Ministry of Health

Government of Ghana:
National Community Health Worker (CHW) Program

Updated March 2014

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GHANA MINISTER OF HEALTH 1MCHW CAMPAIGN ENDORSEMENT LETTER

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Republic of Ghana

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Date : 21st January, 2014

DR JEFFREY SACHS
1 MILLION HEALTHCARE WORKERS
CAMPAIGN TEAM SECRETARIAT
NEW YORK, NY

Dear Dr Sachs,

Hope it is not too late to wish you and your staff, a Happy New Year.

On behalf of the Ministry of Health and the Ghana Government, please accept this letter as our sign off on the attached Roadmap Document for the implementation of the 1Million Community Healthcare Workers (IMCHWs) Program. After months of hard work by our respective Teams in Accra and New York, we are ready to move to the next phase of the Program.

I can assure you that our Ministry, and the Government of Ghana, very much believe in this model and concept of bringing healthcare into the communities and to the door steps of our people, especially those in the rural areas of our country. Indeed, it is in recognition of this, that led the Government of Ghana to implement the Community based Health Planning and Services (CHPS) program back in 2000. And we have had much successes with that CHPS model, but we all agree that to achieve the Millennium Development Goals (MDGs) 4, 5, and 6, we must accelerate our efforts to expand healthcare delivery throughout the country.

As a nation, we continue to increase our investment in the healthcare of our people every year, and to seek donor support to complement our resources, and this year is no exception. That is why, we are pleased to participate in this timely donor funded program to hire, train , equip, and deploy 1 Million Community Healthcare Workers throughout Africa. Based on our calculation, and as noted in the Roadmap document, Ghana will need a total of 83,000 of these healthcare workers over the 10 year period. We are happy, however, to concentrate on deploying 49,800 of these community healthcare workers to service the rural population of the country, in the first 3 years of the program at a total cost of $309 million. (Appendix H Budget). As part of the implementation strategy, we have divided the country into 5 zones with each zone made up of 2 Regions. This is shown on page 16 of the attached Roadmap document: Implementation Structure. We believe this structure will be better managed.

We will assign at least 2 vendors/service providers to each zone to hire, train, deploy and manage those community workers. These non-profit service providers will be carefully screened and vetted to make sure they can provide the service, and once assigned, they will be closely supervised and monitored from the Local, Regional and National levels. As to the availability of these workers, we believe we have a fairly large pool of trained/semi trained, experienced, community healthcare workers who can easily be deployed after some refresher training as described in the Roadmap document.

Lastly, to ensure proper, accurate and timely disbursement of, and accountability for the funds, we recommend that the funds be sent directly to the Ministry of Health. As with other donor funds that we receive, we will set up a special Bank account for these funds. Again, we are most grateful for this opportunity and believe that this program will greatly accelerate Ghana's achievement of Millennium Development Goals, (MDG), 4, 5, and 6.

The programme will be sent to cabinet for approval and later to Parliamentary Select Committee on Health for considerations.

Kindly advise on the way forward for 2014.

Thank you.

Sincerely,

HON. SHERRY AYITTEY
MINISTER OF HEALTH

CC:

- Deputy Minister of Health
- Chief Director, Ministry of Health
- Director-General, Ghana Health Service,
- Ghana Team, 1MCHWs
- Dr Prabhjot Singh, US Team Leader

EXECUTIVE SUMMARY

Ghana's Ministry of Health and Earth Institute's One Million Community Health Workers (1mCHW) Campaign have worked in a joint effort to create this Operational Roadmap to build a world-class national community health worker platform. One of the most critical components of community-based interventions are Community Health Workers (CHWs), a lower level cadre of health professionals who can be trained quickly to deliver preventive and curative services at the household level. By bringing basic health services to Ghanaian communities without access to primary healthcare, this formally recognized cadre of community health workers will strengthen Ghana's overall health system, help Ghana achieve Universal Health Coverage and also put Ghana on track to reach the Millennium Development Goals (MDGs) by 2015.

With less than 1000 days to reach the MDGs, and a growing evidence base for CHWs as effective mechanisms for reaching MDGs 4, 5, and 6, the time is ripe for the global community to take note of Ghana's efforts to pioneer their national CHW platform. This Operational Roadmap builds on lessons learned from Ghana's current Community-based Health Planning and Services (CHPS) program, and describes in detail key program features necessary for a national CHW platform that successfully bridges the gap between rural communities and the primary health care system. The vision for the Ghana CHW program follows the One CHW Action Framework (Appendix A).

Using a ratio of one CHW to approximately 500 individuals, Ghana seeks to cover 100% of the rural population through a phased scale-up strategy over 10 years (2014 – 2023). Ghana will reach full rural coverage in 2019 with **27,845 CHWs**. By 2023, Ghana plans to deploy 31,707 CHWs to maintain full coverage as the population continues to grow. Through this scale-up strategy, in Phase 1 (2014 – 2016), the CHW program would ultimately deploy a cadre of **15,157 CHWs** (covering 60% of the rural population) by 2016 at a total cost of **205 million USD over three years** (see Appendix F). All costs are preliminary estimates and will be further refined with MOHs as implementation moves forward.

Input from multiple departments of the Ministry of Health, Ghana Health Service, NGOs, academia, global funding agencies, and the private sector have helped to create this Roadmap. These stakeholders will be involved as implementation goes forward as well. This document is meant to inform the global community of Ghana's plans to implement a new nationally owned CHW program, to help guide implementation, and to invite relevant and willing agencies to engage in robust commentary on the strategic implementation of Ghana's national CHW efforts.

INTRODUCTION AND RATIONALE

As countries around the globe strive to meet the health-related Millennium Development Goals (MDGs) to improve child and maternal health and reduce mortality and achieve universal health coverage, increased focus is being given to the implementation of evidence-based community interventions using coverage and improved health outcomes. One of the most critical components of community-based interventions is the Community Health Workers (CHWs) concept – a lower level cadre of health workers who are trained to deliver preventive and curative services at the household level.

This is particularly true for rural communities, for whom the provision of preventive, diagnostic, and curative services in the community and at households is a first step to more extensive engagement with primary health care systems. Investments in a national CHW program – as a component of the functioning primary health care system – in health development plans will be important well beyond the 2015 deadline for the MDGs. They will not only support Ghana in achieving universal health coverage, but also support the strengthening of the health sector as it continually evolves to meet the changing epidemiological and demographic needs of rapidly transforming communities.

Since 2000, Ghana has introduced various interventions to improve the delivery of primary healthcare services to its citizens. Over the past 13 years the Government of Ghana (GoG) has implemented the following programs:

1. The Community-based Health Planning and Services (CHPS) strategy –initiated and managed by the Ministry of Health – reoriented trained health workers, i.e., community nurses, and placed them in mobilized communities to provide and promote preventive and curative primary health care services with the support of the people;
2. The Health Extension Worker (HEW) program trained a lower cadre of health workers and assigned them to health facilities to assist health professionals in the delivery of health services;
3. The Health Promotion Assistant (HPA) program oriented graduates of schools of hygiene and unemployed graduates of senior secondary schools to provide free basic health screening, health education and health information across the country.

On the whole, these interventions have been successful at improving access to primary healthcare, particularly in deprived and hard to reach areas of the country. However, there exists a real challenge in sustaining and expanding this access as the country experiences changes in demography and population size, and as the economy slows down with diminishing revenues and increasing debts.

The Ghana One Million Community Health Workers (1mCHW) Campaign provides a timely and unique opportunity for Ghana to hire, train and equip a lower cadre of community healthcare workers to deliver services in their communities. This initiative will create a platform to harmonize the best practices from the various interventions currently in place and help develop a powerful community health system that ensures easy access to basic healthcare at all levels and empowers community members to take control of their health. It will also accelerate progress in the effort towards achieving the health-related MDGs 4, 5 and 6 and Universal Health Coverage.

Under this initiative, the GoG is applying for the scale-up of **31,707 CHWs** over a 10-year period to carry out the mandate of the program, which aligns well with the objectives to provide preventive, promotive, and clinical health services to the citizens of Ghana to empower them to take responsibility for their well-being. Implementing this initiative also offers Ghana the opportunity to blend concerted efforts of its major stakeholders and vendors in a public-private partnership (PPP) to execute a national CHW program.

GHANA POPULATION DATA AND DISEASE BURDEN

In 2010, Ghana became a lower middle-income country with a GDP of $40.12 billion ($39.20 billion in 2011) and a gross national income per capita of $1,810. Despite this overall progress, there is still significant inequality in economic growth between the north and south, which translates into a gap in human development where the north lags behind. With an estimated 28.6% of the population living below the poverty line of $1.25 USD per day, Ghana's total health expenditure represents 4.8% of GDP (total expenditure on health per capita is $90 per person) and its public health expenditure represent 59.5% of GDP.

According to the 2010 National Population and Housing Census with updated approximates, Ghana has a population of 24,658,823 million people, an annual population growth rate of 3.3% and a mean age of 21.7 (21.4 for male and 21.9 for female). Ghana's life expectancy at birth has improved over the past two decades from 57 to 64 years in 2011 (61.22 years for male and 64.73 for female). However under 15 year olds still constitute 38.9% of the population, while those 65 years and older only represent 4.6% of the population. When represented graphically, Ghana's population distribution is shaped as a pyramid where its wide base suggests a large proportion of youth in the country.

The degree of infectious diseases remains very high in Ghana, contributing to a shorter life expectancy. Major infections are food or waterborne diseases, vector-borne diseases, respiratory diseases and animal contact diseases. Access to improved sanitation facilities remains low with a rate of 18% of the population in urban areas and 7% in rural areas.

Additionally, the burden of child mortality remains high with an under-five mortality rate of 80 per 1,000 live births. Moreover, there are regional disparities with a range of under-five mortality rates being as low as 50 in the predominantly urban Greater Accra Region, and as high as 142 in the mostly rural Upper West Region. Infant mortality is estimated at 41 deaths per 1,000 live births; however rates differ across the country with an average of 56 deaths per 1,000 live births in rural areas and 49 deaths per 1,000 live births in urban areas. In addition to malaria and anemia, HIV/AIDS-related conditions, pneumonia, septicemia, diarrheal diseases and malnutrition represent the most common causes of morbidity and mortality in children under 5.

Malaria is the leading cause of both morbidity and mortality in Ghana and accounts for 13.4% of all deaths and 32.9% of hospital admissions. Between 3 and 3.5 million cases of malaria are reported in Ghana each year, of which over 900,000 are children under 5 years of age, making it the leading cause of death in this age group.

HIV/AIDS related causes are the second leading cause of death in the country, accounting for 7.4% of all deaths in Ghana. Data from 2011 indicates an HIV/AIDS prevalence rate of 1.5%. Incidence rates have reduced from 0.18 to 0.15 between 2001 and 2009. HIV transmission is mostly concentrated among persons who engage in high-risk behaviors in urban areas, particularly female sex workers, their clients, their clients' partners.

Anemia is the third leading cause of hospital admissions across all age groups and the second leading cause for children under 5. Closely following HIV/AIDS, it accounts for 7.3% of all deaths in Ghana and is the second leading cause of death in children under 5, accounting for 6.3% of deaths. Data from 2008 indicates that 78% of children under five and 59% of women between the ages of 14 and 49 are anemic. Additionally, anemia demonstrates regional disparity with higher prevalence in rural areas when compared to urban.

Data estimates suggest that many children are not receiving adequate nutrition, and that 28% of children

under the age of five are stunted, 9% are wasted and 14% are underweight. Over the past two decades, the percentage of underweight children has dropped by 13 percent, putting the country on track to reach MDG 1. Stunting rates have also decreased since the 1993 baseline of 36%; however, wasting rates remain unchanged. There is considerable regional disparity showing that 22% of children under 5 in the Northern Region are underweight. These disparities suggest that progress has been uneven across the country and that efforts to improve the nutritional status of children under 5 years of age are still needed.

Current data suggests that 57% of labor and deliveries are performed in a health facility, and a skilled birth attendant was present during 59% of all deliveries. The likelihood of delivering in a health facility and having a skilled birth attendant present is higher in urban settlements compared to rural ones.

Over the past 20 years, fertility rates have been declining in Ghana, dropping from 6.4 to 4.0 births per women. Rural women have higher overall fertility than their urban counterparts with a fertility rate of 4.9 in rural areas and 3.0 in urban areas, with a nationwide fertility rate of 4.0. Overall the use of family planning methods remains low, as only 17% of married women use modern methods of contraception and the unmet need for family planning is estimated at 35%.

Around 50% of the population lives in urban areas; however the rural-urban distribution varies significantly between regions across the country, where 8 of the 10 regions are predominantly rural. In the Greater Accra region, where the country's capital is located, 90.5% of the population lives in urban localities; conversely in the Upper West Region only 16.3% of the population is urban. Overall, the northern part of the country is the least densely populated.

Overall, Ghana's progress toward achieving the MDGs has been mixed. The country is on track to achieve MDGs 1 and 2 to eradicate extreme poverty and hunger and to achieve universal primary education by 2015. Progress on MDG 6, to combat HIV/AIDS, malaria and other diseases, suggests this goal is potentially achievable. MDGs 3 and 7, related to gender equality and environmental sustainability, are likely to be partially achieved. In spite of country efforts, MDGs 4 and 5, to reduce child mortality and to improve maternal health, are unlikely to be achieved.

HEALTH ACCESS AND UTILIZATION

According to Free Universal Health Care[1], 18% of the Ghanaian population has access to free healthcare. Over 60% of the population in Ghana is rural where the nearest health post is 3-5km away, and the current health care system is not effective in reaching these rural populations (GHS report 2011).

Ninety one percent (91%) of 1 year olds are immunized against measles and smear-positive TB treatment success rate is 86%. Antenatal visits increased from 92.1% in 2009 to 94.4% in 2011. The national rate of skilled delivery also continued to improve from 45.6% in 2009 to 52.2% in 2011. The Ghana Demographic Health Survey reported a significant reduction (28%) in under-five mortality rates from 122 to 80 per 1,000 live births between 1998 and 2008.

About 40% of births in Ghana are unattended by skilled health personnel. Currently, maternal mortality rate is estimated at 350 per 100,000 live births. Thus, it is unlikely that Ghana will achieve the MDG target of 185 per 100,000 by 2015, just two years away.

[1]Health journal(http://www.gbcghana.com/index.php?id=1.353980)

With regards to HIV/AIDS, there has been a significant drop from a prevalence of 3.6 in 2003 to 1.5 in 2009. Generally, although there has been a marginal improvement with regards to HIV prevalence, the situation seems a dire one considering the plethora of health needs of Ghanaians.

Unfortunately, communicable and entirely avoidable diseases such as TB and malaria continue to claim the lives of people due to preventable factors such as lack of access to proper drugs and medical treatment. This situation also poses a threat to the attainment of the MDG goal of halving TB prevalence rate by 2015 (GHS Report, 2011).

In sub-Saharan Africa, and Ghana in particular, the basic model for primary healthcare at the level closest to the community is the use of Community Health Care providers such as Community Health Officers (CHO) and community health nurses who have 2 years of training in a nursing institution. With a population-to-doctor ratio of 10,483:1 in 2010 and 10,032:1 in 2011 and a population-to-nurse ratio of 1,489:1 and 1,240:1 in 2010 and 2011 respectively, Ghana's health service delivery system is gradually shifting the focus from direct doctor-patient relations and nurse-patient relations to primary healthcare provision (via CHWs) at the community level in order to effectively reach these remote rural populations.

Ghana's effort over the years has been to strengthen its health service coverage to remote and rural communities. Given the very high population-to-doctor and population-to-nurse ratio, it is clear that the country lacks the adequate number of healthcare professionals, doctors and nurses necessary. Additionally, it would take a long time to train enough healthcare professionals to serve the entire population. In Ghana's context, CHWs will prove to be a sustainable program rather than a mere stopgap measure.

PROVEN INTERVENTIONS

The Community-based Health Planning and Services (CHPS) Program, a comprehensive primary healthcare initiative in Ghana, provides a wide range of essential preventive and curative services to some of Ghana's most rural and impoverished locations. The genesis of the CHPS strategy adopted by the Ministry of Health showed that assigning nurses to community locations reduced childhood mortality rates by over half in 3 years and accelerated attainment of the child survival MDG in the study areas to 8 years. Fertility was also reduced by 15%, representing a decline of one birth in the total fertility rate. The program cost an additional US$1.92 per capita to the US$6.80 per capita primary health care budget.[2]

An important lesson learned from the CHPS program is that many of the trained nurses were unwilling to live and/or work in the remote areas of the country where their services are needed most. Even nurses who come from rural areas became reluctant to leave urban living situations and refused to return to the villages. In order to encourage service in these rural areas, the Government implemented special non-salary incentives to motivate nurses to stay and work at rural CHPS posts.

In order to fill gaps in service delivery, the Government conceived and implemented another program in 2010 to train and deploy 31,400 lower cadre of healthcare workers (6,400 Health Promotion Officers (HPOs) and Health Promotion Assistants (HPAs) and 25,000 Health Extension Workers (HEWs)) to the districts, sub-districts and communities under a Public-Private Partnership between the Ministry of Health, Ministry of Youth and Sports and Better Ghana Management Services, a private sector company. This program supplements and complements the efforts of the trained professionals in the CHPS Zones and other health posts around the country. These cadres undertake community-based health promotion, free basic health screening, preventive health education and minimal interventions similar to the cadre the

[2]Accelerating reproductive and child health programme impact with community-based services: the Navrongo experiment in Ghana, James F Phillips, Ayaga A Bawah,& Fred N Binka Bulletin of the World Health Organization | December 2006, 84 (12);

MoH and One Million Community Health Workers (1mCHW) Campaign seek to develop on a massive scale in Ghana and throughout Africa.

Assessment of the activities of this community-based health intervention undertaken by an independent body (Public Education and Human Development Agency) in 2011 revealed that 89% of all respondents found the work to be very relevant and important; 45.8% of all respondents had had personal encounters and interactions with the Health Promotion Officer/ Assistants (HPO/A); and the remaining respondents indicated that they had heard of the officers working in their communities.

The HPO/A program contributed both directly and indirectly to the increased number of attendants at Out Patients Department (OPDs) across the country from 55.81% in 2010, to 82.11% in 2011 and antenatal visits from 92.1% in 2009 to 94.4% in 2011. Though there has been some success with these efforts, serious service and operational gaps remain which prevent interventions from achieving full potential.

A well-trained, supported, and equipped CHW will prove themselves to be invaluable for Ghana at this point in time. CHW cadres have proven to have a tremendous impact on health indicators across the board, from maternal mortality to nutrition to basic curative services for infectious diseases. A chart listing these activities and documentation of impact from around the globe is included in Appendix B.

With just a year remaining to achieve the MDGs, the 1mCHW Campaign is a timely and welcome initiative. Our ability to hire, train, equip and deploy large numbers of health care workers in our communities with the support of the Campaign will greatly augment our efforts as a nation to reach MDGs 4, 5 and 6.

ROLES AND RESPONSIBILITIES OF GOVERNMENT AGENCIES

The Ghana 1mCHW (GH1mCHW) Campaign team consists of the Directors of Human Resources of the Ghanaian Ministry of Health (MoH) and Ghana Health Service (GHS), the Director of Policy Planning, Monitoring and Evaluation Division (PPME) of the GHS on behalf of the MoH, and the Director General of the Ghana Health Service. The Team will select qualified vendors through a contractual agreement with the Ministry of Health to implement the program nationwide.

The MoH and GHS will be responsible for the oversight of implementation of the national CHW program. The MoH is broadly responsible for formulating health policy, setting standards for health care delivery, monitoring and evaluation of the GHS, sourcing and distributing health service funds and supplies, and coordinating health sector agencies, partners and providers. The GHS is an autonomous Executive Agency responsible for the implementation of national policies under the direction of the MoH through its governing council, the Ghana Health Service Council. [3]

The Policy Planning Monitoring and Evaluation (PPME) Division of the Ghana Health Service has the following tasks:

(1) Organize and ascertain the development of the national plan of action for the integration of the CHW program into the national CHPS strategy. This involves the development of annual operational plans and targets and effective communication to all stakeholders on the intent and purpose of the CHW campaign for all communities, districts and regions in the implementation of primary health care activities.

[3]The GHS continues to receive public funds and thus remains within the public sector, however, its employees are no longer part of the civil service, and GHS managers are no longer required to follow all civil service rules and procedures.

(2) Develop and maintain collaboration with the Qualified NGO Vendors in the placement of CHWs in the electoral areas with established and functioning CHPS zones.
(3) Seek and coordinate regular technical assistance for capacity building in terms of training for all levels of staff, including the CHWs and development of appropriate community level IEC materials for professional and non-professional health providers engaged in community based health care delivery.
(4) Organize advocacy activities for the 1mCHW Campaign among policy makers, donor agencies and high-level professionals and authorities.
(5) Document and organize the dissemination of experiences in the implementation of the 1mCHW Campaign among all districts and regions.
(6) Organize and supervise technical assistance in the monitoring and impact evaluation of the nationwide implementation of 1mCHW Campaign activities.

Under the guidelines and supervision of the MoH and GHS, qualified vendors, (in consultation with the Ghana 1mCHW Campaign team and the Community Health Management Committees (CHMC)) will recruit, train, equip, deploy and manage the administration of the CHWs scale-up program in Ghana. All reporting will be done through the existing CHPS/CHO reporting structures and enhancements will be made to the structure as necessary.

