can influence or be part of the intervention design [1, 10]. Some examples are presented below.

Selection of CHWs- There is a gap in knowledge on optimal selection criteria for CHWs. World-wide, CHWs are overwhelmingly female (70%), though this again varies by context and the tasks assigned to the CHW. Many programs have established formal criteria for CHW selection, usually including age, sex, educational attainment and in some cases related to a model function in family planning and number of children [4]. It is less clear that these selection criteria are essential to CHW performance depending on the complexity of the tasks they are assigned and the value in local context of other characteristics such as social status, perceived experience, etc. Selection links to availability of certain characteristics such as education, livelihood options and intrinsic motivation [22] and has implications for the length and type of training required [23-26]. Research into relationships between selection criteria, motivation and training and how these link to optimal intervention packages to achieve desired outcomes are important. The selection process and especially the involvement of the community therein are covered above.

Training and continuing education of CHWs- Lewin et al. (2010) concluded that there is insufficient evidence to determine which CHW training or intervention strategies are likely to be most effective. Different approaches to the (initial and ongoing) training of CHWs should be included in effectiveness trials [8]. Most literature describes specific training of community health workers, but fails to link the training to gaining competencies or improving performance. Also, impact evaluation of the training program that can link training to competency or performance is often not conducted.

Supervision of CHWs- It appears that supervision presents a missed opportunity for combined roles from the community and formal health system actors. There are only a few published examples where the community is actively involved in the supervision visits with respect to CHWs [3]. Desired frequency of supervision from the formal health system is often mentioned, but not fully described. It's not clear frequency, type of supervision and which supervisor – CHW ratio is feasible and effective under which circumstances.

Remuneration of CHWs- One of the huge variations within the groups that constitute CHWs is remuneration varying from no payment (volunteerism) to salaried by government or NGOs. Studies show that depending on the setting, both systems seem to be possibly effective. More information is needed about the effectiveness of paid versus voluntary CHWs and the underlying factors associated with this effectiveness [2]. Several studies identified the need for further research into volunteerism: research on the long term benefits of being a volunteer [27]; volunteer's intention and how to become and stay a volunteer [28].There is great variation in types of payment and (non-financial)

incentives that CHWs receive. More research is needed to better understand how different models and combination of types of remunerations influence CHW motivation, retention and performance and the sustainability of CHW programs in various settings. There are many questions related to CHW remuneration, including whether to pay salaries, who should pay, and how much [2, 6, 8, 29, 30].

Information systems/ monitoring- 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 focus on more in the future. 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 [5].

The use of new technologies- New technologies, such as mobile phones for communication and uniject devices for injections could contribute to the success of CHW community-based health services. An increasing amount of research is focused on these new technologies, and this could contribute to a better understanding of how to use new technologies in CHW intervention design to optimize CHW effectiveness [6, 8, 31, 32]. Added focus is also needed on the sustainability and opportunity for scale-up in using new technologies.

Broader contextual factors

Broader contextual factors influencing CHW performance include geographic location, culture, economy and political context. Most studies have not looked into these factors even though they could be of great importance for CHW performance (and motivation and attrition) [3, 22]. Differences between factors influencing performance of rural- and urban based CHWs are also important for future research [21].

Summary Table

The following table summarizes the identified outstanding knowledge gaps from existing systematic reviews, recent technical consultations, and reviews in progress (but not yet published). It organizes the findings in the two identified thematic areas: 1) effectiveness of CHWs in relation to specific tasks and responsibilities and 2) systems and broad contextual factors that influence CHWs and their performance.

Thematic area/sub-areas	References	Research needs
Thematic Area 1: Effectiveness of CHWs in relation to Specific Tasks and Responsibilities		
Specific tasks	[2, 5, 6, 8, 11, 33]	Further investigation of the effectiveness of CHWs compared with other providers delivering the same intervention in the areas of maternal and neonatal health, drug-based interventions and HIV/AIDS care
Workload	[2, 17]	-investigation of workload, safety and quality of CHWs with multiple tasks compared to CHWs with fewer tasks -investigation of different forms of shift work -investigation of CHWs offering preventive health care compared to CHWs offering curative health care -investigation of CHW productivity in relation to single and multiple health issues focus - investigation of optimal geographic/ population focus
Thematic Area 2: Systems and Broad Contextual Factors that Influence CHWs and their Performance		
Health System Factors	[4, 10]	-investigation of health system support (e.g. referral systems, formal linkages with health system functions/entities, supervision, supply chain) and their impact on CHW performance -investigation of the potential role of CHW associations
Community Factors	[3, 10]	-investigation of community support (e.g. community involvement in CHW program design, management, implementation, and M&E, formal linkages with community entities/groups, community incentives) and their impact on CHW performance
Combined Health System and Community Support	[5, 8, 10, 33]	-investigation of impact from combined health system and community support on CHW performance (e.g. joint supervision, incentive structures)
Intervention Design Factors	[3-5, 10]	-investigation and increased documentation of how interventions are

