Strengthening Primary Health Care through Community Health Workers:

Investment Case and Financing Recommendations

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Cover: Village Health Team member in Mpigi, Uganda

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We are delighted to present *Strengthening Primary Health Care through Community Health Workers: Investment Case and Financing Recommendations*, a jointly authored report representing our collective findings on the urgent need for national governments and development partners to substantially increase investment in Community Health Workers as part of integrated health care systems.

We fully endorse the findings and recommendations contained herein, and we are committed to building stronger health delivery systems centered on community-based primary health care. There is a strong case for investment in Community Health Workers, which this report lays out alongside important guiding principles for building and financing these systems. We encourage government leaders to develop investment cases to identify the scale and economic impact that a strong, integrated Community Health Worker program could have in their countries, with special attention to increased employment, productivity, and the empowerment of women.

In collaboration with existing efforts such as the One Million Community Health Workers Campaign and in partnership with UNICEF, the World Health Organization, and many partners, we will work to support the implementation of these recommendations. We believe that doing so will help save the lives of millions of women and children, bring us closer to achieving Universal Health Coverage, generate revenue for developing country economies, and help us build more resilient health systems capable of preventing and containing future health crises.

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Table of Contents

Strengthening Primary Health Care through Community Health Workers:

Investment Case and Financing Recommendations

Executive Summary

As we enter the final months of the Millennium Development Goal (MDG) period, the world is at a critical moment of reflection and aspirational forward thinking. While significant progress has been made on the health MDGs (including a global reduction in the child mortality rate by nearly 50% since 1990 and the maternal mortality ratio by 45% in the same period), it is now clear that we will not meet the targets for these MDGs, goals 4 and 5 respectively.[1] Additionally, as the Ebola outbreak slows in West Africa, the world is attempting to understand how this outbreak became so severe so quickly and how future health crises might quickly be contained. In this context, world leaders are setting health targets for the next phase of global development that focus on championing the achievement of universal health coverage (UHC).

An emerging consensus among global health leaders is that building stronger health delivery systems, with particular emphasis on community-based primary health care, will be required in the future—to ensure adequate preparedness against future epidemics, to continue the fight against the top killers of children and mothers around the world, and to build capacity to handle the growing burden of chronic, non-communicable diseases. This will involve harnessing the potential of multidisciplinary care teams (including CHWs, mid-level workers, and professional health workers) to extend health services to poor and marginalized populations.[2] Within this mix of skills, cadres of trained Community Health Workers (CHWs) can play an important role in increasing coverage of essential healthcare interventions[3] and enhancing the resilience of health systems to crisis. Indeed, CHWs have been cited repeatedly by leaders such as Liberia's President Ellen Johnson Sirleaf as essential in responding to health crises, delivering routine care, and providing linkages to the health system for hundreds of millions of individuals in Africa and around the world. [4-6]

Despite the progress some countries have made in scaling up CHW programs, many countries that would benefit from strong CHW cadres currently have only ad hoc, sub-scale programs. This problem extends even to high-income countries that would benefit from CHW programs to provide cost-effective care and battle chronic disease. Countries wishing to scale these programs using a coordinated national strategy face many challenges. Chief among these challenges are limited political prioritization of CHWs and a subsequent lack of financing: insufficient and inaccessible international funding as well as limited alignment on pathways for domestic financing.

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These challenges were taken up by a high-level panel convened by Prime Minister Hailemariam Dessalegn of Ethiopia and Ray Chambers, the United Nations Secretary General's Special Envoy for Financing the Health MDGs and for Malaria. This report states the three key takeaways from this panel's investigation of CHW financing and offers seven recommendations to support countries in the development of strong, integrated CHW programs.

Key Takeaways

Over the course of this panel's investigation into CHW financing, three key takeaways emerged:

I. There is a strong case for investment in CHWs as a component of primary health care

- Investment in CHWs will be essential to achieving UHC, meeting the core capacities of the International Health Regulations (IHR), and reaching other critical health objectives. Expanded access to key interventions provided by CHWs could prevent up to 3 million deaths per year
- Investment in CHWs in sub-Saharan Africa can result in an economic return of up to 10:1—due to increased productivity from a healthier population, potentially reducing the risk of epidemics such as Ebola, and the economic impact of increased employment
- Scale-up of CHWs can create short-term cost savings in other parts of the health system, including reductions in the number of patients treated at facilities
- CHW systems yield additional societal benefits including the empowerment of women and increases in income for households of paid CHWs

II. When building CHW programs, maintaining ten core principles and a focus on performance management will ensure return on investment (ROI)

- Ten guiding principles support CHW program development and implementation—addressing program leadership, health system integration, community engagement, financing, monitoring, health worker training, supervision, management, support, and incentives—and programs seeking financing should ensure they are aligned with these principles
- Existing CHW programs vary greatly in their level of impact—with some of the highest-performing CHW systems being ones in which CHWs are formalized, paid, and given other appropriate incentives
- A core enabler of successful programs is that CHWs be considered part of integrated community-based primary health care teams and of a broader, equity-focused health system, rather than standalone agents. CHWs and lower-level facilities must have sufficient referral capacity so patients can be appropriately and reliably treated at higher-level facilities when required.

III. Sources of financing for CHWs exist, but countries must be proactive to assemble a financing pathway for their system

- Countries that have successfully financed strong national CHW programs with paid, formalized CHWs have done so through coordination of numerous traditional financing sources including international donors and domestic resources
- Countries may follow a four-step process to develop a financing pathway in support of their overall health workforce development plans: determining the required program scale, costing the plan year-by-year, setting financing targets for each year by funding source, and identifying specific financing mechanisms to fulfill these targets

This panel believes high-performing CHW programs can be financially self-sustaining in the long term by sharing the financing burden among the program beneficiaries (which include private employers and private health care providers) and by capturing gains that result from economic growth.

While this report focuses on CHWs in the health systems of low- and middle-income countries, the panel believes that leaders of health systems in high-income countries should consider CHWs as a key domestic strategy for the long-term management of chronic and other diseases, as some high-income countries have already begun to do. As these countries develop plans to incorporate CHWs in their own health systems, they should look to the experiences of low- and middle-income countries for important lessons learned and success factors.

Recommendations

Given these findings, and in order to support countries in capturing a return on the investment for CHW system scale-up, the panel recommends the following:

To government leaders in sub-Saharan Africa:

1. Develop country-specific investment cases and ROI analyses, and consider domestic investments in CHWs as part of national health plans that fully integrate CHWs into the primary health care system, ensure supportive supervision of CHWs, and build reliable referral pathways
2. Proactively seek innovative financing arrangements with funders, especially those that utilize new grant sources, low-cost debt financing, and private sector capital
3. Allocate strong capacity and cross-sectoral "deal teams" at the country level to define, structure, and negotiate financing pathways with local stakeholders and the international financing community

To the international financing community:

4. Fund the start-up costs of these programs by making low-cost, performance-based grant or debt financing immediately available—e.g., through health bonds—to countries wishing to scale up CHW systems

To bilateral and multilateral health donors with disease-specific funding:

5. Allow for and actively promote the use of disease-specific funding, which has been crucial for CHW scale-up to date in many countries, for integrated CHW plans

To the global health community broadly:

6. If requested by countries, establish a unit or team to support country "deal teams" to access available financing options and build best-practice CHW systems, with deeper analysis of CHW financing sources to date as a first step in this work
7. Develop metrics for effective CHW program implementation that could also guide financing support and create a data collection mechanism and scorecard to add transparency on CHW program impact

The Report

The following report includes four sections:

I. The Case for Investment in CHWs

II. Setting the Context for CHW Programs: Concepts and Principles

III. CHW Financing: Developing a Pathway to Sustainably Finance System Costs

IV. Recommendations

The authors of this work are dedicated to the reduction of maternal, newborn, and child mortality around the world, and view these efforts as supportive of the African Union Commission's Campaign on Accelerated Reduction of Maternal, Newborn, and Child Mortality in Africa (CARMMA). This work builds off of the strong foundation developed by many organizations dedicated to CHWs including the One Million Community Health Workers campaign and the Global Health Workforce Alliance. The authors recognize the need for strengthened health systems at all levels and are in full support of efforts led by the World Health Organization (WHO) to develop a global strategy for human resources for health, toward which this report can hopefully be a first step.

1. The Case for Investment in CHWs

There are four pillars of the case for investment in CHWs:

- First, investment in CHWs is a *requirement* to achieving critical health objectives, including UHC, prevention and containment of health crises, meeting the core capacities of the IHR, progress towards disease elimination, keeping healthcare affordable and readily accessible, saving lives of mothers and children, and controlling priority diseases such as HIV, tuberculosis and malaria.
- Second, investing in CHWs results in a positive return—as high as 10:1 when accounting for increased productivity from a healthier population, the avoidance of the high costs of health crises, and the economic impact of increased employment.
- Third, scale up of CHWs can lead to short-term cost savings (as well as long-term cost savings) in other parts of the health system. Short-term savings could be used to support scale-up costs.
- Fourth, investment in CHW systems yields further societal benefits, including empowering women, reducing patient costs, enabling data collection on civil registration and vital statistics, and enabling additional service delivery.

PILLAR 1: Investment in CHWs is a requirement to achieving critical health objectives

Chief among the health objectives under consideration by world leaders for inclusion in the post-2015 global development agenda are continuing the progress made on reducing maternal and child mortality and achieving UHC. These and other global priorities, including preparing for future health crises, eliminating diseases, and achieving affordable healthcare, will all require a strong national CHW program if they are to be realistically achieved:

Promoting health and well-being: Every day, CHWs provide life-saving treatments to sick children. Nearly 40% of newborn and child deaths globally are due to malaria, pneumonia, diarrhea, and sepsis. These are diseases that CHWs can easily and cheaply prevent and treat.[7] Recent scholarship suggests that expanding population coverage of key evidence-based interventions that can be provided by CHWs, including home-based neonatal care and community case management of serious childhood illness, could prevent up to 3 million maternal, perinatal, neonatal and child deaths each year.[8]

Achieving UHC: Achievement of UHC is a goal with broad and growing global support. It has been highlighted by the World Health Assembly and UN General Assembly and is a priority for the WHO, the World Bank, and other leading international health organizations.[9,10] This objective cannot be achieved without the addition of significant numbers of CHWs, particularly across rural sub-Saharan Africa where individuals can live several hours or more from the closest health facility.[11-14] While it may take decades to build enough health facilities to ensure that all rural and remote populations are within walking distance of clinics, CHWs connected to well-formed and managed primary health care teams can extend the reach of high quality care to people who need it most, right where they are. There is widespread evidence that utilization of health facilities decreases exponentially with distance from the patient, and that health facility utilization is inequitable—meaning that those who access facilities are the better off members of the population served by the facility.[15] The Ministry of Health in Ethiopia cites their Health Extension Program as a key enabler of broadening access to critical health services. Data on this program reveals a strong correlation between the scale-up of Community Health Extension Workers and the availability of health services such as insecticide-treated nets (LLINs) for malaria and contraceptive prevalence.

Preventing and containing health crises: As has been demonstrated in the Ebola outbreak in Guinea, Sierra Leone, and Liberia, CHWs can play a critical role in the early identification of cases and response to control further spread of cases, while their absence can allow outbreaks to gain a foothold and spread. In Nigeria, the presence and re-purposing of CHWs focused on polio eradication enabled the country to quickly treat and isolate cases.[20] The turning point in Mali's 2014 Ebola outbreak

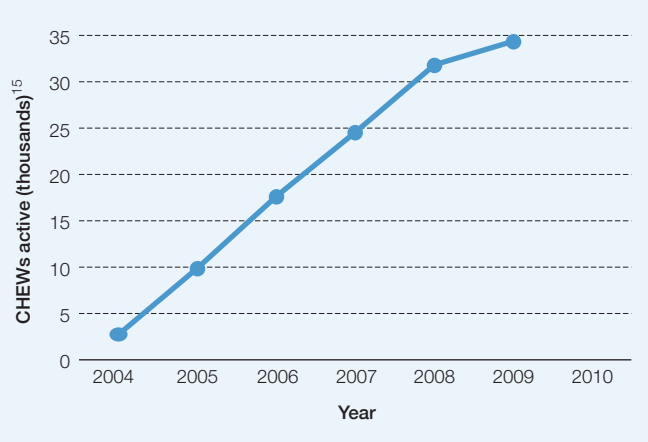
came when frontline workers were trained and deployed to conduct contact tracing and monitoring, which led to a dramatic reduction in symptom-to-isolation time, symptom-to-treatment time, viral spread, and Ebola-related mortality.[21] Uganda, which has had five outbreaks of Ebola between 2000-2012, has quickly contained each outbreak in part due to the country's CHW program (Village Health Teams), which enables central authorities to rapidly identify potential Ebola cases.[22] During crisis response, CHWs have the potential to play a critical role in channeling information to and from the field, in critical health tasks such as case identification and contact tracing, and in provision of care.

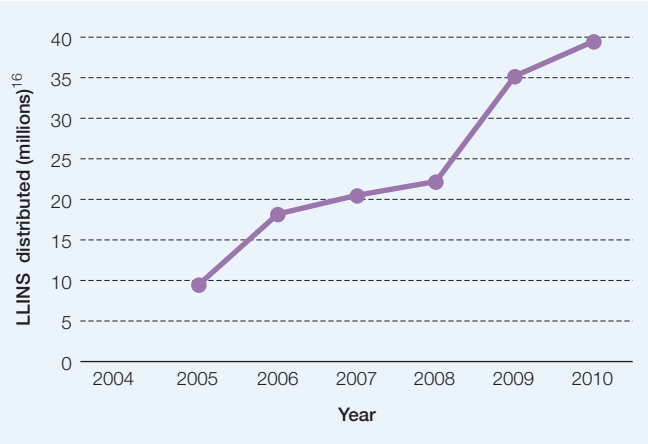
Complying with the IHR: The revised IHR were adopted by all WHO member states in 2005 as a commitment to work together to achieve global health security and health system resilience. These regulations, which came into force in June 2007, required countries to build eight core capacities related to national legislation, policies, and financing; coordination; surveillance; response; preparedness; risk communication; human resources; and laboratories.[23] However, as of 2014, only a third of countries self-reported that they had fully implemented IHR and built these core capacities.[24] CHW programs can support countries in meeting at least four of these core capacities—surveillance, response, preparedness, and human resources—as a critical step in building a resilient health system.

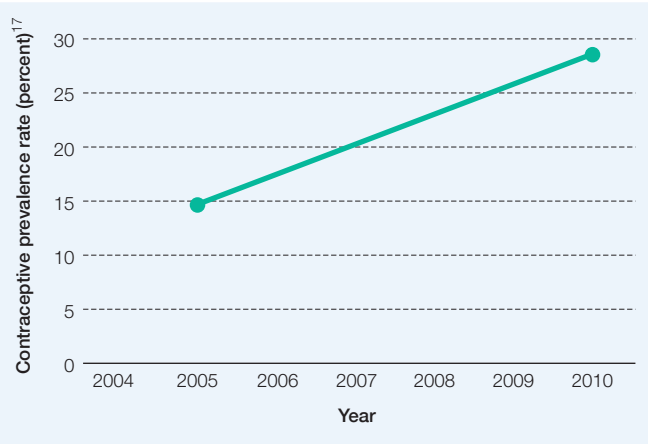
Eliminating disease: The lesson of polio is that disease elimination requires universal high quality coverage and surveillance at the household level, particularly in the most difficult to reach areas. Disease elimination campaigns will not succeed without vast numbers of CHWs to educate the community, administer vaccinations, distribute drugs, and provide or refer treatment.

Making healthcare affordable: As the population grows and demand for healthcare increases, containing costs will be critical for governments around the globe. CHWs can reduce system costs by providing preventive care and education, inexpensively treating uncomplicated cases, delivering life-saving interventions early and at low cost (such as community case management of childhood pneumonia and home-based neonatal care), and cost-effectively managing chronic diseases. For example, CHWs can provide directly observed therapy, short course (DOTS) care for TB, with the same level of quality at 35% lower cost than when CHWs are not utilized.[25] A recent research paper from the WHO has found that CHWs have a high likelihood of delivering essential health interventions in a cost-effective manner in low- and middle-income countries.[26]

Key statistics from the scale-up of Ethiopia's Health Extension Program[14]







PILLAR 2: CHWs provide a long-term ROI

The global health objectives described above cannot be achieved without significant scaling-up of CHW programs. An estimate from the Earth Institute at Columbia University places the total investment required to scale up approximately one million CHWs across sub-Saharan Africa at $3.1 billion per year.[27,28] In addition to achieving critical health objectives, an investment in CHW programs also yields meaningful economic benefits.[29]

Increased productivity from a healthier population: CHWs can deliver life-saving treatments for the leading killers of children across Africa including malaria, diarrhea, pneumonia, neonatal sepsis, and severe malnutrition. When these deaths are averted, children can go on to lead healthy and economically productive lives. Further, cases of these diseases can be prevented from emerging in the first place through education delivered by CHWs—particularly around breastfeeding, sanitation, and maternal education during pregnancy. **The total economic value of productivity gained from a fully-scaled backbone of CHWs across Sub-Saharan African could be as high as $19.4 billion per year.**

Avoiding the high costs of global health crises: As has been observed in the Ebola epidemic, health crises carry high costs to impacted countries as well as to international donors. The World Bank estimated that sub-Saharan Africa will lose at least $2.2 billion in economic growth in 2015 as a result of the epidemic and noted that nearly half of those employed in Liberia at the beginning of the outbreak were no longer working as of November 2014.[30] International donors committed an additional $2.7 billion of aid financing to support countries affected by the outbreak.[31] The World Bank estimates that a severe pandemic flu could cost the global economy up to $3 trillion and that a human pandemic in the future is "virtually inevitable."[32] Bill Gates has stated that "we've created, in terms of [disease] spread, the most dangerous environment that we've ever had in the history of mankind."[33] While CHWs cannot prevent future outbreaks from occurring, they can be instrumental in more quickly containing these health threats by reporting sentinel cases and by participating in early prevention and treatment efforts at critical inflection points. **Considering the contributions CHWs can make to more rapidly containing these catastrophic health crises, it is estimated that up to $750 million in economic losses per year could be avoided through CHW scale-up.**

Increased employment: While employment rates in sub-Saharan Africa are in line with global averages, the region has the highest rate of informal employment in the world—72 percent of non-agricultural employment.[34] Employment in the informal sector is often vulnerable and insecure. The formal employment of hundreds of thousands of CHWs across Africa, in particular the formal employment of women and young people, carries with it both an increase in economic activity as well as meaningful improvements in social indicators, including reduction of crime and expansion of education. These improvements are critical for achieving the "unfinished business" of the Millennium Development Goals and for achieving the likely targets of the Sustainable Development Goals.