OBJECTIVES

OBJECTIVES FOR GHANA

The goal of the Ghana 1mCHW (GH1mCHW) Campaign is to strengthen Ghana's community-based health delivery system by recruiting, training, equipping and deploying 31,707 CHWs **over a 10-year period** to provide community-based healthcare services in a sustained manner. At full implementation, there will be an average of 1 CHW per 500 people, with variations between urban and rural areas.

The vision of the GHS is a healthy population where all children survive beyond 5 years of age; all pregnant women deliver healthy babies safely; all people live healthy lifestyles free of diseases; and average life expectancy is 75 years and above.

The mission of the GHS is to create a healthy and productive disease-free population in all communities in Ghana. The service seeks to do this by improving access to quality health services for all. GHS is focused on the areas of maternal, neonatal, child and adolescent health, including improved access to modern family planning services.

The objectives of the Ghana One Million CHWs Campaign are to:

1. Provide trained CHWs to support the operations of the CHPS Program in the delivery of quality primary health care services in all the electoral areas[4] of the country;
2. Rapidly increase human resources for health service delivery by recruiting and training the large pool of unemployed graduates (including school leavers);
3. Bring basic healthcare services to the doorsteps of rural populations and hard-to-reach areas;
4. Harmonize, strengthen and scale-up various categories of community-based primary healthcare operations and interventions;
5. Use mobile health information technology to leverage community-based service delivery.

GOVERNMENT PRIORITIES

Currently, the GoG is focused on improving and strengthening health service delivery activities in all of the 6,135 electoral areas, where the CHW program will address the basic needs of the people. The Ghana 1mCHW Campaign will harmonize and scale up all current community-based interventions in the country by providing needed human resource at the community level with the needed skills, knowledge and equipment to support a robust community health system in Ghana.

By implementing the 1mCHW Campaign, GHS will realize the dream of creating an effective Community Health System, the ultimate developmental platform to achieving universal coverage for health services. The initiative will:

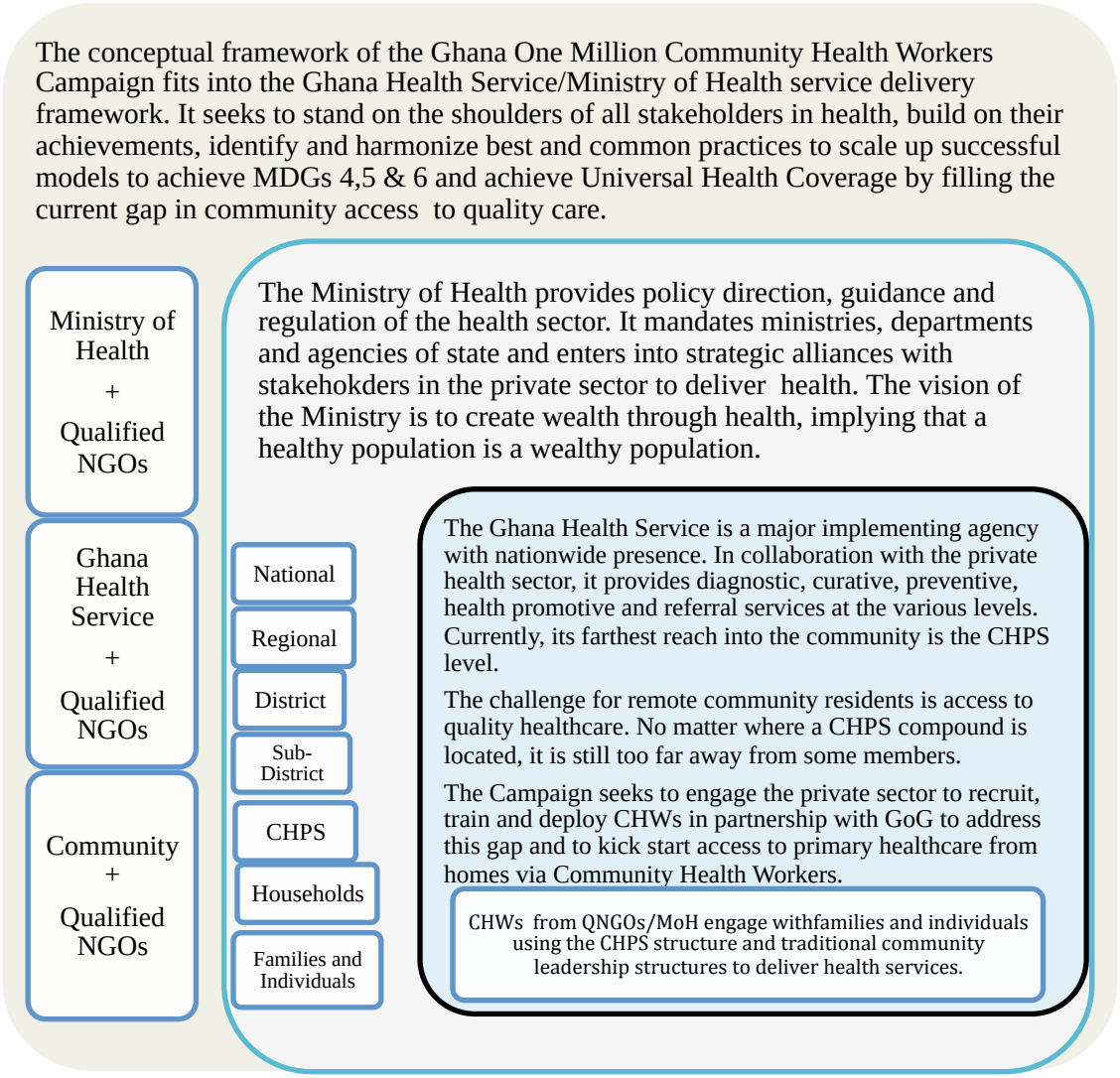
- Establish public-private partnership with qualified and approved local NGOs to implement the program;
- Re-orient the Government's CHOs to provide technical and supervisory support to the CHWs;

[4]The electoral areas model was chosen to ensure that every corner of Ghana is covered and to secure a strong buy-in from the people's political representatives at the Local and National Levels. This buy-in is expected to guarantee unimpeded flow of resources to support healthcare delivery.

- Support recruiting of CHWs;
- Provide material, administrative and funding support as agreed to with the Campaign;
- Develop and implement the M&E framework

PROGRAM DESIGN

CHW PROGRAM CONCEPTUAL FRAMEWORK



GHANA 1MCHW CAMPAIGN KEY STAKEHOLDERS

The proposal for strengthening healthcare delivery at the community level and CHPS with the deployment of more community health workers is a laudable one and has been embraced by the Ministry of Health and Ghana Health Service. Thus, to enable its smooth implementation and success to attain the

health sector goal of bringing health service to the doorstep of every Ghanaian, key stakeholders have been identified to guide and manage the project at the Central and Regional levels (Diagram 1).

The Ministry of Health and Ghana Health Service will provide the leadership for the effective and efficient implementation of the Ghana 1mCHW Campaign. To ensure political commitment, leadership and support from management as well as ensuring ownership of the project by the communities for the smooth takeoff and sustenance of the project, three basic levels of roles and responsibilities are proposed as per the model structure below. These include the roles and responsibilities at the National, Regional and District, Sub-District/Community levels.

At the National level, there will be a Steering Committee and Technical Advisory Group (TAG), a sub-committee of the Steering Committee. The Steering Committee will be comprised of the Chief Director of the Ministry of Health, a representative of the Ministry of Finance, the National Development Planning Commission, the Ministry of Local Government and Rural Development/ Local Government Service the National Health Insurance Authority, the Director-General of the Ghana Health Service, two representatives from the Parliamentary Select Committee on Health, and Deputy Director of Human Resource for Development (HRHD) of the Ministry of Health.

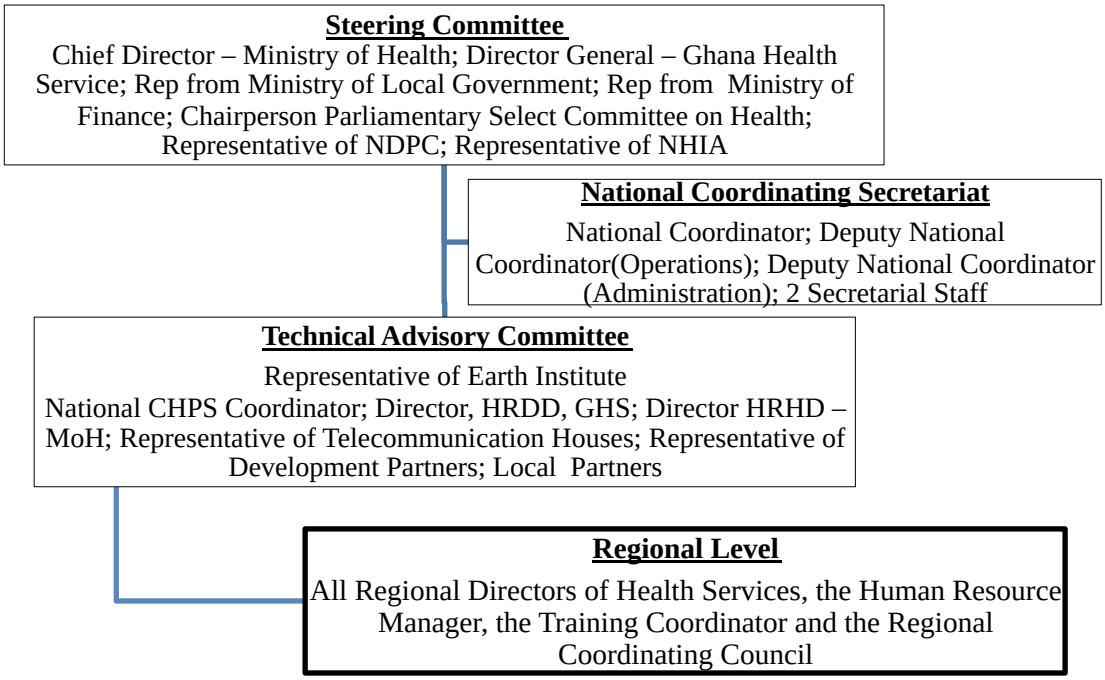
The Steering Committee will provide leadership and direction to guide the TAG that will be responsible for the implementation of the project. The TAG will be comprised of the Directors of Policy Planning Monitoring and Evaluation (PPME), GHS Directors, Deputy Director of HRHD, MoH and shall report regularly to the Steering Committee. The TAG's chair, Deputy Director of HRHD, MoH will serve as the secretary of the Steering Committee.

At the Regional level, all Regional Directors of Health Services, the Human Resource Manager, the Training Coordinator and the Regional Coordinating Council will provide technical advice to guide the TAG and help mobilize Districts, Sub-districts and Communities to implement the CHW scale up. They will give guidance and support the training of the CHWs with qualified NGOs. The District Directors and District Assemblies shall liaise with community opinion leaders to identify qualified candidates for recruitment and training. In addition, this level shall also be responsible for supporting NGOs in the management, supervision and evaluation of CHWs.

In the deployment of the CHWs, the country will be prioritized by region and district according to high-burden of disease as well as likelihood of success (criteria is to be determined in the implementation planning phase). Before the launch of the project, NGOs will be selected using the appropriate selection methods (criteria is to be determined in the implementation planning phase) to carry out implementation of the CHW program in partnership with the Ghana Health Service under a PPP agreement.

There will be an implementation team at all levels to constantly provide feedback to all stakeholders. This team will include members of the TAG, a rotating point person(s) from the Regional level, a rotating point person(s) from the District level, and two consultants.

Diagram 1: Ghana 1mCHW Campaign Key Stakeholders



HEALTH WORKERS IN GHANA & CHW SCALE-UP

Currently, community health nurses of the Ghana Health Service provide community healthcare services:

- **Community Health Officers (CHOs)** operate out of the CHPS compound and are responsible for providing services at the household level. However, due to limited numbers, the majority of their time is spent in the CHPS compounds. There are currently about 9,700 CHOs in Ghana.

With the implementation of the Ghana 1mCHWCampaign, Ghana proposes to categorize the scale-up of community health workers in two main phases over the next 3 years.

PHASE 1 (2014-2016)

1. Training of trainers (ToT)
2. Recruitment of Community Health Workers
3. Training of Community Health Workers
4. Orientation for major stakeholders such as Community Health Volunteers (CHVs), Chiefs, Queens, Opinion leaders, Elders, assemblymen and women, unit committee heads, religious leaders etc. to create a support base at the community level for the CHW operations

PHASE 2 (2017-2019)

1. Recruitment and training of additional CHWs
(Training of CHOs will be streamlined into their regular trainings)

*Some details about Phase 1 and 2 implementation are provided in the rest of the Roadmap document and more will be covered in the Implementation Plan (forthcoming in Spring 2014).

CURRENT STATUS AND NEED

In 2000, the MoH initiated and implemented the Community-based Health Planning and Services (CHPS) program in order to bring accessible healthcare to all corners of the country.

The CHPS program was an innovative first step to create a strong health sector presence at the community level. With CHPS, a Community Health Nurse who has been trained and re-designated as a Community Health Officer, who previously worked as part of a team at the Health Centre within the Sub-district, agreed to be moved into residence within the community known as the CHPS zone with a Community Health Compound (CHC)[5] and to be responsible for the health of the population with community support from the Community Health Volunteers (CHVs) and the Community Health Management Committees (CHMC)[6]. Each CHPS zone, which in most cases may be equivalent to the electoral area, comprises an average of 12 communities.

There are currently 6,500 CHPS compounds, although many are not functioning at full capacity due to limited resources. Considering the workload and schedule of home visits as well as clinical care provision, the CHOs are stretched beyond their capacity and are unable to provide the optimal level of care. It became apparent that it was impossible for the CHO to be available for both home visits and stationary clinical services simultaneously. The strategic response was to recommend the placement of CHOs-in-residence in pairs. To ensure that the basic health needs of each community are adequately met, there is a need for additional groups of health workers, CHWs that will report to the CHOs and provide first level health care for the communities that comprise the electoral area.

Although CHOs previously filled a gap in Ghana's healthcare system, there remains a need for another level of health delivery. CHWs will work under the supervision of CHOs to support community-based health promotion practices, basic health service delivery and screening, preventive health education and other health interventions in order to fill this need. Each CHW will visit each household on the average once every quarter. Through the Campaign, Ghana intends to leverage existing health cadres such as the aforementioned CHVs, HPAs and HEWs to become CHWs if they meet eligibility criteria.

Calculation of Need

Though there is a significant presence of CHOs in Ghana, there is an urgent need for a large-scale investment of CHWs in order to achieve MDGs 4, 5, and 6 and Universal Health Coverage. The proposed population-to-CHW ratio is 500 individuals (100 Households x 5 people per household) to 1 CHW. Through a phased approach, Ghana plans to reach 20% rural coverage by 2014, 40% coverage by 2015, and 60% coverage by 2016. 100% rural coverage will ultimately be reached in 2019 (Table 1).

[5] A CHPS Compound is the living and operational base of Community Health Officer who has agreed to relocate into community residence. It is a simple building procured (rent, renovate an already existing structure, or construct a new building) by the community signifying their commitment and ownership of the CHPS initiative

[6] CHMCs are constituted by appointed elders in the community who report community health issues to the Chiefs and other elders of the community

Table 1: CHW #s Needed and Planned for in Phases 1 through 3

	Phase 1			Phase 2			Phase 3			
Year	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
Rural Pop	11,836,235	12,226,831	12,630,316	13,047,117	13,477,671	13,922,435	14,381,875	14,856,477	15,346,741	15,853,183
CHWs needed per pop	23,673	24,454	25,261	26,095	26,956	27,845	28,764	29,713	30,694	31,707
Target % of CHWs Needed	20%	40%	60%	80%	90%	100%	100%	100%	100%	100%
CHWS in target scale-up scenario	4,735	9,782	15,157	20,876	24,261	27,845	28,764	29,713	30,694	31,707

Under the Ghana One Million CHWs Program, the GoG plans to scale-up the presence of CHWs in the communities by recruiting, training, equipping and deploying a total of **15,157 CHWs** during Phase 1 of the Program. This will be done through both the existing Ghana Health Service health management structure as well as in partnership with qualified NGOs (vendors).

INTEGRATION WITH OTHER PRIVATE EXISTING CHW CADRES IN GHANA

It is critical to ensure that all CHWs provide the same national standard preventive, promotive and clinical quality services and those cadres with similar profiles are integrated into one unified, comprehensive action framework. This national action framework will provide an entry for the extant programs and standardize CHWs deployment countrywide using standard principles that vary only contextually to local customs and practices. All programs should ultimately be incorporated and share common goals and objectives, trainings and curricula, and evaluation metrics.

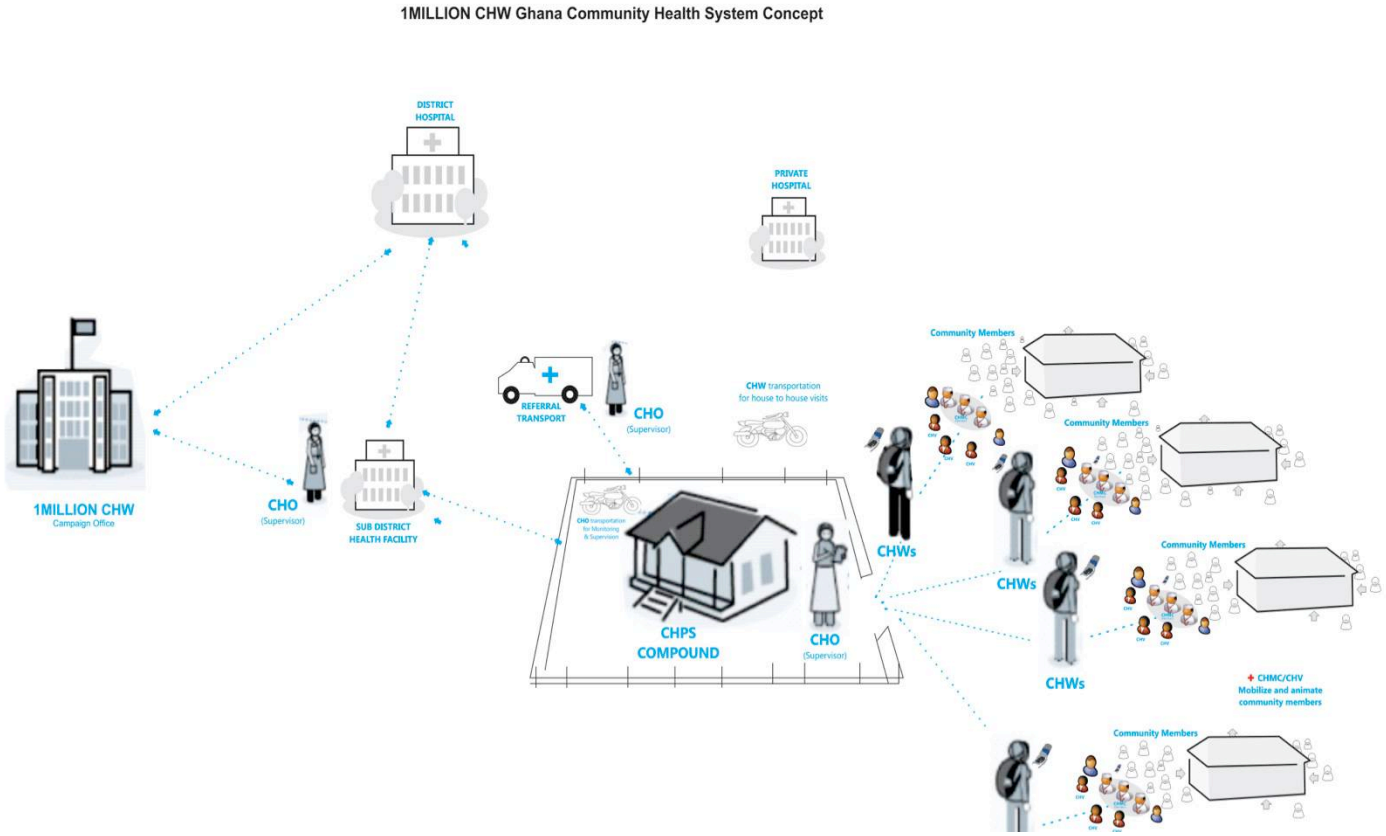
To implement the Ghana 1mCHW Campaign, CHWs that are recruited, trained, deployed and managed by non-governmental organizations, faith-based organizations, community-based organizations, etc. should align with the national CHPS strategy to create an effective and harmonious system of cadre of CHWs in Ghana working efficiently to serve the people. In order to utilize the best practices of partners with existing cadres of CHWs, a four-step integration process will be conducted. The steps are as follows:

1) Assess the capacities of the current non-governmental organizations and other organizations currently working with or without the government to support the national plan to deploy and manage 31,707 CHWs (over a 10 year period) across the country. This will include an assessment of the number of CHWs currently managed, their geographic reach, and the types of services they deliver.
2) Review performance specifications of existing cadres, including their functional standards and impact to date.
3) Conduct a reconciliation process to identify how best to partner and integrate services to reach the maximum number of households and geographic regions.
4) Ensure that the operations of all CHWs activities comply with the ethics, content and intent of the Ghana 1mCHW Campaign.

