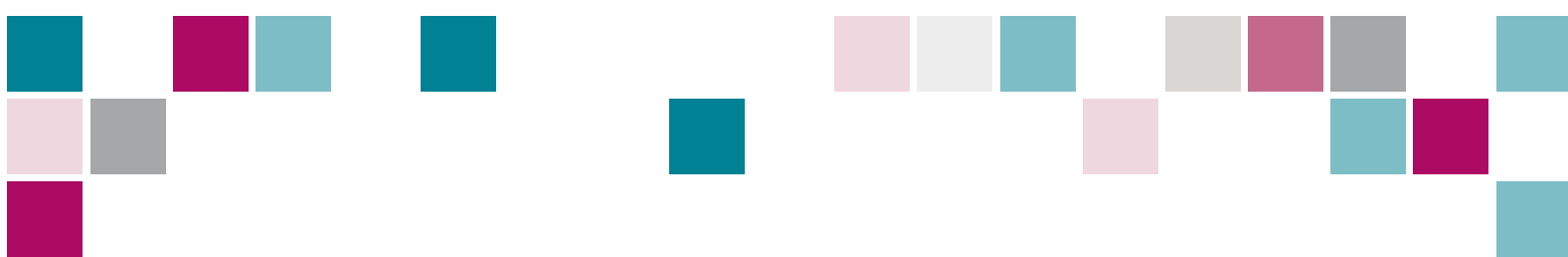




Global Experience of Community Health Workers for Delivery of Health Related Millennium Development Goals: A Systematic Review, Country Case Studies, and Recommendations for Integration into National Health Systems



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This piece of work has been commissioned by the Global Health Workforce Alliance (the Alliance), a partnership hosted by the World Health Organization (WHO), as part of its mandate to implement solutions to the health workforce crisis. In preparing the report, the Alliance is grateful to **Zulfiqar A. Bhutta** (Division of Women & Child Health, The Aga Khan University, Karachi, Pakistan), **Zohra S. Lassi** ((Division of Women & Child Health, The Aga Khan University, Karachi, Pakistan), **George Pariyo** (Makerere University School of Public Health, Kampala, Uganda) and **Luis Huicho** (Universidad Peruana Cayetano Heredia, Universidad Nacional Mayor de San Marcos and Instituto de Salud del Niño, Lima, Peru).



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Preface

Health workers represent the very foundation of health systems. The shortage of health workers is unanimously accepted as one of the key constraints to the provision of essential, life-saving interventions such as childhood immunizations, safe pregnancy and childbirth services for mothers, and access to treatment for AIDS, tuberculosis and malaria. The World Health Report 2006 argued that community health workers (CHWs) have the potential to be part of the solution to the human resource crisis affecting many countries. CHWs provide a variety of functions, including outreach, counseling and patient home care and represent a resource to reach and serve disadvantaged populations. There has been mounting evidence to demonstrate the positive potential of community health workers in improving equitable access to care and health outcomes.

Scaling up community health workers is one of the strategies enshrined in the Kampala Declaration and the Agenda for Global Action. It is against this backdrop that the Global Health Workforce Alliance (the Alliance) in collaboration with United States Agency for International Development (USAID), commissioned this global systematic review to address some unanswered questions on role of community health workers, and policies required to optimize the impact of related programmes and strategies in the context of health workforce planning and management. Along with this, eight in-depth country case studies in sub-Saharan Africa (Ethiopia Mozambique and Uganda), South East Asia (Bangladesh, Pakistan and Thailand) and Latin America (Brazil and Haiti) were conducted. The case studies were undertaken with the specific purpose of corroborating and validating the findings of the review. In particular attention was paid to the different types of community health workers and the services they provide, the typical pitfalls of community health workers programmes, and the enabling systems factors, conversely, that must be put in place to maximize the potential benefit of their

deployment and use. Also, recruitment criteria, training content, certification process, supervision, incentives and professional advancement of community health workers have been examined, providing concrete and actionable recommendations in all these domains.

The key findings of this study provide a clear direction for policy makers on the design and management of CHW programmes:

- 1) CHWs should be coherently inserted in the wider health system, and this cadre should be explicitly included within the HRH strategic planning at country and local level;
 - 2) village health committees in the community should contribute to participatory selection processes of CHWs;
 - 3) the pre-service training curriculum should include scientific knowledge about preventive and basic curative care;
 - 4) CHWs should continually assess community health needs and demographics;
 - 5) CHWs should have established referral protocols with formal health services and social service agencies;
 - 6) CHWs should benefit from regular and continuous supportive supervision and monitoring.
- Priority areas for further research were also identified.

The Alliance believes that implementing these recommendations has the potential to contribute to an equitable and cost-effective scale up of service coverage, and lead to tangible improvements in health outcomes, particularly in the context of Millennium Development Goals.

I would like to conclude by expressing the sincere appreciation of the Alliance to USAID, the Consultants and the Advisory Committee for their valuable support and contribution in undertaking the review and preparing the report.

Dr. Mubashar Sheikh
Executive Director
Global Health Workforce Alliance

Acknowledgements

The authors would like to thank the Global Health Workforce Alliance for entrusting them with this important piece of research.

The authors would also like to thank numerous persons from diverse public and private organizations for their hospitality and support in providing contacts, information, sharing documents and insights into the functioning of the country-specific CHW Programs, and those we interviewed in person, by telephone or through electronic communication: Dr Zahid Larik, Dr Iqbal Lehri, Dr Rashid Jooma, Dr Zareef Khan, Dr Majeed Memon, Dr Assad Hafeez, Ministry of Health Pakistan; Prof Anwar Islam, Dr Koasar Afsana, and Dr Taskeen Chowdhury from BRAC, Bangladesh; Dr Tahmeed Ahmad ICDDR,B; Dr Felix Rigoli, Dr J Paranaguá de Santana and Augusto Campos from PAHO Brazil; Prof Maria Fátima de Sousa from Universidade de Brasília and Núcleo de Estudos em Saúde Pública; Ena Galvao & Christian Morales from WHO/PAHO Haiti; Dr Lambert Wesler from Zanmi Lazante, Haiti; Dr Wesler, Jude Jean, two public health nurses in LasCahobas and Boucan Carre; Gregory Jerome from Haiti; Dr Keseteberhan Admasu Berhane; Abaseko Hussein Mohammed, Woldemariam Hirpa, and Dr Tizita Hailu, from Ethiopian Federal Ministry of Health; Dr Fatoumata Nafo-Traoré, Dr Gebrekidan Mesfin, Dr Sofonias Getachew, and Martha Teshome from WHO country office for Ethiopia; Kora Tushune from Jimma University, Ethiopia; Dr Flavia Mpanga from UNICEF Uganda; Dr Benjamin Sensasi from WHO Uganda; Jessica Anguyo from AMREF Uganda; Richard Okwi from MoH Uganda; John Mukisa from UNACOH Uganda; Tom Lakwo from MoH Uganda; Nantume Sophie Mawejje from TASO Uganda; Sengendo from Uganda Community Based Health Care Association (UHBHCA); Dr. Elizeus Rutebemberwa, Makerere University, Uganda. Dr Leonardo Chavane from MOH Mozambique; Dr Benzerroug from WHO Mozambique; Dr Antoine

Bureau from WHO country office Mozambique.

They would further like to thank Dr Maimoona Azhar Salim, Research Officer, Division of Maternal and Child health, Aga Khan University, Pakistan, who accompanied the research and writing process. Moreover, they extended their sincere appreciation for the medical students (Salimah Valliani; Salima Bhimani; Arif Valliani) for their assistance in literature screening and retrieval.



List of Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ARI	Acute Respiratory Infections
ART	Anti Retroviral Treatment
BLDS	British Library for Development Studies
BRAC	Bangladesh Rural Advancement Committee
CHW	Community Health Worker
CHW-PFA	Community Health Worker- Program Functionality Assessment
CM	Community Mobilizer
DOTS	Directly Observed Treatment Support
EmOC	Emergency Obstetric Care
GDP	Gross Domestic Product
GNI	Gross National Income
HAART	Highly Active Anti Retroviral Treatment
HIV	Human Immunodeficiency Virus
IMCI	Integrated Management of Childhood Illnesses
IPT	Intermittent Presumptive Treatment
KAP	Knowledge, Attitude, and Practices
KMC	Kangaroo Mother Care
LBW	Low Birth Weight
LHWP	Lady Health Workers Program
MDG	Millennium Development Goal
MoH	Ministry of Health
MNCH	Maternal, Newborn and Child Health
NCD	Non-Communicable Disease
NGO	Non-Government Organization
NS	Non Significant
ORS	Oral Rehydration Salts or Oral Rehydration Solution
ORT	Oral Rehydration Therapy
PACS	Programa de Agentes Comunitários de Saúde
PC	Peer Counselor
PMTCT	Prevention of Mother to Child Transfer
RCT	Randomized Controlled Trial
STI	Sexually Transmitted Infections
TBA	Traditional Birth Attendant
TB	Tuberculosis
TT	Tetanus Toxoid
UNFPA	United Nations Population Fund
WHA	World Health Assembly
WHO	World Health Organization

Executive Summary

Human resources for health crisis is one of the factors underlying the poor performance of health systems to deliver effective, evidence-based interventions for priority health problems, and this crisis is more critical in developing countries. Participation of community health workers (CHWs) in the provision of primary health care has been experienced all over the world for several decades, and there is an amount of evidence showing that they can add significantly to the efforts of improving the health of the population, particularly in those settings with the highest shortage of motivated and capable health professionals.

With the overall aim of identifying CHWs programs with positive impact on Millennium Development Goals (MDGs) related to health or otherwise, a global systematic review was undertaken of such interventions, as well as eight in-depth country case studies in Sub-Saharan Africa (Ethiopia Mozambique and Uganda), South East Asia (Bangladesh, Pakistan and Thailand) and Latin America (Brazil and Haiti). The focus was on key aspects of these programs, encompassing typology of CHWs, selection, training, supervision, standards for evaluation and certification, deployment patterns, in-service training, performance, and impact assessment. For impact indicators, the focus was on those related to maternal and child health, HIV/AIDS, TB and malaria, as well as on those related to mental health and non-communicable diseases. In addition, building on the systematic review and the country case studies, draft recommendations was develop for recruitment, training and supervision criteria for CHWs programs to address the health MDGs, for further regional and global consultation among stakeholders, and for their eventual adaptation in varied contexts.

Methodology

For the systematic review, a comprehensive search of studies was performed in several data sources, without language restrictions, focusing on studies performed in developing countries. Eligible studies included randomized, quasi-randomized and before/after trials which had relied upon CHWs in community settings. In addition, other less rigorous study designs like observational (cohort and case-control) and descriptive studies were also reviewed to understand the context within which they were implemented, the typology of health care providers, the types of intervention delivered and reported results. Studies were included if (a) they detailed the role of CHWs and (b) if the outcomes considered are those related to reaching the health and nutrition MDGs like child mortality, maternal mortality, combating HIV/AIDS, TB, malaria, among other target health problems. The main comparison was between CHW interventions compared to no intervention or routine care; or one form of CHW intervention compared with another form.

For country case studies, a review of published and unpublished reports was conducted on specific country experiences with CHWs, and also a direct contact with key personnel overseeing the program was made through electronic correspondence and country visits. The primary level of evidence on impact derived from country specific assessment of CHW programs and from objective evaluation data (where available). The evidence was also triangulated from the global systematic review to the specific programs and types of CHWs in the selected countries. In addition to that, stakeholders familiar with program management and evolution were also contacted for specific inputs. In this process, information was assembled related to: program descriptions, job descriptions, or official descriptions of the role of the CHWs and the process followed to identify and recruit them; records identifying numbers of trained CHWs, dates of recent trainings, and documents describing training content and process as well as the supervision or monitoring process; and records

of current numbers of CHWs. Following the assembly of information from multiple sources, a USAID supported CHW Program Functionality Assessment Tool (CHW-PFA) was utilized to assess the functionality of the CHW programs across these countries. The CHW-PFA proposes twelve programmatic components for a CHW program to be effective.

Key Findings

The review of CHWs across the globe provided us an interesting and diverse picture of the current scenario in outreach services of health care workers. There is a wide range of services offered by the CHWs to the community, ranging from provision of safe delivery, counseling on breastfeeding, management of uncomplicated childhood illnesses, from preventive health education on malaria, TB, HIV/AIDS, STDs and NCDs to their treatment and rehabilitation of people suffering from common mental health problems. The services offered by CHWs have helped in the decline of maternal and child mortality rates and have also assisted in decreasing the burden and costs of TB and malaria. However, the coverage by such programs and the overall progress towards achieving the MDG targets is very slow. The growing consensus regarding this current pace of progress, especially in the low-income countries, is that it relates to fragile health and economic systems.

Country case studies identified a wide range of CHW programs with different mix of CHW typology. For example, Uganda Village Health Teams program has short duration of training with preventive and basic curative tasks for CHWs, with a relatively strong supervision system, and within a weak health system, while, on the other hand, Pakistan's Lady Health Workers (LHW) Program has long duration training programs, with promotional, preventive and basic curative tasks for CHWs, with a relatively strong supervision system, and within a relatively weak health system.

These country case studies demonstrate the participation of the respective governments and the NGOs in financing and implementation of their policies for the CHW programs. Results confirm that CHWs provide a critical link between their communities and the health and social services system. Communities across all the countries that we studied recognized the value of CHWs as a member of the health delivery team and therefore have supported the utilization and skill development of CHWs. These case studies further speak out the achievements of their CHW programs in relation to their modeling and level of commitment from their human resource. The region lagging far behind the MDG targets is Africa especially the Sub-Saharan Africa. Various factors have been identified to be responsible. These include inadequate human resource especially work force who are dying with HIV/AIDS and poor remuneration for their work leading to high drop outs, lack of supervision, and equipment and drug supplies needed to provide essential maternal, child and reproductive health services and those required to control and treat potentially preventable infectious diseases.

Based on the review and the gaps identified in the existing CHW programs and the services rendered, various recommendations are made regarding their recruitment criteria, training content, certification process, ongoing and refresher training, supervision, incentives and professional advancement. Although it is recognized that varying contexts are important, attention to specific criteria and issues could potentially improve the working of CHWs and help scaling up key interventions in relation to MDG targets. These are detailed in the main Report and the summary messages below represent major points for consideration.

Limitations of the study

- The review identified a number of limitations.

Firstly, most of the reviewed studies when implemented, neglected to document the complete description and characteristics of CHWs deployed, especially the level and amount of supervision provided to those workers, which could have helped us in identifying the importance of this factor and its association with other outcomes. Additional information on the initial level of education of CHWs, provision of refresher training, mode of training: balance of practical/ theoretical sessions would have provided greater assistance in understanding the threshold effect, if any, of these factors on CHW performance in community settings. Importantly, community ownership and supervision of CHWs is a key characteristic which is insufficiently described and analyzed in available literature.

- Secondly, studies related to the role of CHWs in HIV/AIDS prevention and care, mental health and food security and nutrition were scarce.
- Thirdly, few evaluation studies/reports were at scale and none had followed an a-priori experimental design or impact assessment process.

Key messages on integration of CHWs at national level

Planning, production and deployment:

- The programs should be coherently inserted in the wider health system, and CHWs should be explicitly included within the HRH strategic planning at country and local level.
- Given the broad role that many CHWs play in primary care, a program must assure that a core set of skills and information related to MDGs be provided to most CHWs. Therefore, the curriculum should incorporate scientific knowledge about preventive and basic medical care, yet relate these ideas to local issues and cultural traditions. They should be trained, as required,

on the promotive, preventive, curative and rehabilitative aspects of care related to maternal, newborn and child health, malaria, tuberculosis, HIV/AIDs as well as other communicable and non-communicable diseases. Other training content and training duration may be added pertinent to the specific intervention that the CHW is expected to work on as detailed in main report.

- The CHW programs should also give attention to both the content and the timings of delivering interventions at the planning stage.
- The CHW programs should regulate a clear selection/deployment procedure (ideally engage community in planning, selecting, implementing, and monitoring) that reassures appointing those who certify the course completion and pass the writing or verbal exam at the end of training.
- Government should take responsibility in making a transparent system for selection and deployment and further quality assurance of the regulated set system.

On scaling up a CHW program, decision makers should consider how to link them up with the wider health system.

Attraction and retention

- Community preparedness and engagement is a vital element that is relatively rarely practiced. From the outset, program should develop village health committees in the community that can also contribute in participatory selection processes of CHWs.¹
- CHW programs should be based in and respond to community needs. In practical terms, such programs should continually assess community health needs and demographics, hire staff from the community who reflects the linguistic and

cultural diversity of the population served, and promote shared decision making among the program's governing body, staff, and community health workers.

- CHW programs should also ensure a regular and sustainable remuneration package that is complemented with other rewards and incentives.
- CHW programs should also provide opportunities for career mobility and professional development. These should include opportunities for continuing education, professional recognition, and career advancement. This can be through specific programmatic opportunities or access to educational and training scholarships.
- The CHW programs should support provision of requisite and appropriate core supplies and equipment to enable appropriate functionality of such workers.

Performance management

- The CHW programs should also ensure that the performance management is based on minimum standardized set of skills that respond to community needs and are context specific.
- The programs should have established referral protocols with community-based health and social service agencies.
- The programs should have regular and continuous supervision and monitoring systems in place and supervision should be taught to be undertaken in a participatory manner that ensure two-way flow of information. Moreover, both external and internal evaluations need to be carried out on regular basis to improve the services and analyze the need of various logistics, supplies and training according to the requirements. Ideally, programs should evaluate their own performance on annual basis, while a

third party evaluation could be recommended in every 4-5 years, which would generate a neutral and free from bias findings.

- The outline of the country plan of action to develop and improve CHW program(s) should be finalized by a working group of relevant multiple stakeholders, including identification of resources needed, indicators and targets, and monitoring tools, and formally authorized by the Ministry of Health
- Finally, sustained resources should be available to support the program and workers therein.

Knowledge gaps requiring further study

- There is a remarkable dearth of information on the cost-effectiveness of CHW programs.
- Studies are needed to assess whether the CHW programs promote equity and access.
- Studies are required to assess the effectiveness of paid workers versus voluntary workers.
- Further analysis is required on the effectiveness of different models of remuneration/ payment/ incentivization of CHWs across different tasks and settings.
- Studies are needed to evaluate quality of care and effectiveness of health care provided by CHWs as compared to professional health care providers in the fields of health education, promotion and management of specific health problems.²
- Studies are also required to compare the effectiveness of promotive/preventive strategies compared to curative interventions delivered by CHWs for maternal and newborn health.

Given the global burden, specific studies on the potential role of CHWs in HIV/AIDS prevention and care, as there is very limited empirical information on this.

- Further research is needed on how CHWs are linked to the wider health system (e.g. in terms of referrals, supervision) and the impacts of the cadre on the health system.
- Further systematic reviews are also required on factors affecting the sustainability of CHW interventions when scaled up; the effectiveness of different approaches to ensure program sustainability; and the cost-effectiveness of CHW interventions for different health issues.²
- Additional analysis is required on the volume of work and type of activities and hence the number of CHWs required for such tasks.³ An example of this type of analysis is provided by a study in Bangladesh which assessed how many additional health workers would be needed to implement IMCI protocols. However, further studies are needed to determine the CHW workforce needed and their functional needs for MDG specific interventions.
- Research is also required to identify innovative mechanisms of maintaining the sustainability of CHW programs.
- That consultation should involve interactive debates that draw attention to key aspects of the community component and planning process, help clarify issues and address practical questions related to operationalization of these findings.
- GHWA should organize theme-focused workshops with existing CHW programs, to facilitate more interaction and generate quality output and in the long run, facilitate follow-up visits in these countries to provide technical support and guidance for CHW programs, including operational research.
- GHWA should also facilitate in undertaking studies related to cost-effectiveness of CHW interventions, potential role of CHWs in HIV/AIDS prevention and care, functional needs of CHWs for MDG specific interventions etc.
- GHWA should also take responsibility for publishing country specific CHW program evaluations and reports, and as much as possible, utilizing innovative, quasi-experimental designs to assess impact of such programs.

Recommendations on how GHWA can utilize the Report/Findings

- The findings from this report should be disseminated to policymakers at country level, to health care delivery organizations, and to organizations in charge of developing HRH programs. As an initial step, an international consultation on CHW study and a global review would facilitate this exchange.



Action Plan



Core Report

Background

The year 2000 marked an important event when 189 countries signed the UN Millennium Declaration which translated into the eight Millennium Development Goals (MDGs). Three out of those eight are directly related to health, namely:

- 1 Reducing child mortality by two-thirds from base levels of 1990;
- 2 Reducing maternal mortality by three quarters from base levels of 1990; and
- 3 Combating HIV/AIDS, malaria and other diseases.

However, progress on achieving these targets is far from the expectations, especially for the low-income developing countries. Despite considerable evidence from recent reviews of interventions that can impact on maternal, newborn and child health and survival, a major issue is the availability of trained health workforce to scale up these interventions in population settings.⁴⁻¹⁴ It is well recognized that critical shortage of physicians and indeed misdistribution underlies poor access to skilled care and commodities by populations in need.¹⁵ This recognition parallels the awareness that a range of community health workers (CHWs), both skilled and semi skilled, can play a major role in community mobilization and deliver a range of commodities.

Given the limited resources available for scaling up interventions to reach the MDG goals, two major barriers have been identified. One, the critical need for health systems strengthening has been underscored¹⁶ and key shortages of health care workers identified, which ought to be addressed by innovative strategies such as development of alternative cadres and task shifting.¹⁷ Health care workers are personnel whose activities are aimed to improve health, and traditional trained health care workers include cadres of doctors, nurses, midwives

or health technologists. According to a report by World Health Organization (WHO) 2006, 57 countries, from Africa and Asia are facing shortages of health care workforce, and an estimated 4,250,000 workers are needed to fill in the gap.¹⁸ Although several countries in Latin America have experienced sustained economic growth within the last few years, much social inequality and health inequities remain in the region, between and within countries. This is reflected in an inequitable distribution of health workers, with 15 countries in the region having less than 20 to 25 health workers for every 10,000 inhabitants, considered the minimum density for making a difference in health indicators. Shortage of health personnel contributes to weaker health systems and the overall burden of disease in these countries parallels the maldistribution of health workforce crises countries.¹⁹

It is for reasons of achieving a wide range of the population with cadres other than traditional health workers, that many countries have explored alternative strategies. An important strategy towards attaining the health related MDGs is investing in cadres of CHWs, and this has been adopted by many African and Asian countries.²⁰ CHWs are community based workers that help individuals and groups in their own communities to access health and social services, and educate community members about various health issues.^{21, 22} WHO has elaborated the definition of CHWs as *“(they) should be members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organization, and have shorter training than professional workers”*.²³

During the 1980s, CHWs were considered a cornerstone for primary health care, as envisioned by the Alma Ata Declaration, but its importance declined in the 1990s with a changing focus on alternative vertical programs and service delivery

models. It is now evident that this change in direction was misplaced and given the increasing interest in integrated primary care and the recognition of the enormous mismatch between disease prevalence and optimal care,²⁴ there has been a rekindling of interest in the importance of CHWs. This interest is related to potential re-allocation of interventions and specified tasks from more specialized to less specialized health care workers (also called “task shifting”).²⁵

While CHWs may not replace the need for sophisticated and quality health care delivery through highly skilled health care workers, they could play an important role in increasing access to health care and services, and in turn, improved health outcomes, as an effective link between the community and the formal health system, and as a critical component in the efforts for a wider approach that takes into account social and environmental determinants of health. Successful examples are evident by the efforts of the Bangladesh Rural Advancement Committee (BRAC), Bangladesh for setting up a CHW program based on cumulative experience and learning.²⁶ Brazil is another example where CHWs provide coverage to over 80 million people.^{27, 28} Ethiopia is currently training about 30,000 workers with emphasis on maternal and child health, HIV and malaria. Similar programs are also being considered in other developing countries like India, Ghana and South Africa. In Pakistan, a huge public sector program for training and deploying Lady Health Workers (LHWs) has been in place since 1994 and has been expanded to cover over 70% of the rural population with a work force exceeding 90,000.²⁹

For CHW programs to effectively perform, it is vital to lay due emphasis on training and supervision. Prior experiences have documented that low interest/use by the government, inconsistent remuneration, inadequate staff and supplies and lack of community involvement are key factors to negatively impact the CHW

program.³⁰ These factors can be alleviated by certified training and supportive supervision, along with other incentives (financial and non-financial) to keep CHWs satisfied and motivated to perform their duties well. Furthermore, efforts geared to standardize training and certification for CHW programs, could further provide a career pathway and enable them to effectively contribute to their communities. A recent study by Kash et al.³⁰ have concluded that certified CHWs are potentially an important health task force towards improving access to health care and social services and improve utility of resources to the underserved.

A large number of countries, many in the high burden countries of South Asia and sub-Saharan Africa, are off target for reaching the MDGs set for the year 2015. One of the mechanisms to effectively reduce this gap is by improving the mechanisms and channels for delivering the interventions with a potential to improve the health and nutrition status of the mothers and children. The important role of formally trained health professionals like doctors and nurses in primary care and community settings is well-recognized. There is a shortage of such staff in many countries which has emerged as a major limitation in the delivery of useful maternal and child interventions. With appropriate training, some of these tasks can be successfully performed by CHWs and other cadres of workers like traditional birth attendants, and lay health workers. Engaging CHWs could provide improved access to the basic essential health services and commodities, and could also influence community demand creation. The role of CHWs, if any, in facilitating delivery of various interventions in community and primary care setting is to improve MDG outcomes in a subject of increasing public health interest but has not been systematically analyzed.

We undertook this review to evaluate the impact of global experience of CHWs in delivering the

health related MDGs and components thereof. This was accomplished through a systematic review of available literature and in-depth case studies of large CHW programs in both the public and private (NGO) sector in eight countries representing various parts of the developing world.

Objectives

The specific objectives of the systematic review included

- Assessment of the evidence base of the impact and effectiveness of global experience of CHWs in delivering care related to health and nutrition MDGs. Special focus was paid on the
 - Typology of CHWs
 - Training practices
 - Supervisory practices
 - Standards for evaluation and certification
 - Deployment patterns
 - In-service training
- Undertaking case studies to evaluate the typology, impact, and performance assessment of the practices of CHWs deployed at scale in 8 countries across the world, two being in Latin America (Brazil and Haiti), three in Africa (Ethiopia, Uganda and Mozambique), and three in South Asia (Pakistan, Bangladesh and Thailand).
- Based on the above, the development of an analytical summary and draft recommendations for recruitment, training and supervision criteria for CHW programs to address the health MDGs for regional and global consultation among stakeholders.
- Prepare the framework for finalization of recommendations for consideration and adaptation by stakeholders

Methods

Global Systematic Review

Criteria for considering studies for this systematic review.

According to WHO, CHWs should be members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organization and have shorter training than professional workers.³¹ Therefore, the types of health care providers included encompassing village health workers, lady health workers/visitors, birth attendants, etc. We restricted our review to CHWs (either paid or unpaid) undertaking activities related to achieving the health and nutrition activities and wherever possible, targeting disorders/conditions of direct relevance to related MDGs. It was recognized that many CHWs in developed countries had significantly higher levels of education, training, experience and support as compared to comparable cadres in developing countries. To ensure comparability of experience from various settings, we set an a priori criterion that CHWs should have received training in some manner in relation to the interventions and targets, but excluded those with formal professional or paraprofessional grooming, or a degree from tertiary learning centre.

Our first level of evidence derived from experimental designs and evaluations of CHWs in various settings. We thus identified and reviewed randomized, quasi-randomized and before/after trials which had relied upon CHWs in community settings. In addition, other less rigorous study designs like observational (cohort and case-control) and descriptive studies were also reviewed to understand the context within which they were implemented, the typology of health care providers, the types of intervention delivered and reported results. Studies were included if (a) they detailed the role of CHWs and (b) if the outcomes considered are those related to reaching the health and nutrition MDGs like child mortality, maternal mortality, combating HIV/AIDS etc. The main comparison was between CHW interventions compared to

no intervention or routine care; or one form of CHW intervention compared with another form. [Box 1](#) is a list of alternative names used for outreach workers globally.

Box 1: Alternative Names for Outreach Worker

Community Health Worker (CHWs)	Bangladesh	Shasthyo Sebika
	Bangladesh, India, Greece & Gambia	Village Health Workers
	Peru	Agente Comunitario de Salud
	Pakistan	Lady Health Workers
	India	Saksham Sahaya
	Brazil	Community Health Agents
	<i>Brazil</i>	<i>Agente comunitário de saúde</i>
	Brazil	Visitadora
	Burkina Faso	Women Group Leaders
	Burma	Maternal Health Worker
	Bangladesh	Community Nutrition Worker
	India	Anganwadi Workers
	India	Maternal & Child Health Promotion Workers
	India	Community-based Workers
	Nepal	Female Community Health Volunteer
	Ethiopia	Village Malaria Worker
	Nepal and China	Maternal Child Health Workers
	Ecuador, Colombia, Nicaragua	Voluntary Malaria Workers
	United States & Mexico	<i>Promotoras de Salud</i>
	Madagascar, Ghana, & Bolivia	Nutrition Volunteers
	Egypt	Raedat
	Haiti	Accompagnateurs
	India	Community Health Volunteer
	Iran	Behvarz
	India	Village Health Guide
	Senegal	Nutrition Worker
	Latin America	Colaborador Voluntario
	Uganda	Community Drug Distributor
	Kenya	Village Health Helper
	Indonesia	<i>Kader Posyandu</i>
	Ethiopia	Mother Coordinator
	Mali	Village Drug-Kit Manager
	South Africa	Lay Health Worker
	Uganda	Community Reproductive Health Worker
	United States	Lay Health Visitor
	England	Mental Health Workers
England	Postnatal Support Worker	
United States	Community Volunteer	
United States	Community Health Advocates	
United States	Community Health Aide	
Guatemala	Village Health Promoters	
Guatemala	Rural Health Worker	
Nicaragua	<i>Brigadistas</i>	
Traditional Birth Attendant (TBAs)	Bangladesh	Community-based Skilled Birth Attendant
	Pakistan	<i>Dai</i>
	Malaysia	<i>Bidan Kampong</i>
	Bangladesh	Skilled Birth Attendants
	Guatemala	Traditional Midwives
Egypt	<i>Dayas</i>	
Community Mobilizer (CMs)	Pakistan	Community Volunteers
	Nepal & India	Facilitator
	Bangladesh	Female Peer Facilitator
	India	Change Agents
India	<i>Doot</i>	
Peer Counselor (PCs)	Brazil	Peer Educators
	Brazil	Lay Counselor
	England	Volunteer Counselor
	United States	Volunteer Peer Counselor
	England	Peer Support Worker

Methods for literature search, information sources, abstraction and synthesis

All the evidence available, relevant to the role of CHWs in achieving the health and nutrition related MDG targets around the world, was systematically analyzed. The following sources of information were used to search literature for review:

- 1 All available electronic references libraries of indexed medical journals and analytical reviews
- 2 Electronic reference libraries of non-indexed medical Journals
- 3 Non-indexed journals not available in electronic libraries
- 4 Pertinent books, monographs, and theses
- 5 Project documents and reports

The following principal sources of electronic reference libraries were searched to access the available data on CHWs studies: Cochrane Reference Libraries, Medline, PubMed, Popline, World Bank's JOLIS search engine, British Library for Development Studies BLDS at IDS as well as the IDEAS database of unpublished working papers, Capacity Project website, HRH Global Resource Center, Google and Google Scholar. Detailed examination of cross-references and bibliographies of available data and publications to identify additional sources of information were also performed. In particular, this search was also extended to review the gray literature in non-indexed and non-electronic sources. The bibliographies of books with sections pertaining to CHWs were also searched manually to identify relevant reports and publications.

The following search strategy was modified for the various databases and search engines. [«Community Health Aides» [Mesh] OR «Primary Health Care» [Mesh] OR «community health worker*» OR «lady health worker*» OR «village health volunteer*» OR «village health guide*» OR «lay health worker*» OR «mid level health

worker*» OR «primary health care» OR «Task Shifting» OR «community based interventions» OR «Female village health worker*» OR «village health worker*» OR «birth attendant*» OR «traditional birth attendant*»]. Language restrictions were not applied and our search strategy included relevant Library of Congress Subject Headings, and MeSH terms.

Studies in languages other than English were included after relevant translation. The abstracts (and the full sources where abstracts not available) were screened by two authors to identify studies adhering to our objectives. Any argument on selecting studies between these two authors was resolved by a third reviewer. After retrieval of the full texts of all the studies that meet the inclusion/exclusion criteria, each study was double data abstracted into a standardized form. The key variables elicited were study setting, location, study design, participants, intervention delivered, outcome effects and type of outreach workers involved. Since the objective of this systematic review is to assess the effectiveness of CHWs in delivering care related to health and nutritional MDGs, special focus has been laid in extracting information related to CHWs, their educational requirement for selection as outreach worker, training content and modalities (didactic, practicum, experiential etc), training duration, certification, refreshers / ongoing training, key competencies, specific role and tasks assigned, supervision and monitoring, incentives (if any), population coverage, impact of CHW programs/ evaluation. All final studies were entered into the Endnote XI database.

Country Case Studies

Two interrelated approaches were used to gather information on the CHWs program from each of the selected country. First, we conducted a review of published and unpublished reports on the countries experiences with CHWs. Second, we made a direct contact with key personnel,

overseeing the program, through electronic correspondence and country visits.

Our primary level of evidence derived from evaluation reports of CHWs in selected countries. We thus identified and reviewed all published or unpublished reports which considered CHWs in the community settings. We also included evidence, pertinent to CHWs from selected eight countries, identified from global systematic review. We also contacted stakeholders, who are familiar with how the program is managed or supported and the regions within which it functions, to get a deep insight about program functionality through country visits and/or email correspondence. In this process we congregated information related to: program descriptions, job descriptions, or official descriptions of the role of the CHW and the process followed to identify and recruit the CHW; records identifying numbers of trained CHWs, dates of recent trainings, and documents describing training content and process; documents that describe the supervision or monitoring process; records of current numbers of CHWs etc.

After assembling information from multiple sources, USAID's CHW Program Functionality Assessment Tool (CHW-PFA)³² was utilized to assess the functionality of the CHW programs across these countries. The CHW PFA proposes twelve programmatic components for a CHW program to be effective. These components are:³²

- 1 Recruitment:** How and from where a community health worker is identified, selected, and assigned to a community.
- 2 The CHW Role:** The alignment, design and clarity of role from community, CHW, and health system perspectives.
- 3 Initial Training:** Training is provided to the CHW to prepare for the role in MCH services delivery and ensure he/she has the necessary skills to provide safe and quality care.
- 4 On-going Training:** On-going training is provided to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned.
- 5 Equipment and Supplies:** The requisite equipment and supplies are available when needed to deliver the expected services.
- 6 Supervision:** Supervision is conducted on a regular basis to carry out administrative tasks and to provide individual performance support (feedback, coaching, data-driven problem-solving).
- 7 Performance Evaluation:** Evaluation to fairly assess work during a set period of time.
- 8 Incentives:** A balanced incentive package that includes financial incentives, such as salary and bonuses and non-financial incentives, such as training, recognition, certification, uniforms, medicines, etc. that is appropriate to the work expectations.
- 9 Community Involvement:** The role that community plays in supporting a CHW.
- 10 Referral System:** A process for determining when referral is needed, a logistics plan in place for transport and funds when required, a process to track and documented referrals.
- 11 Professional Advancement:** The possibility for growth, advancement, promotion and retirement for a CHW.
- 12 Documentation, Information Management:** How CHWs document visits, how data flows to the health system and back to the community, and how it is used for service improvement.

Functionality Rating:

For each of the 12 components listed above, four levels of functionality are described that range from non-functional (Level 0) to highly functional as defined by suggested best practices (Level 3). These levels describe situations

commonly seen in CHW programs and provide enough detail for assessor to identify where that program fall within that range. Level 3, the highest level, provides an accepted best practice for each component. Because each of these components is equally necessary for a program to succeed a CHW program must be rated at least level 2 in each of the 12 components in order to be considered minimally functional. Moreover, a set of widely accepted programmatic and clinical elements were also considered to evaluate their role in MCH. A 'functional' CHW providing MCH services must deliver at least one of the key MCH classified by antenatal, childbirth, early post-partum and early childhood periods in the MCH care-continuum.

Scoring of MCH Intervention:

MCH roles Interventions are grouped by categories which includes antenatal care, birth and newborn care, postpartum and newborn care, family planning, PMTCT, etc. One complete intervention requires a check mark in the column titled YES – indicating full implementation of the intervention at that program level. The scores from CHW program functionality assessment matrix and MCH intervention matrix are summed up separately and reported in the score card.

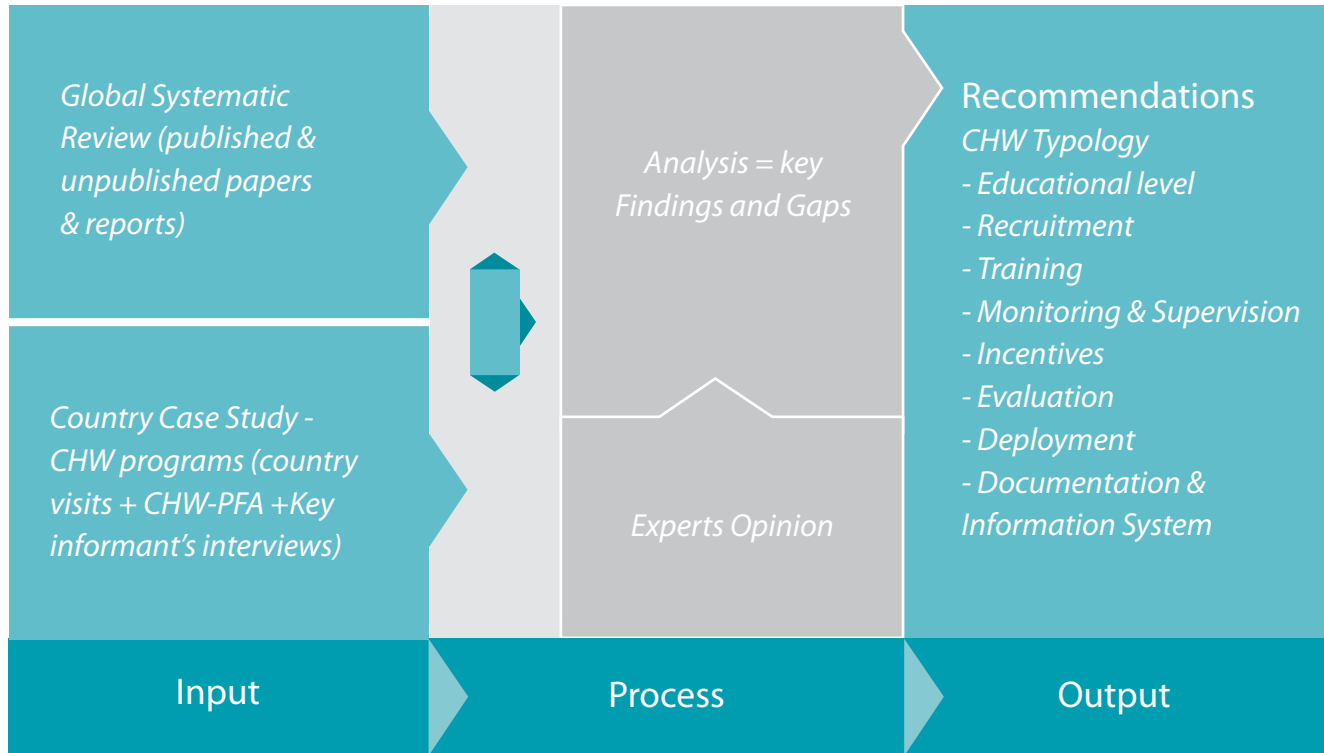
Data Analysis

For global systematic review, the studies were categorized based on interventions relevant to health and nutrition related MDGs and then analyzed by the type of outreach workers and study design employed in order to explore the impact and effectiveness of global experience of CHWs in delivering healthcare. This helped us in outlining the typology, training and supervision needs, tasks and feasibility of developing and deploying CHWs as a way towards the achievement of the MDG targets. We have also

presented some national or NGO driven CHW programs in the form of "CHW Snapshots" appearing randomly in annex I. We also undertook case studies in eight representative countries from Latin America, Africa and Asia, with high burden of diseases, to understand the typology, experience, training needs, program roll out and assessments of CHWs to-date.

Based on our findings from global systematic review and country case studies, we constructed a typology of CHWs, taking into consideration the expert opinion and the context and diversity of training programs, while acknowledging the existing limitations in the available information and in the methods used (Functionality assessment tool, desk review and key informants interviews during country visits).

Structure of Report



Main Findings from Global Systematic Review and Country Case Studies

Global Systematic Review

CHWs were employed to deliver a wide range of interventions that were arranged into groups, each containing studies that used broadly similar methods to influence a single health care outcome.

- 1 Nutritional interventions
- 2 Maternal Health interventions
- 3 Birth and Newborn Care Preparedness Interventions
- 4 Promotion of breastfeeding
- 5 Neonatal Health Interventions
- 6 Childhood Illnesses and Immunization Interventions
- 7 Primary Health Care Interventions
- 8 Malaria Control Interventions
- 9 Tuberculosis Control interventions
- 10 HIV/AIDS Prevention and control Interventions
- 11 Mental Health Interventions
- 12 Interventions related to Non-Communicable Diseases (NCDs)
- 13 Knowledge, attitude & practices of community health workers

Summary

They promoted antenatal, intrapartum and postnatal care, initiation of early and exclusive breastfeeding, promoted use of colostrums and growth monitoring of children.

Their role in preventive medicine can be assessed from the emphasis that they lay in their communities regarding appropriate nutrition and to remain healthy. They also emphasized on usage of condoms and change in sexual behavior, in HIV prevalent communities. In fact, some were trained in the social marketing of condoms.

Besides advocating preventive strategies they also offered treatment for uncomplicated malaria, pneumonia and treatment compliance was ascertained in case of TB and anti-retroviral therapy of HIV as DOTS.

Country Case Studies

- 1 Typology of CHW programs
Short to intermediate duration training programs, with preventive and basic curative tasks for CHWs, with relatively strong supervision activities, and within a weak health system: **Haiti Zanmi Lazante's Community Health Program**
- 2 Long duration training programs with preventive and basic curative tasks for CHWs, with a relatively weak supervision system, and within a weak health system: **Ethiopia Health Extension Program (HEP) & Mozambique Agentes Polivalentes Elementares (APE) Program.**
- 3 Short duration training programs with preventive and basic curative tasks for CHWs, with a relatively strong supervision system, and within a weak health system: **Uganda Village Health Teams.**
- 4 Long duration training programs, with promotional, preventive and basic curative tasks for CHWs, with a relatively strong supervision system, and within a relatively weak health system: **Pakistan's Lady Health Workers (LHW) Program.**
- 5 Short duration training programs, with mostly promotional, preventive and basic curative tasks for CHWs and with a relatively strong supervision system, within a relatively strong health system: **BRAC in Bangladesh**
- 6 Short duration training programs, with mostly promotional, preventive and basic curative tasks for CHWs and with a relatively weak supervision system, within a relatively strong health system: **The Village Health Volunteers Program (VHV) in Thailand**
- 7 Long duration training programs, with mostly promotional and preventive tasks, and very restricted and basic curative tasks for CHWs, with a strong supportive supervision, and within a relatively strong health system, such as the **Family Health Program (FHP) in Brazil.**



Discussion and Way forward

The intentions underlying this global review was to assess the role of CHWs in the interventions related to the MDGs and to bring forth the image of how various countries in the world are running their CHW programs through our country case studies.

The review of CHWs across the globe provided us a vivid picture of the current scenario in outreach services of health care workers. There is a wide range of services that are offered by the CHWs to the community from safe deliveries, counseling on breastfeeding to the management of uncomplicated childhood illnesses, from preventive health education on malaria, TB, HIV/AIDS, STDs and NCDs to their treatment and rehabilitation of people suffering from common mental health problems. The services offered by them have helped in the decline of maternal and child mortality rates and have decreased the incidence of TB and malaria. However the overall progress towards achieving the MDG targets is very slow. The growing consensus regarding this current pace of progress, especially in the low income countries is due to the fragile health and information systems. Their role in the community has also been quantitatively analyzed in other systematic reviews that offered encouraging evidence of the value of integrating maternal and newborn care and other health related interventions in community settings through a range of strategies that work, many of which can be packaged effectively for delivery through a range of community health workers (CHWs).^{2, 33-38}

Our country case studies, on the other hand, demonstrate the participation of the respective governments and the NGOs in financing and implementation of their policies for the CHW programs. Results from these country case studies confirm that CHWs provide a critical link between their communities and the health

and social services system. Communities across all the countries that we studied recognized the value of CHWs as a member of the health delivery team and therefore have supported the utilization and skill development of CHWs. These case studies further speak out the achievements of their CHW programs in relation to their modeling and level of commitment from their human resource. The region lagging far behind the MDG targets is Africa especially the sub-Saharan Africa.³⁹ Various factors have been identified to be responsible. These include inadequate human resource especially work force who are dying with HIV/AIDS, lack of supervision, and equipment and drug supplies needed to provide essential maternal, child and reproductive health services and those required to control and treat potentially preventable infectious diseases.

There has been long and unresolved debate about what functions one CHW can effectively carry out, coupled with concerns about how many tasks a CHW can realistically perform.¹ An in-depth analysis of the CHWs contributions and their outcomes in various interventions has led us to identify various gaps in the effective working of these health workers.³⁰ The PHC workers provided basic health care and appropriate referrals where needed. They increased health awareness and promoted preventive health behaviors. Their services however, were found to be fully utilized where the area of their deployment was in the rural vicinity. Roles and responsibilities that CHW were fulfilling in relation to MDGS, as evident from global literature and national programs, were maternal and child health care, TB care, malaria control, HIV/AIDS care, with very less reports can be found about the use of CHWs in food security and nutrition.

The role of nutrition workers, in small scale projects, was mainly related to counseling and advocacy in community. While, on the other hand, in large CHW programs, they were involved in

iron/folate supplementations, counseling on maternal nutrition, promotion of growth monitoring and weighing of newborns, provision of community based management of acute malnutrition using ready to use therapeutic foods. Studies under our review also identified low education in CHWs as a main factor that hindered them in carrying out the advocacy skills properly. On the other hand, there were studies that highlighted the importance of CHW supervision and refresher training. Some programs experienced challenges in which supervisors were not involved which later diminished when program involved supervisors. Keeping in view, the current transition in dietary pattern, we found a complete absence of CHW's role in life style modification, physical activity and dietary changes particularly from large scale CHW programs, while, it was only found in small scale programs from developed countries.

Almost all of the CHWs driven interventional studies showed a significant impact on reducing maternal, perinatal and neonatal mortality and improvement in perinatal and postpartum service utilization indicators. In most of these studies they were trained and deployed as maternal and child health care providers and reproductive health workers. They promoted the concept of antenatal, intrapartum and postnatal care, exclusive breastfeeding, maternal and child nutrition, immunizations and family planning. The newborn care providers amongst these CHWs were trained to teach kangaroo mother care for LBW babies and monitor growth for children under-five years of age. Apart from delivering general health related promotional interventions, these health workers were also involved in the preventive and therapeutic maternal, newborn and childhood illnesses interventions. They managed uncomplicated common childhood illnesses and identified those requiring referral to higher health facility. However, the major barriers that came in the way of their services included traditional beliefs and

practices. Their major efforts had to be directed towards behavioral change of the community to convince them for the provision of adequate nutrition to the pregnant women, to avoid pre-lacteal feed in newborn and give colostrums and exclusive breastfeed for at least 4-6 months. Inadequate supplies of equipment and drugs were another barrier in the way of their tasks accomplishment. They were trained for growth monitoring but at instances unavailability of physical weigh balance did not allow them to fulfill their job. Apart from inadequate supply of drugs and equipment, lack on ongoing and refresher training was another major barrier in proper functionality of CHW when adequate time was not allocated for practical aspect during their initial training. Studies in which CHWs performed their services under the supervision and attended monthly meetings were able to bring about positive impact and their standing in the community increased with updated knowledge.

We, on the other hand, also assessed CHW programs against MNCH interventions list prescribed by USAID, which showed that none of the program delivered all the interventions suggested. CHWs in these programs mainly complied on delivering antenatal care, postpartum care, immediate newborn care and immunization services in community with special emphasis on counseling and referring cases to the health facilities. But very few programs focused on recognizing and referring maternal and newborn complications, prevention of post partum hemorrhage, providing kangaroo mother care for low birth infants, community based treatment of pneumonia, other referral services for severe illness among children. Looking at the variety of tasks under MNCH domain, CHWs are facing job stresses which are leading to high attrition rates. LHWs (Pakistan) in one study reported that low socio-economic status and long travelling distances for work, inconsistent medical supplies, inadequate stipends, lack of career structure

and not being equipped to communicate effectively with families were the main factors for job dissatisfaction and attrition.⁴⁰ In addition, BRAC Shasthyo Shebika identified factors responsible for their dropouts as low income and small profit gains from selling medication and contraceptive methods.⁴¹

Globally, the incidence of malaria has been declining but especially in the sub-Saharan region malaria, which is preventable and controllable, still continues to take millions of lives. The role of malaria workers in the literature reviewed was to promote use of insecticide treated nets and provide treatment for uncomplicated malaria. While, from country case studies, their main role was found in counseling and referral for insecticide bed nets, IPTp treatment, and rapid diagnostic test. Only two programs, Ethiopia Health Extension Program and BRAC Bangladesh have trained their CHWs for rapid diagnostic tests and treatment. The CHWs working in this domain often faced shortage in supply of new malaria drugs and insecticide treated bed-nets preventing them from offering services in their true capacity. Since in many studies, CHWs were local farmers or drug distributors from the community, they were, in principle, always accessible to the villagers, who had been motivated through health education to consult the CHW for any fever episodes.¹ Key problems in these interventions revolved around the limited scope of the CHWs' practice and their ambiguous role within the health care system.¹ More specifically, Delacotte et al. observed that CHWs wanted to be more than symbolically remunerated for their services; they were eager to receive further training so as to expand their scope of practice, and they wanted to become a formal part of the health structure.^{1,42}

In combating HIV as a goal set in MDGs, there has been a decline in the incidence of newly affected HIV positive people. The number of deaths from HIV has also decreased with the

expansion of ART services. The HIV epidemic has drastically increased the demand for health services, yet a growing number of health workers in high prevalence regions are themselves dying or unable to work as a result of HIV/AIDS. The role of CHWs in reducing the incidence of HIV however has not been very significant partly because HIV was not found to be the major focus of CHW training programs in most parts of the world despite of it being a part of MDGs. The role of CHWs pertaining to HIV was restricted to creating awareness and providing ART using DOTS. From global systematic review, hardly 17 studies were found which described the role of CHWs related to HIV/AIDS out of which just 1 study revealed that the concept of PMTCT was conveyed to the CHWs and both the mother and the HIV exposed newborn were treated with single dose of medicine. And a single study reported the CHWs' rehabilitative role towards HIV/AIDS patients in the form of psychosocial support. Whereas, none of the program from our country case studies delivered all the interventions (as per USAID PMTCT interventions) related to assessment and treatment of HIV/AIDS in mothers and newborns. Only two programs (Brazil and Haiti) among all, included training for PMTCT interventions which was restricted to counseling and referral. These observations reveal that the CHWs in general were not given a comprehensive training on the issue of HIV-prevention, treatment and rehabilitation. CHWs were not armed with the supportive and rehabilitative strategies that would help them ease the life of HIV patients who are generally living with the social stigma related to the disease. Owing to its socioeconomic impact and the multi-system diseases introduced by HIV/AIDS in a person like multi-drug resistant TB and other infections, the issue of HIV/AIDS deserves special attention in terms of preventive, therapeutic and rehabilitation strategies.

Another intervention area that seems neglected and where the CHWs can create a

difference is that of mental health. The current living standards with global economic crisis and unemployment rates have led to a number of mental health problems in the society the most common being anxiety and depression. These problems tend to further deteriorate the health and socioeconomic situation and may even lead to loss of life in the form of crimes and suicide, if left unattended. Despite of these facts, the sphere of mental health illnesses has not been given its due importance. We recommend that this intervention be galvanized into the preventive and rehabilitative strategy of primary health care as well as every MDG related intervention.

On the whole, factors limiting the range and quality of CHWs impacts are identified as below and are further described in the recommendation section.³

- Shortage of basic drugs and irregular supply of vaccines and commodities (e.g. condoms)
- Inadequate and irregular supervision
- Lack of equipment and non-functional equipment
- Insufficient initial and continuing education
- Low status and remuneration of CHWs
- Inadequate linkages with health system.

Based on our review and the gaps identified in the existing CHW programs and the services rendered by them in terms of MDGs, we are able to make the following recommendations regarding their recruitment criteria, training content, certification process, ongoing and refresher training, supervision, incentives and professional advancement (**Table 1**). There is a wide range of different CHWs, performing an even wide range of tasks. A typology is therefore not easy. One simple distinction, however, is that between generalist and specialist CHWs like MNCH workers, nutrition workers, TB and HIV/AIDS workers etc. We also recognize the importance of varying

contexts, therefore our recommendations are based on core as well as for different types of interventions carried out by CHWs, which is definitely not suggesting having different types of CHWs. Attention to the following criteria and issues could potentially improve the working of CHWs and help scaling up key interventions.

Education

Setting up stringent post-primary or secondary education criteria as a pre-requisite for becoming a health worker does not sound practical when it comes to meeting the health care needs of less privileged communities far removed from health care facilities. However, keeping criteria of primary education and incorporating adult education comprising of basic arithmetic, reading and writing should be considered into the training curriculum of the CHWs to ensure proper documentation, referrals and records keeping of the supplies. Moreover, CHWs who are involved in case management should be strictly scrutinize for their education level. In an ideal situation for giving a fair chance, candidate with at least primary level education should be given a preference.

Recruitment criteria

All the studies and CHW programs, that we reviewed, emphasized that CHWs should be chosen from the communities they will serve and that communities should have a say in the selection of their CHWs. As far as the selection of the CHW is concerned, we would recommend that they should be directly chosen by the households that they will work with. Neither health or other officials, nor even community leaders should make this choice alone. CHWs should always be answerable to the local community that they volunteer to serve.¹ We also reviewed from BRAC example that villages initiated village health committees which also help and are responsible for selecting CHW candidates. However, most studies reported that CHWs were chosen or selected “by the communities themselves”.

Table 1: Recommendations - CHW Core Typology		CHW Contextual Factors							
Key competencies	Recruitment	Educational criteria	Training content, duration & role (initial & ongoing)	Certification process	Monitoring supervision & evaluation	Volunteer/salaried	General or Performance based incentives	Career pathway & development	Referral system
Community involvement in identification of potential community health workers	<p>Involvement in local newspaper or radio channel for interested candidates to join</p> <p>Advertisment in local newspaper or radio channel for interested candidates to join</p> <p>Applicant must be</p> <ul style="list-style-type: none"> -18-40years of age -from the local community -permanent resident <p>Test: on literacy and numeracy</p> <p>Interview: to judge on motivation and willingness</p> <p>final selection by community and local health center</p>	primary level schooling	<p>Initial: 6 months</p> <p>On-the-job: 6 months</p> <p>Ongoing: once per month</p> <p>Refresher: every 6 months</p> <p>didactic,interactive sessions</p> <p>Core training:</p> <ul style="list-style-type: none"> -ability to access resources -coordination of services -crisis management -knowledge of medical services -leadership -organizational skills -interpersonal communication skills -confidentiality <p>Key Role:</p> <ul style="list-style-type: none"> -visits households -growth monitoring of children -routine immunization of children and pregnant women -promote exclusive breastfeeding -promotion of oral rehydration for diarrheal diseases -prevention of STD/AIDS, premature pregnancy -identification of pregnant women & promotion of importance of prenatal care at the health facility -periodic household visits for prenatal follow-up, identifying risk signs and symptoms, orientating on feeding and mother preparation for delivery, and promoting breastfeeding -monitoring of newborns & mothers after delivery -educational activities on family planning methods -educational activities on family & community dietary habits -educational activities on oral & dental hygiene, with emphasis on pediatric group -educational activities for water, sanitation and personal hygiene -educational activities for promotion of mental health 	<p>Exam after initial training</p> <p>on passing exam and completion of initial training they should be awarded with title</p> <p>on completion of on-job training they should be awarded with a certificate</p>	<p>Supervisors: 1 supervisor: 20-25 CHWs</p> <p>Evaluation: annual internal evaluation external evaluation in every 5 year</p>	<p>volunteers *</p> <p>OR</p> <p>Salaried keeping in view that they are poor</p> <p>Full time employment</p>	<p>allow to sale medication for minor ailments</p> <p>allow to sale contraceptives methods</p> <p>Free health coverage for themselves and for their family (if possible)</p>	<p>Should be offered to advance their career as supervisor on completion of minimum education level and experience required to reach the next level.</p>	linkages between TBAs and health system

*Volunteers (community members who volunteer few hours a week) Salaried (full time CHWs)

Community preparedness and engagement is a vital element that is relatively rarely practiced. From the outset, program should develop village health committees in the community that can also contribute in participatory selection processes of CHWs.

Although, the countries scored highest (PFA-3) in program functionality assessment on following best practice for recruitment of their CHWs, but difference were found on the nature and selection checklist. It is recommended that CHWs should be recruited for training on the basis of standard and transparent criteria for selection. An advertisement in the most accessible local newspaper or local radio channel should be possibly made for walk-in interviews of interested candidates. Since being a permanent resident of that locality is the most important criteria for selection, therefore, evidences confirming their residency must be strictly and stringently examined during their first assessment, followed by cross confirmation of their educational certificate and work experience (if any). The assessment may include a test for literacy and numeracy as well as interviews to assess aptitude, competence and motivation. Candidates should be thoroughly gauged for their interest for voluntary work (depending on local national program), and serving their own community even in situation of no monetary rewards. It is also recommended that some process for community buy-in and ownership of this screening and selection process be instituted, free from political interference, so that the most suitable candidates are identified and there is local accountability.

In summary, while the selection of CHWs from local communities is common practice, participatory selection processes remain an ideal that is relatively rarely practiced, particularly in large-scale programs.⁴³ The final selection should be proposed by community (or village health committee) with the consensus of community

leaders and district health officer. Other recruitment criteria may be added pertinent to the specific intervention that the CHW is expected to work on as mentioned below.

MNCH workers:

Workers for MDGs 4 and 5 should preferably be female, married and children with not less than 5 years of age, as they have lower tendency for migration. Moreover, they have their own experience of dealing with issues related to pregnancy and motherhood and taking care of their own children when they were sick. During interview, they should particularly be assessed for their own acceptance and attitude towards family planning.

TB and HIV/AIDS Workers:

For TB and HIV workers, preference should be given to those who are former drug user, or those who themselves suffered from tuberculosis and HIV/AIDS and have completed their treatment regimens. Preference can also be given to those who have taken care of a family member suffering from tuberculosis or HIV/AIDS. This would specifically work in areas with high burden of TB and HIV/AIDS diseases like Africa, and where a large number of outreach workers are dying from same condition. Their experience and courage for the fight against disease can give a motivational light to others.

Training content

Almost all the studies described the training modality and content but the extent of training, type of training, and timings of training varied dramatically across the studies. Training courses varied from several hours to several days to even several months. Training is in many cases conducted by professional health members, or, in the case of NGO-driven programs, by the NGOs themselves.¹ CHWs across all the country profiles and global review, were delivering promotional, preventive and therapeutic interventions with very few studies identified with their

Table 2: Recommendations – Typology of Nutritional Health CHW

		CHW Contextual Factors							
Key competencies	Recruitment	Educational criteria	Training content, duration & role (initial & ongoing)	Certification process	Monitoring supervision & evaluation	Volunteer/salaried	General or Performance incentives	Career pathway & development	Referral system
	<p>Community involvement in identification of potential community health workers</p> <ul style="list-style-type: none"> - Advertisement in local newspaper or radio channel for interested candidates to join <p>Applicant must be</p> <ul style="list-style-type: none"> - 18-40 years of age - from the local community - permanent resident <p>Test: on literacy and numeracy</p> <p>Interview: to judge on motivation and willingness</p> <p>final selection by community and local health center</p>	primary level schooling	<p>Initial: 1-2 weeks On-the-job: 2 weeks</p> <p>Key Role: Promotive, preventive and therapeutic interventions:</p> <ul style="list-style-type: none"> - promotion of exclusive breastfeeding for first 6 months - appropriate complimentary feeding for next 6-24 months - iron and folic acid supplementation for children - improved hygiene and sanitation - improved dietary intake for pregnant and lactating women - micronutrient supplementation for prevention of anemia and Vitamin A deficiency for mothers and children - ORT for diarrhea - timely treatment for infectious and parasitic disease - treatment and monitoring of severely malnourished children - treatment for clinical sings of vitamin A deficiency 	<p>Exam after initial training</p> <p>▶ on passing exam and completion of initial training they should be awarded with title</p> <p>▶ on completion of on-job training they should be awarded with a certificate</p>	<p>Supervisors: 1 supervisor: 20-25 CHWs</p> <p>Evaluation: annual internal evaluation external evaluation in every 5 year</p>	<p>volunteers *</p> <p>OR</p> <p>Salaried keeping in view that they are poor</p> <p>Full time employment</p>	<p>identification of severely malnourished child</p> <p>monitoring growth of a child for a year</p>	<p>Should be offered to advance their career as supervisor on completion of minimum education level and experience required to reach the next level.</p>	<p>linkages between TBAs and health system</p>
Nutrition Worker									

*Volunteers (community members who volunteer few hours a week) Salaried (full time CHWs)

role in rehabilitative services especially with chronic diseases and HIV/ AIDS. Majority of the studies under our review found positive impact of their interventions on health and nutrition outcomes. Studies particularly attempted to evaluate the sensitivity, specificity and predictive values reported better diagnosis and case management by CHWs, confirming the thoroughness and appropriateness in the training modality and training content. Looking at the diversity of interventions they deliver in community, they should be classroom trained for at least 6 months with an additional 6 months of hands-on-training which gives practical flavor to their theoretical lessons.

Approaches to training have changed over the years. While in the past it was too theoretical and too classroom-based, while in today, competence-based approaches are usually used. However, it is recommended that didactic training be given with ample interactive sessions including small group discussions, role plays and field activities. This type of learning is usually more effective especially where the CHWs are either illiterate or less educated. Also the simulations as in role plays would help CHWs tackle real life situations more efficiently. In this approach, the skills and competencies required of the CHW are defined and usually expanded into steps and standardized procedures required for a specific skill.

The ideal location of training, where CHWs will have sufficient opportunity to practice, varies by CHW program. In order to get hands on training experience, programs recommend that it should be conducted in community rather than in health facilities. In other contexts like management of sick children, training may take place in the facilities so that they get more opportunities to demonstrate skills in a real-life situation and to practice newly learned skills.¹ Because CHWs have limited formal education, programs should develop training materials and activities

specifically for CHWs rather than using training packages developed for facility-based workers.¹ As suggested, CHWs should at least be educated up to primary school; therefore, course should be developed in simpler language, and incorporate more illustrations and more interactive components for less-educated CHWs.⁴⁴ These days CHW's role has been enhanced for therapeutic interventions, in which they diagnose and treat infectious diseases in children specifically acute respiratory infections. They are mostly given algorithms for proper identification and management, which are better for literate workers but are less understood by illiterate workers who mostly rely on memory. In such case, keeping in view the educational level of CHWs, visual or pictorial cue cards should be utilized.

Furthermore, continuing or refresher training is as important as initial training. A number of studies have found that if regular refresher training is not available, acquired skills and knowledge are quickly lost and that, on the other hand, good continuing training may be more important than who is selected.¹ Curtale et al. suggest that "three additional training days provided regularly to the CHV every year, will result in improved quality of service with consequent increased utilization".⁴⁵

Given the broad role that many CHWs will play in primary care, it is recommended that a core set of skills and information related to MDGs be provided to most CHWs. These include information on major causes of MNC ill health and mortality, TB, HIV/ AIDS, its prevention, treatment and rehabilitation. Other training content and training duration may be added pertinent to the specific intervention that the CHW is expected to work on as mentioned in CHW core and MDGs specific typology.

Table 3: Recommendations – Typology of Maternal and Newborn Health CHW

Key competencies		CHW Contextual Factors							
Recruitment	Educational criteria	Training content, duration & role (initial & ongoing)	Certification process	Monitoring supervision & evaluation	Volunteer/salaried	General or Performance incentives	Career pathway & development	Referral system	
<p>Community involvement in identification of potential community health workers</p> <ul style="list-style-type: none"> - Advertisement in local newspaper or radio channel for interested candidates to join <p>Applicant must be</p> <ul style="list-style-type: none"> -18-40years of age - from the local community -permanent resident -Married preferably - children with not less than 2 years of age <p>Test: on literacy and numeracy</p> <p>Interview: to judge on motivation and willingness</p> <p>final selection by community and local health center</p>	<p>primary level schooling</p>	<p>Initial: 4 weeks On-the-job: 1-2 months</p> <p>Key Role: Promotive, preventive and therapeutic interventions: Maternal and Newborn:</p> <ul style="list-style-type: none"> - adequate diet - iron/folate supplementation -Tetanus Toxoid immunization - malaria prevention and intermittent preventive treatment - healthy timing and spacing of delivery - deworming -facilitate access to maternal health services for ANC and PNC -skilled birth attendance -prevention of mother to child transfer -HIV/STI screening - birth and newborn care preparedness -temperature control in newborn (thermoregulation) -recognizing sick newborns and danger signs requiring referrals -cord care (cleaning & avoiding the use of traditional materials) - home care of low-birth-weight infants -treatment of neonatal pneumonia with oral antibiotics, 	<p>Exam after initial training</p> <p>on passing exam and completion of initial training they should be awarded with title</p> <p>on completion of on-job training they should be awarded with a certificate</p>	<p>Supervisors: 1 supervisor: 20-25 CHWs</p> <p>Evaluation: annual internal evaluation</p> <p>external evaluation in every 5 year</p>	<p>volunteers *</p> <p>OR</p> <p>Salaried keeping in view that they are poor</p> <p>Full time employment</p>	<ul style="list-style-type: none"> -Pregnancy identification -Bringing mothers for delivery -Providing ENC -Referral of maternal and newborn complication -ensuring birth wt 	<p>Should be offered to advance their career as supervisor on completion of minimum education level and experience required to reach the next level.</p>	<p>Linkages between TBAs and health system</p>	

*Volunteers (community members who volunteer few hours a week) Salaried (full time CHWs)

Table 4: Recommendations – Typology of Child Health CHW

Key competencies		CHW Contextual Factors						
Recruitment	Educational criteria	Training content, duration & role (initial & ongoing)	Certification process	Monitoring supervision & evaluation	Volunteer/ salaried	General or Performance incentives	Career pathway & development	Referral system
<p>Community involvement in identification of potential community health workers</p> <ul style="list-style-type: none"> - Advertisement in local newspaper or radio channel for interested candidates to join <p>Applicant must be</p> <ul style="list-style-type: none"> -18-40years of age -from the local community -permanent resident -Married preferably - children with not less than 2 years of age <p>Test: on literacy and numeracy</p> <p>Interview: to judge on motivation and willingness</p> <p>final selection by community and local health center</p>	<p>primary level schooling</p>	<p>Initial: 4 weeks On-the-job: 1-2 months Key Role : Promotive, preventive and therapeutic interventions: Children:</p> <ul style="list-style-type: none"> - appropriate breastfeeding - essential newborn care - hand washing - appropriate complementary feeding (6-24 months) adequate iron - vitamin A supplementation - oral rehydration - zinc therapy - full immunization for age - malaria prevention strategies - deworming - growth monitoring - prevention and treatment of childhood illnesses 	<p>Exam after initial training</p> <p>on passing exam and completion of initial training they should be awarded with title</p> <p>on completion of on-job training they should be awarded with a certificate</p>	<p>Supervisors 1 supervisor: 20-25 CHWs</p> <p>Evaluation: annual internal evaluation external evaluation in every 5 year</p>	<p>volunteers* OR Salaried</p> <p>keeping in view that they are poor</p> <p>Full time employment</p>	<ul style="list-style-type: none"> - identification of sick newborn - completion of essential immunization 	<p>Should be offered to advance their career as supervisor on completion of minimum education level and experience required to reach the next level.</p>	<p>linkages between TBAs and health system</p>

*Volunteers (community members who volunteer few hours a week) Salaried (full time CHWs)

Competencies

This is an extremely important area and dependent upon the primary focus of the CHW program, may include a blend of promotive, preventive, therapeutic and rehabilitative services. While CHWs have played a significant role in various promotive, preventive and therapeutic MNCH services, there is great potential for playing a major role in the screening, recognition and subsequent rehabilitation of patients with TB, STIs, NCDs, HIV/AIDS and selected disabilities. It is recommended that the rehabilitation component also be added to their training curriculum.

Certification & Appointment

Certification after training and promotion after some years of service as CHW supervisor can also act as an incentive and keep CHWs actively involved in pursuit of professional advancement. A clear salaried post must be earmarked for CHWs. Too often CHWs have been identified as “community volunteers” and given a below minimal wage under that consideration. This dichotomy should be removed and a clear appointment/deployment strategy should be available to those who certify the course completion and pass the writing or verbal exam at the end of training. The CHWs recruited for training and deployment should sign a bond for completing the training and service contract of certain time period, failing to do which they should be held liable to a penalty. This will help reduce the dropout rates and ensure a sense of commitment to service with responsibility well before the CHW is into making.

Deployment

CHWs should always be posted in the areas that they belong to so to assure maximal local engagement and ownership. However, it is recognized that given health worker needs, there may be exceptions. In that event, CHWs should be provided with safe and secure housing as well as local transport as needed. This is particularly

relevant for CHWs rendering services in the far flung areas especially those with geographical constraints as in mountainous or desert areas so that the CHWs can perform outreach functions.

Supervision

Supervision and support are two pillars on which a strong and successful program set its base.¹ It is equally acknowledged, however, that supervision is often among the weakest links in CHW programs. Among studies we reviewed, we found that small-scale projects were successful because they handled to institute effectual support and supervisory system for CHWs, often including a significant amount of supervision and oversight by the community itself.¹ National programs, on the other hand, are rarely able to achieve this consistently. Evaluations have documented the flaw of monitoring and support in national programs, which are often irregular or nonexistent.¹ In the nastiest cases, CHWs do not even know who their supervisors when the programs had a clear supervisory system.⁴⁶ In few CHW programs, we found that supervisors were formal health staff from the health services, who, however, may not understand the CHWs or their own role properly and furthermore may resent the additional task.⁴⁶ The CHW programs without supervision system have shown gaps in program functionality in terms of inadequate documentation and linkages with overall health system.

We would therefore recommend that supervisors should be the members of community, who again should be selected according to the set criteria. They should be trained and equipped with supervisory skills. Clear strategies and procedures for supervision and the activities with which supervisors will be charged should be well defined. The skills need to be taught so that health personnel, CHWs and community health committee members know what is expected of them as supervisors.⁴⁶ Supervisors should be supportive and available to offer help

Table 5: Recommendations – Typology of Malaria Control CHW

Key competencies	CHW Contextual Factors								
	Recruitment	Educational criteria	Training content, duration & role (initial & ongoing)	Certification process	Monitoring supervision & evaluation	Volunteer/salaried	General or Performance incentives	Career pathway & development	Referral system
Malaria control CHW	<p>Community involvement in identification of potential community health workers</p> <ul style="list-style-type: none"> - Advertisement in local newspaper or radio channel for interested candidates to join <p>Applicant must be</p> <ul style="list-style-type: none"> - 18-40 years of age - from the local community - permanent resident <p>Test: on literacy and numeracy</p> <p>Interview: to judge on motivation and willingness</p> <p>final selection by community and local health center</p>	primary level schooling	<p>Initial: 1 weeks On-the-job: 2-3 weeks Key Role : Promotive, preventive and therapeutic interventions:</p> <ul style="list-style-type: none"> - prompt treatment with effective drugs for all people especially children suspected to have malaria - increased access to low cost insecticide treated bed nets, especially for children and women - protection for pregnant women (e.g. regular prophylaxis/ intermittent preventive treatment). - Community-based treatment of malaria (testing with Rapid Diagnostic Test or presumptive treatment for malaria per national guidelines.) 	<p>Exam after initial training</p> <p>on passing exam and completion of initial training they should be awarded with title</p> <p>on completion of on-job training they should be awarded with a certificate</p>	<p>Supervisors 1 supervisor: 20-25 CHWs</p> <p>Evaluation: annual internal evaluation external evaluation in every 5 year</p>	<p>volunteers* OR Salaried</p> <p>keeping in view that they are poor</p> <p>Full time employment</p>	<ul style="list-style-type: none"> - identification of suspected case - sales of insecticide treated bed nets 	<p>Should be offered to advance their career as supervisor on completion of minimum education level and experience required to reach the next level.</p>	<p>linkages between TBAs and health system</p>

*Volunteers (community members who volunteer few hours a week) Salaried (full time CHWs)

where needed rather than policing and keeping an eye whether CHWs are on duty or are carrying out the required amount of work.³ Supervision should be taught to be undertaken in a participatory manner. Top-down mechanistic supervision emphasizes the social distance between supervisor and supervisee and leads to communication breakdowns and ultimately to program damage. The guidelines for supervision should include a list of supervisory activities. The most important element of supervision is ensuring the two-way flow of information. It is also vital that the supervisor acts as a role model so that their behavior can be copied. It is also recognized that experienced and competent CHWs may be allowed further training and opportunities for skills development to rise to a level of supervisors.⁴⁷ In an ideal and realistic situation, one supervisor should head 20 to 25 CHWs which allows strong supervisory system as evident from lady health worker program (Pakistan) and BRAC (Bangladesh).

Equipment and Supplies

Issues such as the reliable provision of transport, drug supplies and equipment have been identified as another weak link in CHW effectiveness.¹ The result is not only that they cannot do their job properly, but also that their standing in communities is undermined. Failure to meet the expectations of these populations (with regard to supplies), destroys their image and credibility. If CHWs are used in programs that have drug treatment at their core, such as TB DOTS or HAART, the situation becomes more critical but most programs include the need for supply of drugs and/or equipment, including transport.¹ Ideally, supplies and equipment should be organized through district or regional dispensaries, and collected and delivered by CHWs.¹ In cases where villages are very remote to the central health centre, village dispensaries can be established to cater for the drug needs of the populations.⁴⁸ Equipment and supplies may be added pertinent to the specific intervention that the CHW is expected to work on as mentioned below.

Nutrition workers:

Weighing scale, growth monitoring chart, Iron/Folate, ORS, Anti-helminthics, pictorial material for teaching

MNCH workers:

Iron/ folate, TT vaccine, anti-helminthics, family planning methods, ORS, growth monitoring charts, weighing scale, antibiotics for case management, insecticide treated bed nets etc, pictorial material for teaching

Malaria workers:

insecticide treated bed nets, malaria drugs, and rapid diagnostic test materials, pictorial material for teaching

TB and HIV/AIDS Workers: BCG vaccines, TB drugs, ART drugs for HIV /AIDS, condoms, pictorial material for teaching

Incentives

Keeping in mind the dearth of health workers and the rising need of CHWs to meet the health care demands, it is imperative to prevent dropouts from training programs. CHWs are poor people, living in poor communities, and thus require income. From the global and country case studies review we found that programs pay their CHWs either a salary or an honorarium and almost no examples exist of sustained community financing of CHWs.¹ Even NGOs tend to find ways of financially rewarding their CHWs. Moreover, control on attrition can be achieved with regular and performance based financial incentives and hiring CHWs as full time employees rather than part time volunteers.¹ They should also be given a wage if they work as full time, and those working as part time should be given small incentives for their work. We would make a strong recommendation for ensuring the CHWs be paid adequate wages commensurate with their work load and timings. Performance incentives could be the other pay back option, which can also motivate them to work with full determination. Moreover, in kind awards, such

as an identification pin, can provide a sense of pride in their work and increased status in their communities.¹ In cases where possible, free health coverage for themselves and for their family should be provided. In the end, we would recommend that CHWs should be given pay for performance to keep them stimulated.⁴³ We have also proposed some basic MDGS specific performance based incentives for CHWs.

Nutrition workers:

identification of severely malnourished child, monitoring growth of a child over the period of 1 year.

MNCH workers:

pregnancy identification, bringing mothers for institutional deliveries, providing essential newborn care, referral of a complicated pregnancy case, ensuring taking birth weight, identification of sick newborn, completion of essential immunization.

Malaria workers:

identification of suspected case.

TB and HIV/AIDS Workers:

completion of DOTS therapy for a cure of TB, identification of symptomatic case, identification of HIV positive pregnant women, leading monthly support group meeting with HIV/ AIDS patients.

Professional advancement

Professional advancement is another way out for controlling attrition among CHWs and ensuring continued interest and enthusiasm. In addition to potential rise to the level of supervisors mentioned above, other opportunities for career development and additional training must be provided. Some countries are actively exploring distance education and support programs for CHWs. Career enhancement opportunities should be offered on completion of minimum education level and experience required to reach the next level and may be used as an in-

centive for career development.

Documentation, Information System and Referral System

In many programs, health facility workers who come into most contact with CHWs are not involved in the planning, implementation, monitoring and evaluation of these programs.¹ A proper linkage is therefore required to be created with health system right from the planning of introducing the CHW program in some vicinity to the implementation of actual program. CHWs should be properly linked in to how they would be referring a case to the health centre and how the documentation would take place to prevent duplication in case report.

Evaluation

It is necessary to keep up with the changing demands of the health care needs of community in terms of both supplies and services. Moreover, the effect of the additional workload on the trained CHWs also need to be monitored, to ensure that they are not being overburdened and that there is no detrimental effect on the provision and supervision of services to the community. As such both external and internal evaluations need to be carried out on regular basis to improve the services and analyze the need of various logistics, supplies and training according to the requirements. We would recommend that programs should evaluate their own performance on annual basis, while a third party evaluation could be recommended in every 4-5 years, which would generate a neutral and free from bias findings. We would make a special plea for publishing such evaluations and as much as possible, utilizing innovative, quasi-experimental designs to assess impact of such programs.

Self-Protection of CHWs

While delivering health care to the community these CHWs are themselves at risk of contacting infectious diseases. They are especially at

Table 6: Recommendations – Typology of TB DOTS CHW

Key competencies	CHW Contextual Factors							
	Recruitment	Educational criteria	Training content, duration & role (initial & ongoing)	Certification process	Monitoring supervision & evaluation	Volunteer/salaried	General or Performance incentives	Career pathway & development
<p>TB DOTS CHW</p> <p>Community Involvement in identification of potential community health workers</p> <p>- Advertisement in local newspaper or radio channel for interested candidates to join</p> <p>Applicant must be</p> <ul style="list-style-type: none"> -18-40years of age - from the local community -permanent resident -Preferably people who have completed TB treatment <p>Test: on literacy and numeracy</p> <p>Interview: to judge on motivation and willingness</p> <p>final selection by community and local health center</p>	primary level schooling	<p>Initial: 4 weeks</p> <p>Ongoing: once per month</p> <p>Key Role: Promotive, preventive, therapeutic and rehabilitative interventions:</p> <p>Tuberculosis:</p> <ul style="list-style-type: none"> - BCG immunization for children -DOTS for infectious case to prevent transmission and emergence of drug resistance strains -early identification for symptomatic case -DOTS to cure TB 	<p>Exam after initial training</p> <p>▶ on passing exam and completion of initial training they should be awarded with title</p> <p>▶ on completion of on-job training they should be awarded with a certificate</p>	Supervisors: 1 supervisor: 20-25 CHWs	<p>volunteers *</p> <p>OR</p> <p>Salaried keeping in view that they are poor</p> <p>Full time employment</p>	<p>- completion of DOTS therapy for cure of TB</p> <p>- identification of symptomatic case</p>	<p>Should be offered to advance their career as supervisor on completion of minimum education level and experience required to reach the next level.</p>	linkages between TBAs and health system

*Volunteers (community members who volunteer few hours a week) Salaried (full time CHWs)

Table 7: Recommendations – Typology of HIV/AIDS Care CHW

Key competencies		CHW Contextual Factors						
Recruitment	Educational criteria	Training content, duration & role (initial & ongoing)	Certification process	Monitoring supervision & evaluation	Volunteer/ salaried	General or Performance incentives	Career pathway & development	Referral system
<p>Community involvement in identification of potential community health workers</p> <ul style="list-style-type: none"> - Advertisement in local newspaper or radio channel for interested candidates to join <p>Applicant must be</p> <ul style="list-style-type: none"> -18-40years of age -from the local community -permanent resident <p>Preferably people have AIDS or those who have taken care of any family member with AIDS</p> <p>Test: on literacy and numeracy</p> <p>Interview: to judge on motivation and willingness</p> <p>final selection by community and local health center</p>	<p>primary level schooling</p>	<p>Initial: 4 weeks Ongoing: once per month Key Role : Promotive, preventive and therapeutic interventions:</p> <p>HIV / AIDS:</p> <ul style="list-style-type: none"> - condom promotion and other safe sex health promotion - Provide information and education on TB and HIV to increase community awareness of both infections and their inter-relationship, - Intensify tuberculosis case finding in areas of high HIV prevalence, - Building HIV support groups in the community for social and psychological rehabilitation. <p>PMTCT:</p> <ul style="list-style-type: none"> - Healthy timing and spacing of pregnancy - antibody testing to pregnant women and mothers - prophylactic ARVs/HAART - prophylactic ARVs/HAART to infants - early infant diagnosis - Cotrimoxazole preventive therapy (CPT) 	<p>Exam after initial training</p> <p>on passing exam and completion of initial training they should be awarded with title</p> <p>on completion of on-job training they should be awarded with a certificate</p>	<p>Supervisors 1 supervisor: 20-25 CHWs</p> <p>Evaluation: annual internal evaluation external evaluation in every 5 year</p>	<p>volunteers * OR Salaried</p> <p>keeping in view that they are poor</p> <p>Full time employment</p>	<ul style="list-style-type: none"> - identification of HIV positive pregnant women - leading monthly support group meeting with HIV/AIDS patients 	<p>Should be offered to advance their career as supervisor on completion of minimum education level and experience required to reach the next level.</p>	<p>linkages between TBAs and health system</p>

*Volunteers (community members who volunteer few hours a week) Salaried (full time CHWs)

the risk of air borne and blood borne diseases while treating TB patients and while conducting deliveries and must therefore receive available preventive vaccines such as Hepatitis B, H1N1 vaccine etc. We also strongly recommend that they should be armed with appropriate tools and training to safe practices and prevention strategies against common communicable diseases such as TB, hepatitis and HIV.

Up till now we recommended some general and MDGs specific CHW typology, their entry and training criteria, certification and deployment pathways, core functions etc., which might not work in all scenarios. Therefore, we finish by making recommendations based on the evidence of what works and what not in different settings, building on the constructed typology, on the global review of evidence, and on the country case studies.

- Long duration training programs with a content mostly promotional and preventive, and also aimed at understanding social and environmental determinants of health, strongly supervised, with CHWs playing basically a role of empowerment of the community and health promotional and preventive activities improve health of the population and should be replicated in other settings. This type of program seems to work on the condition that CHWs activities are organized as part of a wider health team and on the condition that programs are effectively linked to the public health system that is able to provide efficient stewardship and financing, and that considers health as a basic human right that should be available to all citizens, free at the point of use. There is no evidence on whether this model could be equally effective when delivered by private providers. Several years of schooling as a selection and recruitment criterion seems unpractical, and alternatively, basic schooling or literacy as a minimum requirement should be attempted, while taking care of monitoring and evaluating the effect of such modification

on the overall performance and impact of the program. Also, where the need of alternative health providers is more pressing, task shifting with CHWs assuming basic curative tasks should be implemented and evaluated.

- Short duration training programs, with mostly promotional, preventive and basic curative tasks for CHWs and with a relatively strong supervision system such as BRAC in Bangladesh and VHV in Thailand are associated with increased coverage and utilization of health services and with certain improved health outcomes, and should be implemented in other settings. Such programs have been implemented in contexts with relatively strong health systems and have been effectively linked to the health system.
- Short to intermediate duration training programs, with preventive and basic curative tasks for CHWs, with relatively strong supervision activities, and implemented by NGOs within a weak health system, have shown to have impact on infant mortality in the area of influence of involved NGOs (Haiti). Their impact when implemented at scale is not known.

Limitations

The review identified a number of limitations. Firstly, most of the reviewed studies when implemented, neglected to document the complete description and characteristics of CHWs deployed, especially the level and amount of supervision provided to those workers, which could have helped us in identifying the importance of this factor and its association with other outcomes. Additional information on the initial level of education of CHWs, provision of refresher training, mode of training (balance of practical/ theoretical sessions) would have provided greater assistance in understanding the threshold effect, if any, of these factors on CHW performance in community settings. Importantly, community ownership and super-

Key messages on integration of CHWs at national level

Planning, production and deployment:

- The programs should be coherently inserted in the wider health system, and CHWs should be explicitly included within the HRH strategic planning at country and local level.
- Given the broad role that many CHWs play in primary care, a program must assure that a core set of skills and information related to MDGs be provided to most CHWs. Therefore, the curriculum should incorporate scientific knowledge about preventive and basic medical care, yet relate these ideas to local issues and cultural traditions. They should be trained, as required, on the promotive, preventive, curative and rehabilitative aspects of care related to maternal, newborn and child health, malaria, tuberculosis, HIV/AIDs as well as other communicable and non-communicable diseases. Other training content and training duration may be added pertinent to the specific intervention that the CHW is expected to work on as detailed in main report.
- The CHW programs should also give attention to both the content and the timings of delivering interventions at the planning stage.
- The CHW programs should regulate a clear selection/deployment procedure (ideally engage community in planning, selecting, implementing, and monitoring) that reassures appointing those who certify the course completion and pass the writing or verbal exam at the end of training.
- Government should take responsibility in making a transparent system for selection and deployment and further quality assurance of the regulated set system.
- On scaling up a CHW program, decision makers should consider how to link them up with the wider health system.

Attraction and retention

- Community preparedness and engagement is a vital element that is relatively rarely practiced. From the outset, program should develop village health committees in the community that can also contribute in participatory selection processes of CHWs.¹
- CHW programs should be based in and respond to community needs. In practical terms, such programs should continually assess community health needs and demographics, hire staff from the community who reflects the linguistic and cultural diversity of the population served, and promote shared decision making among the program's governing body, staff, and community health workers.
- CHW programs should also ensure a regular and sustainable remuneration package that is complemented with other rewards and incentives.
- CHW programs should also provide opportunities for career mobility and professional development. These should include opportunities for continuing education, professional recognition, and career advancement. This can be through specific programmatic opportunities or access to educational and training scholarships.
- The CHW programs should support provision of requisite and appropriate core supplies and equipment to enable appropriate functionality of such workers.

Performance management

- The CHW programs should also ensure that the performance management is based on minimum standardized set of skills that respond to community needs and are context specific.
- The programs should have established referral protocols with community-based health and social service agencies.
- The programs should have regular and continuous supervision and monitoring systems in place and supervision should be taught to be undertaken in a participatory manner that ensure two-way flow of information. Moreover, both external and internal evaluations need to be carried out on regular basis to improve the services and analyze the need of various logistics, supplies and training according to the requirements. Ideally, programs should evaluate their own performance on annual basis, while a third party evaluation could be recommended in every 4-5 years, which would generate a neutral and free from bias findings.
- The outline of the country plan of action to develop and improve CHW program(s) should be finalized by a working group of relevant multiple stakeholders, including identification of resources needed, indicators and targets, and monitoring tools, and formally authorized by the Ministry of Health
- Finally, sustained resources should be available to support the program and workers therein.

vision of CHWs is a key characteristic which is insufficiently described and analyzed in available literature. Secondly, studies related to the role of CHWs in HIV/AIDS prevention and care, mental health and food security and nutrition were scarce. Lastly, there were few evaluation studies/reports at scale and none had followed an a-priori experimental design or impact assessment process.

Conclusion and Areas for Further Study

The UN Secretary General Ban Ki-moon said: “Time is short. We must seize this historic moment to act responsibly and decisively for the common good”. He used these words to strongly urge the governments to work constructively for a high level meeting in September 2010 to review their country’s progress towards the MDGs. With just six years left to meet the MDG 2015 deadline a gigantic responsibility rests on the shoulders of governments to upscale health and nutrition interventions and provide adequate funding and support to their health systems to fulfill the pact they signed way back in 2000 as the UN Millennium Declaration. Induction of more workforces into the programs as CHWs and supervisors with ascertained commitment can greatly help us achieve MDG targets. It is expected that increased emphasis on the issue of HIV in the training module of a CHW, field experience before deployment, better supervision, switching them from volunteers to full time paid health care workers and regular evaluation can lead to a stronger outreach system of healthcare delivery and could eventually help meet the MDG targets.

We constructed a core and MDGs specific CHW typology from the evidences and gaps identified from global systematic review and country case studies. The next step which is required is

to explore the impact of deploying CHW with suggested typology on achieving MDGs.

During the course of undertaking this review, we found dearth of data on the cost effectiveness of CHW programs. Although it was not the aim of this review, but economic studies should accompany trials to establish the cost effectiveness of different CHW interventions, because CHWs are more accessible and acceptable to clients in their communities, and they are expected to improve the overall coverage of services as well as equity. Studies are needed to assess whether the CHW programs promote equity and access; and to evaluate the effectiveness of paid workers versus voluntary workers. Moreover, studies are needed to evaluate the effectiveness of CHWs as compared to professional health care providers in delivering interventions in the fields of health education, promotion and the management of disease.²

Given the global burden, specific studies on the potential role of CHWs in HIV/AIDS prevention and care are particularly required, as there is very limited empirical information on this. Analysis on the effectiveness of different models of remuneration/ payment/ incentivization of CHWs across different tasks and settings needs to be examined. Studies are also required to compare the effectiveness of promotive/ preventive strategies compared to curative interventions delivered by CHWs for maternal and newborn health. Further systematic reviews are also required on: factors affecting the sustainability of CHW interventions when scaled up; the effectiveness of different approaches to ensure program sustainability; the cost-effectiveness of CHW interventions for different health issues; and factors that determine the effectiveness of CHW interventions in different settings. An additional analysis is required on the volume of work and type of activities and hence to determine the number of CHWs required for such tasks.³ An example of this type of analysis is provided by a

study in Bangladesh which assessed how many additional health workers would be needed to implement IMCI protocols.⁴⁹ However, further studies are needed to determine the CHW workforce needed and their functional needs for MDG specific interventions. Further research is also needed on how CHWs are linked to the wider health system (e.g. in terms of referrals, supervision) and the impacts of the cadre on the health system. Moreover, research is required to identify innovative mechanisms of maintaining the sustainability of CHW programs.