Furthermore, these benefits may also apply in middle- and high-income countries, as global unemployment rates remain high, in particular among global youth. **The value associated with these benefits in sub-Saharan Africa—the multiplier effect of increased government spending resulting in increased formal employment and economic activity—yields a total estimated value of up to $1.6 billion per year.**

At full scale, the annual economic benefits of a strong CHW system across sub-Saharan Africa from the three effects noted above are estimated at $21.7 billion, suggesting an annual return of 10:1 against the estimated annual system cost of $2.2 billion.[35]

It can be difficult to compare the published ROIs across different interventions, as each analysis may include differing assumptions of program costs and benefits and may include or exclude beneficiaries to whom a return flows. In particular, there are currently a limited number of ROI analyses conducted for health interventions that calculate returns based on the economic productivity of lives saved (as this analysis does), thought such approaches are becoming more common. The primary objective of the ROI analysis shared in this section is not to encourage the reprogramming of funds from other health interventions, but rather to demonstrate that investments in CHWs and health broadly are sustainable and can result in long-term economic payback and growth.

This ROI model reflects system costs based on current levels of productivity and technology. With improvements in technology and performance, the same health impact could be achieved at lower cost, leading to an even higher return. As an example, in India's state of Bihar, the top 20% of Accredited Social Health Activists (ASHAs) were over 30 times more productive than those in the bottom 20%. As technology makes it easier to support, measure, and reward performance, productivity will rise and costs will decrease.[36]

Scale and integration of multiple diseases will also further reduce the cost of CHW systems. Dimagi, which has implemented more than 300 technology projects for CHW programs, has created a model based on its work which shows that the incremental cost per CHW for mHealth can be significantly reduced by over 50% when mHealth is expanded to include multiple disease programs, cadres of new CHWs, and vertical links to the other parts of the health system.[37]

PILLAR 3: Short-term cost savings to finance system scale-up

In addition to long-term economic returns on investment, CHWs can provide care that has been traditionally carried out by medical staff with more training and higher costs in facilities or in a community setting, thus increasing the immediate value of every dollar invested.

Vaccinations: Studies have shown that engaging CHWs to disseminate information and to promote uptake increases the value of investments in vaccination programs. One study from Ecuador found that the cost per immunized child was $32 when CHWs assisted other health staff vs. $778 when CHWs were not used.[38] A later literature review also found that the two most effective interventions for expanding coverage of immunization services in developing countries both involved CHWs: using them to promote uptake in communities and to conduct door-to-door canvassing.[39]

Neonatal care: CHWs can contribute to improving neonatal care by assuring that newborns get timely support for the most common issues threatening their health. In the SEARCH program in India's state of Maharashtra, the value of this approach was an unprecedented $6 per disability-adjusted life year (DALY) averted.[40,41]

Maternal Health: Family planning s a key part of maternal health is a highly effective way to improve maternal and child health, and improved family planning can result in near-term cost savings for ministries of health. CHWs play a vital role in family planning education and commodity distribution, including the provision of injectable contraceptives.[42,43]

Malaria: Studies from Nigeria and Zambia have shown that CHWs can safely and effectively provide treatments (Artemisinin-based combination therapy) for malaria.[44,45] Further, CHWs have been shown to be effective in administering rapid diagnostic tests for malaria, resulting in reduced wastage of malaria treatment courses.[46]

Community-based management of acute malnutrition: Multiple studies, including two from Bangladesh and Malawi, have found that community-based management of acute malnutrition provided by CHWs can provide greater value per investment spent than facility care.[47,48]

HIV: CHWs can provide the case management and continuity of care support functions necessary to prevent mother-to-child transmission of HIV infection.[49] One study showed an average cost of $45 per DALY averted for the primary regimen and $75 for what is now an outdated regimen with nevirapine.[50] A recent analysis based on data from rural South Africa found that community-based home HIV counseling and testing, a strategy that employs CHWs to support antiretroviral therapy uptake and adherence, can be very cost-effective and result in high coverage of testing and linkage to care compared with facility-based approaches.[51]

Tuberculosis: DOTS for tuberculosis provided by CHWs has been found to create higher value per investment than similar care provided in health facilities. A study from Tanzania found that DOTS provided by CHWs at the community level resulted in similar treatment outcomes as DOTS provided at the health facility, but CHWs delivered the care at 35% lower cost.[52]

While the value of cost savings each country achieves will vary according to each country's context, there is an opportunity for countries to achieve meaningful improvements in the value of their health investments by deploying CHWs to perform tasks currently performed in facilities. This is true for high-income countries as well as low-income countries: a 2012 study from the United States found that a CHW program in Arkansas resulted in savings of $2.92 to Medicaid per dollar invested in the program, and evaluations of other programs have found similar results.[53,54]

PILLAR 4: Investment in CHWs yields further benefits to society

Beyond the quantifiable financial benefits and the short-term cost savings CHWs can create, there are several significant benefits to society that investments in CHWs can confer.

Empowering women: Many countries (e.g., Ethiopia and Pakistan) have chosen to scale-up all-female cadres of CHWs, while other countries employ both men and women. In either case, the employment of significant numbers of women in skilled, visible jobs in the formal sector can represent a meaningful step towards gender equality and female empowerment, with important economic and social benefits to the woman herself as well as to her family and her community.

Reducing costs for patients: Those in rural communities without strong community health systems face a difficult calculus when they and their children show symptoms of illness. The cost of long journeys to health centers or private pharmacies are often prohibitive in both time and money, and there are often substantial costs (relative to income) for diagnosis, treatment, and medicines. CHW systems remove these costs by bringing much less expensive or free care to patients' doors and communities.[55]

Enabling governments to conduct civil registration and record vital statistics (CRVS): The technical linkages between CHWs and CRVS are clear and highly synergistic. The WHO notes that CHWs are a critical workforce for filling data gaps, recording births and deaths in their communities, and notifying the appropriate registration authorities.[56] Technologies such as mobile phones and Short Message Service (SMS) enable them to accurately store and rapidly transmit this data to local and national health authorities. A 2014 WHO Working Group technical task force report points out that despite the importance and potential of utilizing CHWs for this kind of data capture and transmission, this opportunity has not yet been fully realized because the size of CHW programs in many countries remains sub-scale due to funding restrictions.[57]

Enabling expanded non-health service delivery: In addition to the functions described in the next section of this report, CHWs could also be used to spread useful new agricultural practices and to support education (for example by ensuring that children are attending school). While these are not "core" CHW functions, they have been suggested in the past as potential areas where CHWs can be supportive. Of course, countries must be careful not to overload CHWs to ensure that they are effective in their core tasks.

Promoting strong, empowered communities: CHWs can play an important role in building and strengthening the communities in which they operate. CHWs are necessarily a visible part of the communities they serve, and their activities can bring communities together around shared goals of improved health. Further, CHWs can function as the voice of the community in the health system, serving as sources of two-way communication between higher-level health authorities and communities.

Conclusion

Strong, formalized CHW systems can save lives, increase access to care, contain health crises, and keep healthcare affordable, all while delivering a positive economic return, reducing unemployment, and empowering women. However, to capture these benefits, countries must ensure that their CHW system follows the example of best practice programs currently in existence across Africa, South America, and Asia. The following section describes the ten key principles of a CHW system that countries should follow to optimize their ROI.

2. Setting the Context for CHW Programs: Concepts and Principles

Background

Community-based primary health care as key to Universal Health Coverage: Expanding access to primary health care (PHC) has invigorated strategies aimed at strengthening health systems in order to more effectively meet population health needs, particularly for the underserved and hard to reach. Governments and the global health community are calling for and committing to more harmonized collective and collaborative approaches to establishing effective and sustainable frontline health service delivery programs that include CHWs.[58-62]

There is a growing consensus among global health leaders that strong community-based primary health care (CBPHC) systems are essential for achieving UHC. This is particularly true in low- and middle-income countries, meriting prioritization of investments by these countries.[63] Countries as diverse as Brazil, Ethiopia, and Thailand have already achieved substantial and equitable expansion in health coverage through this approach.[63] It is in this context that CHWs have been the subject of renewed interest and investment to address gaps and inefficiencies in health service delivery and to achieve global goals on maternal, newborn, and child survival.[59,65]

CHWs are recognized as an essential and promising component of integrated health systems and an important part of the frontline PHC team.[59,65,68] Nearly 40% of child and neonatal deaths globally are due to malaria, pneumonia, diarrhea, and sepsis—preventable diseases that CHW programs can combat, if well developed and adequately supported. Further, there is growing evidence CHWs contribute to improved health overall by effectively promoting healthy behaviors, encouraging appropriate utilization of higher levels of curative health services (through active-case finding and surveillance efforts), and providing important services within the community and the home such as diagnosis and treatment of childhood pneumonia and provision of family planning services.[65,66] The potential for CHWs to be a key member of the frontline PHC team for the prevention and control of chronic diseases such as hypertension, diabetes and mental health issues is also increasingly apparent, even in high-income countries.[66,67] It has been shown that CHWs both increase utilization and improve follow up and retention.

The World Bank, other international donors, and the global health community are considering opportunities to support governments as they develop and scale up CHW programs.[58-61] While more research is needed to understand leading practices and the situation of CHWs within frontline PHC teams, key challenges to CHW development and integration are already well-known.[59,61,63] These include, but are not limited to, weak national structures to coordinate CHW program implementation, lack of effective integration within health systems structures, tension regarding CHW alignment with community or health system structures, a multiplicity of terms, labels, and categories used to describe them, and undefined remuneration, incentive, and career structures. To counteract these challenges, there is an unprecedented need for coordinated and harmonized efforts by local, national, and global stakeholders.[58,59,64]

This section identifies guiding principles to support the development of CHW programs, including core considerations for the planning and implementation of CHWs as frontline providers in communities and households. Countries with systems following these principles will be assuring that the value of their investment is most fully realized, and as such may be more appealing as investment targets for external donors and financers. The following sets the context for the principles by situating existing work in this area and providing a background for CBPHC and CHWs:

Building momentum for harmonization from global to local initiatives

Multiple stakeholders at global, national, district, and local levels have taken highly diverse approaches to the design, development, and implementation of CHW programs.[59-62] The Global Health Workforce Alliance, in collaboration with a wide range of key stakeholders, reviewed these experiences in order to extract important lessons, identifying elements of success as well as challenges faced in scaling up CHW programs. Their findings acknowledge the importance of collaboration among multiple sectors and stakeholders.[58-61] Complementary

roles are essential to harmonizing investments, building synergies across CHW programs with communities, districts and countries, and integrating CHWs into frontline PHC teams and broader health system designs.[58,59] Important normative tools were developed to promote greater harmonization of stakeholder engagement.[59] These tools include principles of practice to guide collaboration of non-governmental organizations (NGOs) with national and regional health authorities as well as the CHW framework for partner action.

The Framework for Partners' Harmonized Support is based on three overriding principles called the "3-ONES APPROACH:"

- ***one national strategy*** that forms the basis for investment in CHW programming and alignment of efforts
- ***one national authority*** respected by all partners with appropriate delegation to the district level
- ***one monitoring and accountability*** framework that guides reporting and accountability by all stakeholders

A monitoring and accountability framework was presented to support national and international alignment of actions and collective goals[60] along with a final paper outlining knowledge gaps with suggested areas for further research.[61]

Integrated Community-Based Primary Health Care

Building resilient health systems rooted in community-based care provided by CHWs and buttressed by higher-level skilled, supported, motivated, and resourced frontline providers will be a prime determinant of the achievement of UHC.[58-60,65] Community-based primary health care (CBPHC) extends primary prevention, including public health, and primary care services to the community and household levels.[66] It involves coordination and care provision by integrated frontline PHC teams composed of CHWs, auxiliary nurses and clinical officers, trained midwives, graduate nurses, physicians, and other cadres. Importantly, while CHWs can have tremendous positive health impact on their communities, the extent of this impact depends on the support they receive from other levels of the health system and on their ability to refer patients to other care givers able to provide treatment for more complex conditions.

Community Health Workers

The term CHW serves as an umbrella term for a variety of lay health workers selected by and trained to work in their communities. A wide range of titles, roles, and scopes of work for CHWs.[59,61,64] They have been prepared as generalists or specialists in roles that may be characterized in a number of ways—for example, as health promoter, health extension worker, agent of change, or community health manager.[64] Increasingly, programs produce "formalized" CHWs with 6-12 months of initial training (along with regular and integrated refresher training), receive a salary, and provide a broad array of health interventions that may include curative care as well as preventive and/or promotional services.

These programs span a wide variety of contexts, including low-, middle-, and high-income countries. While less common, CHW programs in high-income countries have received growing attention in recent years as a way to contain healthcare costs by providing basic services cost-effectively as well as in contributing to the management of chronic diseases. In the U.S., CHWs in New York City, for example, manage diabetes and hypertension, and CHWs across the country provide expectant mothers with pre-natal care.[75,76]

As frontline workers, CHWs are unique in that they can be prepared for interventions to meet their community's specific health needs while at the same time serving as a critical link between the community and other services provided at higher levels within the larger health system. Their development and deployment must not be approached as a "quick fix" or "cheap option," nor are they a "catch-all" cadre of health workers.[64,69] Instead, they have been shown to be most effective when they are an integrated part of frontline PHC teams,[59,61,64,65] enabling the team's capacity to address community members' health needs across the full continuum of care.

CHWs have been shown to be effective in improving health outcomes while making valuable contributions to community development.[66] Access to health facilities is often constrained by distance, cost, and other social barriers.[59,64] CHWs broaden the reach of health services beyond facilities into communities and homes, thereby increasing access to basic health services and improving the health status of populations.

The following principles must be considered a "work in progress" that will be further honed as research, consultation, and harmonized investments contribute to the development of this field. A variety of frameworks are available to CHW program planners and implementers as they build and grow their programs,[69,70] and a recently completed reference guide is now available regarding questions and issues that might assist in effectively organizing CHW programs at scale.[71] Following such principles is critical for establishing strong CHW programs and for attracting the large-scale funding necessary to catalyze their scale-up.

Guiding Principles

1. Ensure national and local leadership in planning, executing, and monitoring

National political and technical leadership is critical to the success of development, implementation, and replication of CHW programs, and can extend the reach and effectiveness of health systems. Building programs that are responsive to local needs will require collaboration between government and community representatives, with support from sector specialists (in health, education, and social programs) as well as from invested civil society groups who can devise how programs will be designed, executed, and monitored.

If CHW actions are focused on high-impact interventions and community priorities, CHW programs will be valued by the communities they serve as well as by regional and national health authorities. For this reason, CHW program design should be defined by the country and local context, taking into consideration the burden of disease, community-perceived priorities, and availability of the most effective interventions that CHWs can provide, with an aim of achieving an appropriate balance of preventive, promotional, and curative services. Program design should then be anchored by a clear, formal job description that concretely defines CHW tasks and responsibilities.

2. Include CHWs as part of frontline PHC teams

The development and integration of CHWs as foundational members of the frontline PHC team will be critical to their success. Perceptions of CHWs as separate from the frontline PHC team, or a lesser health worker, will stand in the way of their ability to provide effective linkage to the full continuum of care. Such perceptions will impact supervision and mentorship, and may affect the way communities view and accept the services provided. For this reason, curricula for auxiliaries, clinical officers, graduate nurses, trained midwives, physicians, and others should include components describing and formalizing the role of CHW as an integral part of the frontline PHC team. Further, national, regional, and local health authorities should be sure to build, expand, and sustain appropriate referral pathways.

3. Engage communities in all aspects of CHW programs

A strong role for communities in CHW programs is key to their success. Community engagement is often poorly understood and poorly implemented.[64] Involvement and participation of communities at all levels of CHW programming—from health priority setting, to recruitment, monitoring, and evaluation—has been recognized as central to a community's buy-in and to successful ownership and implementation of the programs.[59,64,66,72]

4. Design and provide high-impact training for CHWs

Approaches to CHW competency and skills development are highly variable between countries and, at times, across programs within countries. Competence- and skills-based CHW training assures an adequate depth of knowledge as well as the capacity to perform tasks safely and effectively.[73]

The development of national CHW standards and competencies forms an essential component to guide CHW program development and entry-level training. Practice-based learning can be complemented with classroom-based learning and must include familiarization with how CHWs' roles link to and complement those played by other members of the frontline PHC team, and an understanding of how the broader health system functions. Training duration may range from several months to a year and is generally determined by the scope of the CHW role.[64]

Continuing education programs are essential to supporting ongoing knowledge and skills development. CHW participation in continuing education programs may enhance ongoing interest in their work while, at the same time, providing an opportunity for engagement with other CHWs and other health worker cadres. Linking continuing education programs to a discrete career advancement road map for CHWs (to become CHW supervisors and with bridges to other roles within the health system) will maximize the value of these investments by improving retention and enhancing service quality over the long term.

Suitably prepared and skilled educators who are guided by the best principles of adult learning, and who can calibrate training to respond to the literacy levels of trainees, are needed.[64] Training typically includes classroom, on-site, and hands-on approaches that utilize mixed teaching methods such as didactic techniques, hands-on practical learning, and group sessions with role-playing. A number of high-quality training materials are available that can be adapted to suit local needs.[77]

5. Ensure supportive supervision and mentorship for CHWs

To be effective members of the frontline PHC team, CHWs will require supportive supervision and mentorship from appropriately designated members of the frontline PHC team. Strong supervision and mentorship are indicative of a high value placed on CHWs and serve to legitimize CHW roles (both in their community and within the health system), provide regular oversight, identify training needs

and priorities, and reduce the sense of isolation that CHWs often feel.[59,60,64] Having full-time supervisors represents a promising approach to strengthening supervision and retention by potentially increasing output, productivity, and impact while providing career opportunities for CHWs.[78] While supervision and mentorship are seen as critical success factors, they are frequently the most under-resourced.[64]

There are at least five key success factors for effective, supportive supervision of CHWs:

1. *Understanding of the role:* Those providing supervision must understand the role of the CHW in the community as well as their own role as supervisor and/or mentor.
2. *Proper training:* Ensuring that supervisors understand their role and the role of CHWs in the community will require investment in the development of in-service and pre-service education programs for health professionals who will play an expanded supervisory and teambuilding role. They must be oriented to the role and given clear guidelines on where and how often to supervise.
3. *Proper incentives:* While remuneration for CHWs and their supervisors will vary across country contexts (see principle 8), CHW supervision should be recognized as a meaningful requirement of a health professional's time, and those individuals should therefore be appropriately compensated and incentivized.
4. *Sufficient time and resources to supervise "on the ground":* The supervisory role should be an acknowledged part of the supervisor's job, and they should be provided with the time, workload, and resources necessary for communication, transportation, and other aspects of their job in order to facilitate success in this role.
5. *Integration into health system:* As previously stated, CHW supervisors must be effectively integrated within PHC teams to be effective.