CHW ORGANIZATION

CHWs will be the core strategy of the primary healthcare system at the community level and CHWs will work in close partnership with other health workers at the CHPS compound, health centre, and higher-level health facilities. The CHW cadre cannot replace physicians, registered nurses, or other agents of the formal health system. By bridging the gap between health facilities and households, CHWs will play a unique role in the delivery of services that complement the efforts of facility-based staff to form a single, unified primary health care team (Diagram 1).

Diagram 2: Ghana One Million CHWs Campaign Service Delivery System



Community Health Officer (CHO)
Currently, the CHO is the lowest presence of the health system at the community level but is recognized both at the community level and at the larger health system as the liaison officer. CHO coverage of the community is minimal and inadequate to meet the needs of the rural communities. Following the Ghana 1mCHW Campaign's Roadmap guidelines, the CHO will be the supervisor of the CHW system (Appendix D). The CHO will accompany and introduce CHWs to household visits, coaching and mentoring the CHW to ensure that health behavior in the community and households is acceptable. The CHO will develop and implement a monthly supportive supervisory schedule to assure the quality of CHW work. The CHO will meet quarterly with the CHWs to develop, implement and evaluate Community Health Action Plans, established by community members to identify challenges faced in the assessment of their community's health status and to address issues and gaps identified during evaluation.

Community Health Worker (CHW)
The CHWs will work within the communities, helping the CHO with aspects of his/her work including home visits, health promotion, iCCM, disease surveillance and all GHS-approved and sanctioned health intervention activities at the community level as well as treatment of minor ailments.

Community Health Management Committee (CHMC)
CHWs will be supported by the CHMC[7], who will create an enabling environment for the Campaign to thrive at the community level. Members of the CHMC are respected and committed community elders, opinion leaders, organized group leaders, who speak for traditional authorities and have the power to leverage community volunteerism to support all and any community development initiative. They will organize the community response by coordinating the volunteer arm of community service delivery.

Community Health Volunteers (CHV)
CHWs will be assisted by Community Health Volunteers (CHV), who form part of the community stakeholders and are coordinated by the CHMC. Whether CHVs will be used in a given district or not will depend on the local circumstances and decision-making. The main function of the CHVs is to animate the community and mobilize them with the mandate from the Chiefs and Elders and under the supervision of the CHMCs with the support of CHWs. They will work as a team at the community level and assist in organizing community durbars to discuss community health matters. Their intimate involvement in the Ghana 1mCHW Campaign will position them to disseminate the correct and accurate information about the Campaign to community members at all times and to correct any misinformation that may arise in the course of implementation. Based on their level of competency from long practice and involvement in community work and the ease with which they can acquire new skills, they may transition by training and certification to become CHWs – this decision however will depend on recommendations from the community leadership, the CHO and a track record of objectively verifiable performance indicators.

[7]The Community Health Management Committee (CHMC) is constituted by traditional authority (Chiefs and Elders) to manage the health related matters in the community. After initial consultations with the chiefs and elders, these nominated elders stand in for the chief, negotiate and deliberate on all health-related matters on behalf of the chief and feedback to the authorities. They administratively manage the community health volunteers (identify, nominate for approval, and manage volunteer work related issues). This role removes the burden and challenges faced by the CHO to manage community volunteers who are non-formal workers.

CHW TASKS OVERVIEW

The Basic Package of interventions to be delivered by the CHW is in line with the concept of Primary Health Care essential health care made universally accessible to individuals and families in the community.[8] The basic service package to be delivered in the communities would be as a result of teamwork and not only by the CHW (Appendix C).

The CHWs shall perform all the Core Health Services enumerated in Table 3 such as: disease monitoring, surveillance, reporting and health education, including methods of prevention and control; promotion of food supply and proper nutrition; provision of an adequate supply of safe water and basic sanitation; maternal and child health care, including family planning; immunization programs against the major infectious diseases; prevention and control of locally endemic diseases; appropriate treatment of common ailments and injuries; provision of essential drugs; and monitoring pregnant women and children under five. The services also include household visits to assess, educate, inform, counsel, prevent and treat minor ailments. Once the program is in place, the role and scope of activities of the CHOs, CHWs and other health cadres can be tailored to the changing and emerging health priorities in the country, region, districts, and communities.

The CHWs will be expected to spend 80% of their time in the community to deliver the core interventions. They will make routine home visits with a goal of reaching every household in their catchment at least once every 3 months. They will hold regular community meetings once every quarter to provide feedback on the health status of the community under the supervision of the CHO and the sub-district head or suitable representative from a higher level in the Ghana Health Service.

The CHWs will work closely with the CHOs both in the field and in the CHPS compounds. The CHWs are expected to pursue a work routine that revolves around household visits based on outreach by the health provider, rather than a static service base for the client to attend. The idea is to bring health services to the clients rather than follow the traditional method of expecting the client to seek out the health care provider. The CHPS compound is often the service delivery point and the first point of contact for communities with the formal health system. Community sensitization campaigns will therefore be conducted (with the help of community members outlined in Box 1below) to prime the local population to appreciate the paradigm shift in health service delivery in the context of the campaign and prepare them to receive help from the joint efforts by all health workers (CHWs and CHOs) that service that area.

Box 1. CHW Community Support System

The technical service provision will be supported by others within the community, especially the following:

- Community Health Management Committees (CHMC)
- Community/traditional health delivery personnel (native doctors, TBAs, herbalists, etc.)
- Community-based volunteers (CHV)

[8] Community-based Health Planning and Services (CHPS); The Operational Policy; Ghana Health Service Policy Document No. 20, May 2005

Working as the leader of the team of community health workers of the community health system and as agents for the paradigm shift, CHWs will liaise with the CHO and address routine issues in the community and together they will seek support from facility-based staff as needed. CHWs will treat simple cases of acute infection quickly before complications develop and refer patients with more complex symptoms and illnesses directly to the CHO before referring to higher-level health facilities. When serious illness arises in the home, CHWs will facilitate immediate access to care by calling an ambulance (if available) or arranging for other means of transport to the primary health care facility in collaboration with the CHMCs.

Another crucial component of the CHW model is follow-up visits. During this time, CHWs will continue to assess danger signs and deliver point-of-care services, while following up on referral cases to the primary and secondary care facilities.

Each electoral area currently covers on average 12 communities. Each of these communities will have oriented CHWs who will provide services as enumerated in the Ghana One Million CHWs Campaign. The recommended **Basic Package of Services** by the team at the Community level will be in these broad areas:

- Promotion and prevention
- Management of minor/common ailments and their referrals; and
- Case detection, mobilization and referral

Specific duties and responsibilities include:

- Community and compound (household to household) level education on primary health care;
- Immunizing and providing pre- and post- natal care service delivery;
- Supervising and monitoring sanitation efforts;
- Provision of nutrition education and care;
- Primary care for simple cases of diarrhea, malaria, acute respiratory diseases, wounds and skin diseases;
- Providing referrals for more serious afflictions;
- Provision of education on prevention and management of STDs and HIV/AIDS;
- Provision of family planning services and referrals;
- Supervision and monitoring of community volunteers and TBAs;
- Conducting surveillance on diseases and health events; and
- Submission of written reports to the CHO for submission to the Sub-District Health Team (SDHT).

Services shall be provided in accordance with the existing regulation of the Ghana Health Service.

CORE HEALTH SERVICES PROVIDED BY CHWS

Tables 2 and 3 list core health services provided by CHWs in Ghana.

Table 2: Minimum Requirements for Ghana CHW Program Effectiveness

Condition	Monitor	Counseling and Prevention	Refer and/or Treat	Materials Needed
Case detection, mobilization and referral				
HIV/AIDS	• Assess for danger signs • Monitor for ART adherence • Encourage compliance to 'Know Your Status' campaign	• Provide information and awareness about HIV and encourage testing at the health facilities	• Refer HIV+ individuals for ART consultation, if not already participating	•
TB	• Assess for danger signs	• Contact tracing • Community /family member sensitization	• Referral of suspected cases of TB • Contact tracing for confirmed cases •	•
Manage minor/common ailments and refer more serious afflictions; Primary care for simple cases of diarrhea, malaria, acute respiratory diseases, wounds and skin diseases; Conduct disease surveillance; Submit written reports to the SDHT				
Diarrhea	• Assess for diarrhea	• Provide household counseling on proper sanitary practices, water treatment, and environmental hygiene to reduce onset of diarrhea in their children • Advise on household care of child with diarrhea. • Emphasize	• Administer ORS-Zinc to children (6 months and older) who experience diarrhea and show signs of dehydration, but have a MUAC measurement >125 and no indication of Edema. • Provide caretakers with enough zinc supplements to continue home treatment for 10–14 days.	• Oral rehydration salts • Zinc • Chlorine to purify water supply

		continued feeding or increased breast- feeding during, and increased feeding after the diarrheal episode		
Fever and Malaria	• Assess for fever • Monitor bednet ownership and correct usage • Ensure coverage of newly pregnant women and newborns with LLINs	• Distribute bednets to households that do not possess them • Replace damaged nets (hole greater than 5cm) and cover new sleeping sites	• Referral of pregnant women and children under 5 who show fever to a facility for proper check-up • Provide ACT (ArtesunateAmodiaquineTherapy) for RDT+ and referrals for RDT- in fever cases of children 6 and over • Follow-up of all ill children until recovery after 2 days	• Malaria Rapid Diagnostic Tests • ACTs
Pneumonia	• Assessing Fast Breathing • Assessing Chest In-Drawing	• Provide household counseling on proper sanitary practices (handwashing, etc.)	• Administer first dose of antibiotic & Refer URGENTLY to hospital if suspected severe pneumonia or other very severe disease • If probable pneumonia, give oral antibiotic for 5 days & Soothe the throat and relieve the cough with a safe remedy • Follow-up of all ill children until recovery after 2 days	• Cotrimoxazole • Paracetamol
Immunize and provide pre- and post- natal care				
Neonatal Care	• Complete birth registration • Conduct first visit within 48hrs of	• Counsel on assessment for life-threatening conditions and physical and mental health of infants	• Refer any newborn children with danger signs to facility	•

	birth; bi-weekly visits to a household with a newborn child • Monitor EBF • Monitor bednet usage	• Encourage immunizations • Counsel on EBF for first 6 months, keeping baby warm, care of umbilical cord, hand-washing with soap, newborn temperature management, and recognizing danger signs •		
Provision of family planning services and referrals				
Maternal Care & Family Planning	• Enumeration of pregnant women • Monitoring of ANC cards and whether a pregnant woman has received clinical care • Conduct biweekly postpartum care visits to assess for danger signs	• Assess iron and folic acid compliance • Review birth plans close to delivery • Referral for delivery at health facility • Distribute condoms and pills • Condom promotion	• Referral for ANC services • Refer to facility for long-term birth control methods	• Measuring tape • Folic acid and iron pills • Condoms • Birth control pills
Provide education on prevention and management of STDs (syndromic diagnosis)				
Safe sex education	• Assess at risk sexual behavior, multiple sexual partners, alcohol use, long distance truck drivers	• Educate on condom use • Educate on partner notification of status	• Refer for treatment and counsel on partner notification diagnosis and treatment	•

Cholera	• Assess household sanitation and hygiene procedures and conditions • Identify potential cases of Cholera • Record all cases in the community and identify water sources that may be contaminated	• Provide household counseling on proper sanitary practices, water treatment, and environmental hygiene • Demonstrate preparation of home-based ORS, hand washing and water filtration • Distribute materials such as soap, aquatabs, and bleach • Distribute ORS	• Refer suspected cases of Cholera or other serious cases of water-borne illnesses to the health facility • Administer ORS	• Oral rehydration salts • Zinc • Chlorine to purify water supply • Soap

Table 3: Additional Services

Condition	Monitor	Counseling and Prevention	Refer and/or Treat	Materials Needed
Community and compound (house to house) level education on primary health care; Education for Health Promotion and Disease Prevention; Supervise and monitor sanitation efforts				
Water and Sanitation	• Assess household sanitation and hygiene procedures and conditions • Observe personal hygiene and behavior	• Provide household counseling on proper sanitary practices, water treatment, and environmental hygiene • Demonstrate preparation of home-based ORS, hand washing & water filtration • Distribute ORS	• Refer to facility serious cases of diarrhea or symptoms of Cholera or other serious water-borne illnesses	• Oral rehydration salts bags. • Chlorine to purify water • Soaps

Provide nutrition education and care				
Nutrition	• Assess for nutrition status • Monitor mid-upper arm circumference (MUAC) • Conduct growth measurements • Monitor for proper infant feeding	• Promote immediate and exclusive breastfeeding • Promote locally appropriate complementary feeding, highlighting the nutritional value of traditional and locally available foods • Educate on and monitor the use of iodized salt to prevent goiter • Educate on proper food storage techniques	• Referral a child of 6 months or older to the facility if MUAC measurement <125mm and/or edema are present.	• Infant scales • MUAC bands
Supervise and monitor community volunteers and TBAs				
CHVs	• Home visits, community mobilization, participation in health outreach services, health education	• Good and culturally appropriate behavior, community diplomacy	• Conflict prevention, management and resolution	•
TBAs	• ANC cases, deliveries and delivery outcomes	• Personal and environmental hygiene, clean and safe deliveries, hand washing education, clean materials for cord cutting	• Assessment of pregnancies, Not to deliver primips, multiple pregnancies, breech; • Early referral for difficult labor	•

CRITERIA & SELECTION

Phase 1: CHW Manager Upgrade

Community Health Officers (CHOs) are to be trained and orientated to supervise the Community Health Workers under the GH1mCHW Campaign.

The CHO cadre will be strengthened and re-oriented to provide maternal, neonatal, child health and other public health services in addition to some minimal diagnostic and clinical services. Consequently, while the CHO provides support for basic clinical services at homes and at the CHPS service delivery point, the CHWs reinforces health promotion and disease prevention activities.

Phase 1: CHW Recruitment and Training

Below are criteria for recruitment and training of community members as new CHWs.
Candidates for CHW positions will be recruited and selected from local communities. Each community may add additional considerations based on local context:

1. **Gender:** Male and female
2. **Education level: Junior/**Senior high school and above
3. **Literacy:** Can read and write (Trainable)
4. **Connection to community:** Should live in or in close proximity to the community one is applying for
5. **Language abilities:** Must be fluent in the local language and English
6. **Credibility:** Must be passed as credible in a public forum without any criminal and behavioral records
7. **Nomination:** Must be nominated by a prominent community member (e.g., chiefs, queen mothers, Members of Parliament and local opinion leaders, etc.)
8. **Endorsement:** Must be endorsed by community for responsible and respectable behavior

During Phase 2, the Campaign team will hire additional candidates who are qualified and willing (based on the criteria above). Additional candidates may be recruited from residents in and around the respective electoral area who are (but not limited to) graduates from senior high schools[9] and other health training institutions (School of Hygiene graduates, Senior High School graduates, etc.). A comprehensive six-month training program will be organized for these candidates in both phases.

A detailed process will be formalized for the screening and selection of CHWs across the country, including conducting community meetings with a call for submission of candidates for background search, interview, selection and final approval.

As local community members, newly recruited CHWs should be acquainted with the socio-cultural and behavioral determinants of disease conditions within the community and speak the local language. They shall be engaged in consultation with the leadership of the community such as chiefs, queen mothers, Members of Parliament and local opinion leaders. The program shall follow proper and appropriate community entry procedures for each community (as outlined below).

To actively engage the community in the CHW subsystem, CHWs must be well trained to do so. They must have intimate knowledge of the community, a nuanced understanding of community perspectives on health and well-being, and an awareness of community resources and strengths, such as supportive social

[9] Will be based on the availability of SHS graduates in the target catchment areas

practices and systems that benefit health. This is facilitated by selecting CHWs who can speak the local language but do not necessarily come from the specific locality as the communities prefer a 'trusted outsider' to provide certain types of sensitive health services such as family planning in their catchment area. CHWs must also have planning, communication and collaboration skills to facilitate community dialogue, cross-sectoral collaboration and problem solving in a culturally competent way.

TRAINING & CURRICULUM

Phase 1: Training

A carefully considered training strategy and well-coordinated plan to train all CHWs will be implemented nationally. CHW training will be decentralized throughout the country, with trainings occurring at the community level. All CHWs shall be trained according to the training policies and curricula of the MoH/GHS and GH1mCHW Campaign. Preparing CHWs for deployment will also require a Training of Trainers (ToT) for all CHOs and their supervisors at all levels.

Training of Trainers (ToT)

Under Phase 1 of the implementation of the GH1mCHW Campaign, ToT shall be conducted for three categories of officers from all the ten regions namely:

- Regional Disease Control Officers
- Regional Deputy-Director, Public Health
- Regional Health Promotion Officers
- Deputy Director of Nursing Services[i]

These Officers shall serve as facilitators for the training and upgrading for the rest of the candidates under this program.

Top-up Training and Orientation for CHOs

CHOs are well trained and able to be further re-oriented to supervise the CHWs that will work in the cluster of communities that constitute the electoral area. It is recommended that they be provided with a **2-week** training session on managing community health systems, supportive supervisory skills as well as community diplomacy. They will also need a **1-week** training on the course contents of the CHWs. Therefore, the CHOs will require **3-week training and orientation.**

Phase 1: 28-week Pre-Service Training*

- **8-week Classroom Training**: CHWs are given an initial **8-week** classroom training on concept, basic components, principles and strategies of the GH1mCHW program. This initial classroom training will also be used to provide training in basic health promotion and disease prevention.
- **2-week Field Practicum/Observation and Orientation:** CHWs will then have an opportunity to spend **2 weeks** in their respective electoral area to observe the practical implications of what they have been taught. This will represent a study tour where they are attached to an assigned mentor (a practicing CHO from which the CHW can learn first-hand field experience to supplement the theory from school) and a coach (CHO) to observe and learn the nature and scope of work of these established workers who they will ultimately be assisting.
- **4-week Refresher and Reflection:** After the 2-week field training, the CHWs will return to the training facility for another **4-week** refresher training on what they had learned and observed in the field and use the opportunity to consolidate and to critically reflect and receive clarity in their roles and responsibilities. This refresher period will be used to stress basic principles and concept of the GH1mCHW program.
- **4-week Facility Practicum:** Upon completion of the initial 14 weeks of training from the training institution and study tour, they will be attached to a facility for practical orientation and training at the district/sub-district level for **4 weeks** to understand the structure and functioning of the primary health care system and implications for work at the community level.
- **6-weeks Top-up Training:** The next 6 weeks will be spent in the classroom to top up on the clinical components of the CHW syllabus. This period will concentrate on diagnosis and treatment of minor ailments, treatment guidelines and protocols and referral procedures.
- **4-week Internship/Practicum:** The last 4 weeks (of the proposed 6 months of training) will be spent in an Internship Period at the district/sub-district to sharpen their clinical skills under a designated preceptor. At the end of the internship period, they will be certified as Community Health Workers. They will therefore require **a minimum of 28 weeks** training and certification.

*Proposed training guidelines to be further developed and refined with training vendors in the forthcoming public-private partnership.

Phase 1: In-Service Training

As they work, CHWs will be given refresher trainings on emerging public health issues once every 6 months for duration of **1 week** or as and when needed. Continuing training will consist of both refresher modules to reinforce knowledge and skills in topics that the community, district, and national assessments of the data identify as competency gaps or health priorities in the community, and content modules to introduce new topics or interventions that should be added to CHWs activities. Additional in-service training on topics identified as problems or in need of further reinforcement will take place during the monthly management meetings.

COMMUNITY HEALTH VOLUNTEERS: ROLE, TRAINING, MANAGEMENT

Community engagements and meetings with the chiefs, elders, and other key community members will be organized by the Community Health Volunteers (CHVs). These are community animators for community events and they assist any project that benefits the health of the community. Their role in the GH1mCHW Campaign is critical. As they get involved in the meetings and hold discussions with the Campaign team,

they become the main source of information on the Campaign to immediate community members in tandem with the CHWs.

The CHVs are the core support base to the CHWs and will receive basic orientation in health promotion, disease prevention, disease detection, mobilization and referral areas. CHVs will also be provided with basic first aid skills for home accidents. All other activities can only be undertaken under the direct supervision of the CHW or CHO.

CHVs will also be oriented to the Campaign and assigned to organize the communities. A **1-week** initial orientation will be followed by three days of update meetings once every quarter to keep them abreast with development and to ensure that the appropriate information on the Campaign is always available to the community members.

Volunteer work is best managed by the community members. Social norms and full background knowledge of the volunteers is an effective way to encourage, control and motivate the volunteer. The volunteers will be managed by the Community Health Management Committees (CHMC). These are respected community elders that oversee the management of the volunteer.

PROTOCOLS AND GUIDELINES

All internal guidelines for the management of the program will be compiled into a manual in English that each CHW, CHO and other managers will be trained on and own, (and also provided digitally on the mobile health platform, if feasible). In order to prevent corruption and mismanagement at the local and departmental level, the manual will include regulations with penalties and sanctions, including financial. These regulations will also be included in CHW and CHO Contracts. This adherence will be strictly enforced.

COMMUNITY ENGAGEMENT

For effective community ownership of the GH1mCHW Campaign, effective stakeholder consultations are needed. The Chiefs and Elders of the community must be engaged in consultative meetings with community members to afford them the opportunity to understand and endorse the Campaign, to seek their participation directly and to get them involved in the whole process.