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Global Systematic Review

For global systematic review, the studies were categorized based on interventions relevant to health and nutrition related MDGs and then analyzed by the type of outreach workers and study design employed in order to explore the impact and effectiveness of global experience of CHWs in delivering healthcare. This helped us in outlining the typology, training and supervision needs, tasks and feasibility of developing and deploying CHWs as a way towards the achievement of the MDG targets. We have also presented some national or NGO driven CHW programs in the form of “CHW Snapshots” appearing randomly in this report.

Description of included studies

The defined search strategy identified 136,996 studies from multiple search engines (Figure 1). 1060 studies were retrieved for full text review,

out of which 326 papers (266 original studies) passed the eligibility criteria for inclusion. Among these 326 papers, 240 papers described the role of CHWs in delivering interventions, 40 studies trained TBAs and evaluated the impact of their training, and nineteen studies utilized peer counselors, while 7 described the role of community mobilizers. As far as study designs are concerned, 87 were cRCTs/RCTs, 42 were Quasi RCTs, 34 were prospective before-after intervention studies and 147 were descriptive studies. **Box 2** presents the included studies according to country and continent where it was actually conducted. During our search we also identified six ongoing studies which matched our eligibility criteria and are described in **table 8**.

Box 2: Included studies by continent and country

Asia	n	Africa	n	Europe	n	America	n	Australia	n
Bangladesh	30	Burkina Faso	6	England	3	Bolivia	4	Australia	1
Burma	3	Cameroon	2	Ireland	1	Brazil	10	New Zealand	2
China	2	Egypt	1	Netherlands	1	Canada	2		
India	35	Ethiopia	6	Scotland	1	Colombia	2		
Iran	2	Gambia	7	Turkey	2	Ecuador	2		
Indonesia	2	Ghana	5			Guatemala	6		
Iraq	2	Guinea	1			Haiti	5		
Korea	1	Madagascar	1			Latin America	1		
Laos	1	Mali	2			Mexico	2		
Malaysia	1	Malawi	3			New England	3		
Nepal	11	Mozambique	1			Nicaragua	1		
Pakistan	19	Nigeria	5			Peru	4		
Palestine	1	Kenya	8			United States	56		
Philippines	2	Rwanda	1						
Thailand	8	Senegal	1						
Vietnam	2	Sierra Leon	1						
		South Africa	7						
		Swaziland	1						
		Tanzania	8						
		Uganda	10						
		Zaire	1						
		Zambia	2						
		Zimbabwe	1						

Figure 1: Search Flow diagram

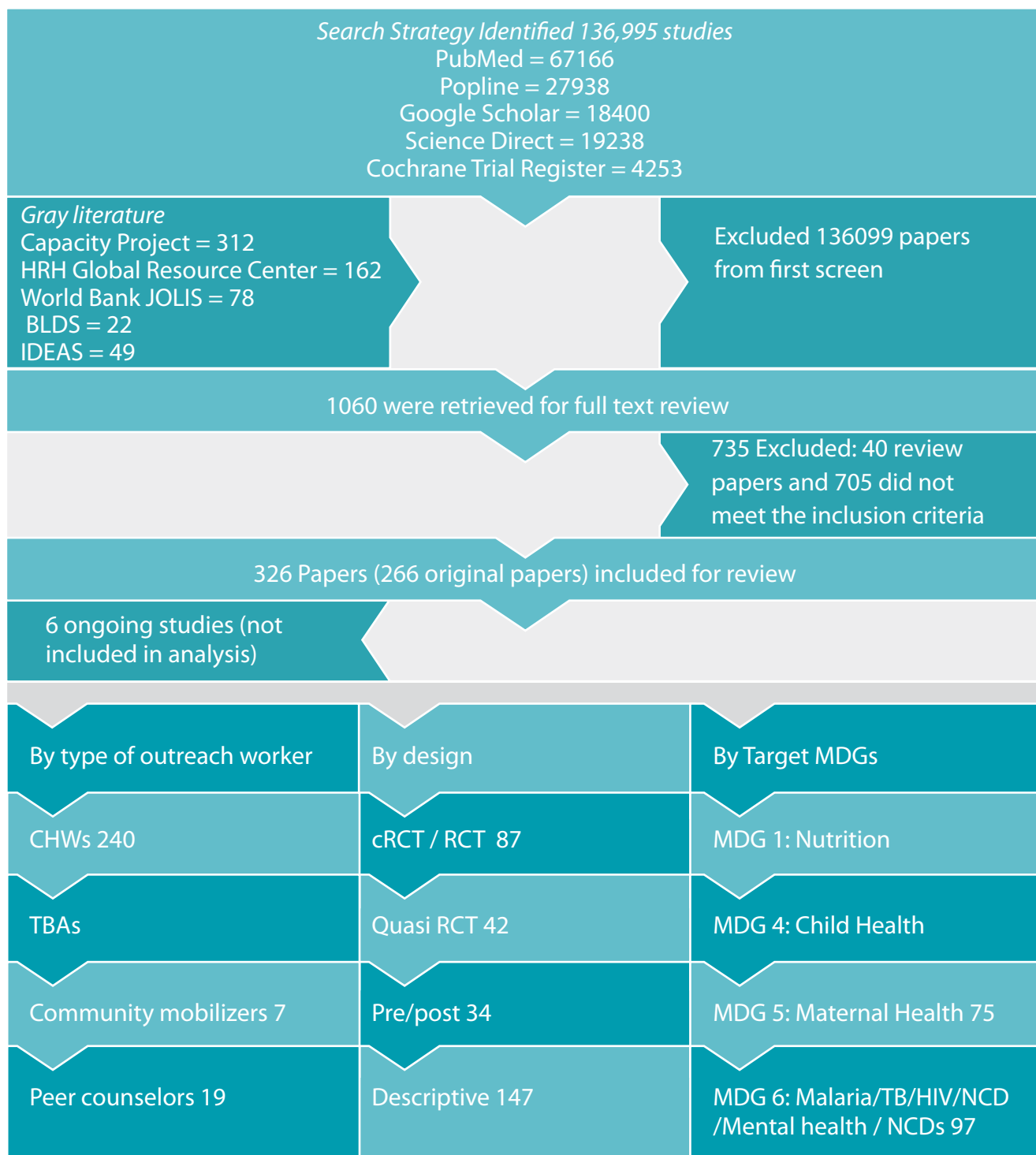


Table 8: Ongoing Trials/ Studies

Study / country	Study design	Outreach worker	Participants	Interventions		Outcomes	Trial registration number	Anticipated end date
				Experimental arm	Control arm			
Ronald ¹ Uganda	cRCT	CHWs	General population with HIV positive status	<p>A: Experimental Peer Health Workers Intervention: Peer health workers are themselves PLWHA on ART who have demonstrated good ART adherence for at least 6 months. The peers are responsible for ~15-20 patients and are expected to visit the patients in their homes once every two weeks.</p> <p>B: Experimental Peer Health Workers and Mobile Phone Intervention: In addition to the peer health worker intervention, this arm adds a mobile phone</p>	Patients in communities without peer educators.	<p>Virologic suppression at 6 months</p> <p>Virologic failure at all time intervals</p> <p>Adherence measured from ART initiation</p> <p>Adherence measured by pill counts</p>	NCT00675389	Dec 2010
Chakaya & Klinkenberg ² Kenya	cRCT	CHWs	15 Years and older population	In the intervention group, the household contacts of enrolled TB/HIV co-infected patient are visited at home by community health workers . They are offered isoniazid at 300mg (5 mg per Kg for children) once daily for 6 months, regardless of their HIV-status.	In line with routine care, eligible index cases are requested to send their contacts to the clinic for evaluation	<p>incidence of TB, incidence of adverse events, incidence of TB-related symptoms in household contacts proportion of household contacts starting IPT, discontinuing IPT, adhering to IPT treatment</p>	NCT00850915	Dec 2011
Osrin et al. ³ India	cRCT	CHWs	Women who give birth or any woman who gives birth in the study area is potentially a participant. The age range would be 12 to 49 years.	Facilitator will convene community groups to explore maternal and neonatal health issues. Groups will meet once or twice monthly and move through action research cycles. The role of the facilitator is to activate & strengthen groups, support them in identifying problems, help to plan possible solutions and implementation & monitoring of solution strategies in the community.	The control group does not receive an intervention. Control areas benefit from the health service provision activities of the City Initiative for Newborn Health: improved maternal and newborn care at health posts, maternity homes, general hospitals and tertiary hospitals.	<p>Neonatal mortality rate.</p> <p>Antenatal, delivery and postnatal care uptake.</p>	ISRCTN96256793	01/01/2010
Rahman ⁴ Pakistan	cRCT	CHWs	Married, consenting women, aged 17 – 40 years. Pregnant; in their 3 rd trimester of pregnancy	The intervention arm will receive seven sessions of this maternal focused approach to promote breastfeeding through Lady Health Workers.	The control arm will receive a similar number of visits of routine counseling for breastfeeding through different Lady Health Workers.	<p>The duration of exclusive breastfeeding and its rate at 6 months</p> <p>Psychological distress at 3 and 6 months</p>	ISRCTN45752079	01/06/2010
Costello ⁵ Nepal	cRCT	CHWs	Women of reproductive age, infants under a year of age.	CHWs will be convening monthly women's groups in which they will identify, prioritize the problems and then develop and implement strategies and evaluate their success. CHWs will be trained to care for vulnerable newborn infants.	The control group does not receive an intervention.	<p>Neonatal mortality rates, stillbirth rates, maternal mortality ratios, Sepsis management</p>	ISRCTN87820538	01/01/2010

Study / country	Study design	Outreach worker	Participants	Interventions		Outcomes	Trial registration number	Anticipated end date
				Experimental arm	Control arm			
Gill ⁶ Lufwanyama, Zambia	cRCT	TBAS	TBA trained in safe delivery	Training traditional birth attendants a modified version of the neonatal resuscitation protocol (NRP) and by improving their ability to identify sepsis and initiate antibiotics in the field.	Active Comparator TBAs continuing with current standard of practice	Neonatal, perinatal & sepsis related mortality cost effectiveness, successful delivery of nevirapine prophylaxis to HIV exposed deliveries	NCT00518856	completed

Results

According to WHO, CHWs should be members of the communities where they work, should be selected by the communities, should be answerable to the communities for their activities, should be supported by the health system but not necessarily a part of its organization and have shorter training than professional workers.⁷

CHWs were first formally introduced in 1970s and 80s after Alma Ata declaration for the initiation and provision of primary health care services at grass root levels to entire population.⁸ However, they gained their popularity due to the shortage of human resources for health care.⁸ They not only support in the promotional and prevention activities but also take part in the management and treatment of illnesses.^{8,9}

CHW programs have been said to be able to provide three major benefits: health benefits including improvement in health indicators, utilization of health services and changes in behaviours directly related to health; non-health benefits to individuals including informational benefits, cultural appropriateness and the promotion of autonomy; and non-health social benefits which can include community empowerment sustainability and economic benefits. While now being acknowledged as a potential important tool in improving health, CHW programs are often held back by unrealistic expectations, poor initial planning, problems of sustainability and the difficulties of maintaining quality.¹⁰

Studies according to MDGs

- In this global systematic review, we grouped and analyzed selected studies according to health related MDGs. Studies are clustered according to the following categories:
- Nutritional interventions

- Maternal, Neonatal and Child health interventions
 - Maternal health interventions
 - Breastfeeding promotion interventions
 - Birth and Newborn Care Preparedness (BNCP) interventions
 - Neonatal health interventions
 - Childhood illnesses and immunization interventions
- Other Primary health care promotion interventions
- Malaria control interventions
- Tuberculosis control interventions
- HIV/ AIDS prevention and control interventions
- Mental Health interventions
- Other non communicable diseases prevention interventions

Nutritional Interventions Background

The first seven Millennium Development Goals are directly or indirectly linked with the activities of the health and nutrition. There are many synergies among these goals and related activities, and nutrition underlies achievement for most of the health MDGs, so working for all MDGs at the same time, such as education, water and sanitation, and gender is likely to be the most effective way of achieving progress in health and nutrition goals. Every year, it is estimated that under nutrition contributes to the deaths of about 5.6 million children under the age of five.¹¹ One out of every four children under five or 146 million children in the developing world is underweight for his or her age, and at increased risk of an early death. When nutrition falls short, damage is done to individuals and to society. When pregnant women are not ade-

quately nourished, their babies are born at low weights, putting their survival at risk. When girls are undernourished, their future ability to bear healthy children is threatened. Under-nutrition and micronutrient deficiencies can lead to developmental delays throughout childhood and adolescence, making individuals less productive as adults. Prevention and control of under nutrition is possible through simple community based interventions lead by community workers. We therefore included studies that initiated community based nutrition interventions by community workers and monitored their results in creating an impact on improving nutritional health of community.

Community Based Evidence

A total of ten studies were reviewed to assess the impact of nutrition related interventions involving the CHWs in the community

(Table 9A and Table 9B). Those recruited were mostly locals from the community.¹²⁻¹⁶ They were trained using didactic mode of training¹²⁻¹⁵ and the training content varied from health education on nutritional requirements of mother and child¹²⁻¹⁴ to the counseling related to nutritional consumption with limited financial resources.¹⁵

In Hossain et al., children were weighed and their care giver was counseled on health, family planning, breast feeding, caring practices, personal hygiene and the use of iodized salt.¹³ Children who did not gain weight in three consecutive months were enrolled in a supplementary feeding program and provided standard packets of food.¹³ However the intervention did not show any impact on evaluation by pre/post intervention questionnaire as compared to interventions where only counseling on nutrition was provided.^{12,15,16} The CHWs in the Staten et

CHW Snapshot 1

Village Health Workers Program Bhutan

Program overview

Bhutan initiated its Community health workers program in 1979 with the name of village health workers program. Their basic idea was to build a link between community and health service utilization. Through this program the concept of primary health care was disseminated and includes improvement in basic hygiene and sanitations prevention of vaccine preventable diseases and other preventive and promotive aspects of health.

Operational aspects and considerations

Village health workers were selected if they were found confident, trusted and popular in the community, living permanently in the community and had a good personal hygiene and health care and community participation. Their role in the community is to provide health education towards better health care, including family planning, provide simple first aid treatment for emergencies and minor illnesses, notification of the outbreak of any epidemics in the community, recognizing danger signs and symptoms of serious and chronic patients, playing an important role in outreach clinics and expanded program of immunization and referral to the nearest health centre. They are also expected to participate in any development activities in the community, for example electricity and water programs.

Village Health Workers, Bhutan

✓ Training	12 days training
✓ Supervision	BHU staff
✓ Incentive	voluntary and only receive financial benefit during training

Coverage and effectiveness

Village health workers have been recognized as a positive force in the community at all levels, including the National Assembly. There is a great demand for VHW training from those communities which do not have VHWs, either, because no-one was trained before or, to replace the drop-outs. However, as the program is totally dependent on donors, even maintaining the network of close to 1,300 VHWs is becoming a challenge.

Source: Unicef 2004¹⁸

al. organized bi-monthly walks and encouraged the participants to find walking partners and support each other in health improving goals¹⁷ and also encouraged each other to increase their fruit and vegetable intake.¹⁷ The CHWs who participated in the Tandon et al. conducted nutrition program for the preschool children, pregnant women and lactating mothers.¹² The effectiveness of this intervention were evaluated by the outcomes of counseling which did not create an impact on the nutritional status of children as evident by 0.1% decrease in severe malnutrition cases over the period of 8 years.¹² Health education on topics like hygiene, proper positioning of infant while feeding and adequate nutrition was the domain of CHWs in Zuvekas et al.¹⁹ The CHWs in Winchagoon et al. monitored growth of children and managed diarrhea using oral rehydration solution.¹⁴

In an intervention by Winch et al., the CHWs provided dispersible zinc tablets in 14-tablet blister packs for children under five years of age.²⁰ The Macharia et al., cross-sectional study on the other hand provided region specific data on the nutrition status in the world.²¹ Only the CHWs in Tandon et al., were paid honorarium¹², which did not seem to have impact on their working as compared to other studies where the health workers were just volunteers.¹⁵⁻¹⁷

Other contextual factors related to CHWs were poorly reported in the included studies. The educational levels of these CHWs, their actual recruitment process and duration of training, refresher and supervision provided were mostly missing in these studies.

Thus we cannot comment on the effect of these factors on overall performance of CHWs and their impact on nutritional outcomes.

Conclusion

Overall the role of CHWs involved in nutritional intervention was promotive in nature and had a preventive baseline strategy. They promoted health education with positive impact on maternal and child health, thus contributing to the achievement of MDG goal 4 and 5 targets. We found that simple promotive interventions lead to create an impact on the nutritional status of children, pregnant women and society as a whole.

CHW Snapshot 2

BRAC – Bangladesh Nationwide Shastho Shebika Program

Program overview

The BRAC was formed in 1972 and has been supporting CHW program since 1977. The BRAC program has trained community health workers who are known as 56 Shastho Shebika and is responsible for treating the essential 10 diseases: anemia, cold, diarrhea, dysentery, fever, goiter, intestinal worms, ringworm, scabies and stomatitis. They sell medications for these ailments for a nominal fee. Each CHW is responsible for approximately 300 households and visits about 15 households each day. In addition to treating the 10 diseases and referring patients, the Shastho Shebika work in many different programs (treatment of tuberculosis cases through directly observed therapy, control of diarrheal disease, immunization, family planning and prevention of arsenic poisoning), encourage people to seek care at BRAC and government clinics, and assist at satellite clinics that focus on antenatal care and immunization.²²

Operational aspects and considerations

The 56 Shastho Shebika are women chosen by the community and are members of the BRAC-sponsored village organizations. Shastho Shebika are volunteers, they support themselves through the sale of commodities provided by BRAC, such as oral contraceptives, birth kits, iodized salt, condoms, essential medications, sanitary napkins and vegetable seeds. The Shastho Shebika use a system of verbal referral.²³

Shastho Sebika, Bangladesh

✓ Education	Few years of schooling
✓ Training	18 days basic and 3 days TB management training
✓ Refresher	One day each month
✓ Supervision	Shastho Kormi
✓ Incentive	Sales of medication

Coverage and effectiveness

BRAC have achieved extensive coverage and have been associated with marked improvements in women and children's health. Oral rehydration therapy was first used clinically for diarrheal illness in Bangladesh, and BRAC was the first organization to implement a community-based program promoting oral rehydration therapy on a wide scale. Reductions in neonatal, post-neonatal and infant mortality were observed in study districts after the introduction of the oral therapy extension program.

Source: WHO/Unicef 2006²⁴

Table 9A: Nutrition Interventions – Description of Studies

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Staten et al. 2004 ¹⁷ Arizona, USA	RCT	CHWs	Three intervention groups: (1) provider counseling, (2) provider counseling and health education, or (3) provider counseling, health education, and CHW support.	No intervention was delivered to control arm	24 months	women over age 50	All three intervention groups showed an increase in self-reported weekly minutes of moderate-to-vigorous physical activity, with no significant differences between the groups. Significantly more women who received the comprehensive intervention of provider counseling, health education, and CHW support progressed to eating five fruits and vegetables per day, compared with participants who received only provider counseling or provider counseling plus health education.
Sripaipan et al. 2002 ²⁵ Rural Vietnam	RCT	CHWs	to assess if community-based participatory intervention could significantly reduce neonatal mortality. undertook growth monitoring and promotion session, provided growth counseling, conducted monthly nutrition education and rehabilitation program session with mothers of malnourished	no intervention in control arm	24 months	less than 3 years old children and their mothers (5 to 25 months old children)	Respiratory illness, mainly upper respiratory illness, was more common than diarrheal disease at baseline (54% vs. 6%, respectively). During follow-up, children in the intervention communes had approximately half the respiratory illness experienced by those in comparison communes (AOR = 0.5; p = .001)
Hossain et al. 2005 ¹³ Rural Bangladesh	Quasi RCT	CHWs	Child was weighed, & the carer received counseling on health, family planning, breastfeeding, caring practices, personal hygiene & the use of iodized salt. All or who failed to gain the required weight in three consecutive monthly weighing was enrolled in a supplementary feeding program. They were given the food (rice, pulses, molasses and oil) was given in standard packets.	Children in control areas receive routine care *	60 months	Children of 6-59 months of age	Severe low WAZ (<- 3 z-scores) 11.4% in intervention areas compare to 12.1% in control (NS) Moderate low WAZ (> 3 z-scores and, <-2 z-scores) 35.2% in intervention areas compare to 36.3% in control (NS) Severe low HAZ (<-3 z-scores) 11.6% in intervention areas compare to 12.4% in control (NS) Moderate low HAZ (> 3 z-scores and, <-2 z-scores) 27.5% in intervention areas compare to 27.6% in control (NS) Severe low WHZ (<-3 z-scores) 1.0% in intervention areas compare to 1.1% in control (NS) Moderate low WHZ (> 3 z-scores and, <-2 z-scores) 13.4% in control (NS)
Kilaru et al. 2005 ¹⁵ India	Quasi RCT	CHWs	An intervention study using monthly nutrition education delivered by locally trained counselors	did not receive the intervention	12 months	infants aged 5-11 months	intervention infants had a higher mean daily feeding frequency (more likely to be fed solids at least four times a day (OR = 4.35, 95% CI = 1.96, 10.00); higher dietary diversity (more likely to receive a more diverse diet OR = 3.23, 95% CI = 1.28, 7.69), and were more likely to be fed foods suggested by the counselors such as bananas (OR = 10.00, 95% = 2.78, 33.3) compared to non-intervention infants
India	Quasi RCT	CHWs	nutrition and education services at the village level through Anganwadi centers, each of which was run by a local part-time female worker	ICDS service was not initiated in control areas	96 months	children under 6 years of age	A study of the nutritional status (by weight-for-age estimations) of the children in the non-ICDS populations showed a drop in severe malnutrition from 19.1% to 8.4% between 1976 and 1985. The status of malnutrition in 1985 in the ICDS populations after 3-5 years and 8 years of implementation decreased from 6.4% to 6.3%

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Chowdhury & Mahmud 16 Mymensingh, Bangladesh	Quasi RCT	CHWs	CHWs visited each house on monthly basis and provide education and conducted monthly nutrition and health education meetings and managed growth monitoring sessions by children ages less than 2 yrs and educated mothers and identified malnourishment. Pregnant women received monthly antenatal care, education and nutrition assessment.	No intervention was provided in Non BRAC areas	24 months	pregnant women, adolescent girls, children	group had the greatest reduction in low birth weights, i.e. 36% between 1992 and 1994 compared to women from other BRAC areas
Winch et al. 2008 20 Bougouni, Mali	Comparative cross sectional survey	CHWs	Dispersible zinc tablets in 14-tablet blister packs were provided through community health centers and drug kits managed by CHWs. Village meetings and individual counseling provided by CHWs.		5 months	children under 5 years of age	27% of children presented with diarrhea symptoms to CHWs and 14% to community health centers similar percent of (29%) children with diarrhea and fever symptoms presented to CHWs and community health center 17% and 29% of children with diarrhea and ARI presented to CHWs and community health centers respectively 27% and 29% of children with diarrhea, fever and ARI presented to CHWs and Community health centers respectively.
Winchagoon 2002 14 Thailand	Cross sectional survey	CHWs	Nutritional improvement has been implemented as an integral part of primary health care and community development extending beyond government services to include community participation. Utilization of village health volunteers has been a crucial feature of the program. Universal iron supplementation has been the major strategy for pregnant women, using village health volunteers to encourage continuation of the antenatal care schedule and encouraging a preventive approach by health service providers. Iron tablets (60 mg dose) were dispensed along with multivitamin mineral tablets monthly or bimonthly, according to ANC schedules		in the year 2000	women and children	Weekly iron supplementation of school children was piloted in 2000, and is now being extended. Other strategies utilized to address iron deficiency include food fortification, dietary improvement and complementary public health measures
Macharia et al. 2005 21, 26 Kenya	Comparative cross-sectional surveys	CHWs	provide region specific data on the nutrition situation in the World Vision Project area and establish whether there is any significant difference from the non-operational area		2 months	Children between 6 – 59 months	The prevalence of stunting in the project area (46.5%) was slightly higher than among the non-project area (42.1%). There was no significant difference in prevalence of stunting, wasting and underweight between the world vision project area and non project area.
Zuvekas et al. 1998 19 Lubec, USA	Cross sectional survey	CHWs	Regional Medical Center at Lubec, Maine uses CHWs to promote the health of the community. The CHW program focuses on providing services to the community's most needy: children, adolescents, and the elderly.		24 months	children adolescents and elderly	12 presentations were given on nutrition at area schools; 11 call-in shows on health education topics were aired on the local public access channel;

Table 9B: Characteristics of outreach workers

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Staten et al.2004 ¹⁷ CHWs (F)	>50yr old bilingual, introduce women, who could provide outreach, translation services	Workers from community	Didactic They were trained under Bangladesh Integrated Nutrition Project			Provided information, support & organized bimonthly walks where they encouraged participants to find walking partners, build friendships, and support each other in their health improvement goals. Also encouraged to increase their fruit & vegetable consumption incrementally	Nutrition counseling	Provided counseling, health education, and social support for behavior change.				Questionnaires for assessing the effectiveness of counseling
Hossain et al.2005 ¹³ CHWs		Workers from community	Didactic They were trained under Bangladesh Integrated Nutrition Project			Home visits made, child weighed and care giver counseled on health, family planning, breast feeding, caring practices, personal hygiene and the use of iodized salt	Nutrition counseling					
Kilaru et al.2005 ¹⁵ CHWs		Locally trained counselors	Didactic Training Trained by nutritionist & pediatrician, related to appropriate feeding of an infant. Also trained to be mindful of constraints in terms of available household food, limited financial resources, decision making capacity and privilege within the family structure while counseling the community members			Collected monthly filled questionnaire on feeding and child care behavior, and study infants were weighed at this time, using the SECA solar scales, developed for UNICEF. Conveyed messages related to: development- tally appropriate local foods & preparation of these foods; feeding frequency; Complementary feeding followed by breastfeeding; avoidance of feeding bottles.	Nutrition counseling					
Tandon 1989 ¹² CHWs (F)		Community workers	Didactic Training Counseling and health education related to consumption of fruits & vegetables every day.			Conducted nutrition program for preschool children (under 6 years old), pregnant women, and lactating mothers.	Nutrition and education services			Honorarium paid		Effectiveness assessed by the outcomes of counseling
Chowdhury & Mahmud ¹⁶ CHWs						Monthly visits to household for monitoring, nutrition assessment and health education	ANC, health education, and nutrition assessment.					

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Winchagoon 2002 ¹⁴ CHWs		Selected from the community	Didactic trained on essential health knowledge and assigned specific preventive and promotive tasks with a focus on maternal and child health and nutrition.				Activities included growth monitoring, diarrhea management using oral rehydration therapy (ORT), identifying pregnant women and encouraging them to attend antenatal care services	Maternal and child health care activities				
Zuvekas et al.1998 ¹⁹ CHWs							Health education on topics as basic as proper hygiene, how to correctly hold and feed an infant and proper nutrition	Primary health care services				

Maternal Health Interventions Background

The inclusion of maternal health in the millennium development goals in itself reflects the gravity of the issue. The targets set are reduction in the maternal mortality ratio by three-quarters between the years 1990-2015, and universal access to reproductive health services by the year 2015. Several indicators that are set to monitor the progress towards meeting the MDGs are maternal mortality ratio, proportion of births attended by a skilled birth attendant, coverage of emergency obstetric care, proportion of desire for family planning, adolescent fertility rate, contraceptive prevalence rate and HIV prevalence amongst 15-24 year old pregnant women.²⁷

According to the joint report of WHO, UNICEF, UNFPA and the World Bank in the year 2005 on maternal mortality estimates, the sub-Saharan Africa and the south Asia account for the 86% of the maternal mortality rate in the world.²⁸ The efforts made to reduce the maternal mortality ratio were focused at providing skilled birth attendant, who would have midwifery skills.²⁷ These skills include conducting normal deliveries, recognizing danger signs if any, provide initial management and appropriate referral to the health care facility.²⁷ In the areas where the maternal mortality burden is high, intrapartum period is not the only domain that needs to be taken care of. The role of antenatal and postnatal care, family planning, and safe abortion cannot be undermined in the improvement of the maternal health scenario and reduction in maternal mortality rate.²⁹

Community-Based Evidence

Total of 44 studies were identified that delivered interventions related to maternal health improvements. There were 12 quasi RCTs, 5 prospective before and after intervention studies, 3 comparative cross sectional studies and rest were descriptive cross sectional qualitative or quantitative studies. Characteristics of studies

and outreach workers are reported in [Table 10A](#) and [Table 10B](#). The types of CHWs involved in the interventions studied, related to maternal health are the community health workers (CHWs), the community mobilizers (CMs) and the traditional birth attendants (TBAs). In 16 studies CHWs alone or in combination with TBAs and CMs delivered the interventional packages related to maternal health, while in 6 studies only TBAs delivered maternal health interventions in community. Out of 42 included studies in this section, only seven were conducted in high income country (USA).

Almost all of the CHWs driven interventional studies showed a significant impact on reducing maternal, perinatal and neonatal mortality and improvement in perinatal and postpartum service utilization indicators. In most of these studies they were trained and deployed as maternal and child health care providers and reproductive health workers. A review of the literature from various parts of the world shows that introduction of skilled birth attendant reduced direct obstetric mortality.³²⁻³⁷ The utilization of antenatal care was found to be availed by 90% of the pregnant women in a survey conducted by Navaneetham and Dharmalingam in India.³⁸

Most of workers were selected from the community.^{32, 39, 40} While some of them were required to have a few years of schooling for recruitment as CHWs⁴⁰⁻⁴³ or TBAs³⁹, the CHWs participating in the intervention presented by Teela et al, were required to have 4 months of medical training prior to their recruitment, but since the study was descriptive qualitative we could not analyze it against studies where extensive medical training was not required. However, we compared studies in which CHWs were educated (studies which failed to mention education were assumed that educational level was not their condition for recruitment) and found that all these studies showed a positive results on uptake of family planning methods concluding

that educated workers usually have positive attitude towards family planning methods and in turns results in positive impact towards using family planning.⁴⁴

CHWs were provided training based on various topics like clean and safe deliveries,^{32, 33, 36, 39, 45-55} family planning,^{32, 34, 40, 41, 43, 48, 56, 57} immunization,^{48, 58} recognition of obstetric complications and referral.^{51-53, 57} In some of the interventions the CHWs were trained to offer Emergency Obstetric Care (EmOC).^{34, 59} In an intervention by Xu et al. the CHWs were trained to manage high risk pregnancies.³⁵ The duration of training varied between 6 hours⁵⁴ to 6 months.^{41, 47} The training content was delivered to the participants using various training

modalities like theoretical lectures with field training,^{34, 39, 45, 47, 60, 61} only theoretical lectures, 41 or didactic training sessions alone.^{32, 37, 40, 43, 46, 48, 51, 54, 56-58, 62} In Begum et al the training also included field visits for two days per week.³³ In the intervention by Douthwaite the CHWs were trained for 3 months initially and then took 12 months of in-service training in primary health care while the study focused their role in family planning services and their impact on uptake of family planning methods.⁴³ Refresher training was also offered⁵⁹ and in one of the interventions related to maternal health the skilled birth attendant took three months of advanced course on management of complications in mother and newborn.⁴⁷ These skilled birth attendants were in Bangladesh and were

CHW Snapshot 3

Community Health Agents Program, Brazil

Program overview

In 1988 the Brazilian government launched the Unified Health System (Sistema Unico de Saúde), with the declared aim to provide universal health services to Brazilians, which was evolved from primary health care initiative (community health agents' program) in the northeastern state of Ceará. The basic initial focus was on universal coverage but later on during 1990s program expanded its horizon into the Family Health Program (Programa Saúde da Família) that encompassed integrated components like promotional and preventive activities and curative and health care, using a family health team of workers assigned to a specified geographic area. The standard team comprises of one physician, one nurse, nurse aides' and 4-6 community health workers. Community health agents are responsible for home visits, in which they collect demographic, epidemiological and socioeconomic information of each assigned family, promote healthy practices, and link families to health services. Their activities ensure the implementation of a community component in IMCI.³⁰

Operational aspects and considerations

These CHWs are selected from the community where program is implemented and are selected by the program. Ninety Five percent (95%) of these workers are women and are supervised by a nurse who also works full-time in the basic health unit, as part of the family health team. The program uses a team approach for referrals of sick children. A unique operational aspect of the program is that CHWs are paid health professionals. The state government is paying the salaries of CHWs on agreement of municipal government to also provides a salary for a nurse supervisor.^{30, 31}

Community Health Agents, Brazil

✓ Education	Primary School
✓ Training	8 weeks residential course + 4 weeks field work
✓ Refresher	Monthly & quarterly
✓ Supervision	Nurse
✓ Incentive	voluntary and only receive

Coverage and effectiveness

Program gained its coverage drastically; when the program was initiated there were approximately 35 participating municipalities with 1500 CHWs. In 1998, 150 municipalities joined hands and 8000 CHWs were deployed in communities. The initiative was expanded in 1994 to the family health program, a team approach to primary health, and adopted at a national level. In 2001, there were 13,000 family health program teams covering 3,000 municipalities, with an estimated coverage of more than 25 million people. Currently there are more than 30,000 family health teams and more than 240,000 CHWs across the country, covering about half of the Brazilian population. Program activities include expanded vaccination coverage, promotion of breastfeeding, increased use of oral rehydration salts, management of pneumonia and growth monitoring. The extended coverage of the Program has been associated with declines in the infant mortality rate.³¹

certified by the Bangladesh Nursing Council at the end of their training.⁴⁷ Most of them were deployed in the rural areas.^{33, 39, 46, 53, 60, 61}

Several competencies were developed in these CHWs during the interventional training. Some developed counseling skills to increase utilization of the prenatal and postnatal services.^{36, 55, 63} In an intervention by McCormic et al. the CHWs were specifically trained to encourage the use of prenatal services by people in lower income communities.⁶⁴ Immunization of pregnant women with tetanus toxoid was also done in a few interventions.^{32, 34, 48}

The role of the CHWs as such was well-oriented with the indicators set to achieve the MDG Goal 5 targets. They were promoting the utilization of antenatal and postnatal care.^{55, 61} In the intervention of Shaheen et al. the CHWs also spread awareness on breast and cervical cancer prevention by teaching breast self-examination and doing pap smears.⁶² Which relates to the sexual health component of the MDG Goal 5. In this regard, they encouraged preventive behavior towards HIV,⁵⁶ the details of which shall be discussed in the section on HIV. The CHWs also recognized anemia in pregnant women and managed it with iron and folate supplementation.^{32, 65} They also counseled mothers regarding their nutritional needs.^{48, 55} In case of parasitic infections they provided curative care for deworming the patient³⁴ and also provided chemoprophylaxis for malaria.⁴⁵ They made referrals, after providing initial management, in case any complications arise.^{39, 45-47, 60}

In an intervention by Douthwaite et al. the CHWs called Lady Health Workers were exclusively evaluated for providing family planning services.⁴³ In another intervention by Stanback et al. the CHWs not only emphasized on the need of family planning but also provided DPMA injections using single-use, auto disposable syringes.⁴⁰

CHWs were supervised during these interventions by the government teams^{34, 45}, or by midwives, community health nurse and doctors,^{51, 60} or by the female paramedic supervisors.^{33, 47} In Shaheen et al. proper monitoring and supervision could not be done due to deterioration of political conditions in Palestine.⁶² In Pakistan the CHWs were supervised by the Lady Health Supervisors⁴³ and in the intervention by Yadav et al. in Malaysia, the supervision was done by the nurses.⁵⁵

Most of these health workers were working as volunteer and a few were paid meager salaries as incentives^{43, 48, 53} while just the transport cost was covered in Yadav et al. intervention.⁵⁵ Salaried TBAs in Bailey et al. 1994⁵³ did not create an impact of increasing the usage of health care services in women, while Swaminathan et al. 1986⁴⁸ did find an impact on increasing health care service utilization among women when their TBAs were given a monthly stipend. Thus it shows that providing wages or salaries to these outreach workers did not have any impact on improving the maternal health.

Evaluation of the CHWs, trained in the interventions was done in a few studies. The impact of their training was assessed by prospective surveys by interviewing people from covered households.^{40, 41} In the Williams and Yumkela intervention, the impact of CHWs was evaluated by the WHO and the UNICEF.⁵¹

Our disaggregated analysis on quasi-randomized study designs revealed that there were two studies in which CHWs were linked with TBAs and integrated with health system (Greenwood et al. 1990⁴⁵; Foord 1995⁶⁰) and delivered interventions. Greenwood 1990⁴⁵ found a significant impact on decreasing neonatal deaths, and increasing institutional deliveries possibly with the reason that TBAs trained for 10 weeks were directly supervised by CHWs and training team,

while in Foord 1995,⁶⁰ they were supervised by health care providers like doctors midwives etc. working in health centers which might required to be tighten up by linking them with CHWs working in that area.

must be trained to play an intermediary role in connecting these two extreme levels of health care provision structures.

Conclusion

The maternal health concerns all over the world can only be addressed with effective training, monitoring and supervision of the CHWs who reach out to the communities at the grass root level. The important finding from analysis signifies that CHWs education (at least 6 yrs of schooling and above) must be stringently followed criteria for selection. They should be linked with local TBAs and health system and

CHW Snapshot 4

Rural Primary Health Care in Iran

Program overview

In 1970s, based on the experience of Azerbaijan province, where a research project around delivering primary health care in the province had been conducted, a network for the delivery of primary health care was developed for the whole country. At the beginning the whole focus was on the rural areas but steadily it spread into the urban areas as well. The most basic unit of service delivery is the health house which covers an average of 1200 to 1600 people. This is staffed by a community health worker known as a behvarz. Usually there will be two behvarz in each health house, with one being male and one being female. Every health house covers one main village and one or more satellite villages. The health house is responsible for: maternal and child health care, family planning, case finding, and follow up of infectious diseases (TB and Malaria), mental health problems and, more recently, other chronic illnesses such as Diabetes and Hypertension, limited symptomatic treatment, environmental health, and occupational health⁶⁶.

Operational aspects and considerations

The community health workers (behvarz) are selected by the community and trained at the Behvarz Training Centre which exists in each district. Their health team comprised of physician, among whom one physician works as an administration and another supervises Behvarz and see the patients referred by them in their health houses.

Source: Primary Health Initiative⁶⁶

Behvarz, Iran

✓	Education	Secondary School
✓	Training	2 years training
✓	Supervision	Physician

Table 10A: Maternal health interventions – Characteristics of included studies

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Ronsmans et al. 1997, 32,67 Matlab, Bangladesh	Quasi RCT	CHWs	MCH-FP areas (referrals for sick cases, safe delivery kit, iron & folate for mothers, family planning, management of obstetric complication etc)	Comparison area did not have MCH-FP services and was provided with routine services*	72 months	Women of reproductive age	3% reduction in direct obstetric mortality per year (CI: 1-5%)
Greenwood et al. 1990 ⁶⁸ Gambia, Africa	Quasi RCT	CHWs TBAs	Government of Gambia implemented OHC service and trained TBAs regarding clean deliveries at home, referrals for delivery and promotion of antenatal and post care among mothers	Non- PHC areas have routine delivery service outlets like health facilities and hospitals	36 months	Pregnant women	No impact of intervention on maternal mortality 33% reduction in neonatal deaths 56% reduction in late neonatal deaths No impact of intervention on still-births Increased in institutional deliveries by 56%
Alisjahbana 1995 ⁴⁶ Rural West-Java, Indonesia	Quasi RCT	TBAs	Trained TBAs for enhanced complication referrals, teaching mothers for danger signs. Improved accessibility to health care services and trained hospital doctors and nurses for appropriate care management. distributed home based maternal and neonatal action records	Routine services provided by government health care facilities and hospitals	15 months	Pregnant women	ANC in intervention arm 89.6% and in control arm 76.1% Complication during pregnancy and during postpartum period in intervention arm 66% and in control arm 62% Institutional deliveries 12% in intervention arm & 0.4% in control arm Complication during delivery in intervention arm 17% and in control arm 20% PMR in intervention and control arms were same i.e. 0.4%
Bhuiyan 2005 ³⁹ Rural Bangladesh	Quasi RCT	TBAs	Trained Skilled Birth Attendants (SBAs) who delivered ANC, PNC, newborn resuscitation and counsel mothers for newborn care management	SBAs were not trained and community was provided with routine care*	-	Pregnant women	Deliveries by SBAs in intervention arm were 52% while in control area was 32%
Foord, 1995 ^{60, 69} Rural Gambia	Quasi RCT	TBAs CHWs	Trained TBAs, registered pregnant women, treated anemia and infection, identified and referred all potential obstetric problems	Services were provided by government health centre	24 months	Pregnant women	No impact of intervention observed on maternal mortality No impact of intervention observed for reducing stillbirths No impact of intervention observed for reducing perinatal deaths
Zeighami et al. 1977 ⁴¹ Iran	Quasi RCT	CHWs	CHWs were providing services regarding family planning	In control areas, services were not provided by CHWs	14 months	Married women of 15-44 years	28% of married women were using contraceptives compared to 15% of married women in the same age-group in control group
Shaheen et al. 2003 ⁷⁰ West Bank & Gaza, Palestine	Quasi RCT	CHWs	Basic service delivery model includes home visits by a CHW to recently delivered women 2-3 days after delivery. During the second home visit the CHW reminded the women about their day 40 clinic visit for postpartum care and highlighted the importance and benefits of contraception, and breast and cervical cancer awareness and prevention.	Control group was receiving routine care	-	Low parity women in postpartum period	Second home visit by the CHW was associated with a substantial increase in the likelihood of visiting the MCH clinic on day 40 (49.1% of intervention group mothers versus 35.6% of control group mothers, p<0.05). The second visit was also associated with increased support provided by the husband to visit the clinic on day 40 (51.0% of intervention group husbands versus 29.0% of control group husbands, p<0.05), as well as increased likelihood of husband-wife communication about timing of next pregnancy (86.0% of intervention group couples discussed timing of next pregnancy versus 77.0% of control group couples, p<0.05).

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Stanback et al. 2007 ⁴⁰ Nakasongola, Uganda	Quasi RCT	CHWs	Trained CHWs to provide DMPA injections using single-use autoinjectable syringes. These workers were active providers of pills and condoms	Routine services from governmental health centers	12 months	Women of reproductive age	Ninety-five percent of community-worker clients were "satisfied" or "highly satisfied" with services, and 85% reported receiving information on side-effects.
Zhang 2004 ⁶¹ Rural areas of China	Quasi RCT	CHWs	trained CHWs and they provided prenatal maternal care services to mothers at grass root levels	no interventions was provided to control group	48 months	mothers with children under 3 years of age	Mean number of obstetric visits in intervention group was 6.6 as compare to 5.6 in control arm (P < 0.05) number of times women in intervention arm was told to visit doctors was higher in intervention arm as compare to control (P < 0.05) 94% of women in intervention arm was told by contraceptive methods as compare to 79% in control arm (P < 0.05)
Cesar et al. 2008 ⁶⁵ Rio Grande, Brazil	Quasi RCT	CHWs	trained CHWs visited women and provided prenatal care which included lab tests, clinical exams, breastfeeding counseling and iron supplementation	routine care by health care facilities in their area	18 months	pregnant mothers	Pregnant women visited by community health agents began prenatal visits earlier than other groups, had more prenatal visits, lab tests, and clinical exams, and received more counseling on breastfeeding and iron supplementation.
Bailey et al. 1994 ^{42, 53} Rural Guatemala	Quasi RCT	TBAs	TBAs were trained to increase in TBAs' detection of obstetric complications and referral for them or women must recognize danger signs and go to a hospital on their own.	TBAs in control areas were not trained	36 months	pregnant mothers	The incidence of postpartum complications decreased after the intervention, controlling for intervention community. On the other hand, after the intervention TBAs were less likely to recognize most maternal complications, and referral rates did not increase significantly. The likelihood of using health care services increased six-fold among women who were not attended by TBAs, and no increase was observed among those who were attended by TBAs.
Moore et al. 1974 ⁷¹ New Orleans, USA	Quasi RCT	CHWs	Group 1 -women were visited at home and given information on child care & self care, as well as encouragement to keep the postpartum appointment. Group 2 -women were visited at home but only for encouraging them to attend the clinic for postpartum examination.	Control group-women who were not visited at home.	4 months	pregnant mothers	percentage postpartum appointment in group 1 was 79%, in group 2 it was 84% and in control it was 76%
Ahmed & Jakaria 2009 ⁴⁷ Bangladesh	pre/post	TBAs	Trained Skilled birth attendants who counseled; provided essential obstetric skills in antenatal care, childbirth and post-partum care for the woman and her newborn; - identified complications requiring referral; motivated women, their households and neighbors on need for skilled attendance and care for pregnant women		12 months	pregnant mothers	delivered over 65,000 babies referred 21,000 women needing medical care
Begum 1987 ³³ Rural Districts (Bongra, Tongi & Dhaka) Bangladesh	pre/post	TBAs	TBAs were trained for the management of childbirth		24 months	pregnant mothers	Maternal deaths reduced from 4.8 / 1000 to 1.5/ 1000 live births after training Stillbirths declined from 76.9 / 1000 births to 46.2/ 1000 births after training Average number of ANC increased from 1.3 to 2.9 after training Average PNC visits increased from 1 to 2 after training

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Mc Pherson et al. 2007 ³⁴ Rural Nepal	pre/post	CHWs	Health messages; management of PPH with Misoprostol, Iron-folate for women, TT doses, Postnatal home visits		24 months	Pregnant women	53% decline in NMR (P=0.004). Improvement in birth attended by skilled birth attendants, institutional deliveries. 52% of women in Banke district were prevented from PPH. While 11% in Jhapa
Emond et al. 2002 ³⁶ Felipe Camaráo, Brazil	pre/post	CHWs	The interventions included the establishment of antenatal clinics at the district's health centers, the opening of the maternity facilities at the polyclinic for low-risk deliveries, the introduction of a family planning clinic and a breast-feeding clinic, support from pediatricians for under-5 (well-baby) clinics, children's outpatient services and children's emergency care, and the introduction of health agents recruited from the local community.		30 months	pregnant women	During 1995 there were 4 maternal deaths from 1 195 pregnancies (maternal mortality of 335/100 000), during 1998 (post-intervention), there were no maternal deaths. In 1993 no deliveries took place at the polyclinic, but in 1998 there were 946 deliveries at the clinic without any serious complications. The method of delivery, the incidence of prematurity, and the incidence of low birth weight did not change significantly. Infant mortality rate decreased from 60/1 000 live births to 37/1 000 live births. Over 95% of both samples initiated breast-feeding, but a higher proportion of the post-intervention sample reported breast-feeding for longer than 6 months (41% vs. 32%, P = 0.0005). No differences were apparent in the use of under-5 clinics, but immunization rates improved.
Xu 1995 ³⁵ Beijing, China	pre/post	CHWs	Changes were introduced into the organization of maternal care for obstetric emergencies, staff training and health education of families and community		36 months	pregnant mothers	Maternal mortality in intervention areas reduced from 151/ 10 000 live births to 37 per 10 000 live births, while maternal mortality in control areas decreased from 99/ 10 000 to 93 / 10 000 live births
Benara & Chaturvedi 1990 ⁷² Bassi Bhanpurkalan & Sirsi, India	Comparative cross sectional. Trained vs. untrained TBAs	TBAs	trained TBAs and evaluated their performances with those who were not been trained		12 months	pregnant mothers	Distribution of contraceptive methods was higher among trained TBAs compare to untrained TBAs. Registration of women for antenatal checkups was 39% among trained TBAs group compared to 6% in untrained TBAs group. PNC among trained TBAs group was 1 3% compare to 8% in untrained group.
Swaminathan et al. 1986 ⁴⁸ Andhra Pradesh, India	Comparative cross sectional. TTBA vs. UTBA	TBAs	TBAs were trained and given a maternity free of charge kit and after which they voluntarily work in maternal and child health, family planning and nutrition in the community		36 months	Pregnant women	Proportion of referrals of women to hospital in trained TBAs were 12% while in untrained TBAs were 9% Tetanus Toxoid to women in trained TBAs group was 52% while in untrained 25%
Douthwaite et al. 2005 ⁴³ Pakistan	Comparative cross sectional study. LHWP vs. non LHWP	CHWs	CHWs evaluation was performed to determine the effect of the Program on the uptake of modern reversible contraceptive methods		6 months	Reproductive age group population	Women served by Lady Health Workers are significantly more likely to use a modern reversible method than women in communities not served by the Program (OR = 1.50, 95% CI: 1.04–2.16, p =0.031), even after controlling for various household and individual characteristics.

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Teela et al. 2009 ⁵⁹ , 73, 74 Burma	qualitative	CHWs	"Mobile Obstetric Maternal Health Worker" (MOM) project, employed a community-based approach to increase access to essential maternal health services including emergency obstetric care		16 months	pregnant women	Majority of MHWs reported that positive relationships between themselves and other project providers (HWs and TBAs), village leaders and community members were critical for success of the project. When asked about the future of the MOM project, one MHW exclaimed: "We must continue until no maternal death!"
Smith et al. 2000 ⁵⁷ Ghana	survey	TBAs	TBAs were trained and data were then regressed to identify the factors associated with training and maternal outcomes. And evaluated to assess the impact of the use of improved techniques in ante, intra and post partum care on maternal and perinatal morbidity and mortality		-	pregnant women	odds of intrapartum referral due to TBAs training were 1.95 (95% CI: 0.92-4.16) odds of postpartum referral due to TBAs training was 1.04 (95% CI: 0.34-3.12) effect of TBAs training also shown decreased in retention of placenta by 65% (95 CI: 4-875)
Diakite et al. 2009 ⁵⁸ Guinea	cross sectional	CHWs	By offering an intervention mix that included maternal and newborn care, nutrition and micronutrients, HIV/AIDS, and immunization.		24 months	mothers & pregnant women	Injectable methods for family planning increased from 347 in 2006-07 to 4632 2007-08 Oral contraceptives increased from 6540 in 2006-07 to 35027 in 2007-08 IUD increased from 90 to 228 in a year's time Condom usability increased from 38107 to 70348 in a year's time.
Padmanaban et al. 2009 ³⁶ Tamil Nadu, India	Descriptive reported National Surveys	CHWs	CHWs were trained to deliver babies and encourage and counsel during perinatal and post natal period		168 months	pregnant mothers	Improved maternal health services leading to reduction in maternal mortality from 380 in 1993 to 90 in 2007. increased rate of institutional deliveries from 20% in 1971 to 97.7% in 2007 PNC given by Tamil Nadu within two days of birth, is 87.2%, and 91.3% receive PNC within 42 days
Bisika 2008 ⁷⁵ Malawi	Cross-sectional Qualitative survey	TBAs	TBAs were trained and then qualitatively data from community people i.e. from women of reproductive health was conducted and		-	pregnant mothers	22.7% of deliveries were attended to by TBAs, 50.2% of deliveries were attended by a nurse or trained midwife, 5.4% by a doctor, and 2.4% by no-one
Purdin et al. 2009 ⁵⁷ Hangu, Pakistan	Prospective sectional surveys	CHWs	IRC established EmOC centers, trained community members on safe motherhood, linked primary health care with education on danger signs of pregnancy and the importance of skilled attendance, and improved the health information system		48 months	Pregnant women and children	The MMR among Afghan refugees in the area improved from 291 per 100 000 live births in 2000 to 102 per 100 000 live births in 2004. The proportion of refugee births attended by skilled staff increased from 5% in 1996 to 67% in 2007. Complete prenatal care coverage increased from 49% in 2000 to 90% in 2006, and postnatal coverage more than trebled from 27% in 2000 to 85% in 2006
Gabrisch et al. 2009 ⁵⁰ Ayacucho, Peru	Cross sectional	CHWs	The new culturally sensitive model involves features such as a rope and bench for vertical delivery position, inclusion of family and traditional birth attendants in the delivery process		24 months	Pregnant women	The proportion of births delivered in the health facility increased from 6% in 1999 to 83% in 2007 with high satisfaction levels.
Williams & Yumkela 1986 ⁵¹ Sierra Leon	Cross sectional	TBAs	3 years training program was conducted and evaluation of TBAs after their training was performed		-	Pregnant women	Referrals to hospital was 57% Attempted delivery and if found difficult referred to hospital 3% Complication during delivery & referral of Prolong labor case to hospital 17%. Immunization referral 32%

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Mushi 2007 ⁷⁶ Mtwara, Tanzania	Cross sectional survey	CHWs	CHWs were tested and assessed a community-based safe motherhood intervention, their main role was to promote delivery with a skilled attendant		24 months	Pregnant women	Some improvement in the overall knowledge of maternal health from a score of 44% to 52%. Changes were observed with regards to causes of pregnancy complications (29% to 47%) and HIV/AIDS as the threat to safe motherhood (76% to 90%). There was a significant increase in the early antenatal care booking (18.7% in 2004 to 37.7% in 2006) and the utilization of a skilled attendant at delivery (33.3% to 49.8%). Referral advice by SMPs from home to the first line facilities (referral rate 52.9%) was well received with a compliance of (66%)
McCormick et al.1989 ⁶⁴ Hartlem, USA	Cross sectional survey	CHWs	community health works were trained and sent in community for encouraging use of prenatal services in low-income communities		-	Women registered for prenatal care at clinics	Of the 599 women enrolling for prenatal care during the intake period for the study, only 52 had had an outreach contact before the start of prenatal care despite extensive field activity.
Zuvekas et al.1998 ¹⁹ Brownsville, USA	Cross sectional	CHWs	Brownsville Community Health Center's CHW program, Muno A Muno (Hand-in-Hand), uses promotorus (health promoters) from this Texas/Mexico border community to conduct home visits to identify pregnant women and help them gain access to prenatal care; educate the community on a comprehensive array of health conditions; and refer clients to services available in the community.		10 months	pregnant women	From January 1997 – October 1997 promotorus in Brownsville conducted 18-20 presentations per month From January 1997 – October 1997 promotorus in Brownsville and Matamoros each made approximately 400-500 home visits per month
Zuvekas et al.1998 ¹⁹ San Diego, USA	Cross sectional	CHWs	Logan Heights Family Health Center located in San Diego, California, has two CHW programs that focus on the protection of sexually active youth through parental organization and education and peer counseling.		-	youth and adolescents	Changes in attitudes with respect to adolescent sexuality. Changes in attitudes toward contraception by adolescents. Improved communication between adults and adolescents and between agencies. Changes in the availability and accessibility of contraception.
Zuvekas et al.1998 ¹⁹ Onondaga, USA	Cross sectional	CHWs	Syracuse Community Health Center's Comprehensive Medicaid Case Management program provides case-management services to high-risk pregnant women and women with infants. Its AmeriCorps Community Health Corps members: work on projects related to patient services; educate patients about the importance of preventive primary care and how to use a managed care system; and collectively work on community health education and awareness projects.		-	high risk pregnant women with infants	Contacted 2,669 patients who have visited the emergency room for acute care services rate for follow-up prenatal appointments of 73 percent in 1996 up from 70 percent in 1995
Zuvekas et al.1998 ¹⁹ West Alabama, USA	Cross sectional	CHWs	West Alabama Health Services in Alabama operates the Home Visitor program which provides community-based home visits by CHWs that: 1) provide support to pregnant women through the perinatal period; 2) ensure that appropriate care provided for newborns; 3) teach the mother appropriate parenting skills; 4) ensure communication between the home and health provider; and 5) assist the provider by evaluating the home situation of at-risk patients.		-	Pregnant women	Sixty-three percent (269) of pregnant women using prenatal care did so in their first trimester. Thirty percent (128) sought prenatal care in their second trimester and only seven percent (32) began receiving prenatal care in their third trimester.
Zuvekas et al.1998 ¹⁹ San Diego, USA	Cross sectional	CHWs	Logan Heights Family Health Center located in San Diego, has two CHW programs that focus on the protection of sexually active youth through parental organization and education and peer counseling.		-	youth and adolescents	Changes in attitudes with respect to adolescent sexuality and contraception by adolescents. Improved communication between adults and adolescents and between agencies. Changes in the availability and accessibility of contraception.

Study / country	Outreach design		Interventions		Years of study	Participants	Outcomes
	Study design	Outreach worker	Experimental arm	Control arm			
Hussein & Mpebeni 2005 ⁵² Mkuranga, Tanzania	Cross sectional survey	TBAs	trained and untrained traditional birth attendants (TBAs) in identifying women with danger signs for developing complications during pregnancy and childbirth as well as their referral practices		-	pregnant women	Trained TBAs were more knowledgeable on danger signs during pregnancy and childbirth and were more likely to refer women with complications to a health facility, compared to untrained TBAs.
Bhiromrit 1990 ⁷⁷ Narativas, Thailand	cross sectional	CHWs CMs TBAs	intensification of maternal and child health/family planning information and services through mobile motivation outreach teams and creation of a village level service delivery system through CHWs and TBAs		42 months	Pregnant women	Fertility rate declines to 2.1 live births per women which is below replacement level. Contraceptive rate increased from 15% to 71%
Bailey & Coombs 1996 ⁷⁸ Verapaz, Guatemala	Cross sectional survey	TBAs	To evaluate the impact of the TBA training.		36 months	Pregnant women	81% of the time complication was detected and out of which 43% were referred
Foster et al. 2004 ⁵⁴ Guatemala	Cross sectional	TBAs	Evaluation of training TBAs		72 months	TBAs	Formal evaluation of this training is underway but results are not yet available.
Navaneetham & Dharmalingam 2002 ³⁸ Southern India	Cross sectional	CHWs	Mode of maternal health care utilization was surveyed in India		12 months	Married women	90% of all women received antenatal care Around 70% of all women received > 4 ANC visits Around 50% of all deliveries took place at institutional level 70% of all deliveries were undertaken by skilled birth attendant
Yadav 1987 ⁵⁵ Kerian, Malaysia	Cross sectional	TBAs	TBAs attended deliveries and advised mothers on antenatal and postnatal issues and also provided nursing care to babies and new mothers some basic steps on baby care		70 months	Pregnant women	Deliveries from skilled birth attendant increased from 23% to 40% and from TBAs decreased from 47% to 19%
Wollast et al. 1993 ⁷⁹ Burkina Faso	Cross sectional	TBAs	TBAs trained to registered all pregnant women, identify high risk pregnancies, provide referrals and evacuate to the health facilities with all the necessary equipment related to pregnancy and delivery		24 months	Pregnant women	MMR of 452 / 100 000 deliveries (27 deaths) observed. Obstructed labor was the main cause of maternal death.
Ahluwalia et al. 2003 ⁸⁰ Northwestern Tanzania	Descriptive	CHWs	Qualitative data from group interviews and program data from GBRHP were used to assess progress in development and use of community level transport systems and support for the village health workers (VHWs)		18 months	general population	Project activities increased community participation in maternal health. An increase was seen in knowledge of danger signs, birth planning, timely referrals, and transport of pregnant women to hospitals, as well as in support and retention of VHWs. More women with obstetrical problems are using the community-based transport system to get to hospitals.
Goodburn et al. 2000 ⁸¹ Bangladesh	comparative cross sectional survey	TBAs	trained TBAs were compared with untrained TBAs and postpartum infections were then compared among the two groups		18 months	TBAs	Trained TBAs were significantly more likely to practice hygienic delivery, and then untrained. (45% vs. 19%, P <0.0001). No significant difference in the rates of postpartum infections.

Table 10B: Description & Characteristics of Outreach workers

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
Ronsmans 1997 ^{32, 67} CHWs (F)			Didactic These CHWs were trained on delivering services during twice-monthly home visits. Immunized women with TT and provide contraceptives on door steps.				Immunized women with TT and provide contraceptives on door steps.	Maternal health				Evaluation on mortality rate after 3 years of implementation of this program
Greenwood et al. 1990 ⁶⁸ CHWs (F)		Selected by villages	Theory and practicum Deliver women at home and given antenatal and postnatal care and advised them for referrals to health facility and trained to give chemoprophylaxis of malaria	10 weeks			Conducted hygienic deliveries and advised on antenatal and postnatal care also gave chemoprophylaxis of malaria for pregnant women	Maternal health	Governments training team			
TBAs (F)	Illiterate	Selected by villages		10 weeks								
Alisjahbana 1995 ⁴⁶ TBAs (F)			Didactic Training of TBAs in detection of pregnancy complications and taking appropriate action (referral)				Reported identified pregnancy and the births she attended to the interviewers, ideally within 24 hrs	Maternal health				
Bhuiyan 2005 ³⁹ TBAs (F)		Selected from community	Theory and practicum Training of TBAs in detection of pregnancy complications & providing referral				Delivered antenatal and postnatal care and counseled mothers for newborn care management	Maternal and neonatal care. Resuscitation				
Foord 1995 ^{60, 69} CHWs (F)			Theory and practicum Trained to provide antenatal care, treat anemia, infections and identification of emergency & complicated cases and their referral to tertiary care centre				Registration of pregnant women in antenatal programs, treatment of anemia and infections	Safe and hygienic home deliveries	Supervision from mid-wife, CHNs and doctors			

Study	Education	Recruitment Criteria	Training Content	Duration	Certification / Ongoing training	Refreshers	Role	key compe- tencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
TBAs (F)			PRACTICUM They were required to accompany mid-wives during the village visits; their task was to assist in home deliveries.				Early identification of pregnant women	midwives, CHNs and doctors				
Zeighami et al.1977 41 CHWs (M & F)	6 years of education	positive attitude towards family planning	Theoretical training on preventive, curative and family planning benefits, preventive services like immunization well baby visits etc, Didactic training On how to provide counseling and services that are tailored to the needs of low parity women. Trained to do pap smears and breast examination.	6 months			Curative services for common colds, ear and eye infections, kept a record card of those interviewed and noted estimate of duration of contraceptive use.	Provision of vaccination, health education and contraceptive education				Interviewed people from covered households
Shaheen et al.2003 70 CHWs (F)			Didactic training On how to provide counseling and services that are tailored to the needs of low parity women. Trained to do pap smears and breast examination.				Explained to women the importance of conducting a day 40 visit to the clinic, family planning methods, maternal care, breast feeding, breast self-exam and newborn during 1st home visit and ensured visit to health care facility by day 40 after delivery.	Maternal health	Proper monitoring and supervision could not be done due to deteriorating political conditions.			
Stanback et al.2007 40 CHWs (M & F)	Few years of schooling	From community	Didactic training where they were trained to provide DMPA injections to their communities using single-use auto disable syringes.				They provided DPMA injections to their communities, emphasized on the importance of family planning methods					Prospective surveys
Zhang 2004 61 CHWs			Theoretical and practical training on prenatal and postpartum services	2 weeks								
Cesar et al.2008 65 CHWs			Trained on emphasizing the importance of prenatal visits, breastfeeding counseling, and iron folate supplementation									
Bailey et al.1994 42, 53 CHWs	Can read					Oral examination to certify them as workers	Educational and promotional activities			Salaried		

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Moore et al.1974 ⁷¹							Make postpartum visits to educate and encourage them to return to a healthy pre-pregnant state and to have a healthy baby	Maternal health				
CHWs												
Ahmed & Jakaria 2009 ⁴⁷		Willingness to stay and serve the community with midwifery services	theoretical and practical knowledge for counseling essential obstetric skills in antenatal care, childbirth and post-partum care for the woman and her newborn, -identifying complications requiring referral, motivate women, their households and neighbors on need for skilled attendance and care for pregnant women	6 months	skilled birth attendants by the Bangladesh Nursing Council	After spending 9 months as community-based SBA they undergo 3 months advance course on mngt of complications, I in mother and newborn	Visited women and identified pregnancies in the community. During their home visits they also identified complicated pregnancies and referred women in case of complication	Counseling skills, Essential obstetrical skills and neonatal care	female paramedics Supervisors receive			
TBAs (F)												
Begum 1987 ³³	no formal education	TBAs, selected through interviews	Class lectures, demonstrations, and field visits were organized for two days in each week	3 months training			Used aseptic technique, advised mothers on nutrition and importance of colostrums, counseled for longer duration of breast feeding	Maternal and neonatal health	Assistant supervisor & paramedic		1 TBA per 2298 population	
TBAs (F)												
Mc Pherison et al.2007 ³⁴			Theory and practice Health education & interventions including iron and folate supplementation, deworming and TT, recognition of danger signs, SBA attendance, emergency obstetrical care and essential newborn care.				Community-level antenatal contact. Strengthening existing services like basic emergency obstetric care (BEOC), management of complications and EPI.	Maternal and child health	monitored by Ministry of Health & Population, Family Health Division and District Health			
CHWs (F)												

Study	Education	Recruitment Criteria	Training Content	Duration	Certification / Ongoing training	Refreshers	Role	key competencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
Emond et al. 2002 ⁵⁶ CHWs			Didactic Health Education on antenatal care, breast feeding, causes and management of diarrheal and respiratory diseases, encouraging health seeking behavior for infant and in elderly, and prevention of HIV				Made visits with the message of breast-feeding, causes & mgmt of diarrheal & respiratory diseases, and prevention of HIV. Promote visit to antenatal clinics, well baby Clinics and for immunization and, and advised hypertensive adults to go for monitoring and treatment	Maternal and child health services				
Xu 1995 ³⁵ CHWs			Educated women about maternal health issues				Their role was to encourage for antenatal examination, management of high risk pregnancies, & streamlined information system					
Cordon & Fonseca-Becker 2004 ⁸² CMS			They were trained to for behavior change communication to make sure women and their families aware of improved services									
Swaminathan et al. 1986 ⁴⁸ TBAs (F)			Didactic and practical	1 month			Register every pregnant woman, provide antenatal, natal and postnatal care, provide TT immunization, PHC services, family planning services, provide maternity kits.	Female health workers and health assistants	Rs. 300 per month and Rs. 2 for each delivery			
Douthwaite et al. 2005 ⁴³ CHWs (F)	8 years of schooling		Didactic for 3 months and 1.2 months of in-service training	15 months			Uptake of contraceptive methods	PHC services	Lady health supervisors		1: 1000 population	Oxford Policy Management evaluation
Teela et al. 2009 ^{59, 73, 74} CHWs (F)		4 months of medical training previously				Refreshers were given						
Smith et al. 2000 ⁵⁷ CHWs			Didactic Trained on care during ante partum, intrapartum and postpartum period	2 weeks			Identification of pregnancies, recognition of complication, referrals, family planning, growth monitoring & immunization					

Study	Education Recruitment Criteria	Training Content	Duration	Certification / Ongoing training	Refreshers	Role	key competencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
Diakite et al.2009 ⁵⁸ CHWs		Didactic training for family planning information	3 day training			Workers maintained information system and register pregnant women and counsel and provide family planning methods					
Purdin et al.2009 ⁵⁷ CHWs (M & F)		Didactic Safe motherhood				raising awareness regarding PHC, including reproductive health	Maternal health				
Williams & Yumkela 1986 ⁵¹ TBAs (F)	Panel of nurses and midwives recruited them	Didactic Trained for clean and safe practices for delivery and recognition of complication during delivery	3 weeks training			Identify pregnancies provided safe and clean delivery and recognized complication and danger signs	Maternal and child health workers	Nurse/ midwives from health facility			WHO and UNICEF
Foster et al.2004 ⁵⁴ TBAs		Didactic They were trained to identify risk factors, good hygiene and transfer Complicated cases.	6 hours of training								Monthly meetings where they shared experiences
Yadav 1987 ⁵⁵ TBAs		Practical training They were taught on simple hygienic procedures, cleanliness and basic nutrition education				Identified pregnancies, provided ANC and PNC		Nurses	Transport cost		
Wollast et al.1993 ⁷⁹	from community	Theoretical and practical trained TBAs to deliver babies, learnt asepsis and simple obstetrical manipulations and also provided with clean delivery kit,	1 month training		2 week refresher course	Identify high risk pregnancies and evacuate to the health facility during complication	pregnancy and child birth procedure	supervised by ministry of social affairs			

Birth and Newborn Care Preparedness Interventions Background

Ninety-eight percent of the four million annual neonatal deaths occur yearly in middle and low income countries, and two-thirds or more of these deaths occur in the first week of life.⁸³ Despite large reductions in mortality for children under 5 years of age, neonatal mortality remains largely unaltered, and now contributes to over one-third of total mortality of children under five.^{83, 84} The precise contribution of various causes of neonatal deaths is difficult to ascertain since the vast majority of births and deaths occur in homes, and are thus poorly reported and categorized.⁸⁵

In an effort to improve outcomes for both mothers and their newborn infants, the “Mother-Baby Package” was introduced by the WHO in 1994.⁸⁶ The “Mother-Baby Package” consists of a set of interventions considered essential to maternal and newborn health. These include interventions such as antenatal registration and care, iron/folate supplementation, tetanus toxoid immunization, prevention and management of STIs and HIV in endemic areas, treatment of underlying medical conditions such as malaria and hookworm infestation, nutritional advice, ensuring clean delivery, presence of a trained birth attendant at delivery, recognition and management of maternal and neonatal complications, neonatal resuscitation, early and exclusive breast-feeding; and prevention and management of neonatal hypothermia and infections including ophthalmia neonatorum and cord infections.

Community-based evidence:

We identified 25 studies that were undertaken in community settings and included a comprehensive birth and newborn care preparedness plan rather than solitary interventions (Table 11A and Table 11B). Among these studies there were 11 RCTs, 4 quasi RCTs, 6 prospective pre/

post studies and 1 comparative cross sectional study. Several of these studies CHWs and/or TBAs to provide care at community level and few of these studies utilized community mobilizers for delivering these interventions in conjunction with TBAs and CHWs. Substantial improvement was observed in reducing perinatal and neonatal mortality and increasing service utilization services like institutional deliveries, deliveries by skilled birth attendants. However, Manandhar et al.⁸⁷ reported substantial impacts of interventions in reducing maternal mortality.

The CHWs and the TBAs recruited in these interventions were from the local community⁸⁸⁻⁹⁸. Their training ranged from 3 days to 6 weeks, while in Bhutta et al. 2008⁹² & Bhutta et al. 2009⁹⁷, CHWs were already trained by government and were given additional 6 days of training on birth and newborn care preparedness. The training imparted to them for interventions were mostly didactic in nature.^{88-92, 95-98, 101-104} The training content included birth and newborn care preparedness messages, provision of essential newborn care, clinical assessment of the neonates, promotion of exclusive breastfeeding and referral to hospital of newborns with danger signs^{95, 96} and management of the sick neonates with an IMCI adopted algorithm.⁹¹ They were trained to provide home-treatment of serious infection with oral chloroquine.⁹⁵ In an intervention by Bhutta et al. 2009, the CHWs were trained to provide bag and mask resuscitation in case of birth asphyxia.⁹⁷ The TBAs in this study were also trained to recognize low birth weight babies, provide them care and refer to the CHWs for further management.⁹⁷ In another study, the CHWs were trained for appropriate immunization of the infant and in the use of oral rehydration solution in case of diarrhea.¹⁰¹

In an intervention by Bhutta et al. 2008, emphasis was laid on adequate maternal nutrition, iron and folate use and rest during pregnancy and promotion of early breast feeding and colos-

CHW Snapshot 5

CARE Community Initiatives for Child Survival, Siaya, Kenya

Program overview

In 1995, CARE Kenya implemented the Community Initiatives for Child Survival in Siaya after the completion of original project which was ended in 1999. In 2003, second phase of wide-ranging intervention package aimed at improving child and maternal health in the Siaya district.⁹⁹ Community health workers in this district were trained to treat children with multiple diseases by using simplified IMCI guidelines. Promotion of family planning, immunization and AIDS prevention are also included in the education package. The CHWs are assigned to 10 households in their community. The supply of drugs in this program is based on the Bamako Initiative. Community-based pharmacies are established and serve as resupply points for the CHWs' drug kits. The CHWs sell the drugs to community members and use monies from sales to buy more drugs to restock their kits in a revolving fund scheme.⁹⁹

Operational aspects and considerations

The CHWs are selected by the community and trained to use the guidelines to classify and treat malaria, pneumonia and diarrhea/dehydration concurrently, and use flow sheets to assist in the application of these algorithms.¹⁰⁰ CHWs provide verbal referral, and referred cases are taken to the front of the line to receive treatment at facilities.

Community Health Workers, Kenya

✓ Training	3 weeks initial training
✓ Refresher	One week
✓ Supervision	Field staff
✓ Incentive	None

Coverage and effectiveness

Every two years, CDC in the United States evaluates the performance of CHWs. The recent evaluation demonstrated that 85% of the cases that the CHWs treat are classified as malaria, acute lower respiratory infection or diarrhea. CHWs adequately treated 90.5 per cent of malaria cases, but they had difficulty in classifying and treating sick children with pneumonia. Four years after the implementation of the project, a reduction 49% in the child mortality rate was noted.

Source: WHO/Unicef 2006²⁴

trums administration.⁹² They were also trained to provide treatment of neonatal pneumonia with oral trimethoprim-sulphamethoxazole.⁹² This intervention showed significant reduction in still births, NMR and MMR.⁹² It also showed improvement in institutional deliveries and initiation of early and exclusive breast feeding.⁹²

Refresher training sessions were held related to management of maternal and newborn complications in most of the interventions reviewed in this regard and showed a greater impact in the outcomes of those interventions^{91, 93, 94, 96, 97} as compared to those without refresher training.¹⁰¹ Some of the interventions were supervised by the regional supervisors.⁹⁵⁻⁹⁷ In the Bolam et al. CHWs were supervised by its principal investigators.¹⁰¹ However as compared to the studies without any supervision, the

supervised studies did not show greater impact on the outcomes.

The CHWs involved in the interventions reviewed promoted the utilization of antenatal, postpartum and neonatal care with recognition of danger signs in the neonates of the community.^{91, 92, 94, 96, 97, 103, 104} They also provided treatment of infections with oral Chloroquine e⁹⁵ and with oral trimethoprim-sulphamethoxazole in case of neonatal pneumonia.⁹² In case of diarrhea they provided the neonate oral rehydration solution¹⁰¹ and would also offer immunization services.⁹² Their role therefore can be perceived to be in compliance with the achievement of the MDG targets in reducing under-5 mortality. Besides this they also provided emergency obstetric care to the mother in case of any obstetric complication and promptly re-

ferred where needed.^{91, 94} The CHWs in Bhutta et al.2009 intervention resuscitated case of birth asphyxia using bag and mask resuscitation, while the TBAs in the same intervention were trained to offer mouth-to-mouth resuscitation.⁹⁷ The Barnes-Boyd et al. intervention worked at the improvement of psychological well being of the mothers, social support and the overall impact on the baby.⁹⁰

A few of the CHWs involved were paid stipends^{92, 96, 98} or transport cost.⁹⁷ However this did not affect the outcome as compared to the studies where the CHWs were all volunteers.^{91, 94, 95}

Conclusion

The percentage neonatal mortality contributes to the under-5 mortality ratio demands active participation from the health care teams and the community to bring a decline in these preventable deaths. The interventions reviewed have shown that the financial incentives did not affect the working of the CHWs, and as such the outcomes of those interventions. However, the additional training which demands active involvement from the CHWs, did seem to reinforce the positive outcomes of the intervention.⁹²

Table 1 1A: Birth and Newborn Care Preparedness – Characteristics of Included Studies

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Jhokio et al.2005 ⁹⁴ Larkana, Pakistan	cRCT	TBAs CHWs	Trained all TBAs for improved services for enhanced referrals, antenatal care and postpartum visits, and provided them with delivery kits. TBAs were also linked with Lady Health Workers (LHWs) in the community	TBAs were not trained and did not receive delivery kits. Routine care was delivered by LHWs	14 months	Pregnant women	No impact of intervention on mortality of mothers 30% reduction in PMR (CI: 18 – 41%) 31% reduction in still births (CI: 17 – 43%) 29% reduction in NMR (CI: 17-38%) 39% reduction in hemorrhage related complication during pregnancy (CI: 21- 53%) 50 % increased in referrals in emergency obstetric care (19 – 91%)
Baqui et al.2008 105-107 Rural, Bangladesh	cRCT	CHWs CMs	Home care arm received interventions for birth and newborn care preparedness, iron/folic acid supplementation, enhanced referrals & community care arm were mobilized through group meetings with pregnant women and community leaders. Refresher training was provided to government health workers in both the intervention groups	Comparison arm received the usual health services provided by the government, and non-government organizations and private providers. Refresher training for government workers was provided.	30 months	All married women of reproductive age	44% reduction in NMR (CI: 7 – 53%) Improved breastfeeding initiation
Bari et al.2008 ⁹⁵ Tangail, Bangladesh	cRCT	CHWs TBAs	Counsel women on birth and newborn care preparedness, made postnatal visits for enhanced referrals for sick newborns.	Routine care*	12 months	Married women of reproductive age	Health care seeking from qualified provider OR 2.98 (CI: 2-4.44) Referral to Project facility OR2.9 (CI: 1.91-4.41) Health care seeking from unqualified providers decreased to 69% (CI: 53-79%)
Bhutta et al.2008 ⁹² Hala, Pakistan	cRCT	CHWs TBAs CMs	LHWs in the interventional arm were given additional training after their usual training & they were linked with Dais (who were given training for newborn resuscitation & immediate newborn care), promotion of nutritional counseling, BNCP, enhanced antenatal and postnatal visits + training in basic and intermediate newborn care was offered to all public-sector staff	LHW training program continued as usual, with regular refresher sessions, but no attempt was made to link LHWs with the Dais. Special training in basic and intermediate newborn care was offered to all public-sector staff	24 months	Married women of reproductive age, older women and adolescent girls	No impact of intervention on maternal mortality 29% reduction in Still births (CI: 11- 43%) 31% reduction in NMR (CI: 13 – 45%) 28% reduction in PMR (CI: 15-39%) Improvement in institutional deliveries, initiation of early and exclusive breastfeeding
Darmstadt et al.2008 ^{108, 109} Uttar Pradesh, India	cRCT	CHWs	Provision of essential newborn care, birth preparedness, enhanced referrals plus thermoregulation along with all other intervention	Control arm received the usual services of governmental and non-governmental organizations in the area	16 months	Stakeholders, community leaders, pregnant women, their immediate family members, neighbors and relatives	No improvement of intervention observed in reduction in maternal mortality in intervention and control groups. 50% reduction in NMR (CI: 31-64%) among these 41% decline occurred in early neonatal period (CI: 16 – 59%) and 68% decline occurred in late neonatal period (CI: 15-88%) 47% reduction in PMR (CI: 27 – 62%) 45% reduction in still births (CI: 5-55%) 59% reduction in complication due to prolonged labor (CI: 51 – 67%) & 50% decline in eclampsia related complication (CI: 4-74%) Improvement in initiation of early breastfeeding

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Bhutta et al. 2009 ⁹⁷ HALA Pakistan	cRCT	CHWs TBAs	LHWs = Along with the basic training (for control group) they received additional training on recognition of high risk pregnancies and referral, management of Birth Asphyxia, serious bacterial infections, LBW infants. TBAs = along with the basic training (for control group) they received additional training on promotion of LHW attendance at births and resuscitation (mouth to mouth) of newborn	Trained LHWs on community mobilization through building support groups, promotion and use of clean delivery kits, recognition of neonatal illness and referral for care and TBAs were linked with LHWs	36 months	Pregnant women and whole community	No impact of intervention on maternal mortality 20% reduction in still births (CI: 10-29%) 16% reduction in perinatal mortality (CI: 9-23%) 12% reduction in neonatal mortality (CI: 1-22%) No impact on early neonatal mortality No impact observed in late neonatal mortality 24% increase in receiving at least one ANC observed (CI: 5-48%) 22% increase in birth attendance by skilled attendant (CI: 4-44%)
Azad et al. 2010 ¹¹⁰ Rural Bangladesh	cRCT	CMs TBAs	Implemented a participatory learning and action cycle in which they identify & prioritize problems, then formulate strategies and implemented & monitored and finally evaluated the process + group was again divided into two according to the trained TBAs for asphyxia or not	Control group was not provided with participatory learning groups	36 months	women of 15-49 years of age	No impact on reducing MMR No impact of intervention observed in reducing NMR (no impact on Early NMR and late NMR) No impact on intervention observed in reducing stillbirths and perinatal deaths No improvements observed in service delivery and newborn care outcomes
Tripathy et al. 2010 ^{111, 112} Jharkhand & Orissa, India	cRCT	CMs TBAs	Implemented a participatory learning cycle, through developing women's groups where they identify & prioritize maternal and newborn health problems in their community, implemented the strategies, and evaluated the results	Health committees in control clusters were formed to give Community a voice in the design and management of local health services.	36 months	women of 15-49 years of age	No impact on reducing MMR 45% reduction in NMR (CI: 33 – 55%) 55% reduction in early NMR (43 – 64%) No impact observed in Late NMR No impact observed in reducing stillbirths 31% reduction in PMR (CI: 19 – 42%)
Darmstadt et al. 2010 ¹¹³ Mirzapur, Bangladesh	cRCT	CHWs	In the intervention arm, community health workers identified pregnant women; made two antenatal home visits to promote birth and newborn care preparedness; made four postnatal home visits to negotiate preventive care practices and to assess newborns for illness; and referred sick neonates to a hospital and facilitated compliance.	standard care in the control arm	24 months	All married women of reproductive age (i.e., 15-49 years)	High coverage of antenatal (91% visited twice) and postnatal (69% visited on days 0 or 1) home visits was achieved. Indicators of care practices and knowledge of maternal and neonatal danger signs improved. Adjusted mortality hazard ratio in the intervention arm, compared to the comparison arm, was 1.02 (95% CI: 0.80-1.30) at baseline and 0.87 (95% CI: 0.68-1.12) at endline. Primary causes of death were birth asphyxia (49%) and prematurity (26%)
Manan et al. 2005 ¹¹⁴ Sylhet, Bangladesh	cRCT	CHWs	Trained CHWs who made two antenatal and three postpartum home visits to promote and support practices for birth and newborn care preparedness (BNCP) and newborn care including support for breastfeeding	No CHWs trained or deployed	24 months	Pregnant women	Absence of an early CHW visit (OR: 11.3, 95% CI: 6.7, 18.9) and feeding of pre-lacteal (OR: 2.8, 95% CI: 1.3, 5.9) were significantly associated with having a feeding problem at a late first-week visit. On adjusted analysis, absence of an early CHW visit (OR: 11.4, 95% CI: 6.7, 19.3) and feeding of pre-lacteal (OR: 2.5, 95% CI: 1.1, 5.7) continued to have significant association with feeding problem persisting at late visit.

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Bolam et al. 1998 ¹⁰¹ Khatmando, Nepal	RCT	CHWs	Group A: health education immediately after birth and three months later Group B: at birth only Group C: at three months only The topics covered were infant feeding, treatment of diarrhea, recognition of acute respiratory infection in young infants, the importance of immunization, and the importance of contraception after the puerperium.	Control group did not receive these health education teaching and counseling	18 months	women admitted to Prasuti Griha hospital for delivery residing in study areas	Mothers in groups A and B (received health education at birth) were slightly more likely to use contraception at six months after birth compared with mothers in groups C and D (no health education at birth) (odds ratio 1.62, 95% confidence interval 1.06 to 2.5). There were no other significant differences between groups with regards to infant feeding, infant care, or immunization.
Baqui et al. 2008 ^{93, 115} Uttar Pradesh, India	Quasi RCT	CHWs CMs	Trained CHWs and CMs who delivered antenatal intervention, birth preparedness, disposable delivery kit, newborn care, postnatal intervention	Received standard government health and Integrated Child Development Services	24 months	Pregnant women	No impact of intervention observed in differences of mortality. Improvement observed in institutional deliveries or conducted by skilled birth attendant, initiation of early breast feeding
Syed et al. 2006 ¹¹⁶ Rural Bangladesh	Quasi RCT	CHWs	Increased coverage of CHWs, trained health care providers and TBA, use of clean delivery kit, antenatal and postnatal visits	Available routine care was utilized in control area	20 months	Pregnant mothers and family members	Improvement observed in initiation of early breastfeeding
Turan & Say 2003 ¹⁰² Istanbul, Turkey	Quasi RCT	CHWs	The antenatal education consisted of eight daytime 2-hour. Session topics included health during pregnancy, pregnancy nutrition, preparing for childbirth, childbirth, motherhood and communication, infant feeding, infant care and health, women's health and contraception after the birth.	Routine care was provided in control areas	18 months	First time expectant mothers	behaviors related to infant health (breastfeeding and infant check-up) and contraception appeared to be influenced by participation in the program
Barnes-Boyd et al. 2001 ⁹⁰ Chicago, USA	quasi RCT	CHWs	community health workers were trained on advocacy, maternal and health issues and community internship was at the end was employed there was one group which received advocacy from trained advocate and	comparison group did not had any advocate for their counseling	60 months	African American families	IMR in experimental arm was 3/1000 and in comparison arm was 5/1000 live births PNMR among experimental arm was 2/ 1000 and in comparison arm was 5/ 1000 live births. no impact was observed in health problems in 2 arms immunization rates in experimental arm was 77% while in comparison arm it was 63% (P<0.001)
O'Rourke et al. 1998 ^{89, 117} Inquivisi, Bolivia	pre/post	CHWs TBAs	Impact of women group diagnosing, designing, implementing, and evaluating community-based solution to maternal and perinatal health problems		36 months	pregnant women	63% reduction in PMR (CI: 27-56%) 25% increase in breastfeeding rates (25.3% pre to 50.3% post intervention)
McPherson et al. 2006 ¹⁰³ Siraha, Nepal	pre/post	CHWs CMs	Birth preparedness plan, keychain containing information on antenatal, care of mother and newborn, danger sings		24 months	pregnant women	Essential newborn care preparedness increased from 20-30%. No improvement in early initiation of breastfeeding (P 0.06) No improvement in skilled birth attendants at birth (0.55) Odds of breastfeeding when exposed to messages was 4.2 (P<0.001)
Moran et al. 2006 ¹⁰⁴ Rural Burkina Faso	pre/post	CHWs	MNH program of JPIEGO focused on birth preparedness, recognition of danger sings		36 months	pregnant women given birth within 12 months	Planning for delivery from skilled birth attendant increased to 26% (P<0.001)

Study / country	Study design	Interventions		Years of study	Participants	Outcomes
		Experimental arm	Control arm			
Hadi & Ahmed 2005 ⁸⁸ Rural Bangladesh	pre/post	CHWs TBAs	trained TBAs were trained for promotion of ANC and PNC services, awareness of complications, early and exclusive breastfeeding, promoting institutional delivery, nutrition supplement and education, care for LBW neonates and refer severe children to hospitals Safe home deliveries, knowledge of signs of sick neonates, manage complications at home, promote antenatal care, referral of the sick newborns to clinics, nutrition supplementation.	24 months	pregnant women	TT immunization of 4 + shots in intervention areas were 31.2% compare to 17.8% in control areas. TT coverage in intervention areas were 93% & 75% in control areas PNC visits in intervention areas was 53% and 9% in control areas LBW among intervention areas was 27% while in control areas 32% PMR in intervention areas was 63/1000 live births and in control areas it was 84/1000 population NMR in intervention areas was 49/1000 live births and in control areas it was 34/1000 population SBR in intervention areas was 42/1000 live births and in control areas it was 38/1000 population
Cordon & Fonseca-Becker 2004 ⁸² Guatemala	pre/post	CHWs	CHWs encouraged families and communities to develop emergency plans (Eps) to help make timely decisions to seek qualified medical care in the event of an obstetrical or neonatal emergency. The plans detailed maternal danger signs and the necessary preparations for childbirth both at the family level (knowing where to go, how much money needs to be on hand, and who will take care of the house and the other children)	24 months	Pregnant women	Almost a third of women (29%) and men (31%) in the follow-up were exposed to some aspect of the program's activities and messages. 66% of exposed women recognized that severe bleeding is dangerous, compared to 31% in the baseline and 51% of exposed men recognized the danger of severe bleeding, compared to 22% in the baseline. Exposed women (93%) in the follow-up were significantly more likely to believe that a woman should receive prenatal care from a skilled provider than non-exposed women (72%), and women in the baseline (66%)
Fullerton et al. 2005 ¹¹⁸ Uttar Pradesh, India	pre/post	CHWs	Mothers & their home birth attendants were taught to recognize & take action to resolve selected maternal & neonatal life-threatening problems. Community mobilization efforts were designed to reduce delays in transport to emergency obstetric care referral units and to increase use of family planning maternal bleeding and newborn sepsis was enhanced	48 months	Pregnant women	The percentage of increase in acceptance of tetanus Toxoid immunization (From 37% to 76%) and the ingestion of iron supplements (from 1% to 36%) Maternal deaths decreased from 1.5% to 0.4% (P=0.053)
Julnes et al. 1994 ⁹⁸ Richmond, Newport News, and Norfolk, USA	comparative cross sectional survey	CHWs	The Resource Mothers Program (RMP) supports disadvantaged teens through the use of para-professional home visitors who are similar to the teens in race and socio-economic status. In addition to recruiting teens into the program and encouraging early prenatal care, the Resource Mothers Program provides teen mothers and their families with practical help and increases community awareness regarding infant mortality and adolescent pregnancy.	-	teen mothers and her family	When compared with a traditional clinic-based multi-disciplinary program (MDP) using health professionals, the Resource Mothers Program reached a higher percentage of high-risk adolescents (e.g., 75.5% RMP vs. 45.6% MDP clients aged 17 years old or under), promoted a higher level of prenatal care (e.g., 53.1% RMP vs. 32.6% MDP clients beginning prenatal care before the fourth month of pregnancy), and resulted in pregnancy outcomes that favored the MDP but were comparable (e.g., 89.8% RMP vs. 93.5% MDP client babies were over 2500 grams at birth).
Walraven et al. 1995 ¹¹⁹ Kwimba, Tanzania	Comparative sectional Study Trained vs. UTBA	TBAs	In this study perinatal mortality was observed among women delivered at home vs. those delivered via trained skilled birth attendant.	During 1990	Pregnant women	Occurred in home births 76% perinatal deaths. Risk ratio for perinatal deaths among home births was 3.29 (95% CI: 1.28-9.22) as compared to those delivered via skilled birth attendants at dispensaries and clinics

Darmstadt 2008⁹⁶ Cairo, Egypt

qualitative TBAs

Traditional birth attendants (Dayas) conducted most deliveries. Advice was rare, except for breastfeeding

- pregnant women

Suboptimal practices included lack of disinfection of delivery instruments, unhygienic cord care, lack of weighing of newborns, and lack of administration of eye prophylaxis or vitamin K.