Over time, high-performing CHWs can be promoted to become supervisors, creating a natural career advancement opportunity. The initial cadre of supervisors could be other medical professionals, such as nurses or assistant nurses, or non-medical professionals with management experience. "Gold standard" programs, such as the Step Ladder program in the Philippines, integrate training curriculum across all cadres in the health system, including CHWs, nurses, midwives, and physicians, which ensures that supervisors recruited from other cadres have the necessary experience to effectively supervise CHWs.

6. Develop high-quality integrated management for CHWs

An integrated approach to management is necessary to enhance CHW effectiveness. Managers need resources and comprehensive support (i.e., financial, organizational, and political) in order to build enabling environments that facilitate CHW performance. Managers should establish reasonable workloads that take into account local conditions and realities. They also need to have an adequate reserve of supplies available, including equipment and drugs. CHW performance and the resulting health outcomes will be greatly influenced by the caliber and quality of management supervision, resources, and mentorship.

7. Ensure CHWs are provided with adequate resources, tools, and supplies

Needs assessments to determine the resources, tools, and supplies necessary to provide effective care should form part of annual monitoring and evaluation. These may include practice guidelines and care protocols, teaching tools, data-collection instruments such as health registers, cell phones or other mobile devices, and drugs. To assist with movement and recognition within their communities, CHWs may be provided with uniforms, nametags, backpacks, and writing/recording materials. Local contexts may demand further investments, such as transportation support or construction of a village health post. The supervisors will also require support themselves to monitor, evaluate, and support the activities of the CHWs.

8. Effectively incentivize and remunerate CHWs

In many cases, CHWs will come from poor communities where they have financially precarious lives. There are many factors that will influence their work, including financial, professional and social motivations. Experience across many countries has shown that full-time CHWs will not be motivated and retained if they are not compensated appropriately and fairly for their work. The programs that have been sustained over time are moving towards "formalization" of CHWs with one year or more of training, full-time work, and a formal salary.

Approaches to remuneration and incentives may be country-specific and may include salaries, performance-based incentives, in-kind gifts, access to micro-credit, participation in cooperatives, and so forth. Non-financial incentives are important contributing factors to CHW retention, but they are insufficient without monetary incentives. Non-financial incentives may include access to career advancement opportunities, release from community work obligations, recognition by the community, privileges for personal health care, and continuing education and training.[74]

Village Health Workers in Mwanza, Malawi, practice counseling couples on antenatal care and health center delivery.

CREDIT: JEANEL DRAKE / PARTNERS IN HEALTH

9. Develop a sustainable financing solution for CHWs

There are a variety of ways and means that CHWs are being financed. Some countries finance them through their fiscal budget and place CHWs on the government payroll. Others use mixed financing channels that combine government financing with support from external development assistance, as well as non-governmental sources. Examples exist of CHW programs integrated into non-governmental service provider networks that are contracted with government or public funding agencies such as national health insurance funds. There are also new opportunities for innovative financing approaches to mobilizing resources for CHW programs, as described later in this report. Regardless of the specific financing path taken, countries should not utilize user fees to cover CHW start up or operational costs, as stated by the WHO. Such user fees may hinder coverage, utilization, and impact, and as such represent a barrier toward attaining universal health coverage.[79]

10. Monitor and evaluate CHW programs on an ongoing basis

Monitoring and evaluation are essential components of CHW program implementation and management. Targets and indicators of success, developed as part of the overall CHW program framework by the MOH staff and potentially in conjunction with outside experts, will assist with regular oversight and heighten the comparability of findings, lessons learned, and exemplary practices, while pointing to gaps in knowledge. It is important that data move both "up the chain" from CHWs as well as back down the chain to return to CHWs, their supervisors, and local program coordinators in order to support operational and quality improvement. Such feedback loops should operate at every level of the state and national health care system.

Integrating CHW Programs into New Health Care Delivery Models

There is no "one-size-fits-all" CHW as a frontline PHC team member. The growing literature and dialogue highlighting CHW roles, program designs, experiences, leading practices, and outcomes within varied contexts is steadily contributing to the CHW lexicon in terms of what is working well, what needs to work better, and what the gaps are in knowledge about CHW program functioning. Enhanced model development will benefit from harmonized efforts in monitoring and evaluation of current and future CHW interventions as well as the effective dissemination of findings.

The annex includes a selection of national CHW program examples that help to illustrate how these principles have been effectively realized in an assortment of contexts.

3. CHW financing: Developing a pathway to sustainably finance system costs

Introduction

While CHW programs can offer a strong ROI, there are several challenges facing governments wishing to scale up national CHW programs, and financing is among the most significant. A national CHW program can require significant upfront investment to scale up, in addition to long-term recurring costs from adding a large public workforce to the government wage bill. A 2013 report from the One Million Community Health Workers campaign estimated that meeting the community health workforce needs of sub-Saharan Africa could cost up to $3.1 billion per year.[80]

Several countries have successfully planned, built, and financed national CHW programs using paid, formalized CHWs. This section includes information on typical costs encountered by countries in scaling up a CHW program, traditional sources of financing used to fund the scale-up of these systems as well as potential new sources, and the steps required to assemble a financing "pathway" for countries wishing to scale up a new CHW system.

Costs of a CHW system

CHW system costs can be split into start-up and recurring costs:[81]

Start-up costs for CHW programs can be highly variable from country to country depending on program design, and can include many components such as planning costs, training costs, and development of any needed infrastructure—physical infrastructure (e.g., health posts) and information technology infrastructure (e.g., payroll and human resources systems to manage public workforce). An example of specific start-up costs encountered by Ethiopia in the scale-up of their Health Extension Program is included later in this section.

Recurring costs are primarily comprised of CHW salaries, drugs and supplies, ongoing supervision, and refresher trainings. Data from several countries in sub-Saharan Africa having paid, national CHW systems indicate that a typical CHW salary is approximately $80 per month, and that these salary costs represent between one tenth and one third of the total program cost.

Program	No. of CHWs	CHWs / population[82]	Monthly salary	Annual cost of salaries	Annual program cost	Salaries as % of program cost
Ethiopia[83]	38,000	1:2,500	$83	$37.8 million	$397 million	10%
Liberia[84]	4,405	1:1,000	$77	$4.1 million	$10.8 million	38%
Malawi[85,86]	10,451	1:1,600	Approx. $80	$9.7 million		
1mCHW[87]	1,029,163	1:900	$80	$988 million	$3.1 billion	31%

The below table provides further information on the values of selected start-up and recurring costs for Ethiopia's Community Health Extension Program (HEP) and its associated Health Extension Workers (HEWs). Importantly, these costs are specific to the Ethiopian context and may vary widely in other countries.

Component	Expenses	Cost (USD)
Phase 1: Preparation		
Developing HEP overall guideline – the design, structure, staffing, selection criteria for HR, etc.	Consultancy fees	6,750.00
	1-2 week workshop expenses for initial draft	18,700.00
	5-day workshop expenses to review draft	12,325.00
	5-day workshop expenses to review draft and produce final	12,325.00
	Editing and printing costs	30,500.00
	Subtotal	80,600.00
Defining HEP package (service package) and developing manuals (16 manuals)	Consultancy fees (5 consultants)	33,750.00
	1 month workshop expenses to develop the packages	44,200.00
	1 week workshop expenses to review the documents	12,325.00
	Editing and printing costs	488,000.00
	Subtotal	578,275.00
Developing curriculum and training materials	Consultancy fees	6,750.00
	1-2 week workshop expenses	18,700.00
	5-day workshop expenses	12,325.00
	Editing and printing costs	30,500.00
	Subtotal	68,275.00
Selecting/establishing training centers including equipping and furniture	Equipment and furniture costs	Existing Technical Vocational Education and Training (TVET) institutions were used for training.
	Books, reference, and reading materials cost	n/a
Training of trainers	"Top up" / allowance for master trainers	n/a
	Salary for master trainers	n/a
Phase 2: Initial Training		
Training of HEWs for one year	Training facility, salaries and allowances for trainers, allowances for HEWs, materials, transportation	Overall tuition fee is $650 per HEW
	Subtotal	24,700,000.00
Phase 3: Implementation		
Health post construction[88]	Construction costs	75,000.00
	Water supply and electricity costs	2,550.00
	Equipment and furniture costs	17,940.00
	Subtotal	95,490.00
Human resource deployment per Health Post	Salary	37,800,000.00
	Uniforms	47,500.00
	Housing	Community contribution
	Subtotal	38,275,000.00
Planning, monitoring and evaluation, and supportive supervision	Meeting expenses, salaries for supervisors, transportation and allowances (estimate)	2,000,000.00
Integrated refresher training	IRT Training for all HEWs (38,000 HEWs, 1,267 sessions)	13,265,490.00
	Training manuals (3 manuals at an average of 250 pages)	855,000.00
	Subtotal	14,120,490.00
Family folder	$.40 per household folder	6,400,000.00
	Grand Total	**86,318,130.00**

Traditional methods of financing CHW programs

Traditionally, governments have financed the scale-up of CHW programs from two sources: donor funding and domestic resources, including current revenue and borrowing mechanisms.

In some countries domestic government resources fund the majority of the CHW program—for example, in Pakistan where 89% of the Lady Health Worker program has been funded by the government and only 11% from donors (1995-2003).[89]

Particularly in sub-Saharan Africa, however, donor funding to implementers and governments has been critical to establishing a CHW system in the majority of countries (e.g., in Ethiopia and Malawi). In Rwanda, a country with a well-established CHW system, 82% of the CHW system was funded by international donors as of 2012 (see table below), though projected economic development and continued strong domestic investment in the health sector may reduce this dependence over the next 5-10 years.

Funding sources for community health, Rwanda: 2011-2012 expenditure[90]

Domestic	**18%**
Rwandan government	16%
Domestic NGOs	2%
International	**82%**
Foreign NGOs	22%
Bilateral donors	52%
Multilateral donors	9%
Total	**100%**

Donor Funding: Donor support to governments and implementers working on rolling out community health interventions is provided through multi-lateral funders such as the Global Fund to Fight HIV/AIDs, Tuberculosis, and Malaria (Global Fund), bilateral funders, and private philanthropic institutions. While a specific analysis or review of all funding programs with regard to community health interventions does not yet exist, it is known that significant donor funding for disease-specific programs is used to support delivery at the community level. Foundation funding from organizations such as the Bill & Melinda Gates Foundation is often used to evaluate new delivery elements (e.g., how to best supervise or motivate CHWs[91] or increase demand for them). Probably the largest source of bilateral funding clearly designated for CHWs has been provided by the Canadian Department of Foreign Trade and Development (DFATD) through its $100 million commitment to the "Catalytic Initiative to Save One Million Lives," which—in partnership with UNICEF—supported Integrated Community Case Management (iCCM) of diarrhea, malaria, pneumonia and acute malnutrition in six high-burden countries from 2007-2012.[92,93]

A Millennium Villages CHW near Mbarara, Uganda

CREDIT: FROG DESIGN

Domestic resources: Government funding of CHW programs is particularly important from a long-term sustainability perspective. While the percentage of program support that is provided by governments varies, the primary domestic sources of financing for CHW programs are general national government revenues, sub-national government revenues, borrowing mechanisms, and contributions (including in-kind) from local communities/individuals. For example, the Ethiopian Health Extension Program recruited local communities to fund and construct health posts across the country.[94]

When governments fund national CHW programs, federal funding is often combined with sub-national level funding, including regional/state or municipal funding. For example, in India, the National Rural Health Mission funds 90% of the ASHA program, with states asked to contribute the remaining 10%.[95]

International financing institutions, including the World Bank and regional development banks (e.g., the Inter-American Development Bank, the African Development Bank, and the Asian Development Bank), have loaned significant amounts of funds to governments for health programs.

A few governments have also successfully used the World Bank's Health Results Innovation Trust Fund (HRITF) to increase government resources for community health programs by leveraging national International Development Association (IDA) allocations. For example, in Burundi, $3 million in IDA funding was spent as part of an approximately $85 million Health Sector Development Project to build capacity for Community Health Actors across all health zones.[96] Similarly, the Global Finance Facility (GFF) in Support of Every Woman Every Child will be launched in July 2015 with at least $600 million in grant financing committed and an expected 4:1 leverage through IDA funding.

Traditional donor financing for CHWs

Type	Main channels	Scale (estimate)	Comments/examples
Multilateral disease funding	• The Global Fund to Fight AIDS, Tuberculosis, and Malaria • GAVI	◕	• Funding opportunities in all channels: AIDS, Tuberculosis, Malaria, and Health Systems Strengthening • Overall it is estimated that approximately 25% of all Global Fund funding is for Maternal and Child Health activities[a]
Bilateral disease funding	• PMI • PEPFAR	◑	• Funding for community case management of malaria (in some cases as part of an iCCM program). For example, in FY2013, approximately 61,000 health workers at the community and facility level were trained in the use of ACTs[b]
Bilateral	• DFATD (Canada) • USAID (US)	◕	• Now-expired $100 million grant to the Catalytic Initiative to Save a Million Lives
Foundations	• Gates Foundation	◔	• Past investments to test the effectiveness of certain program elements, for example, the inSCALE program in Uganda • Current investments in government capacity and financing integration (e.g., the iCCM Financing Task Team) and in specific country programs
Corporations	• GlaxoSmithKline	◔	• 20% reinvestment of profits from least developed countries into the health workforces of those countries

◕ Large-scale funding ◔ Lower-level funding

[a]SEED, Thematic review of GF contribution to MDG 4&5

[b]8th Annual PMI report

How to access and increase the value of these sources

These traditional financing opportunities should not and will not exist forever, and to expand their value in the near term, governments are encouraged to take advantage of disease programs and structure "co-financing deals." Disease-specific funding channels can be leveraged to fund integrated programs at the community level. While there are often donor restrictions on what can be funded within a disease program, funding can often be combined with other disease-specific channels to create an integrated program. Disease-specific funders are increasingly seeking co-financing arrangements with other donors to increase their value for money and to support holistic programming. The President's Malaria Initiative (PMI), for instance, highlighted in its 8th Annual Report that it had combined programs with USAID and UNICEF in Zimbabwe, the Democratic Republic of the Congo (DRC), Myanmar (Burma) and Senegal to deliver iCCM services. Likewise, the 2008 reauthorization and 2013 extension of the President's Emergency Plan for AIDS Relief (PEPFAR) encouraged PEPFAR support to also focus on health systems strengthening, with a goal of training and retaining 140,000 new health care workers (including CHWs).[97]

Malawi, Zambia, and Ethiopia are examples of countries that have used funds designated for disease programming for community health efforts, particularly through Global Fund support. As one example, Malawi utilized its Round 5 Global Fund Health Systems Strengthening proposal to recruit, train, and employ 4,200 new Health Surveillance Assistants (HSAs) as well as to invest in other health workforce cadres.[98]

Ethiopia has taken an especially pro-active approach to utilizing existing donor funding sources to scale and strengthen its Health Extension Worker (HEW) program. Beginning around the time that the Government of Ethiopia announced it would increase coverage of HEWs at health posts around the country, Ethiopia began to request that the Global Fund support HEW refresher training. Incorporation of such costs has continued and expanded. By Ethiopia's New Funding Model proposal (submitted May 2014), Ethiopia had included approximately $12 million for HEW training (including pre-service training, integrated refresher training, and career development training), approximately $6 million for integrated supportive supervision for HEWs, and another $10 million for digitizing community health information (to increase HEW productivity and impact). In addition to these training, supervision, and health management information system costs, and in line with other countries, Ethiopia also requested that the Global Fund cover support for expansion of iCCM, which includes trainings for HEWs (approximately $2.5 million) and malaria commodity costs for services delivered at Health Posts by HEWs (approximately $6 million). Ethiopia has also sought funding from other existing mechanisms, such as GAVI and MDG donor-pooled funding mechanism to support HEW training and budget support for basic services to cover HEW salary costs.[99] According to the Fund Portfolio Manager for Ethiopia, much of Ethiopia's success in raising substantial sums has stemmed from strong government leadership, a well-articulated vision of success, and consistent delivery of results.

As seen in the examples above, in order to take full advantage of this opportunity, countries have to proactively shape these opportunities and create strong financial gap analyses and financing plans for their CHW strategies. These analyses and plans can be used to apply to different donors and, in combination, create a comprehensive approach.

On the basis of a Memorandum of Understanding between the Global Fund and UNICEF, the Global Fund, UNICEF, and a few other partners recently made a significant push to support countries with these types of co-financing structures. The iCCM Financing Task Team supported countries with financial gap analyses that were used to apply for iCCM funding as part of the Global Fund Malaria grants and helped to identify other donors to fund remaining or Global Fund-ineligible gaps. This process mobilized a total of more than $150 million for over seven countries for iCCM, with approximately 50% coming from the Global Fund and approximately 50% from other donors such as UNICEF and the Reproductive, Maternal, Newborn, and Child Health (RMNCH) Trust Fund.[100] In the Democratic Republic of the Congo (DRC), for example, the Global Fund has committed approximately $4 million toward DRC's overall need; UNICEF has put forward approximately $6 million, and the United States Agency for International Development (USAID), the U.K. Department for International Development (DFID), and the WHO's Rapid Access Expansion 2015 (RAcE) project (with funding from Canada) funded several hundred thousand more. The World Bank has also made significant investments into DRC's community health system. This significant co-financing from a range of donors resulted from effective donor coordination and alignment of activities.

New and emerging methods of financing CHW programs

Beyond the traditional methods of financing for health programs, there are several new and emerging models for how governments can fund CHW programs. These models are based on an innovative financing analysis that seeks to answer two questions: first, *who the beneficiaries of the CHW program are*, and second, *how these beneficiaries can be included in supporting the program costs*. As the world transitions into the post-2015 development era, leading thinkers in development finance have noted that because of the massive investment needs of the Sustainable Development Goals—*trillions*, not billions of dollars—there is a need to employ new sources of capital and capacity beyond traditional official development assistance (ODA).[101]

The following section outlines the four key beneficiaries of CHW programs—

Patients, the ***Private Sector***, ***External Donors***, and the ***Domestic Government***—and emerging methods to involve these beneficiaries in supporting CHW program costs. Then, steps that governments can take to access these new sources of financing are discussed. These opportunities are presented in increasing order of magnitude of potential funding available (from low to high).