The community will be mobilized in this process to actively participate and support the CHW through shared health knowledge, health campaign planning, quality oversight, and a commitment to collaborate with health services. Mobilized communities establish the CHMCs to support the selected CHOs from the health sector, provide local legitimacy to the CHWs' role, support CHWs' household and community outreach tasks, provide additional intrinsic and extrinsic incentives as motivators, guide health delivery interventions, problem-solve, and hold service providers accountable. When health systems are weak and mortality is high, a fully developed community approach will offer significant contributions to the health system.

Community engagement also includes surveying and partnering with existing community-based organizations, non-government organizations, faith-based organizations, leaders and the private sector to support the CHW program. For example, peer support groups have been effective at reducing stigma, supporting home care, and overcoming obstacles to care-seeking and practice of key behaviors. Participatory women's groups, in particular, have been cited for their effect on women's empowerment leading to positive health outcomes, especially when linked to savings and loan programs. Local multi-

agency, cross-sectoral coordination committees can address determinants of health, contributing to sustainable cause-specific reductions in mortality.

Furthermore, the active involvement of the local assemblymen[10] in the functions of the CHWs and CHMCs will create sustainability for this community health system. Early consultations with the local assemblymen will foster a productive working relationship and support for the GH1mCHW Campaign as a reasonable and credible strategy for improving community health. It is important to hold sensitization meetings with the District Assembly (District Chief Executive and the Assemblymen) before the launch of the Campaign regarding the structure, functions and philosophy of the GH1mCHW Campaign. Creating buy-in from the local government structure will ultimately link the community health system to the local government structure and open up avenues for resource mobilization for sustainable health development at the community level and create ownership for the community health system.

As each community is a reflection of its local culture, history, politics and interaction with the health system, each unique local context will present distinct challenges to standardized health services. These challenges will change over time with demographic and epidemiological shifts. In addition, it is important to recognize that any "community" is not a single entity. Often a community is a variety of groups that are related in some way (most commonly by geography), and there will likely be divergences on key common issues. Subsequent national discussions will yield a core community engagement strategy to guide sub-district level implementation.

DEPLOYMENT

After training and orientation, CHWs will be assigned to each electoral area to begin the outreach work. It is estimated that there will be a total of 12 CHWs working in each electoral area under the supervision of 1-2 CHOs. A team of CHWs will be assigned to households within the community, and they will serve as the bridge to the first point of access to the national healthcare system. They will visit these households in rotation throughout the year.

The CHO will provide technical support and supervise the CHWs at the community level and conduct regular visits and inspections. They will compile regular reports and forward to Sub-district heads for onward transmission to the District and beyond. The CHW's working relationship at the community level will also be supported by the CHMCs.

REFERRAL LINKAGES

Basic primary care facilities, CHPS compounds, will serve as the anchor point at the community level for the management, supervision, and logistics, such as supply chains for commodities that CHWs will use for service delivery. These CHPS compounds, the existing Health Centers in the sub-districts will also serve as referral sites to which CHWs send patients in need of more skilled attention.

[10]The local assemblyman is an elected political leader and operates for the welfare and development of the constituents of the electoral area.

MATERIALS NEEDED AND SUPPLY CHAIN MANAGEMENT

The proposed standard package of services for CHWs, including the materials needed, is described in Table 5. The full panel of services can be established up front or phased in over time, module by module, with an initial focus on malaria, diarrhea and acute respiratory infections. Other intervention areas range from nutrition, soil transmitted helminthiasis, trachoma, bilhazia, river blindness, fever, HIV/AIDS, and tuberculosis to family planning, and water and sanitation.

BASIC PACKAGES OF SUPPLIES AND EQUIPMENT

To carry out their activities, CHWs will need a range of supplies and equipment (Table 4, Appendix E). These items will be restocked during management meetings and on an as-needed basis during supervisory visits. A list of items is detailed below:

Table 4: CHW Supplies

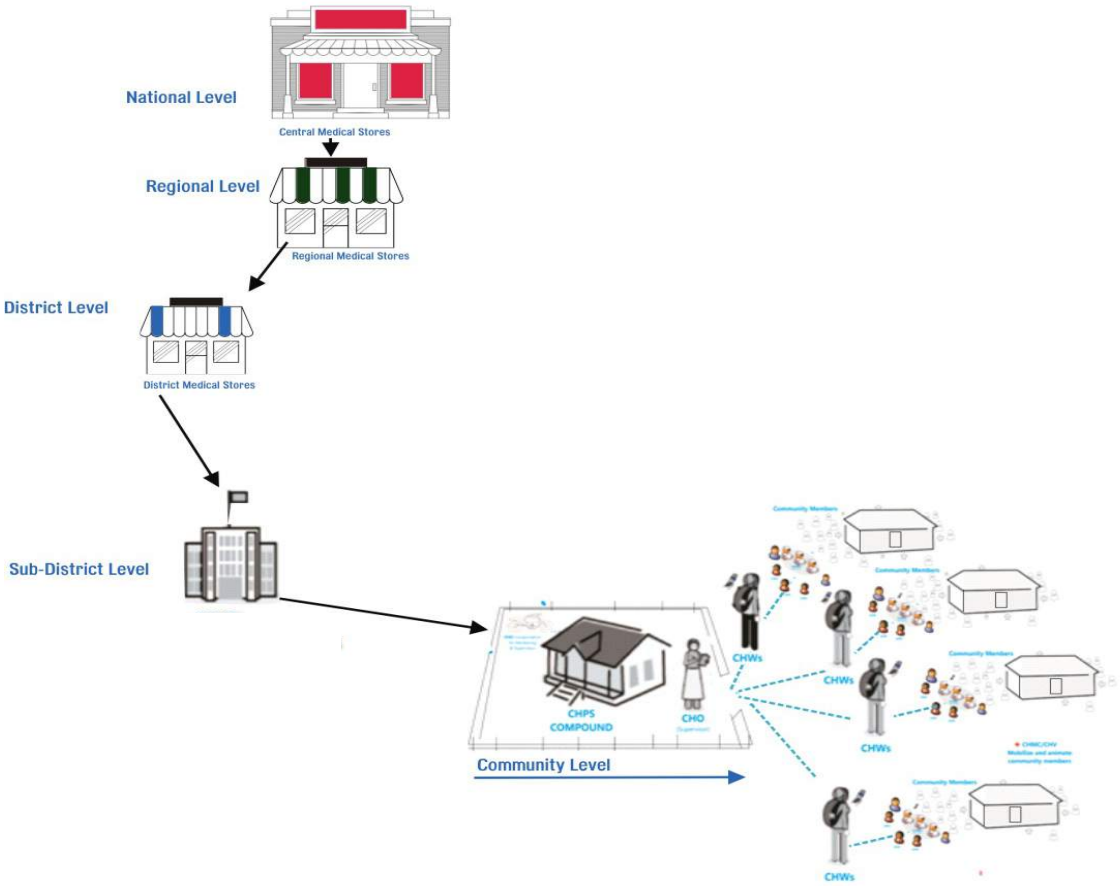
Rain coats	Motor Bicycles
Rain boots	Uniform
Ledgers	Respiratory Timer
Plastic buckets with top	MUAC Tape
Water jugs	Job Aids
Measurement cups	Counseling Cards
Flashlight	Thermometer
Soap	Badge
Pen, Ruler, Calculator, large plastic folder	Backpack
Heavy plastic bag	Smart Phones with treatment protocols
Medical supplies: ORS, Albendazole, Ivermectin**,** Paracetamol, Condoms, Praziquantel	Bicycle
Health promotion flyers, brochures, posters, flip chats	IE&C Materials: Audio-visual materials

SUPPLY CHAIN MANAGEMENT

The GH1mCHW Campaign will examine the current supply chain for the GoG, MoH, and the GHS to see if they are efficient and effective enough to utilize and implement the national CHW scale-up. Necessary adjustments will be made to the current supply chain management system to ensure correct amounts of assets for the national CHW program are secured.

The GHS holds and distributes stock to the CHWs through the CHOs. The distribution channel within the GHS will be used from the Central Medical Stores through the Regional Medical Stores and District Stores through which GHS will deliver supplies to the CHO at the CHPS compounds and allocated to CHWs as depicted in Diagram 3 below.

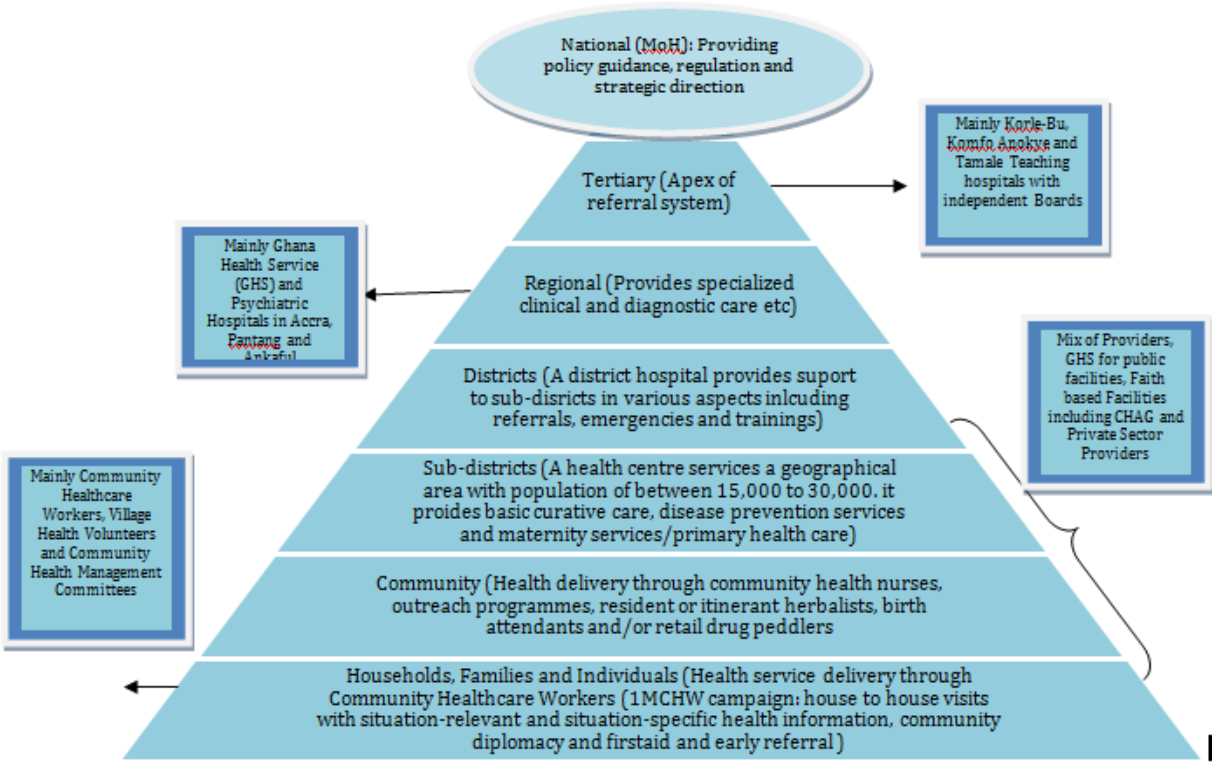
Diagram 3: Ghana 1mCHW Campaign Supply Chain Management System



MANAGEMENT AND ORGANIZATIONAL STRUCTURE

Diagram 4 below describes the organizational structure of Ghana's health care system and underscores the interaction between CHWs and the formal health system.

Diagram 4: National Health System Structure



Health service delivery is through a pyramidal primary health care structure that graduates upward into the secondary and tertiary facilities. Health service delivery is done through an integrated approach. Access, quality and coverage of health information, preventive care, clinical care and emergency services are all important aspects of health service delivery.

To improve universal access to health care, health interventions are supposed to be packaged and delivered right from community settings where the CHPS zones operate. Patients are able to move up the system with referrals to health centers in the sub-districts, districts, regional, tertiary levels. Community engagement in the establishment and running of CHPS are sporadic and the operations of CHPS services are gradually turning into that of operating mini clinics rather than household care. The community needs a better approach at health promotion and disease prevention to keep them healthy and productive and help them to improve on healthy life choices.

The GH1mCHW Campaign will fill this gap by providing human resources below the CHO strategically positioned to link the CHO to the community. The CHW will liaise between the CHO and the CHVs working through the CHMCs. They will provide the essential household visits that are currently a heavy

demand for the CHOs who are few in number. The CHW will therefore increase the presence, permanence and sustainability of health workers in every community.

CHWS AND CHW MANAGERS

- CHWs at the national level will be managed on contractual basis by qualified vendors with an oversight responsibility by the Ghana Health Service (GHS)
- The MoH will provide the policy support and GHS shall provide the technical support for the entire program
- At the regional level, CHWs will be under the management of Regional Coordinators of Vendors/regional CHPS Coordinators reporting to the Regional Director of Health Services-GHS working in close collaboration with District Director of Health Services-GHS through the GH1mCHW Campaign Coordinating Officer appointed in the various offices of the Vendors.
- At the community and electoral areas, the CHWs shall report to the CHO.

IMPLEMENTATION PLAN

The GH1mCHW Campaign will be implemented in 3 phases over the next ten years (2014 – 2023):

Phase 1: 2014-2016

- 15,157 CHWs will be recruited and trained. They will be equipped and assigned to existing functional electoral area CHPS z, preferably in or near their own communities, to manage the proposed community health system.
- Phase 1 of the project will carry out orientation for 100% of CHOs who will serve as the frontline supervisors of the program.

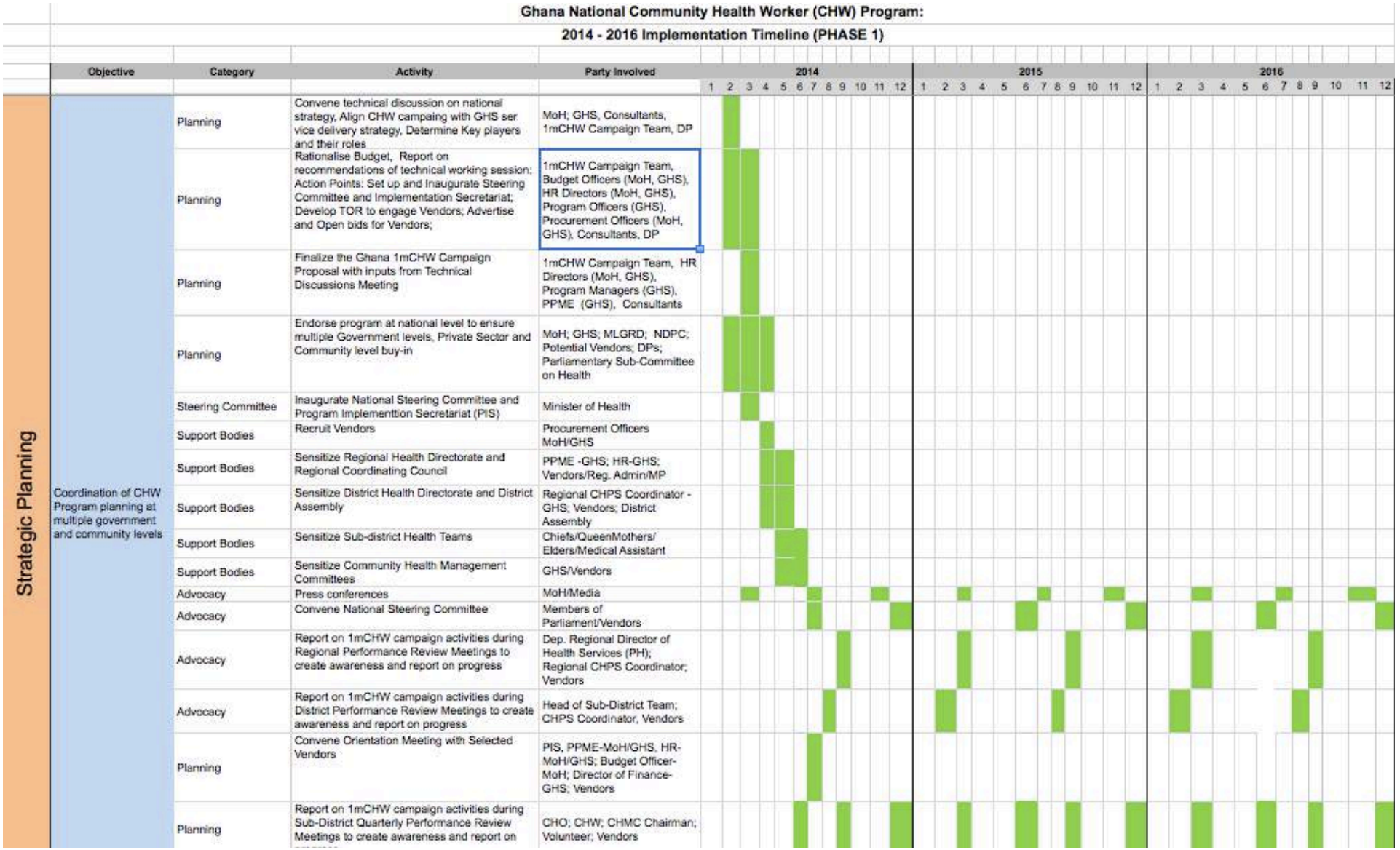
Phase 2: 2017-2019

- The remaining of the total number of CHWs needed to achieve 100% rural population coverage (per the 1 CHW per 500 people ratio) will be trained, equipped and assigned to various electoral areas. The number will be adjusted to accommodate attrition and/or changes to the CHW to population ratio as determined by evaluation and quality improvement efforts from Phase 1.

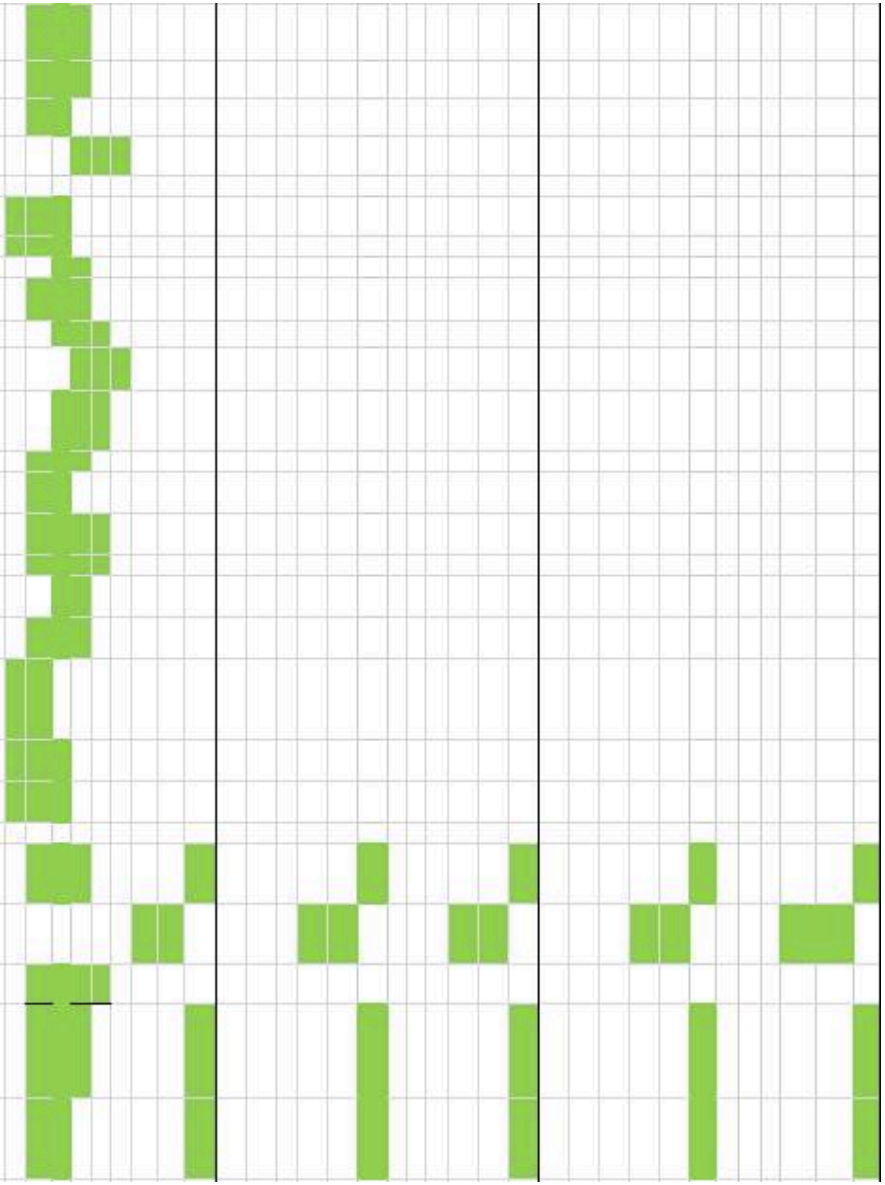
Phase 3: 2020-2023

- Phase 3 entails maintenance and quality control of the CHW program with new hires each year according to population growth.