Table 11B: Characteristics of Outreach Workers in Birth and Newborn Care Preparedness activities

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key compe- tencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Jhokio et al.2005 ⁹⁴	TBAs from community		Didactic and Practicum They were trained on ante partum, intrapartum, and postpartum care; how to conduct a clean delivery; use of the disposable delivery kit; when to refer women for emergency obstetrical care; and care of the newborn.	3 days training		1 days refresher 3-4 times during the study	Register all pregnant women and inform LHW. They were asked to visit each woman & pregnancy to check for dangerous signs & to encourage women with such signs to seek emergency obstetrical care.	Antepartum, intrapartum and post-partum care, Emergency Obstetrical Care; Neonatal care	Unpaid		1 TBA per 1000-5000 population	Follow up done by LHW who asked
TBAs (F)												
Baqiu et al. 2008 ¹⁰⁵⁻¹⁰⁷	Recruited from community		Hands-on supervised training The training included skills development for BCC, provision of essential newborn care, clinical assessment of neonates, & management of sick neonates with an IMCI adopted algorithm	6 weeks		Refresher training sessions for management of maternal and newborn complications	ANC visits to promote BNCIP, iron & folic acid supplementation postnatal home visits to assess newborns on the first, third, and seventh days of birth, & referred or treated sick neonates.	Perinatal care Emergency Obstetrical care Management of childhood illnesses			1 CHW per 4000 population	
CHWs (F)												
CMs (M & F)	Recruited from community		Didactic They held group meetings for the dissemination of BNCIP messages.			Management of maternal and newborn complications	disseminated of birth and newborn-care preparedness messages				1 CM per 18000 population	
Bariet al.2006 ⁹⁵	These CHWs had a minimum of 10th grade education	Resided in the population they would serve	Didactic. The CHWs were trained to carry out bi-monthly pregnancy surveillance and made home-visits in the third and the eighth month of pregnancy to counsel families on (BNCIP). After delivery, the CHWs made home-visits to promote evidence-based domiciliary newborn care and to identify and refer sick newborns, home-treatment of serious infection with oral co-trimoxazole.	1 month			(a) Behavior change communication, (b) identification and referral of sick newborns in the community, and (c) strengthening of neonatal care in health facilities.	Maternal and child health	The Field Supervisors		1 CHW per 4000 population	Data presented from the project MIS
CHWs (F)												

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
TBAs (F)			Trained TBAs to promote referral to hospital for newborns with danger signs.						Regional program supervisor			
Bhutta et al. 2008 ⁹² CHWs (F)	At least 8 years of schooling	Women from local communities, with at least 8 years of formal education and 6 months of training to deliver healthcare in the home	Didactic. Standard curriculum included: Promotion of ANC; iron and folate use in pregnancy; Immediate newborn care; Cord care; Promotion of exclusive breastfeeding. Additional curriculum: Promotion of adequate maternal nutrition and rest; Early breastfeeding & colostrum administration; thermoregulation; Home care of low-birth-weight infants; Treatment of neonatal pneumonia with oral trimethoprim-sulphamethoxazole; Recognizing sick newborns and danger signs requiring; Training in group counseling & communication strategies	Standard 18 months training from government and 6 days extra training for this study		conducted community education group sessions. They should liaise closely with Dais and medical staff at basic health units or rural health centers to monitor growth and to provide antenatal care, contraceptive advice and immunization services.	Essential maternal and newborn care, contraceptive advice and immunization services		Regionally	Approximately US\$ 30 per month plus local travel costs.	1 CHW per 1000 population	External evaluation done and found
TBAs (Female)			Theory and practicum Trained in basic newborn care for Dais, which included basic resuscitation and immediate newborn care.	3 days		Encouraged health maternal and newborn education, recognition of newborn danger signs	Basic resuscitation and immediate newborn care.			Cost of transport & meals		
CMS (Female)			Theory and practicum Trained in basic newborn care for Dais, which included basic resuscitation and immediate newborn care.			Supported LHWs in conducting 3-monthly group education sessions & helped to establish an emergency transport fund for mothers and newborns.						

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
Darmstadt et al. 2008, 108, 109	12 years or more of education	Recruited from the local community proficient in communication & reasoning skills,	Theory and practicum A combination of classroom-based and apprentice ship-based field training on knowledge, attitudes, and practices related to essential newborn care within the community, behavior change management, and trust-building	7 days training		Regional program supervisors had daily	Essential newborn care, Thermal care, breast feeding, counseling, danger sign recognition, behavior change management and trust building	Maternal and child health	supervised by a regional program supervisor who were responsible for 6-7 Saksham Sahayaks (CHWs)		\$30-40/month	two door-to-door inquiries
CHWs (F)												
Bhutta et al. 2009 ⁹⁷	8 years of education	Local CHWs trained by LHW national program working in community were recruited	Didactic and practicum Recognition of high risk pregnancies, referral. Recognition of domiciliary management of birth asphyxia by bag and mask resuscitation. & bacterial infections as per protocol preventive care of LBW infants	5 days		monthly refresher group sessions	Attendance at birth Routine postnatal visit for the mother and newborn within 48 hours after birth	Maternal and neonatal health and resuscitation	Lady health worker supervisors trained CHWs	Transport cost		Surveys.
CHWs (F)												
TBAs (F)		Local TBAs from community were recruited	Theory and practicum they were trained on promotion of LHW attendance of births; newborn resuscitation (mouth to mouth); standardized maternal post-partum care	3 days		monthly refresher group sessions were arranged in which problems encountered were discussed and resolved	Promotion of antenatal care sessions led by LHWs. To deliver perinatal care, & conduct delivery in the presence of LHW & to recognize LBW infant & sick newborn, provide care and refer LHWs for further management and referral.	Maternal and neonatal health and resuscitation				evaluation of the
Manandhar et al. 2004 ⁸⁷ , 120-122		Nominated by leaders, adviserment, after which all potential candidates were interviewed	Didactic They were given brief training in perinatal health issues				Organize monthly meetings to address obstetric and perinatal problems		1 supervisor for every 3 facilitator		1 CHW per 7000 population	
CMs (F)												

Study	Education Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Manan et al. 2005 CHWs (F)	CHWs recruited from community	Didactic and practical Training on essential newborn care, which included an 8-h module on breastfeeding counseling & support, followed by a 6-h practical session on observation & assessment of breastfeeding and a 4-h practical session on counseling. Topics covered included importance & basic features of breastfeeding. Training methods included lectures, hands-on demonstration & practical exercises with real-life postpartum breastfeeding mothers & video-guided lessons.	21 days		Refresher training was organized on areas needing improvement in assessing & supporting breastfeeding mothers.	Early post partum visits between days 1 to 3, 4 to 5 and 6 to 7 of birth. To ensure best practices with regard to breast feeding	Breast feeding guidance, counseling, motivation, negotiation and demonstration	A female trainer observed each trainee CHW while assessing a new breastfeeding mother, using a structured checklist.	1 CHW per 4000 population		
Bolam et al. 1998 CHWs	fluent in the two local languages, Nepali and Newari	Didactic. Trained for promotion of exclusive breast feeding, appropriate immunization of infant, knowledge of oral rehydration solution in case of diarrhea, infant signs suggesting pneumonia and uptake of postnatal family planning.				Conducted first education session before discharge from the hospital and second education session was conducted in the mothers' home three months after delivery	Maternal and newborn health	monitored weekly during the trial by two principal investigators			
Baqui et al. 2008 CHWs (F)	Recruited from community	Hands-on supervised Training included skills development for behavior-change communication, provision of essential newborn care, clinical assessment of neonates, and management of sick neonates with an IMCI adopted algorithm	6 weeks		Refresher training sessions for management of maternal and newborn complications	ANC visits to promote birth and newborn-care preparedness, iron & folic acid supplementation postnatal home visits to assess newborns on the first, third, and seventh days of birth, & referred or treated sick neonates.	Mother & newborn care		1 CHW per 4000 population		

Study	Education Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
CMs (M & F)	Recruited from community	Didactic They held group meetings for the dissemination of BNCIP messages.			Management of maternal and newborn complications	disseminated of birth and newborn-care preparedness messages	Mother & newborn care			1 CM per 18000 population	
Turan & Say 2003 102		Didactic antenatal education. Session topics included health during pregnancy, nutrition, preparing for childbirth, childbirth, motherhood & communication, infant feeding, infant care & health, women's health & contraception after the birth.			Conducted antenatal education sessions for first-time expectant mothers	Maternal & newborn health					Their effectiveness was evaluated by pre and post tests and a household survey.
CHWs (F)											
Barnes-Boyd et al 2001 90	Literate	Didactic Training and field experience	6 months	Maternal Child Health Advocates		To develop a supportive relationship with the mother and to model problem-solving skills. This helped to improve mothers' psychological well-being and their perceived level of social support.	Community health education with special emphasis on maternal-child health issues.		Hourly minimum wage payment without benefits		
CHWs	Residents of the serving community, reliability, literacy, and history of volunteering service	in the concepts of community health, health prevention practices and promotion, social problems that impact infant health and maternal-child health issues									
O'Rourke et al 1998 89, 117	selected from community	They were trained to increase knowledge of reproduction, contraceptive use, danger signs of complications, and self-care, (b) improve immediate newborn care, and (c) increase the percentage of women who receive delivery care from trained birth attendants				Health education and counseling					evaluated by obstetric behavior before and after the intervention
CHWs (F)											
TBAs (F)	local TBAs	TBAs were trained for management of childbirth			Conducted safe deliveries	home deliveries					
McPherson et al 2006 103		Trained for on counseling techniques for small groups and individuals and the use of BPP tools. Key chain focus on four areas of birth-planning:	2 days + 3 additional days			increasing knowledge of community members and practice of beneficial household behaviors and increasing the use of maternal and newborn health services desired behavior for	Inter-personal counseling skills with individuals and groups towards desired behavior for			Maternal and newborn health	
CHWs (F)											

Study	Education Recruitment Criteria	Training Content	Duration	Certification / Ongoing training	Refreshers / Ongoing training	Role	key competencies	Supervision (if any)	Incentive coverage	Evaluation mode
		antenatal care; care for the mother & newborn during and after delivery; danger signs in women and newborns; and financial and logistical preparations for pregnancy, delivery, & postnatal period.					maternal and neonatal care by use of BPP.			
CMs (Female)		Trained on counseling techniques for small groups and individuals and the use of BPP tools.	Two days					CHWs visited them once every 3-4 months.		
Moran et al. 2006 ¹⁰⁴ CHWs (F)		hands-on problem-solving approach Knowledge of birth preparedness package, complication readiness and recognition of danger signs				Provided one-on-one counseling with pregnant women and their families on key messages focused on birth-preparedness and complication readiness and recognition of danger signs using a flip-chart	Counseling and intrapersonal communication skills			
Hadi & Ahmed 2005 ⁸⁸ TBAs (F)	local TBAs were selected	TBAs were trained by Physicians and midwives, and they were trained for behavior change communication and essential newborn care management				Identification of Pregnant women, antenatal interview before two weeks of the delivery, interview at 48 hours after delivery & follow-up interviews after 4 weeks of delivery.	Communication skills for desired behavior and neonatal care	health providers (community midwives) supervised TBAs		
Julnes et al. 1994 ⁹⁸ CHWs (F)	women from the community to serve as resource mothers for pregnant teens	Didactic Training Trained to assist adolescent parents and their families with the non-medical dimensions of pregnancy and child care.				To provides teen mothers and their families with practical help and increases community awareness regarding infant mortality and adolescent pregnancy. Also acts as a liaison between the teens and the relevant public agencies.	Maternal and newborn health	Paid		
Darmstadt 2008 ⁹⁶ CHWs (F)		Trained to provide antenatal, intrapartum and early postnatal	1 day training			Register pregnant women, recognized danger signs, intrapartum & immediate neonatal care including resuscitation, thermal control and skin care.				

Promotion of Breastfeeding Background

Each year about 10.8 million children die because of preventable causes and almost all from poor countries.¹²³ Most of these deaths can be reduced through universal coverage of simple interventions like breastfeeding and estimates predict that improved breast-feeding practices could save the lives of 1.5 million children per year.¹²⁴ The World Health Organization and UNICEF recommend exclusive breastfeeding for first six months of life and appropriate complementary foods after six months along with breastfeeding until two years and beyond.^{125, 126} However, exclusive breastfeeding and appropriate complementary feeding are far from optimum. In developing countries rate of exclusive breastfeeding ranges between 30-50%, while equally unsatisfactory rate for complimentary feedings has been observed.¹²⁷ Low rates of breastfeeding brings along a high burden of childhood illness like recurrent diarrhea, ARI, and other infections resulting to poor nutritional status of children. Several studies done in developed countries have consistently shown that duration of breastfeeding has been associated with reduced risks of childhood/adolescent obesity and some chronic diseases in adulthood. The major challenge is now how to improve the breastfeeding practice to ensure universal coverage. Studies done in developing countries have shown that effective breastfeeding counseling can improve the rate of exclusive breastfeeding substantially. An important aspect of community-based breastfeeding promotion is the home based peer counseling, which involves training lay health workers to contact and advice peers from the same community. The peer counseling intervention further improves its rate. We therefore have separately analyzed the effect of promotion of breastfeeding counseling by CHWs on breastfeeding rates, a subset indicator of MDG.

Community-based evidence

Twenty three studies were identified, of which

eleven were conducted in high income countries,^{128,129,130,131,132,133,364} seven in middle income countries^{134,135,136} and five from lower income countries.^{137,138,139,140,141} Interventions in Quinn et al. 2005¹³⁷ were delivered in three study sites (countries) Madagascar, Bolivia and Ghana. Studies included 10 RCTs, 3 Quasi RCTs, 3 pre/post studies, and 1 comparative cross sectional study (Table 12A & Table 12B) in which breastfeeding was either promoted by peer counselors or volunteers from community.

In some studies breastfeeding was initiated during the antenatal period usually during hospital visits by pregnant women. During postnatal period most interventions were delivered during home visits by CHWs but occasionally were delivered by telephone. This was the main mode of delivery in Dennis et al.¹³⁰ and Graffy et al.¹⁴² In some cases breastfeeding counseling was done during both antenatal and postnatal period.^{138,139}

In the included studies, CHWs were particularly playing a role of peer counselors selected from community, except in two cases where the nature of their interaction with mother or women was not clearly defined.^{129,133} Peer counselors were usually women from community and had previous experience of breastfeeding their own children and were more extensively trained than CHWs. Our disaggregated analysis on results revealed no difference in the impact of outcomes and both of these workers managed to create a positive result in increasing early and exclusive breastfeeding rates.

Few studies clearly mentioned their training part and the certified programs and boards which had accredited them for lactation program.^{131,142} Agrasada et al.¹³⁴ and Morrow et al.¹³⁶ found improvements in exclusive breastfeeding rates as compared to Graffy et al.¹⁴² A large proportion of these studies provided one to one counseling at mother's homes.

On the other hand, few studies used telephonic counseling mechanism for promotion of breastfeeding^{130, 142} The main objective of all these studies was to promote breastfeeding by clarifying their misconceptions and improving their understanding on direct advantages of breastfeeding.

In Morrow et al.¹³⁶ breastfeeding education based on six visits was compared with three visits counseling, and significant results were found in 6 visits breastfeeding education, with the reason that women obtained information at each phase of their breastfeeding, and with time became comfortable with their peer volunteers and started sharing with them all the problems related to breastfeeding and started following their guidance effectively. In another study, breastfeeding counselor was compared with counselors trained for general care; it was found that rates of exclusive breastfeeding among women counseled by breastfeed counselors were higher as compare to general care counselor.

In a few studies CHWs were paid and were given a monthly wage ranging from USD 12 per hour¹³¹ to USD 100-120 /month,¹³⁵ but this salary did not show an added benefit in increasing initial and exclusive breastfeeding rates.^{131, 134, 135, 138}

Conclusion

Improved breastfeeding rates plays a major role for achieving health and nutrition related to MDGS goals. Breast feed is the first and most important food in newborns life can help them protect against major infections through strengthening defense mechanism. Many preventable deaths among neonates can be averted through proper and timely initiation and continuation of breastfeeding. CHWs show promising benefits in breastfeeding rates as compared to usual care. Their contextual factors in increasing the rates of breastfeeding by mothers only had an impact when they were professionally trained by accredited body. However, the additional training and mode of training

CHW Snapshot 6

CARE Peru Enlace and Redes Program

Program overview

CARE Peru, in close collaboration with both the ministry of health and community health promoter associations and committees (APROMSA and COPROMSA), has supported community health workers program through the child survival projects Enlace (1996–2000) and Redes (2000–2004). Within this program, the CHWs are responsible for case management of diarrhea and acute respiratory infection and refer cases needing care at higher facilities. The CHWs are also responsible for mapping out the population, but they identify and track households with young children and pregnant women¹⁴³.

Operational aspects and considerations

The comunitarios de salud, both men and women, are selected by the communities in which they serve. Each health centre under the ministry of health is responsible for training its corresponding community health workers. Supervision and support are provided by facility-based ministry of health personnel, as well as promoter associations. Through both active and passive detection, CHWs locate and refer cases to the nearest health facility.

Community Health Workers, Peru

- ✓ **Refresher** Regular meetings
- ✓ **Supervision** Promoter association

Coverage and effectiveness

During the Enlace program, more than 70 per cent of individuals in need of facility-based care were referred from communities with referral slips, and approximately 50 per cent of these referred cases were counter-referred to the CHW for follow-up. Over the five years of this project, the follow-up visits (counter-referrals) of CHWs increased from 40 per cent of sick children monitored at baseline to 81% monitored during the final evaluation.

Source: WHO/Unicef 2006²⁴

demands active involvement of CHWs with community though direct visitation to women did seem to reinforce the positive outcomes of the intervention.

Table 12A: Promotion of Breastfeeding – Characteristics of Included studies

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Haider et al. 2000 ¹³⁸ Dhaka, Bangladesh	cRCT	PCs	PCs were trained and visited mothers at 10 times during antenatal and postnatal period. They mothers and key family members about importance of exclusive breastfeeding, early breastfeeding, discouraging prelacteal and post lacteal foods and proper positioning of breastfeeding, further they advised mothers of healthy nutrition diet.	No PCs were recruited for control group.	-	Pregnant women aged 16–35 years, with no more than 3 living children	Proportion of infants breastfed at the end of 5 months was > 70% in the intervention areas compare to <10% in control areas.
Leite et al. 2005 ¹³⁵ Fortaleza, Brazil	RCT	PCs	Mothers in intervention arm were taught on correct positioning of breastfeeding, early and exclusive breastfeeding	The control group received no specific intervention. They were instructed to seek out their local health service facility in case of any health problems.	-	mothers who had given birth	The intervention increased exclusive breastfeeding (24.7% vs. 19.4%; $p = 0.044$), delayed the introduction of formula and increased the time infants substituted breastfeeding to bottle milk (bottle milk 33.4% in the control group and 20.1% in the intervention group; $p = 0.0002$). When comparing the frequency of artificial breastfeeding versus all other forms of breastfeeding (exclusive+ predominant + partial), the intervention increased breastfeeding rates in 39% ($RR = 0.61$; CI 95%; 0.50–0.75); 15% of children were free from artificial feeding (absolute risk reduction)
Dennis et al. 2002 ¹³⁰ Toronto, Canada	RCT	PCs	Women allocated to the peer support group had access to all of the conventional support services that control group was availing, in addition to being paired with a peer volunteer, and they were given support and education related to breastfeeding through these counselors	Women allocated to the control group had access to the conventional in hospital & community postpartum support services such as those provided by hospital-based nursing and medical staff	15 months	In-hospital, primiparous, breastfeeding women of 16 yrs of age, had a singleton birth at 37 wks gestation or later & resided in the local region	More mothers in the peer support group than in the control group continued to breast-feed at 3 months post partum (81.1% v. 66.9%, $p =$ and did so exclusively (56.8% v. 40.3%, $p = 0.01$) Breast-feeding relative risk were 1.10 (95% confidence interval [CI] 1.01–2.72) at 4 weeks, 1.13 (95% CI 1.00–1.28) at 8 weeks and 1.21 (95% CI 1.04–1.41) at 12 weeks post partum
Bhandari et al. 2003 ¹³⁹ , 144 Haryana, India	cRCT	CHWs	TBA, CHWs and nutrition workers in the intervention communities to counsel mothers for exclusive breastfeeding at multiple opportunities. Worker assessed and provided information on the benefits of exclusive breastfeeding. At age 3 and 6 months, mothers & infants were visited at home by a member of the study team to ascertain exposure to different counseling sources, the details of counseling received, and any instances of disease in the infant in the past 3 months.	Routine services were provided at the control sites.	50 months	mothers of infants	At 3 months, exclusive breastfeeding rates were 79% (381) in the intervention and 48% (197) in the control communities (odds ratio 4.02, 95% CI 3.01–5.38, $p < 0.0001$). The 7-day diarrhea prevalence was lower in the intervention than in the control communities at 3 months (0.64, 0.44–0.95, $p = 0.028$) and 6 months (0.85, 0.72–0.99, $p = 0.04$). The mean weights and lengths, and the proportion with weight-for-height or height-for-age Z scores of 2 or less, at age 3 months and 6 months did not differ much between groups.

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Morrow et al. 1999 ¹³⁶ , 1425 San Pedro Martir, Mexico	RCT	PCs	Control-group mothers with lactation problems were referred to their own physicians. No other sources of breastfeeding counseling were available in the community	Control-group mothers were referred to their own physicians. No other sources of breastfeeding counseling were available in the community	21 months	Included were mothers residing in study area whose youngest child was < 5 years of age	At 3 months post partum, exclusive breastfeeding was practiced by 67% of six-visit, 50% of three-visit, and 12% of control mothers (intervention Groups vs. controls, p<0.001; six-visit vs. three-visit, p=0.02). Duration of breastfeeding was significantly (p=0.02) longer in intervention groups than in controls, and fewer intervention than control infants had an episode of diarrhea (12% v s 26%, p=0.03).
Chapman et al. 2004 ¹³¹ , 146, 147 New England	RCT	PCs	Exclusive breastfeeding peer counseling Support offering 3 prenatal home visits, daily perinatal visits, 9 postpartum home visits, and telephone counseling as needed.	Women assigned to the control group (CG) only received conventional breastfeeding education prenatally from the Women's Ambulatory Health Services clinic staff	18 months	Expectant mothers, less than 32 weeks gestation and considering breastfeeding	At 3 months, 97% in the Control Group and 73% in the Peer counseling group had not exclusively breastfed (relative risk [RR] = 1.33; 95% CI, 1.14-1.56) during the previous 24 hours. The likelihood of nonexclusive breastfeeding throughout the first 3 months was significantly higher for the Control Group than the Peer Counseling Group (99% vs. 79%; RR=1.24; 95% CI, 1.09-1.41) The likelihood of having 1 or more diarrheal episode in infants was cut in half in the Peer Counseling Group (18% vs. 38%; RR=2.15; 95% CI, 1.16-3.97).
Agrasada et al. 2005 ¹⁴⁸ Manila, Philippines	RCT	PCs	Two intervention groups receiving home based counseling visits, one by counselors trained in breastfeeding counseling, the other by counselors trained in general childcare	control group of mothers who did not receive counseling	19 months	mothers with > 18 years, vaginally delivered a LBW singleton & intended to breastfeed	At 6 mo, 44% of the breastfeeding counseled mothers, 7% childcare-counseled mothers and none of the mothers in the control group were exclusively breastfeeding
Graffy et al. 2009 ¹⁴² London & south Essex, England	RCT	PCs	Counselors visited women once before birth and offering postnatal support by telephone or further home visits if requested. At the antenatal visit the counselors gave the women a contact card and two leaflets.	No support provided to control group	40 months	Women considering breast feeding.	Offering support in breast feeding did not significantly increase the prevalence of any breast feeding to six weeks (65% (218/336) in the intervention group and 63% (213/336) in the control group; relative risk 1.02, 95% confidence interval 0.84 to 1.24). Survival analysis up to four months confirmed that neither duration of breast feeding nor time to introduction of formula feeds differed significantly between control and intervention groups.
MacArthur et al. 2009 ¹²⁹ Birmingham, England	cRCT	PCs	An antenatal peer support worker service planned to comprise a minimum of two contacts with women to provide advice, information, and support from approximately 24 weeks gestation within the antenatal clinic or at home	Women in the control clusters received standard antenatal care, which included usual information and advice from midwives on breast feeding, without input from community peer support workers.	5 months	All pregnant women	The groups did not differ for initiation of breast feeding: 69.0% (747/1083) in the intervention group and 68.1% (896/1315) in the control groups; cluster adjusted odds ratio 1.11 (95% confidence interval 0.87 to 1.43).

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Frank et al. 1987 ¹³³ Boston, USA	RCT	PCs	The first intervention, research breast-feeding counseling, consisted of an individualized 20- to 40-minute postpartum counseling session in the hospital by a trained counselor, followed by eight scheduled telephone calls from the counselor when the infant was 5, 7, 14, 21, 28 days of age and 6, 8, and 12 weeks of age.	Routine counseling by hospital staff	16 months	delivered women	Women who received the research discharge pack, compared with those who received the commercial pack, were more likely to prolong exclusive breast-feeding ($P = .004$, one-tailed), to be partially breast-feeding at 4 months postpartum ($P = .04$, one tailed), and to delay the daily use
Frank et al. 1987 ¹³³ Boston, USA	RCT	PCs	We evaluated the single and combined effects of introducing a motivational video and peer counseling into four matched WIC clinics on breastfeeding initiation and continuation at 7-10 days	control group did not receive interventions	7-10 days	African-American WIC participants	Trends toward a positive impact of the breastfeeding promotion activities were evident but weak, and largely gone by 7-10 days postpartum.
Anderson et al. 2005 ¹⁴⁷ USA	RCT	PCs	Women assigned to the peer counseling group were offered 3 prenatal home visits, 9 postpartum home visits, and daily in-hospital visits during postpartum hospitalization, from the assigned peer counselor (in addition to the routine breastfeeding support received by the control group). During the prenatal visits, the woman was provided with an opportunity to watch a breastfeeding video. The family was also encouraged to participate in the education, especially the person expected to support the woman after delivery. The mothers could contact the mothers by phone if they had any urgent breastfeeding problems between visits. The assigned peer counselor also visited the mother-infant pair at least once a day starting within 24 hours after delivery and continued for as long as the dyad remained hospitalized	Control group did not receive interventions	3 months	18 yrs or older, gestation age of 32 weeks or younger, healthy and absence of any medical condition (diabetes, hypertension, HIV/AIDS or using illegal drugs)	At hospital discharge, 24% in the CG compared with 9% in the PC had not initiated breastfeeding, with 56% and 41%, respectively, nonexclusively breastfeeding. At 3 months, 97% in the CG and 73% in the PC had not exclusively breastfed (relative risk [RR] = 1.33; 95% CI, 1.14-1.56) during the previous 24 hours. The likelihood of nonexclusive breastfeeding throughout the first 3 months was significantly higher for the CG than the PC (99% vs. 79%; RR=1.24; 95% CI, 1.09-1.41). Mothers in the CG were less likely than their PC counterparts to remain in at 3 months (33% vs. 52%; RR=0.64; 95% CI, 0.43-0.95). The likelihood of having 1 or more diarrheal episode in infants was cut in half in the PC (18% vs. 38%; RR=2.15; 95% CI, 1.16-3.97).
Muirhead et al. 2006 ¹⁵⁰ Urban Scotland	RCT	PCs	Received normal breastfeeding support as in control. 2 peer supporters was assigned to each mother and they visited mothers in antenatal period	normal breastfeeding support by community midwife for the first 10 days. Plus they were given breastfeeding support groups and breastfeeding workshops	4 months	women of 28 weeks of gestation from general practice in Scotland	The median breastfeeding duration for all women in the peer support group was 2 days compared to 1 day for the control group and the Kaplan-Meier survival plot shows the peer support group overall breastfeeding slightly longer than the control group, with no statistically significant difference by log rank test ($P = 0.5$).
McInnes et al. 2000 ¹³² Glasgow, USA	Quasi RCT	PCs	Intervention comprised peer counseling of pregnant women, support of breastfeeding mothers and local awareness raising activities	Women in control area was given teaching at health center	24 months	Pregnant women	At delivery, the proportion initiated breastfeeding were 23% of the intervention subjects and 20% of the control. At 6 weeks of postnatal period the proportion in intervention areas was 10% and in control area it was 8%

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Schafer et al. 1998 ¹²⁸ Iowa, USA	Quasi RCT	PCs	volunteers taught a series of in-home, one-to-one lessons about healthy diet and breastfeeding, and maintained informal contact to answer	no significant breastfeeding promotion programs	24 months	Pregnant women	Eighty-two percent of intervention compared with 31 percent of control group women initiated breastfeeding. Mean duration of breastfeeding for intervention and control group women was 5.7 and 2.5 weeks, respectively. At 4 weeks, 56 percent of intervention and 10 percent of control group women were still breastfeeding.
Davies-Adetugbo et al. 1997 ¹⁴¹ Osun, Nigeria	Quasi RCT	CHWs	The training of health workers on breastfeeding and lactation management is to enable them make correct breastfeeding recommendations to mothers.	In control arm, no training was provided to CHWs	-	Pregnant women	The results show that the training was the most powerful predictor. CHW recommendations on breastfeeding (OR 60.25, p=0.000), and of 'perfect' breastfeeding knowledge (OR= 1.92,49, p=0.000). Younger CHWs (in the age bracket 20 to 29 years) were significantly more likely to make correct recommendations on exclusive breastfeeding (OR=3.02, p=0.0304).
Quinn et al. 2005 ¹³³ Madagascar	pre/post	CHWs	Trained CHWs who disseminated messages through a combination of interpersonal communication strategies (health worker to mother, community worker to mother, mother to mother), group activities and community mobilization, and mass media (Radio, television, and print). Women were reached through small- and large-group activities; one-on-one counseling in homes and they promoted breastfeeding via songs performed by women's groups & musical troupes, and community mobilization events such as local theater, health fairs, and festivals celebrating breastfeeding & child health days.		36 months	pregnant women, grandmother and other decision makers such as grand fathers and husbands	infants breastfed within one hour of birth increased from 34% pre intervention to 78% post intervention infants exclusively breastfed in 24 hours increased from 46% pre intervention to 68% post intervention infants breastfed within one hour of birth increased from 56% pre intervention to 74% post intervention infants exclusively breastfed in 24 hours increased from 54% pre intervention to 65% post intervention
Quinn et al. 2005 ¹³³ Ghana	pre/post	CHWs			24 months		infants breastfed within one hour of birth increased from 32% pre intervention to 40% post intervention infants exclusively breastfed in 24 hours increased from 68% pre intervention to 79% post intervention
Coutinho et al. 2005 ¹⁴⁷ Brazil	comparative cross sectional	CHWs	The main objective was to compare the hospital-based intervention (BFHI training of maternity staff) with a combined hospital-based and community-based intervention (BFHI training and postnatal home visits). The primary outcome measure was rates of exclusive breastfeeding from birth to 6 months.		5 months	mothers delivered a baby	The hospital-training intervention achieved a high rate (70%) of exclusive breastfeeding in the hospitals, but this rate was not sustained at home and at 10 days of age only 30% of infants were exclusively breastfed. The patterns of exclusive breastfeeding in the two trial groups for days 10–180 differed significantly (p_0.0001), with a mean aggregated prevalence of 45% among the group assigned home visits compared with 13% for the group assigned none. 25% failed to breastfed their child.
Haider et al. 1997 ¹⁴⁸ Dhaka, Bangladesh	Gross sectional survey	CHWs	mothers were individually counseled by CHWs to breastfeed their infants aged 1–12 weeks who have been admitted with acute diarrhea		2 weeks of follow up	partially breast fed infants	
Nakhunda et al. 2006 ¹³⁶	Qualitative survey	PCs	After training CHWs returned to their communities and started supporting breastfeeding peers			pregnant women	They identified common breastfeeding problems as "insufficient breast milk", sore nipples, breast

engagement, mastitis and poor positioning at the breast. They further observed that most of these problems were eased by correct positioning of the baby at the breast. The peer counselors were easily accepted by their communities. The mothers were happy to have someone within their community helping them with their breastfeeding problems.

Table 12B: Description & Characteristics of Outreach workers

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Haider et al. 2000 ¹³⁸	At least 4 years schooling,	Women with breastfeeding experience, willingness to help other mothers breastfeed,	Didactic demonstrations and role play WHO/UNICEF breastfeeding counselling course and King's book were used as guides. Were taught by demonstrations and role play and included.	10 days (4 h daily) Worked Part-time			They mothers & key family members about importance of exclusive breastfeeding, early breastfeeding, discouraging prelacteal and post lacteal foods and proper positioning of breastfeeding, further they advised mothers of healthy nutrition diet.	Counseling skills for encouragement of breast feeding. Prenatal and postpartum counseling	Their performance was monitored at least thrice over the total study period by two breastfeeding supervisors.	(£16 [US\$22.50] per month).	1 PC for 12-25 mothers	
PC (F)												
Leite et al. 2005 ¹³⁵		personal experience in breastfeeding is associated with the Milk Bank at the Federal University of Ceará.	theory-practice training All members of this group were trained on a course adapted from Breastfeeding training course	20 hours		periodic training	They visited mothers on the 5th day from birth, 15th, 30th, 60th, 90th and 120th	Counseling on breast feeding	Supervision were provided	US\$4 for each home visit, about US\$100–120 per month		
PCs (F)												
Dennis et al. 2002 ¹³⁰	postsecondary education	previous breastfeeding experience of at least 6 months; a positive breast-feeding attitude	Didactic and Interactive orientation session was to develop the peer volunteers' telephone support and referral skills; incorporated various topics such as breast-feeding benefits; general breast-feeding information	2.5 hours		the activity logs distributed during the orientation session were reviewed in relation to the peer volunteer interactions.	Contact the new mother within 48 hours after hospital discharge and as frequently thereafter as the mother deemed necessary	Counseled mothers benefits and proper method of breast feeding				Effectiveness of counseling assessed using a 5-point Likert scale
PCs												
Bhandari et al. 2003 ^{139, 144}		health and nutrition workers	Didactic and hands-on training in counseling individuals or groups of mothers information on the benefits of exclusive breastfeeding and feed on demand based on an adaptation of the IMCI Training Manual On Breastfeeding Counseling.	3 days			Used various materials for communication were posters for doctors' clinics, flip books for workers, a card with feeding recommendations, a counseling guide on solving common breastfeeding difficulties, and a mother-and-child card handed out at Antenatal clinics or at the first home visit.	Growth monitoring and breastfeeding counseling	Growth monitoring techniques reading were supervised before sending workers for field work			
PCs												

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Morrow et al. 1999 ^{136, 145} PCS	high-school	aged 25–30 years and they did not necessarily have previous personal breastfeeding experience.	Didactic and practicum training consisted of 1 week of classes, 2 months in lactation clinics and with mother-to-mother support groups, and 1 day of observation and demonstration by visiting experts				Home visits to pregnant women focused on the benefits of exclusive breastfeeding, especially during illness; positioning of the infant and “latching on”	Breast feeding counseling	supervised by staff of La Leche League of Mexico and the physician study coordinator			An exit interview at 6 months post partum
Chapman et al. 2004 ^{131, 146, 147} PCS	high-school	community women who have breastfed a child for a minimum of 6 months	Didactic classroom training. Topics covered were breast anatomy and physiology; management of breastfeeding, counseling techniques, and related cultural and social factors	30 hours		biweekly case review meetings with program director	1 prenatal home visit; daily perinatal visits, 3 postpartum home visits, and telephone contact as needed.	Prenatal, perinatal and postpartum counseling for exclusive breast feeding and telephone counseling as needed.	Supervised by experienced peer counselor for 3 to 6 months	\$12 per hour & receive health care on working 20 hr/wk		
Agrasada et al. 2005 ¹⁴⁸ PCS	formal education	previous positive personal breastfeeding experience	Interactive Didactic	40 hours			The breastfeeding counselors informed mothers of the benefits of exclusively breastfeeding infants up to 6 mo, & assisted mothers in preventing & managing breastfeeding problems.	Counseling on exclusive breast feeding and child care	A certified lactation counselor	transport cost paid during training & home visit		
Graffy et al. 2004 ¹⁴² PCS		themselves have breast fed their child	Didactic: Training On counseling techniques for promoting breast feeding.		Accredited counselors for the National Childbirth Trust.		Gave the women a contact card and two leaflets during antenatal visit and offered postnatal support by telephone or further home visits if requested.	Breastfeeding counseling				
Mac Arthur et al. 2009 ¹²⁹ PCS			Didactic Training based on the Unicef baby friendly breastfeeding management course, and addressed cultural beliefs and barriers appropriate to the local population.	8 weeks			Kept a log of activities of women who had reached 24–28 weeks gestation, then at around 36 weeks. Also followed up women who initiated breast feeding to give postnatal support.	Worked directly with the antenatal clinics and counseled for early breast feeding.				Evaluated by positive outcome
Franket al. 1987 ¹³³ PCS							Offered individualized 20- to 40-minute postpartum counseling session in the hospital by a trained counselor, followed by eight scheduled telephone calls from the counselor					

Study	Education	Recruitment Criteria	Training Content	Duration	Certification / Ongoing training	Refreshers	Role	key competencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
McInnes et al.2000 132		mothers who had at least 1 child under 5yrs of age, had breastfed a baby for at least 3months	Didactic training and skills to enable them to promote breast feeding and to support breast feeding mothers				Counseling of pregnant women, support of breast-feeding mothers and local awareness-raising activities.	Breastfeeding counseling				Postnatal questionnaires were used to assess the impact of counseling.
PC s(F)												
Muirhead et al. 2006 ¹⁵⁰		2 written references and security vetting was carried out	2 days. And four evening sessions.				monthly meeting for 3 hrs each					
Urban Scotland												
Schafer et al.1998 ¹²⁸		Breastfeeding experience of at least 3 months	Didactic training Topics included general nutrition, advantages of breastfeeding, basic management of breastfeeding, listening and communication skills, and goal setting.	9 hrs			taught a series of in-home, one-to-one lessons about healthy diet and breastfeeding,	Encouraged breast feeding by counseling mothers				
PC s(F)												
Davies-Adetugbo et al.1997 ¹⁴¹		Health workers	Didactic Training Breast feeding Course manual modified for a non-Hospital based primary care setting,				Focused group discussions with lactating mothers and grandmothers	Encouraged breast feeding by counseling mothers				Evaluated after 4 months of
CHWs												
Quinn et al.2005 ¹³⁷		staff from government offices and NGOs along with community-based volunteers	Short-term practical training heavy on counseling/negotiation and communication skills for health and frontline community workers aimed at training large numbers to counteract attrition				Disseminated messages through a combination of interpersonal Communication strategies (group activities and community mobilization, and mass media (Radio, television, and print). Included fathers & grandmothers as secondary audiences to promote behaviors supporting mothers to optimally breastfeed	counseling in breastfeeding				
Madagascar CHWs												
Quinn et al.2005 ¹³⁷												
Bolivia CHWs												
Quinn et al.2005 ¹³⁷												
Ghana CHWs												

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
Nakhunda et al. 2006 140		24–35 years old, and must have breastfed a child who was less than five years old. Also had to be literate in Lusoga, the local language, and acceptable to the community.	Interactive, Didactic and Practicum training was run by two lactation consultants. Breastfeeding Answer Book by Mohrbacher and Stock was used as reference material.	18 hrs		The peer counselors and supervisors held monthly meetings where reports and challenges by peer counselors were discussed and possible solutions agreed.	Recruited pregnant mothers for follow-up and at each visit they would offer information about breastfeeding. For mothers planning to breastfeed, the peer counselor offered to help the mother with breastfeeding after the birth.	BREASTFEEDING COUNSLING AND MANAGEMENT OF BREASTFEEDING PROBLEMS	Each peer counselor would be visited by a supervisor every two weeks and a monthly meeting held for all.			Once every two weeks, a supervisor observed each peer counselor
PC s(F)												

Neonatal Health Interventions Background

The likelihood of death of a child under five years of age, born in a developing country is over 13 times that of a child born in an industrialized country.¹⁵³ The Sub-Saharan Africa accounts for about half of the under five child mortality in the developing world.¹⁵⁴ There has been some decline in the under five mortality but that is far below the MDG target for Goal 4 i.e., to reduce the under five mortality rate by two-thirds.¹⁵⁴

According to Walsh et al., pregnancy-related illnesses and complications during pregnancy and delivery are associated with a significant impact on the fetus, resulting in poor pregnancy outcomes leading to greater health risks for the infant.¹⁵⁵ These health risks include childhood illnesses, disability or even death.¹⁵⁵ In developing countries, almost two-thirds of births occur at home and only half are attended by a trained birth attendant.¹⁵⁶ Of the 136 million babies born every year, approximately 3.2 million are stillbirths and four million are neonatal deaths, 98% of which are in developing countries. The first week of life is a particularly vulnerable period, with 60 to 70% of neonatal deaths occurring within the first seven days after birth.^{157, 158}

The reduction in child mortality is achievable by ensuring full coverage of immunization programs, exclusive breastfeeding for 6 months, scaling up of vitamin A and nutritional supplements, prevention and effective treatment of diarrhea, pneumonia, malaria and other infectious diseases, hand washing and using safe and clean drinking water.¹⁵⁴ These tasks are do-able with the appropriate and active engagement of the CHWs.¹⁵⁴

Community Based Evidence

We identified nine studies including 2 RCTs, 3 quasi-RCTs, and 4 before/after trials that described interventions to improve neonatal health outcomes. All of these studies were conduc-

ted in rural areas of South Asian countries (Pakistan,¹⁵⁹ India¹⁶⁰⁻¹⁶⁴ and Bangladesh¹⁶⁵) (Table 13A & Table 13B). The interventions reviewed on community health workers' role in neonatal health have shown positive outcomes where the trained CHWs were used to outreach the sick children of the community.^{159, 162, 166, 167} The types of outreach workers involved in these activities were the CHWs, TBAs, and CMs. The educational level of the CHWs was generally poorly described. The TBAs involved in the Saleem et al. were all literate¹⁵⁹ while those in Bang et al. were illiterate.¹⁶¹ The CHWs in other interventions reviewed had a few years of schooling.^{162, 163, 167}

The training modalities used were mostly didactic^{163-165, 167} and sometimes in combination with practicum.^{159, 161, 162} The training in Bang et al. was hands-on, workshop based training.¹⁷⁰ The training content focused on management of birth, birth asphyxia, hypothermia, management of LBW babies, recognition of danger signs in neonates and breast feeding problems.^{159, 161-163, 167} The CMs trained in the Dongre et al. intervention were trained to identify newborn danger health signs and promptly refer as per the country specific adaptation of IMCI to ensure household-to-hospital continuum of care.¹⁶⁴

In Sloan et al. BRAC CHWs (government trained nutrition workers) delivered interventions related to nutritional counseling and taught Kangaroo-Mother-Care to mothers. These CHWs were provided frequent refreshers and supervision but despite of providing close monitoring and supervision and frequent refreshers, intervention did not create an impact on reducing neonatal deaths and infant mortality.¹⁶⁵

We identified 6 studies in which CHWs delivered preventive and therapeutic interventions for improving neonatal health. Among these Bang et al.1994 and Bang et al.1999 particularly trained

CHWs to identify and treat neonatal infection and provided referrals where necessary. Both of these studies found substantial reduction of up to 24% in neonatal deaths and declined pneumonia specific neonatal deaths by over 40%. In these projects CHWs along with TBAs were trained to make visits and identify sick neonates who require treatment with antibiotics.^{162, 166} In Bang et al. 1993, illiterate TBAs were trained to count respiratory rate through “Breath counter” and sand timer to identify tachypnoea.¹⁶¹ Workers involved in the treatment and management of neonatal infections were closely supervised by a physician¹⁶² and by field supervisors¹⁶¹ and therefore managed to avert neonatal mortality and more particularly pneumonia specific neonatal mortality.

Dongre et al. and Daga et al. trained CHWs to assess and refer sick newborns and they created referral mechanism with health systems.^{163, 164} In these studies significant improvement was

seen in health care seeking and uptake of immunization services in newborns. CHWs in these studies were extensively trained to create a link between TBAs and local health center. In Daga et al. CHWs were also given a remuneration of Rs 50 per month.¹⁶³

Neonatal resuscitation was another major intervention which was utilized to manage birth asphyxia for the improvement and reduction of neonatal deaths. In Bang et al. the TBAs were trained to manage birth asphyxia via mouth-to-mouth, tube – mask or bag-mask resuscitation.¹⁶⁷ Since TBAs involved in these intervention were illiterate, therefore they were given extensive 3 days hands on training to manage those babies who failed to cry or breathe at birth and undertook drills every 2 months to refresh their practice.¹⁶⁷ Extensive training along with incentive of \$1 per case showed up an impact of reducing neonatal mortality by 70%.¹⁶⁷

CHW Snapshot 7

Female Community Health Volunteers Nepal

Program overview

The Female Community Health Volunteer (FCHV) Program in Nepal was started in 1988 by the Ministry of Health and Population in order to improve community participation. In the mid-1990s a “population based” strategy was adopted in 28 districts whereby additional FCHVs were recruited leading to a current total of nearly 50,000 FCHVs in Nepal and 97% of them are in the rural areas¹⁶⁸. FCHVs play an important role in contributing to a variety of key public health programs, including family planning, maternal care, child health, vitamin A supplementation and immunization coverage.

Operational aspects and considerations

The CHWs are chosen from community; they work for community and refer sick cases to the nearest health facility.

Coverage and effectiveness

The program is currently operates in 17 of 75 districts in the country. As of 2001, there were more than 9,000 community health workers trained in pneumonia case management. Many partners help maintain the program, and it is estimated that a much larger proportion of pneumonia cases are treated in program areas. The Nepal Demography and Health Survey (NDHS 2006) indicates that about 10% of children with ARI in CB-IMCI districts go to FCHVs compared with 19% of children who go to government rural facilities. Only 13% of treatment FCHVs failed to treat any children over six months due to lack of medicines. Evidence from districts that have all treatment FCHVs is that 88% of FCHVs treat successfully if trained. The 2006 NDHS survey found that 90% and 84% coverage for vitamin A and deworming, respectively.

Source: WHO¹⁶⁹ and WHO/Unicef 2006²⁴

Female Community Health volunteers, Nepal

- ✓ **Training** 5 days
- ✓ **Refresher** 2 days after 2-3 months

Conclusion

The evidence based review of the interventions described above shows that the extensively trained CHWs were able to manage preventive and therapeutic care in compliance with the MDG 4 targets.¹⁵⁴ The TBAs were equally competent in managing neonatal infections and birth asphyxia through antibiotics and resuscitation respectively.^{159, 163} Despite the fact that they are illiterate and were a part of informal health system, we cannot ignore their role in delivering

MDGs related intervention. However, their performance can be enhanced through vigorous training, supervision and pay for performance incentives. But at the same time, we need to create a system where these TBAs should be coupled with literate health workers who can liaise on with the health system for maintaining proper referral feedback mechanism for achieving better outcomes as evident in included studies.

Table 13A: Neonatal health— Characteristics of Included Studies

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Saleem et al. ¹⁵⁹ Karachi, Pakistan	cRCT	TBAs	TBAs identified pregnant women. The chlorhexidine vaginal wipe was used by TBAs & applied on entire cervix, vagina & external genitals, the neonate was also wiped after delivery within 6 hrs of birth	saline wipes were used instead of chlorhexidine	7 months	pregnant women	skin infection among experimental arm was 16% while in control arm was 22% neonatal deaths in experimental arm was 0% while in control arm it was 2%
Sloan et al. ¹⁶⁵ Sylhet & Dhaka, Bangladesh	cRCT	CHWs	The government started Integrated Nutrition Program (BINP), which later became the National Nutrition Program (NNP), provided advice & supplementation to pregnant women. In this study BINP's community nutrition workers were trained to teach CKMC to participants in the intervention group villages. They were taught to breastfeed promptly, exclusively, and on demand.	Women in controlled arm were served with community nutrition workers who were not trained for CKMC	-	all late (>7 months) gestation and recently postpartum women and their families	NMR = OR adj = 1.060, 95% CI: 0.761–1.477 IMR = OR adj = 1.039, 95% CI: 0.770–1.40
Bang 1999 170-173 Gadchiroli, India	Quasi RCT	CHWs	Train paramedics, village HCW, and TBA in administration of antibiotics and counseling in mother and newborn care	In control areas these tasks were done by the government health services & the Integrated Child Development Service (ICDS) workers	35 months	Pregnant women	24% reduction in NMR (CI: 5-38%) 94% reduction in CMR due to pneumonia
Bang 2005 ¹⁶⁰ Gadchiroli, India	Quasi RCT	CHWs TBAs	Assessed the impact of TBA training on neonatal resuscitation and home based care education on neonatal mortality	TBAs in control areas were not additionally trained as TBAs in intervention arm, but they did receive usual training from government sources	84 months	Pregnant women	70% reduction in NMR (CI: 59-81%) 56% decline in PMR (CI: 46-68%) 49% reduction in still births (CI: 31-66%)
Bang et al. ¹⁶⁶ Gadchiroli, India	Quasi RCT	CHWs TBAs	TBAs and CHWs were trained to diagnose pneumonia and treat neonates with antibiotics	services were provided by government health facilities	42 months	neonates	pneumonia specific mortality reduced to 44% while total neonatal mortality reduced to 20%
Carlo et al. ¹⁷⁴ Argentina, Democratic Republic of Congo, Guatemala, India, Pakistan, and Zambia	pre/post	TBAs	local instructors trained birth attendants from rural communities in six countries (Argentina, Democratic Republic of Congo, Guatemala, India, Pakistan, and Zambia) in the World Health Organization Essential Newborn Care course (which focuses on routine neonatal care, resuscitation, thermoregulation, breast-feeding, "kangaroo" [skin-to-skin] care, care of the small baby, and common illnesses) and (except in Argentina) in a modified version of the American Academy of Pediatrics Neonatal Resuscitation Program (which teaches basic resuscitation).	services were provided by government health facilities	24 months	neonates	After birth attendants were trained in the Essential Newborn Care course, there was no significant reduction from baseline in the rate of neonatal death from all causes in the 7 days after birth (relative risk with training, 0.99; 95% confidence interval [CI], 0.81 to 1.22) or in the rate of perinatal death; there was a significant reduction in the rate of stillbirth (RR with training, 0.69; 95% CI, 0.54 to 0.88; P=0.003)
Dongre et al. ¹⁶⁴ Rural Wardha, India	pre/post	CMs	Educate women about newborn danger signs/ birth preparedness, health care seeking, and conduction of monthly village based meeting		36 months	pregnant women	Significant improvements seen in health care seeking from private health care providers for sick newborns

Study / country	Study design	Interventions		Years of study	Participants	Outcomes
		Outreach worker	Experimental arm			
Daga et al. 1993 ¹⁶³ Rural India	pre/post	CHWs TBAs	TBAs were trained for providing warmth, resuscitation, and identification and referral of a baby with foot length less than 6.5 cm. CHWs were also trained to make a link between TBAs and health system, and they visited each newborn on birth for the assessment and referral in case found to need hospitalization	36 months	pregnant women and newborns	ANC registration increased from 467 in 1987 to 630 in 1989, improvement in immunization and beneficiaries in immunization was also reported

Table 13B: Characteristics and description of outreach workers

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Saleem et al. 2007 ¹⁵⁹ TBAs	Literate	Skilled TBAs who had conducted at least five deliveries per month	Didactic and practicum training to conduct safe and clean delivery and use of chlorhexidine as vaginal wipes and for use in neonates.				Conducted safe & hygienic delivery using the kits provided and used chlorhexidine as vaginal wipe was, the neonate was also wiped after delivery within 6 hours of birth	Postpartum Infection control in mother and neonate	By study supervisor	Small stipend		
Bang 1999 ¹⁷⁰⁻¹⁷³ CHWs	Village women with 5–10 years of school education	Those who were willing to work were chosen as village health workers.	Theoretical and practical Trained the CHWs to take histories of pregnant women, observe the process of labor, examine neonates, and record findings. Workers were given color photographs of various neonatal signs for visual reference. The female workers were also trained in case management of pneumonia in children, including neonates.				Made home visits, took history, examined mother and child, weighed the child each week, and managed minor illnesses and pneumonia in the neonates. Managed birth asphyxia, premature birth or low birth weight, hypothermia, and breast-feeding problems.	Management of birth asphyxia, LBW infants and breast feed counseling Diagnosed neonatal sepsis	A physician was entrusted with field supervision fortnightly			
Sloan et al. 2008 ¹⁶⁵ CHWs	community nutrition workers		Didactic Trained to teach CKMC to the pregnant or postpartum women and were trained on nutritional counseling			monthly CKMC refresher training sessions	To teach community-based kangaroo mother care to all expectant and postpartum women in the intervention villages	Breastfeeding counseling +KMC	BRAC supervisors	\$7.50 a month		
Bang 2005 ¹⁶⁰ CHWs	5 to 10 years of schooling	VHWs were resident women of the village	Hands-on Workshop based They were trained in how to manage a baby at birth and how to manage those who did not cry or breathe at birth by following an algorithm.	3 days		drills practiced on dummy dolls every 2 months	Provided home-based neonatal care in newborns with birth asphyxia or weak or no cry at birth	Measurement of indicators and the management of birth asphyxia.	Trained field supervisors	CHW was given \$1.00 per case		Evaluation done in the next workshop 2 months later
Bang et al. 1993 ¹⁶⁶ TBAs (f)	Illiterate	Local birth attendants	Didactic and practicum training in safe and hygienic delivery and better care of the neonates;				Conducted safe hygienic delivery and offered newborn care. Completed case record including clinical signs and symptoms, Side effects of treatment follow up, and outcome of treatment in every case diagnosed.	Diagnosis of pneumonia	Trained field supervisors	Field supervisors later visited homes and Verified the records.		

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Ongoing training	Role	key competencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
Carlo et al. 2010 ¹⁷⁴			<p>3-day course clinical practice sessions and demonstrations to train all birth attendants</p> <p>3-day Essential Newborn Care course</p> <p>3-day course in the Neonatal Resuscitation Program</p>									
Dongre et al. 2009 ¹⁶⁴ CHWs		village based CLICS doot were selected from village	<p>Didactic CHWs were trained by Community Led Initiatives for Child Survival CLICS program on identification of newborn danger signs and prompt referral under household and community IMNCI (country specific adaptation of IMCI) to ensure household-to-hospital continuum of care (HHCC).</p>			Community mobilization, health education efforts, recognition of danger signs and prompt referral	Behavior change communication (health care seeking behavior), and health education	supervised by village coordination committees using Lot Quality Assurance Sampling (LOAS) technique			1 CHW per 1000 population	Evaluated by a pretested and redesigned questionnaire after 3 years by paying home visits
Daga et al. 1993 ¹⁶³ CHWs (F)	few years of schooling	chosen by community	<p>Didactic trained on assessment and referrals of sick newborn to hospital and create a link between TBAS and Health system</p>	3 months		house hold visit on day of delivery, assessment of newborn, referral to hospital	newborn assessment and referral				Rs. 50 per month	performance was observed after 1 yr after their deployment

Childhood Illnesses and Immunization Interventions Background

Approximately 29,000 children under the age of 5 years die each day, 21 every second. More than 70% of 11 million child deaths occur mainly from preventable diseases like malaria, diarrhea, neonatal infections, pneumonia, preterm delivery or lack of oxygen at birth.¹⁷⁵ Some of the deaths occur from measles, tetanus, HIV/ AIDS, while malnutrition and lack of safe water and sanitation contribute to half of all these children's deaths. These deaths occur mainly in developing countries while sub Saharan Africa has the higher rates. The global effort for averting these deaths, countries joint their hands and signed a pledge to ensure a two-third reduction in child mortality by 2015 and the effort and goals are listed under the MDGs. Research and experience have shown that six million of the almost 11 million children who die each year could be saved by low-tech, evidence-based, cost-effective measures such as vaccines, antibiotics, micronutrient supplementation, insecticide-treated bed nets and improved family care and breastfeeding practices.¹⁷⁵ Training of health workers in countries with IMCI implementation have been shown to have positive effects. Furthermore, they have also shown promising results in promoting the uptake of immunization in children.

In this section we have reviewed all the evidence of CHWs driven intervention for improving child health and illnesses through identification and management of diseases and promoting the uptake of childhood immunization. We have separately reported evidence based results of studies pertinent to malaria in malaria control section.

Community Based Evidence

A total of 33 studies were reviewed related to the role of CHWs in dealing with childhood illnesses. Among these 5 studies were conducted in high income countries,¹⁷⁶⁻¹⁸⁰ and remaining

all were from lower or middle income countries. (Table 14A and 14B).

The CHWs involved in these interventions were mostly local residents¹⁸¹⁻¹⁸⁶ while some were from the neighborhood.^{177, 178, 187} Some of the CHWs had a few years of schooling,^{183, 184} while the ones involved in Fisher et al. intervention had high school education.¹⁷⁸ All of these studies with literate CHWs found significant results on study outcomes.

The training modality used to train these CHWs was mostly didactic^{177, 178, 183-185, 187-192} while Arifeen et al. and Ali et al. used didactic and practical approach to train their CHWs.^{181, 182}

The training content included identification and management of a wide range of childhood illnesses like acute upper respiratory tract infections,^{180, 182, 187, 189, 190} pneumonia,^{161, 183, 192} diarrhea,^{181, 194} asthma¹⁷⁸ and uptake of immunization services.^{176, 177, 179, 186, 188, 189, 195} The intervention by Kelly et al. dealt with common childhood illnesses,¹⁰⁰ while the one by Cesar et al. trained CHWs in treatment of scabies, infection by helminthes and in use of anti-pyretic agents.¹⁸⁴ The CHWs in the Alderman et al. intervention were trained in deworming treatment and micronutrient supplementation.¹⁹⁵

A total of 3 randomized control trials were exclusively based on delivering education related to promotion of immunization against common illnesses among children. The Pence et al. trial showed positive outcomes of immunization services by reduction in the rates of infant, early and late child mortality.¹⁸⁸ The CHWs involved in this study visited households to talk about hygiene and child immunization and made community aware of their availability for treatments and referrals.¹⁸⁸ The CHWs in the Barnes et al. were involved in immunization outreach, tracking and follow-up in the community.¹⁷⁶ The Rodewald et al. on the other hand, was de-

signed to reduce missed immunizations and the role of CHWs here was to prompt parents for the immunization of their children.¹⁷⁷ The CHWs in some other studies as well played their part in the promotion of immunization.^{179, 186, 189}

The CHWs involved in the treatment of acute respiratory infections could recognize and differentiate between no pneumonia, pneumonia and severe pneumonia and could also provide its management.^{161, 181, 183, 192, 194} The Fisher et al. intervention focused on counseling and management of asthma, use of asthma controlling and relieving medications as well as behavior modification for better outcomes of treatment.¹⁷⁸ The CHWs in the Arifeen et al. adhered to the IMCI case management strategies for the treatment of pneumonia.¹⁸¹ This intervention also laid special emphasis on malnutrition of children and counseled mothers for breast feeding. Their outcomes showed increase in the

practice of exclusive breast feeding and 70% correct treatment of all illnesses among children by the CHWs.¹⁸¹

The CHWs working in most of the interventions were volunteers and only those working in Cesar et al., Chopra et al. and Perry et al. were paid a meager financial incentive which did not seem to have an impact on the working of the volunteers as compared to the studies where CHWs were unpaid.^{184, 186, 196}

Of all the interventions only a few were supervised. Supervision was done by project physicians,¹⁸¹ or by a nurse and psychologist as in Fisher et al.¹⁷⁸ or by health care staff like nurses.^{185, 189, 192} However, supervision also did not seem to effect the outcomes of these studies as compared to those where the CHWs were not supervised.

CHW Snapshot 8

Village Drug Kits, Bougouni, Mali

Program overview

A village drug kit in southern Mali was implemented by the Malian government in 1990 in which gerent de caisse pharmaceutique, or village drug-kit manager were trained who used to manage a kit containing eye ointment, paracetamol, oral rehydration salts, alcohol, bandages, Chloroquine tablets and Chloroquine syrup. Ant malarial treatment is given presumptively. In limited areas, zinc treatment for diarrhea is also distributed and sulfadoxine-pyrimethamine is provided as intermittent presumptive treatment for pregnant women.

Operational aspects and considerations

Village drug-kit managers are selected by the villages they serve, generally by a committee of village leaders. In community they counsel and manage the drug kit. The CHWs are provided with visual aids to help them explain to caregivers how to administer Chloroquine to children in various age groups, and describing the symptoms, such as convulsions and difficulty breathing that require immediate referral to a health facility.

Coverage and effectiveness

An evaluation of this CHW initiative found that the drug kits were successful in increasing the availability of Chloroquine at the village level.¹⁹³ In household interviews, parents reported that 42% of children in the intervention group were referred to the community health centre by the drug-kit manager, versus 11% in the comparison group (OR = 7.12, 95% CI: 2.62–19.38).¹⁹³ This intervention is now implemented in all the village drug-kit programs established by Save the Children in collaboration with the local health services.

Source: WHO/Unicef 2006²⁴

Village drug-kit managers, Mali

✓ Education	Usually illiterate
✓ Training	35 days literacy classes and one week malaria treatment classes
✓ Refresher	One each month
✓ Training	Village committees

Conclusion

The CHWs involved in the childhood illnesses related intervention made a great contribution towards the achievement of Goal 4 of the MDGs by promoting exclusive breastfeeding and preventive care through immunization and hygiene. Their role in identifying and treating pneumonia is also a great contribution towards bringing down the figures of under-5 child mortality rate.

Table 14A: Childhood illnesses and immunization – characteristics of Included Studies

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Arifeen et al. 2009 ^{181,197} Matlab, Bangladesh	cRCT	CHWs	CHWs were trained to provide community case management of non-severe pneumonia and diarrhea and referrals for severe cases	CHWs were not deployed and they were receiving routine care *	60 months	children between 2 months to 5 years	Children ill and taken to health provider was 24% in intervention areas and 5% in control areas Correct management of all illness among children was 70% in intervention areas and 4% in control areas Exclusive breastfeeding in children younger than 6 months in intervention was 76% and in control areas was 65% Breast milk and complementary feeding among children aged 6-9 months was 68% in intervention areas and 57% in control areas Wasting in intervention areas were 13% while in control areas was 14% Stunting in intervention areas was 50% while in control was 57%
Fisher et al. 2009 ¹⁷⁸ St. Louis, USA	RCT	CHWs	Coaches reinforced basic asthma education and encouraged key management behaviors through home visits and phone calls tailored to parent's readiness to adopt management practices and emphasizing a nondirective supportive style (cooperative and accepting of feelings and choices).	No intervention for control group	24 months	children of 2-8 years of age	Within 3 months of randomization to the asthma coach group, 89.6% of parents had at least 1 substantive contact with the coach, with an average of 21.1 contacts per parent The proportion of children are hospitalized was 35 of 96 (36.5%) in the Asthma coach group and 55 of 93 (59.1%) in the usual care group (P=.01), controlling for parental education and child age, sex, and hospitalization in the year prior to the index hospitalization.
Pence et al. 2005 ¹⁸⁸ Kassena-Nankana, Ghana	cRCT	CHWs	The intervention implements both approaches and establishes close links between the MOH nurse and the community leaders and volunteers. They visit households to talk about hygiene, child immunization, and other health issues, and to make the community aware that they are available for basic treatments and referrals.	A comparison area receives services according to standard MOH guidelines.	60 months	Children less than 5 years of age	Reductions were observed in infant (6 percent), early child (20 percent), and late child (41 percent) mortality
Barnes et al. 1999 ¹⁷⁶ New York, USA	RCT	CHWs	Immunization outreach, tracking, and follow-up were provided by community volunteers throughout follow-up	Control children were notified of immunization status at enrollment but received no further contact until the conclusion of follow-up	7 months	Children less than 2 years, with no-shows for a booked appointment, & overdue for a vaccine	Significantly more intervention children were up-to-date with their vaccination series than controls (75% vs. 54%; P = .03). Children in the control group were 2.8 times more likely to be late for a vaccine than intervention children (odds ratio = 2.8; P = .02). In addition, an immunization delay of longer than 30 days at enrollment was a significant predictor of final immunization delay (odds ratio = 2.6; P=.02)
Rodewald et al. 1999 ¹⁷⁷ New York, USA	RCT	CHWs	In the first intervention, tracking with outreach (tracking/outreach). The second intervention was a program to reduce missed immunization opportunities (prompting) in the primary care offices. In the third intervention tracking with outreach and prompting were provided	no intervention was given to this group	18 months	ages 0 to 12 months	Complete immunization coverage levels were: control, 74%; prompting-only, 76%; tracking/outreach-only 95%; and combined tracking/ outreach with prompting, 95%.

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Black et al. 2003 198 Baltimore, USA	RCT	CHWs	All children received services in a multidisciplinary growth and nutrition clinic. A community based agency provided the home intervention. Families in the HI group were scheduled to receive weekly home visits for 1 year by lay home visitors, supervised by a community health nurse. The intervention provided maternal support and promoted parenting, child development, use of informal and formal resources, and parent advocacy.	No interventions	12 months	children	The impact of intervention status on cognitive development varied as a function of children's ages at recruitment, with younger children showing beneficial effects of home intervention. There were no changes in motor development associated with intervention status. During the study period, children gained skills in interactive competence during feeding, and their parents became more controlling during Feeding, but differences were not associated with intervention status.
Brugha & Kevany 1996 199 Urban Ghana	RCT	CHWs	CHWs visited homes and referred children to clinics. They also targeted those children who failed to complete immunization schedules.	No interventions	6 months	children under five	Immunization coverage rose from 60 to 85%. Which was 20% higher than control (P <0.005).
Rowe et al. 2007-200 Siaya, Kenya	RCT	CHWs	CHWs were analyzed for correct identification and treatment of children	No interventions	2 months		The mean percentage of assessment, classification and treatment procedures performed correctly for each child was 79.8% (range 13.3—100%). Of the 187 children who required at least one treatment or referral to a health facility, only 38.8% were Prescribed all treatments (including referral) recommended by the guidelines.
Gokcay et al. 1993-201 Urban Turkey	RCT	CHWs	Community health workers were identified and trained, they were then sent to community where they identified children at risk and not that not attending health institution. They guided their family and given them teaching on immunization and child health related problems	in the control arm this care was given by community midwives	24 months	children less than 5 years of age , pregnant women and mothers	No significant differences were found in these health measurements between areas visited by LHV and areas visited by midwives.
Johnson et al. 1993-202 Urban Ireland	RCT	CHWs	Community mothers were trained and to deliver child development program (early reading as a child, language development, cognitive development through play)	no interventions	16 months	First time mothers with infant <1 year old.	At the end of the study children in the intervention group were more likely to have received all of their primary immunizations, to be read to, and to be read to daily.
LeBaron et al. 2004-203 Urban USA	RCT	CHWs	outreach workers were trained to evaluate the impact of reminder call on low immunization in an inner city population	usual care, and in some instances non-automated postcard recall system	24 months	children born over 1 year	A total of 260 (34%) of the 763 patients in the control group, 306 (40%) of the 763 in the auto-dialer group, 284 (37%) of the 760 in the outreach group, and 293 (38%) of 764 in the combination group completed the vaccination series.
Ali et al. 2001 182 Matlab, Bangladesh	Quasi RCT	CHWs	Trained CHWs to identify both active and passive ARI cases from households, and provide referrals to severe cases	No training to CHWs	60 months	Children > 5 years	ALRI death rate among intervention areas was 6.42/ 1000 children per yr and in control areas were 11.82/ 1000 children per year

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Bang et al. 1993 161 Gadchiroli, India	Quasi RCT	CHWs TBAs	Extensive health education was provided in the intervention area on when to suspect pneumonia in a child and where to seek immediate care.	Routine treatment was provided by government health facilities	24 months	children below 5 years of age	pneumonia specific mortality rate in the intervention area was 40% less in the neonates and about 80% less in the second month and rest of infancy compared with the control area.
Curtale et al. 1995 189 Nepal	Quasi RCT	CHWs TBAs	The intervention, which included preventive and curative activities, was carried out through the existing Primary Health Care (PHC) structure, utilizing CHVs	not covered by any intervention	24 months	children below 5 years of age	the study revealed that children (12-23 months of age) in the index group had higher coverage in BCG, DPT, OPV, measles and in the percentage of fully immunized (84% vs. 66%, P = 0.0001) 94% said they would give it to their children with diarrhea, if available, vs. 76% in the control group (P = 0.0001). In the index group 37% of the children reporting ARI symptoms, according to the mothers, were given co-trimoxazole by CHVs compared to < 1% in the reference group. Just 22% in the index group and even less, 3%, in the reference group had GMCs at the time of the survey, though the difference was significant (P = 0.001).
Khan et al. 1990 183 Abbottabad, Pakistan	Quasi RCT	CHWs	CHWs were trained to administer sulphamethaxazole for suspected pneumonia or acute otitis media before referring to health center	Children in control areas were treated by health center, dispensaries or private practitioners	24 months	Children under 5 years	ALRI specific mortality in infants in intervention was 10/1000 and in control was 15/1000 All cause specific infant mortality in intervention and control areas was 53/1000 and 55/1000 ALRI specific child mortality among intervention group was 4/1000 and in control area was 7/1000 All cause specific child mortality among intervention group was 21/1000 and 28/1000 in control areas
Congsuivattong et al. 1996 190 Pattani, Thailand	Quasi RCT	CHWs	CHWs were trained to detect serious ARI and given initial care by sponging and to advice referral of cases to health center	Control group was given routine care	4 months	Children under 5 years of age	Probability of getting one infection in the intervention group was 0.884 (95% CI: 0.4 – 1.95) P=0.76
Stewart et al. 1970 179 Okla, USA	Quasi RCT	CHWs	Immunization counseling by CHWs	Routine services by governmental facilities	24 months	General population	Immunization rates among children under 5 in intervention areas reached to 160/1000 while it was 40/ 1000 in control area Immunization among population of 5-14 years reached up to 323/1000 in intervention areas while it was 36/1000 in control area Population over 15 years age had an immunization rate reached up to 37/1000 while it was 9/1000 in control areas
Mtango & Neuwians 1986 187 Bagamoyo, Tanzania	Quasi RCT	CHWs	CHWs visited each home every 6-8 weeks and gave health education on recognition and prevention of ARI, treated them with antibiotic and referring them to a higher level	Routine services from governmental health centers	24 months	children under 5 years	under 5 mortality reduced from 32/ 1000 children to 29/1000 children in intervention area and from 40/ 1000 to 35/ 1000 in control area Pneumonia specific mortality reduced from 12 to 10 /1000 children / year in intervention areas and from 14 to 12 / 1000 in control areas.

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Black et al. 1995, 204 USA	RCT	CHWs	All children received services in a multi-disciplinary growth and nutrition clinic. The intervention provided maternal support and promoted parenting, child development, use of informal and formal resources, and parent advocacy.	No intervention was delivered to control arm	12 months	Children with mean age 12.7 months	Children's weight for age, weight for height, and height for age improved significantly during the 12-month study period, regardless of intervention status. Children in the Home group had better receptive language over time and more child-oriented home environments than children in the clinic-only group. The impact of intervention status on cognitive development varied as a function of children's ages at recruitment, with younger Children showing beneficial effects of home intervention. There were no changes in motor development associated with intervention status. During the study period, children gained skills in interactive competence during feeding, and their parents became more controlling during feeding, but differences were not associated with intervention status.
César et al. 1998, 184 Itapirapua Paulista, Brazil	pre/post	CHWs	CHWs made weekly visits and distributed medicine like analgesics, antipyretics, ointments, and drugs against helminthes and scabies.		108 months	children under 5 years	In 1988, the infant mortality rate was 83 per 1,000. When this project was implemented, the IMR had been reduced to 65 per 1,000, or seven deaths per year. During the first year of intervention, only two children died. The following year, one child died and in the third year, two deaths occurred. This indicates that the IMR was reduced by 4.2 times in three years.
Chaudhary et al. 2005, 191 Haryana, India	pre/post	CHWs	The Anganwadi workers (AWWs) and the supervisory staff were given 5 days IMCI training using WHO package. The supervisors gave follow up visits to AWWs using standardized follow up forms adapted from WHO material. 2nd batch of AWWs was followed up 4-8 weeks after training in IMCI.		12 months	Children under 5 years of age	The performance on correct treatment of cases by AWWs weeks were trained 4 – 6 weeks prior to follow up was better than group followed up one year after the completion of training (81.8% and 47.9% respectively). At the same time, the performance on correct treatment showed significant improvement during the second follow up (47.9% and 83.8% respectively).
Alderman et al. 2008, 195 Senegal	pre/post	CHWs	Organized communities, which in turn mobilized community health and nutrition workers to provide growth monitoring services and counseling to all mothers of young children in selected communities, encourage pregnant women and caregivers to seek preventive health care such as antenatal and postnatal care and coordinate with health personnel for delivery of essential health services, such as vaccination, deworming and micronutrient supplementation		24 months	Children under 3 years of age	The odds ratio of being underweight for children in program villages after introduction of the intervention was 0.83 (95% CI 0.69, 1.00), after controlling for regional trends and village and household characteristics.
Ghebreyesus et al. 1999, 185 Tigray, Ethiopia	multiple surveys	CHWs	CHWs were trained and sent to field they were in close contact with health facilities staff.		36 months	children under 5 years	on average 60,000 patients per month were treated children under 5 years decreased from 30/1000 to 18/1000

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Anand et al. 2004, 194 Haryana, India	cross sectional	CHWs	Workers were given training in the management of diarrhea and ARI. Children requiring referral were sent to Ballabgarh	Workers were given training in the management of diarrhea and ARI. Children requiring referral were sent to Ballabgarh	24 months	children under 5 years	ORS advice was adequate. Oral antibiotic use among dysentery was satisfactory (75 per cent). The overall prevalence of severe malnutrition as diagnosed by health workers was quite high. This may be due to the use of mid-arm circumference as a criterion for severe malnutrition. Vitamin A use was quite low. This was due to poor supply of vitamin A during the study period. The workers gave dietary advice more often; however, its effectiveness was not assessed during this study. Measles was adequately managed in most cases.
Fagbule & Kalu 1995,205 Rural Nigeria	comparative cross sectional survey	CHWs	CHWs took histories, and performed physical evaluation. They also performed symptomatic diagnosis and treatment of ARI.	CHWs took histories, and performed physical evaluation. They also performed symptomatic diagnosis and treatment of ARI.	-	children less than 5 years of age	Most commonly prescribed medication by CHWs was paracetamol, Chloroquine, and antibiotics. Many of the workers did not attend continuing education program, and supervision in the previous 2 years was also irregular.
Cauffman et al. 1970 ¹⁸⁰ Los Angeles, USA	Cross sectional survey	CHWs	Community health aides were recruited and trained to teach mothers how to care for their children when they had an upper respiratory infection (URI)	Community health aides were recruited and trained to teach mothers how to care for their children when they had an upper respiratory infection (URI)	-	mothers	90% of all mothers were instructed on treatment of upper respiratory infections, while 45% complied with the treatment regimens
Chopra & Wilkinson 1997, 186 Rural South Africa	comparative cross sectional	CHWs	CHWs were trained and they delivered intervention related to immunization level	CHWs were trained and they delivered intervention related to immunization level	6 months	Children aged 3-59 months	92% immunization coverage observed in intervention areas compared to 73% in control areas (P <0.0001)
Kelly et al. 2001 ¹⁰⁰ Siaya, Kenya	Prospective cross sectional survey	CHWs	Community health worker (CHW) used an algorithm for managing common childhood illnesses. CHWs were observed managing sick outpatient and inpatient children at a hospital, and their management was compared with that of an expert clinician who used the algorithm	Community health worker (CHW) used an algorithm for managing common childhood illnesses. CHWs were observed managing sick outpatient and inpatient children at a hospital, and their management was compared with that of an expert clinician who used the algorithm	48 months	CHWs	One hundred, 108, and 114 CHWs participated in the evaluations in 1998, 1999, and 2001, respectively. The proportions of children treated "adequately" (with an antibiotic, anti malarial, oral rehydration solution, or referral, depending on the child's disease classifications) were 57.8%, 35.5%, and 38.9%, respectively, for children with a severe classification and 27.7%, 77.3%, and 74.3%, respectively, for children with a moderate (but not severe) classification. CHWs adequately treated 90.5% of malaria cases (the most commonly encountered classification).
Perry et al. 2006, 196, 206 Haiti	cross sectional	CHWs	Study compares the under-five mortality in the Hospital Albert Schweitzer (HAS) Primary Health Care Service Area with that for Haiti in general. HAS provides an integrated system of community-based primary health care services, hospital care and community development	Study compares the under-five mortality in the Hospital Albert Schweitzer (HAS) Primary Health Care Service Area with that for Haiti in general. HAS provides an integrated system of community-based primary health care services, hospital care and community development	48 months	under 5 years of age children	Under-five mortality was 58% less in the HAS service area, and mortality for children 12-59 months of age was 76% less

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Huicho et al. 2008 ²⁰⁷ Bangladesh, Brazil, Uganda and Tanzania	cross sectional	CHWs	the clinical performance of health workers with longer duration of preservice training (those with >4 years of post-secondary education in Brazil or >3 years in the other three countries) and shorter duration (all other health workers providing clinical care). We calculated quality of care with indicators of assessment, classification, and management of sick children according to IMCI guidelines. Every child was examined twice, by the IMCI-trained health worker being assessed and by a gold-standard supervisor.		-	children under 5 years of age	The proportions of children correctly managed by health workers with longer duration of preservice training in Brazil were 57.8% (n=43) versus 83.7% (n=61) for those with shorter duration of training (p=0.008), and 23.1% (n=47) versus 32.6% (n=134) (p=0.03) in Uganda. In Tanzania, those with longer duration of training did better than did those with shorter duration in integrated assessment of sick children (mean index of integrated assessment 0.94 [SD 0.15] vs. 0.88 [0.13]; p=0.004). In Bangladesh, both categories of health worker did much the same in all clinical tasks. We recorded no significant difference in clinical performance in all the other clinical tasks in the four countries.
Lindblade et al. 2006 ²⁰⁸ western Kenya	cross sectional	CHWs	Finger-prick blood samples were taken from all consenting participants. Haemoglobin (Hb) levels from the HCS were compared with results from a HemoCue™ portable haemoglobinometer		3 months	children aged 2 months to 2 years and a sample of pregnant women	The prevalence of anaemia (Hb < 11 g/dl) in these groups was 87%, 79%, 74% and 52%, respectively. The prevalence of severe anaemia (Hb < 7 g/dl) was 24%, 11%, 10% and 2%, respectively. The sensitivity of the HCS for anaemia ranged from 60% to 79% and specificity from 59% to 94%. The sensitivity of the HCS for severe anaemia ranged from 24% to 63% and the specificity from 97% to 100%
Edward et al. 2007 ²⁰⁹ Gaza, Mozambique	cross sectional	CHWs	The community-based child survival programme ensured equitable and universal coverage of all households with children under 5 years of age by organizing 173 care groups, each consisting of 10–15 volunteers who were trained through culturally appropriate methods of instruction (drama, song, role play, etc.). Each volunteer was assigned to ten of her neighbouring households and conducted monthly home visits to provide health education for the caretaker and to register vital events.		45 months	children under 5 years of age	The child survival programme implemented in Chokwe district of Gaza province, Mozambique, achieved high coverage for bed net use (80%), oral rehydration therapy for children with diarrhoea (94%) and prompt care-seeking from trained providers for children with danger signs. Evidence from this system indicated a 66% reduction in infant mortality and a 62% reduction in under-five mortality. The mortality survey showed reductions of 49% and 42% in infant and under-five mortality, respectively. The leading causes of death identified by verbal autopsies were malaria (30%), neonatal causes (17%) and pneumonia (21.3%).
Dawson et al. 2008 ¹⁹² Nepal	Program description	CHWs	Female community health volunteers were selected as the national cadre to manage childhood pneumonia at community level using oral antibiotics. A technical working group composed of government officials, local experts and donor partners embarked on a process to develop a strategy to pilot the approach and expand it nationally.		20 years	children under 5 years	Community-based management of pneumonia doubled the total number of cases treated compared with districts with facility-based treatment only. Over half of the cases were treated by the female community health volunteers. The program was phased in over 14 years and now 69% of Nepal's under-five population has access to pneumonia treatment.

Table 14B: Description & Characteristics of Outreach workers in Childhood illnesses and immunization

Study	Education	Recruitment Criteria	Training Content	Duration	Certification / Ongoing training	Role	key competencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
Arifeen et al. 2009 ^{181, 197} CHWs (female)		Recruited from the population	Didactic and Practicum deployed with supplies of essential commodities on pneumonia and malnutrition	10 days training in case management and 5 days in counseling	Extensive monitoring and supervision	-managing children in both first-level and referral-level Facilities	Adaptation to IMCI case management strategies and use of structured referral form.	field supervisors responsible for 5-9 VHWs + regular visits by project physicians	1 CHW per 2200 population	Survey was repeated after 2 years of implementation of program	
Fisher et al. 2009 ¹⁷⁸ CHWs (F)	High school	Recruited from neighborhood	Didactic Trained and contents covered the asthma disease process, asthma action plans, communication techniques, social support, and behavior change strategies	3 months		Asthma counseling, administration of asthma controlling medications and asthma reliever medications and asthma monitoring	Asthma management	Nurse and psychologist			Hospitalization data was used to evaluate the effectiveness
Pence et al. 2005 ¹⁸⁸ CHWs (M)			Didactic trained for counseling, education, follow up and diagnosis	90 days training							
Rodewald College et al. 1999 ¹⁷⁷ CHWs (F)	College education	Recruited from neighborhood	They were trained to identify children, prompt their parents								
Ali et al. 2001 ¹⁸² CHWs (F)		Recruited from the community	Didactic and Practicum trained on diagnosing an ARI as no pneumonia, pneumonia, and severe pneumonia				Detection and management of ARI [Collected data on spatial distribution of health practitioners]	Case Management strategies for pneumonia			
Bang et al. 1993 ¹⁶¹ TBAs (F)	Illiterate	From the neighborhood	Trained to treat pneumonia, furthermore they were also trained safe and hygienic delivery								
Curtale et al. 1995 ¹⁸⁹ CHWs (F)			Didactic training in immunization, family planning, ORT, nutrition and first aid care	24 days							
Khan et al. 1990 ¹⁸³ CHWs (F)	10 years	Recruited from village	Didactic they were trained to delivering health education and management of common illness related to maternal and child health							1 CHWs per 500 inhabitants	

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Congsu-vivatwong et al 1996 ¹⁹⁰ CHWs			Didactic WHO recommended curriculum was developed. They were trained to detect ARI	2 days training			Identified cases with ARI, management with antibiotics and referrals in case of serious illness	ARI detection and treatment				
Mtango & Neuvians 1986 ¹⁸⁷ CHWs (F)		from neighborhood	didactic training needed to provide health education to mothers about symptoms of ARI and treatment of pneumonia with antibiotics				visit each household, identify children under 5 years of age from household, educate mother about the signs and symptoms of childhood infection and treatment of pneumonia among children					
Black et al. 1995 204		from the community	didactic training children's health and nutrition, infant and toddler development, activities to promote children's development, parent child interaction, behavior management, relationship building, family relationships (including violence), child & family advocacy, problem-solving strategies, & community resources and services.	There was an eight-session training program			The home-visiting program was developed as a negotiated partnership between families and interventionists. Home visitors began by asking families about their strengths, needs, and priorities, and then worked with them to develop an individualized family service plan with specific goals and objectives		Lay home visitors supervised by a community health nurse.			
César et al. 1998 ¹⁸⁴ Itapirapua Paulista, Brazil CHWs (M & F)	3-10 yrs of formal school education	Local residents	Didactic Trained on how to diagnose and treat diarrhea and infectious respiratory diseases, infant immunizations and health seeking from health services for serious illnesses				CHWs made weekly visits and distributed medicine like analgesics, antipyretics, ointments, and drugs against helminthes and scabies. Followed approximately 410 children per week	Childhood illness recognition and treatment		\$ 140/month		This quality control consisted at least of five yrs
Choudhary et al. 2005 ¹⁹¹ CHWs (F)		Accepted by the community	Didactic They were trained to provide basic health care, nutrition and preventive and curative services	3-4 hours each day for 5 days			Visit households, provide health and nutrition counseling		Supervisory staff at ICDS 1 supervisor responsible for 20-25 workers		1 CHW per 1000 population	

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Gokcay et al. 1993-201 Urban Turkey	primary school graduates		3 week training on MCH, communication skills and home visits									
Johnson et al. 1993-202 Urban Ireland		interviewed by regional family development nurse	4 weeks of training									
LeBaron et al. 2004 Urban USA	college educated						if a child missed out a vaccination then the outreach worker attempted to contact a family		supervised by a person with doctorate in community and psychology			
Alderman et al. 2008 CHWs (F)			Didactic trained to promote exclusive breastfeeding, adequate and timely complementary feeding, hygiene behaviors, micronutrient intervention, treatment for malaria				They provided counseling, screen and monitored children and delivered effective community mobilization programs					
Ghebreyesus et al. 1999 CHWs (F)	Read and write	Selected by community	Didactic Diagnosis and treatment of malaria			Every month they had a meeting where they shared reports		Malaria control	Nurse incharge			
Anand et al. 2004 CHWs (M & F)			Given training on management of diarrhea and ARI	3 days training		Refresher were given						
Chopra & Wilkinson 1997 CHWs (F)		Accepted by the community	They were given training on promotional, preventive and curative services	4 months				CHW facilitators		\$ 10/day	1 CHWs per 100 homesteads	

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Perry et al.2006 ¹⁹⁰ , 196,206 CHWs (F)			Trained to provide immunization, family planning, expand prenatal care and safe delivery practices, promote the prevention and treatment of childhood diarrhea				They provided peer to peer health education, assist with clinic activities and provide referral to higher level of care and promote community involvement in planning, implementation and evaluation of services	Monitors were recruited to supervise these CHWs		Paid	1 CHW per 400-500 population	
Dawson et al.2008 ¹⁹² CHWs (F)		Identified by technical working group	Didactic training Management of childhood pneumonia and treatment with oral antibiotics				Their main task was to promote healthy behaviors and provide services in their villages	Treatment of pneumonia	Health care staff			

Primary Health Care Interventions Background

Community participation and utilization of CHWs are essential components of the primary health care model. CHW can undertake various tasks, including case management of childhood illnesses (e.g. pneumonia, malaria, and neonatal sepsis) and delivery of preventive interventions such as immunization, promotion of healthy behavior, and mobilization of communities. In this section we have basically pooled up all those studies that have implemented primary health care interventions related to maternal, newborn and child health and nutrition related interventions.

Evidence from Community Based Health worker projects

We found 12 studies related to the role of CHWs in the overall primary health care interventions (Table 15A & Table 15B). The CHWs recruited in these interventions were mostly literate²¹⁰⁻²¹² however those mentioned in the Oxford Policy Management and Omer et al. had 8 years of formal school education.^{213,214} The CHWs involved in Wayland et al. also had age criteria for selection and were supposed to be at least 18 years old for participation in the intervention.²¹²

The training modality used to impart knowledge to the CHWs involved in promotion of primary health care was mostly didactic²¹⁰⁻²¹² while practicum was an added modality in the Omer et al. and Oxford Policy Management report.^{213, 214} The training content was pertinent to basic health care. In Hill et al. the CHWs were trained to promote community participation in health education, water and sanitation.²¹⁰ The CHWs involved in Edpuganti et al. were trained to provide health education related to diarrhea, purpose and preparation of oral rehydration solution, infant nutrition, usage of birth control and growth monitoring of children.²¹¹

The Wayland et al. trained CHWs in the prevention of rabies and counseling on breastfeeding

and nutrition of mother and children.²¹² They were also trained to provide chemoprophylaxis of malaria and purpose and preparation of oral rehydration solution.²¹² They were evaluated by their research team who reported their degree of success.²¹² The CHWs involved in Omer et al. were trained in primary health care services, family planning methods and provision of supplies, nutritional counseling, treatment of common ailments like diarrhea, malaria, ARI, TB and intestinal parasites.²¹³ They were also trained to provide DOTS and disseminate awareness regarding preventive measures against HIV.²¹³ These CHWs received a monthly stipend of Rs 3600 per month, which seemed to have a moderate impact in the outcomes of this intervention as compared to the studies where the CHWs were all volunteers.²¹³

A study conducted by Sauerborn et al. assessed the service utilization of health care workers as compared to other health facilities.²¹⁵ The outcomes of the study showed that 69% of the population approached CHW for primary health care.²¹⁵ The CHWs involved in Bukhari & Gupta were village health guides who were trained to deliver primary health care facilities in the community.²¹⁶ The role of CHWs in Couper et al. encompassed maternal and child health care, family planning, case finding, and follow up of infectious diseases like TB and malaria and mental health problems.⁶⁶ They were also trained to provide limited symptomatic treatment of diabetes and hypertension and addressed the issues of environmental and occupational health.⁶⁶ In Zuvekas et al. the CHWs provided community health care to the fellow farm workers, increased awareness of preventive health behaviors and promoted early enrollment of pregnant women for prenatal care.¹⁹

The Kauffman & Myers trained the CHWs in the fundamentals of primary health care including health promotion and disease prevention.²¹⁵ The CHWs in Reis et al. promoted use of ORT and

vitamin A supplements to prevent dehydration and blindness due to insufficient consumption of vitamin A.²¹⁷

Conclusion

The CHWs involved in primary health care played their role in health promotion and preventive health education. They also provide treatment for minor ailments and injuries as a therapeutic intervention. In the studies reviewed financial incentive was paid only in one intervention which seemed to have a moderate impact on its outcome as compared to those where the CHWs were working as volunteers.

CHW Snapshot 9

China Bare Foot Doctors

Program overview

In 1968, China introduced the program of bare foot doctors as a national policy under the guidance of Red Flag.⁶³ The program was aimed at providing services, including immunization, delivery for pregnant women, and improvement of sanitation. They not only prescribed antibiotics and western medicine but also performed simple surgical operations. Training of barefoot doctors varied and their recruitment depended on a candidate's political attitude and local relationship rather than educational background.

Program constraint and limitation

In 1980, after the collapse of reform in the health care system, from cooperative medical system to a payment-based system of medical care in rural areas. In that era bare foot doctors lost their institutional and financial support and in 1985 their title got canceled by the ministry of health and some of them became village doctors.