Patients

Entrepreneurial cross-selling, a model in which CHWs sell health commodities (typically at a below-market price) and some household goods as individual entrepreneurs. The revenue generated from such a model could probably subsidize up to 10-20% of the total cost of a national CHW program.[102] This model is most appropriate for communities with some disposable income and is not advisable if the existence of any fees would depress demand for medicines or health services. An existing example of this model is Living Goods, an NGO based in Uganda that runs a private entrepreneurial network of CHWs that provide health education, diagnose and treat childhood illnesses, and deliver essential medicines alongside nutrition products and durable goods such as solar lamps and improved cookstoves. A randomized controlled trial evaluation of Living Goods demonstrated an over 25% reduction in under-five child mortality in the areas where it was operating compared to control areas. According to Living Goods, their model covers 100% of the cost of products, with customers paying a below-market price. Their model provides a performance-based income for CHWs through product sales, helping to overcome key challenges around motivating and paying CHW salary costs over time. Further, Living Good's model currently covers 50% of field costs (including start up and recurring costs such as training, supervising, and equipping CHWs) and at scale can cover about 45% of total country costs (including salaries for senior leadership and administration).[103]

Private sector

Private sector trust fund, which could be capitalized either via contributions from consumer health companies distributing in Africa (matched by a philanthropic contribution from the global business) or via support from employers who "adopt" local communities to fund CHW scale-up for villages near their plants or headquarters. These models are most feasible in countries with a robust pharmaceutical market, including some multinational entities, and/or in countries with a consolidated private sector (where a few large employers account for a large share of Gross Domestic Product (GDP)). While these models may require significant lead-time to establish, they offer an innovative way to "expand the pie" of resources available

to finance CHW programs. A small-scale pilot of this is underway in Ethiopia where sugar factories have committed to funding the salaries of CHWs in their surrounding villages.

AngloGold Ashanti (AGA), a global gold mining company headquartered in South Africa, provides an example for how health investments from local employers can generate a positive return. In 2005, AGA's Obouasi Mine Hospital in Ghana diagnosed over 6,000 cases of malaria monthly among employees, contractors, and dependents, resulting in a monthly case incidence rate of 24% for employees and contractors and posing a meaningful risk to AGA operations in Ghana. The next year, AGA instituted a malaria control program centered on indoor residual spraying of insecticide throughout the Obouasi Municipal District. By 2009, not only were malaria outcomes significantly improved in the target area—with a reduction in cases of over 80%—but the average monthly work days lost for the company due to malaria dropped by over 95%, from 6,983 days per month to 163 days per month. The average monthly malaria medication costs at the Mine hospital dropped by 88%, from $55,000 per month to $6,700 per month.[104]

Private health provider partnerships, which could follow several models based on shared value with private sector health providers. As countries begin to implement national health insurance programs, and private providers seek to attract patients and expand their revenue from insurance payments, the demand mobilization role performed by CHWs will become valuable to those providers. Private equity firms have considered supporting CHW program costs for this reason and such investment may become more common in the medium-term.

External donors

The Global Financing Facility (GFF), which is a key financing platform of the United Nations Secretary-General's Global Strategy for Women's, Children's and Adolescents' Health. It is a country-driven financing partnership that brings together, under national government leadership and ownership, stakeholders in reproductive, maternal, newborn, child and adolescent health, to provide smart, scaled and sustainable financing to accelerate efforts – including community health workers and other essential interventions - to end preventable maternal, newborn, child and adolescent deaths by 2030. The GFF has received contributions of $1.1 billion to date from the Bill and Melinda Gates Foundation, Canada, Japan, Norway and USAID. A groundbreaking new GFF partnership with the World Bank Group's International Bank for Reconstruction and Development (IBRD) aims to raise funds from capital markets for countries with significant funding gaps for reproductive, maternal, newborn, child and adolescent health, and expects to mobilize between $3 to $5 dollars from the private capital markets for every $1 dollar invested into the GFF. The Government of Canada is jumpstarting this initiative with a $40 million investment towards two focus areas, one that prioritizes strengthening front-line health systems and scaling-up of community health workers, and another that focuses on the control of malaria to reduce child mortality.

Domestic government

Human capital bonds, in which CHW scale-up costs (e.g., recruitment and training) are financed via the issuance of a bond to private investors by a government or international financial institution which then lends the proceeds of that bond to a government for use in improving human capital in health. Governments and international financial institutions could investigate bringing in other donors to provide performance payments to governments if agreed-upon targets are met. With the involvement of an international finance institution and possible performance-based payments, governments could access low-cost capital to fund the short-term costs of CHW program investments which they would then repay over an extended period.

How to access and increase the value of these sources

Accessing these new and emerging sources of revenue requires a new skill set and mindset from what is required to access traditional sources. In particular, establishing innovative financing arrangements with the private sector and negotiating human capital bonds will require a "deal team" sponsored by the ministry of health that is equipped and empowered to negotiate financing arrangements for ministry programs. Such a team would ideally include:

- at least one individual with a background in finance or investment banking
- one individual from the ministry of health with CHW program-specific knowledge
- one individual from the ministry of health's planning and budgeting function
- and one individual from the ministry of finance.

This approach would follow the example set by the Power Africa program, a partnership to increase access to electricity in Africa led by the governments of the United States of America, Tanzania, Kenya, Ethiopia, Ghana, Nigeria, and Liberia along with the U.S. and the African private sector. Through this program, donor and government investments have leveraged over $20 billion in private sector capital for new and off-grid projects in sub-Saharan Africa.

Tying it all together: Building a CHW financing pathway

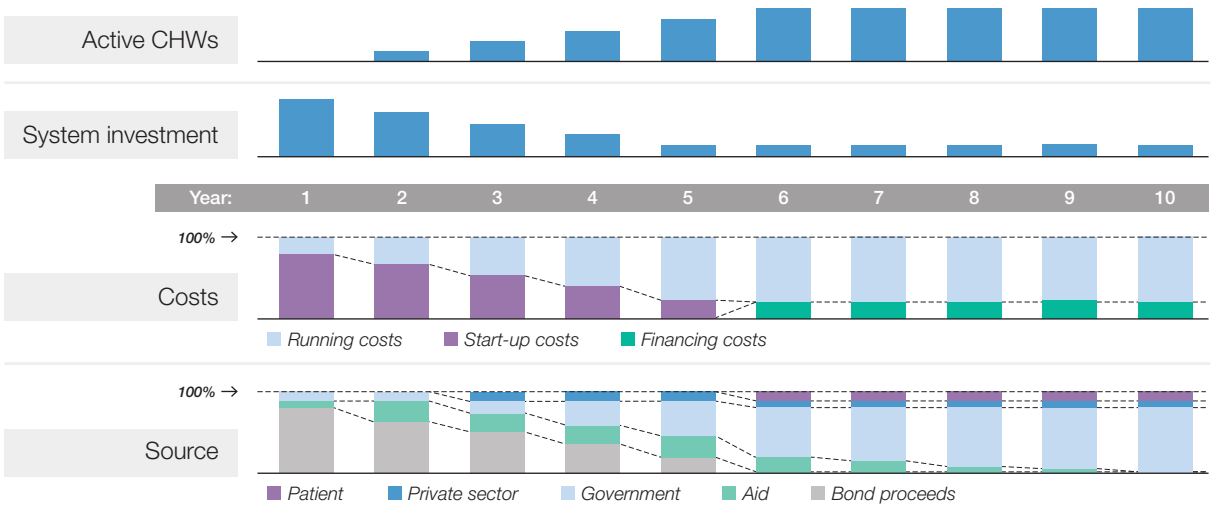
Countries wishing to build a CHW program from the ground up can follow a four-step process, outlined below, to develop a CHW scale-up plan and "pathway" to finance the plan over time.

Step 1: Determining need

The first step in developing a CHW scale-up plan is identifying (i) the target total number of CHWs required at full scale, (ii) the number of years required to scale-up the system, and (iii) the number of CHWs to be trained and made active in each year of scale-up. This process—of setting the strategy at the highest level—should be produced in a workshop (or series of workshops) led by the ministry of health, along with additional implicated state entities (potentially including ministries of finance and civil service), and in-country partner organizations. The output of this step will be a year-by-year plan, for the next 5-10 years, of the number of CHWs to be trained and activated in each year. Historically, foundations and development agencies have supported countries in covering the costs of these workshops, and the One Million Community Health Workers campaign and other organizations have offered technical assistance in developing these plans.

A generic financing pathway template

ILLUSTRATIVE



Step 2: Costing year-by-year

After determining the annual number of CHWs to be trained and active each year, these plans can be costed to support budgeting and planning conversations. These costing exercises can also be conducted in a workshop or series of workshops with the ministry of health and partner organizations. Countries may choose to use existing costing frameworks (such as those developed by the One Million Community Health Workers Campaign), look to the experience of peer countries, or develop their own costing altogether. The output from this phase is a year-by-year budget to implement the program. Again, foundations and development agencies may be able to offer in-kind expertise and also support the costs of these workshops.

Step 3: Breaking down costs by source of fund

Once a plan has been developed and costed, the work of developing a financing pathway begins. The output of this step will include, for each year, the percentage of that year's total cost targeted to come from grant aid, loans, domestic government resources, the private sector, and patients. While the specifics of each pathway will vary based on each country's macroeconomic factors (e.g., GDP growth rate, ratio of public debt to GDP, and the size and number of large local companies), in general countries should consider using low-cost debt to finance the start-up costs of CHW systems (recruitment, initial trainings, and infrastructure investments) as well as leveraging domestic resources and the private sector for recurring costs. Domestic resources can stretch beyond the national treasury and can (and should) include support from sub-national regional entities and local communities (even if limited to in-kind contributions).

Step 4: Identifying mechanisms

Once targets have been set for the amount of funding to be drawn from each source by year, ministry teams should determine which mechanisms can be used to fulfill these targets (including those listed earlier in this report as well as any other appropriate financing options).

Performance metrics and CHW financing

Access to financing—particularly financing from international sources—is encouraged to be tied to performance metrics which are tailored to each country's context. Progress toward achievement of such indicators could serve as a trigger for funding to be released and for a reduction in the original amount owed. This could be structured through a "buy down" arrangement, in which a third party commits to repay a portion of a borrower's debt obligation if certain conditions or performance targets are achieved.

Country performance on these indicators might also be tracked through a scorecard and highlighted in international events, similar to the way progress on malaria is now championed by the African Leaders Malaria Alliance (ALMA). The CARMMA scorecard currently tracks many metrics related to maternal and child health outcomes, and this could serve as or be a useful input to such a tracking process.

All indicators should be refined for country-specific situations, and agreed upon with funders. Below are some suggested indicators that may be helpful to incorporate within a community health program scorecard. Ideally, these should also be linked to the key principles noted in section II above ("Setting the context").

- "Input" tracking metrics
  - Existence of a comprehensive national primary health care training program that ensures both theoretical and practical training components
  - Number of CHWs passing iCCM knowledge test after 6 months in training (or other service package as deemed most critical for the country's health per their national health and CHW strategy)
  - Number of CHW supervisors receiving adequate training and compensation for their supervisory work
  - Percentage of CHWs with a direct supervisor whom they interact with at least monthly
  - Number of patients referred by CHWs to higher-level facilities and treated there for either antenatal, labor and delivery, and/or postnatal care.
- Coverage metrics:
  - Household contact: Percentage of households reporting contact with a CHW in the previous three months
  - Vaccinations: Percentage of children vaccinated
  - Newborn health: Percentage of children receiving a post-natal care visit at home
  - Family planning: Percentage of women using modern contraceptive methods (as defined by the Demographic Health Survey)

CASE STUDY: Liberia

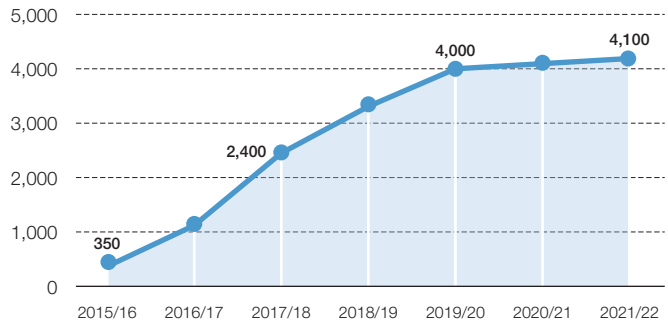
Building a Resilient Health System

Liberia's national CHW program has emerged as a vital need in the wake of the 2014-2015 Ebola crisis that devastated Liberia's health system, infecting over 10,600 Liberians and resulting in 4,800 deaths. Demonstrating strong leadership and political will immediately following the worst of the outbreak, the Government of Liberia led planning efforts and convened stakeholders to update and clarify priority interventions for health sector investment in Liberia's National Health Policy (2011-2021). With the aim of assuring universal health coverage through a more resilient and equitable health system, a trained, supervised and incentivized CHW program was featured as a priority intervention in the resulting National Health Sector Investment and Recovery Plan (2015-2021). The following figures are projections included in this plan and as such are still subject to change.

Plans for a National CHW Program

A National CHW program can extend primary health care services and disease surveillance functions to some of the most remote communities, where the lack of health workers left Liberians in these settings particularly vulnerable during the Ebola outbreak. The Ministry of Health convened relevant Ministry divisions, County Health Teams, and community health technical partners to begin the planning process to launch this program. Drawing from local pilots and international best practices, the program will recruit, train and deploy over 4,000 CHWs and over 200 facility-linked clinical supervisors in five years to extend access to basic primary health care services to the over one million Liberians living further than five kilometers away from a health facility. Existing community-based volunteers not recruited as CHWs will continue to offer a limited package of referral and health promotion services in communities closer to health facilities.

Projected Active CHWS



Financing the National Launch and Scale-up

Launch and subsequent running costs for the national CHW program are estimated at $65 million over the next seven years (inflation adjusted). The Government of Liberia is identifying and assessing short, medium and long term financing options from bilateral/multilaterals, the private-sector, innovative financing mechanisms and philanthropic capital to support the program, with the aim of phasing in greater domestic financial support over time. By closely analyzing costs, investing in program quality, conducting robust evaluations and developing powerful and targeted investment cases, the Government of Liberia expects to secure a diverse portfolio of long-term funding to launch and sustain the national CHW program.

Projected Percent of Total Cost (Average 2015-2021)

Challenges Ahead

Challenges to the program's success include ensuring consistent and coherent program implementation and evaluations across diverse settings, developing sustainable career pathways for CHWs, and securing long-term, needs-based financial support from domestic and external resources.

4. Recommendations

As stated in the Executive Summary, the authors of this report propose the following key recommendations to take forward the concepts articulated above:

To government leaders in sub-Saharan Africa:

1. ***Develop country-specific investment cases and ROI analyses, and prioritize domestic investments in CHWs as part of national health plans that fully integrate CHWs into the primary health care system, ensure supportive supervision of CHWs, and build reliable referral pathways***

To attract traditional donors as well as sources of innovative financing, countries should outline the role that community health can play in achieving critical health objectives and clearly specify the likely maternal and child health outcomes, productivity improvements, employment opportunities, and near-term cost savings likely to result from such investment. These investment cases may function not only to attract international sources of funding but would also be helpful in rallying domestic political support for allocating a greater share of domestic budgets toward community health systems and workers. Countries wishing to scale up CHW programs are also strongly encouraged to include these plans in their investment cases for the GFF or other national planning efforts.

2. ***Proactively seek innovative financing arrangements with funders, especially those that utilize new grant sources, low-cost debt financing and private sector capital***

It is important that countries are aware of the existing and emerging financing mechanisms for community health and that they prepare applications and proposals to pursue such funding.

3. ***Allocate strong capacity and cross-sectoral "deal teams" at the country level to define, structure, and negotiate financing pathways with local stakeholders and the international financing community***

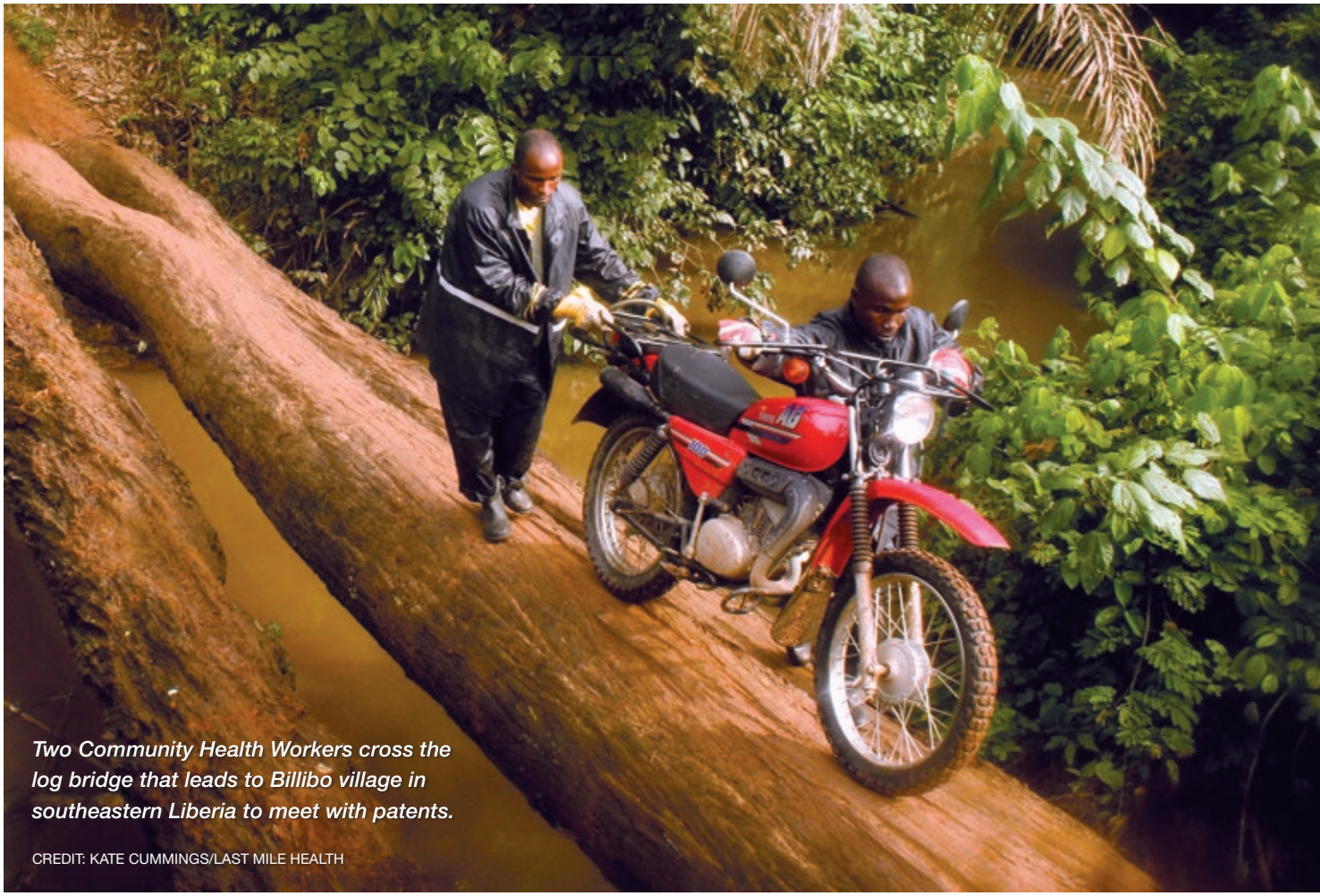
In addition to being aware of funding opportunities, countries should allocate or hire teams capable of engaging with international funders as well as with national and sub-national financing authorities to craft pathways that include cost forecasts as well as likely sources of funding. Such teams would take responsibility for addressing likely funding gaps. In partnership with ministries of finance and health, these teams would also be responsible for ensuring that any funding generated for community health is indeed disbursed for those purposes.