		designed and implemented
1. *Selection of CHWs*	[4, 33]	-further investigation on optimal selection criteria for CHWs
2. *Training and Continuing Education of CHWs*	[8]	-investigation of effectiveness of different training approaches
3. *Supervision of CHWs*	[3, 8]	-investigation of effectiveness of systems of supervision
4. *Remuneration of CHWs*	[2, 6, 8, 27-30]	-investigation on different models and combinations of remuneration
5. *Information Systems and Monitoring of CHWs*	[5]	-investigation of the use of information systems for CHW performance
6. *Use of New Technologies*	[6, 8, 31, 32]	-further investigation on the expanded use of new technologies for CHW programs with focus on sustainability and scale-up
Broader Contextual Factors	[3-5, 21, 22]	-investigation on impact of cultural differences, economy and political context, geographic location (e.g. urban vs. rural effectiveness)

III. Research approaches

The use of more appropriate study designs and methodologies is needed to adequately address CHW evidence gaps and answer some of the complex questions that remain. For studies that require cluster randomizations greater attention needs to be paid to the quality of the study design. Investigators may consider the usefulness of measuring related outcomes [8, 33], or use more intervention arms with the same outcome measures [34]. In addition, measuring potential harms of the intervention and reporting findings according to CONSORT guidelines is important [8, 33]. Focus has been on testing the impact of either a discrete programmatic activity (often disregarding the feasibility of being replicated at scale) or an entire program (often omitting adequate specification of the program or description of the relative importance of different programmatic elements) [1]. Less research studies have examined the relative effectiveness of different combinations of interventions. Measurement of results has been biased toward more distal measures of impact (such as morbidity and mortality) and less on more intermediate or proximal measures [1]. This limits understanding of how interventions effect change. A large focus of CHW research has been placed on answering questions that focus on the "what" and "why" without adequate focus on the "how". This has resulted in a limited understanding of what works best operationally and at-scale and which approaches are easily replicable. Despite some strong examples [34-37], there is an overall gap in the literature reviewed of exactly how interventions are designed and implemented [2, 33].

Moving forward, CHW research needs to be better designed to address the outstanding questions that impede CHW programs from operating at scale. An increased focus on implementation science and knowledge transfer [38] would allow for the investigation of the major bottlenecks that impeding effective implementation and CHW program scale-up while creating generalizable knowledge that can be adapted and applied across various settings and contexts.

The following characteristics should be emphasized in future research:

Issues pertaining to program scale-up and sustainability

Further research should also take the sustainability of community-based health interventions by CHWs into account: which factors influence the sustainability of scaling up of CHW interventions? Most of the research is from rural settings and from shorter-term, small-scale programs of NGO-supported CHWs. Thus, it is difficult to predict how successful these efforts might be if taken to scale in government programs where there is most likely to be less oversight, weaker supervision and supply systems, and more limited resources on a per capita basis. More research should therefore be directed towards larger-scale (urban) CHW interventions and towards approaches that are most feasible, appropriate and affordable to ensure program sustainability [6, 8, 10, 29, 30, 33].

Mixed Research Methodologies

Whenever possible the use of mixed research methodologies will allow for more comprehensive understanding of which factors influence successful implementation of CHW programs [1, 10]. The use of participatory research methods can provide more insights into the roles of both the community and health system. This will also support diversifying the types of information collected to help inform results. Increased utilization of qualitative methods, including observational methods and involving perspectives of all stakeholder groups can help fill a void of studies that give a voice to CHWs and provide information about their perceptions of and feelings about the challenges they face in their work and what is needed to enable them to perform better [33, 39].

Measurement of Results

In order to maximize the utility of evidence addressing both “what” and “how” questions, future research should include more precisely defined process indicators as end-points and include detailed descriptions of the steps taken to measure impact [5, 10, 33, 40]. For example, research meant to investigate the impact of CHWs delivering a health intervention on health outcomes most likely would include a training component. Although in design, more proximal indicators such as effect of

training on CHW performance are bypassed for measurement of more intermediate or distal indicators of health impact. Yet, more focus on the former, along with increased description of design and measurement, would benefit future application of research.