Source: Zhang & Unschuld 2008⁶³

Bare Foot Doctors, China

- ✓ **Education** secondary school
- ✓ **Training** 3-6 months

Table 15A: Other Primary Health Care intervention – characteristics of included studies

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Hill et al. 2000 Farafenni, Gambia	Quasi RCT	CHWs TBAs	Each of them was responsible for the supplies, supervision and the continuing education of the village health workers (VHWs) and trained birth attendants (TBAs) in about 5 PHC villages. They provide EPI and maternal and child health services	intervention areas were compared with areas where PHC were not developed	180 months	general population	Following the establishment of the PHC system in 1983, infant mortality dropped from 134/1000 in 1982–83 to 69/1000 in 1992–94 in the PHC villages & from 155/1000 to 91/1000 in the non-PHC villages over the same period. Between 1982 & 83 & 1992–94, the death rates for children aged 1–4 fell from 42/1000 to 28/1000 in the PHC villages & from 45/1000 to 38/1000 in the non-PHC villages. In 1994, when supervision of the PHC system has weakened, infant mortality rates in the PHC villages have risen to 89/1000 in 1994–96.
Edpuganti 1995 Pacatuba, Brazil	pre/post	CHWs	Health agents were trained to perform their task in field, they were trained to visit household under their coverage and provide them health education related to diarrhea, purpose of ORT, infant nutrition, usage of birth control and they also weighed children.		2 months	general population	Community had lack of knowledge in the causes of diarrhea, purpose of ORT, sources of infant nutrition, usage of birth control and purpose of weighing children.
Wayland 2002 Rural Brazil	cross sectional Retro-spective	CHWs	Brazil implemented a nationwide CHW program in 1991. The goal of this program, called PACS (Programa de Agentes Comunitárias de Saúde), is to improve PHC coverage for children under five and pregnant women in low-income households. During these visits the CHW should measure the nutritional status of pregnant women and children under the age of two in each household. When the CHW encounters a malnourished child or pregnant woman she registers them for the and educate family members on various health topics during their monthly visits		1 months	mothers and children under five population	12% of population received prenatal care, 9% receive breastfeeding counseling, 13% on immunization, 18% on diarrhea and ORS preparation, 9% on nutrition and 5% on respiratory infections
Bukhari & Gupta 2016 India	cross sectional study	CHWs	village health guides were trained to deliver primary health care facilities in the community		4 months	general population	malaria promotion activities were undertaken 0.006% time health education sessions were given 5% times treatment of minor ailments were 47% time family planning promotion activities were performed 17% times and immunization 4% time
Couper 2004 Iran	Cross sectional	CHWs	Every health house covers one main village and one or more satellite villages. The health house is responsible for maternal and child health care, family planning, case finding, and follow up of infectious diseases (TB and malaria), mental health problems and, more recently, other chronic illnesses such as Diabetes and Hypertension, limited symptomatic treatment, environmental health, and occupational health.			General population	No outcome reported
Omer 2002 Pakistan	Cross sectional	CHWs	Over the last decade the GOP and several NGOs have focused attention on improvement in the health sector. One initiative to improve accessibility to primary health care for women and children is the National program for LHW, in which LHWs were recruited and provide services for family planning and PHC		12 months	general population	Women in exposed group were 61% likely to stop her routine work during pregnancy, 60% gave colostrum, 60% more likely to feed her newborn breast milk after birth, twice more likely to introduce liquid other than breast milk to child before the age of four months compare to women who were not exposed to LHWs

Study / country	Study design	Interventions		Years of study	Participants	Outcomes
		Outreach worker	Control arm			
OPM Evaluation 214, 218 Pakistan	Cross sectional	CHWs	Evaluation of National lady health workers program	36 months	General population	Coverage is about 70%. Vaccination promotion coverage: 67% of children under five. Contraceptive usage: 20% of all users of modern contraceptives; 50% of all LHW seen and referred emergency case in previous three months. Indicators of population served by LHWs were slightly better off than National figures
Zuvekas et al. 1998 ¹⁹ Michigan, USA	Cross sectional	CHWs	Northwest Michigan Health Service's Camp Health Aide Program uses migrant farm workers as health-resource persons in the migrant camps to provide community health care among fellow farm workers and promote early enrollment of women in prenatal care; improve the health of migrant CHWs families; and increase awareness of preventive behaviors and general health for the migrant population.	-	general migrant population	CHAs had 1710 encounters with 1685 users CHAs made 687 referrals for migrants for services at the health center, dentist, social service agency, etc. CHAs performed 3 11 liaison encounters between the migrants and the health center staff and various agencies. CHAs administered basic first aid on 402 occasions to migrants.
Sauerborn et al. 1989 ²¹⁵ Burkina Faso	Cross sectional	CHWs TBAs	A representative household survey was carried out in order to study the utilization of CHW in relation to other sources of health care	-	General population	Villagers consulted their CHW only in 8.8% of mild diseases, in 69% the family contacted CHWs for primary care. In the case of serious diseases, which the CHW was supposed to identify and refer, the villagers by passed the CHW in 96.5%
Reis et al. 1991-217 Indonesia	cross sectional study	CHWs	CHWs promoted use of ORT and vitamin A supplements to prevent dehydration secondary to diarrhea and blindness due to insufficient consumption of vitamin A.	12 months	General population	76% of all children were weighed 34% of all mothers were advised of growth, 40% on immunization, 36% in family planning and 48% in diarrheas management. 81% were distributed vitamin A.
Kauffman & Myers 1997 ²¹⁹ Thailand	cross sectional Qualitative	CHWs	CHWs were trained in health promotion and disease prevention and fundamentals of PHC	2 weeks	general population	Majority of villagers did not know about CHWs and only few had used their services.
Colombo et al. 1979 ²²⁰ Portland, USA	Comparative cross-sectional surveys	CHWs	Initially, families were divided into two groups, one with and one without outreach workers. Outreach workers (neighborhood health coordinators) were trained in prevention and health education. They were then assigned to specific subgroups of the poverty population to teach the importance of preventive services and to motivate persons to use these services.	23 months	Pre school children from poverty families.	Findings suggest that special intervention programs, using indigenous and nonprofessional outreach workers, can increase preventive service utilization by poverty groups.

Table 15B: Description & Characteristics of Outreach workers

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Hill et al.2000 ²¹⁰ Farafenni, Gambia			Didactic They were trained to provide community participation in health education, water and sanitation					They were trained in close liaison with nurses and TBAs	Community health nurses			
Edpuganti 1995 ²¹¹ CHWs		Health agents from the community	Didactic health education related to diarrhea, purpose of ORT, breast feeding, infant nutrition, usage of birth control and they also weighed children.	2 months			Visit and provide health education related to diarrhea, purpose of ORT, infant nutrition, usage of birth control and they also weighed children.	Childhood illnesses	local supervisors and the officials at the State Secretary of Health			community members were interviewed
Wayland 2002 ²¹² Rural Brazil CHWs	Literate	From local neighborhood	Didactic Trained in basic healthcare. Attended continuing education workshops on specific topics (e.g. rabies prevention, breastfeeding) They are required to work eight hours a day, Monday to Friday. Had to pass	written exam			Teaching people how to make oral rehydration solution (ORS), immunizing children, providing malaria prophylaxis, etc.	health education and prophylaxis of malaria				Researchers evaluated to report degree of success
Omer 2002 ²¹³ CHWs (F)	8 years of school	Recruited from the community	didactic and practical they are trained on primary health care services, family planning methods and provision of supplies, nutritional counseling, treatment of common ailments like malaria, diarrhea disease, ARI, tuberculosis, intestinal parasites etc. and involve in DOTS treatment, disseminate preventive measures against HIV	18 months		monthly meeting with supervisor where they share their experiences	provision of treatment of common ailments, participate in immunization campaigns, provision of nutritional and family planning counseling, antenatal care and post natal care of women, growth monitoring of children	They are PHC service provider	Lady health supervisor	Rs. 3600 / month	1 CHW per 1000 population	OPM evaluation

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
OPM Evaluation 214 CHWs 8F9	8 years of school	From local neighborhood	didactic and practical they are trained on primary health care services, family planning methods and provision of supplies, nutritional counseling, treatment of common ailments like malaria, diarrhea disease, ARI, tuberculosis, intestinal parasites etc. and involve in DOTS treatment, disseminate preventive measures against HIV	18 months		monthly meeting with supervisor where they share their experiences	provision of treatment of common ailments, participate in immunization campaigns, provision of nutritional and family planning counseling, antenatal care and post natal care of women, growth monitoring of children	They are PHC service provider	Lady health supervisor	Rs. 3600 / month	1 CHW per 1000 population	OPM evaluation
Colombo et al. 1979 220		from neighborhood	Outreach workers (neighborhood health coordinators) were trained in prevention and health education	6 months			The role of coordinators was to provide information and to educate selected persons regarding the chosen preventive services. They were expected to encourage and motivate people to obtain the services within the Kaiser-Permanente program.					

Malaria Control Intervention Background

Malaria currently kills up to 3 million people per year worldwide and a child somewhere in the world every 30 seconds, most of them children in sub-Saharan Africa.²²¹ The disease also contributes significantly to anaemia among children which is a major cause of poor growth and development. Malaria during pregnancy is also associated with severe anaemia and other illness in the mother and contributes to low birth weight among newborn infants which is one of the leading risk factors for infant mortality and poor growth and development. Yet the disease is absolutely treatable and highly preventable. Therefore, the international community has vowed malaria part of its MDGs to make appropriate investments and interventions to bring this disease under control. Malaria is truly a disease of poverty, which is badly affecting the poor who live in malaria-prone rural areas in poorly-constructed dwellings that offer few barriers against mosquitoes. Despite malaria's shocking role in illness, lives, and economic costs,²²² measured are not taken as vigorously as it should be. Malaria's preventable and treatable cycle of illnesses can be altered through simple measures by community volunteers. We therefore reviewed all the interventions applied to control and prevent malaria through simple community based interventions by CHWs.

Community Based Evidence

There are total of 29 studies identified that delivered intervention related to malaria prevention and control in community (Table 16A & Table 16B). Among these identified these, seven were RCTs, five were quasi RCTs, eight were pre/post design while three were comparative cross sectional studies. Studies targeted general population, children under 5 years of age and pregnant women for malarial treatment.

The CHWs in a total of 21 studies identified under the domain of malaria were mostly residents of the community.²²³⁻²³⁸ The health workers re-

cruited in the Delacollete et al. and Deressa et al. were literate,^{227, 237} while those in the Rubesh II et al. 1990 intervention were both literate and illiterate.²³⁹ The training modality used to train these CHWs included didactic approach in 12 studies^{224-231, 233-235, 237, 238, 240} as well as didactic along with practicum in 3 studies.^{223, 235, 241} The training provided to the CHWs in the Kroeger et al. was workshop based.²³²

Refresher training was provided in few of the interventions. The Kouyate et al. provided just one refresher course during the study period,²²³ while in Delacollette et al. there used to be a monthly meeting with the project coordinator.²²⁷ The refresher training in Pagoni et al. was Conducted by the core group of mothers²²⁹ and by the malaria treatment study team in Mayxay et al. intervention.²⁴¹ In some studies refresher training was provided from time to time after the volunteers had spent some years working in the community.^{235,236} The refresher training had an impact on the outcomes of interventions as compared to the studies which did not have refresher or on-going training. This is evident from high number of self reported Chloroquine treatment and more referrals in Kouyate et al. and from decrease in malarial cases in intervention arm in Delacollette et al. and Pagoni et al.

The peer counselors (PC) in the Kidane & Morrow 2000 helped neighbor group mothers recognize and treat symptoms and also to recognize the adverse effects of treatment if they might occur ²²⁴. These PCs were supervised by the CHWs from the community ²²⁴. The proper monitoring and supervision of PCs and educating neighbor group mothers resulted in reducing under five mortality by 40% (P <0.003). The CHWs in most of the interventions were trained to provide treatment of uncomplicated malaria with Chloroquine. ^{223, 228-231, 233, 235-237, 240} However additional training on how to take thick film and refer to health centre if fever not treated in 3 days.²²⁷ They were supervised

by the nurse in-charge of health centre.²²⁷ The CHWs in Sievers et al. intervention were also trained in laboratory monitoring and checking hemoglobin of all the children with malaria.²³⁰ Those involved in Mayxay et al. were also involved in the Laboratory diagnosis of malaria.²⁴¹ The CHWs involved in Das et al. distributed Chloroquine, free of charge to all fever cases²³⁴ while in the Mbonye et al. the CHWs dealt with the chemoprophylaxis of malaria in the pregnant women.²²⁵

The intervention carried out by Okanurak & Ruebush II was conducted in two parts of the world, namely Thailand and Latin America.²³⁵

The CHWs involved in this intervention were unpaid but provided free medical services at government hospitals.²³⁵ Their role was to spread health education related to malaria prevention, to make blood smears, offer presumptive treatment and maintain patient record.²³⁵ Since the nature of study was a cross sectional survey so we could not report the effectiveness through comparison, but it does show that they collected blood smears of 15% and 30% of the population in Thailand and Latin America respectively. They identified 9% and 47% of all the cases of malaria in Thailand and Latin America respectively.²³⁵

CHW Snapshot 10

Anganwadi Workers (Village Health Guides) – India

Program overview

The CHW scheme in India was introduced in 1977 with the aim of providing health services at the doorsteps. The titles of community health worker has been changed over time from community health workers in 1977 to village health guides (Anganwadi workers) in 1981.^{242, 243} In 2002 the village health guides scheme was completely sponsored by family welfare program.

Operational aspects and considerations

village health guides are the people from community and their main goal is to provide curative, preventive and promotive health care at door steps and to involve rural people in the provision, monitoring and control of basic health services, and to create resource person trusted by the local population who could provide link between primary health center and the local community. They devote and work for at least 3 hours per day.^{242, 244}

Anganwadi Workers, India

✓ Education	minimal schooling
✓ Training	3 months
✓ Supervision	community
✓ Incentive	Rs. 50 per month and basic medicines of Rs. 50

Constraints in Sustainability

village health guides program is functional since last 25 years and the program comes under the state government and they are getting financial support from central government, but none of these are willing to take an ownership for the its sustainability. The program has encountered number of difficulties, among which is the initiation of perceiving themselves as village medical practioners.

Source: Unicef 2004¹⁸

Similarly the intervention by Kroeger et al. was conducted in three countries namely Ecuador, Colombia and Nicaragua.²³² The CHWs involved in this intervention were trained to diagnose and treat uncomplicated malaria.²³² After initial training, the refresher training workshops were conducted once a month by the research team.²³² This intervention seemed to have a positive impact on the outcomes as compared to the studies which did not have frequent and regular refresher workshops as evident by increased knowledge of malaria in intervention group by 33-61% as compared to the control.

The CHWs involved in Kolaczinski et al. intervention provided their services in the internally displaced persons (IDP) camp using color coded HOMOPAK according to age of the child.²³⁸

In Nsungwa-Sabiiti et al. CHWs actually trained mothers and provided them with 3 days pre packaged Chloroquine and other medicines as

HOMAPAK which resulted in 10% improvement in the community effectiveness of malarial treatment. In these studies mothers were supervised by community workers for proper identification and treatment of children at their homes.

Conclusion

The interventions related to the malaria prevention have shown positive outcomes especially in studies with regular supervision. The role of CHWs in outreaching the community to reduce the incidence of malaria has been very effective through their awareness campaigns, laboratory diagnosis and treatment that they provided for uncomplicated malaria.

CHW Snapshot 11

Community Health Workers – Sri Lanka

Program overview

In Sri Lanka the concept of community health workers started back in 1915 after involving teachers and village leaders work voluntarily. The initiation was introduced by Rockefeller Foundation who campaigned of hookworm infection control. Service organization such as family planning association started to train volunteers in 1970s from 60 in 1973 to 40,000 in 1987. From 1976 onwards, the Health Education Bureau developed its volunteer program and trained 100,000 volunteers.

Operational aspects and considerations

Volunteers were supposed to be from community and they were the educated males and females from rural areas. Their primary task was to provide health communication message and liaise on with community and health care providers. Each volunteer is responsible for 10 households. Their training differed from areas to areas.²⁴⁵ There were no material incentive for either health staff or volunteers and the means of the cost of the program is very low.

Community Health Workers, Sri Lanka

- ✓ **Education** educated
- ✓ **Training** 3 months training
- ✓ **Supervision** none

CHW Snapshot 12

Thailand Buddhist Monks (Village Health Volunteers)

Program overview

The Malaria Division of the Thai Ministry of Public Health started the Village Voluntary Malaria Collaborator program in 1961. The volunteers used to provide presumptive treatment with sulfadoxine-pyrimethamine^{235, 236} but such treatment was phased out at the end of 2001. Volunteers are also trained to provide education about malaria prevention methods, chemical and biological vector control practices, writing of reports, and community motivation techniques.

Operational aspects and considerations

Malaria volunteers are selected using a variety of methods. They are chosen from an established group in the community, identified by a malaria field officer in collaboration with the village leader, or selected by community leaders at a community meeting. The majority of volunteers are males over 30 years old and farm as their main occupation.^{235, 236} Training takes place over one to two days, with periodic refresher training. Topics covered during the training include: general information about malaria, such as basic epidemiology, prevention, and signs and symptoms; vector control, including spraying and biological control; management of malaria, including blood slide collection and preparation, and presumptive treatment; completion of patient records; and sensitization of the community.²⁴⁶

Village Health volunteers, Thailand

✓ Education	Compulsory education
✓ Training	1-2 days
✓ Refresher	periodic
✓ Supervision	Program officer
✓ Incentive	Free care at government facilities and certificate of recognition

Coverage and effectiveness

In 1990, there were approximately 40,000 malaria volunteers in Thailand. The volunteers took 15% of all the smears used for epidemiological surveillance. Case detection by volunteers was, however, less efficient than in clinics, with only 9% of the volunteers' smears positive, in comparison with 54% of smears positive at the malaria clinic and 26 per cent positive through other passive detection.

Source: WHO/Unicef 2006²⁴

Table 16A: Malaria Control Interventions – Characteristics of Included Studies

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Kouyaté et al. 2008 ²²³ Farafenni, Gambia	RCT	CHWs	Three types of workers: health workers (nurses); women group leaders; and the main care takers (usually the mothers) were trained. Thereafter, the women group leaders trained mothers on correct malaria management. Thus, CQ and paracetamol were pre-packed in plastic bags in four age-specific doses each with a specific color and containing pictorial guidelines according to national malaria treatment guidelines	Control arm received routine care *	24 months	children aged 6–59 months	Self-reported CQ treatment of fever episodes at home as well as referrals to health centers increased over the study period. Compared to baseline findings, the prevalence of anemia (29% vs. 16%, $p < 0.0001$) and malaria parasites such as prevalence of P. falciparum parasitaemia, fever and palpable spleens was lower at follow-up but there were no differences between the intervention and control group
Kidane & Morrow 2000 ²²⁴ Tigray, Ethiopia	cRCT	CHWs	mother were trained to teach neighborhood-group mothers to recognize symptoms in their under-5 children that might be a result of malaria, to give the appropriate course of Chloroquine for their age, to share Chloroquine properly, and to recognize possible adverse reactions from the drug.	In control areas mother were not trained.	24 months	children under 5 years	Under-5 mortality was reduced by 40% in the intervention localities (95% CI from 29.2–50.6%; paired t test, $p < 0.003$)
Winch et al. 2003 ¹⁹³ Bougouni, Mali	cRCT	CHWs	Improve the skills of the village drug kit managers to counsel parents on correct home administration of Chloroquine (CQ), and (ii) increase the referral of sick children to community health centers.	CHWs of control group also received their standard training but they were not given additional training on counsel & referral	3 months	children under 5 years of age	The intervention was associated with significant increases in knowledge of danger signs requiring referral, reported quality of Counseling by the CHW, and correct administration of CQ in the home. Parents reported that 42.1% of children in the intervention group were referred to the CHC by the CHW compared with 11.2% in the comparison group (odds ratio = 7.12, 95 % CI 2.62–19.38).
Mouou-Somo et al. 1995 ²⁴⁷ South West Cameroon	cRCT	CHWs	deltamethrin treated bed nets given to household	no interventions	12 months	children of ages 0–15 years	For the months of April, June and August (rainy season), deltamethrin impregnated bednets did not reduce malaria prevalence significantly, but the overall malaria prevalence for all months of the study was significantly reduced (Chi 2 MH = 9.17, $P = 0.002$).
Koreger et al. 1995 ²⁴⁸ ecuador	cRCT	CHWs	deltamethrin treated bed nets given to household	no interventions	12 months	general population	The protective efficacy varied between 0% and 70% when looking only at the postintervention differences between intervention and control groups. The average protection was 40.8% when considering a four-month incidence of clinical malaria attacks and 28.3% when considering a two-week malaria incidence.
Koreger et al. 1995 ²⁴⁸ Colombia	cRCT	CHWs	deltamethrin treated bed nets given to household	no interventions	12 months	general population	The protective efficacy varied between 0% and 70% when looking only at the postintervention differences between intervention and control groups. The average protection was 40.8% when considering a four-month incidence of clinical malaria attacks and 28.3% when considering a two-week malaria incidence.

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Snow et al. 1987 ²⁴⁹ Rural, Gambia	cRCT	CHWs	permethrin treatment of existed bed nets	nets were not treated	4 months	General population	The incidence of febrile episodes with associated malaria parasitaemias throughout the rainy season and the prevalence of splenomegaly and parasitaemia at the end of the rainy season were determined in 233 children aged 1–9 years who slept under bed nets and in 163 children who did not. Bed nets were used correctly by the children in the study cohort, but direct observations showed that a significant number of children left their nets for a period during the night. There was no significant difference in the incidence of clinical attacks of malaria or in any other malariometric measurement between the 2 groups.
Rowald et al. 1996 ²⁵⁰ Baghicha & Kagan, Pakistan	cRCT	CHWs	trained CHWs to conduct mass meetings with village elders and issue bednets and treatment with insecticide	no treatment in control areas	6 months		10% in the intervention arm compared to 22.4% in control arm developed malaria.
Mbonye et al. 2008 ²²⁵ Mukono, Uganda	Quasi RCT	CHWs	Train community resource people to distribute IPTp. In Uganda, IPTp consists of two therapeutic doses of SP (three tablets of 500 mg sulfadoxine + 25 mg pyrimethamine)	IITp was provided through health center	21 months	Pregnant women	The prevalence of malaria episodes decreased from 906 (49.5%) of 1830 to 160 (17.6%) of 909 (P < 0.001) with the new delivery system and from 161 (39.1%) of 412 to 13 (13.1%) of 99 (P < 0.001) with health units. There was a lower proportion of low birth weight 6.0% with the new delivery system versus 8.3% with health units (P < 0.03)
Nsungwa-Sabiti et al. 2007 ^{226, 251, 252} West Ugandan, Uganda	Quasi RCT	CHWs	Volunteers educated mothers and provided a 3-day course of pre-packaged Chloroquine plus sulfadoxine/pyrimethamine tablets (HOMAPAK)	Children in control area was given routine care	18 months	Under 5 children	13.5% improvement in the accumulated proportion of patients Anti malarial drug efficacy resulted in a 10.4% improvement in the community effectiveness of malaria treatment
Delacollette et al. 1996 ²²⁷ Katana, Zaire	Quasi RCT	CHWs	In control areas CHWs provided treatment of malaria and also provided referrals to patient	In control arm, no specific malaria control effort was undertaken	24 months	General population	Episodes of malaria cases decreased significantly and more cases were treated at home (+16%) and by CHWs (+16%). Malaria cses in intervention arm decreased to
Menon et al. 1990 ^{240, 253} Farafenni, Gambia	Quasi RCT	CHWs	community health workers treated all children with fever during rainy seasons with Chloroquine	workers were not trained for malaria treatment in control group	48 months	children 3-59 months of age	49% reduction in children mortality and 73% reduction in attacks of clinical malaria

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Onwujiokwe et al. 2006 ²²⁸ Enugu State, Nigeria	Quasi RCT	CHWs	The CHWs were trained to treat only uncomplicated cases of fever and to refer all other cases to the health centre or general hospital	Routine care was provided	6 months	Adult population except pregnant ladies	The use of community health workers (CHWs) increased from 0% to 26.1% ($p < 0.05$), while self-treatment in the homes decreased from 9.4% to 0% ($p < 0.05$) after the implementation of the CHW strategy. Use of patent medicine dealers also decreased from 44.8% to 17.9% ($p < 0.05$) after CHW strategy was implemented.
Pagoni et al. 1997 ²²⁹ , 254 Sourou, Burkina Faso	pre/post	CHWs	Training a core group of mothers in every village and supplying community health workers with essential anti malarial drugs specially packed in age-specific bags containing a full course of treatment. They used a simple algorithm for diagnosis of uncomplicated malaria.		12 months	Children under 7 years of age	All malaria cases decreased from 4712 in 1990 to 2612 in 1995. Proportion of malaria in 1990 was 5.6% (95% CI: 4.9 – 6.2) to 6.09% in 1995 (95% CI: 5.2 – 7.0)
Sievers et al. 2008 ²³⁰ Kayanza, Rwanda	pre/post	CHWs	The record review examined a total of 551 pediatric admissions to identify 1) laboratory-confirmed malaria, defined by thick smear examination, 2) suspected malaria, defined as fever and symptoms consistent with malaria in the absence of an alternate cause, and 3) all-cause admissions		12 months	Children under 5 years of age	The percentage of suspected malaria admissions that were laboratory-confirmed was greater during the pre-intervention period (80.4%) relative to the post-intervention period (48.1%; prevalence ratio [PR]: 1.67; 95% CI: 1.39 – 2.02; chi-squared p -value < 0.0001). Among children admitted with laboratory-confirmed malaria, the risk of high parasitaemia was higher during the pre-intervention period relative to the post intervention period (age-adjusted PR: 1.62; 95% CI: 1.11 – 2.38; chi-squared p -value = 0.004) Risk of severe anaemia was more than twofold greater during the pre-intervention period (age adjusted PR: 2.47; 95% CI: 0.84 – 7.24; chi-squared p -value = 0.08)
Spencer et al. 1987 ²³¹ Seradidi, Kenya	pre/post	CHWs	CHWS were provided Chloroquine Phosphate to provide treatment for malaria		27 months	Neonates, infants and children	Neonatal mortality increased from 37 /1000 live births to 49/ 1000 live births. Slight decline observed in post neonatal mortality i.e. from 73 to 67 /1000 live births. Early childhood mortality reduced from 25 to 18 per 1000 children
Koreger et al. 1996 ²³² Ecuador	pre/post	CHWs	There were two phases of the intervention: (1) the training of village health workers, and (2) community workshops. In intervention communities the topics were related mainly to malaria and in the control communities to other common health problems.		24 months	General population	The knowledge of malaria etiology and symptoms was 33-61 % better in the intervention group than in the control group. Knowledge of the recommended doses of Chloroquine increased significantly (34% in Ecuador, 93% in Colombia but not in Nicaragua) and correct use of Chloroquine in the treatment of malaria episodes also improved (26% in Ecuador, 85% in Colombia)
Koreger et al. 1996 ²³² Colombia	pre/post	CHWs	There were two phases of the intervention: (1) the training of village health workers, and (2) home visits and community meetings organized by the village health workers in intervention communities the topics were related mainly to malaria and in the control communities to other common health problems.		24 months		
Kroeger et al. 1996 ²³² Nicaragua	pre/post	CHWs	There were two phases of the intervention: (1) the training of village health workers, and (2) home visits and community meetings organized by the village health workers. In intervention communities the topics were related mainly to malaria and in the control communities to other common health problems.		12 months		

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Thang et al.2009 ²³³ Vietnam	Pre/post	CHWs	National Malaria Control Program (NMCP) was launched using community-based monitoring of malaria cases. The national insecticide-treated bed net (ITN) campaign, supported by an intensive media campaign on the importance of malaria and ITN use, and the widespread use of artemisin derivatives for treatment, were at the basis of such a success		33 months	General population	Malaria prevalence significantly decreased from 13.6% (281/2,068) in December 2004 to 4.0% (80/2,019) in December 2006. Malaria incidence decreased by more than 50%, from 25.7/1,000 population at risk in the second half of 2004 to 12.3/1,000 in the second half of 2006.
Das et al.2008 ²³⁴ Orrisa, India	Comparative cross sectional	CHWs	Volunteers from villages were selected for distribution of Chloroquine and the selection was made either by villagers or head of the village. The services of the volunteers were absolutely free and voluntary in nature. Chloroquine was provided free of charge to all fever cases.		24 months	General population	Mean annual incidence of 331.8 cases per 1,000 population during the three-year study period. The average morbid days due to fever (AFD) was reduced to 1.6 ± 0.1 from 5.9 ± 2.1 in the experimental villages while it remained at 5.0 ± 1.0 in the check villages.
Mayxay et al.2004 ²⁴¹ Rural Laos	Comparative cross sectional study	CHWs	Thick and thin stained blood smears were prepared by the VHVs from the same finger-prick for later microscopic examination. Patients with positive rapid tests at VHVs' houses were treated with oral Chloroquine (25 mg/kg over 3 days; Lao national guidelines), or were referred to the district clinic, where they were treated with either oral Chloroquine (above) or sulphadoxine-pyrimethamine single dose (25/1.25 mg/kg) or oral artesunate (4 mg/kg once a day for 3 days) plus mefloquine (15 mg/kg on day 1, 10 mg/kg on day 2).		10 months	general population	After 1 h training 64 village health volunteers (VHVs) from rural Laos, with no previous laboratory experience, performed two malaria rapid diagnostic tests (ParacheckPfTM and OptiMALTM) accurately.
Lindsay et al.1993 ²⁵⁵ , 256 Soma, Gambia	Comparative cross sectional PHC with nonPHC	CHWs TBAs	Malaria control program was implemented in PHC areas where insecticide impregnated nets and targeted chemoprophylaxis was used.		-	general population	Number of mosquitoes collected in PHC and non-PHC villages were not statistically different. The mosquitoes were found in the appreciable numbers in 4 months of the year (Geometric mean = 32.5, 95% CI: 18.2-57.3)
Okunurak & Ruebush II 2001 ²³⁷ Thailand	retrospective cross sectional	CHWs	CHWs responsibility was to take patient information, blood smears, and administer presumptive treatment with Pyrimethamine-sulfadoxine to residents with suspected malarial illnesses or to those with high risk behaviors.		Over more than 30 years	General population	CHWs collected 15% population blood smears 8.8% of all malarial infection were detected
Okunurak & Ruebush II 2001 ²⁴⁶ Latin America	retrospective cross sectional	CHWs	volunteer collaborator network was built in which CHWs were trained and they to take patient information, blood smears, and administer presumptive treatment of malaria		over more than 40 years	children 3-59 months of age	49% reduction in children mortality and 73% reduction in attacks of clinical malaria
Derssa et al.2005 ²³⁷ Oromia, Ethiopia	cross sectional survey	CHWs	and training on health education, diagnosis of suspected malaria cases and treatment by Sulfadoxine-Pyrimethamine (SP), referral of severe cases, source reduction of mosquito breeding sites, registration and reporting of treated cases, consumed anti malarial, registration of deaths and assessment of the overall status of the epidemic in their particular areas		2 months	general population	The case fatality rate and proportionate mortality ratio for malaria were 20.8% and 90.9% in August, respectively, in the Hospital.
Kolaczinski et al.2006 ²³⁸ Gulu, Uganda	cross sectional	CHWs	Distribute pre-packaged Chloroquine plus Sulfadoxine Pyrimethamine (HOMAPAK®) free of charge to caretakers of febrile children.		1 months	Children under 5 years of age	95.0% (CI: 93.3% – 98.4%) of their children had received the correct dose for their age and 52.3% of caretakers had retained the blister pack. Assuming correct self-reporting, the overall adherence was 96.3% (CI: 93.9% – 98.7%).

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Okanurak & Sornmani 1992 236 Thailand	Cross sectional	CHWs	CHWs were trained for malaria collaborator program		48 months	general population	10% of all malaria cases were detected by volunteers in 1987 which remain static over the years and was around 9% in the year 1990
Rubesh Ilet al. 1990 ²³⁹ Guatemala	pre/post	CHWs	28 CHWs were trained to detect malaria and treat the case		24 months	general population	illiterate counters treated an average of 10 patients per months while literate treated 12 per month,. illiterate treated 36% of the population while literate treated 30% of the population

Table 16B: Characteristics and description of outreach workers

Study	Education	Recruitment Training Criteria	Didactic and Practicum Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Kouyaté et al. 2008 CHWs	permanent residency in the sub-village, age 30–50 years	Didactic and Practicum Health Education and malaria management.	5 days	one refresher course over the study period	The main roles were: Training of health staff, women group leaders and mothers; Sensitization of communities; Drug supply to women group leaders, revolving fund Supervision of health workers and women group leaders	malaria diagnosis and treatment	supervision by their local health workers	They earned money after selling out drugs	1 CHW per 15 mothers			
Kidane & Morrow 2000 PCs	Mother coordinators	Didactic Trained to teach neighbor group mothers to recognize symptoms in their under-5 children that might be a result of malaria, to give the appropriate course of treatment for their age, to share Chloroquine properly, and to recognize possible adverse reactions from the drug.			Kept track of and Record, in monthly format of all births and deaths, and of drug supply. To help neighbor group mothers recognize and treat symptoms of malaria and also to recognize its adverse effects if they may occur. Would make appropriate referrals where needed.	Supervised by CHWs						
CHWs	From community				collected the monthly reports on births, deaths, migration in and out of the community, and referrals, and checked whether drugs were short and reported any problems. Supervised mother coordinators and acted as executive for social affairs of the local community.	Supervised by team from the TCBMCP						

Study	Education	Recruitment Criteria	Training Content	Duration	Certification / Ongoing training	Role	key competencies	Supervision (if any)	coverage	Evaluation mode
Mbonye et al. 2008 ²²⁵ CHWs	Community resource people.	Didactic Training Module included dangers of malaria in pregnancy; malaria prevention in pregnancy; the benefits of SP and its side-effects; taking blood samples for parasite count and hemoglobin analysis; taking the baby's weight; and estimating gestational age	1 week		Distributed IPTp, gave iron and folic acid supplementation, deworming, and information on proper nutrition.		Chemoprophylaxis of malaria in pregnant women.			OPM evaluation
Nsungwa-Sabiti et al. 2007 ²²⁶ , 251, 252 CHWs		Didactic training on recognition of illness symptoms, advising mothers on the use of HOMAPAK and health facilities, and on keeping treatment registers.	3 days		provided anti-malarial in two age-specific, colour-coded formulations, a red pack for infants aged 2—23 months and a green pack for those aged 2—5 years.		Provided treatment of Malaria and offered it under directly observed therapy	district health team on a monthly basis.		
Dela-collette et al. 1996 CHWs	Literate Local villagers/farmers	Didactic in-service training at health centre in the use of simple treatment algorithm for fever and early recognition and management of malaria	2 weeks	Monthly meeting with project coordinator of the project	Quickly provided Chloroquine phosphate treatment for isolated episodes of fever (presumed malaria). Take thick film and refer to HC if not cured in 3 days		Supervised by nurse in charge of HC	Received only symbolic monetary reward.		
Onwu-jekwe et al. 2006 ²²⁸ CHWs	selected community members	Didactic Training trained to treat only uncomplicated cases of fever and to refer all other cases to the health centre or general hospital within town.	1 month		Kept record of patient clinical data, cost of drug and drug supplies, provided treatment by home visit if patient unable to reach them. Referred cases with persistent fever to the health centre or hospital that was nearest to the sick person.		Treatment of uncomplicated malaria	Paid commission on drugs		Post intervention survey to evaluate the effectiveness of CHWs
Pagoni et al. 1997 ²²⁹ , 254 CHWs	Workers from the community	Didactic Training Use of a simple algorithm for diagnosis of uncomplicated malaria.		Refresher training by the core group of mothers	held the supply of drugs and were instructed to sell treatments to the mothers upon request, provided the child did not need Referral. Compiled monthly returns, indicating the number of bags sold for each age group.		Treatment of uncomplicated malaria and record keeping of drug supply	allowed to keep 0.6 US cents for each bag		Assessed using a survey performed one year after the implementation

Study	Education	Recruitment Criteria	Training Content	Duration	Certification / Ongoing training	Role	key competencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
Sievers et al.2008 ²³⁰ CHWs	Community workers	Community workers	Didactic Training trained to distribute anti-malarial within each village to children of five years of age or less with fever and symptoms consistent with uncomplicated malaria. All therapeutic regimens were in accordance with Rwanda Ministry of Health guidelines			Managed children with uncomplicated malaria and referred those with severe illness and dehydration to hospitals. Laboratory monitoring, including checking admission hemoglobin for all children with suspected malaria.	Management of uncomplicated malaria				
Spencer et al.1987 ²³¹ CHWs	Volunteer village health helpers	Volunteer village health helpers	Didactic training Trained to treat uncomplicated malaria with Chloroquine			Provided Chloroquine phosphate for the treatment of malaria,					census and registration of vital events
Menon et al.1990 ²⁴⁰ , 253 CHWs (F)			Didactic they were trained how to treat febrile illness with Chloroquine			Visit households; identify children with febrile illness and treat Chloroquine medication					
Kroeger et al.1996 ²³² Ecuador CHWs	Local Health promoters	Local Health promoters	Didactic and workshop based training on community based malaria control.		Weekend training workshops were held once a month by 1 or 2 members of the research team	Provided workshop based training to the community related to malaria. PMade home visits and organized community meetings	Malaria diagnosis and treatment	Supervised by the research team and the health staff of ministry of health.			The research team observers &evaluated the problems and achievements of health promoters.
Kroeger et al.1996 ²³² Nicaragua CHWs	Malaria volunteers	Malaria volunteers									
Kroeger et al.1996 ²³² Nicaragua CHWs	Volunteer malaria workers	Volunteer malaria workers									
Thang et al.2009 ²³³ CHWs	Village health workers	Village health workers	Didactic Training trained to use rapid diagnostic tests, to take blood slides and administer the treatment to malaria patients according to the test results			Updated census file with births, deaths and migrations records and reported monthly to the malaria provincial station where the electronic census file was managed. Also involved in health promotion and malaria control activities.	Malaria diagnosis and treatment				

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision (if any)	Incentive	coverage	Evaluation mode
Das et al. 2008 ²³⁴ CHWs	Volunteers selected by villagers or head of the village and some malaria workers also included.	Didactic Training on diagnosis based on the symptoms of malaria and on Chloroquine administration as prescribed in the National Anti-Malaria Program through group discussion sessions and demonstrations	1 week			provided Chloroquine to those patients who approach them for treatment and to fill up a 'fever treatment sheet' and the number of Chloroquine tablets given. Volunteers with no educational background were supplied with pre-packed tablets in colored disposable plastic pouches for different age classes.		Distributed Chloroquine, free of charge to all fever cases.	Unpaid			Impact was evaluated based on the changes observed in fever days, incidence, parasite incidence and prevalence.
Mayxay et al. 2004 ²⁴¹ CHWs	Chosen on their willingness to participate.	Practicum training included training in blood collection, performance & interpretation of rapid tests and making malaria smears, was held in the Lao language	1hr			follow-up and re-teaching by the malaria treatment study team		Laboratory diagnosis of malaria	Monitor at Phalanxes District Clinic.			
Okanurak & Ruebush II 2001 ²⁴⁶ Thailand CHWs	Selection made by the malaria field officer and the village headman.	Didactic and Practicum includes general information on malaria transmission, symptoms, prevention, how to prepare thick blood smears, administer presumptive treatment and complete the patient report forms. Also trained in motivational techniques for antimalarial activities in the community.	1-2 days	Certificate from Malaria Division & Ministry of Public Health in the 2nd year of service.	Refresh course organized from time to time after the volunteers have been working for some years.	Spread awareness on malaria prevention, made blood smears, offered presumptive treatment and maintained patient record		malaria diagnosis and treatment	Supervised by malaria field officer on a weekly basis.	Unpaid. Provided free medical services at government hospitals and centres.		Evaluated on the basis of performance.
Okanurak & Ruebush II 2001 ²⁴⁶ Latin America CHWs	Community malaria workers selected from Epidemic-affected peasant associations (Pas).	Didactic training on health education, diagnosis of suspected malaria cases and treatment by Sulfadoxine-Pyrimethamine (SP), referral of severe cases, source reduction of mosquito breeding sites, registration and reporting of treated cases, consumed antimalarial, registration of deaths and assessment of the overall status of the epidemic	3 days			diagnosis and treatment of uncomplicated malaria cases with SP; referral of severely ill patients; community mobilization on environmental mngtt & health education on malaria transmission, prevention, control & the importance of early diagnosis & treatment, & weekly reporting of their performances.		Provision of malaria treatment of malaria under supervision	Supervision carried out by Pas			
Deressa et al. 2005 ²³⁷ CHWs	literate –capable of reading and writing											

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Kolaczinski et al. 2006 238 CHWs		Community drug distributors	Didactic training On provision of color-coded HOMAPAK according to age of the child to his/her care giver and maintenance of record				provided the correct dose of color coded HOMAPAK®, and recorded the age of the child	skills to manage malaria illness in IDP camps	Monthly Record screened by surveyor	Unpaid		Evaluations carried out
Okanurak & Sommani 1992 236 CHWs		established community groups, and then that community decided	didactic training covered 6 subjects. This subjects included general information about malaria, malaria control, how to prepare a think blood slide, drug distribution and report writing and motivation of community	1-2 days training		refresher were provided after working for some time	they were trained to provide health education to the community, they were also trained to increase community awareness on how to prevent malaria and where to get treatment	malaria control and treatment and management		basic remuneration (per diem). Reward pin		performance evaluation
Rubesh Il et al. 1990 239	illiterate and literate	from community through community poll	at volunteer home they were trained how to fill report, and how to administer three days presumptive treatment of malaria and were given a booklet for dosage schedule	1 week orientation & 2 days training			made visits at community household and they were asked to inform the family to report malaria to these workers	detection and treatment of malaria	supervision by evaluators every 8 weeks			people in community were asked to report differences in literate & illiterate

Tuberculosis Control interventions

Background

Tuberculosis (TB) is known to afflict mankind since ancient times. With the arrival of chemotherapy and establishment of short course treatment regimen in 1970s and 1980s, it was believed that TB would surely be conquered soon. Steady declines in case notifications were observed in most of the developed countries in early 80s,²⁵⁷ while no such declines were seen in most developing countries. Before it could have eradicated completely a reversal of the declining trend started with the emergence of HIV/ AIDs disease. Consequently, TB was declared a global emergency by the World Health Assembly (WHA) in 1991 and a frame work for TB control was developed in the form of DOTS (the internationally recommended strategy for TB control).²⁵⁸ The principle target of MDGs for TB control adopted in the year 2000 is to ensure that the incidence rate of TB is declining by 2015. The supplementary targets are to halve the prevalence of TB and TB mortality rates by 2015 as compared to 1990. The ultimate goal is to eliminate TB by 2050, when the annual incidence should be less than one case per million population.

To control TB, the DOT strategy was introduced in late 1990s.²⁵⁹ In this section we will be focusing on the intervention delivered by CHWs in their community to achieve a part of MDG goal-6.

Community-based evidence

Twenty six studies were included in this group that delivered interventions related to management of tuberculosis in the community. Studies included twelve RCTs, 2 quasi-RCT, 2 pre/post design, and other cross sectional or comparative cross sectional studies (Table 17A & Table 17B). all of these studies were from lower or middle income countries except two which were from high income country i.e. USA.^{19, 269}

The participating consumers included only

adults with clinical and culture positive TB in 11 studies,²⁶⁰⁻²⁷⁰ only children and general population in 7 studies.^{271, 272} Type of CHWs working for TB prevention and treatment were mostly volunteers from the community and in few places they were one to one peer and individuals who themselves got treated with anti-TB.^{265, 271} In Clarke et al. consumers themselves selected the CHWs.²⁷³

Educational level of CHWs was not mentioned in any of the study, while 3 studies mentioned that their CHWs were illiterate members from the community.^{267, 268, 269} In all included studies CHWs were the members from local residence. They all received didactic training except in Phomorphub et al. in which CHWs were given practicum training in addition to classroom teaching.²⁷⁵ When the number screened by CHWs in Phomorphub et al. was compared with those diagnosed by health center or hospital staff, their performance was better than health center but poor than hospital staff.²⁷⁵

Content of training varied between studies. In Shargie et al. CHWs distributed leaflets and discussed symptoms of TB at community gathering, plus they also screened population at monthly diagnostic outreach clinics.²⁶⁰ While in some other studies CHWs or family members trained as promoter delivered and monitored TB DOTS therapy.^{261, 262, 265, 268-271, 273}

In Clarke et al. and Walley et al.²⁶² the direct observations therapy strategy by CHWs was compared with family members. Both of these studies showed that cured rates were higher among CHWs arm as compare to family member arm.

Training of these workers varied from 2 days as in Niazi & Al Delamimi intervention²⁶⁶ to 30 days in Chowdhury et al.²⁶⁷ Studies that utilized BRAC CHWs were provided with close monitoring and supervision²⁶⁷⁻²⁶⁹ while only Chowdhury et al.

reported that their CHWs were provided with refresher training once a month.²⁶⁷

Workers from BRAC areas were given small remuneration of 125 Taka,²⁶⁹ sales of drugs²⁶⁷ and transport cost.²⁶⁵ Disaggregated analysis showed that all these studies where CHWs were given remuneration for work had significant tuberculosis cure rates.

Conclusion

The interventions related to the tuberculosis prevention have shown positive outcomes especially in studies with regular supervision of CHWs in TB DOTS program. The role of CHWs in outreaching the community to the cure rates of tuberculosis has been very effective through their awareness campaigns, laboratory screening and treatment that they provided for eradicating tuberculosis.

CHW Snapshot 13

Community Health Workers – Burkina Faso

Program overview

A pilot program in Burkina Faso sponsored by the National Centre for Malaria Control (Centre National de Lutte contre le Paludisme) relies on community health workers who supply anti malarial drugs at the community level. The CHWs sell the pre-packaged Chloroquine regimens to mothers under a cost-recovery mechanism, in accordance with Bamako Initiative principles. The CHWs are given the first stock of drug packages and are expected to sell the drugs at a pre-approved price.

Operational aspects and considerations

Nurses from the health centers train core groups of mothers, village leaders and CHWs in symptom classification and correct dosage schedules. The core mothers and leaders are then responsible for sharing the messages with other members of the community. The CHWs and community leaders are responsible for providing advice about treatment and referral, acting as intermediaries between the health system and the community. Posters depicting the correct dosage of anti malarial by age are placed in the villages and are given to core mothers, village leaders and CHWs. Health centre nurses are responsible for supervision of the CHWs through monthly visits and reviewing the sales of packages. Referral is indicated for those patients with convulsions or other neurological complications and for those who are febrile 48 hours after treatment.^{229, 254}

Constraints in Sustainability

In a study evaluating this program, it was found that 59% of those children treated with pre-packaged tablets received the treatment over the recommended three days. The correct dosage packet for age was received by 52% of the children, with 31% under-dosed (given a packet for younger child) and 17% over-dosed (with packet for older child).

Source: WHO/Unicef 2006²⁴ & Winch et al. 2005²⁷⁴

CHW Snapshot 14

Philippines- Barangay Health Workers

Program overview

The Barangay health workers or government trained health volunteers have been operating in rural villages in the Philippines since 1981. Being a vital part of the health system these CHWs were operating in all parts of the country. Functioning within the capacity of primary health care workers they epitomize health care as acceptable, affordable and accessible.²⁷⁶

Operational aspects and considerations

These workers were recruited and selected and then adequately oriented to tackle malaria in community. They are female residents of community. And receive training from health center personnel to promote and give initial care for common ailments.

Constraints in Sustainability

these workers are expected to deliver comprehensive care directed to common ailments prevailing in rural communities and nutritional activities like weighing children under six, maternal and child health services, family planning and immunization. With more than a dozen of task need to be performed by these workers their roles has been questioned.

Source: BASICS II²⁷⁷

Table 17A: Tuberculosis Control Interventions – Characteristics of Included Studies

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Shargie et al. 2006 ²⁶⁰ Lemo & Hadiya, Ethiopia	RCT	CHWs	Health workers held monthly diagnostic outreach clinics at which they obtained sputum samples for sputum microscopy from symptomatic TB suspects. In addition, trained community promoters distributed leaflets and discussed symptoms of TB during house visits and at popular gatherings. Symptomatic individuals were encouraged to visit the outreach team or a nearby health facility.	In control communities, cases were detected through passive case-finding among symptomatic suspects reporting to health facilities	12 months	General population	159 and 221 cases of smear-positive TB were detected in the intervention and control groups, respectively. Case-notification rates in all age groups were 1.24.6/105 and 98.1/105 person-years, respectively (P = 0.12). The corresponding rates in adults older than 14 years were 207/105 and 158/105 person-years, respectively (P = 0.09). The proportion of patients with > 3 months' symptom duration was 41% in the intervention group compared with 63% in the control group (P < 0.001). Pre-treatment symptom duration in the intervention group fell by 55–60% compared with 3–20% in the control group. In the intervention and control groups, 81% and 75%, respectively of patients successfully completed treatment (P = 0.12).
Newell et al. 2006 ²⁶¹ Hills districts of Nepal	cRCT	CHWs	In intervention arm Community DOTS strategy was used in which drug taking supervised daily by a female community health volunteer or a village health worker with drugs provided to the supervisor every month.	in control arm, family member DOTS was used as a strategy in which drug taking supervised daily by a household member selected by the patient, with drugs provided to the patient's supervisor every week.	12 months	all new > 15 years of age patients with sputum smear-positive	Community DOTS and family-member DOTS achieved success rates of 85% and 89%, respectively (odds ratio of success for community DOTS relative to family-member DOTS, 0.67 [95% CI 0.41–1.10]; p=0.09). Estimated case-finding rates were 63% with the community strategy and 44% with family-member DOTS.
Walley et al. 2001 ^{262, 278} Rawalpindi, Pakistan	RCT	CHWs	DOTS with direct observation of treatment by health workers DOTS with direct observation of treatment by family members	self-administered treatment	28 months	adults with new sputum-positive tuberculosis	Within the strengthened tuberculosis services, the health-worker DOTS, family-member DOTS, and self-administered treatment strategies gave very similar outcomes, with cure rates of 64%, 55%, and 62%, respectively, and cure or treatment-completed rates of 67%, 62%, and 65%, respectively.
Clarke et al. 2005 ²⁷³ Western Cape, South Africa	cRCT	CHWs	TB patients were issued with at most 1 month's anti tuberculosis treatment. And patients were chose to receive DOT from the LHW	Patients in control arm received TB DOTS from health facility where they were issued with sufficient drugs for 1–4 weeks, depending on the distance they live.	12 months	new smear-positive adult TB patients	The successful treatment completion rate in adult TB patients was 18.7% higher (P = 0.042, 95%CI 0.9–36.4) in the intervention group than in the control group. Case finding for adult TB cases was 8% higher (P = 0.2671) in the intervention group compared to the control group.
Zwarenstein et al. 2000 ²⁶⁴ Cape Town, South Africa	RCT	CHWs	In intervention arm, attendance of patients with TB was expected 5 days per week for the first 8 weeks for new patients (12 weeks for re-treatment patients), followed by 3 days per week for the continuation phase	In control arm, self supervised patients visited the clinic once a week, or sent a family member to collect their drugs	16 months	adult (> 15 years) with TB, who started a course of TB treatment (new and retreatment)	All groups achieved similar outcomes (LHW vs. clinic nurse: risk difference 17.2%, 95% confidence interval [CI] 0.1–34.5; LHW vs. self Supervision 15%, 95%CI -3.7–33.6). New patients benefit from LHW supervision (LHW vs. clinic nurse: risk difference 24.2%, 95%CI 6–42.5, LHW vs. self supervision 39.1%, 95%CI 17.8–60.3) as do female patients (LHW vs. clinic nurse 48.3%, 95%CI 22.8–73.8, LHW vs. self supervision 32.6%, 95%CI 6.4–58.7)

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Wright et al. 2004 ²⁷¹ Lubombo, Swaziland	RCT	CHWs	Community health worker supervision. Community health workers acted as treatment supporters with the patient visiting every day for direct observation of treatment	Family member/carer supervision. A family member or carer was nominated by the patient to become the treatment supporter	26 months	Adults or children diagnosed with smear +ve or -ve pulmonary tuberculosis or relapse of previously treated tuberculosis	There was no significant difference in the cure and completion rate between direct observation of treatment by CHWs and family members [2% difference (95% CI 3% to 7%), exact P ¼ 0.52]. A before-and-after comparison of outcomes demonstrated that the cure and treatment completion rate improved from a baseline of 27–67% following implementation of community-based DOTS.
Kamohantanakul et al. 1999 ²⁶⁵ Thailand	RCT	CHWs	In the intervention group, TB patients were given the choice of selecting either health centre staff, community health volunteers or family members as supervisors (health centre staff visited the patients' homes: twice per month during the initial 2 months of treatment, and once per month during the remaining 4 months.	In the control group, patients received drugs for 1 month of treatment after diagnosis and after each follow up visit. No treatment supervision was offered between follow-up visits.	14 months	all tuberculosis cases presenting with sputum smears positive for acid-fast bacilli (AFB)	Cure and treatment-completion rates were significantly higher in the DOT cohort (76% and 84%) than in the control group (67% and 76%).
Chaisson et al. 2001 ²⁷⁹ Baltimore, USA	RCT	CHWs	Patients were assigned to receive directly observed isoniazid preventive therapy twice weekly with peer counseling and education.	Patients were assigned to receive daily self-administered isoniazid with routine care.	16 months	at least 18 years old, used injection drugs, had a positive tuberculin skin test	Adherence to isoniazid preventive therapy by injection drug users is best with supervised care. Peer counseling improves adherence over routine care, as measured by electronic monitoring of pill caps, and patients receiving peer counseling more accurately reported their adherence.
Datiko & Lindtjorn 2009 ²⁸⁰ Southern Ethiopia	RCT	CHWs	We trained HEWs in the intervention kebeles on how to identify suspects, collect sputum, and provide directly observed treatment. The HEWs in the intervention kebeles advised people with productive cough of 2 weeks or more duration to attend the health posts	no intervention	17 months	patients with TB	Two hundred and thirty smear-positive patients were identified from the intervention and 88 patients from the control kebeles. The mean case detection rate was higher in the intervention than in the control kebeles (122.2% vs 69.4%, p.0.001). In addition, more females patients were identified in the intervention kebeles (149.0 vs 91.6, p.0.001). The mean treatment success rate was higher in the intervention than in the control kebeles (89.3% vs 83.1%, p = 0.012) and more for females patients (89.8% vs 81.3%, p = 0.05)
Lwilla et al. 2003 ²⁸¹ Rural Tanzania	RCT	CHWs	Health volunteers from community were trained to provide community based DOT to people with TB	usual care	7 months	General population with TB	Overall, there was no significant difference in conversion and cure rates between the two strategies [M-H pooled odds ratio (OR) 0.62; 95% confidence interval (CI) 0.23, 1.71 and OR ¼ 1.58; 95% CI 0.32, 7.88, respectively]
Mohan et al. 2003 ²⁸² Iraq	RCT	CHWs	women selected from community were trained to serve as volunteers visited homes and promoted adherence of TB treatment	no home visits	6 months	General population with TB	The intervention group showed a higher treatment success rate (94.2% versus 76.7%), lower default rate (0.8% versus 10.0%) and higher smear conversion rate after the end of treatment (92.9% versus 75.0%) than controls. Home visiting by trained personnel significantly improves patient compliance with DOTS.

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Morisky et al. 2001 283 Urban USA	RCT	CHWs	Adolescents from community were trained to become a peer counselors and provided health education to families for TB	no home visits	6 months	General population with TB	The intervention group showed a higher treatment success rate (94.2% versus 76.7%), lower default rate (0.8% versus 10.0%) and higher smear conversion rate after the end of treatment (92.9% versus 75.0%) than controls. Home visiting by trained personnel significantly improves patient compliance with DOTS.
Niazi & Al-Delaimi 2003-266 Baghdad, Iraq	Quasi RCT	CHWs	The intervention group were visited TB patients daily at home for the 2-month initial phase by trained members of the Iraqi Women's Federation	control group attended the local health centre for treatment	10 months	newly TB diagnosed patients	Cure rates for patients treated at home were significantly better than controls (83.7% versus 68.6%), so too was compliance (100.0% versus 14.0%). Smear conversion rates were significantly better in intervention cases compared with controls at all stages.
Dudley et al. 2003-284 Cape Town, South Africa	quasi-RCT	CHWs	TB control program via CHW was delivered in an area	No interventions to control arm	12 months	Tuberculosis patients	Data were collected for 2873 adult TB patients. For smear-positive TB patients, treatment cure rates were higher in the intervention area (Guguletu) than in the control area (Nyanga) (58% vs. 50%, $P = 0.0378$) and for retreatment cases (47% vs. 35%, $P = 0.0791$), treatment success rates were similar.
Chowdhury et al. 1997-267 Rural Bangladesh	pre/post	CHWs	The community health workers distributed information about tuberculosis to the community, especially through village organization meetings and posters. They also detected cases of pulmonary tuberculosis, & followed up individuals with chronic cough of 4 weeks' duration or longer and collect two early-morning sputum samples.		84 months	General population	In the phase-two analysis, 3497 (90%) of 3886 cases identified had accepted 12-month treatment. In phase three, all of 1741 identified cases accepted the 8-month regimen. 2833 (81.0%) and 1496 (85.9%) in phases two and three, respectively, were cured; 336 (9.6%) and 133 (7.6%) died.
Adatu et al. 2003-285 Kiboga, Uganda	pre/post	CHWs	As part of routine tuberculosis control programme operations, to measure the effectiveness and acceptability of community-based tuberculosis (TB) care using the directly observed treatment, short-course (DOTS) strategy for TB control. The implementation of the DOTS strategy with active participation of local communities in providing the option of treatment supervision in the community is known in Uganda as community-based DOTS (CB-DOTS).		24 months	Tuberculosis patients	Following the implementation of CB-DOTS, treatment success among new smear-positive pulmonary TB cases increased from 56% to 74% (RR 1.3, 95%CI 1.2–1.5, $P < 0.001$) and treatment interruption decreased from 23% to 1% (RR 16.5, 95%CI 6.1–44.7, $P < 0.001$). There was no significant difference in the proportion of deaths before and after the implementation of CB-DOTS (15% vs. 1.4% for new smear-positive pulmonary, and 38% vs. 29% for new smear-negative and extra-pulmonary TB cases)
Islam et al. 2002 269 Rural Bangladesh	cross sectional study (BRAC Government areas)	CHWs	Since 1993, a national TB program has been implemented based on the WHO recommended DOTS strategy. Both BRAC and national TB programs use the same treatment regimens (5), but BRAC mainly relies on the use of community health workers (CHWs) to deliver directly observed therapy (DOT) while the government provides DOT mostly through health complexes		12 months	general adult population	In the BRAC area, each cured patient cost the health system US\$ 52, while successfully treated patients cost the system US\$ 48 each. However, the total overall cost per patient cured was higher, at US\$ 64 (Table 4). In the government area, the equivalent figures were US\$ 77, US\$ 70, and US\$ 96, respectively. Treatment completion rate in sputum-negative patients was 62.5% in the BRAC area and 87.5% in the government area. The overall treatment success rate was 83.3% in the BRAC area and 82.7% in the government area.

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Chowdhury 1999 ²⁶⁸ Rural Bangladesh	comparative cross sectional study 12 months regimen vs. 8 months	CHWs	For the first decade of operation, the BRAC program relied on a 12-month treatment regimen, but from 1995 an 8-month short-course regimen was introduced. The CHW identifies people with chronic cough and sends samples of sputa to a local BRAC laboratory for microscopy. The acid-fast bacilli-positive cases are brought to treatment immediately. The CHW provides the drugs, received free from the government.		Between 1997 compared success & failure rates of 1992 with 1997	General TB population	Consistent cure rates of around 85% are testimony to the effectiveness of the BRAC program and the DOTS approach the cure rates in 1992 was 81% while it increased to 90% in 1997
Ravichandran 2003 ²⁷⁰ Rural Bangladesh	cross sectional survey	CHWs	BRAC trained their CHWs who then go into the grass root level and provide treatment to TB patients through WHO DOTS strategy		-	TB patients	their detection rate is 30% and cure rate is about 95%
Drobac et al. 2006 ²⁷² Lima, Peru	Retrospective case series	CHWs	CHWs performed drug sensitivity testing of the child's tuberculosis isolate or suspected on the basis of the presence of clinical symptoms for a child with a household contact with documented multidrug-resistant tuberculosis, was performed and initiated a supervised individualized treatment regimen for multidrug-resistant tuberculosis		48 months	Children under 15 years of age	Forty-five percent of the children had malnutrition or anemia at the time of diagnosis, 29% had severe radiographic findings (defined as bilateral or cavitory disease), and 13% had extra pulmonary disease. Forty-five percent of the children were hospitalized initially because of the severity of illness. Adverse events were observed for 42% of the children, but no events required suspension of therapy for > 5 days. Ninety-five percent of the children (36 of 38 children) achieved cures or probable cures, 1 child (2.5%) died, and 1 child (2.5%) defaulted from therapy
Mitnick et al. 2003 ^{286, 287} Lima, Peru	Retrospective cross sectional	CHWs	results of community based therapy for multidrug-resistant tuberculosis in a poor section of Lima, Peru		84 months	TB population	Among the 66 patients who completed four or more months of therapy, 83 percent (55) were probably cured at the completion of treatment. Five of these 66 patients (8 percent) died while receiving therapy. The predictors of the time to treatment failure or death were a low hematocrit (hazard ratio, 4.09; 95 percent confidence interval, 1.35 to 12.36) and a low body-mass index (hazard ratio, 3.23; 95 percent confidence interval, 0.90 to 11.53)
Phomorphub et al. 2008 ²⁷⁵ Southern Thailand	Cross sectional	CHWs	this study compared the proportions of tuberculosis (TB) cases detected under a project launched in lower part of southern Thailand 1) by screener type [village health volunteer (VHV), health center staff, and hospital staff]; and 2) by region		48 months	population with TB	55 (8%) were diagnosed of TB, including 44 (6%) smear-positive cases. The proportions of smear-positive cases among those screened by VHV, health center and hospital staff were 6.7%, 3.4% and 12.9%, respectively. The corresponding proportions for TB cases were 8.4%, 5.1%, and 12.9%. The proportions of smear-positive cases were 2.5%, 21.7%, and 14.6% for those from the Region A, B and C, respectively.

Study / country	Interventions		Years of study	Participants	Outcomes
	Study design	Outreach worker			
Khan et al. 2002 ²⁸⁸ Rawalpindi, Gujranwala, Sahiwal, Pakistan	cross sectional	CHWs		CHWs	The role of CHWs continues to grow as their responsibilities extend beyond care of the infected and affected and prevention education in the communities studied.
Floyd et al. 2003 ²⁸⁹ Lilongwe, Malawi	cross sectional	CHWs	2 months	Tuberculosis patients	The role of CHWs continues to grow as their responsibilities extend beyond care of the infected and affected and prevention education in the communities studied.
Zuvekas et al. 1998 ¹⁹ California, USA	Cross sectional	CHWs	12 months	general homeless population	For new smear-positive pulmonary patients, two strategies were compared: 1) the strategy used until the end of October 1997, involving 2 months of hospitalization at the beginning of treatment, and 2) a new decentralised strategy introduced in November 1997, in which patients were given the choice of in- or out-patient care during the first 2 months of treatment.
Cavalcante et al. 2007 ²⁹⁰ Rio de Janeiro, Brazil	cross sectional survey	CHWs	24 months	TB population	To assess the cost and cost-effectiveness of new treatment strategies for new pulmonary tuberculosis patients, introduced in 1997. For new smear-positive pulmonary patients, two strategies were compared: 1) the strategy used until the end of October 1997, involving 2 months of hospitalization at the beginning of treatment, and 2) a new decentralised strategy introduced in November 1997, in which patients were given the choice of in- or out-patient care during the first 2 months of treatment.
					Read PPD results for 1740 persons (78%) Referred 142 positive readings for X-ray (8.3%) Referred 125 PPD positive homeless people for X-ray Read 44 TB positive tests (12%) Successfully followed through on 33 TB cases
					Of the 1811 TB patients, 1215 (67%) were treated under DOT; among these, 726 (60%) received clinic-based treatment and 489 (40%) community-based treatment. Patients offered community-based treatment were more likely to accept DOT (99% vs 0.001). Treatment success rates for new smear-positive and retreatment TB cases were significantly higher among those treated with community-based DOT compared to clinic-based DOT.

Table 17B – Characteristics and Description of outreach workers

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Shargie et al.2006 ²⁶⁰ CHWs			Didactic training on case-finding, diagnostic procedures, outreach coordination, handling of sputum specimens, interview techniques, and record-keeping.				Held monthly diagnostic outreach clinics at which they obtained sputum samples for sputum microscopy from symptomatic TB suspects. Also trained community promoters distributed leaflets and discussed symptoms of TB during house visits and at popular gatherings.	Treated symptomatic patients and encouraged them to visit the outreach team or a nearby health facility.				
Newell et al.2006 ²⁶¹ CHWs		health worker from every DOTS centre	the DOTS strategy, the treatment process and its duration, the role of community supervisors in ensuring tuberculosis treatment completion, the side effects of tuberculosis drugs, and the process of referring patients for their management	6 days			discussed tuberculosis, the treatment process, roles and responsibilities in successful treatment, side-effects of drugs, and the importance of immediately seeking advice from the treatment facility if side-effects arose. Discussion was supported by flipcharts and leaflets designed for each strategy. Reminders were given on all subsequent visits to the health facility.	Ensuring treatment completion of TB Counseling		No incentives		Evaluated by success rate
Walley et al.2001 ²⁶² , 278		hHealth workers	Didactic Orientation provided by DOTS supervisor				direct observation of treatment by health workers	ensured compliance with the complete treatment of TB				
Clarke et al.2005 ²⁷³ Western Cape, South Africa CHWs		Adult farm dwellers selected suitable farm-dwelling peers for training as Lay Health Workers	Didactic Training Training modules included becoming an LHW, tuberculosis, family health (including HIV/acquired immune-deficiency syndrome [AIDS]), first aid, and home-based care. TB focus within primary health care & community development principles	five 1-week (25 h weekly) training during the off-peak season			Provided care as DOT, in case of self-supervision LHWs played a mentoring role, visiting the patient & encouraging and monitoring treatment adherence regularly. In all cases, LHWs addressed treatment non-adherence promptly through a process of particularized motivation. LHWs were in a unique position to understand the TB patients' life situations, & consider individual patients' problems.	Assuring TB treatment compliance				

Study	Edu- cation	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key compe- tencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Zwarenstein et al. 2000 ²⁶⁴ CHWs		Community lay health workers	Trained to interview TB patients on treatment				Provided supervision to patients taking drugs for treatment of TB					
Datiko & Lindtjorn 2009 ²⁸⁰ Southern Ethiopia		Rural health motivators	Practicum and didactic Clinic-based training sessions were run on how to support and observe TB treatment, and recording adherence on a Treatment Supporter card.				Acted as treatment supporters with the patient visiting every day for direct observation of treatment.	Monitored treatment adherence and notified defaulters to the diagnostic centre.				Outcome assessment was undertaken by laboratory examination of sputum by technician
Lwilla et al. 2003 ²⁸¹ Rural Tanzania		from the community										
Mohan et al. 2003 ²⁸² Iraq		selected by Iraqi local counsel								transport allowance		
Kamohantakul et al. 1999 ²⁶⁵ CHWs		Community	Didactic training To provide TB treatment under supervision and assure treatment compliance.				Visited the patients' homes: twice per month during the initial 2 months of treatment, and once per month during the remaining 4 months.			Transport available		Evaluated by cure rate
Chaisson et al. 2001 ²⁷⁹		former injection drug user	they were taught to counsel and provide drugs to patients. And also to arrange monthly support meetings				counseling were given and monthly supply of isoniazid 300 mg tablets were also given. They also met with the peer counselor twice during the first month of therapy and once a month thereafter. Arrange monthly support group meetings		Professional health educator			
Niazi & Al-Delaimi 2003 ²⁶⁶ CHWs (F)		Trained members of the Iraqi Women's Federation	Didactic training the problem of TB in general and on the treatment of the disease and close supervision of DOTs	2 days			Provided DOTs treatment of TB to ascertain patient compliance; gave health education to the patient and his/her family about TB and its transmission.					Evaluated by cure rates, treatment compliance
Chowdhury et al. 1997 ²⁶⁷ CHWs (F)	Illiterate	Selected from BRAC organization.	DIDACTIC They were trained for detecting TB patients, followed them and provide them TB drugs.	15-30 days		1 day per month of in-service training	Tb control and treatment of some infectious diseases along with improvement of water and sanitation.	Treatment of TB, common fever, acute respiratory infections, diarrhea, immunization, family planning, deworming		small profit from the sale of drugs 100takka/ completed regimen / patient 25 Taka /case	1 CHW per 200 households	

Study	Education	Recruitment	Training	Duration	Certification	Refreshers	Role	key compe- tencies	Supervision	Incentive (if any)	coverage	Evaluation mode
	Criteria	Content				/ Ongoing training						
Islam et al.2002 ²⁶⁹ Rural Bangladesh	Illiterate Community locals	Didactic	observed new patients swallow the drugs during the first 2–3 months, while patients undergoing retreatment were observed for the entire period. After the initial 2–3 month period, patients collected drugs once a week from the home of the CHW				observed new patients swallow the drugs during the first 2–3 months, while patients undergoing retreatment were observed for the entire period. After the initial 2–3 month period, patients collected drugs once a week from the home of the CHW	Developing patient compliance to TB treatment	Supervised by BRAC paramedics	125 Takas		The role of CHWs was evaluated by cure and treatment success of TB.
Chowdhury 1999 ²⁶⁸ CHWs (F)	Women who received training from BRAC	Didactic training on the treatment of common illnesses including tuberculosis					CHW identifies people with chronic cough and sends samples of sputa to a local BRAC laboratory for microscopy. The CHW provides the drugs, received free from the government.	The acid-fast bacilli-positive cases are brought to treatment immediately.				evaluated by consistent cure rates.
Ravichandran 2003 ²⁷⁰ CHWs	Village health workers	Trained to operate under specific technical guidelines					Provide operational support for the program implementation and would also generate patient related information and data		Supervised by area manager			
Drobac et al.2006 ²⁷² CHWs	community health worker	Didactic training Trained to provide close monitoring to children with multi-drug resistant tuberculosis					Provided all doses received outside the health center hours. Twice-daily dosing was observed 6 days per week throughout the course of treatment, also monitored for adverse events on daily basis	Close monitoring for treatment compliance and improved cure rates.				
Mitnick et al.2003 ^{286, 287} CHWs	community health worker	Didactic specially trained in outpatient treatment & surveillance for adverse events related to multi drug resistant TB					Supervised out-patient treatment and provided surveillance for adverse effects.	TB surveillance and treatment	Supervised by nurses.			
Phomorphub et al.2008 ²⁷⁵ CHWs	Village health workers	Didactic and practical training topics included general knowledge about TB (cause, infectivity, symptoms, transmission, treatment, & prevention), roles of DOT observer, anti-TB drugs, and methods of self-protection. Trained to screen people with suspected TB symptoms					Screened suspected cases of tuberculosis and followed up positive cases.					

Study	Edu- cation	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key compe- tencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Cavalcante et al.2007 ²⁹⁰ CHWs		Selected through a written test and interviews.	Didactic underwent a training program designed to teach them how to provide TB care in the community, focusing on TB control and DOT administration.				Provided health services & health education through home-based outreach and follow-up in the communities they serve. Mainly involved in health promotion and education, immunization, improvement of water & sanitation, and family planning.	Improve the care of TB patients by	Supervised by two nurses and an administrator			

HIV/AIDS Prevention and control Interventions Background

HIV/AIDS alone has taken more than 20 million lives, roughly 500,000 children younger than 15 years died of the disease in 2008, and children accounted for 13% of new infections in 2004 (640,000 cases).²⁹¹ Women accounted for nearly 50% of more than 37 million people living with HIV worldwide and for 60 % in sub-Saharan Africa. The HIV and AIDS pandemic threaten the progress of many of the other MDGs, as it has severe health consequence for individuals, families, and communities. At the same time HIV and AIDS slower the nation growth and act to damage social capital and lower GDP growth. In some studies annual reductions of GDP growth of about 2-4% have been noted in the countries highly affected by HIV.²⁹²

In resource-limited settings, the CHW approach has regained credibility in the last few years through its support of HIV/AIDS care, in particular voluntary testing and counseling and treatment adherence support for people on HIV and TB treatment.²⁹³ These emerging issues of multi-drug resistant TB and HIV make community health education and treatment adherence support imperative. Therefore, in this section we have assessed the role of community based intervention and the quality of CHWs in providing these interventions through evidence based researches from all parts of the world.

Community Based Evidence

We identified 17 studies which portrayed the role of CHWs in the prevention and control of HIV and STIs (Table 18A & 18B). The types of health workers involved in these studies were CHWs,^{44, 294-300} TBAs³⁰¹⁻³⁰³ and PCs.^{294, 304-306} Those recruited in these studies were either health workers,^{294, 300} community educators,³⁰⁴ volunteers^{44, 305} especially those with some background training in HIV/AIDS³⁰⁵ or female sex workers.³⁰⁶

The training imparted to them was didactic

in nature ^{44, 294-300, 302, 304, 306} except for the Sanjana et al. where the training was based on theory and practicum, related to concepts and methods of HIV counseling and testing and then testing of skills under supervision of an experienced counseling and testing (CT) provider.³⁰⁵ Certificate of completion of training was provided to these peer counselors.³⁰⁵ The TBAs in Wanyu et al. and Perez et al. were given additional training on Prevention of Mother to Child Transfer (PMTCT).^{302, 303} In Wanyu et al. 99% of the women were tested for HIV and 88% of the mothers and 86% of newborns were treated with single dose of medicine.³⁰² In another study CHWs were trained to administer medications to patients in their homes as DOTS and also counsel the patient and contacts on stigma related to HIV and TB³⁰⁰ while in Zachariah et al. the CHWs were trained to counsel HIV/ AIDS patients for adherence to anti-retroviral therapy (ART), anti-TB treatment and home-based care activities.^{44, 295} In Koenig et al. patients were also provided with emotional support as a rehabilitative measure, apart from administering DOT-HAART.²⁹⁵ The CHWs in Ross et al. were trained in the social marketing of condoms²⁹⁴ while those in Nasreen et al. worked for creating mass awareness of HIV/AIDS in the community.²⁹⁸ In Sox et al. and Mock et al. CHWs performed Pap Smear in the community for STI detection.^{296, 297} The CHWs, TBAs and the PCs all promoted preventive strategies^{294, 298, 304} against HIV and counseled for treatment adherence in the presence of disease.^{44, 300} The role of TBAs studied in a cross-sectional survey reported that they provided obstetric care to HIV positive pregnant women and HIV exposed newborn³⁰¹ while in another study their level of awareness on principles of PMTCT of HIV were tested.³⁰³ The female sex workers enrolled as PCs in Benezaken et al. gathered data on the number of condoms sold weekly with detailed mapping of the "prostitution spots" in town, carried out preventive education assessment with 100 clients about 'prostitution as work', their motivation to seek

female sex workers, child prostitution and their views on the project.³⁰⁶ In this study, the results of pre/post questionnaires show that there was a significant change in behavior after awareness of HIV prevention methods, i.e., 95% from previously 75% of the clients had changed their sexual behavior to prevent STIs/AIDS.³⁰⁶

Conclusion

The CHWs, TBAs and PCs proved to be an important tool for the dissemination of awareness related to HIV/AIDS. Their contributions can be estimated from the increasing number of mothers and newborns getting medications and from the change in sexual behavior resulting from prevention awareness on STIs and HIV/AIDS.



CHW Snapshot 15
Indonesia Community Health Workers

Program overview
 Indonesia developed a framework in 1976 and started training and deploying community health workers with the title KADER in West Java, Indonesia as a pilot project. In kader method trainer train trainee in exactly same manner as they were trained by their trainer. By 1977 it was clear that kader should become an official component of Indonesian rural health system.³⁰⁷

Operational aspects and considerations
 They are trained on role playing using counseling cards to practice counseling or teaching precisely as trained village health promoter. These counseling cards include diagnostic algorithms and treatment methods. One kader usually worked with 10-15 households and the training lasted for few days to few weeks. Their task involved treatment of number of common illnesses, weighing of children under 5 years of age, nutrition, family planning and health education including environmental hygiene and sanitation, and development of community health insurance scheme and referrals of serious cases.⁷⁸

Community health Workers, Indonesia

- ✓ **Education** Compulsory education
- ✓ **Training** few days
- ✓ **Refresher** periodic
- ✓ **Incentive** none

Coverage and effectiveness
 the survey in 1978 revealed that coverage of kader in Indonesia was up to 85% and 91% of the population had used kader for illness care during previous 18 months and 87% reported hat they had visited their home in last 18 months.^{78, 307}

Table 18A: HIV/AIDS Prevention and Control Interventions – Characteristics of Included Studies

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Ross et al. 2007, 294 Mwanza, Tanzania	cRCT	CHWs	The intervention had four components: community activities; teacher led, peer-assisted sexual health education in years 5–7 of primary school; training and supervision of health workers to provide 'youth-friendly' sexual health services; and Peer condom social marketing.	No intervention in control areas	46 months	Adolescents. Aged > 14 years	Only five HIV sero conversions occurred in boys, whereas in girls the adjusted rate ratio (intervention versus comparison) was 0.75 [95% confidence interval (CI) 0.34, 1.66]. Overall HSV2 prevalence at follow-up were 11.9% in male and 21.1% in female participants, with adjusted prevalence ratios of 0.92 (CI 0.69, 1.22) and 1.05 (CI 0.83, 1.32), respectively
Mitchell et al. 2002, 304 Rural Uganda	RCT	CHWs	Arm 1: received information, education and communication comprising drama and video shows that includes lessons on condom use, HIV testing, how HIV spreads and STD treatment seeking behavior Arm B: received the same information, education and communication combined with improved STD management	Routine government health services prevailed in addition to community development and home-based care initiated by the program	24 months	General adult population	Knowledge regarding AIDS was increased in intervention arms.
Mock et al. 2006, 297 Santa Clara, USA	RCT	CHWs	lay health worker outreach plus media based education (combined intervention)	media-based education only	30 months	Women	Testing increased among women in both the combined intervention (65.8% to 81.8%; P<.001) and media-only (70.1% to 75.5%; P<.001) groups, but significantly more in the combined intervention group (P=.001). Significantly more women in the combined intervention group obtained their first Pap test or obtained one after an interval of more than 1 year (became up-to date; 45.7% to 67.3%, respectively; P<.001) than did those in the media-only group (50.9% to 55.7%, respectively; P=.035)
Zachariah et al. 2007, 44 Thyolo, Malawi	Quasi RCT	CHWs	Community in intervention arm received community support from community health workers	Community in control arm did not receive community support	20 months	HIV positive patients	For all patients placed on ART with and without community support, those who were alive and continuing ART were 96 and 76%, respectively (P < 0.001); death was 3.5 and 15.5% (P < 0.001) The relative risks (with 95% CI) for alive and on ART 1.26 (1.21—1.32), death 0.22 (0.15—0.33)
Sox et al. 1999, 296 Alaska, USA	Quasi RCT	CHWs	CHWs were trained for risk assessment, history taking, patient education, in breast examination, Pap tests, and sexually transmitted disease tests	Control arm did not receive additional services from CHWs	12 months	Women at any age	Overall, the mean proportion of women in the participating villages who had a Pap test increased from 0.44 at baseline to 0.48 at follow-up. During the same periods, the mean proportions in the comparison villages decreased from 0.42 to 0.39 (p= 0.37).
Benzaken et al. 2007, 306 Amazon, Brazil	pre/post	PCs	PCs were trained to promote the use of condoms, informing female sex workers and their clients about STD/AIDS. Peer educators have also resold condoms at low cost and referred sex workers with suspected STD to special outpatient clinics for medical consultation at the project headquarters, and to weekly supervised activities.		72 months	high risk population (sex workers)	Have you changed you sexual behavior to prevent STD/AIDS? 111 75.0 132 94.7 < 0.001 Have you had an anti-HIV test done yet? 29 19.6 64 46.0 < 0.001 Did you use condoms last week? 62 41.9 107 78.0 < 0.001

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Wouters et al. 2009 308 Free state, South Africa	Prospective Cohort	CHWs	Patients are requested to identify a 'treatment buddy', usually someone living in their household, who is aware of the patient's status and who is willing to assist him/her with adherence issues. The treatment buddy attends education sessions, signs the consent to begin ART together with the patient, and reminds and supports the patient once ART has commenced. Patient mobilization and empowerment also include the support of an AIDS patient by fellow PLWHA. Peer-support groups, which are generally not exclusively for patients on ART, facilitate the discussion of factors that may enhance or impede adherence, such as adverse events, disclosure, and other psychosocial issues, and also act as forums for health promotion and education.		36 months	Patients with HIV	After 24 months of ART, 76.4% of patients were classified as treatment successes, compared with 64.1% at 12 months and 46.1% at six months. When we examined the predictors of ART success, baseline health and all three community support initiatives had a positive effect on ART outcomes after six months, whereas patient characteristics had little effect. Six months later, patients with the support of a treatment buddy, CHW, or support group had better ART outcomes, whereas the impact of baseline health had diminished. After two years of treatment, community support again emerged as the most important predictor of treatment success.
Nasreen 2005 298 Districts (Khulna, Madaripur, Jamalpur, and Faridpur) Bangladesh	cross sectional evaluation study	CHWs	The community-based HIV/AIDS education program was initiated in 2002 to increase awareness of HIV/AIDS among community people. Five components include 1) mass awareness of HIV/AIDS in the community including couple education, 2) awareness raising among adolescents in secondary schools as well as in the community, 3) preventing HIV and AIDS among the high-risk populations comprising brothel-based CSWs and drug-users, 4) preventing HIV among internal migrants, such as transport workers, and 5) supporting to the people living with HIV/AIDS		3 months	adults and adolescents, internal migrants, drug-users and brothel-based CSWs	Of the total 4,055, about 99% (4,023) had heard about HIV. A significantly ($P < 0.001$) higher proportion of respondents (about 51%) said that if anyone infected with HIV, then he/she should not continue the occupational activities with the others. Majority of AIDS-aware population got information from TV (72%) followed by BRAC (52%). CSWs mentioned BRAC (94%) followed by other NGOs (68%) as the main source of information
Walton et al. 2004 299 Haiti	retrospective observational study	CHWs	Diagnoses of tuberculosis, HIV infection, and sexually transmitted infections; the number of prenatal visits; and detailed encounter reporting by service (pediatrics, women's health, etc.)		14 months	general population	Within a year, over 120 patients were receiving supervised therapy with ARVs. More than 200 tuberculosis patients were identified and began receiving DOTS.
Sanjana et al. 2009 305 Zambia	cross sectional survey	PCs	Quantitative and qualitative data were collected by means of semi structured interviews from all active lay counselors in each of the facilities and a facility manager or counseling supervisor overseeing counseling and testing services and clients.		1 months	lay counselors	Lay counselors provide up to 70% of counseling and testing services at health facilities. The data review revealed lower error rates for lay counselors, compared to health care workers, in completing the counseling and testing registers.
Mukherjee & Eustache 2007 300 Maitia, Haiti	Cross sectional	CHWs	The model depends on community health workers (CHWs) who supervise antiretroviral therapy (ART) and provide community outreach, including active case finding and outreach to marginalized populations		12 months	General population	HIV service utilization increased from 20 to 400 after the implementation of HIV- PHC model
Pelzer et al. 2009 301 Cape Town, South Africa	Cross sectional survey	TBAs	Information on the last delivery, contacts/relationship with TBAs, THP, HIV and AIDS, antenatal care, obstetric care, post-partum care, and counseling on safe infant feeding for HIV exposed newborn babies.		-	postnatal care clients with a child less than 12 months	31% of TBAs gave advice HIV and AIDS 31% check baby 7% gave family planning

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Kumar et al. 1998,309 Madras, India	cross sectional	CHWs	The outreach workers recruit IDUs from the street and provide various interventions at the street level. Apart from the face-to-face education about acquired immunodeficiency syndrome (AIDS) and its transmission, these individuals are provided with information on decontamination of syringes. Bleach and condoms are distributed by the outreach team. Advice on medical and social problems and service information also are provided, and outreach workers facilitate the use of addiction treatment services.	No intervention in control areas	18 months	HIV patients	Significant decline in injecting risk behavior was noted at 18-month follow-up from baseline for the IDUs recruited from outreach locations.
Johnson & Khanna 2004, 310 Nyanza, Kenya	cross sectional	CHWs	hundreds of lay individuals have been trained as community health workers to provide home-based care to sick or dying HIV/AIDS clients in rural areas.			CHWs	The role of CHWs continues to grow as their responsibilities extend beyond care of the infected and affected and prevention education in the communities studied.
Wanyu et al. 2007, 302 rural Cameroon, Africa	cross sectional study	TBAs	In 2002 TBAs were trained to provide prevention to mother to child HIV transmission services, including counseling, testing, performing oral rapid HIV tests, and administration of single-dose Nevirapine to HIV positive women, to be taken in labor & to their newborn.		36 months	pregnant pregnant	99% of all women were tested for HIV. 88% of women mothers and 86% of newborn were treated with single dose of medicine.
Perez et al. 2008, 303 Mashonaland East, Zimbabwe	Comparative cross sectional trained TBA vs. Untrained TBAs	TBAs	Trained TBAs are defined as those who have received a short-course of training through the modern health care sector to upgrade their skills [35] and were in possession of a badge or certificate which has been issued on completion of her training. The criterion for recruitment of an untrained TBA was that she should have delivered a woman not more than a year ago before the date of the survey and was not formally trained.		3 months	pregnant women	45% of TBAs interviewed knew the principles of PMTCT and 8% delivered a woman with known HIV-positive status in previous year. Women who delivered at home were less likely to have received more than one ANC service or have had contact with a health centre compared to women who delivered in a health centre (91.0% vs. 72.6%; P < 0.001). Also, 63.6% of the women who delivered in a health centre had the opportunity to choose the place of delivery compared to 39.4% of women who delivered at home (P < 0.001).
Koenig et al. 2004, 295 Haiti	descriptive	CHWs	HAART was provided in the context of a comprehensive program of HIV, tuberculosis (TB), sexually transmitted disease (STD) of the project, treatment and prevention, and women's health services at four sites in the first year. At each site, the medical facility was renovated; additional staff were hired as needed, and a network of accompagnateurs (community health workers) was established throughout the surrounding villages to serve as a link with the community, and to provide directly observed treatment (DOT)		1 year after scale up	general population	In the first year of program scale-up, over 8000 patients were followed for HIV, and over 1050 were treated with DOT HAART. Adherence to HAART was very high, and clinical outcomes were excellent: all patients responded with weight gain and improved functional capacity, and fewer than 5% required medication changes due to side effects. Viral load was tested among a subset of patients showing that 86% had undetectable viral loads

Table 18B: Characteristics and description of outreach workers

Study	Education	Recruitment Criteria	Training Content	Duration	Certification / Ongoing training	Role	key tendencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Ross et al. 2007 294 PCs		Four to five youth per village were elected by their peers	trained in the social marketing of condoms.				Community mobilization followed by annual youth health weeks focused around interschool competitions and performances by local youth groups, twice-yearly youth health days at health facilities, and quarterly video shows linked to discussions that were open to all community members.	community-based condom promotion			The impact was evaluated in a cohort of 9645 adolescents.
CHWs		Two to four health workers per government facility	The provision of family planning services and improved case management of STI, and also in the provision of youth friendly sexual health services.	1 week				supervised quarterly			
Mitchell et al. 2002 304 PCs		Community educators	Didactic training Trained in giving lessons on condom use, HIV- general information and testing, HIV spread and STD treatment in local language Luganda.				Provided information, education & communication comprising drama and video shows that includes lessons on condom use, HIV testing, how HIV spreads and STD treatment seeking behavior	Inculcated HIV and STD treatment seeking behavior in the community			Evaluated by house to house KAP & serological surveys
Zachariah et al. 2007 44 CHWs		Community volunteers	formal theoretical training The curriculum covered various aspects linked to HIV/AIDS, adherence counseling for ART, anti-TB treatment and home-based care (HBC) activities	2 weeks			Made house-to-house visits equipped with a 'home-based care kit' containing basic drugs & supportive material for conditions including diarrhea, fever, common skin conditions & oral thrush. Detected 'risk signs' that merit referral to a community nurse or a health facility	PHC services and HIV counseling	Incentives included rainboots, rain coats, seed grain, fertilizer for farms, & bicycles.		
Nasreen 2005 298 CHWs			Didactic, used flip charts and videos. Correct knowledge regarding HIV/AIDS, STI.				Mass awareness of HIV/AIDS in the community including couple education, adolescents in secondary schools as well as in the community, preventing HIV and AIDS among the high-risk populations comprising brothel-based CSWs and drug-users, preventing HIV among internal migrants, such as transport workers, and supporting to the people living with HIV/ AIDS	Creating awareness and counseling of HIV			

Study	Edu- cation	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key compe- tencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Walton et al.2004 299 CHWs			Didactic training on side-effect management and referral				Diagnoses of tuberculosis, HIV infection, and sexually transmitted infections; the number of prenatal visits; and detailed encounter reporting by servic	quality AIDS care and treatment of STIs, TB treatment				
Sanjana et al.2009305 Zambia PCs	Literate	selected among volunteers preference was given to those with some level of background training in HIV/AIDS.	Theory and Practicum classroom component of the training includes instruction as well as role-plays & case studies for better understanding of the concepts and methods of HIV counseling and testing. Practicum included counseling & testing skills under the supervision of an experienced CT provider.	2 weeks theory and 4weeks practicum	Certificate provided on successful completion of both theoretical and practical training	provided pre and post-test HIV counseling as well as HIV testing	Supervised by an experienced CT provider.					CT record keeping was evaluated as a quality assurance measure.
Mukherjee & Eustache 2007 300 CHWs		Community outreach workers	Didactic Training trained to administer medications to patients in their homes as (DOTS); provide prevention education to communities, to minimize stigma & to refer to the clinic possible HIV and TB contacts or those at risk for infection.			Supervised antiretroviral therapy (ART) and provided community outreach, including active case finding and outreach to marginalized populations.	Critical interface between patient, community and the CBS.		nurse supervisor			data maintained by TBAs were cross checked by health facility staff
Peizer et al.2009 301 TBAs		recruited from existing lists of the traditional health practitioner office	Not trained in this study rather their attitudes towards HIV and care of HIV positive mother and newborn were studied.				Obstetric care of HIV positive pregnant woman and HIV exposed newborn					
Wanyu et al.2007 302 TBAs (F)		existed TBAs in community was selected	Didactic training additional training was given on PMTCT and HIV			they provided HIV counseling, performed rapid oral fluid HIV antibody test, and administered Nevirapine to the mother and baby,	HIV counseling ,testing and administration of drugs		nurse supervisor			data maintained by TBAs were cross checked by health facility staff

Study	Education	Recruitment Criteria	Training Content	Duration	Certification / Ongoing training	Refreshers Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Perez et al. 2008 303 TBAs (F)		Above 18 years of age			Tested on knowledge, attitude and practice with regards to HIV/AIDS especially in regard to pregnant women and the HIV exposed newborn		Awareness of principles of PMTCT of HIV				
Mock et al. 2006 297 CHWs (F)			Trained for procedures and approaches to LHW outreach LHWs received Vietnamese-language flip charts and booklets to use in their outreach to explain the causes of cervical cancer and the Pap testing procedure.	2 sessions, 3 hours each		the LHWs used the flip chart to give a 15- to 20-minute presentation about cervical cancer and Pap testing and distributed booklets, reminder cards, posters, & reminder calendars		Vietnamese woman as coordinator	\$1500		
Wouters et al. 2009 308		Person from patient household			Community support for ART patients in the public sector represents a continuum that stretches from more formalized (even paid) community health workers (CHWs) to informal activities, including voluntary support groups for people living with HIV/AIDS (PLWHA) or members of their social networks who volunteer to act as ARV treatment buddies. The roles of these initiatives have broadened with time, but are generally oriented towards the care and support of PLWHA, rather than AIDS prevention or the promotion of health		HIV/TB worker				
Sox et al. 1999 296 CHWs			Didactic, practicum and field work. instruction on risk assessment, history taking, patient education, & indicated follow-up; 16 hours of skills acquisition in breast examination, Pap tests, and STI tests in the hospital outpatient department; and up to 16 hours of field supervision in their respective village clinics within 1 month of training	22 hrs didactic instructions, 16 hrs practical, 16 hrs of field supervision		Breast examination, Pap smears and other STD tests,	Preventive health education and early detection of Breast and cervical cancer.				