There are several existing organizations with the mandate of enhancing government capacity on related topics and skills which could potentially support governments in this effort. These organizations include Born Free Africa; the Learning, Management, and Governance program of Management Sciences for Health; Tony Blair's African Governance Initiative; the Clinton Health Access Initiative; and the Aspen Institute's Leadership for the Last Mile program. These programs can serve as valuable resources to governments as they work to build or allocate their own capacity to develop these financing pathways.

To the international financing community:

4. ***Fund the start-up costs of these programs by making grant or low-cost, performance-based debt financing immediately available—e.g., through health bonds—to countries wishing to scale up CHW systems***

This financing may take on a range of forms, including the issuance of a Human Capital Bond that countries can draw on for their CHW programs, but any financing mechanism should include a performance-based aspect. This new funding could be used to kick-start the planning



Two Community Health Workers cross the log bridge that leads to Billibo village in southeastern Liberia to meet with patents.

CREDIT: KATE CUMMINGS/LAST MILE HEALTH

and implementation of a national CHW program or for upgrading and strengthening an existing program.

Leaders may also engage a dedicated investment banking team to finalize the structuring of various financing mechanisms and to engage with both countries and investors.

To bilateral and multilateral health donors with disease-specific funding:

5. ***Allow for and actively promote the use of disease-specific funding, which has been crucial for CHW scale-up to date in many countries, for integrated CHW plans***

There are multiple examples of disease-specific funding benefitting CHW scale-up and integrated programming, such as those that have been supported by the Global Fund. We applaud these efforts, and encourage them to not only continue, but to continue at even greater scale. Further, donors should actively coordinate with each other around community-level intervention areas for which alignment of funding cycles, indicators, and supply chains would offset existing fragmentation challenges.

To the global health community broadly:

6. ***If requested by countries, establish a unit or team to support the country-specific "deal teams" to access available financing options and build best-practice CHW systems, with deeper analysis of CHW financing sources to date as a first step in this work***

Countries might also benefit from "on call" experts to help them with financing their CHW initiatives and with guiding technical aspects of program strategy. A "Financing Support Unit" (FSU) could serve as a bridge between ministries of health, ministries of finance, and global stakeholders—including international donors, financing institutions, corporate partners, universities and researchers, and international NGOs. The FSU would complement existing support from partners such as

UNICEF, the WHO, the One Million Community Health Worker Campaign, and international and local NGOs, whose support thus far has been primarily at a high-level around health system design or mostly technical and focused on implementation. This effort would also build on the recent work of the iCCM Financing Task Team which has sought to leverage Global Fund resources to solicit new sources of investment for Integrated Community Case Management.

At a global level, the FSU could help global donors understand the value of CHWs, guide investment, and engage lenders to deploy financing mechanisms. The unit might also work with the private sector to broker country-specific and regional financing partnerships, with corporate investment in CHW programs supporting strong and healthy workforces and realizing a strong ROI.

At a country level, the FSU could help countries understand and articulate the return on investing in CHWs, and guide them on financing pathways and grant applications. In addition, the FSU might help countries assess their overall health system and access to health among rural and hard-to-reach populations and define specific objectives. Finally, the FSU might help develop ministry of health capacity around frontline health worker topics and help track program performance across countries.

To successfully carry out such a proposed mandate, the FSU would need access to a broad set of tools. These tools could include case studies of global and country-level investment, access to financing mechanisms and funding, country-specific fiscal space analyses, and clear models for designing high-impact programs, building capacity, and monitoring results.

Such a team might include a global leader able to engage at a senior level with donors, lenders, and corporates as well as a handful of high-caliber staff. The team should have knowledge of traditional and innovative financing mechanisms, experience in ROI analysis, and expertise in health economics and health financing. On the strategy side, this team should include members with experience in strategy development, expertise on health systems, experience with capacity development, and knowledge of how to develop accountability mechanisms such as scorecards.

Ideally, the FSU would be based within an existing regional institution or network such as the African Development Bank, ALMA, the Harmonization Working Group of Roll Back Malaria, or even one of the emerging Africa-based centers focused on CHWs and primary care. Wherever located, the FSU should be easily accessible and accountable to countries, able to benefit from the host's existing infrastructure and networks, and endowed with sufficient resources to meet government demands for support. Annexed to this report is a business plan for the FSU which proposes high-level budget requirements and operations in more detail.

7. Develop metrics for effective CHW program implementation that could also guide financing support and create a data collection mechanism and scorecard to add transparency on CHW program impact

An additional objective of the FSU, or of another entity, should be to create transparency around the impact of countries' community health programs and progress toward key maternal and child survival targets. Such an approach could be modeled after the ALMA scorecard which collects and transparently shares data on countries' performance against key indicators for effective malaria programs. These metrics could be built around the "Concepts and Principles" included in section II of this document (Setting the context), refined by countries, partners, and other experts, and potentially reported on an annual or more frequent basis to a broad range of global health stakeholders. The CARMMA scorecard, which tracks many of these indicators, is a useful tool that could fulfill this purpose with further support and data.

APPENDIX 1.

CHW ROI: Methodology, Assumptions, and Limitations

The *Case for Investment in CHWs* section of this report (Section I) notes an annual "return on investment" (ROI) for CHWs of 10:1. The following section describes the methodology, assumptions, and limitations of this modeling approach.

Methodology and assumptions

The ROI presented in Section I of this report estimates the *costs* and *benefits* of adding approximately 734,000 CHWs across sub-Saharan Africa (SSA). This number represents the gap between the current number of CHWs in SSA (approximately 295,000)[1] and the total number of CHWs required to meet the demand for services (approximately 1,029,000) as projected by the One Million Community Health Workers Campaign in 2013.[2,3]

The output of this model is the annual return on investment in any given year, *once the program has reached full scale (but only representing the return created by the incremental 734,000 CHWs)*. For example, once sub-Saharan Africa has a fully-scaled CHW program (say, in 2025), that year and every year forward will require investment of $2.2 billion and will generate $21.7 billion in economic returns from these additional CHWs. In the near term, the return on investment would be lower, as with any undertaking for which initial investment is required to generate forecasted benefits.

Costs

To estimate the annual cost of running a program with 734,000 CHWs, we have used the assessment prepared by the One Million Community Health Workers Campaign. In its technical task force report,[4] the campaign estimates that a system of approximately 1,029,000 CHWs would cost approximately $3.1 billion, or approximately $3,000 per CHW. Multiplying this value by 734,000 results in a total estimated annual incremental cost of approximately $2.2 billion.[5,6]

Returns

The model calculates three types of economic returns—productivity, insurance against future health crises, and increased economic activity from increased employment:

Productivity: The primary driver of economic returns of CHW programs is increased productivity from mortality averted, or lives saved. To size the effect of this benefit, we have utilized the methodology employed in several previous papers, including "Advancing social and economic development by investing in women's and children's health: a new Global Investment Framework" and "The investment case for reaching 2015 malaria targets in sub-Saharan Africa." In this methodology, the economic value of lives saved is equal to the number of lives saved multiplied by the expected future economic output of each life saved.

Number of lives saved: To determine the number of lives saved as a result of scaling up 734,000 CHWs across SSA, we have used the Lives Saved Tool (LiST), which projects future deaths by year based on certain user-provided inputs, including the coverage rates of health interventions. We ran two LiST projections for each country in SSA: first, we ran a "baseline" projection, which projected the number of child deaths each year from 2015-2035 with no changes to current coverage rates or any pre-loaded inputs. Second, we ran an "intervention" projection, which projected child deaths over the same time period, but assuming increased coverage rates for five key health interventions often provided by CHWs: clean postnatal practices, ORS and Zinc for diarrhea, Amoxicillin for pneumonia, and ACTs for malaria. We assumed that the addition of a fully-scaled CHW system (as proposed by the One Million Community Health Workers campaign) would increase the coverage rates of these interventions by 15 percentage points in each country. Data on the effect of CHWs on increasing coverage rates of health interventions is limited; however the authors feel this is a conservative estimate, particularly as it contains no assumed increase in coverage of other key services commonly provided by CHWs, including handwashing and sanitation promotion, pre-natal care, or access to family planning services. The scale-up of

A CHW checks a child for signs of malnutrition outside of Louga, Senegal

CREDIT: FROG DESIGN

these interventions was assumed to take place evenly over 5 years, after which no further increase in coverage was assumed. The number of lives saved each year was calculated as the difference between the baseline and intervention projections.

In 2035, the number of lives saved across all countries in SSA as calculated via this approach was 300,494—which is the number we have used this as the estimate of the annual number of lives saved as a result of CHW program scale-up.

For comparison, a forthcoming paper by Dr. Henry Perry, a senior scientist at Johns Hopkins School of Public Health, indicates that achieving 90% coverage of interventions delivered by CHWs would save up to 3 million lives per year. The differences between the estimates are due to differing scope (Perry's estimate assumes a broader set of interventions, significantly high increases in coverage rates, and worldwide geographical scope). However, this highlights the degree to which the estimate used in this analysis is conservative, and the potential for further impact with broader scale-up of CHWs.

Potential economic impact of each life saved: We estimate that each individual life saved would have contributed approximately $64,645 in economic activity over his or her lifetime. This estimate is based on four factors:

- The current GDP per capita of sub-Saharan Africa: $1,738[7]
- A projection that this GDP will increase by 2.5% per year[8]
- An estimate that this child will enter the workforce at age 18 and exit the workforce at age 56 (average life expectancy in sub-Saharan Africa)[9]
- Utilization of a discount rate of 5% to calculate the net present value of the future cashflows from these projected lifetime earnings[10,11]

In total, saving 300,494 child lives per year at an estimated economic value of $64,465 per life results in approximately $19.4 billion in productivity gained per year.

Insurance: To calculate the expected value of CHWs averting or more quickly containing health crises, we have attempted to determine first what the economic impact of coming health crises might be, and then the degree to which CHWs might be able to reduce this risk.

We have based our estimate of the potential economic impact of coming health crises on a World Bank report indicating that a coming severe global pandemic could cost the world economy up to $3 trillion in foregone economic growth.[12]

To estimate the degree to which CHWs may be able to reduce this impact, we have evaluated the extent to which the global health workforce will be increased by these additional CHWs. The WHO has estimated the global health workforce to be 59 million (as of 2006).[13] As such, the addition of 734,000 CHWs would increase this workforce by 1.2%. We have assumed that this workforce would reduce the impact of a health crisis by a proportional amount, which represents $37 billion of foregone growth avoided due to CHWs.[14]

We estimate that such an event could occur in the next 50 years, resulting in approximately $750 million per year in amortized impact.[15]

Employment: To estimate the value of increased employment, and the resulting increase in economic activity, we have taken a simplified approach. We have used the concept of economic multipliers, which holds that a government spending program has additional impact on GDP, because when one employs individuals and pays them a salary, they then use that money to purchase goods and services, and so on. The World Bank estimates that the spending multiplier for government spending programs in developing countries is 0.7.[16] Applying this multiplier to the estimated $2.2 billion annual total cost for this program results in a further $1.6 billion in economic value per year created via the employment of the 734,000 CHWs.

Summing these benefits ($19.4 billion, $750 million, and $1.6 billion) results in a total annual return of $21.7 billion. When compared to the required annual cost ($2.2 billion), this represents an annual return of nearly 10:1.

Limitations

Beyond the limitations discussed above, this approach has further limitations.

Not incorporating scale-up costs: For simplicity, we have calculated an annual return of the program at full scale, rather than a true "return on investment" over a defined period of time. However, the long-term nature of these returns (which accrue over the productive lives of children whose deaths have been averted due to the efforts of CHWs) suggests that the return would be evaluated over a long timeframe as well (e.g., 30+ years). With this extended period of evaluation, the one-time scale-up costs of the program would represent a small fraction of the total costs, and the resulting return would be nearly identical to the annual return shared here.

Not representing a country-by-country return: Each country will experience a different return based on the specifications of their CHW program and their baseline health indicators. In some countries, the return may be higher than 10:1, in others, the return may be lower. For this reason, countries should conduct their own analyses, perhaps using this template as a baseline, to estimate their specific expected value of investment.

Conclusion

The modeling conducted for this report has limitations—inherent to any high-level, regional estimation exercise. However, care has been taken to ensure that the ROI figure presented in this report represents a true potential return for governments that choose to invest in CHW programs. While the authors of this report cannot guarantee that every country will experience a 10:1 return on their investment in CHWs, they can confidently assert that countries choosing to make this investment will experience at minimum a positive return on a fully-scaled CHW system. Lastly, it should be noted that this analysis takes a purely economic perspective—that is, the inherent value in human lives saved, which outweighs any economic case, is not included as part of this assessment.

APPENDIX 2.

Financing Support Unit

As proposed in *Strengthening Primary Health Care through Community Health Workers: Investment Case and Financing Recommendations*, a Financing Support Unit (FSU) could be created to work with global partners on CHW financing and to provide high-impact, timely guidance on financing and program strategy to countries that are prioritizing scale-up of their CHW programs and that seek out such assistance. The FSU could be housed within an existing organization that has complementary and aligned capabilities and objectives.

The FSU will require a modest operating budget of approximately $1.5 million for two years of activity, but could return to countries many times this in financing leveraged for CHW program scale-up.

Vision:

The FSU will serve as a catalytic link between ministries of health and global stakeholders (such as banks, investors, international finance institutions, financial advisory firms, and financing mechanisms such as the Global Financing Facility) on critical topics of financing and program strategy related to the scale-up of community health workers as part of integrated primary health care systems. This unit would begin at a small scale with an initial focus on CHWs, but over time, could be broaden to support countries on financing other aspects of their health systems.

Services provided to the global community and countries:

In pursuit of this vision, the FSU will provide specific, value-added services to the global community and to countries (at their request).

These services could include:

1. Financing support

- *At a global level,* the FSU might—
  - Refine the global investment case for CHWs in order to help donors understand the return on investment of supporting CHW programs
  - Work with donors and funders to further define and deploy innovative financing mechanisms to support CHW systems, including a potential human capital bond
  - Find opportunities for the private sector to meaningfully contribute to country-specific financing opportunities, e.g. by conceptualizing and setting up local employer trust funds
- *At the request of countries,* the FSU might—
  - Support countries in defining the value proposition of investing in CHW programs (ROI analysis)
  - Assist countries in developing a financing pathway appropriate to the country's fiscal space, economic situation, and ability to draw on donor and national funding

2. Program strategy and financing capacity

- At the request of countries and in conjunction with other partners (e.g. UNICEF, the 1MCHW Campaign, etc), the FSU could be available to advise on CHW program goals, milestones, and implementation pathways; primarily as they relate to financing
- Further, the FSU could be available to advise countries on best practices for developing dedicated MOH capacity focused on community health, including potential "deal teams" capable of accessing traditional and innovative financing channels

To best provide these financing and program strategy services, the FSU will first undertake rigorous analysis of the pathways that countries with existing programs have thus far taken to finance their CHW programs.

Goals and targets:

Global

- By the end of 2017, the FSU will have refined the overall ROI for CHW programs and attracted a set amount of additional public funding for CHW programs above the current baseline
- By the end of 2017, the FSU will have successfully attracted a set amount of additional private sector financing to support CHW program scale-up

Country-specific

- By the end of 2017, the FSU will have worked with a set number of countries to develop country-specific investment cases and to support the development of country-specific financing pathways

Regional

- By the end of 2016, the FSU – in consultation with ministries of health and key technical groups – will have developed a CHW program scorecard and will have released the first version

Principles:

The FSU will adhere to the following principles when working to support countries and at the global level

1. ***MOH request:*** The FSU team will work at the request and invitation of governments
2. ***Partners:*** The FSU will support existing partners and strengthen their work with the MOH
3. ***Flexibility:*** In offering support, the FSU will balance best practices with known country context and the specifics of the operating environment
4. ***Transparency through data:*** The FSU will gather and use data to help countries track performance and to advocate for funding from global donors

Resources required:

The FSU will require approximately $1.5 million over a two year timeline to cover staff salaries (director, manager, and five staff members), travel costs to support countries, IT costs, and office space. The FSU could be Africa-based and embedded within an existing organization, which will offset some travel, set up, overhead, and infrastructure costs.

Collectively, the team members who comprise the FSU should have a range of skills and experiences. These should include investment banking and debt financing structuring experience, experience working with existing global health donors (such as the Global Fund), knowledge of labor economics, private sector experience, and the ability to communicate and "strike deals" with local employers and multi-national companies.

In addition to resources, there are several requirements this unit must meet to be successful: first, being free of a bureaucracy (and being itself managed in an unbureaucratic way); second, receiving a high-level mandate from the countries it exists to serve; and third, having support from a strong political leader with access to leadership of domestic and international funding sources.

Governance:

The FSU will be overseen by a Board that includes country representatives, multilateral and bilateral funders, NGOs, and the private sector.

APPENDIX 3.

Abridged Case Studies of Large-Scale Community Health Worker Programs

Bangladesh, Brazil, Ethiopia, India, Malawi, Nepal, Rwanda, Zambia

Authors:

Henry Perry
Johns Hopkins University

Katy Bvosburg and **Na'im Merchant**
Last Mile Health

Claire Qureshi and **Meghan Gilfillan**
Office of the UN Special Envoy for Financing the Health MDGs and for Malaria

July 2015

Note:

Case studies are based primarily on two sources, as well as author knowledge:

1) Case studies created for the recently released *CHW reference guide: Developing and Strengthening Community Health Worker Programs at Scale: A Reference Guide and Case Studies for Program Managers and Policy Makers*.
Available: http://www.mchip.net/sites/default/files/mchipfiles/CHW_ReferenceGuide_sm.pdf

2) The Advancing Partners and Communities *Community Health Systems Catalog: Community Health Programs.*
Available: https://www.advancingpartners.org/resources/chsc/chs#sthash.oYOGgknd.dpuf)

Abbreviations

CHW	Community Health Worker
FWA *(Bangladesh)*	Family Welfare Assistant
HA *(Bangladesh)*	Health Assistant
CHCP *(Bangladesh)*	Community Health Care Provider
SS *(Bangladesh)*	Shasthya Shebika
SK *((Bangladesh)*	Shasthya Kormis
CHV	Community Health Volunteer
BRAC *(Bangladesh)*	Bangladesh Rural Advancement Committee
CHA *(Brazil)*	Community Health Agent
PSF *(Brazil)*	Family Health Strategy
HEW *(Ethiopia)*	Health Extension Worker
HDA *(Ethiopia)*	Health Development Army
CHP *(Ethiopia)*	Community Health Promotor
HEP *(Ethiopia)*	Health Extension Program
ANM *(India)*	Auxiliary Nurse-Midwife
AWW *(India)*	Anganwadi Worker
ASHA *(India)*	Accredited Social Health Activist
MPW *(India)*	Multipurpose Workers
ICDS *(India)*	Integrated Child Development Services
HSA (Malawi)	Health Surveillance Assistant
VHC (Malawi)	Village Health Committee
AEHO (Malawi)	Assistant Environmental Health Officer
VHW (Nepal)	Village Health Worker
NHSP (Nepal)	Nepal Health Sector Program
MCHW (Nepal)	Mother and Child Health Worker
FCHV (Nepal)	Female Community Health Volunteer
ASM (Rwanda)	Agente Santé Maternelle
CHA (Zambia)	Community Health Assistant
MDG	Millennium Development Goals
MOH	Ministry of Health
FP	Family Planning
ANC	Antenatal Care
PNC	Postnatal Care
ORS	Oral Rehydration Solution
MOHFW	Ministry of Health and Family Welfare
MCDMCH	Ministry of Community Development, Mother & Child Health
MCH	Maternal and Child Health
PHC	Primary Health Care
IMCI	Integrated Management of Childhood Illness
iCCM	Integrated Community Case Management
HSDP	Health Sector Development Program
ITN	Insecticide-treated Bednets
MMR	Maternal Mortality Rate
CPR	Contraceptive Prevalence Rate
CPBF	Community Performance-based Financing
HP	Health Post
HC	Health Center
DH	District Hospital
PBF	Performance-based Financing
M&E	Monitoring and Evaluation

Introduction

As countries continue to work toward the maternal and child survival targets under the Millennium Development Goals (MDGs) and also take up the post-2015 Sustainable Development Goals agenda, improving access to high-quality health services remains a key focus. Community Health Workers (CHWs) are a critical part of addressing this challenge because of their ability to extend the reach of health programs beyond facilities and deliver basic preventive, promotional, and curative interventions as part of community-based primary health care (CBPHC).