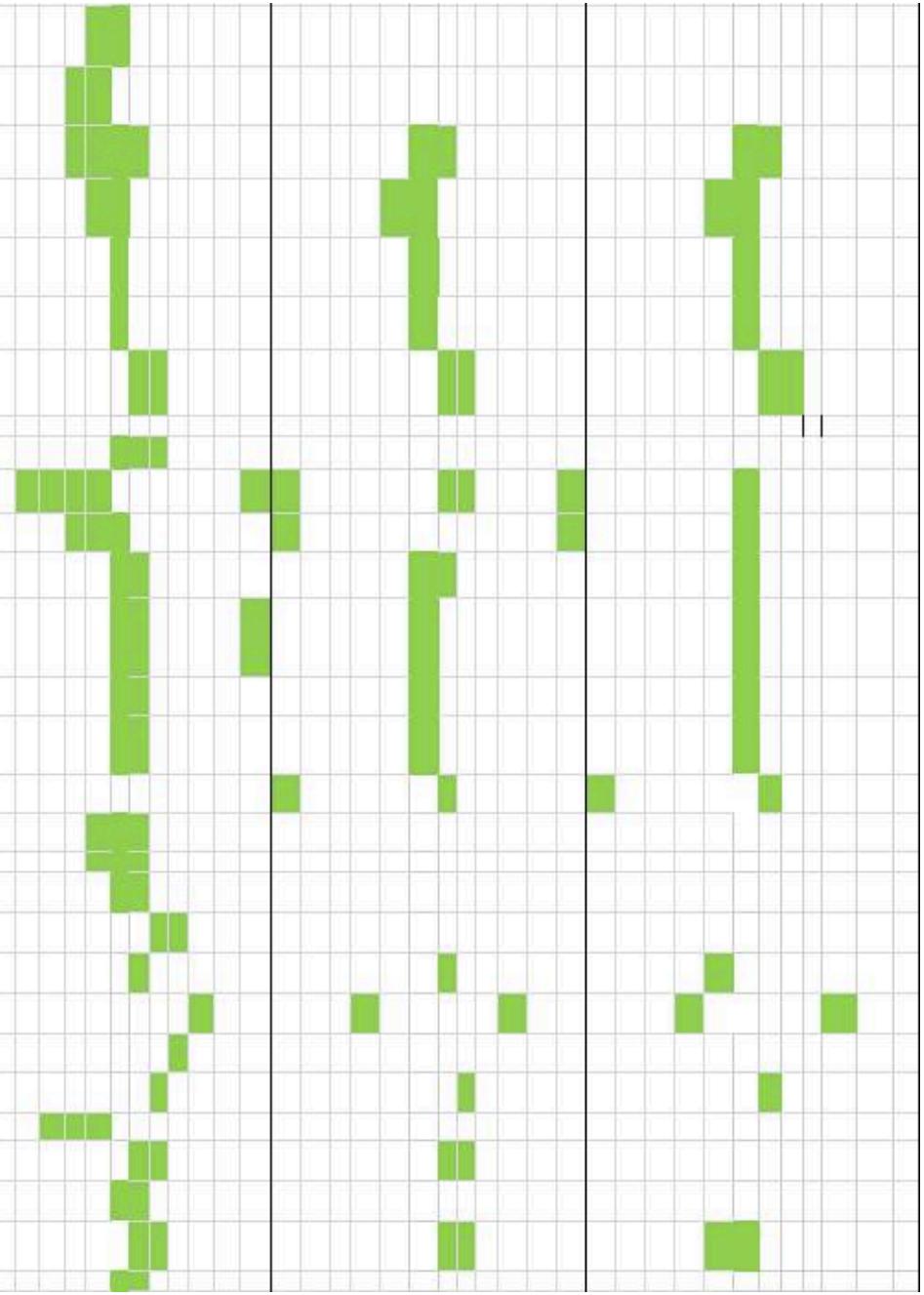
GANTT CHART


Ghana National Community Health Worker (CHW) Program:
2014 - 2016 Implementation Timeline (PHASE 1)
Objective
Category
Activity
Party Involved
2014
2015
2016
1 2 3 4 5 6 7 8 9 10 11 12
Strategic Planning
Coordination of CHW Program planning at multiple government and community levels
Planning
Convene technical discussion on national strategy, Align CHW campaing with GHS ser vice delivery strategy, Determine Key players and their roles
MoH; GHS, Consultants, 1mCHW Campaign Team, DP
Planning
Rationalise Budget, Report on recommendations of technical working session; Action Points: Set up and Inaugurate Steering Committee and Implementation Secretariat; Develop TOR to engage Vendors; Advertise and Open bids for Vendors;
1mCHW Campaign Team, Budget Officers (MoH, GHS), HR Directors (MoH, GHS), Program Officers (GHS), Procurement Officers (MoH, GHS), Consultants, DP
Planning
Finalize the Ghana 1mCHW Campaign Proposal with inputs from Technical Discussions Meeting
1mCHW Campaign Team, HR Directors (MoH, GHS), Program Managers (GHS), PPME (GHS), Consultants
Planning
Endorse program at national level to ensure multiple Government levels, Private Sector and Community level buy-in
MoH; GHS; MLGRD; NDPC; Potential Vendors; DPs; Parliamentary Sub-Committee on Health
Steering Committee
Inaugurate National Steering Committee and Program Implementtion Secretariat (PIS)
Minister of Health
Support Bodies
Recruit Vendors
Procurement Officers MoH/GHS
Support Bodies
Sensitize Regional Health Directorate and Regional Coordinating Council
PPME -GHS; HR-GHS; Vendors/Reg. Admin/MP
Support Bodies
Sensitize District Health Directorate and District Assembly
Regional CHPS Coordinator - GHS; Vendors; District Assembly
Support Bodies
Sensitize Sub-district Health Teams
Chiefs/QueenMothers/ Elders/Medical Assistant
Support Bodies
Sensitize Community Health Management Committees
GHS/Vendors
Advocacy
Press conferences
MoH/Media
Advocacy
Convene National Steering Committee
Members of Parliament/Vendors
Advocacy
Report on 1mCHW campaign activities during Regional Performance Review Meetings to create awareness and report on progress
Dep. Regional Director of Health Services (PH); Regional CHPS Coordinator; Vendors
Advocacy
Report on 1mCHW campaign activities during District Performance Review Meetings to create awareness and report on progress
Head of Sub-District Team; CHPS Coordinator, Vendors
Planning
Convene Orientation Meeting with Selected Vendors
PIS, PPME-MoH/GHS, HR-MoH/GHS; Budget Officer-MoH; Director of Finance-GHS; Vendors
Planning
Report on 1mCHW campaign activities during Sub-District Quarterly Performance Review Meetings to create awareness and report on
CHO; CHW; CHMC Chairman; Volunteer; Vendors

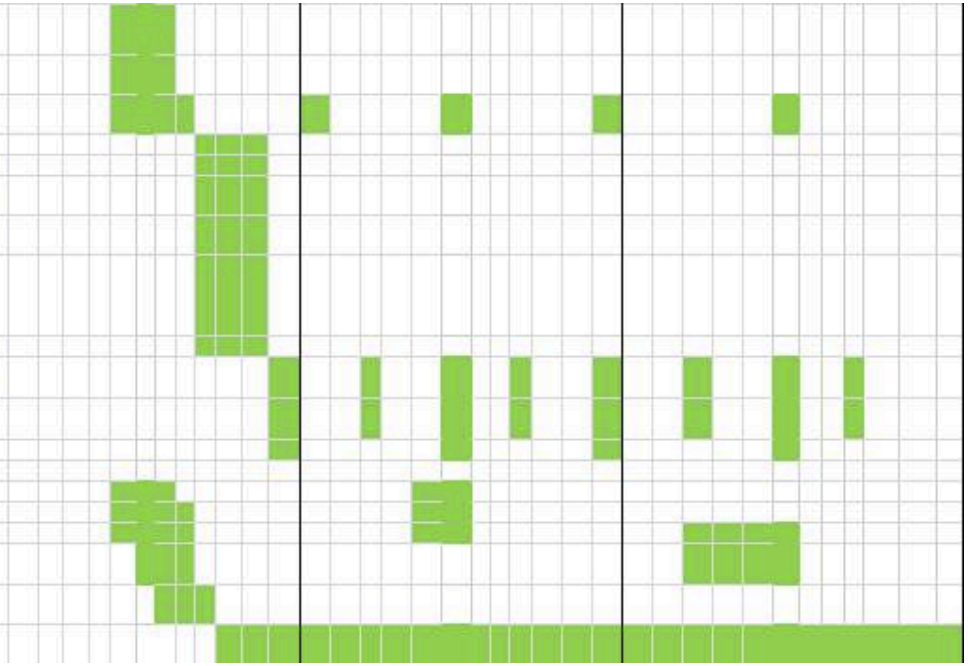
Situation Analysis	Conduct a situational analysis of national community health needs and current programs	Institutions	Identify training institutions for master trainers	Ministry of Health/GHS/ Vendors
		Primary Care	Identify primary care center linkages	Ministry of Health/GHS/ Vendors
		Capacity	Assess NGO capacity to support national plan	Ministry of Health/GHS
		Capacity	Review performance specficiations of existing cadres	Ministry of Health/GHS/Vendors
CHW Program Design	Design the CHW Program operational model	Supply Chain	Establish package of commodities and supplies to be used by CHWs	Ministry of Health/Vendors
		Supply Chain	Formalize a mass buying strategy	MoH/Vendors/GHS
		Supply Chain	Negotiate with and contract vendors	MoH/Vendors/GHS
		Technology	Establish technology strategy and requirements	MoH/GHS/ Partners
		Technology	Identify technology partners	MoH/GHS/Partners
		Technology	Provide technical specifications for competitive bid	MoH/GHS
		Mobile Technology	Identify basic requirements for content, operational needs and training modules on mobile phones	Technology Partner(s)
		Mobile Technology	Establish mobile payment mechanism	Technology Partner(s)
		Mobile Technology	Formalize mobile forms for each CHW process	Technology Partner(s)
		Mobile Technology	Formalize multimedia education content for CHWs to use with clients	Technology Partner(s)
		Mobile Technology	Formalize mobile health application	Technology Partner(s)
		Mobile Technology	Establish mHealth server locally with external backup	Technology Partner(s)
		Service Delivery	Establish CHW service delivery model and referral processes	GHS/Vendors
		Service Delivery	Establish number of CHWs selected per catchment area based on population, geography, disease burden, sociocultural factors and logistics	MoH/Vendors/GHS
		Financial	Establish renumeration and incentive strategies	MoH/Vendors/GHS
		Financial	Establish sources and administration of funds for payments and supplies	Ministry of Health/Vendors
Program Alignment	Integrate the operational model into national policy	Supply Chain	Assess existing training equipment and supplies, and establish additional resources needed	Vendors/GHS
		Human Resources	Assess human resources in Regions and Districts, and Sub-district levels, and establish additional resources required	MOH/GHS/Vendors
		Supply Chain	Integrate supplies and equipment required into national procurement strategy	MOH/GHS
		Information Systems	Ensure Management Information Systems (DHIMS2) at the national and department level that flow to sub-district and community-levels are well supported and planned for.	GHS/Vendors
		Community Engageme	Incorporate community-level engagement (CHMC + Volunteer system) into national planning processes through community support committees	GHS/Vendors



Select & Recruit CHWs	Select and recruit workforce	Selection	Establish CHW and related workers (supervisors, trainers) selection and approval process	District Director/Sub-district Head/Vendors
		Selection	Establish CHW and related workers (supervisors, trainers) selection criteria	District Director/Sub-district Head/Vendors
		Recruitment	Clarify CHW contracting mechanism and exit strategy	District Director/Sub-district Head/Vendors
		Recruitment	Call for CHW applicants	District Director/Sub-district Head/Vendors
		Recruitment	Create a short list of applicants to interview	District Director/Sub-district Head/Vendors
		Recruitment	Applicants sit for a written and/or practical exam	District Director/Sub-district Head/Vendors
		Recruitment	Conduct interviews and final selection	District Director/Sub-district Head/Vendors
Training and Deployment of Workers	Train and Deploy CHWs and related workers	Training Strategy	Define phased training strategy	MoH/GHS/Vendors
		Curriculum	Conduct a curriculum review of existing materials	MoH/GHS/Vendors
		Curriculum	Create training materials and curriculum, where needed	MoH/GHS/Vendors
		Mobile Technology	Procure mobile phones and technology equipment	Tech Partner(s)/MoH
		Mobile Technology	Formalize mHealth components of training (training on how to use mHelath app, plus mHealth elements of each health content module).	Technology Partner(s)
		Mobile Technology	Formalize individual performance monitoring for use by mHealth system	Technology Partner(s)
		Mobile Technology	Formalize expected milestones to drive follow up after training (number of clients expected, number of forms per week expected, etc.)	Technology Partner(s)
		Curriculum	Review curriculum with new modules and updated protocols	MoH/GHS/Vendors
		Training Strategy	Identify training institutions to recruit master trainers	Ministry of Health
		Training Strategy	Locate facilities to be used for training	Ministry of Health
		Training	Train Master Trainers at national and departmental levels	MoH/GHS/Vendors
		Training	Joint Training of CHW Managers Staff of Vendors (and SnCHWs, if applicable)	Ministry of Health/Vendors
		Training	Train CHWs in clusters using a 3-week training model with field work	Ministry of Health/GHS
		Training	Conduct CHW refresher in-service training (2x/year)	Ministry of Health/GHS
		Accreditation	Accredite CHWs through certificate processes	Ministry of Health/GHS
		Training	Retrain existing cadre of CHWs	Ministry of Health/GHS
		Deployment	Establish staggered deployment strategy	MoH/GHS/Vendors
		Deployment	Deploy CHWs (staggered across departments)	Sub-district Head/Vendors
		Mobile Technology	Establish a central server for mobile health system	Technology Partner(s)
		Mobile Technology	Deploy mobile phones	District Director/Sub-district Head/Vendors
		Mobile Technology	Establish a call center for technology support	Technology Partner(s)



Monitoring and Supervision	Monitor and supervise program operations and outputs using decentralized management teams and mobile technology	Supervision Processes	Establish ongoing monitoring strategy	GHS/Vendors
		Supervision Processes	Establish ongoing supervision strategy	GHS/Vendors
		Supervision Processes	Integrate continuing education and refresher training into supervisory processes	Ministry of Health
		Mobile Technology	Formalize mobile health supervisory system	Technology Partner(s)
		Mobile Technology	Formalize Field Coordinator reports	GHS/Technology Partner(s)
		Mobile Technology	Formalize procedures for Field Coordinator-driven remote follow up	GHS/Technology Partner(s)
		Mobile Technology	(Optional) Performance management techniques tested, best methods adopted.	GHS/Technology Partner(s)
		Mobile Technology	Establish call center for direct contact with supervisors, facility-based workers and fellow CHWs to promote quality of care and appropriate referral processes	Technology Partner(s)
		Mobile Technology	Design tech support for mobile health system	GHS/Technology Partner(s)
		Mobile Technology	Deploy and monitor tech support for mobile health	GHS/Technology Partner(s)
		Mobile Technology	Deploy Field Coordinator-driven remote supportive supervision from Call Center	Vendors/Technology Partner(s)
		Supply Chain	Verify supply chain efficiency	Partners
Evaluation	Conduct program evaluations and impact assessments	Strategy	Design M&E system components	GHS/Vendors
		Strategy	Establish data collection strategy	GHS/Vendors
		Strategy	Formalize multi level indicator dashboards	GHS/Vendors
		Data Collection	Conduct population-level household survey data collection	Ministry of Health/GHS/Vendors
		Data Collection	Conduct facility-level and population-level baseline assessments	GHS/Vendors
		Analysis	Facility-level and populaiton-level monthly data review	GHS/Vendors



FRONT END ANALYSIS

Stakeholder Analysis (To be continued during implementation planning)

Before moving forward with scale-up plans, it is important to conduct a stakeholder analysis to ass who outside of the Ministry should be involved with the implementation plan. It is used to develop understanding of the power relationships, influence, and interests of the various people involved in activity and to determine who should participate, and when.[11] Stakeholders are those who are affec an intervention including donor agencies, NGOs who incorporate CHWs in their programmatic act parastatal organizations, or groups represented at the district or community level. The roles of each individual or group in relation to the implementation of the CHW program should be clearly identi Mapping stakeholders according to their roles for vertical programs may be particularly useful as t national CHW program seeks to integrate all vertical programs into one CHW workflow (Table 5)

Table 5: National Stakeholders in Ghana's CHO-CHW Scale-up

Vertical Programmatic Areas	Program Implementer	Who are the major contributo funding programs in this progra area? What do they contribu
Pneumonia	Ghana Health Service; Christian Health Association of Ghana; Association of Private Medical & Dental Practitioners; Ghana Registered Midwives Association; Private Midwives and Maternity Homes	Global Fund; UNFPA; UNICEF, V
Diarrhea	Ghana Health Service; Christian Health Association of Ghana; Association of Private Medical & Dental Practitioners;	
Malaria	Ghana Health Service; Christian Health Association of Ghana; Association of Private Medical & Dental Practitioners;	Global Fund

[11] Linda G. MorraImas and Ray C. Rist. (2009) *The Road to Results: Designing and conducting effective development evaluations.* Washington, DC: Wo

HIV/AIDS	Ghana Health Service; Christian Health Association of Ghana; Association of Private Medical & Dental Practitioners;	Global Fund
Tuberculosis	Ghana Health Service; Christian Health Association of Ghana; Association of Private Medical & Dental Practitioners;	Global Fund
Malnutrition	Ghana Health Service; Christian Health Association of Ghana; Association of Private Medical & Dental Practitioners;	
NTDs	Ghana Health Service; Christian Health Association of Ghana; Association of Private Medical & Dental Practitioners;	

Revenue Analysis

Sources of revenue for the CHW program funding in Ghana include:

(1) Domestic HRH budget;
(2) Vertical conditions funding (as a percentage of funding to support the extension system to achieve vertical disease goals);
(3) Other Global financing sources; and
(4) Innovative financing to create pathways for sustainability.

More detailed analysis will emerge as the Campaign progresses.

Landscape Analysis

The district and sub-district levels of the health sector, together with the community leaders, the local government district assembly structures hold the key to achieving the target of providing access to CHWs services for all households. The first essential and key step in implementing CHWs is for all districts to conduct a *situation analysis* of their service delivery and coverage. This analysis should define minimum indicators to warrant start-up of CHWs for each electoral area, including number of communities, physical distances, coverage for basic services and existing disease patterns. In line with this policy direction, all demarcated electoral areas/CHPS zones would be activated such that all people living in

Ghana are covered by its services by the year 2015. To accomplish this, all electoral areas should be mapped into CHW service delivery "zones."

MONITORING AND EVALUATION

With the expansion of a CHW subsystem, there is a need to incorporate strong evidence into the initial operational design and deployment plan, conduct systematic monitoring to inform process improvements at each level of the subsystem, and build in Monitoring and Evaluation (M&E) structures and strategies to evaluate the impact of the system.

Data collected for the M&E of general health system activities and performance are obtained at six levels with different uses and limitations (Table 7). These can be grouped as either facility-level or population-level assessments that are conducted by the most appropriate member of the system.

Table 7: Data Flow

Agency	Person/Party In-charge of Reporting Up
Ministry of Health Centre for Statistics, Resarch and Information Management	Director of CSRIM
GHS Head Quarters Center for Health Information Management (CHIM)	Director Policy Planning M&E GHS^ Head of CHIM^
National Tertiary Care Hospitals, Research Institutions	CEO of Tertiary Hospitals^ Heads of Research Institutions^
Regional Secondary Care Hospitals	Regional Director of Health Services^ Vendors Regional Cordinators
District DHMT, Primary Care Hospitals, Private Health Facilities	District Director of Health Services; ^ Hospital Superintendent ^
Community	Sub-district Head ^ VENDORS- GH1mCHW Campaign Manager^ CHO ^ CHW ^

Process Monitoring within the Ghana Health Service/Ministry of Health

1. Decentralized planning and budgeting down to the district and sub-district levels
2. Monthly performance data consolidation and validation meetings before data submission
3. Data captured in standard eletronic format, the District Health Information Management System ver 2 (DHIMS2) online and available to all levels in real time
4. Peer performance review every quarter at the district level attended by Regional and National level observers as well as Development Partners
5. Quarterly peer performance review at the regional level
6. Monthly Inter-agency meetings with Development Partners
7. Bi-annual Senior Managers Meeting at the National level for performance review
8. Bi-annual Health Summit to review progress

Process evaluations can explain why interventions may have the effect that they have, and these evaluations can identify what can be done to improve the processes in the subsystem or its structure through analysis of both health indicators as well as the effectiveness of specific program design elements. In addition, real-time monitoring systems via mobile technology can provide more regular feedback to inform active management and adaptation of program design and deployment for optimal outcomes.

Impact evaluations are utilized to determine the effect that the CHW subsystem and its interventions have on end outcomes such as health status and access to care. They can assess changes in coverage, access to care and use of key interventions, quality of service, program cost, and lives saved. Impact evaluations generate knowledge about whether a program achieved its basic aims, and can contribute to the international knowledge base about CHO interventions and operational design effectiveness.

Process evaluations, impact evaluations, and other traditional M&E approaches shall be designed to provide and disseminate findings as rapidly as possible to improve program development through feedback to all levels of service provision where information has been gathered. In order to maximize an M&E programs' potential, it should be integrated into an active management system enabled by the use of mobile technology.