Study	Edu- cation	Recruitment Training Criteria	Duration Certification Refreshers Role / Ongoing training	key compe- tencies	Supervision (if any)	coverage	Evaluation mode
Benzaken et al.2007 306 PCs (F)	higher level of education	Didactic Female sex workers, ease on communicative abilities and interest in the prevention planning practices among the other sex workers of the town and their clients		data gathering on the number of condoms sold weekly, detailed mapping of "prostitution spots" in town, preventive education assessment interviews with 100 clients (convenience sample) about "prostitution as work", their motivation to seek female sex workers, child prostitution, and their views on the project			
Johnson & Khanna 2004 310		A number of the CHWs recruited for the HIV/AIDS Home-Based Care program have previously been CHWs with other organizations, such as Association for the Formation and Support of Development (AFAD) and CARE Kenya- organizations that work with environmental sanitation, educate communities about proper sanitation, and help to prevent and treat diseases (such as measles, cholera, and eye infections). In home-based care training sessions, the CHWs learn a variety of information about HIV/AIDS, methods of prevention, and care and management of the sick and dying.	1-2 weeks training				
Koenig et al. 2004 295		selected from community for from the health staff					During the daily visits, the accompagnateurs observe the patients taking their medications, and they then either leave the second dose of medication or return later to deliver that dose as well.

Mental health Interventions Background

The MDGs practically define health efforts in the 21st century, but they apparently ignore non-communicable diseases such as mental health. In developing countries, conditions related to mental health rank the top among all as physical health also relies on mental fitness of individual. Mental health alone is the most important cause of sickness, disability and premature mortality and it contributes to the increased chances of reducing the incidence of mother breastfeeding their children and decreased likelihood of seeking out care for physical illnesses.³¹¹ Although mental health has not been given its due significance in chalking out the Millennium Development Goals, but it has clear implications in achieving targets like eradication of extreme poverty and hunger, reduction of mortality in children and improvement of maternal health.

The complete absence of mental health from the MDGs reinforces the position that mental health has little role to play in major health development agendas. In this review we have particularly included studies that have delivered mental health interventions to understand the role of outreach worker in community mental and psychosocial health.

Community Based Evidence

We found paucity of studies which have applied mental health interventions in the community; therefore we merged studies specifically focused on mental health of the community along with those that promoted parent child interaction and bonding. We found 8 RCTs, 1 quasi-RCT and two cross sectional studies in the section (Table 19A & 19B).

The community health workers involved in the interventions of mental health were mostly residents of the local village^{312, 313} however, non-residents were also involved in an intervention by Rehman et al.³¹⁴ These CHWs had a few years of schooling^{312, 314} while those trained in

Lester et al., were psychology graduates.³¹⁵ The training content was mostly didactic,^{312, 314, 316} while the modality was didactic and practicum in Lester et al.2007³¹⁵ and the one used in Barnet et al. was didactic and interactive, using role-plays, play activities and social and cultural outings in the community.³¹³ The disaggregated analysis showed training with didactic and interactive mode had an impact on the outcomes of mental health³¹³ as compared to those where the mode of training was only didactic.

In most of these studies CHWs were trained on content related to neonatal behavioral assessment,³¹² psychological counseling for depressed mothers,³¹⁴ parenting behavior^{313, 314, 316} and mental health counseling skills.³¹⁵ Some of them provided individual as well as family counseling.³¹³ In this way they played an important role to prevent mothers from depression which would eventually affect both the maternal and child healthcare promoting psychosocial development of children.³¹²

They also provided rehabilitative support to the already depressed mothers³¹⁴ and to the people with common mental health problems.³¹⁵ Training of CHWs for mental health counseling was meant to develop their core competency in psychological counseling,^{312, 314, 316} however, Morrell et al. study mentioned that their CHWs were awarded with national vocational qualification at the end of their training³¹⁶ but even that extensive training failed to create an impact on improving mental health outcomes at six weeks of intervention.

Supervision of the CHWs was done by the community non-profit organization in Barnet et al.³¹³ however in Lester et al. CHWs attended 1 hour of individual clinic supervision every week from a psychologist and also had ongoing training on a daily basis.³¹⁵ This ongoing training was conducted by the support groups as in service curriculum refreshers for the CHWs in Barnet et

al.³¹³ When level of supervision and provision of refresher in Barnet et al. was compared with other studies (in which proper supervision and refresher training was missing), it was found that it had a significant impact on improving parenting behavior, however no improvement was seen in parenting stress or mental health.³¹³

Most of the CHWs worked as volunteers in the interventions reviewed,³¹⁵ however the ones who participated in Barnet et al. were paid \$200 per year and this showed a positive impact on the mental health outcomes in the community.

Several methods were used to evaluate the performance of the CHWs working under the domain of mental health. Some were evaluated

by re-interviewing the mother,^{312, 314} some mothers were issued questionnaires at 6 weeks and 6 months postnatal.³¹⁶ The CHWs in Lester et al. intervention were evaluated from patient primary care records.³¹⁵ However none of these evaluations made a reinforcing impact on the outcomes of mental health interventions.



CHW Snapshot 16

Home Based Care Services – Tanzania

Program overview

Home based care model came into existence in Tanzania as a result of pilot project implemented during 2005/2007 in 57 communities. The prime aim of this program is to identify practical solutions to specific problem that older carer face. The model is a community based approach to support older care givers and is based on components to collect baseline information, training of old carer for home based care, initiating support groups for home based care, peer counselor, and for self advocacy, and linking them to support services³¹⁸.

Operational aspects and considerations

Home based carer was selected based on their willingness to work and participate in community activities and who is acceptable to community. The main component which is focused during selection is that they should have a previous experience of caring to sick child and have good interpersonal skills and ability to provide feedback and reports. They are trained on the national AIDS control program curriculum for training community home-based care services providers as antiretroviral and DOTS. They were trained on general awareness about HIV/ AIDS, parenting skills general hygiene and sanitation, communication and negotiation skills, psychological support skills, reducing pain, nutritional needs and counseling skills, and proper and timely referrals.

Source: Scholl 1985³¹⁸

Home Based Carer, Tanzania

- ✓ **Education** basic level of literacy
- ✓ **Training** 21 days

Conclusion

The impact of mental health in the development of a society cannot be underestimated. It is essential especially for the maternal and newborn healthcare and adequate growth of the children. The interventions reviewed in this regard have shown that the training modality especially those trained in classroom teaching along with interactive sessions had a positive impact on their results.³¹³ Also external evaluation, financial incentives and regular refresher training sessions for the CHWs can help achieve desired health objectives.^{313, 315}

CHW Snapshot 17

Nicaragua Brigadistas

Program overview

In 1981, Nicaraguan ministry of health began training community health workers called as brigadista de salud, or health brigadier. They trained two types of workers one called as "jornada brigadistas" who were recruited to provide manpower for the national health campaigns and the second group was called "primary health care brigadister" and they perform variety of curative and preventive tasks³¹⁸.

Operational aspects and considerations

these workers are typically chosen from community in which they work and given a modest amount of training and perform variety of preventive, promotive and sometimes curative tasks and are ultimately accountable for community. Some workers works full time while other work as part timer.

Nicaragua Brigadistas	
✓ Training	few days
✓ Supervision	nurse auxiliary
✓ Incentive	paid

Coverage and effectiveness

in 1983, jornada workers found in all 97 health areas while PHC workers were found in 33 of 97 health areas.

Source: Scholl 1985³¹⁸

Table 19A: Mental health Interventions – Characteristics of Included studies

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Rahman et al. 2008 ³¹⁴ Gujar Khan & Kallar Syedan, Pakistan	cRCT	CHWs	In the intervention group, primary health workers were trained to deliver the psychological intervention. The intervention consisted of a session every week for 4 weeks in the last month of pregnancy, three sessions in the first postnatal month, and nine 1-monthly sessions thereafter	In the control group untrained health workers made an equal number of visits to the depressed mothers	24 months	Married women (aged 16–45 years) in their 3rd trimester with perinatal depression	At 6 months, 97 (23%) of 418 and 211 (53%) of 400 mothers in the intervention and control groups, respectively, met the criteria for major depression (adjusted odds ratio (OR) 0.22, 95% CI 0.14 to 0.36, p<0.0001) The differences in weight-for-age and height-for-age Z scores for infants in the two groups were not significant at 6 months (−0.83 vs. −0.86, p=0.7 and −2.03 vs. −2.16, p=0.3, respectively) or 12 months (−0.64 vs. −0.8, p=0.3 and −1.10 vs. −1.36, p=0.07, respectively).
Morrell et al. 2000 ³¹⁶ Netherlands	RCT	CHWs	Up to 10 home visits in the first postnatal month of up to three hours duration by a community postnatal support worker.	Routine service provided to control arm		women aged >17 years delivered a live baby	At six weeks there was no significant improvement in health status among the women in the intervention group. The women in the intervention group were very satisfied with the support worker visits.
Lester et al. 2007 ³¹⁵ Birmingham, England	cRCT	CHWs	in intervention areas patients were provided with anxiety management for people with common mental health problems; information, assessment, screening if required onward referral to the voluntary sector and support for self-help, and mental health promotion.	No intervention for control group	35 months	18 to 65 years of age with a diagnosis of a new or ongoing common mental health problem	Patients in intervention practices had a higher mean level of general satisfaction than those in control practices (difference between group scores of 8.3, 95% confidence interval = 1.3 to 15.3, P = 0.023). The two groups did not differ in mental health symptom scores or use of the voluntary sector.
Cooper et al. 2002 ³¹² Khayelitsha, South Africa	Quasi RCT	CHWs	Interventions were delivered in women's home and each session lasted for an hour. In interventions they tried to improve the psychosocial development of children	Women in control area were not visited by CHWs	6 months	Postpartum mothers	There was no impact of intervention on maternal mood
Barnett et al. 2002 ³¹³ Baltimore, USA	iRCT	CHWs	Volunteers were recruited from the community and trained to implement a parenting curriculum during weekly home visits. Each volunteer was paired with one teenager.	Women in control area were not visited by CHWs	42 months	Adolescents aged 12–18 years at > 28wks gestation or who had delivered a baby in the past 6 months	the home visitation group demonstrated significantly better parenting behavior scores at follow-up than did the control group (P=0.1) but showed no differences in parenting stress or mental health.
Bugental et al. 2002 ³¹⁹ California, USA	RCT	CHWs	Home visitors that served as facilitators, assisting parents in making a causal appraisal of the possible reasons for an identified care giving problem and in designing a strategic plan for the future. Conducted 20 home visits in one year	Control group did not receive interventions	24	Families at moderate risk of Child abuse, expecting the birth of a child or having recently given birth to a child.	Lower levels of harsh parenting were found among mothers in the enhanced home visitation condition than among those in the unenhanced home visitation or control conditions. Prevalence of physical abuse (percentage of mothers who were abusive) during the first year was 26% in the control condition, 23% in the unenhanced home visitation condition, and 4% in the enhanced home visitation condition. Benefits were greatest in families that included a medically at-risk child. A linear pattern of benefits was found for child health; as program features were added, benefits for child health increased

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Bullock et al. 1995 New Zealand	RCT	CHWs	Women in the intervention group received weekly telephone calls throughout their pregnancy. All women were interviewed initially and at 34 weeks gestation. 8 check-off questions to be asked weekly. Referred women to health care provider if there was medical problem and encouraged women to seek assistance from community agencies.	Control group did not receive interventions	8.5	women recruited from an antenatal clinic and general practice surgeries who were < 20 weeks gestation & either single or in a relationship where the partner was unemployed	The intervention and control groups did not differ significantly on the psychosocial measures at baseline. Comparisons at 34 weeks were made by analysis of covariance using the baseline scores. The intervention group at 34 weeks had lower stress scores than the control group (means 16.5 vs 18.4, $p = 0.02$), lower trait anxiety (means 35.2 vs 39.4, $p = 0.04$) and less depressed mood (means 6.6 vs 8.1, $p = 0.02$). Self esteem was higher for the intervention group (means 34.9 vs 32.5, $p = 0.008$). The intervention failed to alter smoking but the intervention women did report more use of community resources ($p = 0.02$) and were less likely to skip meals ($p = 0.03$)
Duggan et al. 2004 Hawaii, USA	RCT	CHWs	Home visits were guided by an individual family support plan (family goals and steps to achieve them). Supervisor and home visitor identify key issues by examining the family's stress checklist assessment and concerns. They decided what areas of concern were appropriate for the home visitor to address with the family in addition to goals nominated by the family. The home visitor and supervisor referred to the goals at least every 2 months, the goals were updated by the visitor and family every 6 months.	Control group did not receive interventions	36 months	Families at risk for child abuse and neglect	There was no significant overall program effect on any risk or on at-risk mothers' desire for and use of community services to address risks. There was a significant reduction in one measure of poor mental health at one agency and a significant reduction in maternal problem alcohol use and repeated incidents of physical partner violence for families receiving $\geq 75\%$ of visits called for in the model. Home visitors often failed to recognize parental risks and seldom linked families with community resources.
Dawson et al. 1989 USA	RCT	CHWs	Home visitors sought to develop trusting relationships with families, primarily mothers. Provided emotional support by listening to mothers, and showing understanding. Provided concrete help eg rides to clinics, babysitting provided information on pregnancy and infant care, enhanced mothers informal and formal social networks by helping mothers access community resources such as housing, food stamps, child care, etc. They responded to what mothers felt they needed to cope better, discussed and encouraged contraception, talked about infant feeding and listened to mothers description of child's minor illnesses	Received routine maternity and paediatric care including nutrition and social services, occasional visits by public health nurses and delivery at university hospital	14	Mothers that were expecting first or second child, were 20-26 weeks pregnant, were at least 16yrs.	Both home-visited women and controls made good use of well-child care. Home-visited women made greater use of sick-child care ($p = 0.002$), most of which was appropriate. The greater use of sick-child care was concentrated among mothers with moderate or high family stress, with whom home visitors had closer relationships.

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Barnett & Parker 1985 322 Sydney, Australia	Observational Prospective Cohort	CHWs	Primiparous women were screened on state and trait anxiety measures in the post-partum period; sub-groups of highly anxious (n = 89), moderately anxious (n = 29), and minimally anxious (n = 29) mothers were derived and subsequently interviewed. The high-anxiety mothers were randomly assigned to a professional intervention, and to a non-professional intervention their progress was reviewed over the following 12 months.	Control groups were also reviewed for 12 months after being randomly selected.	12 months	Primiparous women (were screened on state and trait anxiety measures in the post-partum period	only professional intervention had a significant effect, intervention successfully lowering state anxiety levels to a value comparable with the moderately anxious mothers. Changes in anxiety levels for mothers not receiving an intervention were minimal over the study. In the high anxiety sub-groups, there was a 19% reduction in state anxiety levels for those receiving a professional intervention, a 12% reduction for those receiving a non Professional intervention and a 3% reduction in the controls. A planned contrast analysis determined that only professional intervention had a significant effect, intervention successfully lowering state anxiety levels to a value comparable with the moderately anxious mothers.
Heins et al. 1987 323 Carolina, USA	cross sectional	CHWs	Resource mothers provided parenting experience and knowledge to local community to reduce hazards associated with rural adolescent pregnancy	-	pregnant women	significant parental care in the intervention group. (p=000001)	

Table 19B: Characteristics and description of outreach workers

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Rahman et al.2008 314 CHWs	Secondary school	Non residents of that village	Didactic training trained to deliver the psychological intervention to depressed mothers	8 week	achieved their national vocational qualification		Conducted sessions with mother every week for 4 weeks in the last month of pregnancy, three sessions in the first postnatal month, and nine 1-monthly sessions thereafter	Counseling in the perinatal depression				Evaluation done by re-interviewing the mother.
Morrill et al.2000 316 CHWs			Didactic Trained in the care of young children and intra-personal skills	8 week	achieved their national vocational qualification		10 home visits in the first postnatal month of up to three hours duration	Competence in care of maternal young infant and children				questionnaires were issued at six weeks and six months
Lester et al.2007 315 CHWs	graduates	psychology graduates	Didactic and Practicum Training included all the knowledge, skills, and attitudes required in their job description.	12 weeks plus 3 weeks practice-based induction		ongoing training on a day release basis.	Roles were defined in accordance with the national guidance. Liaised with primary care team members, statutory & non-statutory sector services, & specialized services for patients who are managed in PHC	mental health counseling	received 1 hour of individual clinical supervision each week from a psychologist	Voluntary		Effectiveness evaluated from patient primary care records
Cooper et al.2002 312 CHWs	Limited schooling	Community workers	Didactic Training using Neonatal Behavioral Assessment Schedule to sensitize the mother to her infant's individual capacities & sensitivities.				Gave specific advices on aspects of infant management (e.g. sleep regimen, crying, feeding) during antenatal and postnatal visits	emotional support and counseling				Evaluated from the mother's view
Barnet et al.2002 313 Baltimore, USA CHWs (female)		older than 21 years recruited from the local community via announcements, newspaper advertisements, and churches. Screened their criminal background	Didactic training and counseling skills through development of a mentoring and supportive relationship. Trained to discuss infant development, engaging in age-appropriate feeding or play activities, role-playing age-appropriate discipline, and taking social and cultural outings in the community.	16 hours		Support groups conducted as in-service curriculum refresher	made weekly 1.5 hrs of home visits with the teenager and other family members until the child's first birthday, with an option to continue until the child's second birthday.	Provided individual and family counseling, case management, and coordinated linkages with community agencies when problems were identified	Supervised by the community nonprofit organization	\$200 per year		

Study	Edu- cation	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key compe- tencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Bugental et al. 2002 319			Were trained in home methods through the National Parents as Teachers program. Trained by Parents as Teachers Center in National City California. Two trainers: one Caucasian and one Latino				Parents in the unenhanced home visitation condition received home visitation consistent with the Home visitation program (Duggan 2004) supplemented with information regarding existing community services. Families in the enhanced condition received information on existing community services, combined with methods used in the Healthy Start program and a brief attribution ally based problem-solving discussion at the start of each visit (causal appraisal followed by problem-focused appraisal). Home visitors served as facilitators, assisting parents in making a causal appraisal of the possible reasons for an identified care giving problem and in designing a strategic plan for the future.					
Barnett & Parker 1985 322		Social workers	Guidelines for the social worker suggested attention to: the provision of support; specific anti-anxiety measures; the promotion of self-esteem and confidence; a reduction in intensity of the mother-infant interaction (if appropriate), and promotion of mother father and father-child interaction.				Professional intervention comprised assistance from a social worker experienced in working with mothers and children, each social worker being Allocated six subjects.					
Dawson et al. 1989 321 Scholl 1985318	12 grade		Training covering pregnancy, birth, infant care, safety, nutrition, child development, community resources and family life.	30 hours								

Interventions related to Non-Communicable Diseases (NCDs) Background

Non-communicable Diseases (NCDs) such as heart attack, stroke, cancers, diabetes, and common injuries account for the vast majority of all global deaths, but still do not lay in the domain of millennium development goals. Several of the MDGs are acting as determinants of NCDs like lower levels of education leads to engagement in unhealthy life style and in turns results in developing NCDs.³²⁴ Likewise, environment health hazards are associated with causing respiratory diseases and some types of cancers. NCD also impose severe costs on national health-care systems and economies as a whole.³²⁵ NCD prevention is still not featured as a priority in most national public health agendas. It is therefore essential to move from programs to treat NCDs to risk factor prevention and initiatives for health promotion at every level (individual, family, community and national). Thus, primary control and prevention of NCD risk factors could help strengthen, rather than compete, with health-care interventions for infectious diseases and reproductive health.³²⁶ During our review we found many studies in which CHWs focused delivering interventions related to prevention of NCDs and majority of them were from developed countries. Most of the NCDs driven interventions are targeted in developed countries as they have already or are in phase of achieving targets related to MNCH and communicable diseases.

Community-Based Evidence

We also found the role of CHWs in delivering interventions related to other non communicable diseases like hypertension, diabetes and cancer. We reviewed 25 studies that came across while searching for studies particularly related to MDGs and included in this review to evaluate their dynamic roles in provision and management of non-communicable health problems (Table 20A & Table 20B).

The CHWs recruited in these interventions were

mostly locals from the community.^{296, 327-332} The CHWs in Thompson et al. were either diabetic themselves or had a family history of diabetes and were required to have good interpersonal skills to participate in the intervention.³²⁹ Those recruited in the Gary et al. intervention were all local high school graduates, but had no prior training in health care³²⁷ while those in the Sankaranarayanan et al. were university graduates.³³³ In another study from Pakistan CHWs had 8 years of schooling and were recruited in the pattern of how CHWs are selected for national LHW program.³²⁸ The training modality used in all of the studies was didactic.³²⁷⁻³³⁵ The CHWs in the Krieger et al., Jafar et al. and Gary et al. interventions were trained to counsel patients to adopt preventive care and adhere to the treatment of hypertension.^{327, 334 328} They were taught the risk factors for cardiovascular diseases and trained to conduct blood pressure measurement.^{327, 334 328} The CHWs involved in Fedder et al. intervention were trained in case management of diabetes, like glucose monitoring, medications, emergencies and complications, besides their training in the management of hypertension.³³⁰ In Thompson et al. the CHWs were given 30 hours training in the management of diabetes mellitus and depression³²⁹ while Ingram et al. intervention focused on training the CHWs in inculcating self-management behavior in the diabetics.³³² In another study reviewed, the CHWs were trained in prevention strategies against lead poisoning.³³¹ In Solomon et al. the CHWs were trained in the diagnosis of trachoma, its treatment with azithromycin and proving information of the possible side effects of the drug.³³⁵ on the other hand in Forst et al., farmers in the field were given education related to protective eye care measures and were distributed eye wear.³³⁷

The educational level^{333 328} and the training content both seemed to have a positive impact on the outcomes of all the interventions reviewed. In Thompson et al. having a personal

experience of managing own illness or someone else in the family with diabetes resulted in producing highly significant results through decreasing the levels of HBA1C in the people under their coverage. When educational level of CHWs in Gary et al. and Sankaranarayanan et al. were compared with studies which did not mention education level of CHWs at all, we found no added advantage in the outcomes achieved, in fact in studies where CHWs were selected base on their educational level failed to show any impact on their study outcomes.

On the other hand, regular bi-weekly supervision of the health workers not only served as on-going training but also provided an opportunity to assess the problems encountered in the development of health seeking behavior of the community.^{329, 330} This contributed to the significant reduction in the glycosylated hemoglobin of the diabetics in the community³²⁹ and in the decline of total emergency room visits by 40%.³³⁰

The role of CHWs in relation to the MDGs was oriented towards promotion of health seeking behavior in the community. They promoted preventive strategies with regards to hypertension,^{327, 330, 334 328} diabetes,^{329, 330, 332} de-

pression,³²⁹ lead poisoning,³³¹ oral cancers,³³³ and protective eye care in farmers.³²¹ They also offered therapeutic service as in case of trachoma where they treated the disease using azithromycin.³³⁵

Most of the studies under review of NCDs had CHWs, who worked as volunteers, however those in Fedder et al. and Jafar et al. were given stipends.^{330 328} However the financial incentive or the lack of it did not seem to have any impact on the outcomes of these interventions.

Conclusions

The CHWs can play a great role in promoting preventive healthcare strategy in the community. The outcomes of interventions make it evident that they can counsel patients towards health seeking behavior and provide them motivation necessary for treatment compliance. It is therefore imperative to the achievement of MDGs that the CHW can be deployed to the regions farther from the reach of physicians.

CHW Snapshot 18

Nigerian Community Health Workers

Program overview

In 1982, the institute of child health and primary health, Lagos designed a primary health care service model for rural population. The model decided to base the services in the villages by developing a cadre of volunteer village health workers who will be utilized for referral. Supply and supervision.

Operational aspects and considerations

Initially village health committees were developed and those committees nominated volunteers for training in accordance with criteria designed. These volunteers were recruited if they managed to show a permanent residency in that community and had a responsible attitude. The courses covered curative, preventive and promotional activities.

Source: Weerakon & Jiffry 1989³³⁶

Home Based Carer, Tanzania

- ✓ **Education** no criteria
- ✓ **Training** 3 weeks
- ✓ **Refresher** 2 refresher courses
- ✓ **Supervision** community health assistant (mid level PHC worker)
- ✓ **Incentive** sales of drugs

CHW Snapshot 19

South African Community Health Workers

Program overview

Implementation of community health workers program initiated in 1970s and 1980s following alma ata declaration. In 2002 the year was marked in the history of South Africa as the year of volunteer and a rapid growth was seen with the range of lay workers, home based carer, lay counselors, DOT supporters etc. and term community health workers was introduced under the umbrella concept of lay workers in the health sector and national CHW policy framework was adopted in 2003³³⁸ where these workers were all brought under the banner of an Expanded Public works Program (EPWP). In 2006, training standardization and accreditation of CHW came into existence.

Operational aspects and considerations

Recruitment and selection occurred mostly through calls for volunteers and sometimes via community-based organization and often through involvement of health facility staff. They are expected to work half a day and 20 hours per week. In 2005/06 the national department of health allocated USD 10 million for their training and involving them in HIV/AIDS and TB care and support activities. 14 CHWs were linked with each primary health facility center in their community.

Source: *Schneider et al. 2008*³³⁹

Community health Workers, South Africa

- ✓ **Supervision** nurses
- ✓ **Incentive** R1000 per month

Table 20A: Non-Communicable Diseases Prevention Interventions – characteristics of included studies

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Krieger et al. 1999 ³³⁴ Seattle, USA	RCT	CHWs	The health workers followed a standardized sequence of activities until they reached a client: telephoning (up to 3 times), mailing a postcard asking the client to contact the health worker, making a home visit, and contacting alternate persons who might know the location of the client.	Participants in the usual-care group were advised to see a health care provider for follow-up. Those without a provider were given a list of public & community clinics	28 months	Persons with elevated blood pressure (140 mm Hg systolic or 90 mm Hg diastolic)	The enhanced follow up increased follow up by 39% (95% CI: 14–71% Relative to usual care. Follow up visits were completed by 65% Of Participants in intervention arm compared to 47% in usual care.
Krieger et al. 2005 ³⁴⁰ Seattle, USA	RCT	CHWs	Community health workers provided in-home environmental assessments, education, support for behavior change, and resources. Participants were assigned to either a high-intensity group receiving 7 visits and a full set of resources or a low-intensity group receiving a single visit and limited resources.	received usual care	24 months	4–12 year olds of children with asthma	The high-intensity group improved significantly more than the low intensity group in its pediatric asthma caregiver quality-of-life score (P=0.005) and asthma-related urgent health services use (P=0.026). Asthma symptom days declined more in the high-intensity group, although the across-group difference did not reach statistical significance (P=0.138). Participant actions to reduce triggers generally increased in the high-intensity group.
Gary et al. 2003 ³²⁷ California, USA	RCT	CHWs	The NCM was a registered nurse with a baccalaureate degree in training to be a certified diabetes educator. NCM interventions were 45-min face-to-face clinic visits and/or telephone contacts. She provided direct patient care, management, education, counseling, follow-up, referrals, and physician feedback and prompting, which included advising regimen changes & implementing changes under physician's orders.	Participants assigned to the usual medical care (control) group continued on-going care from their own health professionals	24 months	patients with type 2 diabetes	Compared to the Usual care group, the NCM group and the CHW group had modest declines in HbA1c over 2 years (0.3 and 0.3%, respectively), and the combined NCM/CHW group had a greater decline in HbA1c (0.8%; P=0.137). After adjustment for baseline differences and/or follow-up time, the combined NCM/CHW group showed improvements in triglycerides (35.5 mg/dl; P=0.041) and diastolic blood pressure, compared to the usual care group (5.6 mmHg; P=0.042).
Jafar et al. 2009 ³²⁸ Karachi, Pakistan	cRCT	CHWs	CHWs were trained to screen hypertensive patients from the selected communities and modify their behavior on healthy diet, exercise and smoking cessation and then GPs were also trained for pharmacological and non pharmacological interventions	in control arm CHWS and GPs were not trained and they were receiving services from local health facilities	24 months	hypertensive patients with 40 years of age and above	decrease in systolic blood pressure was significantly greater in the HHE and GP group (10.8 mm Hg [95% CI, 8.9 to 12.8 mm Hg]) than in the GP-only, HHE-only, or no intervention groups (5.8 mm Hg [CI, 3.9 to 7.7 mm Hg] in each; P < 0.001).
Sankaranarayanan et al. 2000 ^{333, 341} Kerala, India	cRCT	CHWs	Subjects in the intervention group will receive 3 rounds of screening consisting of oral visual inspection by trained health workers at 3-year intervals. Subjects in the intervention group were offered screening, and those with lesions suggestive of oral leukoplakia, submucous fibrosis, or oral cancer were referred for examination by physicians	control group did not receive any intervention	36 months	adult population	Of the 63 oral cancers recorded in the cancer registry, 47 were in the intervention group and 16 were in the control group, yielding incidence rates of 56.1 and 20.3 per 100,000 person-years in the intervention and control groups, respectively. The program sensitivity for detection of oral cancer was 76.6% and the specificity 76.2%; the positive predictive value was 1.0% for oral cancer. In the intervention group, 72.3% of the cases were in Stages I/II, as opposed to 12.5% in the control group. The 3-year case fatality rates were 14.9% (7 of 47 patients) in the intervention group and 56.3% (9 of 16 patients) in the control group.

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Vetter et al. 2004 ³⁴² USA	RCT	CHWs	Patients were given intervention related to diet, physical activity, foot care, vision care, blood glucose self monitoring, blood pressure control, adherence to medications and appointments, referrals, and smoking cessation	Own going care from patient own health professionals	24 months	Patient with diabetes	Interventions group improved diabetes control compared to control group.
Taylor et al. 2009 ³⁴³ Seattle, Washington USA and Vancouver, Canada	RCT	CHWs	Four hundred and sixty individuals who had never been tested for hepatitis B were identified from community-based surveys of Chinese conducted in Seattle, Washington, and Vancouver, British Columbia. These individuals were randomly assigned to receive a hepatitis B lay health worker intervention or a direct mailing of physical activity educational materials	Control group did not receive interventions	6 months	General Population	A total of 319 individuals responded to the follow-up survey (69% response rate). Medical records data verified hepatitis B testing since randomization for 9 (6%) of the 142 experimental group participants and 3 (2%) of the 177 control group participants (P = 0.04). At follow-up, a higher proportion of individuals in the experimental arm than individuals in the control arm knew that hepatitis B can be spread by razors (P<0.001) and during sexual intercourse (P = 0.07).
Srinivisan et al. 2006 ³⁴⁴ South India	RCT	CHWs	treated with either 1% chloramphenicol and 1% clotrimazole ointment or 1% chloramphenicol and a placebo ointment three times a day for 3 days. Patients, doctors and VHWs were blinded to treatment.	No treatment	18 months	Patients with traumatic corneal abrasion	1365 people reported to VHWs with ocular injuries, of whom 374 with corneal abrasions were eligible for treatment. Of these, 368 (98.5%) abrasions healed without complications. 2 patients had mild localised allergic reactions to the ointment, 2 dropped out and 2 patients in the placebo group developed microscopic culture-negative corneal stromal infiltrates that healed in 1 week with natamycin drops.
Nguyen et al. 2009 ³⁴⁵ USA	RCT	CHWs	Both groups received targeted Media Education. The intervention group received two LHW educational sessions and two telephone calls.	received media education only	36 months	women aged >40 years	The LHW_ME group increased receipt of mammography ever and mammography in the past 2 years (84.1% to 91.6% and 64.7% to 82.1%, p_0.001) while the ME group did not. Both ME (73.1% to 79.0%, p_0.001) and LHW_ME (68.1% to 85.5%, p_0.001) groups increased receipt of CBE ever, but the LHW_ME group had a significantly greater increase. The results were similar for CBE within 2 years. In multivariate analyses, LHW_ME was significantly more effective than ME for all four outcomes, with ORs of 3.62 (95% CI_1.35, 9.76) for mammography ever; 3.14 (95% CI_1.98, 5.01) for mammography within 2 years; 2.94 (95% CI_1.63, 5.30) for CBE ever; and 3.04 (95% CI_2.11, 4.37) for CBE within 2 years.
Simmons et al. 2008 ³⁴⁶ New Zealand	RCT	CHWs	A pilot study (Vanguard Study) cohort of 160 participants were weighed before and during MCHW intervention, and compared with fifty two participants weighed immediately before intervention and with 1143 participants from the same geographical area.	No interventions to control arm	24 months	patients with diabetes	Those with IGT/IFG diagnosed (n 27) experienced significant weight loss after screening and during the Vanguard Study (572 (SD 676) kg, paired t test P<0.01). Significant weight loss occurred during the Vanguard Study among all participants (2173 (SD 376) kg, P<0.001).

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Cheroff et al. 2002 ³⁴⁷ Baltimore, USA	RCT	CHWs	The program, provided by "experienced mothers" and child life specialists, included telephone contacts, face-to-face visits, and special family events.	Control group did not receive interventions	12 months	children aged 7 to 11 years with diabetes mellitus, sickle cell anemia, cystic fibrosis, or moderate to severe asthma.	Analysis of variance demonstrated that the intervention had a significant main effect on post intervention adjustment controlling for baseline scores ($P=.01$). Using a cutoff score indicating maladjustment, the percentage of experimental group children in the maladjustment range fell from 19% at baseline to 10% after the intervention; the percentage of control group children in the maladjustment range rose from 15% at baseline to 21% after the intervention.
Levine et al. 2003 ³⁴⁸ USA	RCT	CHWs	Community health workers were trained and certified in blood pressure management, monitoring, education and counseling, social support mobilization, and community outreach and follow up.	No interventions to control arm	48 months	general population	The primary results were a significant decrease in mean systolic and diastolic pressures after both levels of intervention, and a significant increase in the percentage of individuals with controlled high blood pressure. Surprisingly, no differences in results were observed between the 2 levels of intervention intensity
Bird et al. 1998 ³⁴⁹ California, USA	Quasi-RCT	CHWs	Lay workers conducted 56 sessions on general States, 86 on cervical cancer, and 90 on breast cancer. Surveys of 306 to 373 women were conducted in to develop cervical cancer. Further, Vietnamese women the study communities in 1992 and 1996.	no interventions	36 months	Vietnamese women	In the intervention community, recognition of screening tests increased significantly between pre- and post intervention surveys: CBE, 50 to 85%; mammography, 59 to 79%; and Pap smear, 22 to 78% (P 0.001 for all). Receipt of screening tests also increased significantly: CBE, 44 to 70% (P 0.001); mammography, 54 to 69% (P 5 0.006); and Pap smear, 46 to 66% (P 0.001). Best-fitting logistic regression models, adjusting for pre-intervention rates and significant covariates, also showed statistically significant odds ratios [9]. Only about half (50 and 53%) of Vietnamese women for the intervention effect (P , .0001).
Forst et al. 2004 ³²⁹ Michigan, USA	pre/post	CHWs	786 workers on 34 farms were divided into three intervention blocks: (A) CHWs provided protective eyewear and training to farm workers; (B) CHWs provided eyewear but no training to farm workers; (C) eyewear was distributed to farm workers with no CHW present and no training.		-	farmers	Pre- and post-intervention questionnaires demonstrated greater self-reported use of eyewear in all blocks after the intervention ($P<0.0001$), with Block A showing the greatest change compared to B ($P<0.0001$) and C ($P=0.03$); this was supported by field observations. Block A showed the greatest improvement in knowledge on questions related to training content.
Fedder et al. 2003 ³³⁷ Baltimore, USA	comparative cross sectional study	CHWs	To ascertain the effect that trained CHWs had on the quality of life (QOL) and level of healthcare utilization of Medicaid enrollees with DM, with or without HTN. Healthcare. CHWs alternated weekly home visits and phone contacts to teach patients to understand the need to control their illnesses, to follow both their therapy and behavioral regimens, and to maintain appropriate visits to a primary care practitioner.		39 months	patients with type 2 diabetes with or without hypertension	Total emergency room (ER) visits declined by 40%; ER admissions to hospitals declined by 33%, as did total hospital admissions; and Medicaid reimbursements declined by 27%.

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Davis 1994 ³⁵⁰ Los Angeles, USA	comparative cross sectional	CHWs	CHWS provided educational sessions to women for protective reproductive health	for protective reproductive health	-	All women ages 21 years & older	The findings suggest that a church-based model of social influence can leverage the participation of minority women in cervical cancer control, provide access to underserved Hispanic women in particular, and sustain cancer control activities beyond the life of an intervention program.
Kegler & Malcoe 2004 ³³¹ Oklahoma, USA	cross sectional survey	CHWs	Trained lay health advisors, who then attended monthly meetings, planned and engaged in outreach activities, and educated individuals in their social networks (average of 5.4 education/ outreach activities per month). During the 2-year intervention period, they made nearly 27000 contacts and spent more than 5000 hours conducting TEAL-related community education efforts. ²² Topics included sources of lead, the importance of blood lead screening, strategies for removing lead sources, hand washing, playing in grass rather than in dirt or mine tailings, good nutrition, & housecleaning.		24 months	children aged 1-6 years	Mean childhood blood lead levels decreased and selected preventive behaviors improved
Ingram et al. 2005 ³³² Yuma and Santa Cruz, USA	cross sectional study	CHWs	The model included a five-week series of free diabetes education classes that assisted participants in gaining the knowledge and skills necessary to be physically active, control diet, monitor blood sugar, take medications, and be aware of complications. Central to the model was the use of community health workers — or to conduct outreach, participate in patient education, and provide individual support.		36 months	patients with Diabetes	Random blood glucose measurement in Yuma, dropped from 224 mg/dL to 201 mg/dL, and, in Santa Cruz, levels dropped from 197 mg/dL to 151 mg/dL. Among high-risk participants in Yuma, systolic BP fell from 151 mg/dL to 137 mg/dL, & diastolic BP fell from 100 mg/dL to 84 mg/dL. Among high risk participants in Santa Cruz, systolic BP fell from 153 mg/dL to 139 mg/dL, & diastolic blood pressure fell from 102 mg/dL to 91 mg/dL.
Solomon et al. 2001 ³³⁵ Daboya, Ghana	cross sectional survey	CHWs	CHWs were trained to diagnose trachoma and to treat the disease using azithromycin. They were also informed of the drug's possible side-effects. Under supervision, each volunteer then examined, and if necessary treated		1 months	General population in households	The volunteers' diagnostic sensitivity for active trachoma was 63%; their specificity was 96%. At the household level, their "decision to treat" was correct in 83% of households
Havas et al. 1991 ³⁵¹ Massachusetts, USA	Cross sectional	CHWs	Principal components included physician education, community based screenings, and follow-up. A lay or professional educator provided counseling and referral advice. Half of the subjects with high blood cholesterol levels received a reminder to see their physician		36 months	adults males, young, poor and less educated	51.5% of those referred had visited their physicians within 2 to 4 months, increasing to 65.6% within 6 to 12 months. Older age (odds ratio [OR], 1.17 per additional decade), more education (OR, 1.17 per additional level), higher blood cholesterol levels (OR, 1.19 per additional 0.51 mmol/L), previous knowledge of level (OR, 1.34), and receiving a reminder (OR, 1.24) were significantly associated with greater likelihood of referral completion, whereas the type of educator providing counseling was not.
Singh et al. 2004 ³⁵² Haryana, India	cross sectional	CHWs	patients were given DOTs strategy		21 months	patients with TB	The proportion of patients with community volunteers increased significantly with time (13% in 2000 to 25% in 2002), even in the absence of financial incentives

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Lam et al. 2003 ³⁵³ California, USA	cross sectional	CHWs	education outreach to women by lay health workers in the community		60 months	Women in community	more understanding in intervention group that smoking and human papillomavirus causes cervical cancer
Mock et al. 2006 ²⁹⁷ USA	cross sectional	CHWs	lay health worker outreach plus media-based education (combined intervention) or media-based education only. Lay health workers met with the combined intervention group twice over 3 to 4 months to promote Papanicolaou (Pap) testing. We used questionnaires to measure changes in awareness, knowledge, and Pap testing.		36 months	Vietnamese American women	Testing increased among women in both the combined intervention (65.8% to 81.8%; $P < .001$) and media-only (70.1% to 75.5%; $P < .001$) groups, but significantly more in the combined intervention group ($P = .001$). Among women never previously screened, significantly more women in the combined intervention group (46.0%) than in the media-only group (27.1%) obtained tests ($P < .001$). Significantly more women in the combined intervention group obtained their first Pap test or obtained one after an interval of more than 1 year (became up-to-date; 45.7% to 67.3%, respectively; $P < .001$) than did those in the media-only group (50.9% to 55.7%, respectively; $P = .035$).
Hiatt et al. 2001 ³⁵⁴ California, USA	cross sectional	CHWs	The Breast and Cervical Cancer Intervention Study was a controlled trial of three interventions in the San Francisco Bay Area from 1993 to 1996: (1) community-based lay health worker outreach; (2) clinic-based provider training and reminder system; and (3) patient navigator for follow-up of abnormal screening results. Study design and a description of the interventions are reported along with baseline results of a household survey conducted in four languages among 1599 women, aged 40–75		36 months	women general population	Seventy-six percent of women ages 40 and breast and cervical cancer screening among uncovered (89%). Rates were significantly lower for non-English-based research designed to develop and evaluate such speaking Latinas and Chinese women (56 and 32%, respectively, for mammography), and maintenance insights regarding previously understudied popular screening (three mammograms in the past 5 years) variations and multiple study design challenges. The proven from 7% (non-English-speaking Chinese) to 53% effectiveness of mammography and Pap smears in pre (Blacks).

Table 20B: Characteristics and description of outreach workers

Study	Education	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Krieger et al. 1999 ³³⁴ CHWs		predominantly Black (12/14) low income neighborhood	Didactic training on hypertension, the cardiovascular system, risk factors for cardiovascular disease, community	100 hours	BP measurement specialists		provided referral to medical care and, assistance in locating a provider; took appointments at health center; issued appointment reminder letter; follow-up to determine whether the appointment was kept; a new appointment for each missed appointment (up to 3); and assistance in reducing barriers to care through referral	blood pressure measurement with linkage with health facility and client	Contact activities were monitored with a computerized tracking system.			
Gary et al. 2003 ³²⁷ CHWs (F)	a local high school graduate	enrolled in college part time, and had no formal training in health care before the study.	Didactic skills development training in preventive care, adherence to treatment recommendation and reporting of identifiable problems.				The CHW facilitated preventive care by offering to schedule appointments and visits, monitored participant and family behavior, reinforce adherence to treatment recommendations, mobilize social support, & provide physician feedback, which included reporting on identifiable problems such as high blood pressure readings	blood pressure measurement and linkage with health facility and client				
Jafar et al. 2009 ³²⁸	8 years of schooling	from the same community and hired as per lady health program Pakistan	Didactic training on behavior change communication of diet, exercise and smoking cessation	6 weeks			pharmacologic (diet, exercise, weight loss, and smoking cessation) and pharmacologic interventions, prescription of low-cost and appropriate generic drugs, preferential use of single-dose drug regimens, scheduled follow-up visits guided by blood pressure, the stepped-care approach for titrating drugs to achieve target blood pressure, and satisfactory consultation sessions for patients, with explanations of treatment and use of appropriate communication strategies.			salaried		

Study	Edu- cation	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key compe- tencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Srinivisan et al. 2006 344	High school education	Fluent in English	Trained to identify corneal abrasions				Dor to door survey and identify patients with traumatic corneal abrasion using a technique taught in training			Paid workers	3500-4000 population	
Sankaranarayanan et al. 2000 333, 341 CHWs (M & F)	university graduates		didactic training they were trained to give anti tobacco health messages to community suring their visits to household				they visited household and given them training related to ant tobacco, they also performed screening of oral visual inspection of anatomical benign oral cancers and provide referrals to them	oral cancer counseling and screening of oral cancers in community				
Thompson et al. 2009 329 CHWs		having diabetes or having a family member with diabetes, possessing good interpersonal skills,	10 sessions of general Didactic training on group facilitation, decision making, popular education methods, making presentations, communication, and analysis. Subsequently, they received 30 hours of training in diabetes management and the TTM.			Biweekly meetings provided ongoing instruction and support on topics requested by the promoters, for the duration of the project, including 12 hours on depression.	Acted as extenders of the medical staff to facilitate behavior change, using patient centered counseling, walking club, diabetes classes, and a psycho educational group for depression.					
Fedderret al. 2003 330 CHWs		required to have community experience to demonstrate their commitment to service, & to either reside in, or be able to travel to, the catchment area.	Didactic Training Received training in chronic illnesses, resource identification, and case management. The initial training was 40 hours, and covered many topics related to diabetes (eg, medications, emergencies & complications, glucose monitoring), and to high blood pressure			Bi-weekly supervision meetings were held in which new patient assignments were given, forms were distributed and collected, and problems addressed.	Alternated weekly home visits and phone contacts to teach patients to understand the need to control their illnesses, to follow both their therapy and behavioral regimens, and to maintain appropriate visits to a primary care practitioner.	Developing Health seeking behavior		provided an MTA bus pass and a monthly stipend (from \$45 to \$75, based on caseload) for incidental expenses incurred.		

Study	Education	Recruitment Training Criteria	Duration	Certification / Ongoing training	Refreshers / Ongoing training	Role	key competencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
Kegler & Malcoe 2004 ³³¹		respected people to whom others turned for advice and help) were recruited from the Native American community	8 hours	training on sources of lead exposure and lead poisoning prevention strategies	community education efforts: Topics included the importance of blood lead screening, strategies for removing lead resources, hand washing, playing in grass rather than in dirt or mine tailings, good nutrition, & housecleaning.					40/ 27000 contacts	
Ingram et al.2005 ³³² Yuma and Santa Cruz, USA		<i>Promotores</i> are indigenous to the communities in which they work		Didactic Training by the hospital in each county provided a CDE to facilitate classes, in diabetes care, and work individually with participants	to provide outreach, recruitment of participants, assist participants in incorporating self-management behaviors into their lifestyles, & offer ongoing support and follow-up.						Collaboratively developed quantitative and qualitative instruments
Solomon et al.2001 ³³⁵ Daboya, Ghana				CHWs were trained to diagnose trachoma and to treat the disease using azithromycin.	They were trained to diagnose and treat trachoma. They were also informed of the drug's possible side-effects. Under supervision, each volunteer then examined, and if necessary treated						

Study	Edu- cation	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key compe- tencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Forst et al. 2004 337	read and write Spanish	interest in Heath, have leadership & communi- cation skills, demonstrated respect for farm workers	promote safety measures in the farmers including eye wear	2 hours daily for 2 weeks training								

Knowledge, attitude and practices of community health workers

Background

A CHW is a frontline public health worker who is a trusted member of the community served and is the backbone of the primary health care.³⁵⁵ The importance of CHWs in the provision of health services cannot be overlooked because they are the solitary means of house-to-house access of health system for the provision of basic health care and serve as a liaison between health/social services and the community to facilitate access to services and improve the quality and cultural competence of service delivery. They also build individual and community capacity by increasing health knowledge and self-sufficiency through a range of activities such as outreach, community education, informal counseling, social support and advocacy. Therefore, only those CHWs who have good knowledge, positive attitude and proper skills, can help the community regarding primary health care and family planning.

In the systematic search for the global evidence of CHWs, we also identified set of studies in which their training and practices were evaluated and reported in the form of Knowledge, attitude and practices (KAP) studies.

Community Based Evidence

We reviewed a total of 19 studies which assessed the knowledge, attitude and practices of the CHWs (Table 21A & Table 21B). The types of health worker involved in the studies reviewed are TBAs^{356, 357} and the CHWs.³⁵⁸⁻³⁶⁸ The CHWs in Darmstadt et al. were educated up to secondary school or higher³⁶⁴ while some had had a few years of schooling³⁶² or were just literate.³⁵⁷ The training modality used where the CHWs were being trained was didactic^{357, 359, 360, 364, 367} along with field work in few of them.^{356, 358, 361-363, 365}

The functional status of the CHWs in Ayele et al. was assessed after providing them with refresher training of 5 days.³⁶⁸ It was observed that their

functional status had significantly changed for outreach activities, health education, environmental health, MCH activities, EPI, birth and deaths registry, curative patients, school health, referrals and epidemic control.³⁶⁸ In Darmstadt et al. physicians independently evaluated all the neonates seen by the CHWs and the outcomes of this study showed that the sensitivity of CHWs' evaluation of a very severe disease was 75% and specificity was 98%.³⁶⁴ In another study by Hadi et al. the assessment and management of ARIs by CHWs was assessed against the gold standard of physician assessment and diagnosis.^{362, 363} The sensitivity of the diagnosis by the CHWs was found to be 68% while the specificity was 95% as compared to the diagnosis of a physician.^{362, 363} The management of sick children according to IMCI protocol and the role of CHWs was also studied in another cross sectional survey and it was found that a significant number of CHWs were needed to meet the time requirement by IMCI protocols.³⁶¹

In Falle et al. the TBAs were trained and then evaluated on their antenatal support and delivery of the baby. They were trained to make antenatal visits and convey advice on diet and nutrition, immunizations (TT) and conduct safe delivery and counseled on reducing the workload during pregnancy.³⁵⁷ The outcomes of this study showed that the trained TBAs were more likely to wash hands with soap before delivery and use a clean delivery kit, and advice feeding colostrums to the newborn.³⁵⁷

Similarly the TBAs in another study were first trained in newborn care and then their knowledge and training was tested before and after training.³⁵⁶ The after training assessment showed statistically significant reduction in perinatal and neonatal deaths among deliveries conducted by TBAs.³⁵⁶

The CHWs in Afsar et al. were assessed on their primary health care delivery, family planning

services, maternal and child health care and referral practices.³⁶⁰ The outcomes of this study showed that the CHWs made 76.4% successful referrals.³⁶⁰ In another study Afsar et al. found that only 4% of the patients referred visited government facilities, the rest preferred private physicians and in-formal practitioners.³⁵⁹

The knowledge, attitude and skills of the CHWs with a job experience of more than 24 months revealed that their knowledge was above 36%, attitude score above 88% and skill assessment score above 86%. The variables included in this study were home visits, antenatal care, family planning, newborn care, vaccination, growth monitoring, common diseases, medicines and referrals.³⁵⁸ The CHWs in Mohanty et al. showed

significant improvement in the performance skills after learning from a pretested self learning educational module with simulation method.³⁶⁵ In Nigeria the Oganfowora & Daniel were interviewed by a self-administered questionnaire to test their knowledge on neonatal jaundice, its causes, treatment and complications and the results of this study showed that only 51% of the respondents had correct knowledge of neonatal jaundice and only 55% of them had adequate knowledge of its effective treatment.³⁶⁶

In Zietz et al. it was found that the CHWs developed the competency to correctly classify ARI, and their average score improved from 60% to 83%, in a pre/post study after training them to use the WHO ARI guidelines.³⁶⁷



CHW Snapshot 20

Pakistan Lady Health Worker Program

Program overview

In 1993, government of Pakistan started a National Program for Family Planning and Primary Health Care and soon the program began to employ a cadre of salaried, female CHWs, called lady health workers, to provide health education, promote healthy behaviours, supply family planning methods and provide basic curative services. Their duties include monitoring the health of pregnant women, monitoring the growth and immunization status of children, and promoting family planning. The lady health workers are provided with a kit that contains materials such as bandages, scissors, cotton, a thermometer, health education posters and a child scale. The kit also contains contraceptives and drugs, including contraceptive pills, condoms, paracetamol tablets and syrup, eye ointment, oral rehydration salts for diarrhea, Chloroquine for malaria and antibiotics for respiratory infections.²¹⁴

Operational aspects and considerations

Lady health workers are all women; 70 per cent are under the age of 35 years, and 72 per cent are currently married or have been married. The written requirements for a lady health worker are to be female, educated to 8th grade, a permanent resident where she will serve, 20 to 50 years of age and preferably married. Their training covers the basics of primary health care and comprises both classroom and clinical practice.^{214, 369} A supervisory visit to the lady health worker's community takes place every month, and monthly meetings are held at the health facility. According to an evaluation 80% of the workers had supervisory visits in last 30 days.²¹⁴ The lady health worker is responsible for recording information about births and deaths in the community, use of family planning methods, immunization of children, diagnosis and treatment of her clients, and pregnancies and care provided. She also refers her clients to next-level facilities if they need further care.

Lady Health Workers, Pakistan	
✓ Education	8th grade
✓ Training	3 months initial training
✓ Refresher	One week each month
✓ Supervision	Lady Health Supervisor
✓ Incentive	Rs. 1600 / month

Coverage and effectiveness

The program is currently employing approximately 69,000 lady health workers each being responsible for approximately 1,000 individuals. This coverage equals approximately one fifth of the entire population of Pakistan and one third of the target population of the program. External evaluation of LHW program occurs periodically in every 3-5 years and up till now 3 evaluations have been conducted. Program has achieved vaccination promotion coverage of 67% of children under five, modern contraceptive usage of 20% and overall indicators of population served by LHWs were slightly better off than National figures.

Source: WHO/Unicef 2006²⁴ & Winch et al. 2005²⁷⁴ & Unicef 2004¹⁸

Conclusion

The review of studies on knowledge, attitude and practices of the CHWs has brought us to the conclusion that basic training and then refresher trainings can significantly improve the working of CHWs and TBAs and thereby make a significant contribution to the health care system of the community.

Table 21A: CHWs Knowledge, attitude and practices assessment studies – characteristics of Included Studies

Study / country	Study design	Interventions		Years of study	Participants	Outcomes
		Outreach worker	Control arm			
Ayele et al. 1993 ³⁶⁸ Illubabor, Ethiopia	comparative cross sectional	CHWs	previously trained CHWs received refresher course of 5 days and were given monthly supervision was looked for providing higher functional status	6 months	CHWs	their functional status significantly changed for outreach activities, health educations, environmental health, MCH activities, EPI, Birth registries, deaths registered, curative patients, school health, referrals, and epidemic control
Darmstadt et al. 2009 ³⁶⁴ Rural Bangladesh	cross sectional study	CHWs	CHWs evaluated breastfeeding and symptoms and signs of illness in neonates during household visits at postnatal days 0, 2, 5, and 8. Neonates with severe disease were referred to community based hospital. Physicians independently evaluated all neonates seen by CHWs.	-	Neonates	CHWs evaluation of very severe disease was 75% and specificity of 98%. PPV was 57% and NPV was 99%
Hadi 2001 ³⁶² Rural Bangladesh	validation study	CHWs	CHWs were given training and then their assessment and diagnosis of ARI in community over children were tested against gold standard of physician assessment and diagnosis.	-	children 3-60 months	CHWS diagnosis of pneumonia was 67.6% sensitive and 95.2% specific. Agreement between CHWs and physician was 0.67.
Hadi 2003 ³⁶³ Rural Bangladesh	cross sectional survey	CHWs	BRAC used community health volunteers as the frontline workforce at the grass roots level were trained in 1992. The health volunteers were expected to detect cases and treat ARIs, but to refer severe and complicated cases to nearby health clinics.	3 months	children between 3 years to < 60 months were included in the study	CHWs were evaluated in 1998-1999. The health volunteers identified 221 (18.9%) children as having ARIs of any kind, while the physicians identified 263 (22.6%) children the estimated sensitivity of volunteer diagnosis was 67.7%, with the specificity being 95.2%.
khan et al. 2000 ³⁶¹ Matlab, Bangladesh	cross sectional survey	CHWs	All children seeking care from the CHWs and the paramedics over the survey months constitute the sample for the study. The time-input requirement survey was carried out at the CHW level only. Children treated by CHWs during their routine home visits were not included in the sample. Since IMCI is a facility-based illness management strategy, medical care provided at doorstep should not be included in estimating the costs	during 1998	children under 5 years of age	The average time needed to collect information for the IMCI approach, including the physical checkup of sick children, was found to be about 16.3 minutes IMCI strategy represents a significant increase in the time input of health workers. Using the additional time input requirement of IMCI, Bangladesh needs to employ somewhere between 2,700 and 4,100 health workers in rural areas. The additional cost of employing these health workers will be around 2.6 to 4.0 million US dollars, about one to 1.5 percent of total health sector budget of the Government of Bangladesh
Falle et al. 2009 ³⁵⁷ Sarlahi, Nepal	Comparative sectional TTBA vs. UTBA	CHWs	TBAs were trained and then they were evaluated	12 months	Pregnant women	Trained used clean cord-cutting instrument (89%) and hand-washing before delivery (74%), were common Trained TBAs were more likely to wash hands with soap before delivery, use a clean delivery-kit, and advise feeding colostrum
Afsar et al. 2003 ³⁶⁰ Karachi, Pakistan	Cross sectional	CHWs	patients referred to different health care facilities by the LHWs were interviewed	2 months	General population	Out of a total of 347 patients interviewed, 265 (76.4%) were successful while 82 (23.6%) were unsuccessful referrals. Multivariate logistic regression analysis showed that objection to referral (Adjusted OR, 2.96; CI: 1.44-5.52), never referred before (Adjusted OR, 1.25; CI: 1.34-6.90), not visited the referral site before (Adjusted OR, 4.04; CI: 2.50-6.08) and no knowledge of who to meet at the referral site (Adjusted OR, 1.30; CI: 1.01-2.96) were the factors associated with unsuccessful referral.

Study / country	Study design	Interventions		Years of study	Participants	Outcomes
		Outreach worker	Experimental arm			
Afsar et al. 2005 ³⁵⁹ Karachi, Pakistan	Cross sectional survey	CHWs	patients referred to different health care facilities by the LHWs were interviewed	1 months	General population	Only 4% of patients referred visited government facilities, the rest having visited private physicians and in-formal practitioners
Rodney et al. 1998 ³⁷⁰ Ohio, USA	Cross sectional	CHWs	In 1992, the Center for Healthy Communities in Dayton, Ohio developed a program to train as Advocates people indigenous to the communities in which they would be working. The effectiveness of the program has been evaluated from three perspectives: the Community Health Advocates, the managers/ directors of the community sites at which the CHAs work, & the clients with whom the CHAs work.	12-36 months	general population	Eighty-five percent of respondents indicated that they were somewhat/very likely to receive this information from friends, family, or neighbors, while 73% were somewhat/very likely to receive information from the CHWs
Khan et al. 2006 ³⁵⁸ Kohat, Pakistan	Cross sectional	CHWs	Lady Health Workers with a job experience of more than 24 months were interviewed to assess their knowledge, attitude and skills, in terms of variables according to their job description. These variables included home visits, antenatal care, family planning, newborn care, vaccination, growth monitoring, common diseases, medicines and referrals	July 2005	LHWs	Knowledge of lady health workers was above 36%, attitude score above 88% and skill assessment score above 86%.
Stekelenburg et al. 2003 ³⁷¹ Kalabo, Zambia	Cross sectional descriptive	CHWs	This study was conducted to identify the factors associated with low performance of community health workers	-	CHWs	The two most important factors are the irregular and unreliable supply of drugs and selection of the wrong people to be trained for community health workers. Other factors, like inadequate community support and inadequate supervision, were mentioned by many contributors.
Fatusi et al. 2008 ³⁷² Osun, Nigeria	Cross sectional study	CHWs	Fifty-six health workers offering delivery services in primary health care facilities were trained to use the partogram and were evaluated after 7 months	7 months	CHWs	A total of 242 partograms of women in labor were plotted over a 1-year period; 76.9% of them were correctly plotted. Community health extension workers (CHEWs) plotted 193 (79.8%) partograms and nurse/midwives plotted 49 (20.2%).
Jacob et al. 2006 ³⁷³ India	Cross sectional	CHWs	The community health workers identified nine subjects as having dementia. This was compared against an education adjusted diagnosis of dementia made in accordance with the 10 / 66 dementia research group protocol.	-	CHWs	The sensitivity and specificity of the community health worker diagnosis was 3.8% and 99.4% respectively. The false positive rate and positive predictive values were 55.6% and 44.4%, respectively. The false negative rate and negative predictive value were 10.3% and 89.7% respectively.
Satischandra et al. 2009 ³⁵⁶ Karnataka, India	Comparative cross sectional. TTBA vs. UTBA	CHWs	TBAs training were conducted and then knowledge and practices related to newborn care was tested before and after training	12 months	TBAs	Pre intervention period (one year prior to the training) and post intervention period (one year after the training) showed that, there was a statistically significant (p<0.05) reduction in the perinatal deaths (11 to 3) and neonatal deaths (10 to 2) among the deliveries conducted by TBAs after the training.
Mohanty et al. 1994 ³⁶⁵ Varasani, India	Comparative cross sectional study	CHWs	Pretested self learning educational module with simulation method was introduced in intervention group	-	CHWs	There was a significant improvement in the performance skills between intervention and control groups (p <0.001)

Study / country	Study design	Outreach worker	Interventions		Years of study	Participants	Outcomes
			Experimental arm	Control arm			
Ogunfowora & Daniel 2006 ³⁶⁶ Ogun state, Nigeria	Cross sectional survey	CHWs	Community health workers in this area were interviewed by means of a self-administered questionnaire which focused on awareness and knowledge of neonatal jaundice and its causes, treatment and complications.		-	CHWs	Only 51.5% of the respondents gave a correct definition of NNJ. 75.8 % knew how to examine for this condition while 84.9 % knew at least two of its major causes in our environment. Also, only 54.5 % had adequate knowledge of effective treatment namely, phototherapy and exchange blood transfusion. Rather than referring affected babies to hospitals for proper management, 13.4 %, 10.4 % and 3 % of the participants would treat with ineffective drugs, natural phototherapy and herbal remedies respectively.
Zeitze et al.1993 ³⁶⁷ Bolivia	Pre/post	CHWs	CHWs were trained to use WHO ARI guidelines of taking history, physical evaluation, disease classification, assignment of treatment site, use of medication, education of mothers about appropriate home therapy and patient follow and record keeping		1 months	CHWs	An average of 88% (ranging from 71% to 100% for the three groups) had received formalized ARI training during the previous year. Only 59% (in a range of 48% to 74% for the three groups) reported having evaluated a case of ARI during the month preceding the study the mean score for identification of danger signs was only 10%, & the mean score for knowing the correct treatment of ARI cases was only 34%. The average score for classification of ARI improved from 60% to 83%, while the average score for ARI treatment rose from 34% to 76%
Frazaõ & Marques 2009 ³⁷⁴ Rio Grande da Serra, Brazil	cross sectional survey	CHWs	A study to assess changes was conducted including 36 community health workers and a representative sample of homemaker literate women and mothers aged 25 to 39 years living in 3- to 6-room dwelling in the city of Rio Grande da Serra, southeastern Brazil. Data on oral health knowledge, self-reported practices, and personal skills regarding self-examination, oral hygiene, number of people living in the same household, number of individual and collective toothbrushes, and dental service access and utilization were collected using structured interviews.		12 months	CHWs	Statistically significant differences between pre- and postintervention program were seen regarding oral health knowledge among both health workers and women (p<0.05). The number of shared toothbrushes per family decreased. Frequency of toothbrushing and flossing increased. Self-assessment of oral hygiene efficacy increased. Changes in practices and personal skills improved self-efficacy. Women had more access to services (p<0.000) and used them more regularly (p<0.000)
Rowe et al. 2007 ²⁰⁰ Siaya, Kenya	cross sectional survey	CHWs	In 1995, the non-governmental organisation CARE initiated a CHW program in Siaya district. The program trained CHW volunteers to assess (i.e. collect information on clinical signs and symptoms), diagnose and treat children <5 years old according to the CARE Management of the Sick Child (MSC) guidelines, a modified version of the WHO/UNICEF IMCI guidelines. Then later on they were assessed for the effect of multiple interventions on healthcare practices.		1 months	CHWs	The mean percentage of assessment, classification and treatment procedures performed correctly for each child was 79.8% (range 13.3—100%). Of the 187 children who required at least one treatment or referral to a health facility, only 38.8% were prescribed all treatments (including referral) recommended by the guidelines.

Table 21B: Description & Characteristics of Outreach workers

Study	Education	Recruitment Training Criteria	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Ayele et al. 1993 ³⁶⁸					5 days refresher			monthly supervision			their functionality was assessed after 6 months
Darmstadt et al. 2009 ³⁶⁴	Most of them had 5 years of schooling	Recruited through local advertise-Di-dactic contents were all female, 20–40 years old.	36 days		Supervisor conducted refresher training fortnightly	Observed to make sure that breast feeding technique is appropriate. Managed and followed up minor conditions facilitated transport and referred where disease severe.	Counseling regarding breast feeding. Managed and followed up fast breathing, oral thrush, localized bac-terial infection, diarrheas with dehydration and diarrhea without dehydration	1 supervisor for 6 CHWs who met them fortnightly for 6 hours			Evaluation done throughout the training, and their assessment of five neonates at the hospital was evaluated before they started field work.
CHWs (F)		Didactic sessions, videos and practice on sick and healthy newborn babies Manual content: pregnancy surveillance & registration; antenatal counseling on prepared-ness for birth and new-born care; management of the neonate at birth, including resuscitation; continuing essential newborn care; routine neonatal assessment and illness classification; and management of illness according to the Mirzapur CHW clinical algorithm, including referral to the hospital.									
Hadi 2001 ³⁶²		trained CHWs were selected				they visited assigned household with children and assessed and dia-gnosed ARI and provided treatment to them	ARI assess-ment and management	study trained physicians were super-vised these CHWs			their assessment & diagnosis was checked gold standard (physician)
CHWs (F)		Didactic and Field work. already trained CHWs were selected and trained for ARI detection and manage-ment at community.									
Hadi 2003 ³⁶³	Most of them had 5 years of schooling	Selected from among the local area	3 to 4 months		Paramedics from BRAC provided rou-tine refresher training to volunteers once a month	Volunteers visited their assigned household(100-120 households/CHW) monthly to identify, diagnose, and treat children with ARIs.	examination of pneumonia cases, coun-ting respiration rate, advice on patient care, use of referral card, target group identification, and record keeping.	group of physicians and para-pro-fessionals with experience in managing and treating ARIs.			The diagnosis and treatment were exami-ined by the BRAC research physicians.
CHWs (F)		Theory and field work basic training in BRAC's offices. content included basic anatomy and physio-logy of respiratory organs, classification of ARIs, analysis of the causes and factors that contribute to these infections; signs and symptoms of pneumonia, examination referral and record keeping.									

Study	Edu- cation	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key compe- tencies	Supervision	Incentive (if any)	coverage	Evaluation mode
khan et al.2000 ³⁶¹ CHWs			Didactic and practical Information on classification of illness conditions according to IMCI module				Used questionnaire to obtain information about all the sick children in the age range of 2 months to 5 years, and did physical examination, management of sick child and advising and counseling of mothers was recorded.	Diagnosis of dehydration and measuring vital signs of patients				
Falle et al.2009 ³⁵⁷ TBAs (female)	Literate	reported delivering at least one baby within the 3 months prior to recruitment.	Trained by health centre, NGOs, district public health office on issues related to safe delivery and antenatal care	3 days		Refreshers after 12 months	Delivered the baby placenta and cut the cord. During antenatal visits, provided advice on diet and nutrition, immunizations (TT), and reducing the workload during pregnancy.	Antenatal support and delivery of baby				
Fatusi et al. 2008 ³⁷²			didactic sessions and practical involved in deliveries in the PHC facilities participated in the training, which was conducted by the investigators; most of whom were specialist obstetricians engaged consistently in using the partogram and training health workers in their practices. The training utilized the partogram produced by WHO.	3 days								
Afsar et al.2003 ³⁶⁰ CHWs (f)		Local resident Lady Health Workers	Didactic Training to provide PHC at the grass roots level. Trained to provide essential maternal and child health & family planning services; management of common ailments and provision of family planning material and health education.				Delivery of primary health care, family planning services and maternal and child health care.	referral of patients to the appropriate health facility				

Study	Education Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key competencies	Supervision (if any)	Incentive (if any)	coverage	Evaluation mode
Afsar et al.2005 ³⁵⁹ CHWs (f)	Local resident Lady Health Workers	Didactic training for appropriate patient referral				Delivery of primary health care, family planning services and maternal and child health care. Management of common ailments and appropriate referrals where needed	Appropriate referrals and building patient compliance with it				
Khan et al.2006 ³⁵⁸ CHWs (female)	Lady Health Workers with a job experience of more than 24 months	Didactic and Practicum Trained in , antenatal care, family planning, newborn care, vaccination, growth monitoring, common diseases, medicines and referrals.				Paid home visits to provide antenatal care, family planning, immunization and growth monitoring of infants and for treatment of common ailments	Primary health care and appropriate referrals				KAP assessment included home visits,
Satischandra et al.2009 ³⁵⁶ TBAs (female)		Didactic and Practicum included topics on techniques of conducting safe delivery and newborn care practices.			training content reinforced during monthly visits 5 months after the training.	conducted safe delivery and provided newborn care practices, advised correct breast-feeding practices, and immunization information to the mothers.	Perinatal care, breastfeeding counseling				Post-test evaluation was done
Mohanty et al.1994 ³⁶⁵ Varasani, India	Anganwadi workers belonging to two ICDS blocks	Didactic and Practicum Topics included recognition and management of LBW babies, growth monitoring of infants, management of diarrhea and ORT, taking body temperature, and referral system.				Identified and managed LBW babies, did growth monitoring of infants, managed diarrhea and gave ORT, taking body temperature, and referral of sick	Newborn and infant care & management of diarrhea.				Evaluation done at 3, 6 months and 9months after training.
Ogunfowora & Daniel 2006 ³⁶⁶ CHWs						To identify neonatal jaundice and to provide appropriate management.	Identification neonatal jaundice				Evaluation to judge their knowledge.
Zeit et al.1993 ³⁶⁷ CHWs		Trained CHWs by the government of Bolivia according to WHO ARI management standards			Refresher training was given for a day and outdated ARI management training was refreshed	they were trained to take history and manage cases according to IMCI algorithm	ARI management in children				post test was conducted to test their knowledge

Study	Edu- cation	Recruitment Criteria	Training Content	Duration	Certification	Refreshers / Ongoing training	Role	key compe- tencies	Supervision	Incentive (if any)	coverage	Evaluation mode
Rowe et al. 2007 200	at least 7 years of schooling	reside in the community	Lectures, role playing + practicum The program trained CHW volunteers to assess (ie. collect information on clinical signs & symptoms), diagnose and treat children <5 years old according to the CARE Management of the Sick Child (MSC) guidelines, a modified version of the WHO/UNICEF (IMCI) guidelines	10 days theory and 5 days of clinical practice		6-15 days of re-fresher to those found weak	diagnoses of childhood illness according to standard criteria using flip charts and then treatment with drugs	monthly group meetings		volunteer		
Frazaõ & Marques 2009 ³⁷⁴			The manual was developed through the following steps: identification of common oral health conditions in the community; formulation of questions about relevant issues to the community; question selection and grouping into thematic blocks; general design of the manual; and CHW evaluation of proposed reading materials and illustrations	36-hour								
							Their work included: providing information & contribute to improve people's ability to manage health; help oral health team to identify the most vulnerable families in need of more specific oral health actions; & improve access & utilization of PHC thus delayed dental care & reducing the need for urgent consultations					

Short summary of the global review

It is said that health workers are the backbone of health care delivery. There are over 59.8 million health workers in the world, two-thirds of which provide health services and the remaining one-third are management and support workers.³⁷⁵ The main task of a health worker is to share knowledge and teach people preventive methods and self-care of common diseases so that they are tackled earlier with better outcomes.³⁷⁶ Owing to the strength of the healing power of belief, many CHWs respect their people's traditions and build on them, helping them use the safe traditional remedies and gradually switching them to modern medicine by increasing their level of awareness.³⁷⁶

In this systematic review, we evaluated the role of CHWs in various communities of the world and assessed their compliance with the achievement of health and nutrition related MDG targets, mainly Goals 4, 5 and 6. The clustering of included studies as mentioned earlier was based on different subsets of these MDGs. The assessment of CHWs' role in various interventions across the globe revealed that few years of formal school education or more had a better impact on the working of the CHWs as was evident from the attitude of CHWs towards family planning⁴³ and from the management of childhood illnesses by CHWs who had had a few years of formal schooling.^{177, 178, 183} Similarly the educated CHWs involved in the primary health care interventions showed effective performance in their outreach services like breastfeeding and colostrums counseling, antenatal care, contraceptive usage and immunizations.^{213, 214} This was also reflected by patient satisfaction in an intervention where CHWs were psychology graduates who participated in anxiety management and treatment of common mental health problems.³¹⁵

The training modality that seemed to be most effective amongst all that were used in the included studies, was didactic training with inte-

ractive sessions,^{130, 140, 148} practicum and field work.^{296, 362, 363} The training was certified only in few of the studies and most of them were deployed in rural areas where health care facilities were not easily accessible. After their training in the interventions, they developed several competencies which ranged from behavior modification counseling as in promotion of exclusive breastfeeding with consumption of colostrums by the newborn,^{92, 101, 130, 138, 139} antenatal care,^{14, 38, 47, 129, 213, 214, 301, 357} family planning,^{213, 216, 294, 358, 377} anxiety management in depressed mothers³¹⁵ and immunization of both the mother and the child,^{41, 48, 51, 56-58, 356, 357} to the sample collection and lab diagnosis of malaria,^{235, 241} TB^{260, 265} and pap smears.^{62, 296} These CHWs were well trained to provide DOTS for TB²¹³ and ART^{44, 300} to ensure treatment compliance, and could also treat uncomplicated malaria^{228-231, 237} and ARIs in children.^{362, 367} The CHWs involved in the maternal and birth and newborn care preparedness interventions were also capable of providing emergency obstetric care^{34, 37} and manage birth asphyxia by bag-mouth and mouth-mouth resuscitation^{39, 97} besides being able to conduct safe and hygienic deliveries.^{45, 47, 51, 60}

Their role in relation to the MDG targets has been versatile (Table 22). They were agents of health education in the community to prevent them from STDs, malaria, TB and other non-communicable diseases.^{89, 90, 101, 161, 164, 187, 196} They promoted antenatal, intrapartum and postnatal care,^{57, 94, 96} initiation of early and exclusive breastfeeding, promoted use of colostrums^{92, 101, 130, 138, 139} and growth monitoring of children.^{14, 16, 57, 365} This promotive role played a significant role in bringing down maternal mortality^{32, 33, 94} and under-5 child mortality rates in the communities they served.^{92, 94, 96, 378} Their role in preventive medicine can be assessed from the emphasis that they laid in their communities regarding appropriate nutrition and to stay healthy.^{12, 15-17} They also

Table 22: List of interventions delivered by CHWs

Goal 1	Interventions related to:		
Nutrition	Exclusive breastfeeding for first 6 months	Iron and folic acid supplementation	Dietary intake for pregnant & lactating women
			Monitoring of severely malnourished children
Goal 4	Interventions related to:		
Child Health	Breastfeeding	Essential newborn care	Hand washing
	Growth monitoring	Oral rehydration	Zinc therapy
	Malaria prevention strategies	Thermo-regulation in newborn	Vitamin A supplementation
	Home care of LBW infants	Newborn care preparedness	Recognizing sick newborns & referrals
			Cord care
Goal 5	Interventions related to:		
Maternal Health	Adequate diet	Iron/folate supplementation	Tetanus Toxoid immunization
	Intermittent preventive treatment	Facilitate access to services for ANC & PNC	Birth and newborn care preparedness
	HIV/STI screening	Deworming	Skilled birth attendance
			Healthy timing and spacing of delivery
			Prevention of mother to child transfer
			Emergency obstetric care
Goal 6	Interventions related to:		
Malaria control	treatment of suspected malaria cases		Access to insecticide treated bed nets
Tuberculosis control	BCG immunization for children	DOTS for infectious case	Early identification of symptomatic case
HIV/AIDS prevention and control	Condom & safe sex promotion	Building HIV support groups	Healthy timing & spacing of pregnancy
	Prophylactic ARVs/ HAART to infants		Antibody testing to pregnant women & mothers
Mental health promotion	Psychological counseling	Anxiety management	Early infant diagnosis
			emotional support to mothers
NCDs prevention and control	promotion of health seeking behavior	Pap smears	Preventive strategies: BP monitoring and Blood sugar monitoring

emphasized on usage of condoms and change in sexual behavior, in HIV prevalent communities.³⁰⁶ Infact some were trained in the social marketing of condoms.²⁹⁴ Besides advocating preventive strategies they also offered treatment for uncomplicated malaria, pneumonia and treatment compliance was ascertained in case of TB and anti-retroviral therapy of HIV as DOTS. As such the role and competencies of CHWs were compliant with the MDG targets and did show up positive outcomes in the form of declining maternal and under-five children mortality rates, decline in the incidence of malaria, TB and HIV.

The supervision and ongoing refresher training of CHWs for performing their above mentioned roles had a positive impact on their performance. Similarly the lack of incentives was found to be one of the major reasons behind dropout rates. However, the provision of incentives provided better motivation to work. In some studies the CHWs were promoted to the level of supervisor.

In various studies, a very strong referral system was in place using which the health workers would refer complicated cases to nearby health care facility after initial management.^{44, 193, 223, 224, 227, 237, 299}

The diversity observed in the services of CHWs is a testimony to the wide range of health care services that they are capable of extending to the community. Several pitfalls and shortcomings were observed which acted as barriers to the outreach services of CHWs. However, keeping in mind the significance of the role of CHWs in the achievement of the MDGs makes it imperative to address these shortcomings and come up with practical recommendations to overcome these obstacles.

Notably, most of the reviewed studies when implemented, neglected to document the com-

plete description and characteristics of CHWs deployed, especially the level and amount of supervision provided to those workers, which could have helped us in identifying the importance of this factor and its association with other outcomes. This information would be of great relevance to policy and practice. The duration of training provided to CHWs was the only consistent information available from these studies but on its own, did not reveal any additional impact on mortality outcomes. Additional information on the initial level of education of CHWs, content of training, provision of refresher training, mode of training, balance of practical or theoretical sessions, remuneration for work, amount of activities performed by CHWs would have provided greater assistance in understanding the threshold effect, if any, of these factors on CHW performance in community settings. Importantly, community ownership and supervision of CHWs is a key characteristic which is insufficiently described and analyzed in available literature. There was a large diversity in the included studies that ended up having small number of similar studies in each group.³⁷⁹ Therefore we could not evaluate the impacts with the characteristics of CHWs involved. There is thus a clear need for additional research at an appropriate scale with detailed description of each intervention bundled in a form of package.

We also tried to look at the impact of CHWs intervention on the outcome achieved according to those who were paid and those who were unpaid. The major limitation we faced in evaluating this factor was the incomplete documentation in the reviewed studies. Among all 326 reviewed studies, only 32 mentioned that their CHWs were paid either in terms of salary or were getting reimbursement for their meals and transport cost. While, on the other hand, only 4 studies reported that their workers were unpaid or working on voluntary basis. Comparison on this factor was therefore not promising, and results were meaningless.

Table 23: Criteria for Recommending CHW typology from Global Systematic Review

Studies related to	Type of evidence (study design)	Strength of evidence (from studies)	Evidence available from existing reviews	CHWs contextual factors	
				*Recommended CHWs typology	
MDG-1 Nutrition	1 = Descriptive	1 = Poor (insignificant >0.1)	1 = Evidence not available	Recruitment	We analyzed studies and reports and recommended CHW typology from:
				Education	Studies with strong designs (3-4)
MDG-4 Child Health	2 = Prospective time series (before/after)	2 = Moderate (partially significant <0.1)	2 = Evidence available	Training content/duration (initial and ongoing)	and/or
				Certification process	studies with significant findings (3-4)
MDG-5 Maternal Health	3 = Quasi-experimental	3 = Strong (significant <0.05)	2 = Evidence available	Monitoring and supervision	and
				Volunteer/salaried	if positive evidence was available from similar Cochrane reviews (2).
	4 = Cluster /randomized controlled trial	4 = Very strong (very significant <0.01)		Incentives	
				Career pathways and advancement	
				Referral system	

*Recommendations were based on type of evidence, strength of evidence and if evidence were available from existing Cochrane reviews

We recommended CHW typology primarily from the evidence derived from global systematic review (Table 23) and if the similar practice has also been recommended from other Cochrane reviews (Table 24). The criteria have given importance to three main components: type of evidence, strength of evidence and existing evidence from Cochrane review. Thus, the recommendations for core contextual factors were made when the evidence was generated from studies with strong study design, with high strength of evidence and when Cochrane review also suggested positive impact of community health workers on particular MDG target.

Review

Protocol

Table 24: Evidence from Cochrane Systematic Reviews				
Review ID / year	Objectives	MDG targeted	Type of studies included	Results
Panpanich & Garner 2009 ³⁸⁰ REVIEW	To evaluate the effects of routine growth monitoring on: 1. The child, in relation to preventing death, illness or malnutrition; and referrals for medical care, medical specialist assessment or professional social support follow-up. 2. The mother, in relation to nutritional knowledge, anxiety or reassurance about the child's health, and satisfaction with services.	MDG 1 (nutrition)	RCTs and Quasi RCTs 2 studies	Two studies included, both conducted in developing countries. In one, the nutritional status at 30 months in 500 children showed no difference between those allocated to growth monitoring and those not. The other study examined whether counseling improved mothers' knowledge of the growth chart, and reported better test scores at four months.
Dale et al. 2009 ³⁸¹ REVIEW	To assess the effects of peer support telephone calls in terms of physical (e.g. blood pressure), psychological (e.g. depressive symptoms), and behavioural health outcomes (e.g. uptake of mammography) and other outcomes.	MDG 4 (breastfeeding)	Randomized controlled trials 11 trials	Peer support telephone calls were associated with an increase in mammography screening, with 49% of women in the intervention group and 34% of women in the control group receiving a mammogram since the start of the intervention (P </= 0.001). In another study, peer telephone support calls were found to maintain mammography screening uptake for baseline adherent women (P = 0.029). Peer support telephone calls for post myocardial infarction patients were associated at six months with a change in diet in the intervention and usual care groups of 54% and 44% respectively (P = 0.03). In another study for post myocardial infarction patients there were no significant differences between groups for self-efficacy, health status and mental health outcomes. Peer support telephone calls were associated with greater continuation of breastfeeding in mothers at 3 months post partum (P = 0.01). Peer support telephone calls were associated with reduced depressive symptoms in mothers with postnatal depression (Edinburgh Postnatal Depression Scale (EPDS) > 12). The peer support intervention significantly decreased depressive symptomatology at the 4-week assessment (odds ratio (OR) 6.23 (95% confidence interval (CI) 1.15 to 33.77; P = 0.02)) and 8-week assessment (OR 6.23 (95% CI 1.40 to 27.84; P = 0.01). One study investigated the use of peer support for patients with poorly controlled diabetes. There were no significant differences between groups for self-efficacy, HbA1C, cholesterol level and body mass index.
Dyson et al. 2005 ³⁸² REVIEW	To evaluate the effectiveness of interventions which aim to encourage women to breastfeed in terms of changes in the number of women who start to breastfeed.	MDG 4 (breastfeeding)	Randomized controlled trial 11 included studies	Five studies (582 women) on low incomes in the USA with typically low breastfeeding rates showed breastfeeding education had a significant effect on increasing initiation rates compared to standard care (risk ratio (RR) 1.57, 95% confidence interval (CI) 1.15 to 2.15, P = 0.005). Subgroup analyses showed that one-to-one, needs-based, informal repeat education sessions and generic, formal antenatal education sessions are effective in terms of an increase in breastfeeding rates among women on low incomes regardless of ethnicity and feeding intention. Needs-based, informal peer support in the antenatal and postnatal periods was also shown to be effective in one study conducted among Latina women who were considering breastfeeding in the USA (RR 4.02, 95% CI 2.63 to 6.14, P < 0.00001).

Review ID / year	Objectives	MDG targeted	Type of studies included	Results
Lumbiganon et al. 2007 ³⁸³ PROTOCOL	To assess the effectiveness of antenatal breastfeeding education for increasing breastfeeding duration. To compare the effectiveness of various forms of antenatal education; for example, peer support, educational programme, didactic teaching session, workshop, booklets, etc, or a combination of these interventions for increasing breastfeeding duration.	MDG 4 (breastfeeding)	randomized controlled trials	Any type of antenatal education with breastfeeding components. Antenatal breastfeeding education is defined as breastfeeding information being imparted during pregnancy in a variety of forms. This could be on an individual or group basis, include home visiting programmes; peer education programmes or clinic appointments specifically aimed at imparting breastfeeding knowledge; Brochures or booklets; electronic education programmes; or a combination of these, and could involve prospective fathers or not.
Zaidi et al. 2009 ³⁸⁴ PROTOCOL	To determine the effect of community based programs that address the management of neonatal sepsis compared to similar programs that do not include antibiotic treatment on neonatal mortality in neonates with confirmed or suspected sepsis in developing countries.	MDG 4 (management of newborn sepsis)		Intervention: programs of newborn care that include the use of antibiotics for neonates
Thaver et al. 2009 ³⁸⁵ PROTOCOL	To compare the effectiveness of a health education strategy (vs. existing level of health education), imparted to mothers or their family members in developing country community settings; on neonatal mortality, neonatal morbidity, access to health care, and cost.	MDG 4 (management of newborn sepsis)	Community-based randomized controlled, cluster-randomized or quasi-randomized controlled trials.	To compare the effectiveness of a health education strategy (vs. existing level of health education), imparted to mothers or their family members in developing country community settings, on neonatal mortality, neonatal morbidity, access to health care, and cost. We will conduct separate analyses according to the educational strategy used: 1. One to one counseling vs. control 2. Group counseling vs. control 3. Any combination of the above vs. control 4. One to one counseling vs. group counseling
Lewin et al. 2010 ³⁸⁶ REVIEW	To assess the effects of LHW interventions in primary and community health care on maternal and child health and the management of infectious diseases.	MDG 4 (immunization and breast-feeding) and MDG 6 (TB)	RCTs Eighty-two studies	Analyses found evidence of moderate quality of the effectiveness of LHWs in: promoting immunization childhood uptake (RR 1.22, 95% CI 1.10 to 1.37; P = 0.0004); promoting initiation of breastfeeding (RR = 1.36, 95% CI 1.14 to 1.61; P < 0.00001), any breastfeeding (RR 1.24, 95% CI 1.10 to 1.39; P = 0.0004), and exclusive breastfeeding (RR 2.78, 95% CI 1.74 to 4.44; P < 0.00001); Improving pulmonary TB cure rates (RR 1.22 (95% CI 1.13 to 1.31) P < 0.00001), when compared to usual care. TB preventive treatment completion (RR 1.00, 95% CI 0.92 to 1.09; P = 0.99) child morbidity (RR 0.86, 95% CI 0.75 to 0.99; P = 0.03) and child mortality (RR 0.75, 95% CI 0.55 to 1.03; P = 0.07) and neonatal (RR 0.76, 95% CI 0.57 to 1.02; P = 0.07), Increase the likelihood of seeking care for childhood illness (RR 1.33, 95% CI 0.86 to 2.05; P = 0.20).
Haider et al. 2009 ³⁸⁷ PROTOCOL	To assess the effectiveness of community-based intervention packages in preventing maternal and perinatal mortality and morbidities; and improving health outcomes.	MDG 4 and MDG 5	Randomized and quasi-randomized controlled trials	Unpublished results: The review included 19 studies, covering a wide range of interventional packages, of which 17 trials (and two subsets from Baqui et al. 2008 trial) were included in the meta-analysis. Review did not show any reduction in maternal mortality (RR 0.74; 95% CI: 0.51-1.07). However, significant reduction was observed in maternal morbidity (RR 0.75; 95% CI: 0.61-0.92); neonatal mortality (RR 0.74; 95% CI: 0.66-0.82), stillbirths (RR 0.84; 95% CI: 0.74-0.96) and perinatal mortality (RR 0.80; 95% CI: 0.71-0.90) as a consequence of implementation of community-based interventional care packages. It also increased the referrals to health facility for pregnancy related complication by 40% (RR 1.40; 95% CI: 1.19-1.65), and improved the rates of early breastfeeding by 94% (RR 1.94; 95% CI: 1.56-2.42).