As the Concepts and Principles section of the report *Strengthening Primary Health Care through Community Health Workers: Investment Case and Financing Recommendations* outlines, CHWs should not be seen as a "catch-all" cadre of health workers that can assume additional roles every time new funding or political opportunities arise. The CHW role must be tailored to the operating environment and country context as well as to the evidence regarding intervention effectiveness. Specifically, CHWs need a comprehensive, clearly defined scope of work. When supported and given a clearly-defined scope of work, CHWs become powerful components of frontline systems – promoting health and providing basic preventive and curative services.

The Concepts and Principles section of the report further illustrates that there is no "one-size-fits-all" CHW model and lists a set of principles that governments should incorporate in programs in a contextually appropriate and balanced manner. The case studies below demonstrate how countries have attempted to implement the principles outlined in section II of this report. Table 1 provides specific illustrative examples of where countries have included these principles into program design. Included are case studies from Bangladesh, Brazil, Ethiopia, India, Malawi, Nepal, Rwanda, and Zambia. These studies highlight the diversity of CHW programs as well as the essential tools for successful and effective community-based care. A key theme regarding the importance of integrating CHWs into frontline health systems emerges, as does the importance of thoughtful training and deployment so that diverse cadres can work in complementary roles. Table 2 at the end of this document summarizes the details of each program for ready comparison among all programs.

Clinical Mentor Tarnue Jallah screens for anemia in the village of Tempo, Liberia.

CREDIT: ANDY SECHLER/ LAST MILE HEALTH

Table 1: CHW Principles and Specific Examples

This table is meant to be illustrative and not a systematic review of the CHW programs.

Principle	Country example
1. Ensure national and local leadership in planning, execution, and monitoring	• In Ethiopia, the Health Extension Worker Program has strong political support from the Federal Ministry of Health • India's national and state level governments have been key participants in developing, refining, and funding India's cadres of CHWs • In Malawi, the MOH determines policies, standards, and guidelines • In Zambia, CHWs are formally recognized as a cadre
2. Include CHWs as part of frontline teams	• In Brazil, CHWs are highly integrated into frontline teams and are the cornerstone of the national Primary Health Care program. • In Ethiopia, Health Extension Workers work with the Health Development Army to extend promotion and services
3. Engage communities in all aspects of CHW programs	• In Bangladesh, Brazil, Ethiopia, Malawi, Nepal, India, Rwanda, and Zambia, CHWs address the specific needs of communities by delivering appropriate services and tailored messages
4. Design and provide high-impact training for CHWs	• In Bangladesh, Brazil, Ethiopia, India, Malawi, and Zambia, CHWs receive adequate training to assure development of the knowledge, skills, and behaviors necessary to complete their tasks
5 Ensure supportive supervision for CHWs	• In Bangladesh, Brazil, Ethiopia, Malawi, Nepal, Rwanda, and Zambia, there is supportive supervision available to motivate, encourage, coach, and performance manage CHWs.
6. Develop high-quality integrated management for CHWs	• In Ethiopia, a comprehensive district (woreda)-level supervisory team provides oversight for the Health Extension Workers and their activities at the health posts
7. Ensure CHWs are provided with adequate resources, tools, and supplies	• In Bangladesh, Brazil, Ethiopia, Malawi, Nepal, Rwanda, and Zambia, CHWs are provided with the resources, tools, and supplies needed to ensure their impact and perform their duties/responsibilities
8. Effectively incentivize and remunerate CHWs	• In each of the countries of Bangladesh, Brazil, Ethiopia, India, Malawi, Nepal, and Zambia, there is at least one paid cadre of CHWs • In Malawi, Rwanda, India, Ethiopia, and Bangladesh, cadres of volunteer CHWs receive a variety of professional and social incentives
9. Develop a sustainable financing solution for CHWs	• In Brazil, states must allocate at least 12% of their total budget to health and municipal governments are required to spend 15% of their total budget on health (a requirement met by 98% of municipalities) • In Ethiopia, financing for CHWs stems from national and sub-national government entities, bilateral and multilateral donors, NGOs, private contributions, and user fee revenues • In Rwanda, the government increased its spending on essential health services since 2005 and spending is projected to reach 15% of the government's total budget this year; community-based health insurance schemes have allowed for 92% of the population to be insured
10. Monitor and evaluate CHWs programs on an ongoing basis	• In Malawi, there is extensive monitoring data that indicates communities are utilizing the sick child services, for example • In Rwanda, cell coordinators monitor activities, supplies, and drugs and compile all reports from CHWs for submission to the In-Charge of Community Health on a quarterly basis

BANGLADESH

Provided here are a description of the government CHW program (Family Welfare Assistants, Health Assistants and Community Health-Care Providers) as well as a very large NGO CHW program, the Bangladesh Rural Advancement Committee (BRAC) Shasthya Shebika Program.

PROGRAM 1: Government Family Welfare Assistant and Health Assistant Programs

Bangladesh has approximately 56,000 government-supported CHWs grouped into three primary cadres. They provide a range of support from family planning to vaccination delivery to care for pneumonia, diarrhea, malaria, and TB.

Background

Bangladesh has a history of using CHWs to support health services. At present there are approximately 219,000 CHWs in Bangladesh, with roughly 56,000 of these being government CHWs. This case study will describe the government programs for Family Welfare Assistants (FWAs), Health Assistants (HAs), and Community Health-Care Providers (CHCPs).

Implementation

FWAs were introduced in 1976 and now number 23,500. HAs were introduced in 1995, whereas previously they had worked as vaccinators or malaria control workers, with 20,615 HAs at present. CHCPs were introduced in 2010 to staff community health clinics and now number 12,991.

How Is the Program Financed?

Although external donors, particularly the World Bank, provided significant support for the FWA program during the early decades, all three CHW cadres are supported with government funds at present. The program for community clinics and CHCPs has been highly political from the start, having been a signature project of the Awami League government that was closed down when another government came to power in 2001. When the Awami League returned to power in 2008, the clinics were reopened.

Training

FWAs receive 21 days of training followed by on-the-job training. HAs receive training of similar length. CHCPs receive 12 weeks of training.

Roles/Responsibilities

FWAs visit households every 2 months, register couples, motivate them for family planning, distribute contraceptives, and refer clients for antenatal and postnatal care. HAs provide immunizations, vitamin A capsules, distribute packets of oral rehydration salts (ORS), and detect and treat pneumonia, diarrhea, malaria, and tuberculosis. CHCPs provide ANC and PNC, treat cases of pneumonia, diarrhea, and anemia, and give injectable contraceptives.

Incentives

FWAs receive a government salary of US$98 per month. HAs receive a government salary of US$103 per month. CHCPs receive a government salary of US$110 per month.

Supervision

FWAs are supervised by male supervisors with whom they meet twice per month. HAs are supervised by Assistant Health Inspectors each of whom is responsible for five to six HAs. CHCPs are supervised by the Subdistrict Hospital Manager.

Impact

The strong presence of both government and NGO CHWs in Bangladesh is widely perceived to have made an important contribution to Bangladesh's remarkable progress in reducing under-5 mortality and maternal mortality.

Link to Health Sector

The goal is to have one FWA for every 4,000–5,000 persons and one HA for every 6,000 people.

PROGRAM 2: The BRAC Shasthya Shebika Community Health Worker

BRAC's Shasthya Shebika program in Bangladesh is a unique model that expects CHWs to undertake health promotion activities for which they are not remunerated while allowing CHWs to sell essential medicines and other health products at an attractive price. This provides the CHWs with enough profit to make their work financially worthwhile.

Background

The Shasthya Shebika (SS) Program is rooted in a gendered perspective – focusing on the need for female health workers in Bangladesh to address socio-cultural barriers to accessing health care services. BRAC first adopted the Barefoot Doctor approach, used in China a half-century ago, training male paramedics but then shifted the approach in the early 1980s to focus on women with lesser training who were often illiterate.

Implementation

In 1990, there were 1,080 SSs, and by 2008 the number had grown to 70,000. At present, there are approximately 120,000 SSs.

How Is the Program Financed?

SSs earn an income from selling supplies such as oral contraceptives, birthing kits, iodized salt, condoms, essential medications, sanitary napkins, and vegetable seeds at cost plus a small markup. In addition, they receive financial incentives for good performance that are based on achieving specific objectives during that month, such as identifying pregnant women during their first trimester. Supervisors verify and monitor performance during their visits to communities, where they have the chance to talk with village women. Like most other program activities at BRAC, the SS Program is subsidized by income-generating activities that BRAC operates at scale, including commercial enterprises in handicrafts, milk and poultry production, printing, and banking.

Training

SSs receive 4 weeks of basic training by the local BRAC office. They are trained to treat common medical conditions, to promote a wide variety of healthy behaviors, and to refer patients to preventive and curative services as appropriate.

Roles/Responsibilities

During monthly household visits, SSs provide health promotion sessions and educate families on nutrition, safe delivery, family planning, immunizations, hygiene, and water and sanitation. They also use this time to sell health products such as basic medicines, sanitary napkins, and soap. BRAC introduced the sales component to provide a small profit as an additional incentive and motivation. When someone has an illness that the SS cannot manage, the person is referred to government health centers or a BRAC clinic. They also identify persons with symptoms of tuberculosis, sending sputum specimens for testing at a government health facility. For those who test positive, SSs supervise treatment at their homes.

Incentives

SSs are given small loans to establish revolving funds which they use to purchase health products that they later sell at a small markup.

Supervision

Direct supervision is conducted by higher-level CHWs called Shasthya Kormis (SKs). Other program staff at BRAC also provide supervisory support.

Impact

The program is self-sustaining and is widely perceived to have made an important contribution to Bangladesh's remarkable progress in reducing under-5 mortality and to controlling TB nationally.

Link to Health Sector

SSs link into the formal MOHFW system in several important ways. They mobilize women and children in their catchment areas to attend satellite clinic sessions when a mobile government team comes to give immunizations and provide family planning services, usually once a month. They also mobilize their clientele to participate in the national government's special health campaigns such as vitamin A distribution and de-worming. They also serve as outreach workers for these campaigns.

SSs are supervised by SKs, who are also recruited from their communities. SKs are paid a sum equivalent to about US$40 per month to supervise the SSs and perform ANC in villages. The SKs, all women, have a minimum of 10 years of schooling and work between 4 and 5 hours per day. They accompany each of the SSs in their charge on community visits at least twice per month and meet monthly with their group of SSs to discuss problems, gather information, and provide supplies and medicines. BRAC program staff members also participate in supervision. There is formal linkage to the local government's health service delivery system for referral when necessary.

The Community Health Agent Program of Brazil

Brazil's Community Health Agents are linked to other frontline health workers and are fully financed by Brazil's states and municipalities. Brazil's Community Health Agents (CHAs) work from a health center, as members of a closely integrated health team. Members of the entire family health team are in contact with each other on a daily basis, and CHAs begin their day at the health center before going out into the community to carry out home visits.

Background

The Programa Saúde da Família (Family Health Program, now called the Family Health Strategy and abbreviated PSF) was launched in 1994, building upon several previous decades of experience in underserved rural areas with Community Health Agents (CHAs) who were legally recognized as professionals in 2002. Currently, Brazil has 236,000 CHAs working as part of 33,000 family health care teams (Equipos de Saúde Familiar).

Implementation

Originally, CHAs provided vertical (centrally directed) maternal and child health services (such as immunizations and family planning) in isolated rural areas where services were limited but have evolved into the cornerstone of the national PHC program that reaches virtually the entire population of the country. CHAs operate as members of family health care teams that are managed by municipalities. With usually 4–6 CHAs on each team (sometimes more), each CHA is responsible for an average of 150 families (range: 75 to 200 families). Other members of the family health team include one doctor, one nurse, and one auxiliary nurse.

How Is the Program Financed?

The financing of the health system in Brazil is decentralized and arises from a variety of funding sources, including taxes, social contributions, out-of-pocket expenditures, and employer health insurance purchases. The PSF provides services free of charge to recipients, and the program is financed on a capitation basis with incentives for municipalities to increase coverage. Since 1996, states and municipalities have been responsible for the management and financing of health care. Now, states must allocate at least 12% of their total budget to health and municipal governments are required to spend 15% of their total budget on health (a requirement met by 98% of municipalities).

Training

The training of CHAs is conducted at the national Ministry of Health (MOH), with the training curriculum approved by the Ministry of Education. Nurses provide 8 weeks of formal didactic training to CHAs at regional health schools. Following this, CHAs receive 4 weeks of supervised field training. CHAs also receive ongoing training monthly and quarterly.

Roles/Responsibilities

Key services provided by CHAs include the promotion of breastfeeding;, the provision of prenatal, neonatal, and child care;, the provision of immunizations;, and participation in the management of infectious diseases, such as screening for and providing treatment for HIV/AIDs and TB.

In the 1990s, CHAs were trained to provide integrated management of childhood illness (IMCI) in the home, including providing prescriptions for antibiotics for children suspected of having pneumonia. Unfortunately, this stopped in 2002 following pressure from medical societies. Nurses have also pressed against allowing CHAs to administer injections.

Incentives

CHAs are full-time, salaried workers earning in the range of US$100 to US$228 per month.

Supervision

CHAs are supervised by nurses and physicians from the local health center. Supervisory nurses spend 50% of their time in these supervisory roles and the rest of their time working in the health center.

Impact

Brazil has experienced dramatic improvements in a broad range of national health indicators over the past 3 decades. Much of this progress is attributable to the strength of its PHC program and the critical role played by CHAs.

Link to Health Sector

CHAs are closely integrated into formal health services. They operate as members of the family health care teams, described above, which are managed by municipalities. Throughout Brazil's population of approximately 200 million people, there are 236,000 CHAs working in 33,000 family health care teams. These teams are based within PSF clinics and provide services to usually 600–1,000 families (1,500–3,000 people), but they occasionally serve as many as 4,500 people.

Other significant cadres of CHWs in Brazil include those trained and supported by the Catholic NGO Pastorate of the Child. This NGO has a network of 260,000 volunteer CHWs who promote child survival through low-technology interventions such as the administration of ORS for childhood diarrhea.

ETHIOPIA

Ethiopia's Health Extension Program

Ethiopia's HEW Program is seen as a primary driver behind Ethiopia's gains in maternal and child survival during the MDG period. The system combines a paid, professionalized cadre (the Health Extension Workers) with a newly-formed "Health Development Army" focused on health promotion and service utilization.

Background

The first cadre of Health Extension Workers (HEWs) was trained in 2004. During the following years, Ethiopia expanded its PHC programs in hope of achieving universal health coverage. Human resources that serve at the community level in Ethiopia include: HEWs, voluntary CHWs, and Community Health Promoters (CHPs), now called Health Development Army (HDA) Volunteers.

Implementation

At present there are approximately 38,000 HEWs. The percentage of the population that is served by the program has increased from 61% in 2003 to 87% in 2007. HEWs are supposed to split their time between health posts and the community. The Health Development Army (HDA) Volunteer's role is to increase utilization of primary health services through part-time work (less than 2 hours per week) within their communities. Each HEW serves approximately 2,500 people, and each HDA volunteer is responsible for 25 people.

How Is the Program Financed?

The Health Sector Development Plan (HSDP) has been financed by national and sub-national government entities, bilateral and multilateral donors, NGOs, private contributions, and user fee revenues. Current HSDP funders include the GAVI Alliance's Health System Strengthening Program, the Global Fund to Fight AIDS, Tuberculosis and Malaria, and the Carter Center, among others.

The total per capita health expenditure in 2007–2008 was US$16.09. A costing exercise determined that an additional US$11.96 per capita per year for 5 years (totaling US$8.83 billion) would be required to meet Ethiopia's health-related MDGs. This investment would reduce under-5 mortality by 32% and maternal mortality by 55%. Forty-five percent of the budget would be allocated to sustain and strengthen the HEP. There is, however, a substantial gap between the amount required to achieve the MDGs and the current level of funding.

The costs of HEWs are as follows: US$234 for 1 month of training, US$178 for the apprenticeship, and US$84 monthly for the salary of one HEW. At the local level, financing and planning are decentralized and the woredas (districts) receive block grants to cover the expenses of the HEP.

Training

HEWs have more than 1 year of pre-service training conducted by trainers who were taught through a cascade train-the-trainer approach.

Roles/Responsibilities

The main responsibilities of HEWs include health promotion, disease prevention, and treatment of uncomplicated and non-severe illnesses such as cases of malaria, pneumonia, diarrhea, and malnutrition in the community. Selected HEWs do community-based insertion of contraceptive implants. Most HEWs provide oral contraceptive pills and condoms and also give injectable contraception to clients.

The role of HDA Volunteers is to promote healthy behaviors at the household level and increase utilization of primary health services. They work less than 2 hours per week within their communities. Their services include prevention, health promotion, and health education; support for HEWs and their outreach work; and support of and participation in campaign-type activities.

Incentives

HEWs are formal government employees and are paid a salary. HDA Volunteers are not monetarily compensated but receive nonfinancial incentives such as formal recognition, ongoing mentorship, certificates, and recognition at community celebrations.