INDICATORS

Indicators guide the M&E program and represent the measures by which a CHW subsystem can be held accountable and evaluated. Below are general indicator categories with examples:

- **Household Coverage Indicators** track the CHW subsystem's coverage of households in each CHW's allotted catchment. Indicators include the ratio of CHWs to total households, the proportion of households receiving singular routine visits, and the amount of monthly household visits. Prior to deployment CHWs will work with their CHW Managers to conduct a rapid assessment of households in the area, to confirm the number and location of each household within their particular catchment.

- **Impact Indicators** measure mortality statistics such as child mortality, maternal mortality, and case fatality due to diarrhea, malaria, malnutrition, and cholera.

- **Vital Statistics Indicators** record birth registration and the number of neonatal, infant, under-5, maternal, and over-5 deaths.

- **Supervision/Program Performance Indicators** assess the management and supervision of the CHW subsystem with indicators such as the ratio of CHOs to CHWs, CHWs per community,

CHWs per electoral area, supervision coverage, quarterly performance evaluation, timely payment, community feedback coverage, and refresher trainings.

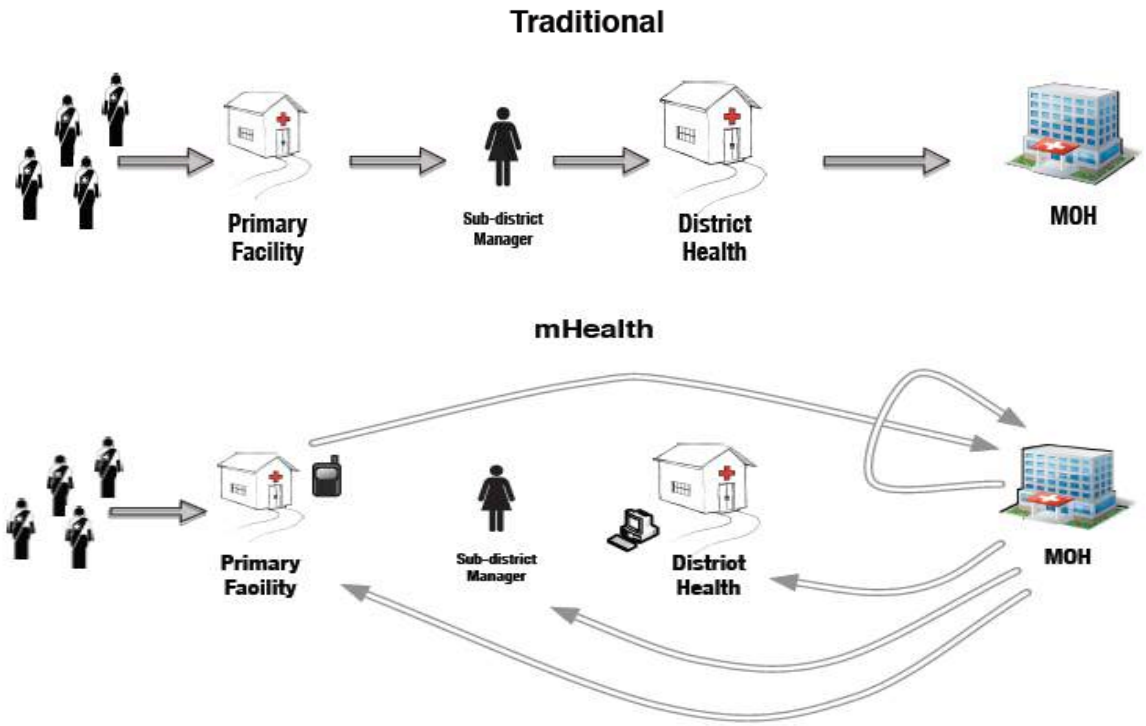
- **CHW Performance Indicators** track CHW referral and treatment history with indicators that measure diagnosis rate, treatment response, and referral for malaria, fever, diarrhea, malnutrition, and cholera. Also tracks routine checkups for pregnant women and newborns, and follow-ups to urgent referrals.

- **Maternal Health Outcomes Indicators** provide information regarding the percentage of women 15-49 reporting use of modern family planning methods, pregnant women reporting antenatal care visits by trimester and proportion of deliveries in a health facility.

- **Child Health Outcomes Indicators** provide information regarding the proportion of newborns exclusively breastfeeding, children under 1 who have been immunized, children aged 6-59 months with evidence of malnutrition, and bednet distribution.

MOBILE TECHNOLOGY

By utilizing mHealth, a mobile technology designed to bring many aspects of data collection, active management, and training refreshment into one programmatic component, real-time monitoring allows for continuous evaluation of certain indicators to help inform decision-making. Whereas in a traditional reporting structure, information moves linearly up the chain of command, technology improves the process of M&E by integrating the mechanism of data capture into the overall system. With an mHealth platform, the key information CHWs collect in a household gets immediately verified and validated before aggregation into a wider health information and coordination network, from the nearby primary care facility to the Departmental level. The data will again be aggregated at the district level and submitted to the Ministry of Health. Previously, many health-reporting systems followed a hierarchal approach to data reporting and aggregation. The benefit of an mHealth system as compared to the more traditional approach is depicted in the representation below:



The data that CHWs record from their activities and services will be processed (verified and validated) to provide a real-time picture of CHW activity and performance both to hold the CHWs accountable and to guide the overall management of the program. Data will be reported back to CHWs to guide their day-to-day activities. Information on their own performance will be provided with emphasis on areas where they should improve their efforts. Data analysis may reveal patterns that show where CHW numbers should be adjusted or household catchments reconfigured for more optimal coverage. These steps will include improvements CHWs could make to shore up lapses in the system and prevent similar outcomes in the future. CHWs will also be given notifications on epidemiological trends based on disease surveillance data and information collected about caseloads at local health facilities.

Mobile health (mHealth) platforms that use cell phone-based software packages can streamline the collection and use of data for community health worker programs. mHealth platforms are used to create

cell phone-based questionnaires that facilitate data collection while also automatically organizing this information into a household database. This allows data to be more easily processed and integrated for management needs. Further, mHealth platforms also provide CHWs with decision support modules and the capability to receive reminders to make follow-up visits, or a variety of customizable alerts that can be associated with case management details such as high-risk and low-risk status.

The CHW subsystem therefore becomes more fluid and comprehensive once armed with an mHealth platform that assists in:

- Patient registries for vital events tracking (including births, deaths, and immunizations)
- Patient registration and end-to-end case management
- Awareness campaigns and treatment adherence messaging
- Decision support and embedded job aids
- Full programmatic monitoring and supervision of the CHWs and CHW Managers

The platform itself can function on either a smart or feature phone and is fully secured and encrypted along with multilingual support. The toolkit also includes support for multimedia job aids including tests, images, audio, and video. It can function fully in an offline mode that allows for asynchronous communication. All data is owned by the Ministry but can optionally be supported and managed by third parties, and the system has open data integration points to enable data communication with other systems in both the public and private sector. These applications will comply with the National Enterprise Architecture for electronic data in health.

Implementing an mHealth-based data collection system will require notable infrastructure upgrades and connectivity at the local level. In addition, significant technical capacity, such as a cloud-based, locally hosted server to handle the data processing and storage, is required for the system to run smoothly.

A paper-based system for data management is also required as a backup for when mHealth software is first introduced and CHWs are learning to enter information directly into cell phones. For a paper-based system, each CHW headquarter requires infrastructure (computers and connectivity) and dedicated data staff (data entry clerks) to process information and organize it into reports for use by managers. The CHW program will largely be the same in both mHealth and paper-based system but will be designed to take advantage of the abilities of mobile phones.

Data Collection

Mobile phones support health system building by allowing data collection and reporting on patients, and by enabling the tracking and management of work for CHWs and other health cadres. This will streamline and add value to varying key operational components of the national CHW system, particularly when applied with an awareness of minimizing the reporting burden on health providers.

CHWs will capture population-level data at the household level using the mHealth platform, including:

- **Vital Events** – CHWs will report all births and deaths that happen in the community. Eliminating poor health outcomes is the central goal of the health system and is most simply reflected by the

rate of child deaths. Without ways to track vital events in real-time, this information is only available every several years when Demographic Health Surveys (DHS) are conducted. In addition to the time lag, DHS results represent retrospective data from past years instead of offering information on the population's current health status. For these reasons, vital events data collected through an mHealth platform by CHWs in real-time is tremendously valuable for evaluating performance and guiding health system strategy.

- **Verbal Autopsies** – For all deaths of children under five and of pregnant women, CHWs will conduct simple verbal autopsies to categorize broadly the medical cause of death and identify the 'social' reason for the death. This social cause of death seeks to identify why the deceased may not have received treatment or, if they did, why that treatment may not have prevented death. With most child deaths resulting from acute infections that can be effectively treated (i.e., malaria, diarrhea, pneumonia), this piece of information becomes extremely informative for identifying systems issues that need correction. By collecting and aggregating this type of feedback, an mHealth system allows administrators strategically to target the gaps that are driving poor health indicators.

- **Intervention Coverage** – During routine household visits, CHWs will collect information on the coverage of key interventions in the community that can only be tracked at the household level. This information is gathered for each household or for a sample of households at defined intervals, as prompted by and inputted into the mHealth system.

mHealth Management and Staff Responsibilities

Equipped with an mHealth platform, CHWs and CHW Managers are able to utilize a series of data-driven benefits, from active management to deployment organization and logistics. CHW Managers are able to track the CHWs in their charge and regional planners can assess real-time information flows to respond to fluctuating commune and household-level needs.

For data capture, CHWs log their activities and services delivered in the community, including households visited, RDTs used for cases of fever, pregnant women referred for delivery, and other parameters reflecting their core responsibilities. This information must be processed and organized so managers can view a comprehensive panel of data for each CHW and understand what they have been doing in the field. The platform contains an integrated ticketing system that tracks performance issues and their resolutions, in addition to enabling the creation of care-teams that can securely share clients and cases among multiple CHWs and CHW Managers. During monthly management meetings, managers will use this data to review CHW performance and determine steps that need to be taken to improve their efforts. In addition, managers will review all verbal autopsies so that important lessons can be learned and appropriate steps made to prevent further mortality.

Integrating mHealth: Training and Management

Integrating mHealth into the overall CHW program is therefore crucial to ensure the program's scalability and sustainability at scale. For this reason, an mHealth team member will be part of the CHW program design team, and matters relating to training and management will be embedded within an mHealth solution, and vice versa.

The training plan will introduce a mobile phone system early on. Training will emphasize that all visits and activities need to be reported through the mHealth system. Although more complex functions can be turned off and taught later, training will include about one day of dedicated time to cover these more

complex functions. Each training module will incorporate time for CHWs to practice what they have learned by going through checklists, forms, or protocols on a phone. Each training module will also include questions that can be delivered over SMS to test understanding and retention of the module. Furthermore, each CHW will receive intensive remote follow up by the mHealth system after training. The CHWs who are not enrolling enough clients, making enough visits, or underperforming on other process-related tasks must be followed up on and retrained.

The management system of an mHealth-enabled CHW system will develop a supervision plan that is fundamentally based on the potential that real-time data from CHWs create. CHW Managers will be able to depend on real-time data from activities such as the number of patients enrolled, the number and length of visits, and case follow-up rate. Because of this, it is important to plan for both an identification system of some type to enumerate the individuals in a population, and a CHW reporting structure to clarify roles and responsibilities, and to hold members of the system accountable.

Data-Driven Reorganization

Data will be used to refine the number of CHWs deployed in each department and the household catchments assigned to each CHW. Data analysis may reveal patterns that show where CHW numbers will be adjusted or household catchments reconfigured for more optimal coverage. For example, if information shows that a particular CHW is overburdened by a higher rate of malaria in her catchment due to the presence of a swamp, the catchment may need to be further divided with an additional CHW brought on board in order to adequately deliver care for that area.

At the district level, aggregate data will be reviewed to evaluate the performance of the CHW program in each community. At these higher levels, managers will analyze the data to identify systemic problems and, accordingly, make adjustments in strategy, policies, programs, and logistics. For example, if data show that CHWs across an entire zone are not using RDTs to test cases of fever for malaria, this finding may reveal a breakdown in the supply chain for RDTs at the zonal level, thus requiring steps to be taken at that level rather than locally.

Data will also be used to conduct an impact evaluation of the CHW program so policymakers can clearly see whether the program is affecting health outcomes, particularly maternal and child mortality rates. This impact evaluation will be the ultimate assessment of the efficacy of the CHW cadre and be used to guide improvements to the program.

Mobile Payments

Through a mobile payment system, remuneration can be processed in a streamlined and effective manner that can support salary-based, activity-based, or performance-based payments for CHWs. Several components need to be put into place before a mobile payment system is applied effectively.

Firstly a payment scheme for the program needs to be designed, ideally to include performance as an input. Secondly the mHealth platform will be integrated to calculate these payments (as per performance). Lastly the payment must be transacted through the mobile infrastructure.

Data-Driven Logistics

The data reported from CHW activities will tally the usage of medicines and commodities so managers can match consumption of supplies against reported caseload. This will allow managers to ensure CHWs are using these items appropriately and hold them accountable for the commodities given to them for

service provision. This information will also guide supply chain management and facilitate projections for procurement needs based on observed patterns of use in the field.

Roles and Responsibilities

Defined and integrated responsibilities allow for M&E to take place seamlessly within the reporting and management structure. Although information is shared with different parts of the system at varying cycles, clearly outlining where information is collected and processed provides foundational stability to the program.

- **CHWs** – collect household data through their mobile phone-based system. They will be furnished with decision support, and reminded through the system to perform tasks such as follow-ups and event-triggered visits. The data they collect will help to inform not only their activities, but also their performance evaluations.

- **CHW Managers** – ensure that the CHWs they manage have the tools and materials to properly collect data, as ascertained through monthly management meetings. Managers will review all data collected by CHWs, and conduct performance evaluations of the CHWs, review this performance data, and coordinate training sessions.

- **Primary Care Facilities (district-level)** – support the basic primary care facilities (SSPEs) that serve to anchor the management, supervision, and logistics of the CHW subsystem. Data entry clerks will sit in this level to support data management for the paper-based backup to the mHealth program.

- **Regional-level** – coordinates the integration of the M&E system and its findings into other health activities and trainings, and ensures the transmission of overall regional data to the Unit of Planning and Evaluation at the national level.

- **National-level** – centralizes the M&E program and oversees the development of norms, procedures, curricula, minimum packages of services and other tools. The PPME Directorate in the GHS analyzes data collected by the CHWs from the 10 regions and processes it for presentation to the broader MoH and stakeholders.

BUDGET

The budget below presents the total costs over three years for creating a high-functioning national CHW program. Components that make this program more advanced than the current system include living-wage CHW salaries, mHealth technology, transport for CHW supervisors, and a ratio of 1 CHW to 500 people to account for large geographic spread among communities. Through this scale-up strategy, in Phase 1 (2014 – 2016), the CHW program would ultimately deploy a cadre of **15,157 CHWs** (covering 60% of the rural population) by 2016 at a total cost of **205 million USD over three years (see Appendix F)**.

Assumptions

1. Country and Program Assumptions

- Total population, percentage of population living in rural areas, percentage annual growth rate, etc. as per most recent available data from Ministry of Health, Ghana Health Service, World Health Organization, World Bank, UNICEF, and other related sources.
- The target of CHW program for Phase 1 is Ghana's rural population.
- Program duration is set for a 10-year planning period.
- It is assumed that an at-scale CHW system is achieved by end of 2016. Therefore, costs during the 2014-2016 period are ramp-up. (Costs from 2017 and onwards represent the steady-state, or maintenance, costs and will be displayed in Version 2.0.)
- Governance units are displayed in three layers: regional, district, and sub-districts. These fields impact the supervisory structure and associated management costs.
- All cost figures are displayed in USD for ease of comparison.

2. CHW Assumptions

- The ratio is assumed to be 1 CHW per 500 people.
- Assumed full-time workload of 270 working hours earning a flat salary of $142 per month. (Performance incentives will be represented in Version 2.0.)
- Default baseline number of existing deployed CHWs is set as zero, i.e., all CHWs will require initial pre-service training.

3. CHW Package of Services

- The core package of CHW interventions are defined for maximum MDG impact on maternal and child survival: Diarrhea, Fever and malaria, Pneumonia, Neonatal Care, Maternal Care and family planning, and Nutrition.
- Additional services listed here are HIV/AIDS and TB; others can be added during the Version 2.0 refinement phase.
- For each service area requires a target population, incidence rate, and baseline coverage rate. Current coverage rates for each service should be approximated using best available data pertaining to community-based service delivery. It is assumed that target coverage will reach 100% by end of 2015.
- Demographic distribution can be modified.

4. CHW Equipment

- The equipment list is a suggested bundle and includes mHealth supplies. Other items can be added.

5. Medicines & Commodities

- The suggested medicines and commodities list corresponds to the selected package of services, and is priced per unit on a service basis as determined by epidemiological need.

6. Training

- Initial: Suggested pre-service training structure is a three-tier cascade model: Training of Master Trainers, Training of Trainers, and then Training of CHWs. It is assumed that every new CHW will receive a pre-service training, and that pre-service trainings continue annually to account for scale-up, population growth, and loss due to annual attrition.
- Refresher: The default design for in-service trainings is on an annual basis, and all CHWs and Trainers are targeted. (Remedial trainings are not included in this version.)
- Training associated with mHealth is displayed separately.
- Figures per field are total costs per participant, and include per diem, food, materials, etc., and are not contingent upon class size or duration of training. (These factors can be incorporated in Version 2.0.)

7. Management & Supervision

- The supervisory ratio is assumed to be 1 Supervisor per 6 CHWs.
- Personnel are distributed per governance layer, and are assumed to be full-time.
- Annual operating costs include all relevant office equipment, including mHealth infrastructure and supplies, as well as travel costs.

8. Financing

- Funding streams can be entered by source and by program category (#1-7 as above). For example, government resources directed toward existing personnel would be linked to the Management category.
- Once known fields have been entered, the financing gap is displayed by program category.

BUDGET SPREADSHEET

The spreadsheet in Appendix F details the key cost inputs and total program costs both annually for the 2014-2016 period.

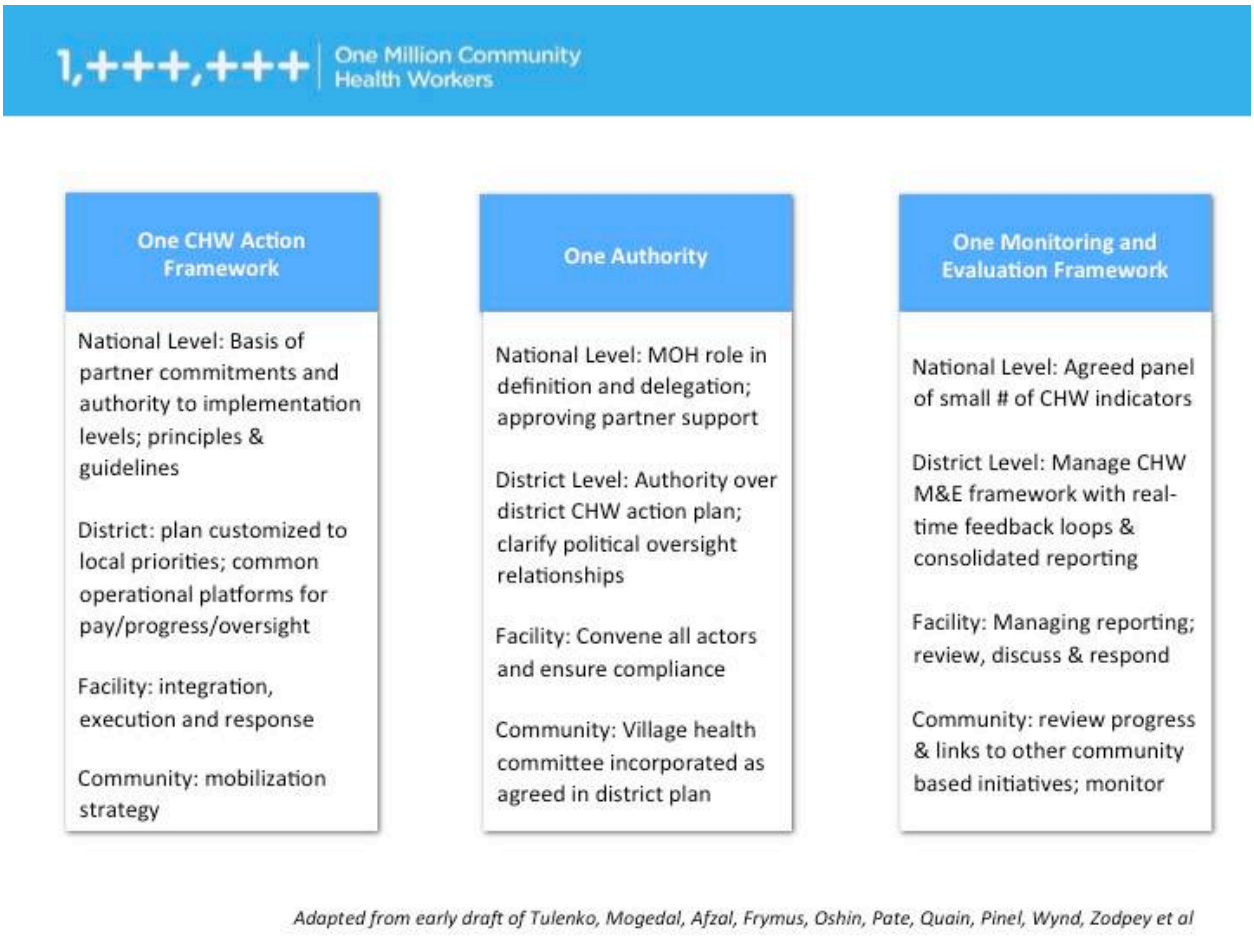
Version 1.0 of the One Million CHWs Campaign costing tool is a preliminary exercise to account for all parts of the comprehensive CHW system as defined by this operational plan. The total cost estimate produced here is indicative, but is not intended to be taken as an accurate estimate. The next iteration will be a product of the Version 2.0 refinement phase, which will include populating the pre-filled fields with country-specific data that have a higher degree of precision as well as refinement of the tool itself.