Review ID / year	Objectives	MDG targeted	Type of studies included	Results
Volmink 2009 ³⁸⁸ REVIEW	To compare DOT with self-administration of treatment or different DOT options for people requiring treatment for clinically active tuberculosis or prevention of active disease.	MDG 6 (TB)	Randomized and quasi-randomized controlled trials 11 trials	No statistically significant difference was detected between DOT and self-administration in terms of cure (RR 1.02, 95% CI 0.86 to 1.21, random-effects model); 1603 participants, 4 trials) When stratified by location, DOT provided at home compared with DOT provided at clinic suggests a possible small advantage with home-based DOT for cure (RR 1.10, 95% CI 1.02 to 1.18; 1365 participants, 3 trials). There was no significant difference detected in clinical outcomes between DOT at a clinic versus by a family member or community health worker (1326 participants, 1 trial). by a family member versus a community health worker (2 trials), or for DOT provided by a family member versus a community health worker (1326 participants, 1 trial). Two small trials of tuberculosis prophylaxis in intravenous drugs users found no statistically significant difference between DOT and self-administration (199 participants, 1 trial) or a choice of location for DOT for completion of treatment (108 participants, 1 trial).
Thomas et al. 2005 ³⁸⁹ PROTOCOL	To identify all interventions (patient, administrative, health care worker, and societal) to increase influenza vaccination rates in those 60 and older in institutions and the community	MDG 6 (other health problems)	RCTs and quasi-randomized, cohort and case-control studies.	These types of interventions will be separately assessed 1. Patient interventions: to increase patients' perceptions of their susceptibility to influenza. 2. Administrative interventions: to increase demand for and up-take of vaccinations by individuals or communities 3. HCW interventions: to increase HCW beliefs that elderly individuals are susceptible to influenza and that vaccination is effective and safe for themselves and their patients; 4. Societal interventions: administrative frameworks or decisions that differ between societies and affect vaccination rates, such as increased remuneration to HCWs for increasing vaccination rates.
Mlunywa & Volmink 2007 ³⁹⁰ PROTOCOL	To evaluate the effects of Education and counseling on treatment completion and cure in people with clinical tuberculosis.	MDG 6 (TB)	Randomized controlled trials	Any educational or counseling intervention alone or in combination with each other aimed at improving adherence to anti tuberculosis treatment. Trials in which education and/or counseling interventions are confounded by other types of interventions will be excluded.
Myer et al. 2001 ³⁹¹ PROTOCOL	The objective of this review is to assess the effects of structural and community-level interventions for condom promotion, by comparing alternative strategies or by assessing the effect of a strategy compared with a control.	MDG 6 (HIV/AIDS)	Randomized controlled trials (RCTs), before and after trials	The interventions may include the following types: Those focusing on changing condom use behaviors by altering social norms. Examples include mass media campaigns, the use of public opinion leaders, social marketing strategies, as well as some interventions which employ of social learning strategies.

Assessment of CHWs roles in various interventions across the globe revealed:

NOTE: [(a/b) suggests that out of 'b' many studies only 'a' times study (ies) reported that component]

MDG 4 and 5

- Receiving formal schooling had better impact
 - Positive attitude towards family planning (2/3)
 - Proper management of childhood illnesses using algorithms (10/11)
 - Effective counseling skills for breastfeeding promotion (10/22) and immunization (6/9)
- Workers who were female, married, and had children had a positive impact on
 - Promotion of breastfeeding à personal experience of feeding their own child (16/22)
 - Uptake of family planning (4/5)
- Combination of didactic and interactive sessions, practicum and field work provided better understanding & intervention content (78/125)
- Specialized certified training was associated with better results
 - On management of childhood illnesses (11/30)
 - Breastfeeding counseling (4/11)
- Continuing training once in a month provided a platform (22/125)
 - For discussing field issues
 - Updating knowledge and skills
 - Refill drugs and supplies stock
 - Provision of incentives provided better motivation to work
 - Birth and newborn care preparedness intervention (4/7)

- Female sex workers (1/8)
- Combination of didactic and interactive sessions, practicum and field work provided better understanding of topic and interventional content (13/77)
- Behavioral therapy and counseling skills (4/8)

MDG 6

- Recruitment advantages
 - Person with AIDS or those who have taken care of any family member with AIDS (9/40)

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Country Case Studies

After deriving out an evidence from a global systematic review, an in-depth country specific CHW program have been evaluated to further appraise the typology, impact, and performance assessment of the practices of CHWs deployed at scale in eight countries across the world. The eight countries investigated in this section were chosen based on their high burden of disease and low utilization of health services and most importantly with the reason that they are far off from reaching the targets of the MDGs set for the year 2015. To understand the typology, experience, training needs, program roll out and assessments of CHWs to-date, we also undertook case studies in eight representative countries from Latin America, Africa and Asia, with high burden of diseases. These countries have been selected on the basis of existing CHW programs in the public and non-governmental sector and include:

- 1 South Asia (Bangladesh, Pakistan, Thailand)
- 2 Latin America (Brazil and Haiti)
- 3 Africa (Ethiopia, Uganda and Mozambique)

Table 25: CHW Program in selected eight countries

Country	CHW Program Name	Local name for CHW	Year Initiated	Numbers of CHWs Trained	Per HH/per 10,000 pop	Duration of training	Female (%)	Supervisor (post name)
Pakistan	Lady Health Worker Program	Lady Health Workers	1994	92 957	100-200 HH / 1000 population	15 months	100%	Lady Health Supervisor (LHS)
Bangladesh	Rural Advancement committee- CHW program	Shashyo Sebika	1977	78 000	150-250 HH	3 weeks	100%	Shashyo Kormi (SK)
Thailand	Village Health Volunteer Program	Village Health Volunteer	1970	80,000	5-15 HH	3 weeks	700%	Sr. Village health volunteer
Brazil	Programa Saúde da Família	Agentes comunitarios de Saúde	1994	240,000	12.57 per 10,000 population (national average)	12 weeks	95%	Sr. Village health volunteer
Haiti	Projeveye santé (Zanmi Lasante's Community Health Program)	(Health agents, Women's health agents, Traditional birth attendants (matrons) Accompagnateurs, Youth monitors, Agricultural agents	1985	> 1,600	10/10,000 (Up to a maximum of six patients per CHW)	3 months - health agents, 2 weeks -accompanateurs, and 1 month-TBAs	50%	(Senior health agents, Social workers, Doctors, Public health nurses, HIV program Nurses, Senior Accompanateurs (Accompagnateur Leaders)
Mozambique	Agentes Polivalentes Elementares Program	Agentes Polivalentes Elementares	1978	< 1000	~1 /20,000	6 months	60%	Village CHWs
Uganda	Village Health Teams and CHWs Program	Village Health Team CHWs	2003	.*	.*	10 days	About 50%	health center worker

— ASIAN Case-Studies —

Pakistan – Lady Health Workers Program

Bangladesh – BRAC Community Health Workers

Thailand – Village Health Volunteer Program

1. Pakistan – Lady Health Workers Program

Socio-economical and Political background

Pakistan is a profound blend of landscapes varying from plains to deserts, forests, hills, and plateaus ranging from the coastal areas of the Arabian Sea in the south to the mountains of the Karakoram range in the north with arable land, water, and extensive natural gas and oil reserves as country's principal natural resources. The total population according to the World Health Statistics 2008 is 161,000,000.¹

The demographic and health scenario in Pakistan is characterized by a high birth rate, a comparatively low death rate and a consequent rapid growth in population. Total fertility rate per woman in 2007 is reported to be 4.1/ woman.² Estimated crude death rate is 7.1 per 1000, in which there has been a steady decline from 16 per 1000 in 1970 to the current 7.1 per 1000.¹ However the infant mortality rate is still very high and estimated to be 91 per 1000 live births.³

According to the World Health report 2004 the total health expenditure in Pakistan per capita is \$18⁴ whereas the total health expenditure as a % of GDP is just 0.6% as reported by Pakistan Social and Living Standards Measurement Survey 2004-05.⁵ The private financing of health care is estimated to be more than 75% as per WHO 2006 report.⁶

Health System Overview

Over the last decade the Government of Pakistan and several non-government organizations have focused attention on improvement in the health sector. In Pakistan the healthcare comprises of public and private set ups. However, the private healthcare system serves the affluent of the country, where the proportion of population below the national poverty line is 32.6%, according to the UN report.⁷ Besides, the private

sector is rarely taken into account while making the Health plans. Economic polarization as such has resulted in greater health inequalities.⁸ The maternal mortality ratio is alarmingly high and is estimated to be 320 per 100,000 live births.⁹ The burden of diseases and service utilization indicators has been summarized in [Box 3](#).

In order to cater to the health needs of larger masses of the country, one major initiative to improve the accessibility to primary health care, taken by the Government, was establishment of the Lady Health Worker Program (LHWP).

Brief historical description of the LHW Program

The Lady Health Worker Program originally designed in the early 1990s, later conceived in 1993 and finally launched in April 1994 as a federal development program. The program was originally officially called the Prime Minister's Program for Family Planning and Primary Health Care (PMP-FPPHC) and then later in 2000 was changed to the National Program for Family Planning and Primary Health Care (NPFP & PHC), but it is typically referred to as Lady Health Workers Program (LHWP)¹⁰ Under this program paid Lady Health Workers (LHWs) are recruited from local communities, especially in rural areas of the country, to provide services for family planning and primary health care.

Why this program for review?

In a developing country like Pakistan, outreach workers are essential for the delivery of health care especially in the rural areas. Seventeen percent of all those who consult for an illness report consulting the LHW first, and not a physician.¹⁰ They play an important and increasing role in the provision of preventive, promotive, and curative health care services. The program has expanded manifolds since its inception and as such there have been some substantial im-

provements in the level of service delivery since the previous evaluation, particularly for family planning services.¹⁰ Therefore reviews on this program are necessary to further increase the coverage of services, so that they reach all registered clients in compliance with the Millennium Development Goals.

The Lady Health Workers' Program

According to latest Oxford Policy Management report on evaluation of Lady Health Workers Program, there are now close to 90,000 LHW nationwide.¹⁰ Since its last evaluation in May 2000 the LHWP has expanded rapidly. In view of its wide scope of work in terms of the population and health problems covered, and widely expanded infrastructure, in terms of health facilities, staff, drugs and supplies etc. There is a need for the program to have an efficient information system, responding to the information needs of various decision making levels of the health system.

Recruitment Process

The LHWs are the women residing in the same community for which they are recruited, acceptable to their communities, trained to deliver family planning services, to promote positive health behaviors and deal with health problems of individuals and the community through a PHC approach.¹¹

Selection committee, which comprises of medical officer in-charge First Level Care Facilities (FLCF), women medical officer-FLCF, lady health visitor/ female medical technician-FLCF, male technician/ dispenser, member nominated by the local community preferably the local educated union, council Nazim/ counselor, first identify potential LHWs through contacting community organizations if active in the area and in areas where community organizations do not exist, the committee meet with key members of that community, discuss and obtain their support for the program. Selection committee also disseminates information through print media, and local announcements.¹¹

Box 3: Burden of disease and service utilization indicators in Pakistan

Maternal Mortality Ratio ¹	320
Neonatal Mortality Rate ¹	53
Infant Mortality Rate ¹	73
U-5 Mortality Rate ¹	90
HIV / AIDS prevalence (%) ²	86
Malaria incidence (per 1000 population) ³	0.75
Tuberculosis incidence (per 100 000 population) ⁴	181
Tuberculosis prevalence (per 100 000 population) ⁴	263
Proportion children immunized for Measles ¹	80
Proportion of births attended by skilled health personnel ¹	39
Contraceptive Prevalence Rate ¹	30
Antenatal care coverage (at least once) ¹	36
Unmet need for family planning ¹	33

Sources:

¹ United Nations Population Division 2007

² United Nations Program on HIV/ AIDS 2002

³ National Malaria Control Program, Ministry of Health, Pakistan 2006

⁴ World Health Statistics 2008

Selection of LHW is based on the following criterion:¹¹

- female (preferably married),
- permanent resident of the area (for which she is recruited),
- minimum 8 years of schooling (preferably matriculate),
- should be between 20 to 50 years (up to 18

years only if she is married),

- past experience in community development,
- willing to carry out the services from her home (designated health house that ensures effective linkage between the community and the public health care delivery system)

The age, marital status, residence and level of education of current LHWs has been summarized in [Box 3](#):¹⁰

Box 3: Characteristics of LHW

Age Distribution (%)

15-19	1.1
20-24	12.2
25-29	24.6
30-34	27.7
35-39	15.7
40-44	9.6
45+	9.0
Mean age	32.6
Mean age when recruited	25.5

Marital Status (%)

Never married	25.6
Currently married	65.8
Widow/divorced/separated	8.6

Years LHW has resided in Village/Mohalla (%)

0-2	3.7
3-4	5.4
5-20	31.6
More than	20 8.6
Since birth	50.7
Mean years resided	21.7

Educational Level (%)

Less than 8 years	0.7
8 or 9 years	35.7
Matric (10-11 years)	44.4
Intermediate (12-13 years)	15.1
Graduate (14+ years)	4.1
Mean education Level (1-5)	9.84
% with class certificate seen and confirmed	77.2

Source: OPM LHWP Fourth Independent Evaluation, (2008)

The final selection of the LHWs is made after careful scrutiny of the documents and the residential status of the applicants and their selection is approved on the recommendations of council Nazim/ counselor and on approval of Executive District Officer – Health (EDO-H). LHWs are initially employed on contract for one year but their services are likely to continue for the life of the Program. The LHWs, at the time of recruitment, are required to provide a notarized affidavit stating that they would perform their duties to the satisfaction of their supervisors for at least one year after the completion of their full training and in case of failing the course, they will have to return the salaries and equipment (LHWS kit bag, weighing scales etc) they have received. The LHWs selected are then supervised closely to ensure provision of quality services to the communities. Those who do not fulfill the selection criteria or those not performing their duties satisfactorily are liable to termination of contract by the District Head of the health department i.e. EDO (H)/DHO.¹⁰

The LHW Role

The prime role of LHWs is to provide PHC services to the communities in her catchment area and to organize community by developing women groups and health committees in her area. She has to look after a population of 1000 individual for whom she arranges meetings of these

groups in order to effectively involve them in family planning, primary health care and other related community development activities. In these meetings they discuss issues related to better health, hygiene, nutrition, sanitation and family planning and emphasize their benefits towards improved quality of life. They also act as a liaison between formal health system and the people and ensure coordinated support from NGOs and other departments. LHWs routine activities are:¹⁰

- Register all family members in the catchment areas specially the eligible couples (married women age 15-49 years) during their visits to households, and maintain up to date information
- Visit 5-7 households every working day and ensure a re-visit every two months
- Keep in close liaison with influential women of her area including lady teachers, traditional birth attendants and satisfied clients
- Motivate and counsel clients for adoption and continuation of family planning methods
- Provide condoms, oral pills to eligible couples in the community and inform them about proper use and possible side effects and also refer clients needing IUD insertions, contraceptive surgery and injectable to the nearest FLCF in the government or NGO sector
- Coordinate with local TBAs/midwives or other skilled birth attendants and local health facilities for appropriate antenatal, natal and postnatal services
- Undertake nutritional interventions such as anemia control, growth monitoring, assessing common risk factors causing malnutrition and nutritional counseling
- Treat iron deficiency anemia among all women especially pregnant and lactating mothers as well as anemic young children
- Promote nutritional education with emphasis on breast-feeding and weaning practices, maternal nutrition and macronutrient malnutrition
- Coordinate with EPI for immunization of mothers against tetanus and children against six preventable diseases and participate in various campaigns for immunization against EPI target diseases
- Involve in the surveillance activities
- Carry out prevention and treatment of common ailments e.g. malaria, diarrhea diseases, acute respiratory infections, tuberculosis, intestinal parasites, primary eye care, scabies, snake bites, injuries and other minor diseases using essential drugs and refer cases to nearest centers as per given guidelines
- Involve in DOTS and malaria control programs
- Disseminate health education message on individual and community hygiene and sanitation as well as information regarding preventive measure against spread of AIDS
- Submit monthly progress report to incharge health center containing information regarding all activities carried out by her including the home visits, number of family planning acceptors by methods and stock position of contraceptives and medicines

The LHWs role in curative care is substantially larger in rural areas than in urban areas (0). As was found in the Third Program Evaluation, this is particularly true for rural women and girls; around a fifth of females who had been ill consulted a LHW, if they consulted any care provider. It is interesting to note that the urban/rural differences are not so pronounced in the

current survey. However, having increased the coverage of services during a period of program expansion should be recognised as a significant achievement.¹⁰

Initial Training of LHWs

The training of LHWs are conducted in two phases for a total of fifteen months using program training manuals and curriculum, which is then followed by continual training at the health facility along with refreshers. Their 15 months training course is divided into integrated training and task based training.¹⁰

Integrated training: (initial 3 months training)

The first phase of basic training is for five days a week for three months. In this period, the newly recruited LHWs are trained to cover the major PHC subjects, which include immunization, diarrhoea control, reproductive health including maternal and child health and family planning, nutrition, common ailments, personal hygiene along with education on community organization and interpersonal communication skills.¹⁰

Task Based Training: (12 months training)

The second phase of training lasts for twelve months with three weeks of fieldwork followed

Box 4: Consultations with the LHW by sick individuals by place of residence

Measure	2000		2008-All LHWs	
	Urban	Rural	Urban	Rural
Individuals who were ill or injured in the previous fourteen days				
% who consulted the LHW – total	11	22	14.2	18.1
% who consulted the LHW – female	14	25	16.1	20.2
% who consulted the LHW – male	8	19	12.2	15.8
Individuals who were ill or injured in the previous fourteen days and who consulted any health provider				
% who consulted the LHW first	-	-	6.1	9.4
Children under 5 who were ill in the previous fourteen days and who consulted any health provider				
% with diarrhea who consulted the LHW	10	15	14.9	19.9
% with respiratory infection who consulted the LHW	12	19	15.6	23.5
Children under 5 who were ill in the previous fourteen days and who consulted any health provider				
% with diarrhea who consulted the LHW first	-	-	2.7	13.1
% with respiratory infection who consulted the LHW first	-	-	8.8	16.2
Children under 5 who were ill in the previous fourteen days and who consulted LHW				
% mothers reported that LHW gave advice about how to prevent diarrhea in future	-	-	38.7	60.1

Source: OPM LHWP Fourth Independent Evaluation, Quantitative Survey Data (2008).

by one week of classroom training each month. This training gives special emphasis to fieldwork and practical work on health center patients. This training builds on the first three months to strengthen the competence and skills of LHWs. The training is job specific, focused on carrying out instructions/procedures related to the work of LHWs. The training of LHWs is linked to their scope of work, to the problems they have to solve and to their ability to carry out specified tasks. The training is participatory and instrumental in the process of helping LHWs to develop new skills, acquire knowledge, and apply what they are learning to their day-to-day working environment. During this phase, the LHWs also work in their communities for three weeks and come to the training site for one week each month.¹⁰

On-going Training of LHWs

All LHWs attend their respective health facility/training center for one day each month to get refresher training on an identified topic. In addition, problems faced by LHWs in providing services are discussed with the trainers. LHWs also submit their monthly report, and collect supplies for one month. LHWs are not given any refresher trainings, but in latest LHW program PC-I report, this issue has been highlighted and they have planned to provide LHWs with 15 days training each year in addition to the continuing education. They have also planned to remunerate these LHWs with Rs. 50 per day in addition to salary to cover travel costs and refreshment etc.¹¹ The summary of training duration and by whom it was imparted has been summarized in [Box 5](#).

Training of Trainers

Trainers of LHWs are FLCF staffs who are trained by district trainers for a period of 9 days followed by 3 days of assessment workshop to ensure the quality of training. This training team is paid 20% of their current salary per month during the 15

months training of LHWs.¹⁰

Equipment and supplies

The LHWs are basically provided with oral contraceptive pills and condoms and with a limited range of inexpensive following essential drugs for those health problems that are common.¹⁰

- Paracetamol Tabs 500mg
- Chloroquine Tabs 150mg
- Mabendazole Tabs 100mg
- Oral rehydration solution
- Cotrimoxazole Symp.
- Ferrous Fumerate 150mg + Folic Acid 0.5mg
- Cotton Bandages 4" x 3m
- Benzyl Benzoate Lotion
- Paracetamol Symp 120mg/ml
- Chloroquine Symp 50mg/5ml
- Piperazine Symp 500ml/5ml
- Polymyxin "B" Sulphate Eye Ointment (4 Gram)
- B.complex Symp Complex
- Antiseptic Lotion

List of Non-Drug Items

- Cotton Wool (250 Gram)
- Sticking Plaster 1" x 5m
- Pencil Torch with Two Cells
- Thermometer Clinical
- Scissors
- LHW Kit Bags containing weighing scale etc.
- Salter Scale with Trouser

Supervision

The National Program for FP & PHC has an elaborate and multi tiered supervisory system. The

Box 5 :Training of LHWs

Proportion of LHWs who received initial (basic) training	99.8
Duration of initial training	
Less than two months	0.0
Two months	0.0
Three months	94.1
More than three months	5.8
Total	100.0
Mean number of months of initial training	3.1
Training was imparted by	
Medical doctor (male)	87.2
Medical Doctor (female)	16.5
Lady health visitor	68.7
Dispenser	24.5
Male medical health technician	16.4
Female medical health technician	4.5
Others	7.5
LHW training was given by any female trainers	

Source: OPM LHWP Fourth Independent Evaluation, (2008).

cadre of LHW Supervisors has been developed to provide supervisory support to the LHWs on daily basis. The LHS uses a structured checklist for monitoring purposes. The Program has a provision for one LHS for 25 LHWs i.e. a ratio of 1:25 reference. At the Provincial level, Field Program Officers (FPOs) are employed on contract to monitor the program in two or three districts and report back to the Federal, provincial or district level program implementation unit on monthly basis. In the case of non-performance the District Health Officer (DHO) has the authority to end the LHWs contract. Feedback to the DHO and the District Coordinator can occur via the community, the health facility, other DOH professionals, the LHS and the Field Program Officer.¹⁰

LHS are selected based on the following criteria¹⁰:

- Female

- Age: 22-45 years
- Education (In order of preference): LHV/Graduate or LHW Intermediate with one year experience as LHW or Intermediate
- Preferably one-year relevant experience
- Local resident of the area

LHS are employed on contract initially for one year but their services are likely to continue for the life of the program. They are paid Rs. 3300 per month as training allowance for three months and later on the same amount is paid as fixed salary. They are given an annual raise of Rs. 200 per month as an incentive. LHS are also provided with POL for the vehicles (800cc Pick-ups) on an average of 70 liters per month. Those LHS working without vehicles get Rs. 70 as fixed travel allowance per field visit day.¹⁰

LHS are trained for one year and their training is

carried out in following three phases

- 02 months training of trainer manual + 03 weeks LHS manual + one week practical training
- 03 months field/on job training (First two weeks in the field and last two weeks of every month class room training) on LHS manual with more emphasis on practical training with audiovisual support and role-play.
- 46 months training (first 3 weeks of every month in the field and last week for class room training) more emphasis in practical training in the areas of EPI, pediatrics, Eye, midwifery/Gynae/ Obs.

The LHS are trained on specially designed curriculum and they use the program checklist during field visits. Specific checklist and feedback report for LHS are also developed. Their main functions are to:

- Provide support and guidance
- Ensure adequate performance of LHWs regarding delivery of primary health care and family planning services
- Assess the level of community participation and involvement in support of LHW and the program
- Identify deficiencies in communication skills
- Check whether the eligible couples have been registered and contacted regularly for motivation and delivery of family planning services and to find out reasons for non-acceptance and to assist in the motivation and service delivery of hard-core cases
- Provide support and supervise skilled birth attendants
- Carry out corrective measures to improve the performance of LHWs as per given guidelines

Performance Evaluation

The program has carried out 3 evaluations. The result showed that Program is having a significant impact on a range of health outcomes. Fourth 3rd party evaluations are in process. The mean number of households registered by the LHWs is highest in Punjab and lowest in Baluchistan. The lower number of households registered by LHWs in Baluchistan is understandable due to the scattered population in this province. It is also likely that LHWs will have lower number of individuals registered due to the hilly terrain and a scattered population in AJK/NAs and in some parts of NWFP. All provinces have some households that are registered with the LHW but do not know they are registered, although this has improved since 2000. The problem is smallest in Balochistan and largest in Punjab. In most of the activity measures, however, Balochistan and Sindh show the poorest performance. Around two thirds of LHWs in Balochistan and a third of LHWs in Sindh reported working less than 15 hours in the preceding week. Two thirds of LHWs in Balochistan and a quarter of LHWs in Sindh saw less than 10 clients in that week.¹⁰

In his report on evidence-led training and community tools for LHWs in Sindh, Pakistan, published in August 2002, K Omer et al concludes that use of traditional craft items to communicate health messages to the non-literate masses proved quite effective. Results showed that a woman shown a traditional ajrak with maternal and child health care messages, was 61% more likely to avoid heavy routine work during pregnancy, was 60% more likely to breastfeed the infant and twice as likely to follow the exclusive breastfeeding guidance.¹² The additional supervision provided to the LHWs and their active involvement due to the intervention also seemed to improve their performance. The impact of the LHWs efforts was noted to be greater in cases where either women had some degree of formal education or if their spouse was educated.¹²

In another study by Douthwiate et al. the role of CHWs in promoting modern reversible contraceptive methods was assessed as compared to the population not approached by LHWs. The study showed that women served by Lady Health Workers are significantly more likely to use a modern reversible method than women in communities not served by the Program (OR = 1.50, 95% CI: 1.04–2.16, p =0.031), even after controlling for various household and individual characteristics.¹³ It also showed that continuous support and monitoring by the supervisors ensured successful results.¹³

The comparison between the year 2000 and 2008 surveys¹¹ suggests a substantial improvement in a number of the LHWP target indicators. The improvements in tetanus toxoid coverage (five or more doses) and attended deliveries are particularly large, with increases from 14 to 33

percent and 27 to 46 percent coverage respectively. The proportion of children fully immunised has increased from 57 to 68 percent. Measures of exclusive breastfeeding have also improved, although this area needs further investigation. However, the improvement in the contraceptive prevalence rate is modest, having increased by only 3 percentage points.

Some areas of LHWs performance have however stagnated or even decreased. Knowledge of mothers regarding at least one way to prevent diarrhoea has reduced; and growth monitoring services continue to have a limited coverage.¹⁰ The factors identified, leading poor performance, are failures in supply systems of medicines and equipments, like that in growth monitoring have been unavailability of functional weighing scale to the LHWs. Another factor affecting the performance of LHWs has been the irregularity

Table 26: Performance Evaluation of LHWs

Program coverage	Coverage is about 1 per thousand populations. 70% of the population is covered
Preventive and promotive service delivery	Vaccination promotion coverage: 68% of children under five Contraceptive usage: 36% of all users of modern contraceptives
Curative service delivery	17.2% of all LHW seen and referred emergency case in previous fourteen days
Support system for LHWs and their performance	Recruitment: vast majority meet program selection criteria Training: 99.8% received introductory training Knowledge: 86.8% of LHWs given at least one correct answer Supplies and equipment: lack of stock, expired stock, missing stock Salaries: one third had not been paid for over three months Supervision and LHS: 85.3% reported supervisor meeting in last 30 days Support from FLCF: 50% doctors present and 50% facilities lacked important medicines and supplies on the day of survey
LHW impact on health	Indicators of population served by LHWs were slightly better off than National figures
LHW costs – current and future	Actual level of funding is much lower than the levels originally planned

Source: OPM LHWP Fourth Independent Evaluation, (2008).

in the payments of salary and deduction in salaries due to untold reasons.¹⁰ One out of ten LHWs has been reported to charge for the services offered.¹⁰

Incentives

During their initial training of three months they are paid Rs. 50 per day for first three months followed by Rs. 1600 (approx USD 20) per month. They are also given an annual raise of Rs. 100 as an incentive, whereas, their monthly salary is Rs. 3090 (approx. USD 38). Other incentive they receive is in the form of money which they earn after selling contraceptives to their clients. They charge Rs. 3 per cycle of pills and Rs. 0.50 per condom.

Community Involvement

Through the process of community organization for PHC and family planning, members of the community are organized for participation in health promoting activities. These activities include participation in:¹⁰

- Decision making during project planning/project implementation at the local level
- Monitoring and evaluation

Various primary health care services (e.g. immunization, improved sanitation etc)

Possible approaches that are employed for initiating contact with community are through advocacy and awareness raising activities and by establishing organizations like health committees, women groups and through health care delivery outlets.

Referral System

One of the important functions of the LHW is referral of patients to the appropriate health facility. LHWs provide motivation and referral service to community for common ailments

and to mothers for safe motherhood including ante natal, safe delivery and postnatal care. LHWs achieve this by close coordination with the nearest health facility, TBAs and other skilled birth attendants including midwives.¹⁰

Professional Advancement

Professional advancement and promotions are offered to LHW to learn new skills to advance their career as LHS and later on as Field Program Officer (FPO) on completion of minimum education level (intermediate to become an LHS and Masters in any field to become an FPO) and experience (1 year work experience as LHW to become an LHS and 2 years work experience as LHS to become an FPO) required to reach the next level. Hence, advancement is intended to reward good performance or achievement. There are no paths planned to retirement for LHWs.¹⁰

Documentation and Information Management

In view of its wide scope of work in terms of the population and health problems covered, and widely expanded infrastructure, in terms of health facilities, staff, drugs and supplies etc. there is a need for the program to have an efficient information system, responding to the information needs of various decision making levels of the health system. Procedures and instruments are developed to collect data in key areas having impact on the health status of the communities through the LHWs. Data are passed on to the FLCF, district, provincial and federal level for compilation and analysis. The federal, provincial and district program implementation units are equipped with computers and printers for proper compilation and analysis of the reports on monthly, quarterly and annual basis. The federal, provincial and district PIUs are linked through WAN or e-mail for timely and efficient transfer of data. LHW MIS system has

been placed for proper management of information; however, the HMIS in its present form is limited to the FLCFs, without incorporating the data from the community level. The different kinds of tools used by LHWs are:

- Map of community
- Family (Khandan) register
- Community chart
- Treatment and family planning register & Diary
- Mother and child health card
- Referrals slips
- Monthly report of LHW

Table 27 – CHW Program Functionality Assessment Tool (CHW-PFA) – Pakistan

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
1 Recruitment How and from where a community health worker is identified, selected, and assigned to a community.	CHW not from community and plays no role in the recruitment.	CHW is not recruited from community but the community (reluctantly) accepts the identified CHW after selection.	CHW is not recruited from community but the community is consulted on the final selection.	Recruited from community when possible. If not possible, the community is consulted during the process and agrees on recruitment selection.	3
2 CHW Role Alignment, design and clarity of role from community, CHW, and health system perspectives.	Role is not clear or agreed upon between CHW, community and formal health system.	No formal role of CHW exists (no policies in place) General expectations are given to CHW (initial training) but are not specific. CHW and community do not always agree on role/expectations.	Health system defines (policies exist) the CHW role but without community input. Role is clear to CHW and community but little discussion of specific expectations. General agreement on role between CHW, health system, and community.	Health system, community, and CHW design the role/expectations and policies in place that support CHW role. Role and expectations are clear to CHW and community. Process for update and discussion of role/expectations in place for CHW and community	3
3 Initial Training Training provided to CHW to prepare for role in MCH services delivery and ensure he/she has the necessary skills to provide safe and quality care.	No initial training is provided.	Minimal initial training is provided (1 workshop, etc). Some CHWs attend workshops on specific topics.	Initial training is provided to all CHWs within the first year of recruitment. Training does not include participation from community or from referral health center.	Initial training is provided to all CHWs within the six months that is based on defined expectations for CHW. Some training is conducted in the community or with community participation. Training is consistent with health facility guidelines for community care and health facility is involved in training.	3
4 On-going Training On-going training to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned.	No ongoing training is provided	Occasional, ad hoc visits by supervisors provide some coaching.	On-going training is provided on a regular basis. Some supervisors follow up with coaching. Note: Functional CHWs have been trained (or updated) within the last 18 months.	On-going training is provided to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned. Training is tracked and opportunities are offered in a consistent and fair manner to all CHWs (not only some)	2
5 Equipment and Supplies Required equipment and supplies to deliver expected services..	No equipment and supplies are provided.	Inconsistent supply and restocking to support defined CHW tasks. No formal process for re-ordering.	Supplies are ordered on a regular basis although delivery can be irregular. Stock out of supplies essential for defined CHW tasks occur at a rate of x per year/mo	All necessary supplies; no substantial stock-out periods.	2

	Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
		0	1	2	3 (best practice)	
6	Supervision Supervision conducted on a regular basis to carry out administrative tasks and to provide individual performance support (feedback, coaching, data-driven problem-solving).	No supervision or regular evaluation occurs outside of occasional visits to CHWs by nurses or supervisors when possible (1x/year or less).	Supervision visits conducted between two and three times per year to collect reports/data (or group meetings at facility to turn in monitoring forms). No individual performance support offered on work (problem-solving, coaching)	Regular supervision visit at least every three months that includes reviewing reports, monitoring of data collected and occasionally provide problem-solving support to CHW. Supervisors are not trained in supportive supervision but are facility based health workers.	Regular supervision visit every 1-3 months that includes reviewing reports, monitoring of data collected. Data is used for problem solving and coaching. Supervisor visits community, makes home visits; provides skills coaching to CHW. Supervisor is trained in supervision and has supervision tools	3
7	Performance Evaluation Evaluation to fairly assess work during a set period of time.	No regular evaluation of performance by CHW.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data. There are no rewards for good performance.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data (national /program evaluation). Community is not asked to provide feedback on CHW's performance. There are some rewards for good performance, such as small incentive gifts; recognition, etc.	At least once/year evaluation that includes individual performance (local evaluation) and evaluation of coverage or monitoring data (national /program evaluation) Community is asked to provide feedback on CHW performance. There are clear rewards for good performance, and community plays a role in providing rewards.	3
8	Incentives Financial= salary and bonuses Non-financial= training, recognition, certification, uniforms, medicines, etc.	No financial or non-financial incentives provided	No formal incentives provided but community recognition is considered a reward	Some financial or non-financial incentives are provided. Examples of non-financial incentives include occasional formal recognition, additional training, and other small incentives.	Financial and/or non-financial incentives are partly based on good performance. Incentives are balanced and in line with expectations placed on CHW. Examples of non-financial incentives that engage workers might include (advancement, recognition, certification process)	2
9	Community Involvement Role that community plays in supporting CHW.	Community is not involved with ongoing support to CHW	Community is sometimes involved (campaigns, education) with the CHW and some people in the community recognize the CHW as a resource.	Community plays significant role in supporting the CHW through mother's groups, networks, etc. CHW is widely recognized and appreciated for providing service to community.	Community plays an active role in all support areas for CHW, such as development of role, providing feedback, solving problems, providing incentives, helps to establish CHW as leader in community.	2

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
<p>10 Referral System Is there a process for - determining when referral is needed logistics plan for transport/payment to a health care facility when required - how referral is tracked and documented</p>	No referral system in place: CHW might know when and where to refer client, but - no logistics plan in place by the community for emergency referral - information is not tracked or documented	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is but have no formal referral process/logistics Referral is not tracked by community or CHW	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and usually have the means to transport client Client is referred with a slip of paper and informally tracked by CHW (checking in with family, follow up visit) but information does not flow back to CHW.	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and have a logistics plan for emergencies (transport, funds) Client is referred with a slip of paper and information flows back to CHW with a returned referral form and/or monthly monitoring.	1
<p>11 Professional Advancement The possibility for growth, advancement, promotion and retirement for CHW</p>	No professional advancement is offered.	Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. Limited No other opportunities are discussed with CHW. Advancement is not related to performance or achievement.	Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. Limited training opportunities are offered to CHW to learn new skills to advance role. Advancement is intended to reward good performance or achievement, although evaluation is not consistent (advancement might mean path to formal sector or change in role). No path to retirement is made clear to CHWs	Advancement (promotion) is offered to CHWs who perform well and who express an interest in advancement if the opportunity exists (advancement might mean path to formal sector or change in role) Training opportunities are offered to CHW to learn new skills to advance their role and CHW is made aware of them. Advancement is intended to reward good performance or achievement, and is based on fair evaluation. Retirement is encouraged and incentives are provided to encourage retirement at a set age.	2
<p>12 Documentation, Information Management How CHWs document visits, how data flows to the health system and back to the community, and how it is used for service improvement</p>	No process for documentation or info management is followed	Some CHWs document their visits and group monitoring visits to facility are attended by CHWs who bring monitoring forms. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities work with supervisor or referral facility to use data in problem-solving at the community.	2

Table 28 – Community Health Worker Functionality Matrix – MCH Interventions – Pakistan

	MCH INTERVENTIONS	YES	COMMENTS
1	ANTENATAL CARE		
A	Iron folate supplements Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X X X	
B	Maternal nutrition Counsel Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	 X O O	
C	Counsel on birth preparedness/complication readiness ✱ (includes counseling to use skilled birth attendant)	X	
D	Tetanus toxoid Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X O X	
E	Deworm Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X X O	
2	CHILDBIRTH and IMMEDIATE NEWBORN CARE		
A	Prevent Infection/Clean Delivery (Hand washing, clean blade +/- or clean delivery kit)	X	
B	Provide Essential Newborn Care a. Immediate warming and drying b. Clean cord care c. Early initiation of breastfeeding	 X X X	
C	Recognize, initially stabilize (when possible) and refer for maternal and newborn complications a. newborn asphyxia b. sepsis, c. hypertensive disorder d. hemorrhage e. prolonged labor and post-abortion complications	 O O O O	
D	Prevent PPH: AMTSL or use of uterotonic alone in absence of full AMTSL competency (e.g. oral Misoprostol)	O	
E	Provide special care for Low Birth Weight newborns (Kangaroo Care)	O	
3	POST-PARTUM and NEWBORN CARE		
A	Provide counseling on evidence-based maternal newborn health and nutrition behaviors a. clean cord care; b. exclusive BF through 6 months; c. thermal protection; hygiene; d. danger sign recognition; e. maternal nutrition, etc.	 O X O O O	

	MCH INTERVENTIONS	YES	COMMENTS
B	Assess for maternal newborn danger signs and provide appropriate referral.	<input type="radio"/>	
C	Provide Treatment for severe newborn infection (when community-based treatment supported by national guidelines.)	<input type="radio"/>	
4	EARLY CHILDHOOD		
A	Infant and young child feeding, IYCF: Provide counseling for immediate BF after birth; exclusive BF < 6 months; age-appropriate complementary foods	<input checked="" type="checkbox"/>	
B	Promote growth monitoring, weighing infants and recording progress	<input checked="" type="checkbox"/>	
C	Provide community based management of acute malnutrition (CMAM) using Ready to Use Therapeutic Foods (community-based recuperation of children with acute moderate to severe malnutrition without complications)	<input type="radio"/>	
D	Community-based treatment of pneumonia Counsel re recognition of danger signs, seeking care/antibiotics Assess and treat with antibiotics Refer for antibiotics Refer after treating with initial antibiotics	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
G	Community-based prevention and treatment of diarrhea Counsel on hygiene Counsel on point-of-use water treatment Provide point-of-use water treatment Refer point-of-use water treatment Counsel on ORS Provide ORS Refer for ORS Counsel on Zinc Provide Zinc Refer for Zinc	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
H	Vitamin A supplements (twice annually children 6-59 months) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
I	Effectively assess and recognize severe illness in children (danger signs) with appropriate referral.	<input checked="" type="checkbox"/>	
j	Counsel on immunizations Mapping/tracking for immunization coverage Provide Immunizations: -DTP -polio and or measles - +/- HIB - Hep B -Pneumovax -Rotavirus Refer for immunizations	<input checked="" type="checkbox"/> <input type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/>	

	MCH INTERVENTIONS	YES	COMMENTS
5	FAMILY PLANNING/HEALTHY TIMING AND SPACING OF PREGNANCY		
A	Counsel on HTSP/contraceptives Provide contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - depo Refer for contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - long-acting and permanent methods Provide FP counseling +/- - administer contraceptives (e.g.;Oral Contraceptives)	X O X O X O X O O X X	
6	MALARIA (Optional - Dependent Upon Country)		
A	Insecticide-treated mosquito nets to pregnant women and children Counsel Provide commodity or intervention/ Assess and treat	X O	
B	Refer for commodity, intervention, or treatment Intermittent preventive malaria treatment (IPTp) Counsel Provide commodity or intervention/ Assess and treat	O O O	
C	Refer for commodity, intervention, or treatment Community-based treatment of malaria (testing with Rapid Diagnostic Test or presumptive treatment per antimalarial per national guidelines.) Counsel Provide commodity or intervention/ Assess and treat	O X X	
	Refer for commodity, intervention, or treatment	O	
7	PMTCT (Optional - Dependent Upon Country)		
A	Healthy timing and spacing of pregnancy Counsel Provide commodity or intervention/ Assess and treat	O O	
B	Refer for commodity, intervention, or treatment Antibody testing to pregnant women and mothers Counsel Provide commodity or intervention/ Assess and treat	O O O	
C	Refer for commodity, intervention, or treatment Prophylactic ARVs/HAART to pregnant women mothers Counsel Provide commodity or intervention/ Assess and treat	O O O	
E	Refer for commodity, intervention, or treatment Prophylactic ARVs/HAART to infants Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	O O O O	

	MCH INTERVENTIONS	YES	COMMENTS
F	Early infant diagnosis Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
G	Pregnant HIV-infected women tracking Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
H	HIV-exposed infant tracking Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	

Summary

The LHWP, launched in Pakistan in 1991, as a concretion of the integrated health system, is a highly beneficial program for the community and has a major role to play in the provision of primary health care and in reduction of burden of disease via preventive strategies and education of the masses, especially in the rural areas. The LHW program is composed by Lady Health Workers and Lady Health Supervisors that work together, having families as their center of action. Each LHW is responsible for enrolling and monitoring the health status of about 1,000 populations living in an assigned area, providing primary health care services, family planning and making referrals to other level of care as required. The LHW who is a member of community and at the same time is a health professional paid by public sector. They are accountable for the health of their own community, and play a liaison between community and health system. Their main tasks involves preventive and promote activities related to maternal, newborn and child health, plus therapeutic activities in controlling diseases like malaria, tuberculosis and other communicable diseases. They also provide promotional and preventive messages to community members and are expected to timely identify family members at risk or with early signs of diseases, and refer them for further diagnosis and management.

Based on these characteristics and through a combined central government support and strong local committeemen, the LHW program expanded impressively, from a less than 20,000 workers in 1995 to more than 90,000 workers all over the country in 2005-06, that are covering currently about half of the Pakistani population.

There are convincing evidences about the impact of the LHW program on health indicators when compared with national figures as regard to immunization coverage, modern methods for family planning utilization, antenatal coverage, maternal, infant and child health. However

there is a need to follow the program design with consistency for better outcomes and a need to overcome shortcomings resulting from financial and supplies inadequacy. Despite of the incentives and chances for professional advancement, 1 out of 10 LHWs charge their clients for their services and drop outs have also been observed. The reasons behind this were found to be the irregularity in the payment of salaries to the LHWs the geographical constraints that make travelling for home visits difficult for them thus hampering their performance.

Notwithstanding these challenges, LHW program is indubitably a global example whose basic underlying principles can and should be implemented in different settings, irrespective of the political and economic country level established systems, on the basic stipulation of considering health as a fundamental right to be offered by a public sector minimally able to address the community needs.

2. Bangladesh – BRAC Community Health Workers Program

Socio-economic and Political Context

Bangladesh is located in South East Asia between India and Burma having a total area of 143,998 square kilometers with mostly flat alluvial plain and hilly areas in southeast region. It has a population of 156,050,883 which is growing at a rate of 1.3%.¹⁴ Children under the age of 14 years comprise 36.4% of the population while only 4% of the population is under the age of 65 years.¹⁴ Majority of the population are between the ages of 15-64 years. The total population sex ratio according to the 2009 estimates of Central Intelligence Agency is 0.93 males for every one female.¹⁴ Although the rate of urban population

is increasing at 3.5% annually only 27.5% of the total population resides in the urban areas.¹⁴

Bengali is the dominant ethnic group with the 98% population who usually converse in Bengali which is the official language whilst English is also used by some as the mode of communication¹⁴. Eighty three percent of the people are Muslims and 16% Hindus.¹⁴

The GDP of Bangladesh has increased from US\$1300 to US\$1500 from 2006 to 2009.¹⁴ Conversely 45% of the population is below poverty line in addition to 2.5% increase in annual unemployment.¹⁴ Consequently, the life expectancy at birth is merely 60.25 years with female life expectancy is indistinctly higher than that of males.¹⁴ Moreover, the death rate is 9.23 for every thousand people yearly.¹⁴ The degree of risk due of major infectious diseases is also high. These include food and water borne diseases such as bacterial and protozoal diarrhea, hepatitis A and E, and typhoid fever; vector borne diseases like dengue fever and malaria and water contact disease which includes rabies.¹⁴

Health Systems Overview

Bangladesh is one of those low income countries which has made considerable progress in improving the health and nutritional status of its citizens during the last decade. In the poor households of the country however, the issues of preventable morbidity and mortality from poor maternal and child health, malnutrition, communicable diseases are still major challenges to be tackled. At the same time, there are new concerns due to the rising rate of non-communicable diseases, from environmental hazards such as air and water pollution and from behavioral causes such as tobacco use, accidents and violence.¹⁵

Bangladesh has a three tier health care service delivery system with a comprehensive network

of public facilities at tertiary, secondary and primary levels. However in reality there is a mix of public, private, NGO, and traditional providers operating with variable population reach and quality. Less than 20% of the curative health services are consumed from the public sector.

Traditional healers, quacks, qualified doctors working privately, and NGOs also have their stake in the delivery of health services. Several doctors are into dual practice, i.e., both public and private.¹⁶ The private sector is the major provider of curative services for both poor and rich, in both urban and rural areas.¹⁷

The public sector is underfunded yet has poor absorptive capacity. The distribution of qualified staff seems to be biased and retaining them in rural postings is quite difficult. Ghost workers in the public sector¹⁸ and mushrooming of private health care set ups are another serious problems.¹⁹

The professional medical associations are particularly opposed to make any attempts to tackle the human resource deficit in rural areas, such as by addressing the skills of semi-qualified providers who are mostly consulted by the rural populations.¹⁹

Bangladesh Rural Advancement Committee (BRAC) is the largest national non-governmental organization that incorporates semi-voluntary CHWs. BRAC came into existence in 1972 as a relief organization. After a year of working, as a relief team, realized that relief and reconstruction efforts would only be limited to disaster management measure. Thus in 1973, BRAC adopted the community development approach but due to the exploitation of the poor by the rural elites, lack of education and health care found their intervention to be insufficient. BRAC then switched to the Health, Nutrition and Population Programs in 1973 and a Non-Formal Primary Education Program in 1985. In health

care outreach services BRAC has been corroborating with CHW programs in Bangladesh since 1977. It integrates essential health care and provides basic curative and preventive health care. Shastho Sebikas (SS) is an alternative term used for CHWs in Bangladesh. CHWs in Bangladesh are a class under primary health care approach. They are selected by the community and are acceptable to them.²⁰

Besides designing interventions for the community, BRAC also focused on the sustainability of the project and generated funds from both donors as well as through its own support enterprises and microfinance projects.

BRAC not only strengthened its roots in Bangladesh but also expanded globally. It has been serving in Afghanistan since 2002, in Sri Lanka since 2004 and in Tanzania, Uganda and Southern Sudan since 2006. BRAC USA came into being in year 2007, while the year 2008 marked BRAC's full-fledged operations in Pakistan.

Recruitment Process

Shasthya Sebika are recruited from among the active village based BRAC credit and development group called Village Organization (VO).²¹ VO is formed by the poor women in the village and this organization extends small loans to members for income generating activities.

Initially village organization discusses and mutually nominates prospective SSs and then suggests nominated candidates to regional office members. Based on the recommendations forwarded by that organization, final selection is done at BRAC regional office. In regional office, a general meeting is held to ratify the nomination and finally the candidate has to undergo a selection interview. Selection of SS is based on the following criterion:

- female (25-45 years),

- married having children not below 2 years of age,
- few years of schooling,
- willing to provide voluntary services, acceptable to community they serve,

Preferably, they should not be living near a local health facility to avoid competition, and extend basic health facilities coverage to places far away from any health facility

The SS Role

SS works for 15 days a month, approximately six days a week and on an average two hours a day usually in afternoon, but they work quite extensively in the community. Their specific roles are to: ^{22, 23}

Perform health education and promotion activities in five essential components that consist of water and sanitation, immunization, health and nutrition education, family planning, and basic curative services

Sell medicine, contraceptives, sanitary latrines, tube-wells and vegetable seeds

Diagnose, treat and provide health education on diarrhea, dysentery, fever, common cold, worm infection, gastric ulcer, allergic reaction, scabies and ringworm infection

- Identify pregnant women
- Encourage pregnant women to utilize services in government facilities
- Visits women at 42 days of delivery
- Give special care to Low Birth Weight (LBW) babies
- Organize income generating activities
- Prepare and submit monthly progress report
- Works on DOTS program

Initial Training of SSs

SSs are given fundamental and essential curative training for a period of 4 weeks, amounting about four days per week at the regional office.¹⁶ They are trained on following common illnesses: anemia, angular stomatitis, common cold and cough, diarrhea, dysentery, gastric ulcer, peptic ulcer, ringworm, scabies, and worm infestation.²⁴ For specific programs such as DOTS, community based ARI, and safe motherhood interventions, a subset of these workers are given additional training as and where necessary.

On-going Training of SSs

For the next two years, they are provided with refresher training sessions, once every month, conducted by the program organizers. Refreshers are conducted in an interactive and problem solving way, in which problems encountered during the month are discussed alongside the discussion of new health and nutrition aspects. This keeps the knowledge of the SSs updated about health innovations and management of diseases, and most importantly, it gives the SSs the motivation to continue the work.¹⁶

Equipment and supplies

After training, SSs receive essential drugs, other health commodities (e.g. contraceptives pills, condoms) kit, delivery kit, sanitary napkins, soaps and iodized salt for performing their tasks in the community. These drugs and health commodities are procured by BRAC in bulk and then supplies to the SSs at lower-than-market prices, which they sell with a small mark up.²⁵ The essential drug kit contains:

- Paracetamol
- Vitamins
- Antihistamines
- Oral rehydration solution
- Antacids
- Anti helminthics

Supervision

Supervision of the SSs is done by the program officers at BRAC, the Shasthyo Kormis (SKs). SKs are paid health care workers associated with BRAC and have a minimum of ten years of school education. Each SK supervises 25 to 30 SSs. An SK visits households three days a week during which time she reviews the work done by SS related to DOTS, family planning, and EPI motivation and maintenance of their registers. In the remaining three days she provides ANC and PNC services to women, manages health forums and enrolls births. During this time she also reviews the activities of SSs with regard to diverse services provided by the SSs. Thus, this helps her supervise the SSs. Each SS is visited by a program officer (PO) at an average of three to four times a month. The visit of 25% of households by the PO is also a part of routine screening. SKs are selected based on the following criteria:²⁶

- experienced,
- selected from and by community,
- willing to work,
- age 30-45 years

These supervisors are given 2 weeks training on basic curative care for some common illness, family planning, MNCH, nutrition, immunization, water and sanitation, communicable disease control, DOTS, ARI, communication, supervision and monitoring. Supervisors are also paid with incentives of Tk.80 for providing antenatal and post natal care services to women in community.

Performance Evaluation

Performance evaluation of CHWs and their impact on service utilization has been observed in BRAC internal reports. Evaluation has shown that ^{27, 28}:

- CHW are well recognized in community and motivated

- Patient compliance has increased
- Service provision and utilization has been increased

They made several efforts to spread awareness of HIV/AIDS in the community and 94% of the Community sex Workers (CSWs) reported that the BRAC volunteers were their source of information.²⁹ It has also been observed that there has been greatest reduction in low birth weight babies in the areas of BRAC volunteers³⁰. Their diagnosis of pneumonia was found to be 67.6% sensitive and 95.2% specific.³¹ Their efforts in TB control are reflected by treatment success rate of 83.3%.³²

Incentives

SS works as a volunteers and receives no salary, they basically earn income from the sale of drugs and health commodities and receive incentive from certain performance based tasks²⁵.

Incentive mechanism in BRAC was started in 1984 particularly for TB control program for detecting higher number of cases from the community. Until previously, the program was based on voluntary mechanism and SSs were benefiting from the sales of medicines and commodities provided by BRAC and as a part of non monetary reward, motivational factors like enthusiasm to work for the betterment of the community was involved and social prestige and fame were important inspirational factors that were involved. The subset of SSs who also works for DOTS program receives Tk. 150 for the patient who completed the treatment for TB under her observation.³³ Under urban MNCH program, CHWs are also provided with incentives for identification, referral and provision of services.³³ Following incentives are provided for specific MNCH tasks:

- Pregnancy identification Tk. 30
- Brining mothers to delivery centers Tk. 100

- Providing essential newborn care Tk. 100
- Refer from home for complication Tk. 100
- Inform the SK for ensuring birth weight if delivered at home Tk. 30
- Women receives ANC Tk. 5 for non VO member and Tk. 3 for a VO member

Community Involvement

SSs perform their task in the community by involving community in their tasks. They develop community level advocacy and support groups where they discuss issues and influence them to participate and help them in suggesting an action plan for specific problems and issues. SSs also involve community in identifying patients for referrals.³⁴ They also enhance community awareness through interactive communications in the form of folk music, theatre. Furthermore, SSs also aware local stakeholders about the community issues through advocacy workshops.

Referral System

On identification of emergency case by SSs, they verbally refer the child to an existing health facility. Workers inform center's health providers about case pre hand through mobile phone and then these workers ensure that these patients are transferred to facilities through proper transport. They also follows patient at home on their arrival to community after treatment.³⁴

Professional advancement

Some CHWs accumulate experience and are sometimes used to train others. There were no cases of retirement reported and at the moment there is no formal retirement plan for them documented.

Table 29: Performance Evaluation of SSs

Program coverage	Coverage is about 70%. Covered 46 districts out of total 64.
Preventive and promotive service delivery	Vaccination promotion coverage: 87% of children under five, CPR 62%, ANC (3 visits) coverage 62%, TT coverage 82%, under 5 vitamin A is 92%
Curative service delivery	Tuberculosis Completion rate over 90%, and success rate is 89%
LHW services and the poor	BRAC providing services to the poorest population of Bangladesh
LHW impact on health	BRAC impact and coverage is better off than national figures. TB prevalence in BRAC areas half the rate in other areas

Table 30 - CHW Program Functionality Assessment Tool (CHW-PFA) – Bangladesh

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
1 Recruitment How and from where a community health worker is identified, selected, and assigned to a community.	CHW not from community and plays no role in the recruitment.	CHW is not recruited from community but the community (reluctantly) accepts the identified CHW after selection.	CHW is not recruited from community but the community is consulted on the final selection.	3 (best practice) Recruited from community when possible. If not possible, the community is consulted during the process and agrees on recruitment selection.	3
2 CHW Role Alignment, design and clarity of role from community, CHW, and health system perspectives.	Role is not clear or agreed upon between CHW, community and formal health system.	No formal role of CHW exists (no policies in place) General expectations are given to CHW (initial training) but are not specific. CHW and community do not always agree on role/expectations.	Health system defines (policies exist) the CHW role but without community input. Role is clear to CHW and community but little discussion of specific expectations. General agreement on role between CHW, health system, and community.	Health system, community, and CHW design the role/expectations and policies in place that support CHW role. Role and expectations are clear to CHW and community. Process for update and discussion of role/expectations in place for CHW and community	2
3 Initial Training Training provided to CHW to prepare for role in MCH services delivery and ensure he/she has the necessary skills to provide safe and quality care.	No initial training is provided.	Minimal initial training is provided (1 workshop, etc). Some CHWs attend workshops on specific topics.	Initial training is provided to all CHWs within the first year of recruitment. Training does not include participation from community or from referral health center.	Initial training is provided to all CHWs within the six months that is based on defined expectations for CHW. Some training is conducted in the community or with community participation. Training is consistent with health facility guidelines for community care and health facility is involved in training.	2
4 On-going Training On-going training to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned.	No ongoing training is provided	Occasional, ad hoc visits by supervisors provide some coaching.	On-going training is provided on a regular basis. Some supervisors follow up with coaching. Note: Functional CHWs have been trained (or updated) within the last 18 months.	On-going training is provided to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned. Training is tracked and opportunities are offered in a consistent and fair manner to all CHWs (not only some)	3
5 Equipment and Supplies Required equipment and supplies to deliver expected services.	No equipment and supplies are provided.	Inconsistent supply and restocking to support defined CHW tasks. No formal process for re-ordering.	Supplies are ordered on a regular basis although delivery can be irregular. Stock out of supplies essential for defined CHW tasks occur at a rate of x per year/mo	All necessary supplies; no substantial stock-out periods.	3

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
6 Supervision Supervision conducted on a regular basis to carry out administrative tasks and to provide individual performance support (feedback, coaching, data-driven problem-solving).	No supervision or regular evaluation occurs outside of occasional visits to CHWs by nurses or supervisors when possible (1x/year or less).	Supervision visits conducted between two and three times per year to collect reports/data (or group meetings at facility to turn in monitoring forms). No individual performance support offered on work (problem-solving, coaching)	Regular supervision visit at least every three months that includes reviewing reports, monitoring of data collected and occasionally provide problem-solving support to CHW. Supervisors are not trained in supportive supervision but are facility based health workers.	Regular supervision visit every 1-3 months that includes reviewing reports, monitoring of data collected. Data is used for problem solving and coaching. Supervisor visits community, makes home visits; provides skills coaching to CHW. Supervisor is trained in supervision and has supervision tools.	3
7 Performance Evaluation Evaluation to fairly assess work during a set period of time.	No regular evaluation of performance by CHW.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data. There are no rewards for good performance.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data (national /program evaluation). Community is not asked to provide feedback on CHW's performance. There are some rewards for good performance, such as small incentive gifts, recognition, etc.	At least once/year evaluation that includes individual performance (local evaluation) and evaluation of coverage or monitoring data (national /program evaluation) Community is asked to provide feedback on CHW performance. There are clear rewards for good performance, and community plays a role in providing rewards.	2
8 Incentives Financial= salary and bonuses Non-financial= training, recognition, certification, uniforms, medicines, etc.	No financial or non-financial incentives provided	No formal incentives provided but community recognition is considered a reward	Some financial or non-financial incentives are provided. Examples of non-financial incentives include occasional formal recognition, additional training, and other small incentives.	Financial and/or non-financial incentives are partly based on good performance. Incentives are balanced and in line with expectations placed on CHW. Examples of non-financial incentives that engage workers might include (advancement, recognition, certification process)	2
9 Community Involvement Role that community plays in supporting CHW.	Community is not involved with ongoing support to CHW	Community is sometimes involved (campaigns, education) with the CHW and some people in the community recognize the CHW as a resource.	Community plays significant role in supporting the CHW through mother's groups, networks, etc. CHW is widely recognized and appreciated for providing service to community.	Community plays an active role in all support areas for CHW, such as development of role, providing feedback, solving problems, providing incentives, helps to establish CHW as leader in community.	3

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
<p>10 Referral System Is there a process for - determining when referral is needed - logistics plan for transport/payment to a health care facility when required - how referral is tracked and documented</p>	No referral system in place: CHW might know when and where to refer client, but - no logistics plan in place by the community for emergency referral - information is not tracked or documented	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral is but have no formal referral process/logistics Referral is not tracked by community or CHW	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and usually have the means to transport client Client is referred with a slip of paper and informally tracked by CHW (checking in with family, follow up visit) but information does not flow back to CHW.	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and have a logistics plan for emergencies (transport, funds) Client is referred with a slip of paper and information flows back to CHW with a returned referral form and/or monthly monitoring.	1
<p>11 Professional Advancement The possibility for growth, advancement, promotion and retirement for CHW</p>	No professional advancement is offered.	Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. No other opportunities are discussed with CHW. Advancement is not related to performance or achievement.	Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. Limited training opportunities are offered to CHW to learn new skills to advance role. Advancement is intended to reward good performance or achievement, although evaluation is not consistent (advancement might mean path to formal sector or change in role). No path to retirement is made clear to CHWs	Advancement (promotion) is offered to CHWs who perform well and who express an interest in advancement if the opportunity exists (advancement might mean path to formal sector or change in role) Training opportunities are offered to CHW to learn new skills to advance their role and CHW is made aware of them. Advancement is intended to reward good performance or achievement, and is based on fair evaluation. Retirement is encouraged and incentives are provided to encourage retirement at a set age.	0
<p>12 Documentation, Information Management How CHWs document visits, how data flows to the health system and back to the community, and how it is used for service improvement</p>	No process for documentation or info management is followed	Some CHWs document their visits and group monitoring visits to facility are attended by CHWs who bring monitoring forms. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities work with supervisor or referral facility to use data in problem-solving at the community.	1

Table 31 - Community Health Worker Functionality Matrix – MCH Interventions

	MCH INTERVENTIONS	YES	COMMENTS
1	ANTENATAL CARE		
A	Iron folate supplements Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X X X	
B	Maternal nutrition Counsel Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	 X X X	
C	Counsel on birth preparedness/complication readiness * (includes counseling to use skilled birth attendant)	X	
D	Tetanus toxoid Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X O X	
E	Deworm Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X O X	
2	CHILDBIRTH and IMMEDIATE NEWBORN CARE		
A	Prevent Infection/Clean Delivery (Hand washing, clean blade +/- or clean delivery kit)	X	
B	Provide Essential Newborn Care a. Immediate warming and drying b. Clean cord care c. Early initiation of breastfeeding	 X X X	
C	Recognize, initially stabilize (when possible) and refer for maternal and newborn complications a. newborn asphyxia b. sepsis, c. hypertensive disorder d. hemorrhage e. prolonged labor and post-abortion complications	 X X X X X	
D	Prevent PPH: AMTSL or use of uterotonic alone in absence of full AMTSL competency (e.g. oral Misoprostol)	X	
E	Provide special care for Low Birth Weight newborns (Kangaroo Care)	X	
3	POST-PARTUM and NEWBORN CARE		
A	Provide counseling on evidence-based maternal newborn health and nutrition behaviors a. clean cord care; b. exclusive BF through 6 months; c. thermal protection; hygiene; d. danger sign recognition; e. maternal nutrition, etc.	 X X X X X	

	MCH INTERVENTIONS	YES	COMMENTS
B	Assess for maternal newborn danger signs and provide appropriate referral.	X	
C	Provide Treatment for severe newborn infection (when community-based treatment supported by national guidelines.)	X	
4	EARLY CHILDHOOD		
A	Infant and young child feeding, IYCF: Provide counseling for immediate BF after birth; exclusive BF < 6 months; age-appropriate complementary foods	X	
B	Promote growth monitoring, weighing infants and recording progress	O	
C	Provide community based management of acute malnutrition (CMAM) using Ready to Use Therapeutic Foods (community-based recuperation of children with acute moderate to severe malnutrition without complications)	O	
D	Community-based treatment of pneumonia Counsel re recognition of danger signs, seeking care/ antibiotics Assess and treat with antibiotics Refer for antibiotics Refer after treating with initial antibiotics	X X X X	
G	Community-based prevention and treatment of diarrhea Counsel on hygiene Counsel on point-of-use water treatment Provide point-of-use water treatment Refer point-of-use water treatment Counsel on ORS Provide ORS Refer for ORS Counsel on Zinc Provide Zinc Refer for Zinc	X O O X X O O O O O	
H	Vitamin A supplements (twice annually children 6-59 months) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X O X	
I	Effectively assess and recognize severe illness in children (danger signs) with appropriate referral.	X	
j	Counsel on immunizations Mapping/tracking for immunization coverage Provide Immunizations: -DTP -polio and or measles - +/- HIB - Hep B -Pneumovax -Rotavirus Refer for immunizations	X O O O O O O O X	

	MCH INTERVENTIONS	YES	COMMENTS
5	FAMILY PLANNING/HEALTHY TIMING AND SPACING OF PREGNANCY		
A	Counsel on HTSP/contraceptives Provide contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - depo Refer for contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - long-acting and permanent methods Provide FP counseling +/- administer contraceptives (e.g.; Oral Contraceptives)	X O X O X O X O O O O X	
6	MALARIA (Optional - Dependent Upon Country)		
A	Insecticide-treated mosquito nets to pregnant women and children Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X X X	
B	Intermittent preventive malaria treatment (IPTp) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X X X	
C	Community-based treatment of malaria (testing with Rapid Diagnostic Test or presumptive treatment per antimalarial per national guidelines.) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X X X	
7	PMTCT (Optional - Dependent Upon Country)		
A	Healthy timing and spacing of pregnancy Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	O O O	
B	Antibody testing to pregnant women and mothers Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	O O O	
C	Prophylactic ARVs/HAART to pregnant women mothers Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	O O O	
E	Prophylactic ARVs/HAART to infants Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	O O O	

	MCH INTERVENTIONS	YES	COMMENTS
F	Early infant diagnosis Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
G	Pregnant HIV-infected women tracking Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
H	HIV-exposed infant tracking Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	

Summary

The health system in Bangladesh was crippled after partition from Pakistan in 1971. At that time the health system of Bangladesh was facing weak leadership, governance, and accountability, and thus was unable to provide minimum and decent level of health services to the majority of their citizens. BRAC initially came into existence in 1972 as a relief organization, but after working for years they realized that relief and reconstruction efforts would only be limited to disaster management measure. Thus BRAC then switched to the Health, Nutrition and Population Programs in 1973 and has been corroborating with CHW programs in Bangladesh since 1977. The initiative and commitment of CHWs from BRAC in taking responsibility of local implementation of health and nutrition services across the country allowed an impressive expansion of the program, from a number of CHWs less than 1,000 in 1990 to more than 78,000 in 2008 in place currently. Each CHW is responsible for following up 150-200 households. The CHW receive training that privileges the determination and understanding of social, economic and environmental characteristics of the community, as well as epidemiological profile. They also receive promotional and preventive aspects of health, so that they are in good position of providing influential counsel to community members, for identifying timely family members at risk or with health problems and refer them to the health facility for further assessment and management, if considered pertinent. Their role in community health promotion is significant, as they are community members carefully selected with the participation of community members and BRAC leaders.

From the very outset, BRAC has provided consistent evidence about the positive impact on an increased coverage of health care for MNCH, nutrition and TB, malaria patients through home-based directly observed therapy strategy conducted by CHWs, and also an increased trust of community members on health

facilities run by NGOs. There is also consistent evidence about clearly positive impact of NGOs community based programs on reduction of TB and malaria morbidity and mortality and on reduction of infant and child mortality, and on maternal and reproductive health indicators in their catchment areas.

The valuable effort of BRAC CHW program has now been replicated in many regions of Africa, USA, UK and South Asia. Amongst all these BRAC Afghanistan has been functional since last 7 years which was initially started in response to the conflict in Afghanistan and the flood of returning refugees in 2002. By implementing the holistic strategy we have developed in Bangladesh and adapting it to suit the local context, BRAC Afghanistan quickly became the largest and most sustainable of all the development organizations in the country with program in 23 of the country's 34 provinces and nearly 895,000 people are benefiting from the program.

With all these success, program is also facing some local difficulty of high drop-outs that need to be effectively discussed and addressed to assure the sustainability of the program. The primary motivation to become a CHW is the economic incentive, with the meager income earned by their activities, it is difficult to retain them in the system and the drop-out rate is fairly high. The Shasthya Sebika work extensively in the community and drive their motivation not only from the financial incentive but also from the prestige that they gain in the community. An escalation in their financial incentives can improve their performance and as such the primary health care scenario of the country.

3. Thailand – Village Health Volunteer Program

Socio-economic and Political Context

The United Kingdom of Thailand is a mountainous country in the Southeast Asia, lying southeast of Burma, bordering the Andaman Sea and the Gulf of Thailand.³⁵ It has a total area of 513,120 square kilometers.³⁵ The total population of the country is 63,444,000,³⁶ which is growing at the rate of 0.6%.³⁵ Majority of the population (70.5%) are between the ages 15–64 years³⁵ and the life expectancy in Thailand at birth is 73.1 years³⁵ while the death rate is 7.3 deaths per 1,000 population.³⁵

The most dominant ethnic group of the country is Thai followed by Chinese, comprising 75% and 14% of the total population, respectively.³⁵ Amongst them 95% of the people are Buddhists.³⁵ The official language of the nation is Thai³⁵ and the country has a literacy rate of 92.6%³⁵ where the government spends 4.2% of GDP on education.³⁵

The GDP per capita of the country is \$8,400,³⁵ and the total expenditure on health as % of GDP (2006) is 3.5.³⁶ The World Bank listed Thailand's economy as the lower middle income economy.³⁷ Thailand's economic growth has fallen sharply due to political crises that are there since 2005³⁵ and currently 10% of the total population lives below poverty line.³⁵

Health Systems Overview

Thailand has a multi-layered health care system beginning from self-reliant, self-care at the family level to that of care offered by a medical specialist.³⁸ The dominant provider of the health care is the public sector although for profit and not for profit private sectors also have their role in delivery of health services.³⁸ There are 4 attending physicians per 10,000 population³⁶. The country has a very strong primary health care system with CHWs as its backbone and it has proven its success by a cut down of 80% in infant mortality rate during the last three deca-

des, i.e., the rate has dropped to 8 per 1000 in year 2006.³⁶ The system has been developed in such a way that the primary health care is rooted in the local communities and the volunteers play an important role to prevent the disease in the first place through preventive health education.³⁶

In the year 2003, health care system in Thailand has been decentralized to provinces and the districts as a result of Health System Reforms.³⁹ The program with its appreciable outcomes³⁶ deserves a full functionality assessment.

The Village Health Volunteers Program (VHVs)

The VHV program has been launched in Thailand at a national level after the Alma-Ata conference in 1978.⁴⁰ The two types of CHWs involved in the primary health care are VHVs and the Village Health Communicators (VHCs).⁴⁰ Almost all the villages in Thailand had trained VHVs and VHCs by the year 1986.⁴⁰ The CHW scheme then became the most important activity of the National Primary Health Care program with the objectives of reaching out majority of the population with low cost, equitable and easily accessible healthcare.⁴⁰ In 1994, these two roles have been merged together and only VHVs are trained.⁴¹

Recruitment Process

The VHVs are the respected members from Thai village where they work. During the early years of the system, VHVs were selected by the primary health care centre officer using a “social matrix” method to identify potential VHVs through informal surveys. This method involved selecting individuals who were respected by the community and had the social skills necessary to engage community members, including good listening, communication and inter-personal skills as well as motivation to help others.

The selected VHVs were usually village leaders or other respected villagers.

Selection of VHV is based on the following criterion:⁴¹

- Able to read and write,
- Live and work in the village,
- Have shown regular participation in the village health community development program,
- Be trusted by village members,
- Have one's own occupation to earn a living,
- Live in a house easily accessible to villagers,
- Not to be government official or village headman

The candidates who fulfill the above requirements are approved by a government official (Provincial Health Officer) after going through the following selection process:

- Public advertisement is posted by a primary health care centre for a specified period
- Completed application is received
- Official assignments are given by the district health officer (who also serves as the supervisor) after the basic training is completed

An informal pre-selection process is also followed in which potential VHVs are selected and encouraged to apply by their village leaders and the primary health care centre staff. This pre-selection helps ensure the acceptability of the VHV in the village once officially appointed by the provincial level. Senior VHVs also assist with the selection of new ones. VHVs often serve for life, once selected, and children of VHVs are encouraged to participate once their parents eventually retire.

Existing volunteer workforces were found to be comparatively low educational and economic

background. 86.9% have no more than basic primary school education. Only 7.3% were college graduates and 1.0% holds a bachelor degree. 51.1% were farmer and 13.4% worked as waged labor.⁴²

The VHV Role

Every village in Thailand has at least one VHV, who in turn are responsible for 5 to 15 households.³⁹ The responsibility of VHV is to promote health and intervene in treating minor health problems. Their health promotive activities range from advocating simple preventive measures to fostering wider health related community development in areas such as literacy, housing, sanitation and water supply and their health interventions activities range from providing basic drugs and oral rehydration solution to endorsing and teaching family planning and conducting routine childhood growth measurements.⁴³

Some important responsibilities of VHVs are to:⁴¹

- Demonstrate a good role model in self-care
- Disseminate health information through community radio
- Provide a health information corner in the public health center
- Meet with public health workers on the surveillance system of communicable diseases in the community
- Educate the villagers on self and family prevention of communicable diseases
- Provide information on disease outbreak immediately
- Test blood for malaria and test specimen for parasite when suspected
- Provide basic health care
- Transfer the patient to an appropriate health centre

- Survey and collect sanitation and environment data and send it to the district health worker
- Raise awareness on environmental management
- Improve public water supply
- Cooperate with community leaders and organize health promoting activities
- Survey and collect data on children aged 0-5 years, pregnant women, and post partum women
- Inform the villagers on vaccine-preventable disease
- Cooperate with public health workers in organizing vaccination point
- Weigh children aged 0-5 years every three months and compare the children's weight with standard and record
- Measure nutrition intake of children every two-three months
- Spray iodine in salt for the villagers
- Promote selling of iodized salt in the community
- Supply concentrate iodine water to the villagers
- Promote prenatal care
- Recommend to mothers to breastfeed till the child is at least four months old
- Suggest to the mother to bring her child for a medical checkup at the health centre
- Follow up pregnancy, and post-pregnancy and ensure that the infant gets a medical check-up
- Provide knowledge on family planning
- Suggest use of medication and herbal medication
- Supply and sell basic-needs medication
- Promote the "My first toothbrush" campaign in children aged 1 ½ to 2 years
- Urge parents to take their children for dental care
- Suggest to the villagers to avail the dental service when having a dental problem
- Supply and sell toothbrush, toothpaste and medication
- Provide knowledge on mental health to villagers
- Support to establish a society for the elderly and provide knowledge on physical and mental health of elderly persons
- Organize mental-health-promoting activities
- Provide knowledge on AIDS to villagers on prevention and control
- Organize activities to promote National AIDS Day
- Supply condoms for villagers
- Survey villagers aged 40 and above for diabetes, high blood pressure and vision problems
- Mobilize villagers to improve the environment and to reduce accidents
- Publicize on how to select good quality products
- Demonstrate a good role model in buying product showing registration number and expiry date and in reading the medical labels
- Cooperate with community leaders to ensure that only good quality products are sold.
- Cooperate with the village committee in monitoring the environment and to set up an environment protection club.

Initial Training of VHVs

Village health volunteers are trained in primary health care aspect for 7 days and later on, specialized on-the-job training is provided for 15 days.⁴¹ They are trained for motivation sessions, concepts of primary health care, prevention of disease including water supply, sanitation, immunization and other controls, treatment of health problems including first aid, symptomatic and supportive treatments and herbal medicine, promotion of health including nutrition, reduction of mental stress and family planning.⁴⁴ They are trained in the form of lectures, demonstration and discussions by volunteered professionals from medicine, nursing and public health fields.

On-going Training of LHVs

To sustain and upgrade the VHVs' knowledge, regular meetings are held at the district health office level. These meetings provides an opportunity for refresher training, communication and networking among VHVs, health officials and health professionals.

Equipment and supplies

The VHVs are provided with simple non-prescription medicines that are effective in treating common illnesses. They also promote herbal medications as an important way to address health problems and the drug shortage.⁴¹

Supervision

VHVs work under the direct supervision of a primary health care officer at the sub-district level, whereas the district health officer serves a second-level supervisor. There is no formal evaluation or performance monitoring to assess the quality of VHVs work. Each village has a lead VHV who organizes the other VHVs into a team, and, in effect also serves as an informal supervisor. They are usually the senior-most among VHVs in the village. The VHVs leader also supervises

other VHVs and briefs them on any training or communication received.³⁹

Performance Evaluation

There is no formal evaluation and monitoring system placed to assess the quality and impact of village health volunteers' work. However studies have shown that the case detection of tuberculosis done by the VHVs was comparable to the trained staff of the hospital and the health center.⁴⁵ Currently, they are providing a coverage to 12 million household in Thailand.⁴⁶ The knowledge and performance of VHVs are evaluated by questionnaires and visits by professionals while they are practicing in the community and are also re-evaluated when they are on their refresher training.⁴⁷ However VHVs reported a decline in the use of their services in regions bordered by urban areas where quite advanced health facilities were available to the villagers.⁴¹ There is also a current shift in their role to potential areas of work such as prevention of domestic violence, alcohol consumption control, and caring of the elderly.

More health activities were found in the villages where the VHVs had a higher level performance than in the villages where the VHVs had lower level of performance.⁴⁶

Incentives

There is no monetary incentive provided to the VHVs, except for free health services for themselves and their immediate family members. More specifically, VHVs are exempted from the annual fee that is required for the universal coverage of health care or what is called the "30-baht healthcare scheme".⁴⁸ They also have full and free access to health services at the district hospital. They also have special quotas for VHV families to apply to government nursing. As a part of non monetary reward, VHVs receive public recognition from both the community as well as

the formal health sector. They also experience enhanced social standing, greater respect from their community and personal satisfaction, and some of them have also been elected to the local government. VHVs are treated as part of the formal health system, and the district health services use them in the out-patient department at health centers, when there is a surge of work or a personnel shortage. Furthermore, VHVs are also acknowledged for their work in various ways. The “best VHV of the year” is selected and announced annually at a national ceremony attended by all VHVs in the country on the 20th of March, which is designated as “Village Health Volunteer Day” to celebrate and recognize their work.

Community Involvement

Whenever the health system requires community involvement, especially with regard to prevention and health promotion activities, the VHV is designated to communicate the messages and mobilize the community to participate and suggest in developing an action plan.

Referral System

VHV knows when to refer a client and know where referral facility is but have no formal referral process is place and referral is not tracked by community or VHV.

Professional Advancement

The system encourages young village health volunteers for further education and provide them grants to study and return as public health officers.³⁹

Table 32 - CHW Program Functionality Assessment Tool (CHW-PFA)-Thailand

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
1 Recruitment How and from where a community health worker is identified, selected, and assigned to a community.	CHW not from community and plays no role in the recruitment.	CHW is not recruited from community but the community (reluctantly) accepts the identified CHW after selection.	CHW is not recruited from community but the community is consulted on the final selection.	Recruited from community when possible. If not possible, the community is consulted during the process and agrees on recruitment selection.	3
2 CHW Role Alignment, design and clarity of role from community, CHW, and health system perspectives.	Role is not clear or agreed upon between CHW, community and formal health system.	No formal role of CHW exists (no policies in place) General expectations are given to CHW (initial training) but are not specific. CHW and community do not always agree on role/expectations.	Health system defines (policies exist) the CHW role but without community input. Role is clear to CHW and community but little discussion of specific expectations. General agreement on role between CHW, health system, and community.	Health system, community, and CHW design the role/expectations and policies in place that support CHW role. Role and expectations are clear to CHW and community. Process for update and discussion of role/expectations in place for CHW and community	3
3 Initial Training Training provided to CHW to prepare for role in MCH services delivery and ensure he/she has the necessary skills to provide safe and quality care.	No initial training is provided.	Minimal initial training is provided (1 workshop, etc). Some CHWs attend workshops on specific topics.	Initial training is provided to all CHWs within the first year of recruitment. Training does not include participation from community or from referral health center.	Initial training is provided to all CHWs within the six months that is based on defined expectations for CHW. Some training is conducted in the community or with community participation. Training is consistent with health facility guidelines for community care and health facility is involved in training.	3
4 On-going Training On-going training to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned.	No ongoing training is provided	Occasional, ad hoc visits by supervisors provide some coaching.	On-going training is provided on a regular basis. Some supervisors follow up with coaching. Note: Functional CHWs have been trained (or updated) within the last 18 months.	On-going training is provided to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned. Training is tracked and opportunities are offered in a consistent and fair manner to all CHWs (not only some)	2
5 Equipment and Supplies Required equipment and supplies to deliver expected services.	No equipment and supplies are provided.	Inconsistent supply and restocking to support defined CHW tasks. No formal process for re-ordering.	Supplies are ordered on a regular basis although delivery can be irregular. Stock out of supplies essential for defined CHW tasks occur at a rate of x per year/mo	All necessary supplies; no substantial stock-out periods.	2

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
6 Supervision Supervision conducted on a regular basis to carry out administrative tasks and to provide individual performance support (feedback, coaching, data-driven problem-solving).	No supervision or regular evaluation occurs outside of occasional visits to CHWs by nurses or supervisors when possible (1x/year or less).	Supervision visits conducted between two and three times per year to collect reports/data (or group meetings at facility to turn in monitoring forms). No individual performance support offered on work (problem-solving, coaching)	Regular supervision visit at least every three months that includes reviewing reports, monitoring of data collected and occasionally provide problem-solving support to CHW. Supervisors are not trained in supportive supervision but are facility based health workers.	Regular supervision visit every 1-3 months that includes reviewing reports, monitoring of data collected. Data is used for problem solving and coaching. Supervisor visits community, makes home visits; provides skills coaching to CHW. Supervisor is trained in supervision and has supervision tools.	0
7 Performance Evaluation Evaluation to fairly assess work during a set period of time.	No regular evaluation of performance by CHW.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data. There are no rewards for good performance.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data (national /program evaluation). Community is not asked to provide feedback on CHW's performance. There are some rewards for good performance, such as small incentive gifts, recognition, etc.	At least once/year evaluation that includes individual performance (local evaluation) and evaluation of coverage or monitoring data (national /program evaluation) Community is asked to provide feedback on CHW performance. There are clear rewards for good performance, and community plays a role in providing rewards.	0
8 Incentives Financial= salary and bonuses Non-financial= training, recognition, certification, uniforms, medicines, etc.	No financial or non-financial incentives provided	No formal incentives provided but community recognition is considered a reward	Some financial or non-financial incentives are provided. Examples of non-financial incentives include occasional formal recognition, additional training, and other small incentives.	Financial and/or non-financial incentives are partly based on good performance. Incentives are balanced and in line with expectations placed on CHW. Examples of non-financial incentives that engage workers might include (advancement, recognition, certification process)	2
9 Community Involvement Role that community plays in supporting CHW.	Community is not involved with ongoing support to CHW	Community is sometimes involved (campaigns, education) with the CHW and some people in the community recognize the CHW as a resource.	Community plays significant role in supporting the CHW through mother's groups, networks, etc. CHW is widely recognized and appreciated for providing service to community.	Community plays an active role in all support areas for CHW, such as development of role, providing feedback, solving problems, providing incentives, helps to establish CHW as leader in community.	3

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
<p>10 Referral System Is there a process for - determining when referral is needed - logistics plan for transport/payment to a health care facility when required - how referral is tracked and documented</p>	No referral system in place: CHW might know when and where to refer client, but - no logistics plan in place by the community for emergency referral - information is not tracked or documented	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral is but have no formal referral process/logistics Referral is not tracked by community or CHW	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and usually have the means to transport client Client is referred with a slip of paper and informally tracked by CHW (checking in with family, follow up visit) but information does not flow back to CHW.	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and have a logistics plan for emergencies (transport, funds) Client is referred with a slip of paper and information flows back to CHW with a returned referral form and/or monthly monitoring.	1
<p>11 Professional Advancement The possibility for growth, advancement, promotion and retirement for CHW</p>	No professional advancement is offered.	Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. No other opportunities are discussed with CHW. Advancement is not related to performance or achievement.	Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. Limited training opportunities are offered to CHW to learn new skills to advance role. Advancement is intended to reward good performance or achievement, although evaluation is not consistent (advancement might mean path to formal sector or change in role). No path to retirement is made clear to CHWs	Advancement (promotion) is offered to CHWs who perform well and who express an interest in advancement if the opportunity exists (advancement might mean path to formal sector or change in role) Training opportunities are offered to CHW to learn new skills to advance their role and CHW is made aware of them. Advancement is intended to reward good performance or achievement, and is based on fair evaluation. Retirement is encouraged and incentives are provided to encourage retirement at a set age.	1
<p>12 Documentation, Information Management How CHWs document visits, how data flows to the health system and back to the community, and how it is used for service improvement</p>	No process for documentation or info management is followed	Some CHWs document their visits and group monitoring visits to facility are attended by CHWs who bring monitoring forms. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities work with supervisor or referral facility to use data in problem-solving at the community.	0

Table 33 - Community Health Worker Functionality Matrix – MCH Interventions

	MCH INTERVENTIONS	YES	COMMENTS
1	ANTENATAL CARE		
A	Iron folate supplements Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X X X	
B	Maternal nutrition Counsel Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	 X O O	
C	Counsel on birth preparedness/complication readiness <i>(includes counseling to use skilled birth attendant)</i>	X	
D	Tetanus toxoid Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X O X	
E	Deworm Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X X O	
2	CHILDBIRTH and IMMEDIATE NEWBORN CARE		
A	Prevent Infection/Clean Delivery (Hand washing, clean blade +/- or clean delivery kit)	X	
B	Provide Essential Newborn Care a. Immediate warming and drying b. Clean cord care c. Early initiation of breastfeeding	 O O O	
C	Recognize, initially stabilize (when possible) and refer for maternal and newborn complications a. newborn asphyxia b. sepsis, c. hypertensive disorder d. hemorrhage e. prolonged labor and post-abortion complications	 O O O O O	
D	Prevent PPH: AMTSL or use of uterotonic alone in absence of full AMTSL competency (e.g. oral Misoprostol)	O	
E	Provide special care for Low Birth Weight newborns (Kangaroo Care)	O	
3	POST-PARTUM and NEWBORN CARE		
A	Provide counseling on evidence-based maternal newborn health and nutrition behaviors a. clean cord care; b. exclusive BF through 6 months; c. thermal protection; hygiene; d. danger sign recognition; e. maternal nutrition, etc.	 O X O O O	

	MCH INTERVENTIONS	YES	COMMENTS
B	Assess for maternal newborn danger signs and provide appropriate referral.	X	
C	Provide Treatment for severe newborn infection (when community-based treatment supported by national guidelines.)	X	
4	EARLY CHILDHOOD		
A	Infant and young child feeding, IYCF: Provide counseling for immediate BF after birth; exclusive BF < 6 months; age-appropriate complementary foods	X	
B	Promote growth monitoring, weighing infants and recording progress	X	
C	Provide community based management of acute malnutrition (CMAM) using Ready to Use Therapeutic Foods (community-based recuperation of children with acute moderate to severe malnutrition without complications)	O	
D	Community-based treatment of pneumonia Counsel re recognition of danger signs, seeking care/antibiotics Assess and treat with antibiotics Refer for antibiotics Refer after treating with initial antibiotics	O O O O	
G	Community-based prevention and treatment of diarrhea Counsel on hygiene Counsel on point-of-use water treatment Provide point-of-use water treatment Refer point-of-use water treatment Counsel on ORS Provide ORS Refer for ORS Counsel on Zinc Provide Zinc Refer for Zinc	X X O O X X O O O	
H	Vitamin A supplements (twice annually children 6-59 months) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X X X	
I	Effectively assess and recognize severe illness in children (danger signs) with appropriate referral.	O	
j	Counsel on immunizations Mapping/tracking for immunization coverage Provide Immunizations: -DTP -polio and or measles - +/- HIB - Hep B -Pneumovax -Rotavirus Refer for immunizations	X O X X O O O O X	

	MCH INTERVENTIONS	YES	COMMENTS
5	FAMILY PLANNING/HEALTHY TIMING AND SPACING OF PREGNANCY		
A	Counsel on HTSP/contraceptives Provide contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - depo Refer for contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - long-acting and permanent methods Provide FP counseling +/- administer contraceptives (e.g.;Oral Contraceptives)	X O X O X O X O O X X	
6	MALARIA (Optional - Dependent Upon Country)		
A	Insecticide-treated mosquito nets to pregnant women and children Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X O O	
B	Intermittent preventive malaria treatment (IPTp) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	O O O	
C	Community-based treatment of malaria (testing with Rapid Diagnostic Test or presumptive treatment per antimalarial per national guidelines.) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X X O	
7	PMTCT (Optional - Dependent Upon Country)		
A	Healthy timing and spacing of pregnancy Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X O O	
B	Antibody testing to pregnant women and mothers Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	O O O	
C	Prophylactic ARVs/HAART to pregnant women mothers Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X O O	
E	Prophylactic ARVs/HAART to infants Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X X O	

	MCH INTERVENTIONS	YES	COMMENTS
F	Early infant diagnosis	X	
	Counsel	X	
	Provide commodity or intervention/ Assess and treat	O	
	Refer for commodity, intervention, or treatment		
G	Pregnant HIV-infected women tracking	X	
	Counsel	X	
	Provide commodity or intervention/ Assess and treat	X	
	Refer for commodity, intervention, or treatment		
H	HIV-exposed infant tracking	X	
	Counsel	X	
	Provide commodity or intervention/ Assess and treat	X	
	Refer for commodity, intervention, or treatment		

Summary

Thailand's PHC system, one of the oldest and most successful in the world, grew from a 1966 pilot program to a full-fledged program of universal health care in 1980. Supporting the concept of community involvement, the Village Health Volunteer (VHV) is the backbone of this health care delivery system. Thailand, which is at high risk of major infectious diseases, the prevalence of HIV in the country and the occurrence of H5N1 avian influenza makes it mandatory to have a strong grass root level health care integration program which connect people in the community to formal health care system. The village health volunteer program in Thailand was started in 1970 with the aim of training 1% of the population as CHW managed to train and deployed one volunteer in each village.

There are many factors that has contributed in the sustainability of the program and that includes: the perceived high value paid to these village health volunteers by the government as well as the community for their work and the way they were chosen with full consensus of community in their selection process. Furthermore, they are also been empowered by the district level and public health matters that directly affects the community. Though volunteers receive modest or no financial remuneration, they receive in-kind incentives and acknowledgement as well as social standing. It appears that membership in a nationwide network, fulfillment of their aspirations to help others, and security gained for their family members in terms of receiving health care benefits and some advantages in educating their children are enough to sustain the system. It has also been identified that many of these retired volunteers have been replaced by their own offspring or relatives which help in supporting the program.

There is convincing evidence about the impact of the VHV worker program on health indicators such as malaria control, management of Tuberculosis and HIV/AIDs and other infectious

diseases like avian H5N1 from the published studies. In addition, the decentralization of health care system in Thailand has proved the inherent sustainability of the CHW program which continues to show improvement in the health scenario of the country by consistently decreasing the burden of diseases prevalent in the country. However, the referral system needs to be further strengthened and the formal evaluation of the CHWs should also be done on a regular basis to further improve their performance. We also recommend that the funding of CHW program which at times become insufficient to run training programs be increased keeping in view the crucial role played by the VHVs in the country's preventive and curative health care system.