Supervision

Supervision is conducted by the *woreda* (district) supervisory team which is comprised of a health officer, a public health nurse, an environmental/hygiene expert, and a health education expert. In addition, each health center supervises approximately 5 health posts (with 10 HEWs), and supervision occurs in the health post and at the health center. In 2005, HEWs had an average of three supervisory visits over the course of 9 months. HDA Volunteers are supervised by HEWs.

Impact

Ethiopia is making some of the strongest improvements in health in all of Africa, at present. Its declines in under-5 mortality and in maternal mortality, along with dramatic improvements in the contraceptive prevalence rate, are among the most notable out of all African countries. HEWs are widely seen as the main reason that services have expanded and that these results have been achieved. Significant, positive associations were also found between exposure to HEWs and child vaccination uptake, insecticide-treated bed net use by children and pregnant women, utilization of antenatal care early in pregnancy, and proper sanitary practices. Additionally, some regions have achieved increases in institutional deliveries and tetanus vaccination coverage.

Link to Health Sector

The Ethiopian health system is decentralized and has been reorganized into three tiers. Tier 1 is made up of PHC units, made up of a health center (one health center for 15,000–25,000 people) and five satellite health posts (one health post for 3,000–5,000 people) along with *woreda* hospitals, each serving 60,000–100,000 people. Tier 2 includes zonal/general hospitals (one hospital for 1 million to 1.5 million people), and Tier 3 involves specialized/referral hospitals (one hospital for 3.5 million to 5 million people).

HEWs are a formally recognized cadre that has strong political support, including from the Federal Ministry of Health and the prime minister. HEWs are supposed to manage the other CHW cadres, but their relationship with these cadres in the field is not clear.

INDIA

India's Auxiliary Nurse-Midwife, Anganwadi Worker, Accredited Social Health Activist, Multipurpose Worker, and Lady Health Visitor Programs

India has three separate but interrelated CHW programs funded from different sources of the national and state governments. These have made great strides in bringing care to rural and disadvantaged populations. Financial and operational challenges persist, however, including adequacy of supervision.

Background

India has three cadres of CHWs: the Auxiliary Nurse-Midwife (ANM) who is based at a subcenter and visits villages in addition to providing care at the subcenter; the Anganwadi Worker (AWW) who works solely in her village and focuses on provision of food supplements to young children, adolescent girls, and lactating women; and the Accredited Social Health Activist (ASHA), who also works solely in her village. ASHA workers focus on promotion of MCH, including immunizations and institutional-based deliveries, for which they receive a performance-related fee.

Implementation

There are at present 208,000 ANMs, 1.2 million AWWs, and 857,000 ASHA workers. They each have their own supervisory and payment systems and are all based primarily in rural areas. ASHA workers are located in 17 priority states and 233 priority districts. Each ASHA has a catchment area of approximately 1,000 people. Each Aganwadi Center, staffed by an AWW and an Aganwadi Helper, serves 200-1,000 people.

How Is the Program Financed?

AWWs: US$8 billion (444 billion rupees) was allocated to the ICDS overall in the 11th Five Year Plan Period (2007–2012). Financing for AWW payments and upkeep of Anganwadi Centers comes from both the central and state governments, with the central government contributing 90% and the states contributing 10%. The cost of the food

provided by AWWs through ICDS is shared 50-50 by the central and state governments.

ASHA workers: In 2006, the MOHFW stipulated that the ASHA program would cost 10,000 Indian rupees (approximately US$163) per ASHA worker per year across 18 high-focus states. This included the cost of the selection process, social mobilization, training, drug kits, identity cards, and support for ASHA workers by the primary health center and the ASHA supervisor (facilitator). This amount did not, however, include the cost of ASHA worker remuneration which was supposed to come from the budgets of various other MOHFW initiatives such as the *Janani Suraksha Yojana* Program to support institutional delivery in rural areas.

Training

ANMs receive 18 months of training. AWWs and ASHA workers each receive 3–4 weeks with additional trainings from time to time.

Roles/Responsibilities

ANMs are now officially called Multipurpose Workers (MPWs) with a broad set of responsibilities, including the support of AWWs and ASHA workers. Some obtain additional training to manage birth complications and refer women with complications to higher levels of care, and some obtain additional training for insertion of intrauterine devices. AWWs manage nutritional supplementation at Anganwadi centers for young children, adolescent girls, and lactating women. They also help with promotion of healthy behaviors, mobilization of the community for improved water and sanitation, participation in immunization activities and other special health activities. AWWs provide information about basic child health and nutritional supplementation for children younger than six years of age, adolescent girls, and lactating women. They are assisted by Anganwadi Helpers. ASHA workers go from door to door to provide services and are given performance-based incentives that focus on facilitating institutional deliveries, immunizations, provision of basic medicines (including oral contraceptives), and referral of patients to the nearest subcenter, particularly for delivery. They also provide family planning services.

Incentives

ANMs are paid a government salary. AWWs are considered volunteers but are paid an “honorarium” of about US$27–$29 per month. ASHA workers receive performance-based incentives such as US$10 for facilitation of an institutional delivery and US$2.50 for facilitation of a child’s completion of immunizations. They now also receive US$16 per month for completing day-to-day routine tasks independent of the specific tasks for which they receive performance-based incentives.

Supervision

Supervision of each of these three cadres is carried out independently. For all cases, there is a widespread consensus that the supervision is inadequate. ASHAs are supervised by ANMs or AHSA Supervisors. AWWs are supervised by AWW Supervisors who are each responsible for 25 Aganwadi Centers. ANMs are supervised by a Lady Health Visitor who is responsible for 6 subcenters, each of which is staffed by an ANM.

Impact

Evaluations of these programs have produced mixed results. Wide variations exist in the quality of training and in the competency and effectiveness of these CHWs, but strong efforts are under way (particularly for the ASHA Program) to improve training, supervision, remuneration, and logistical support.

Link to Health Sector

The rural PHC system includes CHWs at the village level. Each village is supposed to have one AWW and one ASHA worker. The AWW is based out of an Anganwadi Center and is the key functionary of India’s Integrated Child Development Services (ICDS) Program.

A Village Health Team member treats a young boy in Mpigi, Uganda.

CREDIT: FROG DESIGN

Malawi's Health Surveillance Assistant (HSA) Program

Malawi's Health Surveillance Assistants (HSAs) provide an essential link between the formal health system and a range of volunteer CHW cadres. The HSA program was developed in response to Malawi's health worker insufficiency and is funded through a pooled funding mechanism known as a Sector-wide Approach (or "SWAP") which includes funding from the Ministry of Health, international donors, and NGOs.

Background:

Health Surveillance Assistants (HSAs) are the main professionalized CHWs in Malawi, but there are other types of volunteer CHWs who are supervised by HSAs. From health posts, HSAs provide a broad array of services. Other volunteer CHWs include Community-based Distributing Agents (CBDAs), Community Home-based Care Providers (CHBCs), Growth Monitoring Visitors (GMVs), Sanitation Promoters (SPs), Community Groups (CGs), Peer Educators (PEs), and members of Village Health Committees. Malawi's HSA program coordinates the delivery of primary care services at the community level including services for environmental health, family planning, maternal and child health, HIV/AIDS, Integrated Management of Childhood Illness (IMCI), and sanitation.

Implementation

As of 2013, there were more than 10,000 HSAs active in urban and rural areas of Malawi. Malawi has targeted a ratio of 1 HSA per 1,000 people, but the current ratio is closer to 1 per 1,200. HSAs are given a bicycle by the MOH. There were 1,003 CBDAs several years ago, but the number is supposed to reach 3,360 by the end of 2015. One CBDA serves approximately 1,000-1,200 people.

How Is the Program Financed?

MOH funds combine with donor and NGO funds to support primary care, including the HSA program. HSA compensation is based on the GOM civil service salary scale and is equivalent to a first level clerical staff member. In 2008, a major grant from the Global Fund allowed the GOM to double the HSA workforce to 10,000 HSAs.

Training

HSAs are eligible for basic, specialized, and on-the-job training. Prior to training, most HSAs have no formal medical training but have completed some primary school. They do not always originate from the communities they serve and may not reside in their catchment area. The 12 week basic training incorporates health education, common diseases and treatments (including iCCM), vaccination, sanitation, etc. Select HSAs are also trained in more diverse activities such as contraception administration, TB treatment, and HIV testing and counseling. An on-the-job orientation is also provided as well as on-going refresher trainings.

CBDAs receive two weeks of training. Members of Village Health Committees receive 5 days of training on health promotion. In specific regions, NGOs also provide supplementary training.

Roles/Responsibilities

HSAs focus on hygiene and sanitation, immunizations, growth monitoring, antenatal care, family planning, disease surveillance, community assessments including public facility inspection, and basic preventive and curative health services. Some HSAs deliver a full package of iCCM, CMAM, TB, HIV, and family planning services.

CBDAs provide family planning services, but not injectable contraceptives.

Members of Village Health Committees focus on health promotion and community mobilization.

Incentives

HSAs are paid a salary of approximately US$100 per month from the Government of Malawi, which is equivalent to the salary of a first level clerical staff. CBDAs are volunteers, but some NGOs provide a monthly stipend. Members of Village Health Committees are volunteers and do not receive monetary incentives.

Supervision

The Assistant Environmental Health Officer (AEHO) formally supervises the HSAs. Recently, however, senior HSAs (a new position) have undertaken the majority of supervision for HSAs. NGOs also participate in supervision.

At least once per month, HSAs supervise members of Village Health Commitees. HSAs are also responsible for supervising all other cadres of CHWs in their geography. NGOs also support this supervision.

CBDAs are supervised by HSAs.

Impact

Malawi is considered to be on track to reach MDG 4, and Malawi's HSA program has contributed to a significant drop in the country's child mortality rates. Under-five mortality rates have declined from 222 per 1000 live births in 1990 to 92 per 1000 live births in 2010.

An assessment has shown that HSAs are able to treat sick children at a level of quality similar to the care provided in fixed facilities. Monitoring data also suggest that communities are utilizing sick child services

Link to Health Sector

HSAs are formally linked to the rest of the health system and are considered the lowest level of the system. Members of Village Health Committees and other cadres link to the health system through the HSAs, who have accountability for reporting on their activities.

The MOH determines the policies, standards, and guidelines for HSAs. Zonal and District Health Offices support with technical guidance and monitoring.

NEPAL

Nepal's Frontline Health Workers

Nepal's CHW program includes two cadres of formal, paid workers and one cadre of un-paid volunteers. These workers are seen as having been instrumental in Nepal's impressive gains in maternal, newborn, and child health.

Background

The first Nepal Health Sector Program (NHSP) was implemented in 2004 to 2009. It worked to provide equitable access to free basic health services.

Implementation

Each health facility has, in additional to one professional health worker, one Village Health Worker (VHW), one Mother & Child Health Worker (MCHW), and usually nine (but sometimes more) Female Community Health Volunteers (FCHVs) to serve a catchment population of 5,000–10,000 people. Today, there are approximately 52,000 FCHVs, 4,000 VHWs and 3,100 MCHWs. The community-level work is known as the National Community-based Health Program (NCBHP).

How Is the Program Financed?

VHWs and MCHWs are salaried staff of the MOH, so they receive their salary and benefits according to government rules and regulations. The costs of the FCHV program (basic training, refresher training, training materials, in-kind incentives, and so forth) are financed by donor agencies. Generally, the US Agency for International Development (USAID) pays for the cost of training through its implementing partners (John Snow, Save the Children, Plan International, and others). The United Nations Children's Fund (UNICEF) provides materials for training and patient education.

Training

FCHVs receive 18 days of basic training. VHWs and MCHWs each receive 3 months of basic training.

Roles/Responsibilities

Each of the three types of CHWs has a defined scope of work. The MCHWs are full-time employees who offer reproductive services for women. The VHWs are also full-time workers, and they offer family-oriented services such as immunizations and management of newborn infections. The FCHVs are part-time volunteers who provide basic services and health education. The set of community-level health workers the comprise the NCBHP now provide a broad array of interventions at the community level that include community case management of childhood pneumonia, distribution of misoprostol tablets for women to take after a home delivery to reduce the risk of postpartum hemorrhage, application of chlorhexidine to the umbilical cord to reduce the risk of neonatal sepsis, home-based neonatal care (including management of newborn asphyxia and neonatal sepsis), family planning services, and other evidence-based interventions.

Incentives

MCHWs and VHWs are formally employed and paid by the government for their services and receive approximately US$140 per month. FCHVs, as their name implies, are volunteers but receive about US$2.50 per day as an incentive and they receive a US$5 incentive for providing a full range of community-based maternal and neonatal health care services. They also receive certain non-financial incentives such as a clothing allowance and community recognition.

Supervision

VHWs and MCHWs supervise the FCHVs who work in their catchment areas. VHWs and MCHWs are responsible for resupplying the FCHVs and for providing support, advice, and feedback during monthly supervision visits. VHWs and MCHWs are supervised by the health facility manager at the facility where the VHWs and MCHWs are based.

Impact

Among low-income countries, Nepal has been a global leader in reducing its under-5 mortality rate, its maternal mortality ratio, and its fertility rate. In fact, it achieved its 2015 MDGs for child health and for maternal health in 2010. There is widespread agreement that CHWs in Nepal, particularly the FCHVs, have played an important role in achieving these important goals.

Link to Health Sector

VHWs, MCHWs, and FCHVs are all based out of local health facilities that serve catchment populations of 5,000–10,000. Each health facility has one professional health worker, one VHW, one MCHW, and usually nine (but sometimes more than nine) FCHVs. These cadres work closely together, supporting one another's scope of work. For example, FCHVs mobilize the communities for immunization by VHWs, and they distribute vitamin A capsules with the logistical support of the other cadres.

RWANDA

Rwanda's Community Health Worker Program

Rwanda's unique performance-based model helps link CHWs to health facilities while incentivizing CHWs to increase quality and utilization.

Background

The Rwanda CHW Program was established in 1995, aiming at increasing uptake of essential maternal and child clinical services through education of pregnant women, promotion of healthy behaviors, and follow-up and linkages to health services. An estimated 45,000 CHWs operating at the village level provide the first line of health service delivery. There are three CHWs in each village: a male-female CHW pair (called Binômes) providing basic care and integrated community case management (iCCM) of childhood illness, and a CHW in charge of maternal health, called an ASM (Agent de Sante Maternelle).

Implementation

When the MOH endorsed the program in 1995, there were approximately 12,000 CHWs. By 2005, the program had grown to over 45,000 CHWs (30,000 working as Binômes and 15,000 ASMs). From 2005, after the government's decentralization policy had been implemented nationally, the MOH increased efforts to improve MCH services, and between 2008 and 2011, Rwanda introduced iCCM of childhood illness (for childhood pneumonia, diarrhea, and malaria). In 2010, the Government of Rwanda introduced family planning as a component of the national community health policy.

How Is the Program Financed?

Rwanda's health system financing originates from two main sources. On the supply side, the central treasury transfers funds to districts and health facilities. On the demand side, the system provides health insurance payments for documented services. In recent years, much of the total health expenditures of the Government of Rwanda have come from external sources such as the Global Fund to Fight AIDS, Tuberculosis and Malaria; PEPFAR (the President's Emergency Plan for AIDS Relief); and the President's Malaria Initiative. In 2011, 47% of the government's total health expenditures (US$407 million) was supplied by donors.

However, the Government of Rwanda has increased its own spending on essential health services since 2005; spending is projected to reach 15% of the government's total budget by 2015. Community-based health insurance schemes have allowed for 92% of the population to be insured. This has greatly increased access to health care service and drugs.

Training

Although it is acknowledged in the national Community Health Development Strategy that the CHWs in Rwanda should be appropriately trained, documentation detailing the duration, format, and content of overall training is difficult to find. However, in-depth information is available about CHW training for specific programs such as community-based provision of family planning and community-based IMCI.

Roles/Responsibilities

Three CHWs, each with clearly distinct defined roles and responsibilities, operate in each village of approximately 100–150 households. The ASM identifies pregnant women, makes regular home follow-up visits during and after pregnancy, and ensures deliveries in health facilities where skilled health workers are available. Binômes provide iCCM (assessment, classification, and treatment or referral of diarrhea, pneumonia, malaria, and malnutrition in children younger than 5 years of age), community-based provision of contraceptives, directly observed treatment (DOT) for TB, prevention of non-communicable diseases, and preventive and behavior change activities.

Incentives

Although CHWs in Rwanda are volunteers, in 2009 the MOH introduced community performance-based financing (CBPF) as a way to motivate CHWs. CHW Cooperatives are organized groups of CHWs that receive and share funds from the MOH based on the achievement of specific targets established by the MOH. By linking incentives to performance, the MOH hopes to improve quality and utilization of health services.

Supervision

Cell Coordinators (also referred to as the In-Charge of CHWs at the local health center), sometimes assisted by an Assistant Cell Coordinator, visit CHWs to monitor activities, monitor supplies and drugs, compile reports from CHWs, and submit the information to the In-Charge of Community Health on a quarterly basis. As part of this supervision, Cell Coordinators also make home visits to see how the CHWs are performing their activities there and verify reports that have been sent by CHWs using mobile phone text messaging (SMS) to the health center. In addition to this line of supervision, the CHW cooperatives also perform an evaluative function and CHWs are incentivized based on the performance of the cooperative.

Impact

Rwanda achieved its MDGs for maternal and child health in 2012, three years ahead of schedule. Its CHW program has played an important role in expanding coverage of basic services, particularly community-based family planning services and treatment of childhood malaria and pneumonia.

Link to Health Sector

Health sector decentralization laws were implemented in 2005–2006. Authority and resources have been transferred from the district level to the health centers and posts within the district. Health services are provided in communities, at health posts, health centers, district hospitals, and referral hospitals. At the lowest level, those in charge of community health activities in the catchment areas of health centers supervise CHWs. The CHWs receive financial compensation through CBPF, determined by the number of essential health services provided. Thirty percent of the total PBF funds is shared among individual CHW members while 70% is deposited in the collective funds of CHW cooperatives. Within each district there are Health Center Committees that provide oversight of community health work, which is directly supervised by various units in each health center. These units include outreach, supervision, and financial control.

ZAMBIA

Zambia's Community Health Assistant Program

The Government of Zambia's Community Health Assistant (CHA) Program was launched as a pilot activity in 2010 to provide CBPHC to 161 health posts and is now scaling up to train 5,000 CHAs to expand access to health in rural communities through the government's 650 health posts under construction. CHAs serve as a vital link between the health centers and the communities they are recruited from. They provide preventative, basic curative and health promotion services.

Background

The CHA Program is an emerging national initiative to bring primary health care as close to the home as possible. The first CHAs were trained during 2011–12 and deployed in late 2012. The Government of the Republic of Zambia aims to scale the program nationally to over 5,000 CHAs using a phased approach.

In addition to CHAs, there are an estimated 23,500 Community Health Volunteers (CHVs). The volunteer network is primarily managed by implementing partners, mostly NGOs.