The inputs are color coded as follows.

- Orange fields require country-specific input; these have been pre-populated based with suggested values.
- Yellow fields do not require country-specific input; they have been pre-populated based on either regional or sub-regional data, or generic assumptions. Country-specific data can be inputted to override the default.
- White fields are auto-calculated and cannot be modified.

The outputs are displayed in three sections: program overview, cost summary and financing gaps by program category. The major cost-drivers are evident based on the percentage of annual total program cost. The financing gap illustrates the areas identified for incremental funding increases from external and domestic sources; it is assumed that approximately half of the gap will be borne by new or reallocated external sources.

APPENDIX A. ONE NATIONAL CHW FRAMEWORK



Adapted from early draft of Tulenko, Mogedal, Afzal, Frymus, Oshin, Pate, Quain, Pinel, Wynd, Zodpey et al

APPENDIX B. IMPACT FROM AROUND THE GLOBE

Community-Based Intervention	CHW, with health system support	CHW referral to health facility and system	Systematic Reviews of Evidence and References
CHILD			
Hygiene education and provision of soap	X		Lancet Child Survival Series 2003; Hill 2004, WHO; Lancet Maternal and Child Under nutrition Series 2008; Freeman 2009, Global Public Health; Perry 2009, APHA; Perry 2011 (under review)
Ensure usage of insecticide treated bednets for malaria prevention	X		Lancet Child Survival Series 2003; Hill 2004, WHO; Bhutta 2005, Pediatrics; Lancet Neonatal Survival Series 2005; Lancet Maternal and Child Under nutrition Series 2008; Freeman 2009, Global Public Health; Perry 2009, APHA; Perry 2011 (under review)
Management of fever	X	X	Lancet Child Survival Series 2003; Lewin 2010, Cochrane Review; Gilroy and Winch 2006, WHO/UNICEF; Freeman 2009, Global Public Health; Perry 2009, APHA; Perry 2011 (under review)
Management of diarrhea	X	X	Hill 2004, WHO; Lancet Neonatal Survival Series 2005; Gilroy and Winch 2006, WHO/UNICEF; Freeman 2009, Global Public Health; Perry 2009, APHA, Lewin 2010, Cochrane Review
Management of malnutrition	X	X	Lancet Child Survival Series 2003; Hill 2004, WHO; Bhutta 2005, Pediatrics; Lewin 2010, Cochrane Review; Lancet Neonatal Survival Series 2005; Gilroy and Winch 2006, WHO/UNICEF; Lancet Maternal and Child Undernutrition Series 2008; Perry 2009, APHA; Perry 2011 (under review)
Management of acute respiratory illness	X	X	Lancet Child Survival Series 2003; Winch 2005, Health Policy and

			Planning; Gilroy and Winch 2006, WHO/UNICEF; Freeman 2009, Global Public Health; Perry 2009, APHA; Lewin 2010, Cochrane Review; Perry 2011 (under review)
Complementary feeding promotion in food-secure populations	X		Lancet Child Survival Series 2003; Hill 2004, WHO; Lancet Maternal and Child Undernutrition Series 2008; Bhutta 2008, Lancet
Provision of food supplements in food-insecure households		X	Bhutta 2008, Lancet; Perry 2009, APHA
Iron supplementation for children in non-malarial populations		X	Bhutta 2008, Lancet
Promotion of care-seeking for sick child	X	X	Hill 2004, WHO; Gilroy and Winch 2006, WHO/UNICEF; Lewin 2010, Cochrane Review
Referral to health facility for child morbidities		X	Hill 2004, WHO; Gilroy and Winch 2006, WHO/UNICEF; Lewin 2010, Cochrane Review
EARLY AND LATE NEONATAL			
Promotion of ANC visits for micronutrient supplements, tetanus toxoid injection, anthelmintic treatment, immunoprophylaxis		X	Lancet Child Survival Series 2003; Hill 2004, WHO; Bhutta 2005, Pediatrics; Lancet Neonatal Survival Series 2005; Perry 2009, APHA
Promotion of clean delivery practices		X	Lancet Child Survival Series 2003; Lancet Neonatal Survival Series 2005; Freeman 2009, Global Public Health; Perry 2009, APHA; Perry 2011 (under review)
Promotion of initiation of breastfeeding and of exclusive breast-feeding	X		Lancet Child Survival Series 2003; Hill 2004, WHO; Bhutta 2005, Pediatrics; Lancet Maternal and Child Undernutrition Series 2008; Freeman 2009, Global Public Health; Perry 2009, APHA; Lewin 2010, Cochrane Review; Perry 2011 (under review)
Promotion of appropriate complementary feeding beginning at 6 months of age	X		Freeman 2009, Global Public Health; Perry 2011 (under review)
Promotion of immunization uptake	X	X	Hill 2004, WHO; Perry 2009, APHA; Lewin 2010, Cochrane Review; Perry 2011 (under review)

Promotion of care-seeking for sick newborns	X	X	Hill 2004, WHO; Lewin 2010, Cochrane Review
Promotion and provision of antiretroviral medication to newborns of HIV positive women to prevent MTCT		X	Freeman 2009, Global Public Health; Perry 2009, APHA
Ensure usage of insecticide-treated bed nets for malaria prevention	X		Lancet Child Survival Series 2003; Freeman 2009, Global Public Health; Perry 2009, APHA; Perry 2011 (under review)
Intermittent presumptive treatment for malaria	X	X	Lancet Child Survival Series 2003; Lancet Neonatal Survival Series 2005; Lancet Maternal and Child Undernutrition Review 2008; Freeman 2009, Global Public Health; Perry 2009, APHA; Perry 2011 (under review)
Community-based pneumonia case management	X	X	Lancet NeonatalSurvivalSeries 2005; Bhutta 2008, Lancet
Referral to health facility for neonatal morbidities		X	Hill 2004, WHO; Lassi 2010, Cochrane Review
Home-based neonatal care including diagnosis and treatment of neonatal sepsis, promotion of cleanliness, prevention of hypothermia, and care of LBW infant	X		Bhutta 2008, Lancet; Freeman 2009, Global Public Health; Perry 2009, APHA; Lassi 2010, Cochrane Review; Perry 2011 (under review)
Home-based antenatal and postnatal visitations, with community mobilization	X		Lassi 2010, Cochrane Review
MATERNAL			
Promotion of ANC visits for micronutrient supplements, anthelmintic treatment		X	Hill 2004, WHO; Bhutta 2005, Pediatrics; Lancet Neonatal Survival Series 2005; Bhutta 2008, Lancet; Lancet Maternal and Child Undernutrition Series 2008; Perry 2011 (under review)
Ensure usage of insecticide-treated bed nets for malaria prevention	X		Lancet NeonatalSurvivalSeries 2005; Bhutta 2008, Lancet
Promotion and provision of antiretroviral medication to HIV positive women to prevent MTCT		X	Freeman 2009, Global Public Health

Home-based antenatal and postnatal visitations	X		Lassi 2010, Cochrane Review
Referral for Emergency Obstetric Care	X	X	Lassi 2010, Cochrane Review
Family Planning Promotion and Provision	X	X	No Reviews Available, some trial studies
Promotion of Institutional deliveries	X	X	Lassi 2010, Cochrane Review
Health care seeking for maternal morbidities	X	X	Lassi 2010, Cochrane Review
ADULT			
Support adherence to treatment for adults with smear-positive TB	X		Lewin 2010, Cochrane Review

APPENDIX C. ROLE OF CHWS IN PROVISION OF BASIC HEALTH INTERVENTIONS

A Community Health Worker will not replace physicians or nurses within the primary health care system. Each CHW will extend access to health care to the population located in remote areas in developing awareness, counseling, diagnosing illnesses, treating as allowable, and referring serious illnesses. Each CHW maintains a close relationship with the community and referral centers such as the dispensary, the health center or the community referral hospital. The tables below demonstrate the role a CHW plays by various services as part of this integrated primary health care system.

Antenatal Care				
Interventions and Services Provided	**CHW**	**CHO**	**Health Centre**	**District hospital**
Routine care				
Diagnosis pregnancy (Clinical diagnosis)	Yes	Yes	Yes	Yes
Screen for high risk, including short height (<5ft)	Yes	Yes	Yes	Yes
Monitor Growth of fetus (Height of fundus)	No	Yes	Yes	Yes
Monitor mother's weight gain	No	Yes	Yes	Yes
Give tetanus toxoid	No	Yes	Yes	Yes
Give prophylactic iron, folic acid, multivitamins	Yes	Yes	Yes	Yes
Give Albendazole for deworming	Yes	Yes	Yes	Yes
Screen for and manage pre-eclampsia or hypertension	No	Yes. Refer for delivery	Same	Yes
Screen for and manage severe pre-eclampsia or hypertension	No	Yes. Refer for delivery	Same	Yes
Screen for and treat anemia	No	Yes	Yes (Laboratory)	Same
Manage severe anemia (<7mg/dl) with symptoms in last trimester.	Refer	Refer	Refer	Yes
Screen (RPR) and manage syphilis and partner	No	No	Yes	Yes
VCT for HIV	Counseling	Yes	Yes	Yes
Feel for malpresentations or twins	No	Refer	Yes	Yes
IEC/BCC on the importance of antenatal care (Teenagers; high parity women)	Yes	Yes	Yes	Yes
IEC/BCC on diet and rest during pregnancy and lactation	Yes	Yes	Yes	Yes
IEC/BCC: birth preparedness and danger signs; family planning	Yes	Yes	Yes	Yes
Promote and provide insecticide- treated mosquito nets for pregnant women	Yes	Yes	Yes	Yes
Manage complications of pregnancy				
Manage threatened or complete abortion	Refer	No	Yes	Yes
Manage incomplete abortion (Manual Vacuum	Refer	Refer	Yes	Yes

Aspiration)				
Manage complicated abortion	Refer	Refer	Refer	Yes
Manage ectopic pregnancy	Refer	Refer	Refer	Yes
Manage urinary tract infection	Refer	Yes	Yes	Yes
Manage fever/malaria (Rapid diagnostic test)	Yes	Yes	Yes	Yes
Manage vaginal discharge (syndromic method) and partner	Refer	Yes	Yes	Yes
No fetal movements	Refer	Refer	Refer	Yes
Ruptured membranes, not in labor	Refer	Refer	Refer	Yes

Labor and Delivery Care				
Interventions and Services Provided	**CHW**	**CHO**	**Health Centre**	**District hospital**
Monitor progress in labor/Recognize delay	No	No	Partograph. Refer if delay	Manage
Conduct a clean delivery of the baby	No	No	Yes	Yes
Management of third stage of labor	No	No	Yes	Yes
Episiotomy and repair of tears	No	No	Yes	Yes
Breech delivery	No	No	Yes	Yes
Transverse lie	No	Refer	Refer	Yes
Vacuum extraction	No	No	Yes	Yes
Forceps	No	No	No	Yes
Induction of labor	No	No	No	Yes
Cesarean section	No	No	No	Yes
Antepartum hemorrhage	No	Resuscitate and refer	Same	Yes
Treat shock	No	Yes/Refer	Yes	Yes
Give blood transfusion	No	No	No	Yes
Bimanual compression of uterus	No	No	Yes	Yes
Manual removal of retained placenta	No	No	Yes	Yes
Manage convulsions/eclampsia	No	No /refer	Same	Yes
Manage convulsions with fever/malaria	No	First aid/refer	Same	Yes
PMTCT – Chemo Prophylaxis (mother)	No	Yes	Yes if available	Yes

Postpartum Care

Interventions and Services Provided	CHW	CHO	Health Centre	District hospital
Immediate Postpartum care				
Monitor general condition, uterine contraction, bleeding	No	Yes	Yes	Yes
At the end of first week and during puerperium				
Give postpartum vitamin A	Yes	Yes	Yes	Yes
Give prophylactic iron and folic acid	Yes	Yes	Yes	Yes
Detect and manage puerperal sepsis	Refer	First aid/Refer	Same	Yes
Detect and manage anemia	Refer	Yes but refer if symptoms	Same	Yes
Detect and manage urinary tract infection	No	Yes	Yes	Yes
Manage nipple or breast pain	Refer	Refer	Yes	Yes
Manage constipation , hemorrhoids and others	No	Refer	Yes	Yes
Counsel on birth spacing	Yes	Yes	Yes	Yes

Newborn Care				
Interventions and Services Provided	**CHW**	**CHO**	**Health Centre**	**District hospital**
Immediate Care				
Keep dry and warm, clear airway, breastfeeding	Yes	Yes	Yes	Yes
Help Babies Breathe; neonatal resuscitation.	Yes	Yes	Yes	Yes
Tetracycline. Eye ointment to prevent ophtalmia neonatorum	No	Yes	Yes	Yes
PMTCT-newborn management	No	No	Yes, if available	Yes
During the first month				
Manage low birth weight (1,500-2,500 grams)	No	Refer	Yes	Yes
Manage very LBW (<1,500 g or < 32 weeks gestation)	No	Refer	Refer	Yes
Manage neonatal jaundice	No	Yes	Yes	Yes
Counsel and support mother on breastfeeding	Yes	Yes	Yes	Yes
Give newborns immunizations	No	Yes	Yes	Yes
Treat skin pustules or cord infection	No	Yes	Yes	Yes
Treat neonatal sepsis/severe skin or cord infection	No	First Aid/Refer	Yes	Yes
Neonatal tetanus	No	Refer	Refer	Yes

Reproductive and Adolescent Health

Interventions and Services Provided	CHW	CHO	Health Centre	District hospital
IEC/BCC on birth spacing and family planning	Yes	Yes	Yes	Yes
Counsel on informed choice	Yes	Yes	Yes	Yes
Distribute male and female condoms and counseling	Yes	Yes	Yes	Yes
Distribute OCPs and explains their use	Yes	Yes	Yes	Yes
Insert and remove IUD and explain their use	No	Yes/No/Refer	Yes	Yes
Insert and remove Implants	No	Yes/No/Refer	Yes	Yes
Permanent surgical methods	No	Refer	Refer	Yes
Syndromic management of STIs for women	No	Yes	Yes	Yes
Syndromic management of STIS for men	No	Yes	Yes	Yes
Voluntary Confidential Testing for HIV	No	No	Yes, if available	Yes
Infertility Counseling	Yes	Yes	Yes	Yes
Supportive services to adolescents seeking advice and care, including counseling on STIs, FP, safe motherhood, adolescent health, cancers, negative cultural practices, and infertility	Yes	Yes	Yes	Yes
Education of adolescents on reproductive health	Yes	Yes	Yes	Yes
Education of adolescents on family life skills	Yes	Yes	Yes	Yes

Expanded Programs on Immunization				
Interventions and Services Provided	**CHW**	**CHO**	**Health Centre**	**District hospital**
IEC/BCC	Yes	Yes	Yes	Yes
Storage of Vaccines	No	Yes/Cold box	Yes	Yes
Routine and outreach immunization	Yes	Yes	Yes	Yes
Surveillance and case reporting of immunizable diseases	No	Yes	Yes	Yes
Reporting immunization activities	Yes	Yes	Yes	Yes
Supervision of EPI activities	Yes	Yes	Yes	No

Integrated Management of Childhood Illnesses				
Interventions and Services Provided	**CHW**	**CHO**	**Health Centre**	**District hospital**
IEC/BCC on home care for the sick child, danger signs	Yes	Yes	Yes	Yes
Management of severe ill child	No	First Aid/Refer	Yes	Yes
Pneumonia (Cough with difficulty in breathing	Diagnose	Yes	Yes	Yes

and fever)	and refer			
Severe Pneumonia	Diagnose and refer	First Aid/Refer	Yes	Yes
Ear Infection	No	Yes	Yes	Yes
Diarrhea with no dehydration	Yes	Yes	Yes	Yes
Diarrhea with some dehydration	Yes	Yes	Yes	Yes
Diarrhea with severe dehydration	First Aid/Refer (ORS)	First Aid/Refer	Yes	Yes
Persistent diarrhea or dysentery	No	Yes	Yes	Yes
Measles	No	Yes	Yes	Yes
Complicated measles	No	First Aid/Refer	Yes	Yes
Case management of a child with fever/malaria	Yes	Yes	Yes	Yes
Management of severe malnutrition	No	First Aid/Refer	Yes	Yes

Infant and Young Child Nutrition				
Interventions and Services Provided	**CHW**	**CHO**	**Health Centre**	**District hospital**
Promotion of early breastfeeding and EBF for the first 6 months	Yes	Yes	Yes	Yes
Promotion of appropriate complementary feeding	Yes	Yes	Yes	Yes
Growth monitoring and nutrition counseling	Yes	Yes	Yes	Yes
Vitamin supplementation to children 6-59 months	Yes	Yes	Yes	Yes
Iron supplementation for children 6-59 months	Yes	Yes	Yes	Yes
Deworming of children	Yes	Yes	Yes	Yes
Identification of malnutrition	Yes	Yes	Yes	Yes
Management of severe malnutrition	No	First Aid/Refer	Yes	Yes

HIV/AIDS and Sexually Transmitted Infections				
Interventions and Services Provided	**CHW**	**CHO**	**Health Centre**	**District hospital**
Awareness and sensitization activities promoting "ABC"	Yes	Yes	Yes	Yes
Promotion and distribution of condoms	Yes	Yes	Yes	Yes
Awareness and sensitization about VCT	Yes	Yes	Yes	Yes
VCT services	No	No	Yes, if available	Yes
Supervision of ARV therapy, including home-based care	No	No	Yes, if available	Yes

Treatment of opportunistic infections	No	No	Yes	Yes
Supervision of Cotrimoxazole and/or Isoniazid Preventive Therapies	No	No	Yes	Yes
Awareness and sensitization of pregnant mothers to VCT for Prevention of Mother To Child Transmission (PMTCT) services.	Yes	Yes	Yes	Yes
VCT for PMTCT services	No	No	Yes, if available	Yes
PMTCT services follow up	Yes	Yes	Yes, if available	Yes
Post-exposure Prophylaxis (PEP)	No	No	Yes, if available	Yes
Syndromic management of STIs at antenatal, family planning and general outpatient clinics (Without microscope).	No	Yes	Yes	Yes
Syndromic management of STIs at antenatal, family planning and general outpatient clinics (With microscope).	No	No	Yes	Yes
RPR test for syphilis at antenatal clinics.	No	No	Yes	Yes

Tuberculosis				
Interventions and Services Provided	**CHW**	**CHO**	**Health Centre**	**District hospital**
IEC/BCC on spread of TB, recognition of symptoms and case management.	Yes	Yes	Yes	Yes
BCG immunization of all newborns	No	Yes	Yes	Yes
Identification of suspect cases	Yes	Yes	Yes	Yes
Collection of sputum and microscopic exams	No	If diagnostic center	Yes	Yes
Diagnosis of TB in sputum negative cases	No	If diagnostic center	Yes	Yes
Diagnosis of TB in children	No	Refer	Yes	Yes
Registration and assignment to treatment regimen	No	If diagnostic center	Yes	Yes
Supervision of intensive phase of DOTS	No	If treatment center	Yes	Yes
Supervision of continuation phase of DOTS	No	If treatment center	Yes	Yes
Sputum examination & treatment review at the end of intensive phase and continuation phase.	No	If diagnostic center	Yes	Yes
Management of complications and suspected drug-resistant cases	No	Refer	Refer	Yes, if possible
Screening of household members, especially of children with TB.	Refer	Yes	Yes	Yes

Cholera				
Interventions and Services Provided	**CHW**	**CHO**	**Health Centre**	**District hospital**
Counseling and information about cholera; promotion of cleanliness	Yes	Yes	Yes	Yes
Hygienic measures to avoid the pathology: hand washing, sanitation	Yes	Yes	Yes	Yes
Distribution of materials such as chlorine	Yes, if available	Yes	Yes	Yes
Diagnose the pathology	Yes	Yes	Yes	Yes
Distribution of oral rehydration salts	Yes and refer	Yes	Yes	Yes
Give antibiotics	No and refer	Yes	Yes	Yes
Give IV fluid	No	Yes	Yes	Yes

Malaria				
Interventions and Services Provided	**CHW**	**CHO**	**Health Centre**	**District hospital**
Case management of malaria				
IEC/BCC on case recognition and management	Yes	Yes	Yes	Yes
Make presumptive clinical diagnosis	Yes	Yes	Yes	Yes
Laboratory confirmation in adults and children	Yes, Rapid Malaria Test	Yes	Yes	Yes
Give first line treatment	Yes	Yes	Yes	Yes
For severe, complicated malaria in under fives, give parenteral quinine, and manage convulsions, hypoglycemia and high fever.	No	Refer	Yes	Yes
For complicated malaria in adults, give parenteral quinine	No	First dose/Refer	Yes	Yes
Prevention of Malaria				
IEC/BCC on preventing malaria transmission	Yes	Yes	Yes	Yes
Promote and distribute ITNs for under five children	Yes	Yes	Yes	Yes
Promote and distribute ITNs for pregnant women	Yes	Yes	Yes	Yes

Mental Health				
Interventions and Services Provided	**CHW**	**CHO**	**Health Centre**	**District hospital**
Danger signs of acute mental illness. Treatment	Refer	Refer	Refer	Yes. Refer if needed
Anxiety or depressive state. Counsel. Refer to family or community resources	Yes	Yes	Yes	Yes

Psychosomatic symptoms: recognize, counsel, refer as appropriate	Yes	Yes	Yes	Yes
Substance abuse. Counsel and refer to support person	Yes	Yes	Yes	Yes
Supervise and supply medications for persons on long-term medication for mental health condition or epilepsy	No	No	No	Yes
Psychosocial & Trauma Counseling	Yes	Yes	Yes	Yes

Other Types of Care				
Interventions and Services Provided	**CHW**	**CHO**	**Health Centre**	**District hospital**
Stomach ulcer	No	Yes	Yes	Yes
Asthma	No	Yes and refer if needed	Yes	Yes
High blood pressure	No	Yes	Yes	Yes
Anemia	No	Yes	Yes	Yes
Diabetes	No	Yes and refer if needed	Yes	Yes
Conjunctivitis	No	Yes	Yes	Yes
Manage shock	No	Yes	Yes	Yes
Manage anaphylaxis	No	Yes	Yes	Yes
Head injury	No	Refer	No	Yes and refer if needed
Epitaxis	No	Refer	Yes	Yes
Foreign body in ear and nose	No	Refer	Yes	Yes
Sexual assault	No	Refer	Refer	Yes
Wound and soft tissues injuries	No	Yes	Yes	Yes
Pneumothorax and hemothorax	No	Refer	Refer	Yes
Abdominal trauma or acute abdomen	No	Refer	Refer	Yes
Closed fractures and dislocations of upper limb	Refer	Refer	Yes	Yes
Closed fractures of lower limb	Refer	Refer	Refer	Yes and refer if needed
Open fractures	Refer	Refer	Refer	Yes and refer if needed
Spinal injuries or Pelvic fractures	Refer	Refer	Refer	Refer
Multiple injuries	Refer	Refer	Refer	Yes and refer if needed
Care to amputees	Refer	Yes	Yes	Yes

APPENDIX D: COMMUNITY HEALTH WORKER SUPERVISOR

Community Health Officer (CHO)

The CHO is basically a Community Health Nurse who has undergone a two-year training and writes a licensure examination conducted by a regulatory body.