LATIN-AMERICAN Case-Studies

Brazil – Programa Saúde da Família
Haiti – Zanmi Lazante’s Community
Health Program

4. Brazil - Programa Saúde da Família

Socio-economic and political context

Brazil is the largest country in South America with 191.6 million inhabitants, and covering around half of the total surface area of the sub-continent. It is politically and administratively organized in 26 states, 5,561 municipalities, and the Federal District, seat of the federal government. There are five political and geographical regions: North, Northeast, Southeast, South, and Center-west.

The Brazilian constitution establishes three independent branches: legislative, executive, and judicial. Brazil has a democratic system relying on general elections for a President and for legislative representatives. Judges and other judicial officials are appointed after passing entry exams. The President is both head of state and head of government of the union and is elected for a four-year term, with the possibility of re-election for one additional term.

Brazil is an upper-middle-income country, with an average GNP of US\$ of 5,920 and an estimated 22% of the population below the national poverty line. It has made substantial advancements in poverty fighting in the last years.⁴⁹ However, several inequalities still persist, with 59 million Brazilians living on less than two dollars a day, with North and North East parts of the country concentrating the poorest segments of the population, and showing comparatively worse health, education and economic indicators that need further improvement.⁴⁹

According to the Human Development Report 2005, Brazil ranks 63rd in the classification of countries based on the human development index.⁵⁰ Life expectancy at birth is 72 years, infant mortality rate is 19 per 1,000 live births, child malnutrition prevalence is 4%, access to

improved water source is 91%, and literacy rate is 89%,⁵⁰ figures all substantially better than years ago, but still hiding huge disparities.

Health System overview

The pattern of mortality in Brazil has changed markedly over the years, with a decline in some infectious diseases and a resurgence of others, and with a sustained increase in the frequency of some non-communicable diseases, such as heart disease (most notably cerebrovascular diseases and ischemic heart diseases), diabetes, cancer, and deaths attributable to violence, particularly during the period 1996-2004.⁵¹

During the same period, childhood deaths due to diarrheal disease and acute respiratory infections have dropped substantially. Infants' deaths have seen a decrease of 34%, the largest reductions being from meningitis (86.3%), HIV infection (69.8%), and intestinal infections (65.1%). Similarly, the proportion of infant deaths due to perinatal causes increased from 57.0% in 1996 to 61.2%. In 2004, the risk that a child would die before reaching the age of 1 year was 2.23 times greater in the Northeast than in the South.⁵⁰ The states with the highest and lowest rates, respectively, were Alagoas (47.1 per 1,000 live births) and Santa Catarina (13.6 per 1,000 live births).

In 2004, the average country maternal mortality was estimated in around 76 deaths per 100,000 live births, whereas the figure was 44 deaths per 100,000 live births in the Federal District and 84 deaths per 100,000 live births in Mato Grosso do Sul. More than half (61.4%) of maternal deaths were due to direct obstetric causes, notably eclampsia and antepartum hemorrhage, and important indirect causes (such as preexisting conditions complicating pregnancy that include infectious diseases, diabetes, anemia, and cardiovascular disorders).⁵¹

It is within the above described health profile

that the Brazilian health systems exists. It basically faces the challenges of a country characterized by an epidemiological and nutritional transition, and persisting inequalities in the social determinants of health.

The health sector in Brazil comprises a complex network of services encompassing both public and private suppliers and financiers.⁵¹ The private sector includes for-profit providers and nonprofit charitable organizations. The private system of health plans and insurance covers about 24.5% of Brazilians, 44% of the privately covered population being primary beneficiaries of health plans and 56% dependents of primary beneficiaries.⁵¹ Most of the clientele of the private system reside in the cities of the Southeast and South regions. The private system underwent considerable growth during the 1990s, especially in the second half of the decade. The public health sector, to which access is universal, is the sole provider of health care coverage for 75% of the population, in addition to providing public health services for the entire population. Some of the population covered by private health plans also uses the services of the Unified Health system (Sistema Unico de Saude, SUS), especially for highly complex or costly procedures or treatments. Private contractors, including both nonprofit and for-profit entities, deliver through federal, state, and municipal government networks and SUS. The SUS includes subsystems at the level of each state (state SUS) and each municipality (municipal SUS). By law, municipalities have primary responsibility for providing health care and services to their respective populations, with technical and financial assistance from the federal government and the states. Nationally, the SUS is managed by the Ministry of Public Health, which has primary responsibility for regulatory and coordination functions and plays a major role in financing of the system. The Ministry retains direct responsibility for some areas, such as health education, research, tertiary care, and delivery

of special services, such as indigenous health care. Other parts of the federal government also provide health services directly, notably the system of university hospitals, health care facilities operated by the Ministry of Education, and the armed forces health services. The SUS carries out ongoing functions of coordination, planning, linkage, negotiation, monitoring, control, evaluation, and auditing, which are incumbent on the three levels of government.

There are three major sources of funding for the Brazilian health system: the Government (through taxes and social security contributions collected by the three spheres of government), companies, and families.⁵¹ The World Health Organization estimates that in 2004 total health spending in Brazil amounted to 7.9% of GNP.⁵² Private expenditure accounted for 51.9% of that total, and out-of-pocket spending by families accounted for nearly 64% of private expenditure. For 2006, the total health expending (public and private, all categories) was nearly 90 billion dollars, which represented about 8% of the GDP. Private spending on health includes expenditures by families and companies, the latter through the provision or purchase of insurance plans or through health plans for their employees and their dependents, such coverage being voluntary, not mandatory. In 1996, 9% of consumer spending by families was devoted to health (37% for drug purchases, 29% for payment of health plans and insurance, and 17% for dental services). Spending by the richest segment of the population represented a significant portion of total health expenditure, while spending by the poorest decile constituted only a very small fraction. According to the Periodic Family Budget Survey, the three wealthiest deciles accounted for 68% of total health spending, while the poorest 30% accounted for just 7%.⁵³ There are also qualitative differences in expenditure by the richest and poorest segments: while drugs constitute the main item of expenditure for the latter, among the highest-

income deciles, health plans accounted for an increasing proportion of spending, although in all income deciles spending on drugs accounted for a considerable proportion of total health expenditures.⁵¹ In particular, in the poorest decile, 54% of health spending went to the purchase of drugs and 6% to payment for health plans, while in the wealthiest decile 24% of spending was for drugs and 33% for health plans.⁵¹

Brief historical description of the CHW Program

The PSF was chosen as the target Program for this present country case study because it is by far the most important health care initiative in the country since several decades ago, and because it is a comprehensive health care delivery channel that emphasizes promotional and preventive health activities performed mainly by CHW, while also paying attention to health facility-based care through other health professionals. In addition, the activities of the CHW program, the predecessor of the current PSF, have spanned more than four decades now and was a valuable experience on which PSF built for accomplishing its objective of providing integral and universal health. Another reason is that the PSF implementation reached impressive expansion since its inception in 1994, and there is compelling evidence about its positive impact on several health indicators.

The main health reform in Brazil was performed since 1988 through the development of the Brazilian unified health system (Sistema Unico de Saúde, SUS). This system was conceived on the principle of health as a basic right of all citizens, and with the aim to reach universal coverage, emphasizing decentralization, equity, community participation, integration, shared financing among the different levels of government, and complementary participation of the private sector.^{54, 55} Shortly afterwards, as a concrete way to making operational this fundamental

reform, Primary Health Care was chosen by the Ministry of Health as the way to reach with quality health services the neediest segments, and eventually the whole Brazilian population, and therefore Family Health Program (Programa Saúde da Família, PSF) was launched in Brazil in 1994, in a context of active decentralization and intense mobilization of municipal health secretaries from all over the country in favor of basic care.

In the late 1980s, Brazil converted its federal public health financing system to a single national health fund. In the mid-1990s, it instituted a per capita payment for primary care services that was distributed directly to municipalities, a reform that caused vast improvement in the equity of the health care system. This capitation system was later enhanced by the PSF, through which the Federal Government transferred additional funds to the municipalities that agreed to implement a proactive primary health care model, provided resources were spent for agreed purposes and municipalities fulfilled their agreed obligations. The PSF therefore is basically implemented by the municipalities across the country, in coordination with the Ministry of Health, which has mainly a stewardship role.

The PSF targets provision of a broad range of primary health care services, delivered through a Family Health Team (Equipo de Saúde Familiar) composed by at least one family doctor, one nurse, one assistant nurse, and six community health agents or CHW,^{56, 57} although the number of CWs within each team varies at each municipality level. Some expanded teams in due places also include one dentist, one assistant dentist, one dental hygiene technician, and social work professionals.^{56, 57} Each team is in charge of a specific geographical area, working actually in the Basic Health Units and in the households themselves. The team is then responsible for enrolling and monitoring the health status of the population living in the

assigned area, providing primary care services, and making referrals to other levels of care as required. Each team is responsible for following about 3,000 to 4,000 and a maximum of 4,500 people.

The PFS started in a few municipalities, reportedly in the poorest ones, but municipality coverage expanded in a sustained way to more than ninety percent in about fifteen years, as part of an explicit effort from the central government and due to strong local initiatives. Thus it is estimated that currently PSF covers more than 85 million people across the country.

The key characteristics of the PSF include: i) to serve as an entry point into a hierarchical and regional system of health; ii) to have a definite territory and delimited population of responsibility of a specific health team, establishing liability (co-responsibility) for the health care of a certain population; iii) to intervene in the key risk factors at the community level; iv) to perform integral, permanent, and quality assistance; v) to promote education and health awareness activities; vi) to promote the organization of the community and to act as a link between different sectors, so that the community can exercise effective control of actions and health services and develop strategies for specific health interventions; and vii) to use information systems to monitor decisions and health outcomes.⁵⁸

In fact, the PSF has been conceived as a federal program, and the responsibility of its implementation rests on each municipality. For an effective implementation therefore, an adequate coordination is required between the different government levels. Ideally, the conception of the program should involve all three levels of government (municipality, state, and central government). However, and this is also a demonstration of its flexibility, there are stories of local implementation without support or interference of the state government.⁵⁸ In brief,

the PSF is a package designed by the Ministry of Health, and its implementation requires voluntary adhesion of a municipality administration, preferably with support from the state government. Officially, the responsibilities across the different spheres of government are defined in the following way:⁵⁸ a) Federal Government: elaborates the basic health goals of national policy; co-finances the system of “basic health attention;” organizes the formation of human resources in the area; proposes planning and control mechanisms, regulates and evaluates the system of “basic health attention;” and maintains a national database; b) State Government: follows the implementation and execution of the PSF; regulates the inter-municipal relationships; coordinates policies of human resources qualification in the state; co-finances the program; helps in the execution of the strategies of the system of basic health care; and c) Municipality Government: defines and implements the model of the PSF; hires the labor force for use in the program; maintains the management network of basic health units; co-finances the program; maintains the information system; and evaluates the performance of the basic health care teams under its supervision.

The PSF has built in a significant proportion on the valuable lessons from The CHW Program (Programa de **Agentes Comunitários de Saúde: PACS**) that had been active in Brazil for more than 40 years, by going beyond those activities based in health facilities, relying for this on CHW as an important part of the family health team. **Thus in the Brazilian PSF**, the cadre of CHWs is integrated into the ministry of health hierarchy, with strong links to health facilities or other health agents, but also accountable to their communities. The PACS was developed by the former Fundação SESP (Serviços Especiais de Saúde Pública) about 50 years ago, with the aim to reach poorest people, living mostly in remote and rural areas of Brazil. **In those places where there are only PACS, the situation can**

be considered as transitional through the definitive establishment of the PSF.⁵⁹

Recruitment Process (selection committee, selection criteria)

Compulsory requirements for being eligible as a CHW (profile):

- To have demonstrated leadership and solidarity spirit;
- To have 18 years old or more;
- To be literate (reading and writing); since 2004, a minimum of 8 years of schooling is required, due to a high demand for the CHW position and with the aim of increasing the quality standards;
- To be resident of his/her own community by at least 2 years;
- To have enough available time for performing the assigned activities;
- To take responsibility for the follow-up of maximum 150 families or 750 individuals of the community

The selection process:

The CHW candidates do not need to have previous health knowledge, because if selected, they will be trained and permanently supervised by his/her assigned nurse instructor/superior.

The CHWs are choiced through a public selection process with a strong presence of community members. The corresponding municipality, with support of the State Health Secretariat, conducts the process. The Municipal Health Council, as a way to guarantee transparency, accompanies this process. Candidates are assessed for their aptitude, posture, and attitudes, during simulated community problems.

The CHW Role

The CHW should be well familiarized with the community where he/she will work. His/her work starts with the household registration and a detailed information recollection, including family composition, basic facilities (such as water and sanitation), schooling, literacy, job situation and income of household members. This information will allow him/her the identification of household members needing priority attention, such as infants, children, pregnant women, malnourished, members with diseases such as hypertension, diabetes and other conditions. This household information should be updated periodically, both for feeding the Basic Care Information System and for serving as an orientation to CHWs activities. Specifically, the update of the information is made by the CHW on a yearly basis, and whenever a family arrives from another place or moves to another geographical location.

Other specific activities of CHWs include:

- Work with families of defined geographic areas
- Participate in the demographic diagnosis
- Participate in the definition of socioeconomic level of community members
- Participate in the identification of cultural and religious characteristics of families
- Determination of risk micro-areas
- Visits to risk micro-areas
- To adequate frequency of household visits whenever there are situations needing special attention
- Update the families' information sheet
- Perform surveillance of children considered at risk
- Follow-up children 0-5 years old, through measurement and registration of weight, height, growth and development monitoring
- Promote routine immunization of children and

pregnant women, encouraging their visit to health facilities

- Promote exclusive breastfeeding through educative activities
- Monitoring of diarrheal diseases and promotion of oral rehydration
- Monitoring of acute respiratory infections, identifying danger signs and asking the referral of pneumonia suspicious cases to referral health facilities.
- Monitoring of dermatoses and parasitosis in children
- Orientation of adolescents and their families in prevention of STD/AIDS, premature pregnancy and drug misuse
- Identify and orientate pregnant women on importance of prenatal care at the health facility
- Perform periodic household visits for prenatal follow-up, identifying risk signs and symptoms, orientating on feeding and mother preparation for delivery, and promoting breastfeeding
- Monitoring of newborns and mothers after delivery
- Performance of educational actions for prevention of cervix and breast cancer, encouraging period examinations at health facilities
- Performance of educational activities on family planning methods
- Perform educational activities on menopause
- Perform educational activities on family and community dietary habits
- Perform educational activities on oral and dental hygiene, with emphasis on pediatric
- group
- Perform active search of carriers of transmissible diseases
- Support epidemiologic enquiries, investigation

of outbreaks or occurrence of conditions nee

- ding compulsory notification
- Perform promotion and prevention activities for the elderly
- Identify persons with psychological or physical impairment, orientating their families for
- providing support at home
- Incentive community members for acceptance and social insertion of persons with psychological or physical impairment
- Orientate families and communities for prevention of endemic diseases
- Perform educational activities for environmental preservation
- Perform activities for increased awareness of families and communities on human rights
- Promote community participation in actions related to improved quality of life
- Perform other activities related to CHWs tasks, to be further defined during local planning
- Supervise together with families and encourage treatment compliance at home by persons with TB, leishmaniasis, AIDS, diabetes, hypertension, and other chronic diseases

Initial Training of CHWs

The central level of the MoH proposes the training curriculum as a national reference, and the Ministry of Education approves it. Then each municipality prepares its own specific training program, according to its particular epidemiological profile, social and economic context. Initial CHWs training consists of an 8-week residential course, with an additional 4 weeks of strictly supervised fieldwork. However, training is a gradual and continuous process that is adapted according to needs emerging during the daily work. Nurses at the nearest public clinic provide training, with the assistance of staff from the

State Health Secretariat based in the capital. The whole Family Health Team also participates in the training process.

Initially, CHWs receive orientation for home visits and family census, including information on cultural background of communities, socioeconomic conditions of the work area, and communication techniques.

Then they are trained in specific themes on how to follow and orientate the group of women and children, considered a priority target for health care, with emphasis on identification and prevention of risk situations.

Gradually, the training is extended according to the array of problems of the community: fight of endemic conditions, elderly care, adolescents, attention of groups with special needs, importance of basic sanitation, amongst others.

On-going Training of CHWs

After the initial 12-week period, ongoing education is provided during local monthly and quarterly meetings. This training is oriented toward local concerns of the agents or clinical family health team. Standardized training is provided whenever new practices are instituted, such as care for acute respiratory infections or procedures for reporting causes of deaths.

Training of Trainers

Training of trainers (nurses) consists of a basic training module of 80 hours. Trainers can also perform a further specialization program of 540 h, offered at the municipality level and at state level through the Technical Schools. This extended course has a semi-presential modality. Nurses fulfilling this specialization requirements course receive a title of Specialist in Professional Health Education, which has national level recognition. This specialization program is cen-

trally coordinated and funded by the Ministry of Health, and the technical arm is the Fundacao Oswaldo Cruz, in Rio de Janeiro. Teachers are senior nurses who already have the experience of having been nurses of the PSF. There are currently more than 3,100 senior nurses at national level. Basic content of training of trainers courses include themes as health and education context, health and work, and the understanding of social determinants of health. The feasibility of establishing a MA in Professional Health Education is being currently considered, as a step forward that should strength the profile of health professionals of the PSF.

Finally, a year ago it was established UNASUS, a national level strategy that brings together academic institutions and health services, with the aim to establish and consolidate a critical mass of Family Health Specialists through an ad-hoc training process of health professionals, with an initial emphasis on members of the PSF. This initiative, thought to work as an open university, is offering about 52,000 positions for applicants to the specialization course.

Equipment and supplies

Basic equipment and supplies:

- A distinctive dress and ID badge
- A Clipboard
- A format of Basic Care Information System
- Bicycle, canoe or ship, if the CHW needs to reach remote places
- Scale for weighing children at home
- Chronometer to verify respiratory rate
- Thermometer
- Tape measure -Educational material

Supervision

Periodically, the instructor/supervisor (a nurse) brings together the CHWs, to evaluate their work and to reorient their activities. Alternatively, as for example, in Ceara, a nurse-supervisor visits

each agent under her charge at least once a month to review problem cases and collect services data. In addition, one of the nine staff members of the agent program at the central office meets with each municipal supervisor every 2 to 4 months.

Each nurse of the PSF generally spends half of her time supervising an average of 30 CHWs, doing bookkeeping, distributing supplies, and compiling data for the health agents program. During the other half of her time she staffs a clinic.⁶⁰ However, where there are many agents, the nurses increasingly work full-time as supervisors.

As part of the evaluation process of CHWs, a working group must be established, composed by representatives of partners in charge of CHWs enrollment (the municipality and civil society organizations), in order to follow-up and guarantee the accomplishment of the goals established in the contract.

During the evaluation process of performance of CHWs in relation to goals and activities defined, the following criteria are considered for each micro-area:

- Proportion of families enrolled in each micro-area: 100%
- Mean monthly number of domiciliary visits performed by CHW to each family enrolled in the micro-area: 1
- Systematic update of family enrollment in the micro-area: 100%
- Follow-up of children 0-5 years old resident in micro-areas: 100%
- Proportion of children younger than 2 years weighed: 100%
- Proportion of children younger than 1 year old with updated immunization: 100%

Monthly follow-up of diagnosed pregnant women resident in micro-areas: 100%

- Monthly follow-up of diagnosed hypertensive patients resident in micro-areas: 100%
- Monthly follow-up of diagnosed diabetic patients resident in micro-areas: 100%
- Monthly follow-up of diagnosed TB patients resident in micro-areas: 100%
- Monthly follow-up of diagnosed leprosy patients resident in micro-areas: 100%
- Proportion of children younger than 4 months old with exclusive breastfeeding: increasing trend
- Proportion of deaths in children younger than 1 year old: decreasing trend
- Proportion of deaths due to diarrhoea in children younger than 1 year old: decreasing trend
- Proportion of deaths due to respiratory infections in children younger than 1 year old: decreasing trend
- Number of deaths in children younger than 1 year old: 0
- Accomplishment of CHW requirements and attributions: 100%

Performance Evaluation of the PSF

Various external evaluation efforts of PSF have been published. One of them resorted to an ecological design, using longitudinal secondary data sources.⁶¹ It documented coverage of PSF from 1990 to 2002 and variation of infant mortality during the same time period, and then explored possible association between coverage of PSF and infant mortality, controlling for contextual factors, including state level measures of access to clean water and sanitation, average income, women's literacy and fertility, physicians and nurses per 10 000 population, and hospital beds per

1000 population. Additional analyses controlled for immunization coverage and tested interactions between PSF and proportionate mortality from diarrhea and acute respiratory infections. According to this report, from 1990 to 2002 IMR declined from 49.7 to 28.9 per 1000 live births. During the same period average Family Health Program coverage increased from 0% to 36%. A 10% increase in PSF coverage was associated with a 4.5% decrease in IMR, controlling for all other health determinants. The authors concluded that the PSF is associated with reduced IMR, suggesting it is an important, although not unique, contributor to declining infant mortality in Brazil.

A more recent study analyzed the direct and indirect impacts of Brazil's Family Health Program at country level and in different regions of Brazil, by crossing municipality level data with the Brazilian National Household Survey from 1995 through 2003, and controlling also for contextual factors such as presence of other public health policies, education infrastructure, and immunizations in each assessed municipality.⁶² The authors also explored other possible sources of variation in the effects of the program, such as initial level of mortality and geographic region. The main sources of variation used to identify the effects of the program included different timing of adoption across municipalities and different time of exposure.

Direct impacts were related to the effects of the program on health outcomes. Indirect impacts refer to the effects of the program, through changes in health, on household behavior related to child labor and schooling, employment of adults, and fertility. In the analysis of the health impacts of the program, the unit of observation is a municipality at a point in time. In the analysis of the impacts of the program on individual behavior, the unit of observation is an individual within a municipality at a point in time. The study found consistent effects of the program

on reductions in mortality throughout the age distribution, but mainly at earlier ages. It furthermore found that municipalities in the poorest regions of the country benefit particularly from the program. For these regions, implementation of the program is also robustly associated with increased labor supply of adults, reduced fertility, and increased schooling.

As for the direct impacts, the results of the study showed that implementation of the PSF was significantly associated with reductions in mortality before age 1, between ages 1 and 4, and between ages 15 and 59. Particularly, municipalities eight years into the program are estimated to experience a reduction of 5.4 per 1,000 in mortality before age 1, as compared to municipalities not covered by the program. The estimated impacts are driven mostly by reductions in mortality due to perinatal period conditions, infectious diseases, endocrine and metabolic diseases, and respiratory diseases.⁶²

In relation to changes in behavior that may be determined from improvements in health, the analysis concentrates on the two poorest regions of the country.⁶² The study found that eight years of exposure to the program are associated with a 6.8 percentage point increase in the labor supply of adults between 18 and 55, a 4.5 percentage point increase in the school enrollment of children between 10 and 17, and a 4.6 percentage point reduction in the probability that women aged between 18 and 55 experience a birth over a given 21 month interval.⁶²

The PSF seems to be most effective in the North and Northeast regions of Brazil, and also in municipalities with a higher fraction of rural population, and lower coverage of public health infrastructure (access to treated water and sewerage system).⁶² For example, a municipality eight years into the program is estimated to experience a reduction in infant mortality of

15 per 1,000 in the North and 14 per 1,000 in the Northeast, as compared to the 1993 national average of 27 for this variable.

On the other hand, the yearly cost of maintaining a PSF team has been estimated to be between US\$ 109,610 and US\$ 173,400 in 2000. On the assumption that each team coverage capacity reaches about 3500 individuals, this would correspond to a yearly cost between US\$ 31 and US\$ 50 per individual covered.⁵⁸ The authors concluded that the evidence suggests that the Family Health Program is a highly cost-

effective tool for improving health in poor areas, although a formal cost-effectiveness study was not performed.

Incentives

In Brazil, the CHWs are considered sui generis employees of the ministry of health, selected with an active participation of the community, paid by the public sector, and accountable both to their communities and to the public sector. They are in charge of actively making the surveillance of the whole social, economic and

Table 34 - Performance evaluation of CHWs

Program coverage (%)	>90% of Brazilian municipalities, and more than 85 million people (Ref: 15), or about half of Brazilian population.
Preventive and promotive service delivery	Vaccination promotion coverage (%): 100 % of children under five in the assigned area of each CHW Contraceptive usage: there is not a specific goal of the PSF for CHWs for this particular aspect.
Curative service delivery	% of all CHW seen and referred emergency case in previous three months : 100%
Support system for CHWs and their performance	Recruitment: approximate proportion that meet program selection criteria: variable from municipality to municipality Training: 100 % CHWs received introductory training Supplies and equipment: provided regularly. No stock problems Salaries: all CHWs receive regularly their salaries Supervision: 100 % CHWs attend monthly a supervisory meeting.
CHW services and the poor	Approximate overall poor coverage of the program: (%): hard to estimate. Although initially focused on poorest regions of the country, the PSF is currently aimed at reaching all the Brazilian population. With 30,000 Family Health Teams active across the country, it currently covers half of the Brazilian population.
CHW impact on health	Indicators of population served compared with national figures? Difficult to ascertain. The average current coverage is more than 95% of country municipalities, but this hides great disparities from municipality to municipality (there are still municipalities with less than 10% coverage)
CHW costs – current and future	Actual level of funding is increasing compared with the originally planned budget, but is not enough due to the magnitude of expansion of the PSF.

social situation of families, and of serving as a link between the community and the health system. As health professionals, whose role in the PSF is so important, CHWs receive a financial incentive, earning the official national minimum wage, which is about US\$ 112 per month. This is about twice the average local monthly income for rural workers, but the specific amount varies in fact from municipality to municipality, through negotiations between CHWs associations and municipalities. The Ministry of Health pays them, but there is a co-financing between federal government, state, and municipal government levels. Importantly, selection and participation of the state government in salary payment prevents local politicians from manipulating the program. Central funding has also been key to the local leaders' accepting the program, which employs 30–150 local residents per municipality.

A unique operational aspect of the both the PACS and PSF is the way they have been introduced into new municipalities. In the PACS the state government would pay the CHWs' salaries only if the municipal government agreed to provide a salary for a nurse supervisor, contributing thus to the assembly of the Family Health Team, and avoiding to promote isolated activities of CHWs. Similarly, in the PSF a municipality must apply to the federal government and agree to partial financial responsibility for the program. This scheme ensures local commitment before the government initiates the program in that area. The program generally employs 30 to 150 local residents per municipality as CHWs. They are paid out of central state funds, making the program attractive to local leaders.

Community Involvement

A key challenge for assuring the sustainability of CHW programs lies in institutionalizing and mainstreaming community participation. The PSF, which is part of a large-scale political trans-

formation, has been able to integrate CHWs into its primary health care services and has institutionalized Community Health Committees as part of the municipal health services to sustain social participation, meaning that community participation does not become an alternative but an integral part of the state's responsibility for health care delivery. With decentralization, municipalities are now responsible for delivery of health services at primary level. Municipalities are also in charge of actively ensuring the existence of Community Health Committees, incorporating in this way the voice of community members. Public service regulations regarding the national advertising of civil service posts have been amended to ensure that health agents come from and serve their own communities. Moreover, one of the key characteristics of the PSF is that it is explicitly committed to promote the organization of the community and to act as a link between different sectors, so that the community can exercise effective control of actions and health services and develop strategies for specific health interventions.

Referral System

The CHW performs a monthly visit to each family in his/her catchment area, and on a daily basis whenever he/she finds a member at risk or sick. In this last case, he/she immediately reports the finding to the nurse auxiliary or to the nurse of the family health team, for further evaluation. Depending on the severity of the case, a referral to the nearest health facility may be formally made, with the CHW accompanying the patient and permanently maintaining the contact with the family. Once the patient is discharged, the CHW continues the follow-up until the resolution of the problem, maintaining the link between the health system and the family and the community. The CHW keeps a written record of each family at risk and of those patients referred for further assessment and treatment. Such a written record is monthly presented by the CHW to

the family health team. By interacting on a systematic basis with the same families, through a close supervision by a nurse, and in coordination with the Family Health Team, CHWs are able to detect early symptoms that may require a more specific type of care, but they are also instrumental in increasing the accountability of the health system to the community, and also in empowerment building and maintenance of the community with regards to the health as a right. The network of PSF professionals, once established in a certain area, can be used to implement any type of health intervention that demands some degree of coordination across large areas or different agents (immunizations, campaigns against endemic conditions, etc).

Professional Advancement

The CHW is a unique professional, who is aimed at working only for the PSF. Therefore, there are no mechanisms for promoting them to nurse auxiliaries or nurses, or other health specialist titles. Of course each individual CHW is free to pursue any professional development path, and most frequently, the previous training and experience gained is an asset that allows him/her to achieve his/her expectations. Although there is an official referential national minimum wage for CHWs, they are organized locally, and nationally, and are therefore empowered for negotiating with national and local authorities the range of salaries at each local setting. In addition, there are performance-based financial incentives for the family health team at some municipalities. The issue of professional advancement has been largely discussed, and the decision of not promoting it as a program is based on the fundamental philosophy of PSF of building a strong family health team with empowered, motivated and passionate CHWs, committed not only to the health of the community to which they belong, but also and more generally, contributing to the development of citizenship and of human and social capital. Champions and implementers of

the PSF think that encouraging the systematic promotion of CHWs by the PSF would risk them becoming employees of the public sector, without real incentives for working with a genuine interest in their communities, and thus it would jeopardize the very basic tenets of PSF. This trade-off between the programmatic needs of the PSF and the legitimate aspirations of CHWs for professional development is an important challenge that needs to be faced adequately.

Documentation and Information Management

The PSF maintains an information system aimed at monitoring decisions and health outcomes. Data related to implementation of the program at the municipality level are available from the Brazilian Ministry of Health, through its Basic Attention Department (“Departamento de Atenção Básica”). These data provide the date of implementation in each municipality (starting from 1996). The Family Health Team, including the CHW, is required to systematically collect and report geographical, demographic, and health information on the assigned families, and also to use such information for monitoring their own activities and performance, so as to make the adjustment decisions deemed pertinent.

However, there are remaining challenges. Currently the information systems at health facilities that are part of the PSF have Internet access, and allow access to data integrated to a unified database of the Ministry of Health. There are available indicators on the health team activities and on management. The under-registration has decreased in the last years, but there is still resistance of health workers to use the information systems, as they are perceived as being basically related to management and financing support systems, and not related to clinical activities. There are ongoing efforts at municipality level for developing software that should allow registration of data useful for both

managing and evaluation of clinical activities,
including the development of a digital clinical
record.

Table 35 - CHW Program Functionality Assessment Tool (CHW-PFA) -Brazil

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
1 Recruitment How and from where a community health worker is identified, selected, and assigned to a community.	CHW not from community and plays no role in the recruitment.	CHW is not recruited from community but the community (reluctantly) accepts the identified CHW after selection.	CHW is not recruited from community but the community is consulted on the final selection.	Recruited from community when possible. If not possible, the community is consulted during the process and agrees on recruitment selection.	3
2 CHW Role Alignment, design and clarity of role from community, CHW, and health system perspectives.	Role is not clear or agreed upon between CHW, community and formal health system.	No formal role of CHW exists (no policies in place) General expectations are given to CHW (initial training) but are not specific. CHW and community do not always agree on role/expectations.	Health system defines (policies exist) the CHW role but without community input. Role is clear to CHW and community but little discussion of specific expectations. General agreement on role between CHW, health system, and community.	Health system, community, and CHW design the role/expectations and policies in place that support CHW role. Role and expectations are clear to CHW and community. Process for update and discussion of role/expectations in place for CHW and community	2 Although significant progress has been made along the years in defining the role of CHW, this is still a challenge needing further improvement
3 Initial Training Training provided to CHW to prepare for role in MCH services delivery and ensure he/she has the necessary skills to provide safe and quality care.	No initial training is provided.	Minimal initial training is provided (1 workshop, etc). Some CHWs attend workshops on specific topics.	Initial training is provided to all CHWs within the first year of recruitment. Training does not include participation from community or from referral health center.	Initial training is provided to all CHWs within the six months that is based on defined expectations for CHW. Some training is conducted in the community or with community participation. Training is consistent with health facility guidelines for community care and health facility is involved in training.	3
4 On-going Training On-going training to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned.	No ongoing training is provided	Occasional, ad hoc visits by supervisors provide some coaching.	On-going training is provided on a regular basis. Some supervisors follow up with coaching. Note: Functional CHWs have been trained (or updated) within the last 18 months.	On-going training is provided to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned. Training is tracked and opportunities are offered in a consistent and fair manner to all CHWs (not only some)	3
5 Equipment and Supplies Required equipment and supplies to deliver expected services.	No equipment and supplies are provided.	Inconsistent supply and restocking to support defined CHW tasks. No formal process for re-ordering.	Supplies are ordered on a regular basis although delivery can be irregular. Stock out of supplies essential for defined CHW tasks occur at a rate of x per year/mo	All necessary supplies; no substantial stock-out periods.	3

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
6 Supervision Supervision conducted on a regular basis to carry out administrative tasks and to provide individual performance support (feedback, coaching, data-driven problem-solving).	No supervision or regular evaluation occurs outside of occasional visits to CHWs by nurses or supervisors when possible (1x/year or less).	Supervision visits conducted between two and three times per year to collect reports/data (or group meetings at facility to turn in monitoring forms). No individual performance support offered on work (problem-solving, coaching)	Regular supervision visit at least every three months that includes reviewing reports, monitoring of data collected and occasionally provide problem-solving support to CHW. Supervisors are not trained in supportive supervision but are facility based health workers.	Regular supervision visit every 1-3 months that includes reviewing reports, monitoring of data collected. Data is used for problem solving and coaching. Supervisor visits community, makes home visits; provides skills coaching to CHW. Supervisor is trained in supervision and has supervision tools.	3
7 Performance Evaluation Evaluation to fairly assess work during a set period of time.	No regular evaluation of performance by CHW.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data. There are no rewards for good performance.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data (national /program evaluation). Community is not asked to provide feedback on CHW's performance. There are some rewards for good performance, such as small incentive gifts, recognition, etc.	At least once/year evaluation that includes individual performance (local evaluation) and evaluation of coverage or monitoring data (national /program evaluation) Community is asked to provide feedback on CHW performance. There are clear rewards for good performance, and community plays a role in providing rewards.	3
8 Incentives Financial= salary and bonuses Non-financial= training, recognition, certification, uniforms, medicines, etc.	No financial or non-financial incentives provided	No formal incentives provided but community recognition is considered a reward	Some financial or non-financial incentives are provided. Examples of non-financial incentives include occasional formal recognition, additional training, and other small incentives.	Financial and/or non-financial incentives are partly based on good performance. Incentives are balanced and in line with expectations placed on CHW. Examples of non-financial incentives that engage workers might include (advancement, recognition, certification process)	3 With progressive empowerment of CHWs associations, they are now in a better position to ask for better salaries
9 Community Involvement Role that community plays in supporting CHW.	Community is not involved with ongoing support to CHW	Community is sometimes involved (campaigns, education) with the CHW and some people in the community recognize the CHW as a resource.	Community plays significant role in supporting the CHW through mother's groups, networks, etc. CHW is widely recognized and appreciated for providing service to community.	Community plays an active role in all support areas for CHW, such as development of role, providing feedback, solving problems, providing incentives, helps to establish CHW as leader in community.	3

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
10 Referral System Is there a process for - determining when referral is needed - logistics plan for transport/payment to a health care facility when required - how referral is tracked and documented	No referral system in place: CHW might know when and where to refer client, but - no logistics plan in place by the community for emergency referral - information is not tracked or documented	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral is but have no formal referral process/logistics Referral is not tracked by community or CHW	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and usually have the means to transport client Client is referred with a slip of paper and informally tracked by CHW (checking in with family, follow up visit) but information does not flow back to CHW.	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and have a logistics plan for emergencies (transport, funds) Client is referred with a slip of paper and information flows back to CHW with a returned referral form and/or monthly monitoring.	3
11 Professional Advancement The possibility for growth, advancement, promotion and retirement for CHW	No professional advancement is offered.	Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. No other opportunities are discussed with CHW. Advancement is not related to performance or achievement.	Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. Limited training opportunities are offered to CHW to learn new skills to advance role. Advancement is intended to reward good performance or achievement, although evaluation is not consistent (advancement might mean path to formal sector or change in role). No path to retirement is made clear to CHWs	Advancement (promotion) is offered to CHWs who perform well and who express an interest in advancement if the opportunity exists (advancement might mean path to formal sector or change in role) Training opportunities are offered to CHW to learn new skills to advance their role and CHW is made aware of them. Advancement is intended to reward good performance or achievement, and is based on fair evaluation. Retirement is encouraged and incentives are provided to encourage retirement at a set age.	2 As explained above, this particular type of professional advancement is not promoted by the PSF as a program, for the explained fundamental reasons
12 Documentation, Information Management How CHWs document visits, how data flows to the health system and back to the community, and how it is used for service improvement	No process for documentation or info management is followed	Some CHWs document their visits and group monitoring visits to facility are attended by CHWs who bring monitoring forms. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities work with supervisor or referral facility to use data in problem-solving at the community.	3

Table 36 - Community Health Worker Functionality Matrix – MCH Interventions

	MCH INTERVENTIONS	YES	COMMENTS
1	ANTENATAL CARE		
A	Iron folate supplements Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X O X	
B	Maternal nutrition Counsel Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	 X O X	Provides counsel and refers if he/she identifies a nutrition problem or risk
C	Counsel on birth preparedness/complication readiness <i>(includes counseling to use skilled birth attendant)</i>	X	
D	Tetanus toxoid Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X O X	
E	Deworm Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X O X	
2	CHILDBIRTH and IMMEDIATE NEWBORN CARE		
A	Prevent Infection/Clean Delivery (Hand washing, clean blade +/-or clean delivery kit)	O	CHW provides counseling and education on prenatal care, safe delivery and need of immediate newborn care at a health facility, but does not provide any care intervention
B	Provide Essential Newborn Care a. Immediate warming and drying b. Clean cord care c. Early initiation of breastfeeding	 O O O	CHW provides counseling and education on prenatal care, safe delivery and need of immediate newborn care at a health facility, but does not provide any care intervention
C	Recognize, initially stabilize (when possible) and refer for maternal and newborn complications a. newborn asphyxia b. sepsis, c. hypertensive disorder d. hemorrhage e. prolonged labor and post-abortion complications	 O O O O O	CHW provides counseling and education on prenatal care, safe delivery and need of immediate newborn care at a health facility, but does not provide any care intervention
D	Prevent PPH: AMTSL or use of uterotonic alone in absence of full AMTSL competency (e.g. oral Misoprostol)	O	CHW provides counseling and education on prenatal care, safe delivery and need of immediate newborn care at a health facility, but does not provide any care intervention
E	Provide special care for Low Birth Weight newborns (Kangaroo Care)	O	CHW provides counseling and education on prenatal care, safe delivery and need of immediate newborn care at a health facility, but does not provide any care intervention
3	POST-PARTUM and NEWBORN CARE		
A	Provide counseling on evidence-based maternal newborn health and nutrition behaviors a. clean cord care; b. exclusive BF through 6 months; c. thermal protection; hygiene;	 X X X	

	MCH INTERVENTIONS	YES	COMMENTS
	d. danger sign recognition;	X	
	e. maternal nutrition, etc.	X	
B	Assess for maternal newborn danger signs and provide appropriate referral.	X	
C	Provide Treatment for severe newborn infection (when community-based treatment supported by national guidelines.)	O	
4	EARLY CHILDHOOD		
A	Infant and young child feeding, IYCF: Provide counseling for immediate BF after birth; exclusive BF < 6 months; age-appropriate complementary foods	X	
B	Promote growth monitoring, weighing infants and recording progress	X	
C	Provide community based management of acute malnutrition (CMAM) using Ready to Use Therapeutic Foods (community-based recuperation of children with acute moderate to severe malnutrition without complications)	O	
D	Community-based treatment of pneumonia Counsel re recognition of danger signs, seeking care/ antibiotics Assess and treat with antibiotics	X O X O	
G	Refer for antibiotics Refer after treating with initial antibiotics Community-based prevention and treatment of diarrhea Counsel on hygiene Counsel on point-of-use water treatment Provide point-of-use water treatment Refer point-of-use water treatment Counsel on ORS Provide ORS Refer for ORS Counsel on Zinc Provide Zinc Refer for Zinc	X X O X X O X X O X	
H	Vitamin A supplements (twice annually children 6-59 months) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X O X	
I	Effectively assess and recognize severe illness in children (danger signs) with appropriate referral.	X	Although the CHW is not expected to make a specific classification or diagnosis, he/she should recognize danger signs and make the corresponding referral
j	Counsel on immunizations Mapping/tracking for immunization coverage Provide Immunizations: -DTP -polio and or measles	O X O O	

	MCH INTERVENTIONS	YES	COMMENTS
	- +/- HIB - Hep B -Pneumovax -Rotavirus Refer for immunizations	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	
5	FAMILY PLANNING/HEALTHY TIMING AND SPACING OF PREGNANCY		
A	Counsel on HTSP/contraceptives Provide contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - depo Refer for contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - long-acting and permanent methods Provide FP counseling +/- administer contraceptives (e.g.;Oral Contraceptives)	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
6	MALARIA (Optional - Dependent Upon Country)		
A	Insecticide-treated mosquito nets to pregnant women and children Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	
B	Intermittent preventive malaria treatment (IPTp) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	
C	Community-based treatment of malaria (testing with Rapid Diagnostic Test or presumptive treatment per antimalarial per national guidelines.) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	
7	PMTCT (Optional - Dependent Upon Country)		
A	Healthy timing and spacing of pregnancy Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	
B	Antibody testing to pregnant women and mothers Counsel Provide commodity or intervention/ Assess and treat	<input checked="" type="radio"/> <input type="radio"/> <input checked="" type="radio"/>	
C	Refer for commodity, intervention, or treatment Prophylactic ARVs/HAART to pregnant women mothers Counsel	<input type="radio"/> <input checked="" type="radio"/> <input type="radio"/>	

	INTERVENTIONS	YES	COMMENTS
	Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X	
E	Prophylactic ARVs/HAART to infants Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X O X	
F	Early infant diagnosis Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X O X	
G	Pregnant HIV-infected women tracking Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X O X	
H	HIV-exposed infant tracking Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X O X	

Summary

Brazil has experimented significant social, economic and health changes in the last years, with substantial reductions in country average poverty, improvements in life expectancy at birth, and reductions in several health indicators. Important inequities persist, however, which need to be addressed if the gains are to be sustained. In 1988 the Brazilian government launched the Unified Health System (Sistema Único de Saúde), with the declared aim to provide universal health services to Brazilians, emphasizing decentralization, equity, community participation, integration, shared financing among the different levels of government, and complementary participation. Primary Health Care was considered to be key tool in achieving the goal of universal access to health care, and it was made operational through the implementation of the Family Health Program (Programa Saúde da Família, PSF) in 1994. The PSF was conceived as an integral approach to community health needs, with a particular emphasis on promotional and preventive activities and with an equity lens, prioritizing first the poorest regions of the country. The initiative and commitment of municipalities for taking responsibility of local implementation of PSF across the country allowed an impressive expansion of the program, from a few municipalities covered in 1994, to more than 95% of all municipalities with PSF in place currently, although this figure hides great disparities, as there are still municipalities with less than 10% of PSF coverage.

The PSF has been implemented as an initiative aimed to provide a broad range of primary health care services, delivered through a Family Health Team (Equipo de Saúde Familiar), composed by at least one family doctor, one nurse, one assistant nurse, and a variable number of community health agents or CHW in each municipality. Some expanded teams also include one dentist, one assistant dentist, one dental hygiene technician, and social work professionals. Each team is in charge of a specific geogra-

phical area, performing their activities actually in the basic health units and in the households themselves. The team is specifically responsible for enrolling and monitoring the health status of the population living in the assigned area, providing primary health care services, and making referrals to other levels of care as required. Each team is responsible for following about 3,000 to 4,000 and a maximum of 4,500 people.

The CHWs receive a training that privileges the determination and understanding of social, economic and environmental characteristics of the community, as well as the epidemiological profile. They also receive training on promotional and preventive aspects of health, so they are in a good position for providing influential council to community members, for identifying timely family members at risk or with health problems and refer them to the family health team for further assessment and management, if deemed pertinent. The CHWs follow-up closely those families at risk and those with a sick member, providing support, counseling, supervising and encouraging treatment compliance, whenever needed. The role of the CHWs within the Family Health Team is seemingly critical, as they are community members carefully selected with participation of community members, the municipality, and the Ministry of Health. The participation of the CHWs in the team facilitates an integral approach to health, with an increased understanding of social determinants, linking more closely the whole Family Health Team to an empowered community demanding for more and better health, but also taking responsibility for adopting healthy life styles.

The PSF started in 1994 in a few pilot municipalities and then has reached an impressive expansion, having currently about 30,000 family health teams and more than 240,000 CHWs that cover half of the country, whereas the other half is still basically covered through the traditional health facility-centered model. Although the

PSF initially prioritized the poorest regions of the country, it is not to be conceived as an intervention for poor people, but as an innovative integral promotional and preventive health model aimed at covering the entire Brazilian population instead. There is compelling evidence on PSF impact on health indicators such as infant, child mortality and maternal health, as well as on behavioral indirect household outcomes including increased child schooling, reduction of female fertility rate and improved adult labor enrolment. These improvements can be attributed in a substantial proportion to a wide country level implementation to PSF, although other health and crosscutting interventions have also surely played an important role. Remaining challenges for sustaining and further increasing this implementation at scale of PSF and for improving quality are huge, however, including among others a still “medicalized” narrow and vertical training of CHWs and other members of the family health team, with a still relatively weak emphasis on social determinants of health and on health understood as a fundamental right to be demanded by empowered communities and provided by the government, a continued resistance of powerful health professional corporations to the PSF innovative approach, difficulties in enrolling capable and committed family doctors, nurses, CHWs and other health professionals, and trade-offs between managerial objectives of keeping solid family health teams with minimal leakages and legitimate expectations of CHWs for further professional development. There are also several local difficulties that need to be openly, honestly and effectively discussed and addressed to assure the sustainability of the program.

The PSF is undoubtedly a global lesson whose basic underlying principles can and should be adopted in different settings, irrespective of the political and economic country level prevailing systems, on the basic condition of considering health as a basic human right to be provided

by a public sector minimally able to address the community needs.

5. Haiti - Zanmi Lazanté's Community Health Program

Socio-economic and political context

Haiti is one of the poorest countries in the world and reportedly the poorest country in the Western hemisphere,⁶³ and it has suffered several decades of social unrest and political instability. Despite several efforts made, vast segments of the population remain poor and this situation has even worsened, as well as inequalities in access to basic services such as health and education. Due to this gloomy situation, the United Nations placed a special peace keeping force (MINUSTAH) in the country in 2004, and they are still in place now. Security has improved since then, although crime and violence continue undermining Haiti's development.⁶³

Haiti is a mountainous country. It has about 9.6 million inhabitants, 5 million of whom live in rural areas.⁶⁴ Some social indicators are among the weakest in the world in Haiti,^{63, 65, 66} including a GNI per capita of only US\$560, life expectancy at birth of 60 years, infant mortality rate of 60 for every 1,000 live births, 2.2 percent of HIV prevalence among the population (aged 15-49), and literacy rate of 43 percent. Haiti ranks 146th out of 177 countries on the United Nations Human Development Index, and 54 percent of Haitians live on less than US\$1 a day and 78 percent on less than US\$2 a day.

The country has been hit very recently by soaring world prices for food and fuel, followed by natural disasters such as tropical storms and hurricanes since August 2008, which took the lives of several hundred people and left about a tenth of the total population needing humanitarian assistance.⁶³

Haiti has witnessed recently three successive years of economic growth since 2004, when the economy contracted by 3.5 percent, and is still set to post modest growth for the country's 2008 fiscal year. However, growth estimates for fiscal year 2009 and beyond are being revised downwards to reflect the impact of the recent natural disasters.⁶³

According to a recent World Bank country brief, Haiti requires continued strong support from its international partners for relief, recovery, and rebuilding, and to safeguard the considerable progress made since 2004.⁶³ This country brief states that Haiti has improved economic and social stability, democratically elected a president and parliament and launched wide-ranging reforms, particularly in the area of economic governance, notably in budget formulation, execution and reporting.⁶³

Although there is currently an apparent stability, the political situation is always volatile, and rapid changes in leadership affect governance, continuity of policy-making and progress in all sectors. Haiti still struggles with major political, economic and social challenges. An always-weak leadership and governance jeopardizes presence of state across the country and provision of even basic services, which are in a significant extent in the hands of civil society organizations. As a dramatic illustration, barely 55.2 percent of the Haitian population has access to an improved water source, while almost 70 percent does not have direct access to potable water. Water supply is intermittent in virtually all urban areas, whereas in rural areas access to water becomes a real prowess during the dry season. Moreover, only 27 percent of the country has access to basic sewerage, and 70 percent of households in Haiti have either rudimentary toilets (34.9 percent) or none at all (34.7 percent). It is not difficult therefore to imagine that fecal contamination of the water supply is a leading cause of disease in Haiti.

Health systems overview

The Haitian health system includes the public sector (Ministry of Public Health and Population and Ministry of Social Affairs); the private for-profit sector (all health professionals in private practice); the mixed nonprofit sector (Ministry of Health personnel working in private institutions (NGOs) or religious organizations); the private nonprofit sector (NGOs, foundations, associations); and the traditional health system.⁶⁵

A number of central bureaus execute the health programs (except AIDS and tuberculosis, directly under the Office of the Director General). There are also 10 directorates (one for each department and for the Nippes Coordination), under which come the UCSs. Due to the country's political problems, there has been no recent progress in health legislation. The Ministry of Health coordinates all health system institutions. This sector has been unable to assume its leadership role in the recent past, as the economic embargo directed resources toward the nonprofit sector. The health services reach 60% of the population.

In 2000, after irregularities in legislative elections were reported, the US and European Union imposed an economic embargo and more than US\$ 500 million of blocked loans were earmarked for health, education, water and roads.⁶⁶ During the following five-years period, the only aid coming from these regions for health was channeled through non-governmental organizations, further weakening the already crippled health system in Haiti.⁶⁶ Thus it is not surprising that the Haitian government spends less than US\$2 dollars per capita on health per annum. Moreover, less than 40% of health expenditures occur in the public sector,⁶⁷ and the remaining 60% of health expenditures occur in the private sector, including both the for-profit and not-for-profit health sectors.⁶⁷ Notably, of the private sector spending, 70% is out-of-pocket expenditure, which is a tremendous barrier to healthcare in one the most impoverished countries of the world.

According to a recent PAHO report, there are only 371 health posts, 217 health centers and 49 hospitals in Haiti.⁶⁸ It is estimated that 40 % of the population relies on traditional medicine, mostly in rural areas.

Haiti lacks evidently the minimal financial, infrastructural, and human resources to deliver basic preventative health and medical services to its citizens.⁶⁹ It has only 25 doctors, 11 nurses, and one dentist per 100,000 people, a paltry figure when compared even with the least developed countries in Latin America.

Community Health Workers Programs in Haiti

The role of CHW is critical in a country like Haiti, with a weak public sector unable to provide the necessary amount of capable and motivated health workers to vast segments of the population, particularly to rural areas such as central Haiti. Not surprisingly, as an alternative to the failing public health system in the country, non-governmental organizations that cover a substantial proportion of health care provision have resorted to CHWs, in the attempt to compensate the deficiencies of the formal system.

A review of the National Health System Reform Strategic Plan 2005-2010 from the Ministry of Health and Population (Plan Stratégique National pour la Réforme du Secteur de la Santé 2005-2010 –Ministère de la Santé Publique et de la Population),⁷⁰ shows that CHWs are barely mentioned. Another document of the Ministry of Health on a Minimum Health Package,⁷¹ considers the role of the various types of CHWs active in the country, but fails to specify what the relationship of CHWs Programs is with the wider health system, in particular of those initiatives run by NGOs and faith organizations. This reflects surely the weak stewardship of the public sector for bringing together the various sub-systems and delivery channels operating in

the country, and points to a problem that should be taken into account by the government, donors and the private sector, if the objective of strengthening the health system is to be effectively pursued in practice.

Currently the World Bank is in the preparatory phase of a two-year program of non-lending technical assistance for Haiti to improve the capacity and effectiveness of nutrition-related programs that address the negative impact of severe and chronic malnutrition among the most vulnerable on human and social capital development. There are ongoing discussions on how to involve CHWs in this program so as to take advantage of their experience. However, the level of involvement of the Ministry of Health is rather weak, and therefore the prospects of constructing strong and sustainable links with the public health system through this program seem to be very limited, unless the presence of public sector is effectively increased, and real actions aimed at strengthening the health system in the long-term are taken.

We chose Zanmi Lazante's CHW Program for a full functionality assessment because it is by far the most consistent effort that relies on the participation of CHWs for providing access of health care to poor rural and remote areas of the country.

Brief historical description of the Zanmi Lazante's CHW Program in Haiti

Zanmi Lasante was founded in 1985 by a group of Haitians and Dr. Paul Farmer of Partners In Health, a non-governmental organization affiliated with the Harvard Medical School. Partners In Health (PIH) (or Zanmi Lasante in Haitian Creole) founded the Clinique Bon Sauveur (CBS) in 1985. Partners In Health is a non-governmental organization affiliated with the Harvard

Medical School that has been at the forefront of HIV service provision in Haiti since the first case of HIV was detected in Haiti's central plateau in 1986. It has done so within a framework of wider primary health care services for the range of public health problems affecting low-income households.

CHWs have served to bridge gaps in access to care that arise from lack of communication for patient follow-up and long distances for patients to travel for health problems. CHWs are lay people who are selected by the community to be trained and employed as health agents. Such cadres had been involved in directly observed administration of tuberculosis treatment since the mid 1980s in Haiti. In 1999, modeled after the successful outpatient treatment of tuberculosis, access to highly active antiretroviral therapy (HAART) was expanded through a community-based program called the HIV Equity Initiative. A cadre of CHWs was trained to administer HAART to patients in their homes as directly observed therapy (DOT). The CHWs were also trained to provide preventive education to communities, to minimize stigma and to refer to the clinic possible HIV and TB contacts or those at risk for infection.

Later on, Zanmi Lasante has expanded its network of lay community members serving as CHWs, involving them in a wider range of activities such as encouragement of voluntary HIV testing, HIV, TB and other chronic diseases treatment supervision, health education, educational and psychological support to families of affected patients, reproductive health, and assessment and management of maternal and child health problems. This network therefore includes currently several groups of CHWs with different names and roles (Health Agents: Agents Sante; Women's Health Agents: Agents de Femmes; Youth Monitors, The Accompagnateurs, Traditional Birth Attendants: Matrones; and Agriculture Agents: Agents

Agricoles). The CHWs thus have become a critical interface between patient, community and the CBS in Haiti.

Recruitment Process

We emphasize from here onwards on Health Agents as they constitute the most important cadre of CHWs of Zanmi Lasante, and unless otherwise stated, when we talk of CHWs we are referring to Health Agents. CHWs are chosen by patients or their communities, thus the hiring policy involves a strong communal component. It happens that more than one candidate may be eligible for final selection. In such cases, members of the community get together and elect one of them. This is an informal process that involves a lot of discussion and negotiation in case the selection of a health agent is in play. The process of selecting an accompagnateur is less complex as it only involves the program nurse, the social worker and the HIV or TB patient. Moreover, due to the particular vulnerability of women in face of the HIV epidemic, more than fifty percent of accompagnateurs are women. Given the demographics of Zanmi Lazante's CHWs workforce, they have an innate understanding of the socioeconomic and health concerns of the communities they serve.

General Requirements:

- The CHW must be an adult (usually over 18 years of age) and preferably literate.
- Since the CHW is in daily contact with patients in their homes, he or she should live in or close to the community served; having lived in the community for a specific number of years is often required.
- The CHW should have a background that is similar to the background of the patients so that they feel comfortable sharing their concerns. This also enables the CHW to have first-hand knowledge of the problems and obstacles patients face every day. In some cases, CHWs are

themselves HIV positive or former TB patients. They frequently know someone who has HIV or TB in their community.

- Motivation and character are critical requirements. A CHW must be a trustworthy and respected member of the community, with a strong desire to help the needy and a strong sense of empathy with those who are vulnerable and sick. A CHW's work is not only focused on improving health status, but also on social justice and solidarity with the community, through working to support affected individuals and households and reduce social isolation.

Interviewing CHW candidates:

The clinical team usually interviews people who wish to become CHWs to see if they meet the above requirements. Team members that may be involved in the interview process include doctors, nurses, social workers or program managers. The candidate may be asked to take a basic literacy test. He/she may also be called upon to read a medication label or write his/her name, to distinguish medications by color and size and to count the number of pills in a month's supply. In some specific programs, preference is given to candidates who are extremely poor and could therefore particularly use the additional income and skills-training. As stated previously, given the specific vulnerabilities of women in face of the HIV epidemic, women may be preferentially selected.

Pairing a patient with a CHW

Patients themselves play an active role in selecting CHWs. In the case of an established program, a patient may already know a CHW in his community, and may even have been referred to the health center by him/her. If the patient does not know any CHW, or doesn't feel comfortable with the one(s) he/she knows, then the clinical team suggests another possible candidate from those CHWs who live in the vicinity of the patient.

The CHW Role

CHWs have traditionally been used in the delivery of tuberculosis medicines and in national vaccination strategies in Haiti. Less often have CHWs been used in the management of chronic medical illnesses such as HIV, diabetes and chronic heart failure. Depending on the specific subgroup of CHWs involved and on the education they receive, their responsibilities range from general preventive services to the provision of drugs and medicines and health education and agricultural techniques.

Broadly speaking, Zanmi Lazante's CHWs in Haiti serve as counselors, educators, treatment supervisors, and advocates experienced in identifying the needs of their communities. They:

- Provide home-based care
- Provide psychosocial support to patients undergoing treatment
- Act as the link between the patient and the health center
- Carry out active case-finding
- Educate the community on a variety of health topics

In fact, however, as we already outlined above, Zanmi Lazante's CHWs network includes several groups, with different names, training profiles and roles.

Health agents (Agents Santé, Ajan Santé in creole) are the most educated and provide basic health services, vaccination, health education, family planning, and hygiene education, collect socio-demographic information about communities can provide basic treatment for malaria, diarrhea and other non-complex health problems.

Women's health agents (Agents de Femmes, Ajan Fanm in creole) focus on reproductive health counsel, and provide modern contra-

ceptive methods except Norplant and surgical methods. They are also involved in support PMTCT mothers by providing psychosocial support and the provision of HIV prophylaxis.

The Accompagnateurs are focused on HIV, AIDS, and TB. They are in charge of directly observed treatment (DOTS) for HIV/TB, and provide psychological support to families. These tasks have been expanded to other diseases, and they also supervise treatment compliance for chronic diseases, making sure that patients comply with anti-diabetes and hypertension drugs, for instance.

Youth monitors provide education and peer support to young groups on HIV, sexually transmissible diseases (STDs), sexual issues and other reproductive health problems such as early pregnancy.

Traditional birth attendants (TBA) (Matrones) play an active role in the referral of pregnant women at any stage of their pregnancy, but provide also HIV drugs as part of the prevention of maternal-to-child transmission of HIV (PMTCT) to mothers. They are trained to recognize signs and symptoms of pregnancy complications and accompany affected pregnant women to the clinics.

Agricultural agents (Agents Agricol in creole) teach agricultural techniques to communities and educate them on how to improve their production. Community members are supported for to produce nuts for instance, and selling them. In this way consumption of nutritious products is promoted, along with and increased family incomes. This activity of agricultural agents is key, because most of CHWs trained by Zanmi Lasante are farmers, and HIV and TB patients go back to their communities and they are expected to be reinserted in the productive activities, mainly agriculture. Agricultural agents therefore, even if they are not directly related to

provision of health care services, are a key component of Zanmi Lazante's network.

Initial Training of CHWs

Organization:

Before they begin supporting patients, CHWs receive an orientation from the clinical staff at the health center as well as participate in a rigorous training program designed by Sanmi Lazante. Its current curriculum for CHWs comprises 15 units, with a focus on AIDS and tuberculosis. The training is tailored to be given over seven consecutive or separate days. Each training day consists of 6.5 hours of training, 1 hour for lunch, and two 15-minute breaks. The number of participants varies according to need; 25 participants or fewer are ideal. All participants are provided with meals and a stipend. Trainers and facilitators are drawn from the staff at the health centers and should have experience in training or education to ensure that they are knowledgeable about and competent in participatory-based learning and training methods suited to low-literate adult learners. Regardless of the specific content areas covered, the primary objective of CHW training is consistent: to instill a sense of solidarity and social justice in supporting patients, households and the community.

Specific training goals include:

- Providing correct information about treatment, prevention, and risk factors for HIV, TB, malaria, and other infectious and chronic non-transmissible diseases.
- Defining the roles and responsibilities of CHWs.
- Helping CHWs recognize and reduce stigma and discrimination in their communities.
- Developing CHWs' competence in active case finding for diseases and social needs.
- Helping CHWs improve their skills related to effective communication and psychosocial support.

- Directing CHWs to additional resources or people at the health center and in the community, who can guide or assist their work.

Training principles:

Based upon adult learning principles, the CHW training curriculum presented here incorporates a variety of participatory approaches to teaching and learning that build upon the existing knowledge, skills, and experiences of the participants, including:

- Large- and small-group activities and discussions
- Role plays
- Case studies
- Brainstorming
- Panel discussions
- Peer teaching

According to the specific group of the network, discussion and teaching topics and issues offered during initial training vary in length, modules and even locations of training. **Health agent** is the group who receives the most advanced training in diverse issues, from infectious diseases to hygiene and sanitation, and includes communication skills, counseling and reproductive health and preventable diseases for children and vaccination. **Women's health agents** focus on reproductive health and HIV/AIDS. **Youth monitors** address youth issues, sexuality and responsible behavior in the era of STDs and civic actions. **TBAs** are trained in danger signs recognition and referral of women in labor and beyond. **Agricultural agents** address agricultural techniques for improving production, grow, harvest and education including nutrition matters. Initial training for **Accompagnateurs** is very participatory, comprising various methodologies from theory presentations to discussions, case studies, and visits to patients with expert accompagnateurs, and often testimonies of

expert patients. Modules include HIV, TB and STDs topics as well as psychological matters, counseling and individual and group support, and daily monitoring of patients through the accompagnateurs' form.

On-going Training of CHWs

Continuing education:

After the initial program, CHWs participate in on-going monthly education sessions for one year and beyond, with additional training in areas such as nutrition, malaria, pediatric HIV/AIDS, diarrhoeal disease, family planning, active case-finding, worms and parasites, chronic diseases, first aid, the role of traditional healers, and oral hygiene. Health center staff or other available teachers lead trainings.

Shadowing a CHW:

After completing his/her initial training, the new CHW joins a veteran CHW in conducting patient visits. This provides a practical, hands-on learning experience and helps the new CHW develop a support network of fellow CHWs.

In fact, the process for on-going training is also quite different from one group to another. Health agents and women's health agents meet on a monthly basis for programmatic follow-up. These meetings serve as an opportunity for continuing education. New topics or refreshment courses are taught. Accompagnateurs receive refreshment courses on a yearly basis as their group makes the majority of ZL network of CHW.

On-going training characteristics for Youth Monitors, TBAs, and Agricultural Agents has to do with refreshment courses and discussions of new matters that are not systematically taught in initial training such as hygiene, new agricultural techniques, sexuality, STIs or new monitoring and evaluation issues that may arise from donors such as new forms and new indicators to report.

Training of Trainers

Training of trainers (TOT) has not been formally offered to CHWs until recently. In 2009, formal TOT was delivered to a group of CHW among the best ones. The Training center is committed to carrying out more TOTs targeting this group.

Equipment and supplies

Supplies are provided to each CHW according to their respective responsibilities and competencies. The stocks are provided mainly on a monthly basis.

Health agents: dressing kits, flip chart and flyers for education, vaccines (Polio, DTP, TT, BCG), syringes, ORS, weigh scales, centimeters, thermometers, boots, rain coats, road to health charts, data collection forms, monthly and daily report forms, and irregular provision of phone cards

Women's health agents: pills, boots and rain coats, data collection forms Youth monitors: flip charts, raincoats, and pens Accompagnateurs: boots, raincoats, pens, data collection forms

Agricultural agents: agricultural materials, flip charts TBAs: boots, rain coats, a delivery kit (clean gloves, scalpels, cotton, gauzes and referral forms).

CHWs receive monthly stocks of specific supplies or commodities such as condoms, SROs, Iron, Folate, and vitamin A. Vaccines, however, are provided the day before or the same day of vaccination, as cold chain may be a major issue in Haiti.

Supervision

The supervisory system is built involving all levels of hierarchy of each institution. It starts from the head of the Commune (city) to public health nurses, HIV program nurses/ Social workers to Senior Health Agents/Accompagnateurs to the rest of each group. The system is organized around the monthly meetings during

which supervision activities and continuing training are provided together. In addition to that, unplanned and planned field supervision visits are carried out by the each level of supervision. Unplanned supervision visits during health posts and vaccination day are provided as well. Historically, CHWs have been directly supervised by clinical staff, usually a doctor or nurse involved in the care of HIV or TB patients. As Zanmi Lazante programs have grown, there was increasing awareness on the need for more formal supervision structures that take advantage of the experience and skills of more senior CHWs. Recently, the role of Accompagnateur Leader has been introduced at several of the program sites.

CHW leader (Accompagnateur Leader): Most often, the leader is an existing CHW who has been chosen based on the high quality of his/her work, leadership qualities and standing in the community. The length of time the CHW has been working as an accompagnateur and his/her level of education are also factors taken in consideration for their promotion to CHW leaders. The number of CHWs supervised by each CHW leader varies. In Haiti, a CHW leader may oversee up to 50 CHWs.

Roles and responsibilities of the Accompagnateur Leader: The primary responsibility of the CHW leader is to ensure that the CHWs are visiting their patients daily, administering medications correctly, and vigilantly monitoring patient health. The leader also helps the clinical team by answering patients' questions, joining the team on patient visits, and identifying problems between CHWs and patients. Another point of supervision is at the pharmacy, which CHWs visit regularly to pick up medications for their patients. Pharmacy logs and interactions with the pharmacist are important points of supervision. The CHW leader and other members of the health center identify problems between CHWs and patients through unannounced visits

to patients' homes. When a conflict does arise, the CHW is called to the health center to discuss the situation. CHW leaders meet regularly with health center staff to exchange information and discuss common issues. CHWs meet monthly with health center staff for ongoing training and to discuss any problems or concerns.

Performance Evaluation

There are several assessment publications on Zanmi Lazante's CHW Program impact. They basically show an increased coverage of health care for HIV/AIDS and TB patients, specifically increased coverage of voluntary HIV testing and HIV/TB treatment adherence in Zanmi Lazante's influence areas, through home-based directly-observed therapy strategy conducted by CHWs, and also an increased trust of community members on health facilities run by committed and capable organizations such as Zanmi Lasante and other NGOs. There is also consistent evidence about a clearly positive impact of NGOs community-based programs on reduction of TB and HIV morbidity and mortality, and on reduction of infant and child mortality, and on maternal and reproductive health indicators in their catchment areas.⁷²⁻⁷⁷ These findings highlight the fact that more than 20 years experience of work with CHWs in Haiti constitutes a unique potential on which to build for scaling up and for strengthening the Haitian health system. However, to date there is not yet compelling evidence about the overall impact of CHWs Programs on Haiti key health indicators at country level. Improved levels of coordination between NGOs, the stimulus of the vital stewardship role of the public sector, the critical need of strengthening capacity, governance and accountability of the public sector, and an effective tackling of social determinants of health including factors such as poverty and external debt, all must constitute long-term objectives for the effective and sustainable delivery of health services in Haiti. Without them,

it is doubtful that Haiti will reverse the gloomy health situation that most of their citizens' face.

Incentives

All the groups within the network are paid in addition to other social benefits. Monthly salary ranges from USD 50 -130. **Agents Sante** are full-time employees (8 hours a day, five days a week), and receive a monthly payment of about US 100 (one USD=40 goudes). **Agents de Femmes** (focus on reproductive health) mostly offer counseling on family planning, and provide some methods: condoms, pills. Very few of them can give injections of Deproprovera. Full-time Monthly salary: 75. **The Accompagnateurs** work on a part-time basis (about 1-3 hours a day, 7 days a week, because they should not work more than 30 minutes for each patient they visit, as they need to move long distances from one patient to the next one), receive a payment that ranges between USD 40-60/month, depending on the number of patients they see. **Matrones** (TBS): they work part-time and receive a case-by case payment that is US 5 for each institutional delivery. **Agricultural agents** are full-time employees and are paid the equivalent of US \$ 100 a month, almost the same as CHWs. **Youth monitors** are part-time and school fees are paid for them, as well as training and provision of some equipments.

Community Involvement

CHWs are local people selected by community members and ZL staff. They have an innate understanding of the local population. They are not only focused on HIV care but community health and serve as liaisons between the community and clinics, which helps to prioritize needed services beyond clinical care, such as water projects and vaccination campaigns. CHWs attend clinic staff meetings bringing a community voice to decision making, from planning events such as World AIDS Day to structuring clinic visits.

Employing local residents creates trust between the community and clinic, decreases stigma and generates self-confidence in community members.

Referral System

The referral system is very active and all groups refer to the clinics. Referral forms are available between sites. CHW refer to the clinics and often accompany the patients to make sure that they get the care they need. Feedback is most often provided to them, facilitating in this way follow-up of patients. In brief, a CHW refers to the clinics any patient suffering with any kind of disease. All referrals are made through written referral forms that are completed by CHWs.

Professional Advancement

Professional advancement still needs to be improved and better structured. CHWs who have demonstrated a good performance record are promoted to positions of supervision (Accompagnateur Senior).

Additional incentives for advanced CHWs may reach a 30% of their salary when they become supervisors. A motorcycle is also provided for each site for supervision. In addition they receive calling cards for about US \$15 a month.

Documentation and

Table 37 – Performance evaluation of CHW program

Program coverage (%)	15% (About 1.2 million people –Overall population 9 million)
Preventive and promotive service delivery	Vaccination promotion coverage: 90%. Proportion of children with basic vaccination: 80% Contraceptive usage: 24% of all users of modern contraceptives
Curative service delivery	100 % of all CHW seen and referred emergency cases in previous three months
Support system for CHWs and their performance	Training: 98% who received introductory training Knowledge: 95 % of CHWs given at least one correct answer Supplies and equipment: Few lack of stocks. No expiration of stock was reported in the last 5 years. Salaries: example: 100% paid over three months Supervision: Each CHW supervisor makes a visit at least once a month to all the CHWs under his/her supervision. Public health nurses supervise once a week at least a major CHW health post. A doctor, like the nurse, supervises once a week a CHW health post or mobile clinic. 0% facilities lacking important medicines and supplies on the day of survey
CHW services and the poor	Approximate overall poor coverage of the program: 90%
CHW impact on health	Indicators of population served compared with national figures? 1.2 millions In Central Plateau and half of the Artibonite region.
CHW costs – current and future	Actual level of funding is enough than originally planned? More funds are needed to support the program. The program grew so fast that actual level of funds is not sufficient.

Information Management

Monthly data collection forms are provided to health agents. Daily and monthly forms are also given to all the other groups. Forms to collect information about health posts, special vaccination days, and routine vaccination are handled as well. Accompagnateurs handle forms to report on HIV drugs, adverse reactions and any remark they may have.

Recently, Zanmi Lazante has set up a web-based medical record system linking remote areas in rural Haiti.⁷⁸ It comprises an information system and medical record to support HIV treatment and it is used to track clinical outcomes, laboratory tests, and drug supplies and to create reports for funding agencies. Future work will focus on refining the system and developing a core data set and functions to support other HIV treatment projects, including incorporation of data representation and exchange standards. It is acknowledged that common standards for creating computerized guidelines are also important to allow sharing of knowledge between projects and information systems.

Zanmi Lazante is aware that HIV treatment does not occur in isolation, and that the infrastructure this organization has developed in central Haiti is augmenting the care of other acute and chronic diseases, including tuberculosis and heart disease. The similar web based tuberculosis electronic medical record in Peru provides important support for treatment, drug supply, and research with more than 2,500 complete patient records entered to date. Zanmi Lazante has been planning to make our HIV-EMR available to other organizations once it is complete, using an open source model for software distribution.

Table 38 - CHW Program Functionality Assessment Tool (CHW-PFA) - Haiti

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/Evidence
	0	1	2	3 (best practice)	
1 Recruitment How and from where a community health worker is identified, selected, and assigned to a community.	CHW not from community and plays no role in the recruitment.	CHW is not recruited from community but the community (reluctantly) accepts the identified CHW after selection.	CHW is not recruited from community but the community is consulted on the final selection.	Recruited from community when possible. If not possible, the community is consulted during the process and agrees on recruitment selection.	3
2 CHW Role Alignment, design and clarity of role from community, CHW, and health system perspectives.	Role is not clear or agreed upon between CHW, community and formal health system.	No formal role of CHW exists (no policies in place) General expectations are given to CHW (initial training) but are not specific. CHW and community do not always agree on role/expectations.	Health system defines (policies exist) the CHW role but without community input. Role is clear to CHW and community but little discussion of specific expectations. General agreement on role between CHW, health system, and community.	Health system, community, and CHW design the role/expectations and policies in place that support CHW role. Role and expectations are clear to CHW and community. Process for update and discussion of role/expectations in place for CHW and community	3
3 Initial Training Training provided to CHW to prepare for role in MCH services delivery and ensure he/she has the necessary skills to provide safe and quality care.	No initial training is provided.	Minimal initial training is provided (1 workshop, etc). Some CHWs attend workshops on specific topics.	Initial training is provided to all CHWs within the first year of recruitment. Training does not include participation from community or from referral health center.	Initial training is provided to all CHWs within the six months that is based on defined expectations for CHW. Some training is conducted in the community or with community participation. Training is consistent with health facility guidelines for community care and health facility is involved in training.	3 Remember that groups such as Accompagnateurs and Youth Monitors be trained in specific topics related to MCH
4 On-going Training On-going training to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned.	No ongoing training is provided	Occasional, ad hoc visits by supervisors provide some coaching.	On-going training is provided on a regular basis. Some supervisors follow up with coaching. Note: Functional CHWs have been trained (or updated) within the last 18 months.	On-going training is provided to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned. Training is tracked and opportunities are offered in a consistent and fair manner to all CHWs (not only some)	2
5 Equipment and Supplies Required equipment and supplies to deliver expected services.	No equipment and supplies are provided.	Inconsistent supply and restocking to support defined CHW tasks. No formal process for re-ordering.	Supplies are ordered on a regular basis although delivery can be irregular. Stock out of supplies essential for defined CHW tasks occur at a rate of x per year/mo	All necessary supplies; no substantial stock-out periods.	2

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
6 Supervision Supervision conducted on a regular basis to carry out administrative tasks and to provide individual performance support (feedback, coaching, data-driven problem-solving).	No supervision or regular evaluation occurs outside of occasional visits to CHWs by nurses or supervisors when possible (1x/year or less).	Supervision visits conducted between two and three times per year to collect reports/data (or group meetings at facility to turn in monitoring forms). No individual performance support offered on work (problem-solving, coaching)	Regular supervision visit at least every three months that includes reviewing reports, monitoring of data collected and occasionally provide problem-solving support to CHW. Supervisors are not trained in supportive supervision but are facility based health workers.	Regular supervision visit every 1-3 months that includes reviewing reports, monitoring of data collected. Data is used for problem solving and coaching. Supervisor visits community, makes home visits; provides skills coaching to CHW. Supervisor is trained in supervision and has supervision tools.	3
7 Performance Evaluation Evaluation to fairly assess work during a set period of time.	No regular evaluation of performance by CHW.	Once/year evaluation that is not based on individual performance and includes only evaluation of coverage or monitoring data. There are no rewards for good performance.	Once/year evaluation that is not based on individual performance and includes only evaluation of coverage or monitoring data (national /program evaluation). Community is not asked to provide feedback on CHW's performance. There are some rewards for good performance, such as small incentive gifts, recognition, etc.	At least once/year evaluation that includes individual performance (local evaluation) and evaluation of coverage or monitoring data (national /program evaluation) Community is asked to provide feedback on CHW performance. There are clear rewards for good performance, and community plays a role in providing rewards.	2
8 Incentives Financial= salary and bonuses Non-financial= training, recognition, certification, uniforms, medicines, etc.	No financial or non-financial incentives provided	No formal incentives provided but community recognition is considered a reward	Some financial or non-financial incentives are provided. Examples of non-financial incentives include occasional formal recognition, additional training, and other small incentives.	Financial and/or non-financial incentives are partly based on good performance. Incentives are balanced and in line with expectations placed on CHW. Examples of non-financial incentives that engage workers might include (advancement, recognition, certification process)	3 Zanmi Lasante's program involves all aspects of financial and non-financial
9 Community Involvement Role that community plays in supporting CHW.	Community is not involved with ongoing support to CHW	Community is sometimes involved (campaigns, education) with the CHW and some people in the community recognize the CHW as a resource.	Community plays significant role in supporting the CHW through mother's groups, networks, etc. CHW is widely recognized and appreciated for providing service to community.	Community plays an active role in all support areas for CHW, such as development of role, providing feedback, solving problems, providing incentives, helps to establish CHW as leader in community.	2

Component Definition	Level of Functionality: 0= non-functional; 1 =partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
<p>10 Referral System Is there a process for - determining when referral is needed - logistics plan for transport/payment to a health care facility when required - how referral is tracked and documented</p>	No referral system in place: CHW might know when and where to refer client, but - no logistics plan in place by the community for emergency referral - information is not tracked or documented	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is but have no formal referral process/logistics Referral is not tracked by community or CHW	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and usually have the means to transport client Client is referred with a slip of paper and informally tracked by CHW (checking in with family, follow up visit) but information does not flow back to CHW.	CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and have a logistics plan for emergencies (transport, funds) Client is referred with a slip of paper and information flows back to CHW with a returned referral form and/or monthly monitoring.	<p>3 But with little irregularity concerning formal feedback to be sent to CHW</p>
<p>11 Professional Advancement The possibility for growth, advancement, promotion and retirement for CHW</p>	No professional advancement is offered.	Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. No other opportunities are discussed with CHW. Advancement is not related to performance or achievement.	Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. Limited training opportunities are offered to CHW to learn new skills to advance role. Advancement is intended to reward good performance or achievement, although evaluation is not consistent (advancement might mean path to formal sector or change in role). No path to retirement is made clear to CHWs	Advancement (promotion) is offered to CHWs who perform well and who express an interest in advancement if the opportunity exists (advancement might mean path to formal sector or change in role) Training opportunities are offered to CHW to learn new skills to advance their role and CHW is made aware of them. Advancement is intended to reward good performance or achievement, and is based on fair evaluation. Retirement is encouraged and incentives are provided to encourage retirement at a set age.	<p>2</p>
<p>12 Documentation, Information Management How CHWs document visits, how data flows to the health system and back to the community, and how it is used for service improvement</p>	No process for documentation or info management is followed	Some CHWs document their visits and group monitoring visits to facility are attended by CHWs who bring monitoring forms. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities work with supervisor or referral facility to use data in problem-solving at the community.	<p>3</p>

Table 39 - Community Health Worker Functionality Matrix – MCH Interventions

	MCH INTERVENTIONS	YES	COMMENTS
1	ANTENATAL CARE		
A	Iron folate supplements Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 O X	
B	Maternal nutrition Counsel Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	 O X	Note that CHW are also involved in some aspects of the treatment as they have to follow-up the treatment prescribed at the clinics.
C	Counsel on birth preparedness/complication readiness <i>(includes counseling to use skilled birth attendant)</i>	X	
D	Tetanus toxoid Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 O O X	
E	Deworm Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 O O X	
2	CHILDBIRTH and IMMEDIATE NEWBORN CARE		
A	Prevent Infection/Clean Delivery (Hand washing, clean blade +/-or clean delivery kit)	X	Mostly TBAs and Health agents
B	Provide Essential Newborn Care a. Immediate warming and drying b. Clean cord care c. Early initiation of breastfeeding	 X X X	
C	Recognize, initially stabilize (when possible) and refer for maternal and newborn complications a. newborn asphyxia b. sepsis, c. hypertensive disorder d. hemorrhage e. prolonged labor and post-abortion complications	 O O O O O	
D	Prevent PPH: AMTSL or use of uterotonic alone in absence of full AMTSL competency (e.g. oral Misoprostol)	O	
E	Provide special care for Low Birth Weight newborns (Kangaroo Care)	X	
3	POST-PARTUM and NEWBORN CARE		
A	Provide counseling on evidence-based maternal newborn health and nutrition behaviors a. clean cord care; b. exclusive BF through 6 months; c. thermal protection; hygiene;	 X X X	This is the critical role of TBAs and Women's Health Agents.

	MCH INTERVENTIONS	YES	COMMENTS
	d. danger sign recognition; e. maternal nutrition, etc.	X X	
B	Assess for maternal newborn danger signs and provide appropriate referral.	X	
C	Provide Treatment for severe newborn infection (when community-based treatment supported by national guidelines.)	O	
4	EARLY CHILDHOOD		
A	Infant and young child feeding, IYCF: Provide counseling for immediate BF after birth; exclusive BF < 6 months; age-appropriate complementary foods	X	
B	Promote growth monitoring, weighing infants and recording progress	X	
C	Provide community based management of acute malnutrition (CMAM) using Ready to Use Therapeutic Foods (community-based recuperation of children with acute moderate to severe malnutrition without complications)	X	
D	Community-based treatment of pneumonia Counsel re recognition of danger signs, seeking care/ antibiotics Assess and treat with antibiotics	X X X X	
G	Refer for antibiotics Refer after treating with initial antibiotics Community-based prevention and treatment of diarrhea Counsel on hygiene Counsel on point-of-use water treatment Provide point-of-use water treatment Refer point-of-use water treatment Counsel on ORS Provide ORS Refer for ORS Counsel on Zinc Provide Zinc Refer for Zinc	X X X X X X X X X X X X	When they have to refer for ORS, it occurs only in case they have a stock out of ORS in the community
H	Vitamin A supplements (twice annually children 6-59 months) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X X X X	
I	Effectively assess and recognize severe illness in children (danger signs) with appropriate referral.	X	
j	Counsel on immunizations Mapping/tracking for immunization coverage Provide Immunizations: -DTP -polio and or measles - +/- HIB - Hep B	X X X X O O	Only Health Agents are authorized to provide immunization routinely. Some members of other groups if they are deemed competent to do so.

	MCH INTERVENTIONS	YES	COMMENTS
	-Pneumovax -Rotavirus Refer for immunizations	<input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/>	
5	FAMILY PLANNING/HEALTHY TIMING AND SPACING OF PREGNANCY		
A	Counsel on HTSP/contraceptives Provide contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - depo Refer for contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - long-acting and permanent methods Provide FP counseling +/- administer contraceptives (e.g.;Oral Contraceptives)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Some competent senior CHWs can provide Depo
6	MALARIA (Optional - Dependent Upon Country)		
A	Insecticide-treated mosquito nets to pregnant women and children Counsel Provide commodity or intervention/ Assess and treat	<input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/>	
B	Refer for commodity, intervention, or treatment Intermittent preventive malaria treatment (IPTp) Counsel Provide commodity or intervention/ Assess and treat	<input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/>	They are active in the distribution of impregnated bed nets in the communities
C	Refer for commodity, intervention, or treatment Community-based treatment of malaria (testing with Rapid Diagnostic Test or presumptive treatment per antimalarial per national guidelines.) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/>	
7	PMTCT (Optional - Dependent Upon Country)		
A	Healthy timing and spacing of pregnancy Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="checkbox"/> <input type="radio"/> <input checked="" type="checkbox"/>	
B	Antibody testing to pregnant women and mothers Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="checkbox"/> <input type="radio"/> <input checked="" type="checkbox"/>	
C	Prophylactic ARVs/HAART to pregnant women mothers Counsel Provide commodity or intervention/ Assess and treat	<input checked="" type="checkbox"/> <input type="radio"/> <input checked="" type="checkbox"/>	

	INTERVENTIONS	YES	COMMENTS
	Refer for commodity, intervention, or treatment		
E	Prophylactic ARVs/HAART to infants		
	Counsel	O	
	Provide commodity or intervention/ Assess and treat	O	
	Refer for commodity, intervention, or treatment	X	
F	Early infant diagnosis		
	Counsel	O	
	Provide commodity or intervention/ Assess and treat	O	
	Refer for commodity, intervention, or treatment	X	
G	Pregnant HIV-infected women tracking		
	Counsel	O	
	Provide commodity or intervention/ Assess and treat	O	
	Refer for commodity, intervention, or treatment	X	
H	HIV-exposed infant tracking		
	Counsel	O	
	Provide commodity or intervention/ Assess and treat	O	
	Refer for commodity, intervention, or treatment	X	

Summary

Haiti faces a dramatic lack of a minimal strength of the state to accomplish its responsibilities for providing essential education and health services to the great majority of Haitian citizens. Non-governmental organizations have been instrumental in providing such services to poorest areas in Haiti, most notably for a timely diagnosis and treatment of HIV/AIDS and TB, utilizing for these activities the potential of community members themselves.

Several decades of valuable experiences with CHWs in Haiti are in place for helping to build a functional health system at country level. It is up to the international community, to government spheres and to civil society members to turn this accumulated capacity into effective health interventions for all Haitians. CHWs Programs implemented by capable and committed non-governmental organizations such as Zanmi Lasante's have provided consistent evidence about the positive impact on an increased coverage of health care for HIV/AIDS and TB patients, specifically on coverage of voluntary HIV testing and HIV/TB treatment adherence in the NGOs influence areas, through home-based directly-observed therapy strategy conducted by CHWs, and also an increased trust of community members on health facilities run by NGOs. There is also consistent evidence about a clearly positive impact of NGOs community-based programs on reduction of TB and HIV morbidity and mortality, and on reduction of infant and child mortality, and on maternal and reproductive health indicators in their catchment areas.

The evidence clearly shows that it is feasible to expand such experiences. There is not excuse for not doing so. It is not enough to have patchy success stories. Without country level sustained scaling up of effective interventions there is no hope for a real change in the quality of life of Haitians. Without a full presence of the public sector in the health sector reform, coordinating efficiently the diverse public and private

efforts in place in Haiti and playing an effective stewardship role, each organization will continue executing its own agenda, while countless citizens will continue suffering as a consequence. There is no way of turning a CHW Program, no matter how successful has been in its particular geographical catchment area, into a country level example of successful health delivery if the country health system is dysfunctional, and in this task the government responsibility is essential, but donors and private providers need also to take seriously their own participation quota.

Coordinated CHW Programs like Zanmi Lasante's, if they are effectively inserted into the wider health system activities, have a real potential for making a difference. It is within the broader Haitian social, economic and health system context that we present here the experience and contribution of Zanmi Lasante's CHW Program.

— AFRICAN Case Studies —

Ethiopia – Health Extension Program

Uganda – Uganda Village Health Teams

Mozambique – Agentes Polivalentes

Elementares Program

6. Ethiopia - Health Extension Program

George W. Pariyo (Dept of Health Policy, Planning and Management, Makerere University School of Public Health) & Kora Tushune (Dept of Community Medicine, Jimma University)

Socio-economic and political context

Ethiopia is a Sub-Saharan African country located in the Greater Horn region of East Africa. It has an area of 1.1 million km² and shares borders with five countries: Kenya to the South, Somalia and Djibouti to the East, Eritrea to the North and The Sudan to the West. It is an ancient civilization with recorded history of more than 300 years.

Ethiopia is a federal republic that has nine states and two city administrations. It is further divided into 819 woredas (districts) and more than 15,000 kebeles (sub districts), 10,000 of which are rural and 5,000 urban. The country is diverse in its climatic, ethnic, cultural and religious make up all of which have implications for the organization of the health system. A substantial part of the country has challenging topography full of ragged mountains and arid and semi-arid areas that are difficult to access and expensive to cover with infrastructural development.

Though the country has a long history of independence, internal conflicts and civil wars punctuated by occasional drought and famine have had a detrimental effect on socio-economic development of the country. With a population of nearly 80 million people and a population growth rate of 2.9%, Ethiopia is one of the poor countries in sub-Saharan Africa with low indicators of development. The majority of its people (85%) live in rural areas where infrastructure is poor, 23% of the population live on less than \$1 per day. It has a GNI per capita of \$ 220 (2007), total adult literacy is 36% and net enrollment/attendance in primary schools is 45%. The economy is dependent on primary agricultural products.

Under 5 mortality fell from 204 per 1,000 live births in 1990 to 119 per 1,000 live births in 2007. However, up to 47% of the under five children experience moderate to severe stunting.

Economic and social reforms have been undertaken and the economy registered an impressive double digit growth rate in recent years, accompanied by falling poverty rates and a 83.4% increase in net enrolment in primary school.⁷⁹

Life expectancy at birth is estimated at 53 years. Only 42% of the total population has access to improved drinking water sources, while only 8% of the rural population was using improved sanitation facilities by 2006. By 2007, only 10% of children under five with fever were estimated to be accessing antimalarial drugs. There is an estimated HIV prevalence rate of 2.1% in the population age-group 15-49 years.⁸⁰

Health Systems Overview

The national health system is organized in four tiers with primary health care unit (PHCU) - consisting of one health center and five satellite health posts that serve a population of 5,000 being the first tier interfacing the health system with the community. Next is the district hospital that serves a population of 250,000 and the third is a zonal hospital that covers a population of 1 million. The final tier is a specialized referral hospital that serves a population of 5 million (figure 1).

The health system is generally considered weak, underfunded, inequitable and inefficient. The infrastructure is underdeveloped and facilities poorly staffed.