Implementation

The MOH launched the program with a pilot class of 307 CHAs. With scale-up funding secured and with leadership from the government, by the end of 2015 there will be approximately 1,100 CHAs who have been trained and ready for deployment. The government's goal is to eventually have 5,000 CHAs. CHAs are envisioned to staff the country's growing number of health posts. There are 2 CHAs per health post (ideally one male and one female). CHAs are supposed to spend 20% of their time at the health post and 80% in the community, where they conduct household visits and provide services for disease prevention and health promotion as well as some curative services.

How Is the Program Financed?

Financing to date for the CHA program has been through a multi-stakeholder collaborative process. The initial strategy development was funded by the Global Health Workforce Alliance, and initial seed funding for the recruitment and curriculum development by was provided by ELMA Philanthropies. The United Kingdom's Department for International Development (DFID) supported the pilot's planning and development, implementation, and monitoring and evaluation. DFID also is supporting the scale-up through 2018. The Government of the Republic of Zambia funded the first CHA training school's operational costs. USAID financed the Zambia Integrated Systems Strengthening Program to provide initial support for the CHA trainer's salaries and training of CHW supervisors.. UNICEF provided support for some of the community CHA training materials. PATH also provided cost-sharing for the mobile phones that the CHAs are equipped with. Since the completion of the pilot phase, the Government of the Republic of Zambia continues to contribute financially by supporting recurrent costs to run the CHA training schools, and it now covers the cost for the majority of CHA trainers. In July 2013, the Ministry of Community Development, Mother and Child Health (MCDMCH) took over financial responsibility for paying CHA salaries, partially supplemented by donor funding in the short term.

Training

CHAs attend one year of formalized pre-service training on prevention, health promotion, and curative care. The 12 training modules include integrated theoretical and practical training components. The tutors at the CHA training school consist of well-experienced health professionals.

Roles/Responsibilities

The main responsibilities of the CHAs are health promotion and disease prevention. CHAs are also trained in basic curative and family planning services that they can provide at the health post and in the community. In addition, they are responsible for identifying patients who are in need of referral to the next level in the health system, usually a health center. CHVs provide family planning services (but not injectable contraception) and provision of TB medications.

Incentives

CHAs receive a salary of 2,600 ZMK per month (US$465) and other civil servant benefits. They are also provided with a bicycle, mobile phone, shoes, an umbrella, a backpack, data registers and a uniform—all of which are property of the MOH. CHVs receive in-kind support such as bicycles, t-shirts, raincoats and umbrellas.

Supervision

About half of CHAs are supervised by the Staff In-charge at the nearest "parent" health facility. The other CHAs who work from a health facility are supervised by another higher-level staff member at the facility. In this case, one of these staff members is designated as the CHA supervisor. Supervision is designed to be conducted at the health facility and in the community on a monthly basis using a standardized supervisory checklist, but community-level supervision rarely happens due to competing demands on the supervisor.

Impact

Through the CHA program, the Government of Zambia aimed to improve maternal and child health by increasing access to services in rural areas, and existing evidence demonstrates that a pilot program of 307 CHAs deployed in 2012 is making steps toward that goal.

An evaluation of the pilot revealed that the CHAs complemented clinical staff working at nearby health facilities by taking on the workload of basic health services, thus freeing up skilled clinician time to focus on more complicated patient cases. More complex services were shifted to health centers, as CHAs made referrals to the appropriate level of care. This study found that the addition of CHAs in rural areas increases health service provision at health posts and reduces the workload of more highly trained health workers.

Routine monitoring data demonstrated that the first class of 307 CHAs is reaching 563,500 people in 161 rural communities (approximately 1,800 people per CHA). CHA's monthly reports from 2012-2013 demonstrate that,

on average, each CHA is educating over 1,300 individuals on health topics such as measures to prevent and seek early treatment for common illnesses, safe water and food storage practices, and more. On average, each CHA also provided treatment for over 700 cases of malaria, diarrhea, and respiratory infections, and inspected almost 400 households for safe waste disposal, food storage, and other environmental health concerns.

Further, the government partnered with an academic institution to conduct the health outcomes evaluation to assess the contribution of CHAs to the delivery of primary health services in the community. In the communities where they were deployed, CHAs were associated with significant increases in the proportion of children fully immunized, fevers diagnosed with rapid diagnostic tests, and reductions in the prevalence of confirmed cases of malaria and of severe health conditions in children under 5 years.

In 2013, bolstered with strong evidence of the CHAs' added value, the Government of the Republic of Zambia placed all CHAs on the public sector payroll, thus officially recognizing CHAs as a new cadre in the national workforce and displaying the government's commitment to sustaining the CHA program.

Link to Health Sector

CHAs are formally recognized as a cadre by the MOH and MCDMCH. Over the next 5 years, significant government and donor support is committed for the scale-up of the CHA program. CHAs work in collaboration with other formally trained health staff at the health posts (who are typically nurses and environmental health technologists) and with community development assistants as well as social welfare volunteers at the community level who work on issues related to gender, environmental health, education, personal finance, and home economics. CHAs also play a role in coordinating with the CHVs to create monthly work plans. The Government of Zambia prioritizes the staffing of rural health posts such that at present more than half of the CHAs are stationed side by side with other, more qualified health care workers. This is the ideal scenario in that CHAs can refer patients from the community to the nurse at the health post. In many cases, task-shifting from health care workers to the CHAs relieves time pressures, so much so that the health care staff who are based at health posts have requested that CHAs work at the health post (rather than in the community) at least two days per week.

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Web-Based Resources

CHW Central (http://chwcentral.org/) is a global resource for and about Community Health Workers. Its vision is to improve and sustain a dynamic global web-based resource that promotes and engages CHWs, enables the wide and rapid sharing of information about CHW work and management, offers resources to help improve CHW programs and CHW performance, and provides a forum for continuous and online discussions and exchanges among CHWs, public health professionals, and program managers in the United States and across the globe. It also has a listserv associated with it, along with a rich library of CHW resources.

The Community Health Systems Catalog (http://www.advancingpartners.org/resources/chsc) is an innovative and interactive reference tool on country community health systems. The catalog covers USAID-priority countries for population and reproductive health and countries with a demonstrated interest in community-based family planning. This resource is intended for ministries of health, program managers, researchers, and donors interested in learning more about the current state of community health systems.

The 1 Million Community Health Workers Campaign (http://1millionhealthworkers.org/about-us/) aims to expand and accelerate community health worker programs in sub-Saharan African countries, scaling them up to district, regional, and national levels to meet the health-related Millennium Development Goals. With the use of the latest communications technology and diagnostic testing materials, these frontline workers link the rural poor to the broader health care system of doctors, nurses, hospitals, and clinics. The website contains a rich array of resources and current events related to the campaign and CHW programs more generally.

In 2010, the CORE Group, Save the Children, BASICS, and MCHIP collaborated to produce *Community Case Management Essentials: Treating Common Childhood Illnesses in the Community; A Guide for Program Managers*. This guide is available at: http://www.coregroup.org/storage/documents/CCM/CCMbook-internet2.pdf.

In 2011, the USAID Health Care Improvement Project created the *Community Health Worker Assessment and Improvement Matrix (AIM) toolkit* to help ministries, donors, and NGOs assess and strengthen their CHW programs to improve their functionality. This toolkit is available at: http://www.urc-chs.com/uploads/resourceFiles/Live/CHWAIMToolkitcomplete.pdf.

In 2012, the US Government hosted an international conference to review the evidence related to CHW performance. Their report, entitled *Community and Formal Health System Support for Enhanced Community Health Worker Performance*, is available at: http://www.usaid.gov/sites/default/files/documents/1864/CHW-Evidence-Summit-Final-Report.pdf.

Table 2: CHW Program Comparison Table

Country	CHW name	Number currently active in country	Population per CHW	Length of training	Type of incentives/ salary	Roles/ responsibilities	Supervision	Linkage to formal health system and coverage
Bangladesh – cadre 1	Family Welfare Assistant	23,500	1 FWA for every 4,000-5,000 persons	21 days	Government salary of US$98 per month	• Visit households every 2 months • Register couples • Promote family planning • Distribute contraceptives • Refer clients for ANC and PNC	• Supervised by male supervisors • Meet twice per month	• These government-supported CHWs provide a range of support from family planning to vaccination delivery to care for pneumonia, diarrhea, malaria, and TB. • The goal is to have one FWA for every 4,000-5,000 persons.
Bangladesh – cadre 2	Health Assistant	20,615	1 HA for 6,000 people	21 days	Government salary of US$103 per month	• Provide immunizations and vitamin A capsules • Distribute packets of ORS • Visits homes to promote the use of ORS and to treat acute infections	• Supervised by Assistant Health Inspectors • Each AHI is responsible for 5-6 HAs	• These government-supported CHWs provide a range of support from family planning to vaccination delivery to care for pneumonia, diarrhea, malaria, and TB. • The goal is to have one HA for 6,000 people.
Bangladesh – cadre 3	Community Health-Care Provider (CHCP)	12,991	1 CHCP for 6,000 people	12 weeks	Government salary of US$110 per month	• Work at a community clinic • Provide ANC and PNC • Treat cases of pneumonia, diarrhea, and anemia • Give injectable contraceptives	Supervised by the Subdistrict Hospital manager	The location of each clinic is supposed to be such that 80% of the population is within a 30-minute walk of the facility.
Bangladesh – BRAC cadre 1	Shasthya Shebika (SS)	120,000	• Provide services to an average of 250–300 households through monthly household visits. • BRAC community-based integrated programs now reach more than 110 million people in Bangladesh.	4 weeks	Given small loans to establish revolving funds, which they use to purchase health products to sell at a small markup	• Provide health promotion sessions and educate families on nutrition, safe delivery, family planning, immunizations, and WASH (water, sanitation and hygiene) • Sell health products	• Higher-level CHWs called Shasthya Kormis (SKs) • Other program staff at BRAC • SKs are all women, paid US$40 per month, have a minimum 10 years of schooling	• There is a formal link to the local government's health service delivery system for referral when necessary • SSs serve as outreach workers for special campaigns such as vitamin A distribution and de-worming
Brazil	Community Health Agent (CHA)	236,000 working as part of 33,000 family health care teams	• 236,000 CHAs for 200 million people • Working in 33,000 family health care teams that provide services to 1,500-3,000 people • With 4-6 CHAs on each team, each CHA is responsible for 150 families	• Nurses provide 8 weeks of formal didactic training • CHAs receive 4 weeks of field training • CHAs receive monthly and quarterly ongoing training	Full-time salaried workers earning between US$100-228 per month	• Provide comprehensive care through promotive, preventive, recuperative, and rehabilitative services • Register the households in the areas where they work • Empower their communities/ link them to the formal health system • Promote breastfeeding; provide prenatal, neonatal and child care; provide immunizations; participate in management of infectious diseases	Supervised by nurses and physicians from the local clinics	Operate as members of the family health care teams that are managed by municipalities

Ethiopia – cadre 1	Health Extension Worker (HEW)	38,000	Each HEW serves approximately 2,500 people	More than 1 year of pre-service training	Formal employees and are paid a government salary	• Health promotion • Disease prevention • Treatment of uncomplicated and non-severe illnesses	• District (woreda) supervisory team: health officer, public health nurse, an environmental/hygiene expert, health education expert • A staff member of the health center visits the HEWs at their health post	• HEWs are a formally recognized cadre that has strong political support, including from the MOH and prime minister • HEWs attend monthly meetings at the "parent" health center,
Ethiopia – cadre 2	Health Develop-ment Army Volunteer (HDA Volunteer)		Each HDA volunteer is responsible for 25 people		Non-financial incentives such as formal recognition, ongoing mentorship, certificates, and recognition at community celebrations	Promote utilization of health post services	Supervised by HEWs	• Refer patients in need of health care services • Support the work of HEWs • Participate in campaigns
India – cadre 1	Auxiliary Nurse-Midwife (ANM)	208,000	• ANMs are now officially Multipurpose Workers (MPWs) and support AWWs and ASHA workers. • They are based out of subcenters, the lowest facility in the rural public health care system.	18 months	Paid a government salary	• Multipurpose Workers that support AWWs and ASHAs • Deliver babies at the subcenter and refer women with complications to higher levels of care • Insert intrauterine devices	Supervised by a Lady Health Visitor who is responsible for 6 ANMs and the subcenters where they work	Based at a subcenter and visits villages in addition to providing maternity care at the subcenter
India – "cadre 2	Anganwadi Worker (AWW)	1.2 million	Each village has 1 AWW	3-4 weeks	Considered a volunteer but paid an "honorarium" of US$27-29 per month	• Manage nutritional supplementation for young children, adolescent girls, and lactating women • Promote healthy behaviors and mobilize community for improved water and sanitation • Participate in immunization services and other special health activities	ANM or AWW Supervisor (each of whom is responsible for 25 AWW Centers)	• Provide information about basic child health and nutritional supplementation for children younger than 6, adolescent girls, and to lactating women • Based out of an Anganwadi Center and is key functionary of India's ICDS
India – "cadre 3	Accredited Social Health Activist (ASHA)	857,000	Each village has 1 ASHA worker	3-4 weeks	Performance-based incentives; US$16 per month	Facilitate institutional deliveries, immunizations, provision of basic medicines, and referral of patients to the subcenter	ANM or ASHA Supervisor	Focus on promotion of MCH
Malawi – cadre 1	Health Surveillance Assistant (HSA)	More than 10,000	Targeted ratio of 1 HSA per 1,000 people, but current is 1 per 1,200	12 weeks	Paid a salary of approximately US$100 per month	• Focus on hygiene and sanitation, immunizations, growth monitoring, antenatal care, and basic preventive and curative health services • Some deliver a full package of iCCM, CMAM, TB, HIV, and family planning services	• Supervised by Assistant Environmental Health Officer • Senior HSAs • Often supervised by NGO staff	• Formally linked to health system and are considered lowest in the system • Accountable for reporting on the activities of members of Village Health Committees • MOH determines policies, standards, and guidelines • Regional offices support with technical guidance and monitoring

Table 2: CHW Program Comparison Table (continued)

Country	CHW name	Number currently active in country	Population per CHW	Length of training	Type of incentives/ salary	Roles/ responsibilities	Supervision	Linkage to formal health system and coverage
Nepal: Nepal Health Sector Program – cadre 1	Village Health Worker (VHW)	4,000	1 per health post	3 months	Formally employed and paid by the government	Offer family-oriented services such as immunizations and management of newborn infections	Supervised by the facility manager	Based out of local health facilities that serve populations of 5,000-10,000 people
Nepal - cadre 2	Maternal and Child Health Worker (MCHW)	3,100	1 per health post	3 months	Formally employed and paid by the government	Offer reproductive services for women	Supervised by the facility manager	Based out of local health facilities that serve populations of 5,000-10,000 people
Nepal - cadre 3	Female Community Health Volunteer (FCHV)	~50,000	At least 9 to serve 5,000-10,000 people	18 days	Non-financial incentives such as a clothing allowance and community recognition	Provide basic services and health education	Supervised by VHWs and MCHWs	Based out of local health facilities that serve populations of 5,000-10,000 people
Rwanda	Agent de Sante Maternelle (ASM) (Binôme)	45,000	3 CHWs in each village of 100-1150 households	Information is available only about CHW training for specific programs, such as 10 days of training for family planning	CHWs are volunteers; community performance-based financing is available; CHW cooperatives receive and share funds from the MOH based on the achievement of specific targets established by the MOH	• 3 CHWs operate in each village of 100-150 households • The ASM identifies pregnant women, makes regular follow-ups during and after pregnancy, and ensures deliveries in health facilities where skilled health workers are available • Binômes provide iCCM, community-based provision of contraceptives, DOT for TB, prevention of NCDs, and preventive and behavior change activities	Cell Coordinators monitor activities, monitor supply and drugs, and compile all reports from CHWs	• The health sector decentralization laws in 2005-2006 transferred significant authority from the district level to the health centers and posts • Health services provided in communities at health posts, health centers, district hospitals and referral hospitals • Each district has Health Center Committees that oversee community health work, which is supervised by units that include outreach, supervision, and financial control
Zambia	Community Health Assistant (CHA)	Launched pilot with 307 CHAs; aims to scale to 5,000	2 CHAs per health post	1 year	Receive a salary of US$465 per month and other civil servant benefits; provided with a bicycle, mobile phone, shoes, umbrella, backpack, data registers and a uniform	• Health promotion and disease prevention • Basic curative services • Identify patients who are in need of referral to the next level in the health system	• Half are supervised by the in-charge at the nearest rural health center • The remainder work from a health post where 1 or more highly trained staff members are posted and supervise	• Formally recognized as a cadre by the MOH and MCDMCH • Over the next 5 years, significant government and donor support is committed for the scale-up of the CHA program

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Endnotes to Appendix 1

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3. The lack of clear standards for CHWs makes it difficult to accurately count the number of existing CHWs, and estimates of this total can vary significantly between organizations. The UNICEF numbers were selected as a rigorous estimate developed with significant country input. There is similar debate over how widely the "One Million CHWs" goal is shared, though this effort utilizes that goal in the absence of any more widely supported target. Lastly, the size of these numbers does not affect the final ROI—that is, as modeled, each CHW added is equally productive.
4. One Million Community Health Workers Technical Task Force Report, 2013
5. While the One Million Community Health Workers campaign estimate was not developed particularly for this exercise (and may not explicitly account for certain functions this group believes CHWs should perform, including, for example, surveillance), it is one of the most rigorous and widely known approaches for costing CHW programs, and we have selected it for this reason.
6. We have focused this modeling on the incremental CHWs needed across sub-Saharan Africa and have not assessed the costs and benefits of the 295,000 CHWs already present. However, "counting" them in this model would simply proportionally raise the projected costs and returns, and would have no impact on the ROI.
7. World Bank
8. "The investment case for reaching 2015 malaria targets in sub-Saharan Africa"
9. World Bank
10. "The investment case for reaching 2015 malaria targets in sub-Saharan Africa"
11. One limitation of this approach is that every child life saved—regardless of the year in which it is saved—is assigned equal economic value. Given rising GDP per capita, a life saved in 2020 would have a higher expected lifetime earnings than a life saved in 2015. The current approach estimates the value of a life saved in 2015, and we have chosen to use this approach for simplicity and to present a conservative estimate of projected return.
12. http://siteresources.worldbank.org/EXTAVIANFLU/Resources/EvaluatingAHIeconomics_2008.pdf
13. http://www.who.int/whr/2006/06_chap1_en.pdf
14. This approach assumes that every health worker is equally effective at reducing the impact of a health crisis. In reality, this is unlikely to be the case—the value of a health worker in reducing the impact of a crisis will depend on their location to the crisis, the nature of the epidemic, and the skills required to contain it. In the absence of an ability to predict these factors, however, we have assumed the proportional approach described above.
15. We have assumed a 50-year timeframe in the absence of further detailed guidance.
16. World Bank (http://blogs.worldbank.org/growth/re-thinking-fiscal-multipliers)