Economic Evaluation

There is agreement in the literature that there needs to be more focused attention and research on issues related to adequate and consistent financing of CHW programs (both design and ongoing running costs). Several reviews discuss the lack of and need for economic studies accompanying trials to demonstrate the cost effectiveness of various types of CHW interventions. Studies have indicated that CHWs are accessible and acceptable to clients at community level and therefore, CHWs are expected to improve access and equity of health services. The equity impact of CHW programs is seldom measured. The cost of CHW interventions compared to the costs of similar interventions delivered by health professionals should also be included in further research. Overall more investigation is required to determine the cost-effectiveness of CHWs programs [2, 8]. An important contribution in this area is the GHWA'S current cost-effectiveness study of CHWs programs which have been implemented at scale in an effort to assist policy makers in the identification of the most efficient, feasible and sustainable CHW models.

Increased Documentation

Greater attention and investment in prospective and retrospective documentation of programs, particularly, large-scale ones, is recommended [1, 10]. Concrete descriptions of program design and implementation can be highly instructive in replicating and scaling up programs and their components. This effort should include increased attention to documentation of both intended and unintended effects. More thorough context of CHW programs and the attributes of interventions implemented should be provided [8, 40].

Increased Capacity Building Efforts for LMIC Investigators

A concerted effort is needed to develop the capacity of investigators from LMICs in formulating research questions of local relevance and in carrying out the investigations using a range of methods [10]. This will require increased mentorship and capacity building efforts by partners.

IV. Prioritization of the CHW Research Agenda

It is proposed that the organization and prioritization of a global CHW research agenda will be discussed further at the upcoming 3rd Global HRH Forum in Recife, Brazil. A side session to discuss this paper, along with the two other working papers being developed to address the need for greater synergies for CHWs, can provide an opportunity for global consensus building on the way forward.

After establishing an agreed upon CHW research agenda at the global level, country research agendas can then be adapted based on the need to inform particular knowledge gaps that are limiting country level policy and programmatic, evidence-based decision-making. Evidence needs are ultimately different and will vary by country. This corresponds with the frameworks for partners' harmonized support and monitoring and accountability which recommend that research be aligned with country needs and be in partnership with national level institutions.

V. Stewardship in Moving Forward and Fostering Culture of Evidence Based CHW Programming

Fragmentation in CHW stewardship at both global and country levels has ultimately impeded effective decision making. The previous two papers outline ways for improving stewardship and creating better synergies at both levels that can also support efforts for incrementally advancing the state of the art of CHW programs and evidence-based decision making. Moving forward, mechanisms that foster collaboration and knowledge sharing of CHW research efforts will need to be in place. Establishing a process for identifying future research priorities will ensure continued dialogue for expanding the evidence base for CHWs. Future dialogue must incorporate views of the diversity of stakeholders engaged with CHW programing and be aligned with the greatest areas of need at the country level.

Mechanisms/platforms for Collaboration and Knowledge Sharing

It is recommended that web-based platforms such as the GHWA e-platform or CHW Central will be utilized for routine information sharing and discussion of research efforts and new evidence generated. These platforms may also serve as a global clearing house for CHW research. Annual global forums, such as the symposium on health system research, are further opportunities for sharing updates on research efforts.

At the country level, national forums such as Country Coordination and Facilitation (CCFs) and workforce observatories should also be used for sharing information and identifying opportunities for collaboration. Research should be conducted in partnership with local institutions and emphasis should be placed on building the research capacity of local investigators.

Identification of Future Priorities in Research

Future priorities in research will ultimately be identified through increased collaboration and knowledge sharing. The topic of new CHW research priorities can be integrated into discussions on web-based platforms and annual global forums. Additionally, it is recommended that a periodic donor round table be organized which includes extensive stakeholder representation from the country level to discuss CHWs, discuss commitments for expanding the CHW evidence-base, and to ensure that research efforts are aligned with the most urgent country needs.

VI. Conclusion

Though a wealth of knowledge and evidence is available on key aspects of CHW programs, critical knowledge gaps remain. To enable the environment for increased evidence-based decision making at the country level, adequate emphasis must be placed on continuing to strengthen the evidence base for CHWs. This should be an integral component of efforts to improve stewardship and synergies for creating a more harmonized response for CHWs at both global and country levels. A CHW research agenda needs also to focus attention on the use of more appropriate study designs and methodologies for answering some of the complex programmatic and policy questions that remain.

Web-based platforms and annual global forums are mechanisms for fostering collaboration and knowledge sharing of CHW research efforts. At the country level, national forums such as CCFs and workforce observatories can be utilized. Research should be conducted in partnership with local institutions and emphasis should be placed on building the research capacity of local investigators. Future priorities in research will ultimately be identified through increased collaboration and knowledge sharing. Yet, to ensure that CHW research receives continued attention, it will be important to arrange high level dialogue for discussing commitments to expand the CHW evidence-base and ensure that research efforts are aligned with the most urgent country needs.

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