Objectives of Community Health Nursing include:

- Provide antenatal, maternity and postnatal care to ensure safe pregnancy, delivery and puerperium for the mother and child.
- Provide Under Fives' Clinics for:
    - immunization
    - developmental assessment
    - advice on nutrition and child care
    - treatment of minor ailments
    - providing encouragement and support to mothers.
- Provide clinics for treating adults and children for:
    - minor ailments

CHO Tasks
The CHPS concept is for Community Health Officers (CHO) to move from house to house to provide health education, health promotion and other health related activities. Though, the core duties of the CHO are to move from house to house, these duties will mostly be transferred to the CHWs. CHOs will reside in the CHPS compound where they will treat patients who visit with referral cards.

CHO Modular Training Schedule:

Module 1: Family Planning
- Unit 1: Counseling Individual Clients and Couples (New Clients) for Family Planning
- Unit 2: Providing Family Planning Services
- Unit 3: Conducting Follow up Visits for Continuing Clients
- Unit 4: Tracing Family Planning Clients Lost to Follow up

Module 2: Antenatal Care
- Unit 1: Promoting the Health of Pregnant Women and their Families during Antenatal Period
- Unit 2: Providing Care to Pregnant Women Including Adolescents
- Unit 3: Managing Pregnancy-Related Conditions in the Community

Module 3: Safe Emergency Delivery
- Unit 1: Assessing the Stages of Labor
- Unit 2: Managing Delivery

Module 4: Postnatal and Infant Care
- Unit 1: Care of Post –partum Clients (0-7 days) at Home and in the Community
- Unit 2: Care of Clients during Late Post-partum Period
- Unit 3: Care of Newborns at Home
- Unit 4: Health Education for Postnatal Clients

Module 5: HIV/AIDS

Unit 1: Informing Individuals and Communities on HIV/AIDS
Unit 2: Referring Individuals and Families for HIV/AIDS
Unit 3: Giving Supportive Care to Persons Living with HIV/AIDS (PLWHA) and their Families

APPENDIX E. LIST OF CHW COMMODITIES

ACT - Artesunate 50mg+ Amodiaquine 153mg
Amoxycillin 250mg Tablets
Artemether 20mg/ml Ampoule
Co-trimoxazole 400+80mg Tablets
Erythromycin 500mg (as stearate) Tablets
Examination gloves
Female condom Pieces
Long Lasting Insecticide Treated Nets (LLITN)
IV pla. unit l/d 25x0.8mm CH22
Lofemenal - Ethinylestradiol + Norgestrel 0.3+0.03mg (COC)
Male condom Pieces
Mebendazole 500mg Tablets
Medroxyprogesterone acetate 150mg depot Injection
Metronidazole 200/250mg Tablets
Microgynon - Ethinylestradiol + Levonorgestrel 0.03+0.15 mg (COC)
Microlut - Levonorgestrel 0.03mg (POP)
Nordette - Ethinylestradiol + Levonorgestrel 0.03+0.15 mg (COC)
Oral Rehydration Salt Sachet
Paracetamol 500mg Tablets
Retinol (Vit. A) 100,000 i.u. Capsules
Retinol (Vit. A) 200,000 i.u. Capsules
Ringer's Lactate 500ml Bag
Zinc Sulphate 20mg Tablets
Chlorine (water purification) tab
Rapid Diagnostic Test – malaria
Iron + folic acid pills 60mg + 0.4mg capsule
Sputum collection containers
Ziplock for sputum
Plumpynut (packet)

APPENDIX F. BUDGET

High-Level Cost Summary:

- The budget for the Ghana 1mCHW Campaign is **$205 million** across 3 years.
- The government will be contributing **$59 million** towards this budget.
- External contribution will be **$146 million**.
- The total funding need is **$146 million**.

Cost summary (in millions)

Category	**2014**	**2015**	**2016**	**TOTAL**
Total Costs	41	68	97	205
Operating costs	*30*	*52*	*80*	*162*
Deployment costs	*10*	*16*	*17*	*43*
Government contribution	13	19	27	59
External contribution	28	49	70	146
Total Funding Need	**28M**	**49M**	**70M**	**146M**

Cost Breakdown:

Operating Costs summary (in millions)

Category	**2014**	**2015**	**2016**	**TOTAL**
Total operating costs	30	52	80	162
Government contribution	13	19	27	59
External Contribution	17	33	53	103
Operating Costs Funding Gap	**17M**	**33M**	**53M**	**103M**

Deployment Costs summary (in millions)

Category	**2014**	**2015**	**2016**	**TOTAL**
Total deployment costs	10	16	17	43
Government contribution	0	0	0	0
External contribution	10	16	17	43
Deployment Funding Gap	**10M**	**16M**	**17M**	**43M**

Deployment Budget (2014 – 2016)

	2014	2015	2016	Total
Strategy and Planning Meetings	$426,500	$218,000	$218,000	**$862,500**
Regional and District Training and Set-Up	$932,500	$752,500	$752,500	**$2,437,500**
Vendor Selection and Set-Up	$598,000	$800,000	$1,300,000	**$2,698,000**
Advocacy	$1,531,000	$1,531,000	$1,531,000	**$4,593,000**
Monitoring and Evaluation	$6,051,402	$12,282,918	$13,550,000	**$31,884,320**
TOTAL	**$9,539,402**	**$15,584,418**	**$17,351,500**	**$42,475,320**

Operating Budget (2014 – 2016)

The budget below presents a detailed breakdown of the operating costs over three years for creating a high-functioning national CHW program. Components that make this program more advanced than the current system include living-wage CHW salaries, mHealth technology, transport for CHW supervisors, and a ratio of 1 CHW to 500 people to account for large geographic spread among communities. In Phase 1 (2014 – 2016), the CHW program would ultimately deploy a cadre of **15,157 CHWs** (covering 60% of the rural population) by 2016 at a total cost of **162 million USD over three years.**

COST SUMMARY BY PROGRAM CATEGORY

	2014	2015	2016	TOTAL 2013 - 2015
CHW SALARIES	$ 8,045,144	$ 17,534,523	$ 28,663,683	$ 54,243,350
% of Total cost	27%	34%	36%	34%
EQUIPMENT	$ 1,700,360	$ 2,040,999	$ 3,186,994	$ 6,928,353
% of Total cost	6%	4%	4%	4%
MEDICINES, COMMODITES	$ 2,628,962	$ 5,730,163	$ 9,367,227	$ 17,726,352
% of Total cost	9%	11%	12%	11%
TRAINING	$ 4,789,300	$ 7,582,253	$ 11,146,476	$ 23,518,029
% of Total cost	16%	15%	14%	15%
MANAGEMENT & SUPERVISION	$ 12,969,882	$ 19,393,518	$ 26,881,574	$ 59,244,974
% of Total cost	43%	37%	34%	37%
TOTAL COSTS	$ 30,133,647	$ 52,281,456	$ 79,245,954	$ 161,661,058

Color Coding	
	Country Assumption
	Preloaded Assumption
	Automatic Calculation

1. Country & Program Assumptions

Country Name:	Ghana
African Region:	West and Central Africa
Total Population:	24,658,823
% Rural Population:	48%
Total Rural Population:	11,836,235
Annual Pop. Growth (%):	3.3%
Crude birth rate:	3.5%

Program Start Year:	2014
Program End Year:	2023
Length of Program:	10
Currency used in tool:	USD
Annual Inflation Rate (%):	5.5%
Annual Salary Increase (%)	5.5%

		2014	2015	2016
First Level:	State	10	10	10
Second Level	District	216	216	216
Third Level	Sub-District / Health Center	1,054	1,054	1,054

2. CHW Assumptions

Desired ratio of CHW to population: *1 CHW per*	500	population
Ratio of CHWs per Supervisor: *1 Supervisor per*	6	CHWs
Annual CHW Attrition Rate (%):	5.0%	
Total CHW working days / year:	270	
Total CHW working hours / day:	8	
Annual CHW Salary (baseline year):	$ 1,699.08	
Supervisor Annual Salary:	$ 6,438.18	
Number of existing trained and deployed CHWs:	-	

3. CHW Package of Services

		Service Included in Package?	Target Population	Incidence Rate (Cases per Target Pop per Year)
1	Diarrhea	Yes	Children <5	3.00
2	Fever and malaria	Yes	Children <5	1.00
3	Pneumonia	Yes	Children <5	0.50
4	Neonatal Care	Yes	Newborns	1.00
5	Maternal Care and Family Pl	Yes	Female Rep Age	0.33
6	Nutrition	Yes	Children <5	0.21
7	HIV/AIDS	Yes	Adults >5	0.05
8	TB	Yes	Adults >5	0.00
9				
10				
11				
12				
13				
14				
15				

		Target Coverage: 2014	Target Coverage: 2015	Target Coverage: 2016
1	Diarrhea	20%	40%	60%
2	Fever and malaria	20%	40%	60%
3	Pneumonia	20%	40%	60%
4	Neonatal Care	20%	40%	60%
5	Maternal Care and Family Pl	20%	40%	60%
6	Nutrition	20%	40%	60%
7	HIV/AIDS	20%	40%	60%
8	TB	20%	40%	60%
9				
10				
11				
12				
13				
14				
15				

4. CHW Equipment

	Item	Unit cost (USD)	Replacement Frequency (Years)
1	Rain coats	$ 14.00	2
2	Rain boots	$ 8.00	2
3	Ledgers	$ 5.00	2
4	Plastic buckets with top	$ 6.50	2
5	Water jugs	$ 4.00	2
6	Measurement cups	$ 5.00	2
7	Flashlight	$ 2.00	2
8	Soap	$ 0.40	1
9	Pen, Ruler, Calculator, large pla	$ 6.05	2
10	Heavy plastic bag	$ 3.50	1
11	Bicycles	$ 90.00	-
12	Uniform	$ 40.00	-
13	Respiratory Timer	$ 3.50	-
14	MUAC Tape	$ 0.05	2
15	Job Aids	$ 5.00	-
16	Counseling Cards	$ 0.10	1
17	Thermometer	$ 1.00	2
18	Badge	$ 5.00	-
19	Backpack	$ 10.00	-
20			
21			
22			
23			
24			
25			

Data Management / Mobile Health

	Item	Unit cost (USD)	Replacement Frequency (Years)
1	Mobile Phones / chargers / SIM card & registration	$ 100.00	3
2	Solar equipment for device charging	$ 50.00	3
3			
4			
5			
6			

5. Medicines and Commodities

Additional Buffer Stock	10%
Mark-up cost of medicines for management, supply, storage	5%

	Name of medicine, supply, commodity	Unit cost (USD)
1	ACT - Artesunate 50mg+ Amodiaquine 153mg	$ 0.06
2	Amoxycillin 250mg Tablets	$ 0.02
3	Artemether 20mg/ml Ampoule	$ 0.82
4	Co-trimoxazole 400+80mg Tablets	$ 0.08
5	Erythromycin 500mg (as stearate) Tablets	$ 0.05
6	Examination gloves	$ 0.05
7	Female condom Pieces	$ 0.72
8	Long Lasting Insecticide Treated Nets (LLITN)	$ 7.00
9	IV pla. unit i/d 25x0.8mm CH22	$ 0.25
10	Lofemenal - Ethinylestradiol + Norgestrel 0.3+0.03mg (COC)	$ 0.21
11	Male condom Pieces	$ 0.03
12	Mebendazole 500mg Tablets	$ 0.01
13	Medroxyprogesterone acetate 150mg depot injection	$ 1.04
14	Metronidazole 200/250mg Tablets	$ 0.01
15	Microgynon - Ethinylestradiol + Levonorgestrel 0.03+0.15 mg (COC)	$ 0.34
16	Microlut - Levonorgestrel 0.03mg (POP)	
17	Nordette - Ethinylestradiol + Levonorgestrel 0.03+0.15 mg (COC)	$ 0.34
18	Oral Rehydration Salt Sachet	$ 0.09
19	Paracetamol 500mg Tablets	$ 0.00
20	Quinine Sulphate 300mg Tablets	$ 0.03
21	Retinol (Vit. A) 100,000 i.u. Capsules	$ 0.02
22	Retinol (Vit. A) 200,000 i.u. Capsules	$ 0.03
23	Ringer's Lactate 500ml Bag	$ 1.85
24	Syringes and needles	$ 0.06
25	Zinc Sulphate 20mg Tablets	$ 0.02
26	Chlorine (water purification) tab	$ 0.15
27	Chloroquine	
28	Rapid Diagnostic Test - malaria	$ 0.59
29	Iron + folic acid pills 60mg + 0.4mg capsule	$ 0.01
30	Sputum collection containers	$ 0.05
31	Ziplock for sputum	$ 0.32
32	Plumpynut (packet)	$ 0.33

6. Training Costs

Training of Master Trainers - First Tier	$ 600.00	per Trainer	Supervisors per Master Trainer:	50
Training of Trainers - Second Tier	$ 600.00	per Supervisor		
CHW Initial (Preservice) Training - Third Tier	$ 900.00	per CHW		
Mobile Health - Supervisors	$ 8.00	per Supervisor		
Mobile Health - CHWs	$ 8.00	per CHW		
CHW Annual (Refresher) Training	$ 450.00	per CHW		
TOT Annual (Refresher) Training	$ 300.00			

7. Management and Supervision Costs

Management & Supervision Salaries

		Quantity (per Level)	% Time Spent	Annual Salary (USD)
	National Level			
1	(TAG) Deputy Director of HR (M	1	10%	$ 58,455.42
2	(TAG) Director of HR (GHS)	1	5%	$ 74,014.73
3	(TAG) Head of Budget (MOH)	1	5%	$ 71,858.23
4	(TAG) Director of Finance (GHS)	1	5%	$ 64,677.10
5	(TAG) Consultant	2	100%	$ 40,000.00
6	(TAG) Secretary of TAG (MOH)	1	15%	$ 32,728.00
7				
8				
9				
10				
	State Level			
1	(Regional) Director of Health Se	1	5%	$ 74,014.73
2	(Regional) m/e-Health Officer	1	100%	$ 26,688.94
3				
4				
5				
6				
7				
8				
9				
10				
	District Level			
1	(District) Director of Health Ser	1	5%	$ 35,803.69
2				
3				
4				
5				
6				
7				
8				
9				
10				
	Sub-District / Health Center Level			
1	(Sub-District)	1	20%	$ 33,124.89
2				
3				
4				
5				
6				
7				
8				
9				
10				

Management Operating Costs

	Item	Quantity	per Unit	Unit Cost (USD)
	National Level			
Capital Costs	Office Furniture	2	per National Level	$ 300.00
	Computer & Accessories	2	per National Level	$ 1,000.00
	Router	1	per National Level	$ 66.00
Recurrent Costs (Annual)	Vehicle	1	per National Level	$ 36,000.00
	State Level			
Capital Costs	Computer for m/e health office	10		$ 1,000.00
Recurrent Costs (Annual)				
	District Level			
Capital Costs				
Recurrent Costs (Annual)				
	Sub-District / Health Center Level			
Capital Costs				
Recurrent Costs (Annual)	Stationery/Office Supplies	1	per Sub-District / Health Center	$ 60.00

mHealth Budget (2014 – 2016)

The following is a summary of the 1mCHW Campaign mHealth deployment budget across the years 2014, 2015, and 2016. The unit numbers are based upon our estimates for staff needed and total number of CHWs with required equipment needs. Based upon our estimates, the total Deployment Budget for the years 2014, 2015, and 2016 is **$15,036,923.**

The number of CHWs to be added each year is estimated to be as follows:

- 2014: 4498 CHWs
- 2015: 5284 CHWs
- 2016: 5865 CHWs

Inputs		**2014**		**2015**		**2016**		**2014 - 2016**
	Unit Cost	# Units	Cost	# Units	Cost	# Units	Cost	Total
Field Engineer	$12,000	43	$516,000	43	$516,000	43	$516,000	$1,548,000
Training costs	$2,000	43	$86,000	43	$86,000	43	$86,000	$258,000
Equipment	$150	8996	$1,349,400	10568	$1,585,200	11730	$1,759,500	$4,694,100
User Fee	$249	4498	$40,482	9782	$88,038	15647	$140,823	$7,451,823
Developers	$25,000	2	$50,000	4	$100,000	5	$125,000	$275,000
mHealth Specialists	$27,000	10	$270,000	10	$270,000	10	$270,000	$810,000
Total			**$3,391,402**		**$4,992,918**		**$6,652,603**	**$15,036,923**
			$15,036,923					

The summaries are based upon the specific values in the table above:

Field Engineer and Training Costs
We estimate that costs of sending Field Engineers to deploy an mHealth system will be $12,000 per district in addition to $2,000 per training in each district. Assuming that each district will require this investment cost, and that 43 districts will set-up the mHealth system per year, the amount allocated towards providing Field Engineers and CHW training will total $662,000 per year or **$1,806,000** over three years ($1,548,000 in salaries and $258,000 in training costs over three years).

Equipment
Mobile phones and solar chargers are expected to require a one-time initial investment for each CHW for the first 3 years. The estimate per unit cost of mobile phones and solar chargers are $100 and $50 respectively, and we estimate that over three years, each CHW will use 2 phones and 2 solar chargers. With 4,498 CHWs in 2014, there will be 8,996 mobile phones and 8,996 solar chargers, reaching a total cost of $1,349,400 for 2014 ($899,600 for mobile phones and $449,800 for solar chargers). With an additional 5,284 CHWs deployed in 2015, costs to provide mobile phones and solar chargers total $1,585,200. For 2016, if there are an additional 5,865 CHWs, we estimate that the total cost for these two items will be $1,759,500. Overall, we estimate that over the three years, **$4,694,100** will need to be allocated towards mobile phone and solar chargers.

mHealth Software User Fee and Annual Data Plan
mHealth software user fees and annual data plans are estimated to cost $249 per CHW per year. According to CHW growth projections, the total estimated cost over three years is $269,343 in mHealth Software user fees and $7,182,480 in Annual Data Plans, totaling **$7,451,823.**

Software Developers and mHealth Specialists
We estimate that the annual salary of software developers will be $25,000. If a total of 5 Developers will be required through the year 2016, (2 employed in 2014, 2 additional Developers in 2015, and 1 additional Developer in 2015 to accommodate for increasing data and users) the total cost of their salaries over three years will be **$275,000**.

We estimate that the annual salary for a mHealth Specialist will be $27,000, and if 1 mHealth Specialist is allocated to each of the 10 regions specified, the annual cost for these workers will total $270,000. Over three years the cost will total **$810,000**.