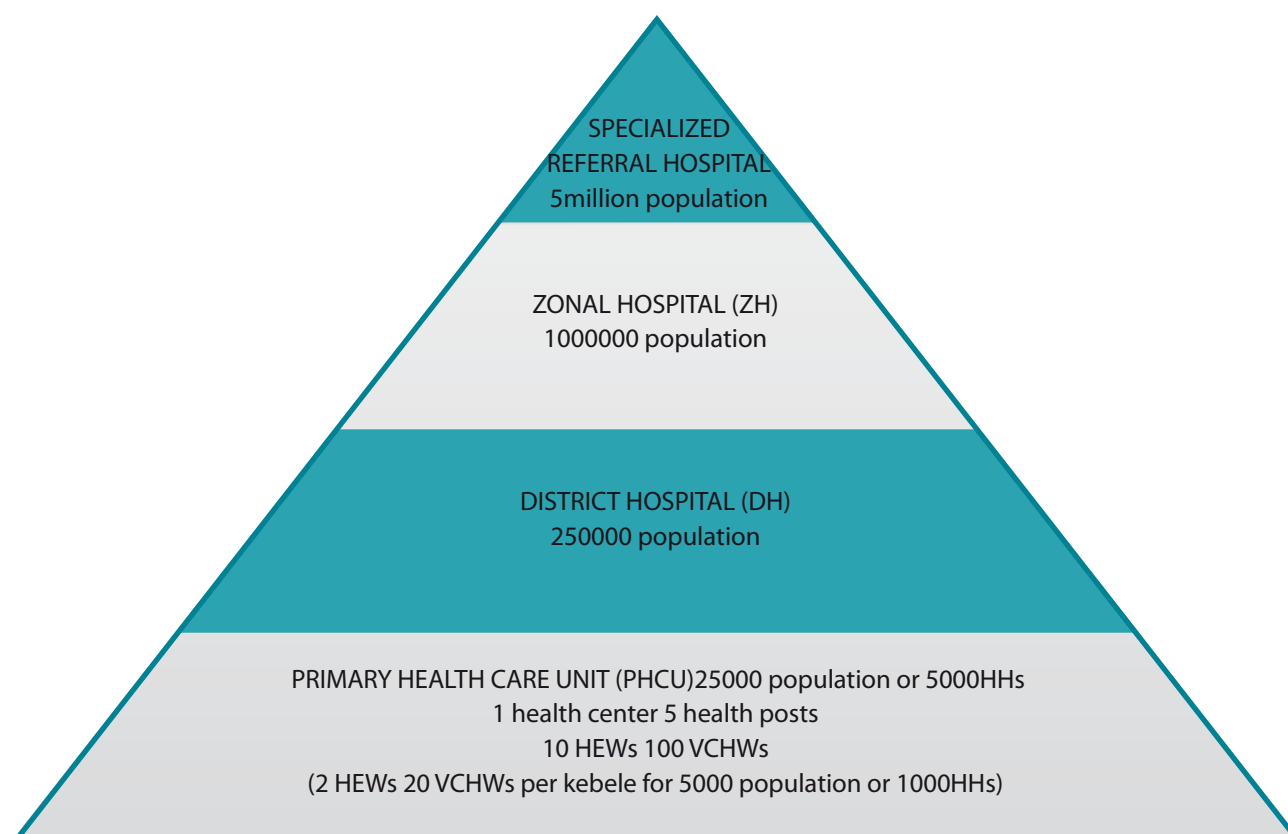
The health system suffers from shortage, maldistribution and gender imbalance of the health workforce. The motivation and performance of the workforce working in the public sector is low. As a result the performance of the system

is also poor. The health sector has a 20 year sector development strategy divided into a series of five-year rolling plans called Health Sector Development Program (HSDP), and is currently implementing HSDP III (2005/6-2009/10).

Health services are financed from four main sources: Government (federal and regional) 28%; multilateral and bilateral donors (through grants and loans, nongovernmental organizations (NGOs) - international and local) 37%; and private contributions (e.g., out-of-pocket spending) 31%. Per capita health expenditure is US\$7.14 and health expenditure is estimated at US\$522 million p.a. (5.6% of GDP).

The health status of the Ethiopian population is also a reflection of the reality described above: Infant mortality rate is 77 per 1,000 live births; maternal mortality ratio is 673 per 100,000 live births; under-five mortality stands at 123 per 1,000 live births; coverage of deliveries attended by skilled staff (6%); antenatal attendance (27%) and access to post-natal services (11%). The EPI coverage is estimated at 81%, the increase mainly attributable to the recently implemented health extension program. Seventy to eighty percent of health problems are preventable, occurring mainly due to infections and nutritional disorders. Access and utilization is very low especially among rural and vulnerable groups of the population. Malaria, Acute respiratory

Figure 1: Organization of the health care system in Ethiopia
Health Service Delivery System of Ethiopia



infections and helminthiasis are the top causes of outpatient visits whereas deliveries, malaria and bronchopneumonia are the leading causes of admissions.⁸¹

The administration of the health services is decentralized along a federal system of government that was introduced in Ethiopia following the 1991 overthrow of the socialist government. The federal ministry of health (FMOH) has taken up the roles of policy making, regulation, technical support and standardization of services while Regional Health Bureaus (RHB), which is accountable to respective state governments, assumed the role of provision of services and management of the workforce and health facilities.

Ethiopia Health Extension Program

Even though the importance of improving the coverage of basic health services was recognized much earlier in Ethiopia the significance of PHC strategy received emphasis after the Alma Ata Declaration of 1978. The earlier shift towards socialist ideology in the country also favored the adoption of PHC. Two years before the adoption of PHC, in 1976 The Revolutionary Democratic Program of the socialist regime had also endorsed primary care, rural health services, prevention and control of common diseases, self reliance and community participation as a policy direction of the new Ethiopia.

In spite of early adoption of PHC and deployment of CHWs, who were the key workforce, the achievements were not as expected primarily because of challenges faced by similar programs in many other developing countries; i.e., constrained resources and institutional environments, problems of sustaining a volunteer workforce, logistics and supply chain difficulties, training and supervision needs and the required multi-sectoral support. As a result there was no

major breakthrough in terms of equitable access to PHC during the socialist regime and even in the immediate aftermath of its downfall in 1991. However the foundation for the Health Service Extension Program (HEP) can be traced back to the National Health Policy of the country that was issued in 1991. The Policy gave emphasis to prevention aspects of health service and promoted self-reliance as a way forward for Ethiopia. Following the Policy the country adopted a 20-year Health Sector Plan as part of the national development strategy of the country. The plan is further divided into five-year rolling plans called Health Sector Development Plan (HSDP).⁸²

The Health Extension Program (HEP) was started in 2004 during the second five year plan (HSDP II 2002/03-2004/05) after evaluation of the implementation of the first five year plan (HSDP I) revealed that necessary basic health services had not reached the people at the grass roots level as envisaged and desired, due to the nature of services being given by the health system and the health service indicators especially those related to MDGs were not showing improvement or the improvements were negligible at the best. To implement the HEP government launched a strategy known as Accelerated Expansion of Primary Health Care Coverage (AEPHCC) that guided the investment plan. The strategy document was a blue print for government investment in construction of health posts and health centers and investment in the workforce including the Health Service Extension Workers (HEWs).

Health service extension program is “a package of basic and essential promotive, preventive and selected curative health services, targeting households in the community, based on the principles of primary health care to improve the health status of families with their full participation, using local technologies and the skill and wisdom of the communities”. It forms the bottom part of the national health system

mainly focusing on preventive aspects of health services and promotion of healthful living in the community. The HEP was initiated from high level political leadership of the country, inspired by the enhanced implementation and performance of agricultural extension program. The philosophy behind the program is that households can produce their own health like they produce agricultural outputs for their consumption provided they are given the right information, supported in health actions and mobilized. As a result communities, households and individuals are empowered to take care of their own health in the spirit of ownership and self-reliance.⁸³

The package (HEP) is implemented by the Health Extension Workers (HEWs), who receive training for one year. HEWs are a new cadre of community based health workers in Ethiopia. They are selected by the community in which they live (in collaboration with wereda administration), to provide, after completing one year training, promotive, preventive and selected curative health services to the community of their origin based on the values and principles of primary health care. Two HEWs are deployed in every village with population of 5000. They are supported by a number of volunteer CHWs selected by the community with ratio of one VCHW for every 250 population.

This program was selected for review as it is the main officially recognized nationwide CHW program that Ethiopia has developed and is implementing. It is the only CHW program that is well structured, and with clear curriculum and training materials agreed on by all the partners. All other programs are rather ad hoc in nature and not nation-wide, and are being phased out or should work under overall co-ordination of the HEP.⁸⁴

Recruitment Process

HEWs are recruited for the training from the community in which they live and would serve after completing the training. The criteria used to select HEWs are that they have to:

- Be female of 18 years of age and above
- Complete grade 10 secondary education with a grade good enough to allow them to join vocational training, TVET (1.6-1.8 grade points)
- Be from the target community
- Respected by the community (recommendation from the village) and willing to live in and serve the community after the training
- A member nominated by local community, representative. Selection is done by a committee comprised of woreda (district) health office, capacity building and education offices.

The above criteria are reconsidered in recruitment of the pastoralist HEWs due to problem of finding persons who have reached the 10th grade in general, and especially among women in particular. As a result the educational requirement is reduced to 6th – 8th grade; training duration reduced to six months and gender criterion is also relaxed to allow men to be recruited where it is difficult to find women due to educational or cultural situation of the community.

The CHW Role

According to the implementation guidelines of the Health Service Extension Program (HEP) health service extension workers are expected to carry out responsibilities in four major areas; a) administrative duties, b) promotive and preventive activities, c) basic treatment and referral services, and d) essential IEC activities which are cross-cutting.

Administrative duties

HEWs are responsible for:

- collecting and recording basic demographic and health related information of the kebele
- planning, coordinating and leading the HEP in kebele in collaboration with kebele administration, the community, voluntary health workers (VHWs) and partners
- availing and managing inputs for implementation of HEP
- strengthening the implementation of the referral system and
- ensuring the availability of registers and forms and using them
- establishing and strengthening the documentation and filing system
- requesting medicines, medical equipment and supplies in a timely manner, collecting them, registering in accordance with official guidelines
- managing medicines and medical equipment carefully in order to avoid damage or waste, and report expired and unwanted medicines to the Woreda Health Office (WrHO).
- excreta disposal, solid and liquid waste management, safe water supply and handling, food hygiene, environmental sanitation, pest and rodent control, prevention and control of malaria and TB, prevention and control of HIV/AIDS and STD
- train community members in becoming health promoters
- mobilize communities and organize campaigns to promote health services
- understand and implement policies, strategies and the Health Sector Development Plan (HSDP) of the FMoH.

Basic treatment and referral services

HEWs also provide Basic curative and referral services which include to:

- relieve pain,
- treat common health problems such as malaria, diarrhea, intestinal parasites, trachoma and scabies,
- Refer cases beyond their capacity to the nearest health centre.

Preventive and promotive activities

Under this the HEW roles include:

- organize, train and coordinate volunteer community health workers (VCHWs)
- conduct regular house-to-house visits
- identify defaulters and help them use services
- implement and/or support vaccination, family planning, health and nutrition, complementary feeding, feeding the sick child, growth monitoring, identification of nutritious foods, nutrition counseling for pregnant women, and lactating mothers, distribution of micronutrients (Vitamin A and zinc), prenatal care, intra-partum and post-partum and newborn care, infant and integrated maternal and newborn child health care, adolescent reproductive health services, disease surveillance, personal hygiene, human
- Another important task of a HEW is IEC activities which are cross-cutting in nature and included in nearly all other roles of the HEW. They are tailored to the local socio-cultural situation of the community to convey health messages using inter-personal communication, role plays, folklore, poetry, proverbs, demonstrations and the like. These duties and responsibilities which are categorized in four areas are prepared and delivered in 16 packages each having its own guideline booklets prepared in different languages. **Box 6** shows the 4 components of the HEP and the 16 packages implemented by HEWs.

These services are provided to the target community using three modalities. These are:

Health post based services

- Health education
- Vaccination to mothers and children
- Clean delivery and postnatal care and counselling
- Child growth monitoring and nutritional counselling
- Malaria prevention and control activities where needed
- Treatment of trachoma using tetracycline eye ointment and counselling on face washing
- Prevention and control of scabies
- Treatment of diarrhoea using ORS
- Identifying sicknesses and referring to the next-level health facility
- Providing appropriate treatment for children and other members of the community
- Vitamin A supplementation for the target groups
- Health education and demonstration in schools
- Training and regular meeting with volunteer community health workers (VCHWs)
- Documentation, compiling records, files and reports
- Displaying health information using graphs and charts and posting them on the wall
- Antenatal Care
- Delivery and postnatal care

Box 6 : Components and packages of the Ethiopian health extension program.

HEP Components	Health Service Packages
Hygiene and Environmental Sanitation	<ul style="list-style-type: none"> ■ Excreta disposal ■ Solid and liquid waste disposal ■ Water supply and safety measures ■ Food hygiene and safety measures ■ Healthy home environment ■ Control of insects and rodents ■ Personal hygiene
Family Health Service	<ul style="list-style-type: none"> ■ Maternal and child health ■ Family planning ■ Immunization ■ Nutrition ■ Adolescent reproductive health
Disease Prevention and Control	<ul style="list-style-type: none"> ■ HIV/AIDS and sexually transmitted infections (STIs) and TB prevention and control ■ Malaria prevention and control first aid emergence measures
Health Education and Communication (cross-cutting component)	<ul style="list-style-type: none"> ■ Crosscutting (Advocacy, Social mobilization, IEC/ BCC (IPC & counseling), Community conversation and Social marketing

- Immunization
- Growth monitoring
- Family Planning
- Nutritional advice, vitamin A supplementation
- Diagnosis and treatment of malaria
- Treatment of eye and skin infections with ointment
- Health education
- First aid and referral of difficult cases

HEWs generally spend about 25% of their time at the health post conducting facility-based services and use about 75% of their time outside the health post delivering family and community packages.

Family packages

These include training of model families (2hrs/day, total 96hrs) and home visit (4-6HH/day). Model families are selected and trained in three phases graduating at the end of the training. All families in the kebele are eventually reached with the training as a result of rounds of training sessions. During home visits HEWs provide the following services:

- Educate and demonstrate household waste management, personal hygiene and other health practices
- Assist families on how to use and properly handle latrines
- Communicate and demonstrate how to keep the home and compound clean
- Advise to separate human quarters from where animals stay
- Provide family planning services
- Provide antenatal, intra-partum and postnatal care services and counselling
- Demonstrate essential newborn care practices

- Monitor child growth and counsel on child feeding
- Assess nutritional status of children and pregnant women and counsel
- Drain and eradicate mosquito breeding sites in malaria areas
- Observe use of bednets and demonstrate proper use
- Provide treatment to patients with malaria
- Treat trachoma with tetracycline ointment and counsel on face washing
- Prevent and control scabies
- Treat diarrhoea with ORS and other homemade fluids
- Identify sick family members and refer to next level health facility
- Provide vitamin A supplementation
- Provide first aid treatment
- Follow up of HIV/AIDS and TB patients
- Provide training, support and encouragement for community health workers and coordinate their activities
- Facilitate care and support for HIV/AIDS patients and facilitate support for orphans and vulnerable children

Community based health packages

These deal with communication of health information to the community using traditional and indigenous community associations which in the Ethiopian situation are called "idir", "mahber" and "ekub", and community based organizations such as schools, women and youth associations and religious institutions. As part of this effort HEWs carry out community mobilization, community-based organization mobilization and provide services at 3-4 outreach sites. Services HEWs provide at the outreach setting are:

- Health education
- Vaccination of mothers
- Family planning services
- Antenatal care and counselling
- Child growth promotion and nutritional counselling
- Nutritional assessment of pregnant women and counselling
- Malaria prevention and control activities where needed
- Treatment of trachoma using tetracycline ointment and counselling on face washing
- Prevention and control of scabies
- Treatment of diarrhoea with ORS
- Identification of sick children or members of the family and referring to the next-level facility
- Vitamin A supplementation for the target groups
- First aid
- Health education and demonstration in schools

Initial Training of CHWs

After recruitment the HEWs are sent to one of the technical and vocational training schools (TVETS) in the country for one year training, in case of agrarian HEWs. The HEP was designed to use about 40 such training schools in various parts of the country to train HEWs for agrarian and pastoralist communities. Once they are back to their communities, the HEWs then train volunteer CHWs that can support them in providing the services to the households and individuals.

Recently the government has launched a variant of HEP for urban setting which trains registered nurses for three months before deployment to urban communities. The HEP for urban setting has just started and the first batch of trainees is still undergoing training.

Agrarian HEWs are trained for one year, 30% of the time in theoretical courses and 70% of the time in practical training including apprenticeship attachment to health centers and project attachment to the community. Attachment to health facilities and community is for about three months. The training syllabus and breakdown is shown below:

Box 7: Content and Structure of Training Program for HEWs

Course Structure of Health Service Extension Workers

<i>Theoretical training</i>	30%	<i>Practical training</i>	70%
Community documentation		<i>Practical works</i>	
Family health care		Models training	
Disease prevention and control		Group assignment	
Environmental health promotion		Demonstration and role play	
Supportive courses		<i>Apprenticeship</i>	
Common courses (English, mathematics, IT and entrepreneurship)		Health facility attachment	
	Community attachment		

But duration of training for HEWs intended to work in the pastoralist community is only six months due to the problem of finding trainees that meet the criteria laid out in the HEP guidelines and using a slightly changed (lighter) curriculum. By the end of 2008, 30,190 HEWs had been trained in 32 TVETS distributed throughout the country, 18 in Oromia, 3 in Amhara, 7 in SNPPR, and one each in Gambella, Benishangul Gumuz, Somali and Afar regions.

Till recently the training of HEWs focused primarily on agrarian and pastoralist HEP. However in 2009 training package for urban HEP has been launched and urban HEWs are expected to be deployed after graduation of the first round trainees. The HEWs are trained at the certificate level. They are able to upgrade to higher levels of health professional status through training and growth in the career path prepared by the MoH and the government. The Urban HEWs are registered nurses who are trained for three months on urban HEP packages. Figure 3 shows the annual build up of HEWs since the beginning of the Program:

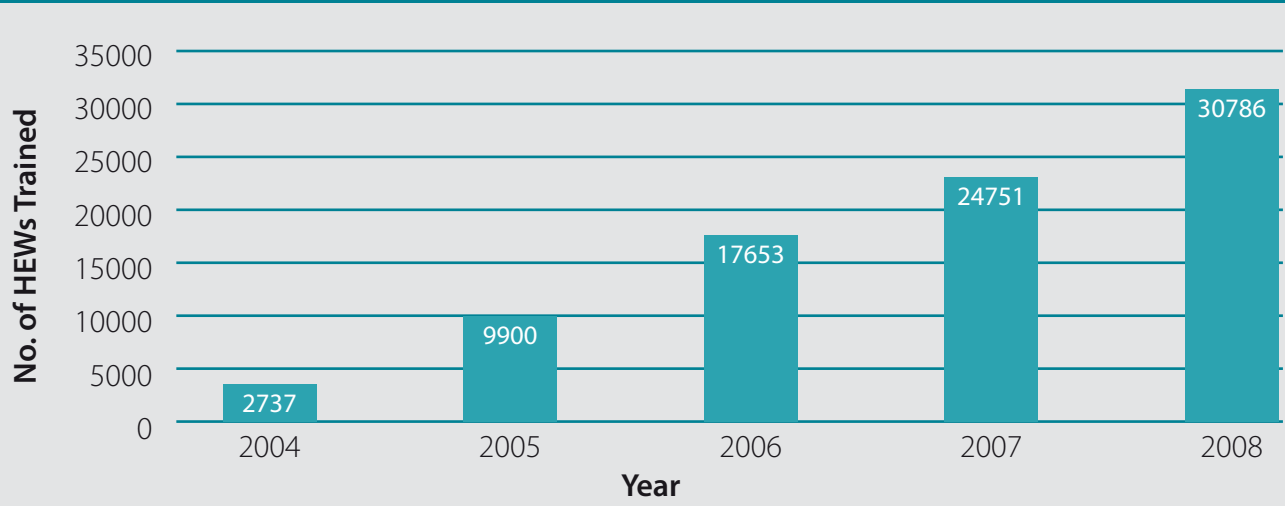
Deployment

HEWs are deployed in the health post, a community level health facility that serves a population of about 5000 people. The health post is the lowest level health facility. Five such health posts together with a health center constitute a primary health care unit of the Ethiopian health care delivery system. There were 9914 health posts constructed in the country in 2007. Two HEWs are deployed in each health post and are supported by village community health workers (VCHWs) in each kebele. The number of VCHWs in a kebele usually ranges between 10 and 25. As a result HEWs to population ratio is usually 1:2500. Health posts are built either by the health system or the community and will usually have at least two rooms.

On-going Training of CHWs

In HEP the HEWs are expected to attend a series of integrated refresher training (IRT) to improve their skill and sustain their motivation and contribution. The district health office identifies gaps in knowledge and skills of HEWs through regular supervision visits.

Figure 3: Cumulative number of HEWs Trained and Deployed (2004 – 2008)



Data source: Abaseko, 2009

Training of Trainers

Trainers of HEWs are based at Technical and Vocational Training Schools (TVETS). These TVETS are under the Ministry of Education (MOE) and are distributed throughout the country, in different regional states. However, the trainers, who are environmental health workers and nurses by profession, are recruited by the MOH and then transferred to MOE institutions and trained for three months before assuming their new role of training HEWs. Their instructors were drawn from the health sector.

Equipment and supplies

The basic equipment and supplies available to the HEW are shown in Box 8 (Center for National Health Development in Ethiopia, 2008c).

Supervision

The importance of supervision has received more emphasis recently as a reaction to gaps identified from early assessment of implementation of the program. In response to the problem government launched a strong supervisory system. The supervisors are either nurses or environmental health professionals who are trained for two months on supervisory skills to support the HEP. So far about 3200 HEW supervisors have been trained. The supervision is linked with integrated refresher training (IRT) to address the skill and knowledge gaps identified during supervisory visits. There is one supervisor for ten HEWs and five health posts. A Checklist is used in the supervisory visit and HEWs are provided supportive supervision. The supervisors are health center-based and are accountable to the District Health Management Office (DHMO). The DHMOs are in turn supported by Regional Health Bureaus (RHB), which are also visited every 3 months by the FMOH.

Performance Evaluation

Primarily due to its short life of just about five

years, there has not been many comprehensive evaluations of the national HEP/HEWs program of Ethiopia. The only comprehensive evaluation was carried out by CNHDE and The Earth Institute of Columbia University in 2007 and the findings were released in 2009. This evaluation was done after about one and a half years of implementation and the findings may not reflect the performance of the program when it is fully implemented and fairly resourced. Some of the challenges identified in the report are being addressed already. The CHNDE evaluation study which had a before and after design, looked into three aspects of the HEP: effect of the program on health and related aspects of the households, HEWs' performance in provision of the health service packages and the performance of HPs in terms of facilities and productivity. Reports of the study released in three volumes corresponding to three aspects of the program. The repeated cross-sectional study compared the baseline study information that was collected in 2005 with the findings of the follow-up study conducted between November 1-December 30, 2007 from the HEP communities. Table 40 shows some of the findings of the evaluation.⁸⁵⁻⁸⁷

Incentives

Like many developing countries Ethiopia has experimented with volunteer CHWs after the PHC declaration of Alma Ata. One of the lessons from the past was that incentive is a crucial factor in sustaining community based health services provided by volunteers. Therefore, in the national HEP, Ethiopia has tried to address this problem by introducing paid HEWs who are no more volunteers but civil servants paid from the treasury of state governments. The monthly salary has slight variation from region to region ranging between Birr 530 (about USD 45) and 760 (about USD 63) with majority getting Birr 670 (about USD 56). This is a fairly reasonable stipend by Ethiopian standards. However, according to a 2007 evaluation by The Center

for National Health Development in Ethiopia (CNHDE) and The Earth Institute at Columbia University, about half of the HEWs do not feel that the level of payment is adequate and/or commensurate with the workload and training duration that they undergo (Center for National Health Development in Ethiopia, 2008b).⁸⁵

Community Involvement

Communities are involved in selecting the HEW who will work in their area. They are also involved in supporting the work of the HEW in communication of health information to the community using traditional and indigenous community associations which in the Ethiopian situation are called “idir”, “mahber” and “ekub”,

and community based organizations such as schools, women and youth associations and religious institutions. As part of this effort HEWs carry out community mobilization, community-based organization mobilization and provide services at 3-4 outreach sites.

Referral System

The HEW screens patients who need treatment beyond first aid and refers them on to the health centre or the nearest available health facility. She also helps to follow up patients in the community on long-term treatment such as HIV/AIDS and TB patients and links them to the health facility.

Box 8: Basic Equipment and Supplies Available at the Health Post for Use by the HEW

<i>Service area</i>	<i>Furniture and equipment</i>
ANC and delivery	Adult weighing scale, ANC kit, Blood pressure apparatus, Foetoscope Delivery kit, Delivery table, Neonatal resuscitation mask & bag
Child care	Baby weighing scale, Measuring tap (1.5mt, Measuring board Graduated measuring jar Spoons
Immunization	Refrigerator , Vaccine carriers (ice bags) , Ice box
First aid care	Gowns, Examination bed, Stretcher, Stethoscope, Thermometer
Others	Spatula, Torch light
HEALTH POST ESSENTIAL MEDICINES	
<i>Service areas</i>	<i>Essential medicines</i>
Antimalarial Drugs	Coartem(ACT), Chloroquine, Both ant malarial drugs
Diarrheal control	ORS
Contraceptive methods	Oral contraceptives, Depo-provera injection, At least one method Both contraceptive methods
Micronutrient Supplementation	Iron Tablet , Folic Acid, Vitamin A, Capsule 100,000 IU Vitamin A, Capsule 200,000 IU
Others	Analgesics -Aspirin/Paracetamol, Ergometrine-500mg, TTC eye ointment Baby Lotion (Bottle
HEALTH POST SUPPLIES	
<i>General</i>	<i>supplies</i>
	AD Syringes and needles, Mixing Syringes , Syringes and needles, Gloves Gauze, BCG OPV, DPT, Measles, TT, Alcohol, Savlon, Iodine , GV, Disinfectants , Cord Ties , RDT for Malaria , Condoms

Professional Advancement and career path for HEWs

HEWs are also entitled to upgrading programs that would raise their level of education from certificate to diploma level as registered nurses. The method of upgrading is designed in a distance course mode with a period of hands-on training. Guidelines are being developed to allow them to continue their professional career even into higher degrees of qualification such

as, bachelors, masters and PhD degrees subject to their fulfilling university entry requirements.

Documentation and Information Management

Basic records are kept by the HEW on cases seen or referred and items dispensed or used.

Table 40: Summary of Selected Performance Indicators from Evaluation Reports

Program coverage	Coverage is about 100%
Preventive and promotive service delivery	Vaccination promotion coverage: BCG coverage is 57.1%, and measles 39.5% Contraceptive usage: CPR is 24.8%
Support system for CHWs and their performance	Recruitment: 80% that meets program selection criteria Training: 100% received introductory training Knowledge: 38% of HEWs had comprehensive knowledge on ANC. Skills and knowledge gaps exist especially related to pregnancy, delivery and care of the newborn, Supplies and equipment: 22.6% of health posts had at least 60% of the minimum set of medical equipment, only 7.5% had 80% of minimum medical equipment, 81% had vaccine carriers, 30.2% of health posts were equipped to carry out static immunization services, 67% of posts had first aid kits. Salaries: HEWs get regular payment from the district Supervision and LHS: 50% reported supervisor meeting in last 30 days Support from health care delivery system: % facilities that lacked important medicines and supplies on the day of survey (other drug availability or stock out information) 36% of health posts lacked Coartem, 41% lacked ORS; 45% of health posts reported not having had stock out of Coartem for the 3 months preceding the survey
CHW services and the poor	As HEP services involve all households in the community and are free of charge the poor will have equal access to the services through the home visits, one-on-one conversation with mothers and husbands, community packages and health post based services in the community. But the poor may not comply with the referral of the HEWs. Indicators of population served compared with national figures? 1.2 millions In Central Plateau and half of the Artibonite region.
CHW impact on health	Any information on how CHWs impact on health areas served compared to those not served? Improved knowledge and use in HEP areas compared to non-HEP areas in improved sanitation (75.6% of 36.3%), proper human waste disposal (57.6% of 34%), hand washing facilities present (55.7% of 39.9%). There was less improvement in CPR (24.8% of 21.7%).
CHW costs – current and future	The program has reliable funding for salary of HEWs. But supplies, supervision and training seemed to face some challenges.

Table 41 - CHW Program Functionality Assessment Tool (CHW-PFA)-Ethiopia

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/Evidence
	0	1	2	3 (best practice)	
1 Recruitment How and from where a community health worker is identified, selected, and assigned to a community.	CHW not from community and plays no role in the recruitment.	CHW is not recruited from community but the community (reluctantly) accepts the identified CHW after selection.	CHW is not recruited from community but the community is consulted on the final selection.	3 (best practice) Recruited from community when possible. If not possible, the community is consulted during the process and agrees on recruitment selection.	3
2 CHW Role Alignment, design and clarity of role from community, CHW, and health system perspectives.	Role is not clear or agreed upon between CHW, community and formal health system.	No formal role of CHW exists (no policies in place) General expectations are given to CHW (initial training) but are not specific. CHW and community do not always agree on role/expectations.	Health system defines (policies exist) the CHW role but without community input. Role is clear to CHW and community but little discussion of specific expectations. General agreement on role between CHW, health system, and community.	Health system, community, and CHW design the role/expectations and policies in place that support CHW role. Role and expectations are clear to CHW and community. Process for update and discussion of role/expectations in place for CHW and community	3
3 Initial Training Training provided to CHW to prepare for role in MCH services delivery and ensure he/she has the necessary skills to provide safe and quality care.	No initial training is provided.	Minimal initial training is provided (1 workshop, etc). Some CHWs attend workshops on specific topics.	Initial training is provided to all CHWs within the first year of recruitment. Training does not include participation from community or from referral health center.	Initial training is provided to all CHWs within the six months that is based on defined expectations for CHW. Some training is conducted in the community or with community participation. Training is consistent with health facility guidelines for community care and health facility is involved in training.	3
4 On-going Training On-going training to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned.	No ongoing training is provided	Occasional, ad hoc visits by supervisors provide some coaching.	On-going training is provided on a regular basis. Some supervisors follow up with coaching. Note: Functional CHWs have been trained (or updated) within the last 18 months.	On-going training is provided to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned. Training is tracked and opportunities are offered in a consistent and fair manner to all CHWs (not only some)	2
5 Equipment and Supplies Required equipment and supplies to deliver expected services.	No equipment and supplies are provided.	Inconsistent supply and restocking to support defined CHW tasks. No formal process for re-ordering.	Supplies are ordered on a regular basis although delivery can be irregular. Stock out of supplies essential for defined CHW tasks occur at a rate of x per year/mo	All necessary supplies; no substantial stock-out periods.	2

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
6 Supervision Supervision conducted on a regular basis to carry out administrative tasks and to provide individual performance support (feedback, coaching, data-driven problem-solving).	No supervision or regular evaluation occurs outside of occasional visits to CHWs by nurses or supervisors when possible (1x/year or less).	Supervision visits conducted between two and three times per year to collect reports/data (or group meetings at facility to turn in monitoring forms). No individual performance support offered on work (problem-solving, coaching)	Regular supervision visit at least every three months that includes reviewing reports, monitoring of data collected and occasionally provide problem-solving support to CHW. Supervisors are not trained in supportive supervision but are facility based health workers.	Regular supervision visit every 1-3 months that includes reviewing reports, monitoring of data collected. Data is used for problem solving and coaching. Supervisor visits community, makes home visits; provides skills coaching to CHW. Supervisor is trained in supervision and has supervision tools.	3
7 Performance Evaluation Evaluation to fairly assess work during a set period of time.	No regular evaluation of performance by CHW.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data. There are no rewards for good performance.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data (national /program evaluation). Community is not asked to provide feedback on CHW's performance. There are some rewards for good performance, such as small incentive gifts, recognition, etc.	At least once/year evaluation that includes individual performance (local evaluation) and evaluation of coverage or monitoring data (national /program evaluation) Community is asked to provide feedback on CHW performance. There are clear rewards for good performance, and community plays a role in providing rewards.	2
8 Incentives Financial= salary and bonuses Non-financial= training, recognition, certification, uniforms, medicines, etc.	No financial or non-financial incentives provided	No formal incentives provided but community recognition is considered a reward	Some financial or non-financial incentives are provided. Examples of non-financial incentives include occasional formal recognition, additional training, and other small incentives.	Financial and/or non-financial incentives are partly based on good performance. Incentives are balanced and in line with expectations placed on CHW. Examples of non-financial incentives that engage workers might include (advancement, recognition, certification process)	2
9 Community Involvement Role that community plays in supporting CHW.	Community is not involved with ongoing support to CHW	Community is sometimes involved (campaigns, education) with the CHW and some people in the community recognize the CHW as a resource.	Community plays significant role in supporting the CHW through mother's groups, networks, etc. CHW is widely recognized and appreciated for providing service to community.	Community plays an active role in all support areas for CHW, such as development of role, providing feedback, solving problems, providing incentives, helps to establish CHW as leader in community.	2

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
10 Referral System Is there a process for - determining when referral is needed - logistics plan for transport/payment to a health care facility when required - how referral is tracked and documented	0 No referral system in place: CHW might know when and where to refer client, but - no logistics plan in place by the community for emergency referral - information is not tracked or documented	1 CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is but have no formal referral process/logistics Referral is not tracked by community or CHW	2 CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and usually have the means to transport client Client is referred with a slip of paper and informally tracked by CHW (checking in with family, follow up visit) but information does not flow back to CHW.	3 (best practice) CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and have a logistics plan for emergencies (transport, funds) Client is referred with a slip of paper and information flows back to CHW with a returned referral form and/or monthly monitoring.	2
11 Professional Advancement The possibility for growth, advancement, promotion and retirement for CHW	0 No professional advancement is offered.	1 Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. No other opportunities are discussed with CHW. Advancement is not related to performance or achievement.	2 Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. Limited training opportunities are offered to CHW to learn new skills to advance role. Advancement is intended to reward good performance or achievement, although evaluation is not consistent (advancement might mean path to formal sector or change in role). No path to retirement is made clear to CHWs	3 Advancement (promotion) is offered to CHWs who perform well and who express an interest in advancement if the opportunity exists (advancement might mean path to formal sector or change in role) Training opportunities are offered to CHW to learn new skills to advance their role and CHW is made aware of them. Advancement is intended to reward good performance or achievement, and is based on fair evaluation. Retirement is encouraged and incentives are provided to encourage retirement at a set age.	2
12 Documentation, Information Management How CHWs document visits, how data flows to the health system and back to the community, and how it is used for service improvement	0 No process for documentation or info management is followed	1 Some CHWs document their visits and group monitoring visits to facility are attended by CHWs who bring monitoring forms. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	2 CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	3 CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities work with supervisor or referral facility to use data in problem-solving at the community.	3

Table 42- Community Health Worker Functionality Matrix – MCH Interventions

	MCH INTERVENTIONS	YES	COMMENTS
1	ANTENATAL CARE		
A	Iron folate supplements Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X X X	Comprehensive knowledge levels on ANC found to be low
B	Maternal nutrition Counsel Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	 X X X	
C	Counsel on birth preparedness/complication readiness <i>(includes counseling to use skilled birth attendant)</i>	X O	
D	Tetanus toxoid Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X X X	
E	Deworm Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 O O X	
2	CHILDBIRTH and IMMEDIATE NEWBORN CARE		
A	Prevent Infection/Clean Delivery (Hand washing, clean blade +/-or clean delivery kit)	X O	
B	Provide Essential Newborn Care a. Immediate warming and drying b. Clean cord care c. Early initiation of breastfeeding	 X X X	
C	Recognize, initially stabilize (when possible) and refer for maternal and newborn complications a. newborn asphyxia b. sepsis, c. hypertensive disorder d. hemorrhage e. prolonged labor and post-abortion complications	 X X X X X	Skills levels were found in evaluation to be low in these areas that deal with pregnancy, delivery, and care of the newborn.
D	Prevent PPH: AMTSL or use of uterotonic alone in absence of full AMTSL competency (e.g. oral Misoprostol)	O	Plans are underway to introduce Misoprostol
E	Provide special care for Low Birth Weight newborns (Kangaroo Care)	O	
3	POST-PARTUM and NEWBORN CARE		
A	Provide counseling on evidence-based maternal newborn health and nutrition behaviors a. clean cord care; b. exclusive BF through 6 months; c. thermal protection; hygiene;	 X X X	

	MCH INTERVENTIONS	YES	COMMENTS
	d. danger sign recognition;	X	
	e. maternal nutrition, etc.	X	
B	Assess for maternal newborn danger signs and provide appropriate referral.	X	
C	Provide Treatment for severe newborn infection (when community-based treatment supported by national guidelines.)	O	They only provide first aid then refer
4	EARLY CHILDHOOD		
A	Infant and young child feeding, IYCF: Provide counseling for immediate BF after birth; exclusive BF < 6 months; age-appropriate complementary foods	X	
B	Promote growth monitoring, weighing infants and recording progress	X	
C	Provide community based management of acute malnutrition (CMAM) using Ready to Use Therapeutic Foods (community-based recuperation of children with acute moderate to severe malnutrition without complications)	O	They provide advice on nutritional practices and nutritious foods.
D	Community-based treatment of pneumonia Counsel re recognition of danger signs, seeking care/ antibiotics Assess and treat with antibiotics	X O X O	
G	Refer for antibiotics Refer after treating with initial antibiotics Community-based prevention and treatment of diarrhea Counsel on hygiene Counsel on point-of-use water treatment Provide point-of-use water treatment Refer point-of-use water treatment Counsel on ORS Provide ORS Refer for ORS Counsel on Zinc Provide Zinc Refer for Zinc	X O O O O X X O O	
H	Vitamin A supplements (twice annually children 6-59 months) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X X X	
I	Effectively assess and recognize severe illness in children (danger signs) with appropriate referral.	X	
j	Counsel on immunizations Mapping/tracking for immunization coverage Provide Immunizations: -DTP -polio and or measles	X X X X	

	MCH INTERVENTIONS	YES	COMMENTS
	- +/- HIB - Hep B -Pneumovax -Rotavirus Refer for immunizations	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/>	
5	FAMILY PLANNING/HEALTHY TIMING AND SPACING OF PREGNANCY		
A	Counsel on HTSP/contraceptives Provide contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - depo Refer for contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - long-acting and permanent methods Provide FP counseling +/- administer contraceptives (e.g.;Oral Contraceptives)	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
6	MALARIA (Optional - Dependent Upon Country)		
A	Insecticide-treated mosquito nets to pregnant women and children Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
B	Intermittent preventive malaria treatment (IPTp) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
C	Community-based treatment of malaria (testing with Rapid Diagnostic Test or presumptive treatment per antimalarial per national guidelines.) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
7	PMTCT (Optional - Dependent Upon Country)		
A	Healthy timing and spacing of pregnancy Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	
B	Antibody testing to pregnant women and mothers Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/>	
C	Prophylactic ARVs/HAART to pregnant women mothers Counsel	<input checked="" type="checkbox"/> <input type="radio"/>	

	INTERVENTIONS	YES	COMMENTS
	Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/>	
E	Prophylactic ARVs/HAART to infants Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
F	Early infant diagnosis Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
G	Pregnant HIV-infected women tracking Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/>	
H	HIV-exposed infant tracking Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	

Summary and Conclusions

Ethiopia is implementing a nation-wide health extension program which is dependent on the health extension workers for implementation. The country has prioritized the development of the HEP as a strategy to increase access to essential health services for her people. The HEW is at the centre of this effort. This is being implemented with a unified strategy, curriculum and uniform training and supervision guidelines. The HEW are considered an extension of the formal health system and receive a regular pay. There are also clear structures for their supervision and linkage with the health department. They have the opportunity to upgrade their skills and advance in their careers. The program is well established and a first evaluation has shown positive results in terms of increased access to basic care services and improving coverage of key interventions. The HEW works as part and as an extension of the health care delivery system and are considered civil servants. The program is well accepted by all stakeholders and enjoys strong government leadership and funding through established budgetary mechanisms. An assessment of the context shows that the HEP/HEW program is reasonably well established with a score on the total program functionality matrix of 27 (Min 24, Max 36). However, there is still much scope for improvement particularly with regard to the scope of MNCH services being offered. The program would score 17 out

of a total of 34 on the MNCH matrix. There are clear national policies and guidelines for supervision, referral and linkage with the formal health care delivery system, which carries out regular supervision. The career pathway and opportunities for personal growth of the HEW are built into the program.

7. Uganda Village Health Teams

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Socio-economic and political context

Uganda is located in East Africa land locked with Kenya to the east, Sudan in the north, the Democratic Republic of Congo to the west, and Rwanda and Tanzania to the south. It covers an area of 241,139 square kilometers of which 18% is covered by open water and swamps. Uganda gained independence from Britain in 1962 and has had military dictatorships for many years. The current government took over after a protracted guerilla war from 1981 to 1986. According to the UNDP report of 2007/2008, Uganda has a per capita of 1454 US \$ and this gives the country a rank of 154th out of 177 countries whose data

Box 9: The structure of the Uganda National Health system

Health unit	Physical structure	Location	Population
Health Centre I	None	Village	1,000
Health Centre II	Outpatient services only	Parish	5,000
Health Centre III	Outpatient services, maternity, General Ward and laboratory	Sub-county	20,000
Health Centre IV	Outpatients, Wards, Theatre, Laboratory and blood transfusion	County	100,000
General Hospital	Hospital, laboratory and X-ray	District	100,000 – 1,000,000
Regional Referral Hospital	Specialists services	Region (3 – 5 districts)	1,000,000 – 2,000,000
National Referral Hospital	Advanced Tertiary Care	National	Over 20,000,000

Source: Adapted from Government of Uganda, Health Sector Strategic Plan, 2000/01 – 2004/05

was used. The same report quotes the physician to population ratio of 8:100,000.⁸⁸

The total population of the country was estimated at 29.6 million by 2008. With an annual population growth rate of 3.24%, the country is expected to have about 39 million people by 2015. The median age is 15.6 years according to the 2002 national census. The infant mortality rate stands at 76/1000 live births and a child mortality rate at 137/1000 according to the 2006/07 Uganda Demographic and Health Survey of 2006/07. The maternal mortality ratio per 100,000 live births is 435, total fertility rate 6.7, percentage of stunted children under five 38% and life expectancy 50.4 years.⁸⁹

The Uganda health care system

Uganda operates a decentralized health system where the health sector structure follows the administrative structure as indicated in the table below.

The national head quarters has the function of setting policies and guidelines for program implementation and service delivery, capacity building, monitoring, evaluation and support supervision, resource mobilization and coordination while the planning and implementation of the health sector is at the district level. The community health workers (CHWs) function at village level under the virtual health centre I.⁹⁰

The private health care providers comprise about 80% of the outpatient health care provision. Approximately a quarter of the health facilities are owned by the Private-Not-For-Profit which are mainly faith based and are located in the hard to reach areas. The majority of outpatient care is offered by private providers and 37% of the total health expenditure was out-of-pocket household payments according to the WHO statistical information system 2005.⁹¹

Uganda Village Health Teams and CHWs Program

The need to meet the Poverty Eradication Action Plan (PEAP) targets and the Millennium Development Goals (MDGs) necessitated the harmonization and universalisation of efforts towards community empowerment and mobilization for health (CEMH). Because of this, the National Health Policy of 1999 and the Health Sector Strategic Plan (HSSP) 1 (2000/2005) and HSSP II (2005/2010) included the CEMH as one of the elements of the Uganda National Minimum Health Care Package (UNMHCP). It was, however, the Home Based Management of Fevers (HBMF) program, rolled out after the Abuja Declaration 2000 that demonstrated the practicality and massive benefits of a sustained universal community empowerment and mobilization intervention in Uganda. When this was added to successes of more focal community efforts, such as Guinea worm Eradication Program, CB-DOTS, Ivermectin distribution, it became clear that an all embracing integrated community empowerment and mobilization strategy, the village health team (VHT) strategy could indeed be practicable and synergistically more beneficial.^{92, 93} The VHT strategy rolled out started in 2003.^{94, 95}

This program was selected for review as it is the main officially recognized nationwide CHW program that Uganda is developing/ implementing. It is the only CHW program that is well structured, and with clear curriculum and training materials agreed on by all the partners. All other programmes are rather ad hoc in nature and not nation-wide. The government is considering the use of only VHT members in every community based health intervention.^{96, 97}

Recruitment Process

The selection of CHWs follows a face to face sensitization session where the community members are first educated about the program and the need to have volunteers. The session fa-

cilitator who might be a technical person from the District Health Team or the nearest Health Centre (II or III) explains the kind of people they would prefer on the program.

For the VHT, selection is done by a popular vote after sensitization and consensus building of all stakeholders in the village and from all households and below is the criteria:

- Maturity (above 18 years of age)
- A resident of the village
- Ability to read and write at least in a local language
- A good community mobilizer and communicator
- A dependable and trust-worthy person
- Someone interested in health and development
- Willingness to work for the community (showing the spirit of voluntarism)
- Preference is given to people already serving as CHWs especially if they have served well ^{94, 97}

In the case of community medicine distributors (previously called community drug distributors), the Health Assistant from a Health Centre III would organize a meeting of village members through the Local Council (LC) I Chairman. Together with a member of the District Health Team, a sensitization about the program would be conducted and the community members briefed on the selection criteria for the community medicine distributor (CMD) ^{98, 99}.

In the case of Ivermectin distribution, the Kinship-enhanced community directed treatment with Ivermectin is being used in districts of Uganda where there is Onchocerciasis. In this model, the community is divided around kinships and these kinships select the distributors of ivermectin from amongst themselves. The

quality attributes remain the same and there is an added value of better service delivery since the drug distributors are serving a smaller area and fewer people to whom they have a kinship attachment ^{100, 101}.

This approach has proved to be more effective than the classic-community directed treatment with ivermectin in terms of treatment coverage, decision on treatment location and mobilization for CDTI activities.

To ensure sustainability and to avoid parallel programs, development partners rarely create new structures of community health workers. Partners like NGOs build on the existing resource persons given that their activities are short lived.

Community health workers are usually taken as volunteers within the community they hail from. They are not salaried or transferred from one place to another. They are not given a written contract spelling out the terms of service and payment. They may, however, be rejected by the community when the community members do not use their services and through their leaders cause to have another one appointed as a replacement for the one who falls out of favour with the community. If they do not fulfill their obligations to the supervisors at the health facilities, the latter can also have them replaced. They can migrate to other places but they would cease to function as CHWs unless they are again selected to be CHWs by their new host communities.

The CHW Role

The roles of Community Health Workers are explained well in the guidelines. For the VHT strategy which is an all inclusive approach, the selection process tries to mix different portfolios like the community medicine distributors, some extension workers (for the hygiene and sanitation), peer educators (for health education),

some traditional birth attendant and some member of the water source committees etc. Out of the nine VHT members, efforts are made to include different categories of community health workers. There are guidelines explaining the roles of community volunteers including those who may not fall under health. For example the Ministry of Water and Environment through the Directorate of Water Development has guidelines specifying the selection and the roles of water source committee members.

The roles can range from community mobilization and sensitization for activities like immunization, pregnancy monitoring to ensure compliance with safe motherhood for traditional birth attendants, drug distribution, referring patients, filling the registers (Community Based – HMIS), organizing health education events, participating in outreaches etc. In the VHT, although the members are drawn from different portfolios, the training is done in such a way that every member acquires skills to handle all these roles at the end of the training.

Initial Training of CHWs

The training of community health workers is conducted in a cascading manner whereby the district leadership is first sensitized about the program or strategy to be used. This is done by national level facilitators who might be from the Ministry of Health or any other development partner like the NGOs.

Because of resource constraints, the Ministry of Health and the districts have been unable to roll out the VHT strategy and this has called for support from the Development Partners. There are training guidelines for the VHT strategy which were developed by the Ministry of Health and these guidelines have management and technical issues that the VHT members have to be trained on. Management issues include; planning, coordination, data management like how

to fill in the registers. Technical issues include the diagnosis and treatment (handling and administration of drugs).

The District Health Team then takes it upon itself to train the trainers. The trainers are usually invited from Health Centres (levels III and II). Because of understaffing at health centre IIs, trainers are usually drawn from the Health Centre III. The duration of the training depends on the resources available (including the capacity of the training agency) and context.

In the case of the VHT strategy where all the other categories of community health workers are being integrated, the training manual is so comprehensive that it tackles almost all community health aspects and the initial training is supposed to last 10 working days. The others are needs based sessions which are conducted during the quarterly meetings at the health facility or as these members collect the supplies. The contents of the VHT training manual, divided into modules are as below:⁹⁶

MODULE 1: THE VILLAGE HEALTH TEAM (VHTS) CONCEPT

Topic 1 The Village Health Teams (VHTs)
Topic 2 Key actors in the VHTs implementation and sustainability

MODULE 2: COMMUNICATION

Topic 1 Communication
Topic 2 Interpersonal Communication (IPC)
Topic 3 Counseling
Topic 4 Adult-learning and facilitation skills
Topic 5 Provision of basic health messages (Health Education)

MODULE 3: COMMUNITY MOBILIZATION AND EMPOWERMENT

Topic 1 Community mobilization and empowerment
Topic 2 Community situation analysis
Topic 3 Community participation and

involvement
Topic 4 Participatory planning
Topic 5 Resource mobilization and management
Topic 6 Community-based health information management system

MODULE 4: CHILD GROWTH AND DEVELOPMENT

Topic 1 Home Based Management of Fevers
Topic 2 Immunization
Topic 3 Control of diarrhea
Topic 4 Food and nutrition
Topic 5 Breast feeding

MODULE 5: CONTROL OF COMMUNICABLE DISEASES

Topic 1 Sexually transmitted diseases (STDs)
Topic 2 HIV/AIDS
Topic 3 Malaria
Topic 4 Tuberculosis (TB)

MODULE 6: SEXUAL AND REPRODUCTIVE HEALTH

Topic 1 Family planning (Child spacing)
Topic 2 Pre-conception and antenatal care
Topic 3 Care given after delivery
Topic 4 Adolescent sexual and reproductive health
Topic 5 Gender-based violence

MODULE 7: ENVIRONMENTAL HEALTH

Topic 1 Sanitation
Topic 2 Water
Topic 3 Personal hygiene
Topic 4 Domestic hygiene
Topic 5 School hygiene
Topic 6 Food hygiene

MODULE 8: COMMON NON-COMMUNICABLE DISEASES

Topic 1 Mental health

MODULE 9: MONITORING

Topic 1 Monitoring
Topic 2 Record keeping

Topic 3 Home visits

On-going Training of CHWs

Continuous training of CHWs is largely through needs based sessions which are conducted during the quarterly meetings at the health facility or as these members collect the supplies.

Training of Trainers

The trainers are mixed in such a way that both the management and technical aspects in the training manual are handled. Development partners rely on the district health personnel from the Health Centers II, III, or the District Health Team for the technical personnel to handle the technical aspects. Where there is need, different trainers who may not necessarily be health workers come in to handle the management aspects. Where Development Partners are involved, these may be the project staff or consultants. The sensitization about the strategy is done at the district, Sub County and Parish level and it is usually from these Health Centres (II and III) that trainers are identified. They then attend the training at the Sub County level to come back and train the selected VHT members.

Equipment and supplies

Community Health Workers are provided with different equipments and supplies depending on the program and the availability of resources. In districts where development partners are actively participating, the facilitation can stretch up to provision of bicycles, umbrellas, T-Shirts, Gum-boots, sometimes allowances etc.

These are, however, not affordable for community health workers who are purely facilitated by the government and this creates competition for these community health workers.

Under the Public Private Partnerships for health

policy, the Project Steering Committee is supposed to allow those development partners who are coming in to fill gaps in the use of VHTs.

"If you have a project that facilitates community health workers and leaves out others, those left out plus the community will refuse to own the project and they will always say that those are AMREF VHTs" (KI, AMREF).

With the old system of each program having its community health workers, there has been attempts to adopt cost effective models like the home based care of TASO was initially very expensive until they adopted the drug distribution points where patients go for drug refills and the use of a community nurse to offer home based care to the bed ridden clients. Some of the drugs distributed at home include Coartem, Amoxicillin and Paracetamol.

Supervision

The CHW supervisors main functions are to:

- Provide support and guidance
- Monitor patients in case of adverse reactions to drugs
- Provide the necessary supplies
- Monitor the performance of the program
- Tracking the medicines and other supplies released to these VHTs

Supervision of community health workers is done in both a supportive and fault finding way. In the sensitization meetings with the village members, there is some form of yard stick establishment which can be used to hold these community health workers responsible and accountable. The beneficiaries report their complaints to the local council leadership or the nearest health facility. Also the nearest health facility which is supposed to supervise the activities of these community health workers can

conduct a spot check. The other way in which faults are found is when the registers have some shortcomings. In cases of failure, a replacement is sought. Cases of community health workers charging fees for the services, delayed referrals, discrimination, extra have all been rectified through this joint supervision.

The support supervision is built within the community and the health system. The community passes some form of bye-laws that can be based on how to handle beneficiaries who do not comply for like the case of latrine construction; there is a fine which the culprit pays to the local council. The health worker provides support supervision on the weaknesses identified in the reports, complaints from the community and questions or challenges presented by the community health workers themselves. It is usually during the quarterly meetings, escorted referral, on outreaches or when collecting supplies that community health workers and the health workers interface.

"The requirement for quarterly meetings helps to rejuvenate the competences of these community health workers. This could be based on the way data is recorded in registers or the experience sharing in a meeting of community health workers" (KI, UNACOH).

In the case of Ivermectin distributors, there are supervisors at community level to supervise the kinship distributors, 2 supervisors at parish level (one community member and a Chairman LC II or the Parish Chief). In addition, the Health Assistant at the HC III supervises the activities of all the above persons.

Performance Evaluation

The Ugandan VHT program is still new and no evaluation has been done as yet. However, there have been isolated evaluations of various NGO programs that involve CHWs. UNICEF conducted

an assessment of Home Based Management of Fevers using the CORPs (Community Owned Resource Persons).^{102, 103}

Incentives

The Ugandan CHWs officially do not receive a stipend and mechanisms to support them are left at the discretion of the communities they serve as well as NGOs operating in their areas. Some projects provide CHWs with T-shirts, gum-boots, rain jackets, bicycles, transport allowances and lunch allowance.

Community Involvement

Community involvement happens through the community selecting their CHWs and also monitoring their performance in relation to expectations from the community. As mentioned before, the community can cause their CHW to be replaced if they are dissatisfied with his/her performance. The community gets linked to the activities of the health facility through the CHW interacting with the local health facility staff who have the responsibility to supervise the CHWs.

Referral System

The CHWs are not considered a part of the formal health system. In areas where they are active, they are known to the health staff operating there, and they freely refer. CHWs are mainly involved in the prevention of diseases through health promotion. They are involved in curative services only when they have been provided with basic medicines which they can administer to patients in the community. For the bed ridden patients, a referral is made to the appropriate service provider. In the case of HIV/AIDS for example, the referral system involves calling a health worker to come to the patient and provide home based care.

"For the mothers, when you are taking the child for treatment at a health centre, you feel confident because you are not going to suffer with the health workers who do not know you once you have been

referred by the CHW" (KI, MoH)

Professional Advancement

Some community health workers accumulate experience and are sometimes used to train others. There were no cases of retirement reported except those who get opportunities outside the community and they are replaced. Attrition is high among the youth because they are likely to get married or leave the village in search of jobs. At the moment there is no formal certification program for CHWs.

Documentation and Information Management

The records do vary according to the program. In the updated VHT strategy which will commence in January 2010, these data tools have been harmonized to be used by any community health worker.

We have even adopted new registers and we do not want for example the Community Medicine Distributors having different registers from other VHT members we want them to have a harmonized register. We now need a VHT register that is standardized for all these community health workers. (KI, UNICEF).

Records are kept by CHWs

CHWs are expected to maintain basic health records on curative activities e.g., how many cases of malaria or pneumonia seen in the month, how many doses of treatments given out, any treatment complications, any referrals. These records are reviewed by their supervisors when they come to visit. In addition, CHWs provide monthly returns to the health facility as accountability for the drugs dispensed, on basis of which new drugs and supplies are provided. The same records are used by health workers to monitor patients. For the HIV/AIDS service delivery, adherence to ART and cases of drug misuse are monitored through such records.

Table 43 - CHW Program Functionality Assessment Tool (CHW-PFA) – Uganda

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/Evidence
	0	1	2	3 (best practice)	
1 Recruitment How and from where a community health worker is identified, selected, and assigned to a community.	CHW not from community and plays no role in the recruitment.	CHW is not recruited from community but the community (reluctantly) accepts the identified CHW after selection.	CHW is not recruited from community but the community is consulted on the final selection.	3 (best practice) Recruited from community when possible. If not possible, the community is consulted during the process and agrees on recruitment selection.	3
2 CHW Role Alignment, design and clarity of role from community, CHW, and health system perspectives.	Role is not clear or agreed upon between CHW, community and formal health system.	No formal role of CHW exists (no policies in place) General expectations are given to CHW (initial training) but are not specific. CHW and community do not always agree on role/expectations.	Health system defines (policies exist) the CHW role but without community input. Role is clear to CHW and community but little discussion of specific expectations. General agreement on role between CHW, health system, and community.	Health system, community, and CHW design the role/expectations and policies in place that support CHW role. Role and expectations are clear to CHW and community. Process for update and discussion of role/expectations in place for CHW and community	2
3 Initial Training Training provided to CHW to prepare for role in MCH services delivery and ensure he/she has the necessary skills to provide safe and quality care.	No initial training is provided.	Minimal initial training is provided (1 workshop, etc). Some CHWs attend workshops on specific topics.	Initial training is provided to all CHWs within the first year of recruitment. Training does not include participation from community or from referral health center.	Initial training is provided to all CHWs within the six months that is based on defined expectations for CHW. Some training is conducted in the community or with community participation. Training is consistent with health facility guidelines for community care and health facility is involved in training.	3
4 On-going Training On-going training to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned.	No ongoing training is provided	Occasional, ad hoc visits by supervisors provide some coaching.	On-going training is provided on a regular basis. Some supervisors follow up with coaching. Note: Functional CHWs have been trained (or updated) within the last 18 months.	On-going training is provided to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned. Training is tracked and opportunities are offered in a consistent and fair manner to all CHWs (not only some)	1
5 Equipment and Supplies Required equipment and supplies to deliver expected services.	No equipment and supplies are provided.	Inconsistent supply and restocking to support defined CHW tasks. No formal process for re-ordering.	Supplies are ordered on a regular basis although delivery can be irregular. Stock out of supplies essential for defined CHW tasks occur at a rate of x per year/mo	All necessary supplies; no substantial stock-out periods.	1

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
6 Supervision Supervision conducted on a regular basis to carry out administrative tasks and to provide individual performance support (feedback, coaching, data-driven problem-solving).	No supervision or regular evaluation occurs outside of occasional visits to CHWs by nurses or supervisors when possible (1x/year or less).	Supervision visits conducted between two and three times per year to collect reports/data (or group meetings at facility to turn in monitoring forms). No individual performance support offered on work (problem-solving, coaching)	Regular supervision visit at least every three months that includes reviewing reports, monitoring of data collected and occasionally provide problem-solving support to CHW. Supervisors are not trained in supportive supervision but are facility based health workers.	Regular supervision visit every 1-3 months that includes reviewing reports, monitoring of data collected. Data is used for problem solving and coaching. Supervisor visits community, makes home visits; provides skills coaching to CHW. Supervisor is trained in supervision and has supervision tools.	2
7 Performance Evaluation Evaluation to fairly assess work during a set period of time.	No regular evaluation of performance by CHW.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data. There are no rewards for good performance.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data (national /program evaluation). Community is not asked to provide feedback on CHW's performance. There are some rewards for good performance, such as small incentive gifts, recognition, etc.	At least once/year evaluation that includes individual performance (local evaluation) and evaluation of coverage or monitoring data (national /program evaluation) Community is asked to provide feedback on CHW performance. There are clear rewards for good performance, and community plays a role in providing rewards.	2
8 Incentives Financial= salary and bonuses Non-financial= training, recognition, certification, uniforms, medicines, etc.	No financial or non-financial incentives provided	No formal incentives provided but community recognition is considered a reward	Some financial or non-financial incentives are provided. Examples of non-financial incentives include occasional formal recognition, additional training, and other small incentives.	Financial and/or non-financial incentives are partly based on good performance. Incentives are balanced and in line with expectations placed on CHW. Examples of non-financial incentives that engage workers might include (advancement, recognition, certification process)	1
9 Community Involvement Role that community plays in supporting CHW.	Community is not involved with ongoing support to CHW	Community is sometimes involved (campaigns, education) with the CHW and some people in the community recognize the CHW as a resource.	Community plays significant role in supporting the CHW through mother's groups, networks, etc. CHW is widely recognized and appreciated for providing service to community.	Community plays an active role in all support areas for CHW, such as development of role, providing feedback, solving problems, providing incentives, helps to establish CHW as leader in community.	2

Component Definition	Level of Functionality: 0= non-functional; 1 =partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
10 Referral System Is there a process for - determining when referral is needed - logistics plan for transport/payment to a health care facility when required - how referral is tracked and documented	0 No referral system in place: CHW might know when and where to refer client, but - no logistics plan in place by the community for emergency referral - information is not tracked or documented	1 CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is but have no formal referral process/logistics Referral is not tracked by community or CHW	2 CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and usually have the means to transport client Client is referred with a slip of paper and informally tracked by CHW (checking in with family, follow up visit) but information does not flow back to CHW.	3 (best practice) CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and have a logistics plan for emergencies (transport, funds) Client is referred with a slip of paper and information flows back to CHW with a returned referral form and/or monthly monitoring.	1
11 Professional Advancement The possibility for growth, advancement, promotion and retirement for CHW	0 No professional advancement is offered.	1 Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. No other opportunities are discussed with CHW. Advancement is not related to performance or achievement.	2 Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. Limited training opportunities are offered to CHW to learn new skills to advance role. Advancement is intended to reward good performance or achievement, although evaluation is not consistent (advancement might mean path to formal sector or change in role). No path to retirement is made clear to CHWs	3 (best practice) Advancement (promotion) is offered to CHWs who perform well and who express an interest in advancement if the opportunity exists (advancement might mean path to formal sector or change in role) Training opportunities are offered to CHW to learn new skills to advance their role and CHW is made aware of them. Advancement is intended to reward good performance or achievement, and is based on fair evaluation. Retirement is encouraged and incentives are provided to encourage retirement at a set age.	0
12 Documentation, Information Management How CHWs document visits, how data flows to the health system and back to the community, and how it is used for service improvement	0 No process for documentation or info management is followed	1 Some CHWs document their visits and group monitoring visits to facility are attended by CHWs who bring monitoring forms. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	2 CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	3 (best practice) CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities work with supervisor or referral facility to use data in problem-solving at the community.	2

Table 44 - Community Health Worker Functionality Matrix			
	MCH INTERVENTIONS	YES	COMMENTS
1	ANTENATAL CARE		
A	Iron folate supplements Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 O O O	
B	Maternal nutrition Counsel Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	 X O O	
C	Counsel on birth preparedness/complication readiness <i>(includes counseling to use skilled birth attendant)</i>		
D	Tetanus toxoid Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X O O	
E	Deworm Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 O O O	
2	CHILDBIRTH and IMMEDIATE NEWBORN CARE		
A	Prevent Infection/Clean Delivery (Hand washing, clean blade +/-or clean delivery kit)		
B	Provide Essential Newborn Care a. Immediate warming and drying b. Clean cord care c. Early initiation of breastfeeding	 X X X	
C	Recognize, initially stabilize (when possible) and refer for maternal and newborn complications a. newborn asphyxia b. sepsis, c. hypertensive disorder d. hemorrhage e. prolonged labor and post-abortion complications	 X X O X X	
D	Prevent PPH: AMTSL or use of uterotonic alone in absence of full AMTSL competency (e.g. oral Misoprostol)	O	
E	Provide special care for Low Birth Weight newborns (Kangaroo Care)	X	
3	POST-PARTUM and NEWBORN CARE		
A	Provide counseling on evidence-based maternal newborn health and nutrition behaviors a. clean cord care; b. exclusive BF through 6 months; c. thermal protection; hygiene;	 X X X	

	MCH INTERVENTIONS	YES	COMMENTS
	d. danger sign recognition; e. maternal nutrition, etc.	X	
B	Assess for maternal newborn danger signs and provide appropriate referral.	X	
C	Provide Treatment for severe newborn infection (when community-based treatment supported by national guidelines.)	O	
4	EARLY CHILDHOOD		
A	Infant and young child feeding, IYCF: Provide counseling for immediate BF after birth; exclusive BF < 6 months; age-appropriate complementary foods	X	
B	Promote growth monitoring, weighing infants and recording progress	X	
C	Provide community based management of acute malnutrition (CMAM) using Ready to Use Therapeutic Foods (community-based recuperation of children with acute moderate to severe malnutrition without complications)	O	
D	Community-based treatment of pneumonia Counsel re recognition of danger signs, seeking care/ antibiotics Assess and treat with antibiotics	O O O	
G	Refer for antibiotics Refer after treating with initial antibiotics Community-based prevention and treatment of diarrhea Counsel on hygiene Counsel on point-of-use water treatment Provide point-of-use water treatment Refer point-of-use water treatment Counsel on ORS Provide ORS Refer for ORS Counsel on Zinc Provide Zinc Refer for Zinc	X O O X O O O O O O	
H	Vitamin A supplements (twice annually children 6-59 months) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	O O O	
I	Effectively assess and recognize severe illness in children (danger signs) with appropriate referral.	X	
j	Counsel on immunizations Mapping/tracking for immunization coverage Provide Immunizations: -DTP -polio and or measles	X O O O	

	MCH INTERVENTIONS	YES	COMMENTS
	- +/- HIB - Hep B -Pneumovax -Rotavirus Refer for immunizations	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
5	FAMILY PLANNING/HEALTHY TIMING AND SPACING OF PREGNANCY		
A	Counsel on HTSP/contraceptives Provide contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - depo Refer for contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - long-acting and permanent methods Provide FP counseling +/- administer contra- ceptives (e.g.;Oral Contraceptives)	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
6	MALARIA (Optional - Dependent Upon Country)		
A	Insecticide-treated mosquito nets to pregnant women and children Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
B	Intermittent preventive malaria treatment (IPTp) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 <input type="radio"/> <input type="radio"/> <input type="radio"/>	
C	Community-based treatment of malaria (testing with Rapid Diagnostic Test or presumptive treatment per antimalarial per national guidelines.) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 <input type="radio"/> <input type="radio"/> <input type="radio"/>	
7	PMTCT (Optional - Dependent Upon Country)		
A	Healthy timing and spacing of pregnancy Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 <input type="radio"/> <input type="radio"/> <input type="radio"/>	
B	Antibody testing to pregnant women and mothers Counsel Provide commodity or intervention/ Assess and treat	 <input type="radio"/> <input type="radio"/> <input type="radio"/>	
C	Refer for commodity, intervention, or treatment Prophylactic ARVs/HAART to pregnant women mothers Counsel	 <input type="radio"/> <input type="radio"/>	

	INTERVENTIONS	YES	COMMENTS
	Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/>	
E	Prophylactic ARVs/HAART to infants Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
F	Early infant diagnosis Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
G	Pregnant HIV-infected women tracking Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
H	HIV-exposed infant tracking Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	

Summary and Conclusions

The Ugandan CHW program is being implemented as part of the wider Village Health Team (VHT) strategy. Although the idea was initiated way back in 2003, implementation has been slow, mainly due to lack of resources. Hence, the program is still in its infancy. The total program functionality score was 20 (Min 24, Max 36) and the score on the MNCH matrix was only 8 out of a total score of 34. There has been slower than expected progress. However, most stakeholders have now bought into the idea and nationwide implementation is being rolled out. An assessment of the context shows that the recruitment and initial training of the community health workers is highly functional. The clarity of role, supervision, performance evaluation and community involvement, documentation, information and management are functional but gaps still remain. Ongoing training, supply of equipment and supplies, provision of incentives and integration in a referral system are not adequately done. Worse still, there is no professional advancement offered.

8. Mozambique Agentes Polivalentes Elementares Program

Socio-economic and political context

With a population of about 20 million, Mozambique has over the years registered an impressive recovery from civil and political unrest. It gained independence from Portugal in 1975 and endured a civil war between FRELIMO and RENAMO. A new constitution was approved in 1990 and civil war ended in 1992. Since then, the country has held regular multi-party elections and experienced peaceful change of leadership. Multiparty politics has been established and the country is stable.

At GNI per capita of \$340, Mozambique is still

a poor country with many problems but the social indicators are improving. For instance, under 5 mortality fell from 235 per 1,000 live births in 1990/92 to 138 per 1,000 live births in 2008. Economic and social reforms have been undertaken and the economy registered an impressive 8% growth rate between 1996 and 2008, accompanied by falling poverty rates and a 76% increase in net enrolment in primary school.¹⁰⁴

However, life expectancy at birth is estimated at 42 years and total adult literacy is estimated at 44%. Only 42% of the total population has access to improved drinking water sources, while only 19% of the rural population was using improved sanitation facilities by 2006. By 2007, only 15% of children under five with fever were estimated to be accessing anti malarial drugs. There is an estimated HIV prevalence rate of 12.5% in the population age-group 15-49 years.¹⁰⁵

Health Systems Overview

The health sector in Mozambique is led by the Ministry of Health, "Ministério de Saúde" (MISAU). Health facilities include hospitals, health centres and health posts. The health services are organized at 3 levels; national, provincial and district level.

Mozambique has 3 main Central hospitals in each region located in Maputo (which is also the final referral hospital for the whole country) for the Southern region, Beira for the Central region and Nampula for the Northern region.

The lowest level of care is provided by Health Posts (1 per about 28,000 people). Other health facilities include:

- Health Centres (1 per about 35,000 people)
- Rural Hospitals (1 per about 700,000 people)
- Provincial or General Hospitals (1 for every 1,500,000 people).

The main challenges that Mozambique faces with regards to health are:

- Low access to health care. Between 30-50% of the population have access to basic preventive and curative health services; i.e., those living within 10kms of a health facility,
- High level of Communicable Diseases (e.g., about 13% of adults are living with HIV/AIDS; annually there are about 18,000 cases of Malaria per 100,000),
- Lack of health staff and low health worker densities (0.027 physicians per 1,000; 0.322 nurses/midwives per 1,000; 0.029 environmental and public health workers per 1,000)
- General lack of material and financial resources (only \$9 per capita in 2001, \$12 pc in 2003). Mozambican total health expenditure as percentage of GDP was estimated at 4.7% (2003). Per capita total expenditure on health is about \$12 p.c. (\$7 from government). Close to 40% of household expenditure on health is out of pocket. The share of national budget allocated to health is at about 11%, still shy of the 15% committed at Abuja.

The major causes of death among children under 5 years include; neonatal causes (29%), HIV/AIDS (13%), diarrheal diseases (17%), malaria (19%), and pneumonia (21%).

With the successful peace process and ensuing stability with regular elections, a large number of international development partners came to provide support to Mozambique, especially in the health sector. In 2007, foreign aid contributed to 70% of the health sector's budget and this was expected to increase to 73% in 2008.

Mozambique adopted a "Sector Wide Approach" (SWAp) to the health sector in 2000 with the aim of improving the performance of the sector, strengthening government leadership, putting

greater emphasis on policy and strategy development and lowering the transaction costs of foreign assistance.

A total of 26 partners participate in the Health SWAP structure to enhance strategic dialogue among partners and between the Ministry of Health and partners on sector policies, priorities and performance in the context of Absolute Poverty Reduction Plan of Action (PARPA) and delivery of the sector strategic plan (PESS). Up to 30% of external funding is channelled through a Common Fund Mechanism (Prosaude).¹⁰⁶

Mozambique Agentes Polivalentes Elementares Program

Mozambique gained independence from Portugal in 1975. Immediately after this, Mozambique adopted the primary health care approach as strategy to provide health care to the population. In 1978 the Ministry of health started the Community Health Workers Program here known as Agentes Polivalentes Elementares (APE). The objective of this program was to rapidly expand health care to the rural areas which had been underserved during the colonial period. Between 1978 and 1988 a total of 1,500 APEs were trained under this program. As a result of civil war between 1977 and 1992, the training process and supervision were done under a lot of constraints. In 1983 the program started to decline. In 1989 the Ministry of Health officially declared that the program was being interrupted. From then up to date the Ministry of Health has not been able to implement it in a structured manner. Despite the fact that the Ministry did not train new APEs during this period, it continued providing medicine for the group. In several provinces NGOs had carried out the training for new APEs. However, most of these workers have disappeared from the system, calling into question sustainability of the program.

Now, the Ministry of Health is undertaking a plan to restore functionality of the APE program using a new model.¹⁰⁷ The rest of this document focuses on the proposed new approach.

This program was selected for review as it is the main officially recognized nationwide CHW program that Mozambique is developing/ implementing. It is the only CHW program that is well structured, and with clear curriculum and training materials agreed on by all the partners. All other programmes are rather ad hoc in nature and not nation-wide. The APE program is part of Mozambique's strategy to contribute to objectives of MDG 4 and 5.^{108, 109}

Recruitment Process (new proposed model)

The new APEs will be selected from the same community where they will work. Preference will be given to female candidates. The selection process will be managed by the District Health Directorate in conjunction with the community where the health professionals in the area will play a facilitative role in the selection process. As a measure to divert the APEs from the current tendency to mainly focus on providing curative services, the new approach recommends that most of the training should happen outside the health institutions. Also, it is recommended in this model that the training process must be carried out in the community where the APE will develop his/her activities. The candidate interested in becoming an APE must demonstrate his/her willingness to work in his/her community. The information will be disseminated through the health facilities and community radios. Selection of CHW is based on the following criterion:

- Preference for females (at least 60% should be women),
- permanent resident of the area (for which she is recruited),

- The candidate must have the ability to read and write Portuguese and have basic notions of arithmetic
- Should be between 18 to 35 years,
- past experience in community development,
- willing to carry out the services from her home
- Able to relate well both with the community to be served and with the health care system.

The final selection of the APEs will be done after the candidates undertake a reading and writing test. The proposal is that all the APEs will have a contract with the local Government and will receive a stipend in line with the country's minimum wage (equivalent to about 50 USD). Guidelines and instruments to be used for supervision are under development.

The contract will be signed on an annual basis. In case of lack of satisfactory performance of their duties the contract will be terminated if attempts to correct the situation are unsuccessful. The community will be involved in this process.^{110, 111}

The APE's Role

The prime role of the APE is to carry out health promotion and preventive activities for the Population within the catchment area. Each APE is expected to serve a population of 500 up to 2,000 inhabitants. The APEs establish the linkage between the national health care delivery system and the community, and will be responsible for mobilizing the community to participate in health services and health activities.¹¹²

The APE's routine activities are to:¹¹⁰⁻¹¹²

- Describe and Map the health area under his/her responsibility
- Register all family members in the catchment areas during their visits to households, and

maintain up to date information (this is to be started within the towns)

- To develop community awareness on the importance of the individual and community hygiene
 - To disseminate messages on the importance of protecting water sources
 - Visit with regularity the households under his/her responsibility
 - Keep in close liaison with influential women of her area including lady teachers, traditional birth attendants
 - Motivate and counsel clients for adoption and continuation of family planning methods
 - To promote the deliveries within the health facilities
 - Participate in outreach activities from health facilities, promoting growth monitoring, assessing common risk factors causing malnutrition and nutritional counseling
 - Promote nutritional education with emphasis on breast-feeding and weaning practices, maternal nutrition and macronutrient malnutrition
 - Coordinate with EPI for immunization of mothers against tetanus and children against vaccine preventable diseases and participate in various campaigns for immunization against EPI target diseases
 - Get involved in surveillance activities
 - Carry out prevention and treatment of common ailments e.g. malaria, diarrhea diseases, acute respiratory infections, intestinal parasites, scabies, snake bites, injuries and other minor diseases using essential drugs and refer cases to nearest centers as per given guidelines
 - Get involved in DOTS and malaria control programs
 - Identify and refer to the health facilities the suspected cases of AIDS, Tuberculosis and other conditions.
- Disseminate health education messages on individuals and community hygiene and sanitation as well as information regarding preventive measures against spread of AIDS
 - Submit monthly progress reports to in charge health center containing information regarding all activities carried out by him/her
 - To use rationally the medicine contained in the kit under his/her control.

Initial Training of APEs

The training of APEs will be conducted in 4 blocks for a total of 18 working weeks using program training manuals and curriculum, which is then followed by continual training at the health facility along with refreshers. After each block of lectures the trainees will be involved in practical activities in the field. After the first block, the task consists of learning how to design the catchment area and how to identify, along with the community leaders, the main health problems in a given health catchment area. After the second block, the task is to identify in the catchment area other community health workers and develop with them 3 sessions of health education. The third practical activities consist of identifying health workers working in preventive activities and developing 3 sessions of health education. After the last block, the trainee has the opportunity to work within the Health Facility to learn how to deal with the short list of diseases for which he/she has been trained. ^{110, 111}

Initial training (Block 1: 80 hours training)

The first block of basic training will take a total of 80 hours. In this period, the newly recruited APEs are trained to understand:

- The role and the APE's responsibility within the Community
- The relation between the community, APE and the health System
- The role of the leaders within the community on the health issues
- How the health system is organized including the different levels of care
- How the primary health care team is composed including the exact role of the community health worker within this group
- The basic principles of communication for change
- The basic principles of professional ethics
- The concepts of health and disease
- The notion of health determinants within a given community
- How to do a community health status assessment based on a guideline
- How to use the material provided for community health education
- How to register the activities developed in the community and to fill the existing forms and to prepare the activity reports
- The importance of washing hands and personal hygiene for disease prevention
- The importance of health sanitation in disease prevention
- The importance of water conservation to prevent common diseases

Block 2: Health promotion activities (120 hours of training)

The objectives of this block are to provide the trainee with the understanding on:

- Why the mothers have to follow antenatal and postnatal care in health facilities
- The potential risk of lack of antenatal care and home delivery
- The main methods for HIV prevention
- The importance of vaccination of children and women
- The importance of exclusive breastfeeding
- How to best use the locally available nutrients
- The importance of family planning for child survival
- The importance of monitoring child growth and development
- The basic mechanism of transmission of: malaria, diarrheal diseases, STIs, Tuberculosis and other respiratory infections.
- The basic principles for prevention of malaria transmission and other infectious diseases

Block 3: (120 hours training)

The second block follows the field practical activities. In this block, it is expected that at the end the trainee will be able to:

- Manage non complicated malaria cases with first line drugs
- Manage non complicated cases of diarrhea using oral re-hydration salts
- Identify cholera cases in the community and refer them to health facilities
- Manage non-complicated cases of Acute Respiratory Infections in children under five years old
- Provide first aid observing bio-safety best practices
- Identify suspected Tuberculosis cases, Leprosy cases, AIDS and other transmitted infection cases and refer them to the health facilities.
- Correctly use the protocols for patient referral and transference

Block 4 (40 hours)

This block is dedicated for practical activities in the community, to revise what has been covered and to do evaluation of the training.

On-going Training of CHWs

From time to time the health authorities will organize a refreshment training based on the training needs identified during the supervision process.

Training of Trainers

There is a national pool of about 20 CHW trainers who are expected to train other trainers at provincial and district levels. Training guidelines are being developed. A training of trainers will be carried out and these trainers will in turn be responsible to train and supervise local health facility staff that will be in day to day contact with the APEs.

Equipment and supplies

The CHWs are basically provided with essential medicines and supplies (in Kit C) including the following:

- Paracetamol Tabs 500mg
 - Coartem
 - Mebendazole Tabs 100mg
 - Oral rehydration solution
 - Cotrimoxazole Symp.
 - Ferrous Fumerate 150mg + Folic Acid 0.5mg
 - Cotton Bandages 4" x 3m
 - Benzyl Benzoate Lotion
 - Paracetamol Symp 120mg/ml
 - Antiseptic Lotion
- List of Non-Drug Items:
- Cotton Wool (250 Gram)
 - Sticking Plaster 1" x 5m
 - Pencil Torch with Two Cells

- Thermometer Clinical
- Scissors
- CHW Kit Bags containing weighing scale etc.
- Salter Scale with Trouser

Supervision

There is as yet no pool of supervisors trained. These supervisors are expected to be drawn from existing health facilities. These facilities are in turn routinely supervised by the health teams from the district and provincial levels. The health workers at the health units will be responsible to supervise the APEs close to their facilities.

The supervisors are public servants on a monthly salary. However, during the supervision visits they receive a per diem allowance. The health facilities are responsible to provide the means of transportation. Usually they use the vehicle available at the health unit.

Performance Evaluation

An evaluation of previous CHW activities is reported to have been conducted by the Swiss co-operation. The evaluation noted that the training was unstructured, ad hoc, involved mainly NGOs, was often localized in small areas and varied in duration and quality.^{110, 111} Specific data on program coverage, service delivery, support systems, impact on health and costs were not available.

In 2007, a national meeting on community involvement was convened and made the following observations:^{110, 111}

- Community involvement is still not well understood by health sector staff at all levels, who are not ready to develop community outreach activities;
- Most of the community outreach initiatives in the provinces are carried out by NGOs;

- There is no clear guidance regarding implementation of community outreach activities;
- The charges for consultations and sale of drugs by community health workers are not any different from those of private practice
- The training for community health workers and paramedics does not follow uniform criteria despite being carried out by the Provincial Health Directorate in partnership with NGOs; and
- There are inequalities in the payment of incentives to community health workers.

This national meeting also noted that data that are sent are often unreliable and that HIV/AIDS “counselors” are starting to exert pressure to become integrated into the NHS. ^{110, 111}

Incentives

During training the APE will receive a small amount of money for basic needs. This amount is not yet established. As soon as they start to work, they will have a contract with the local government and they will receive the equivalent of the minimum wage in the country (about USD 50). All medicines will be free under the new model.

Community Involvement

One of the roles of the APE is to establish the linkage between the health system and the community. In this role, the APE is in charge of mobilizing the community to be involved in several activities oriented to promoting better health. The community usually participates in sanitation activities e.g., to build community water and sanitation facilities. ^{110, 111}

When the health team organizes outreach activities, it is a primary responsibility of the APE to mobilize the community to participate. The outreach package in Mozambique includes: Antenatal care, postnatal care, family planning,

immunization, growth monitoring, follow-up of chronic diseases treatment (Tuberculosis and Leprosy).

Very often within the community there are other kinds of health activists and volunteers. The APE has the role to coordinate and in some cases supervise these groups. These agents and activists are being supported by among others NGOs, the Red Cross, women groups and others. It is proposed that all these will come under the overall supervision and co-ordination of the APE who will also act to link them up to the national health care system.

Referral System

The APEs are recognized by the health facilities. The APE can refer all patients with complicated conditions to the nearest health facility. In some areas the APE has a station where he/she does see patients. In that place usually he/she works together with the TBA to assist the deliveries happening at the community level.

Professional Advancement

The APE is still not considered as part of the formal human resources for health. He/she doesn't fit within the human resources for health career pathways. Because of this, even within the new model, APEs are not considered part of the public system and even though they have access to a retirement plan. In order to favor their growth within the system, all APEs are encouraged to continue with studies to upgrade their level. When the APE achieves the recommended level to start formal training as a health worker he/she will have priority for selection. This is the only way for an APE to become part of the formal system and enter a career pathway.

It is planned that those who are trained according to the new CHW profile and curriculum will be recognized by the Ministry of Health and all partners.

Documentation and Information Management

Basic records that will be kept by the APE will include numbers and types of patients seen, medicines given out, and health activities carried out. It is on the basis of submission of these reports that the APE will receive a new Kit C.

Table 45 - CHW Program Functionality Assessment Tool (CHW-PFA) – Mozambique

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/Evidence
	0	1	2	3 (best practice)	
1 Recruitment How and from where a community health worker is identified, selected, and assigned to a community.	CHW not from community and plays no role in the recruitment.	CHW is not recruited from community but the community (reluctantly) accepts the identified CHW after selection.	CHW is not recruited from community but the community is consulted on the final selection.	3 (best practice) Recruited from community when possible. If not possible, the community is consulted during the process and agrees on recruitment selection.	3
2 CHW Role Alignment, design and clarity of role from community, CHW, and health system perspectives.	Role is not clear or agreed upon between CHW, community and formal health system.	No formal role of CHW exists (no policies in place) General expectations are given to CHW (initial training) but are not specific. CHW and community do not always agree on role/expectations.	Health system defines (policies exist) the CHW role but without community input. Role is clear to CHW and community but little discussion of specific expectations. General agreement on role between CHW, health system, and community.	Health system, community, and CHW design the role/expectations and policies in place that support CHW role. Role and expectations are clear to CHW and community. Process for update and discussion of role/expectations in place for CHW and community	2
3 Initial Training Training provided to CHW to prepare for role in MCH services delivery and ensure he/she has the necessary skills to provide safe and quality care.	No initial training is provided.	Minimal initial training is provided (1 workshop, etc). Some CHWs attend workshops on specific topics.	Initial training is provided to all CHWs within the first year of recruitment. Training does not include participation from community or from referral health center.	Initial training is provided to all CHWs within the six months that is based on defined expectations for CHW. Some training is conducted in the community or with community participation. Training is consistent with health facility guidelines for community care and health facility is involved in training.	3
4 On-going Training On-going training to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned.	No ongoing training is provided	Occasional, ad hoc visits by supervisors provide some coaching.	On-going training is provided on a regular basis. Some supervisors follow up with coaching. Note: Functional CHWs have been trained (or updated) within the last 18 months.	On-going training is provided to update CHW on new skills, reinforce initial training, and ensure he/she is practicing skills learned. Training is tracked and opportunities are offered in a consistent and fair manner to all CHWs (not only some)	1
5 Equipment and Supplies Required equipment and supplies to deliver expected services.	No equipment and supplies are provided.	Inconsistent supply and restocking to support defined CHW tasks. No formal process for re-ordering.	Supplies are ordered on a regular basis although delivery can be irregular. Stock out of supplies essential for defined CHW tasks occur at a rate of x per year/mo	All necessary supplies; no substantial stock-out periods.	2

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
6 Supervision Supervision conducted on a regular basis to carry out administrative tasks and to provide individual performance support (feedback, coaching, data-driven problem-solving).	No supervision or regular evaluation occurs outside of occasional visits to CHWs by nurses or supervisors when possible (1x/year or less).	Supervision visits conducted between two and three times per year to collect reports/data (or group meetings at facility to turn in monitoring forms). No individual performance support offered on work (problem-solving, coaching)	Regular supervision visit at least every three months that includes reviewing reports, monitoring of data collected and occasionally provide problem-solving support to CHW. Supervisors are not trained in supportive supervision but are facility based health workers.	Regular supervision visit every 1-3 months that includes reviewing reports, monitoring of data collected. Data is used for problem solving and coaching. Supervisor visits community, makes home visits; provides skills coaching to CHW. Supervisor is trained in supervision and has supervision tools.	2
7 Performance Evaluation Evaluation to fairly assess work during a set period of time.	No regular evaluation of performance by CHW.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data. There are no rewards for good performance.	Once/year evaluation that is not based individual performance and includes only evaluation of coverage or monitoring data (national /program evaluation). Community is not asked to provide feedback on CHW's performance. There are some rewards for good performance, such as small incentive gifts, recognition, etc.	At least once/year evaluation that includes individual performance (local evaluation) and evaluation of coverage or monitoring data (national /program evaluation) Community is asked to provide feedback on CHW performance. There are clear rewards for good performance, and community plays a role in providing rewards.	1
8 Incentives Financial= salary and bonuses Non-financial= training, recognition, certification, uniforms, medicines, etc.	No financial or non-financial incentives provided	No formal incentives provided but community recognition is considered a reward	Some financial or non-financial incentives are provided. Examples of non-financial incentives include occasional formal recognition, additional training, and other small incentives.	Financial and/or non-financial incentives are partly based on good performance. Incentives are balanced and in line with expectations placed on CHW. Examples of non-financial incentives that engage workers might include (advancement, recognition, certification process)	0
9 Community Involvement Role that community plays in supporting CHW.	Community is not involved with ongoing support to CHW	Community is sometimes involved (campaigns, education) with the CHW and some people in the community recognize the CHW as a resource.	Community plays significant role in supporting the CHW through mother's groups, networks, etc. CHW is widely recognized and appreciated for providing service to community.	Community plays an active role in all support areas for CHW, such as development of role, providing feedback, solving problems, providing incentives, helps to establish CHW as leader in community.	2

Component Definition	Level of Functionality: 0= non-functional; 1=partly functional; 2= functional; 3 = highly functional				Current Level/ Evidence
	0	1	2	3 (best practice)	
10 Referral System Is there a process for - determining when referral is needed - logistics plan for transport/payment to a health care facility when required - how referral is tracked and documented	0 No referral system in place: CHW might know when and where to refer client, but - no logistics plan in place by the community for emergency referral - information is not tracked or documented	1 CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is but have no formal referral process/logistics Referral is not tracked by community or CHW	2 CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and usually have the means to transport client Client is referred with a slip of paper and informally tracked by CHW (checking in with family, follow up visit) but information does not flow back to CHW.	3 (best practice) CHW knows when to refer client (danger signs, additional treatment, etc) CHW and community know where referral facility is and have a logistics plan for emergencies (transport, funds) Client is referred with a slip of paper and information flows back to CHW with a returned referral form and/or monthly monitoring.	1
11 Professional Advancement The possibility for growth, advancement, promotion and retirement for CHW	0 No professional advancement is offered.	1 Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. No other opportunities are discussed with CHW. Advancement is not related to performance or achievement.	2 Advancement (promotion) is sometimes offered to CHWs who've been in program for specific length of time. Limited training opportunities are offered to CHW to learn new skills to advance role. Advancement is intended to reward good performance or achievement, although evaluation is not consistent (advancement might mean path to formal sector or change in role). No path to retirement is made clear to CHWs	3 Advancement (promotion) is offered to CHWs who perform well and who express an interest in advancement if the opportunity exists (advancement might mean path to formal sector or change in role) Training opportunities are offered to CHW to learn new skills to advance their role and CHW is made aware of them. Advancement is intended to reward good performance or achievement, and is based on fair evaluation. Retirement is encouraged and incentives are provided to encourage retirement at a set age.	2
12 Documentation, Information Management How CHWs document visits, how data flows to the health system and back to the community, and how it is used for service improvement	0 No process for documentation or info management is followed	1 Some CHWs document their visits and group monitoring visits to facility are attended by CHWs who bring monitoring forms. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	2 CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities do not see data analyzed and no effort to use data in problem-solving at the community is made.	3 CHWs document their visits consistently and group monitoring visits to facility are attended by CHWs who bring monitoring forms. Supervisors monitor quality of documents and provide help when needed. CHWs/communities work with supervisor or referral facility to use data in problem-solving at the community.	0

Table 46 - Community Health Worker Functionality Matrix			
	MCH INTERVENTIONS	YES	COMMENTS
1	ANTENATAL CARE		
A	Iron folate supplements Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 O X X	
B	Maternal nutrition Counsel Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	 X O X	
C	Counsel on birth preparedness/complication readiness <i>(includes counseling to use skilled birth attendant)</i>	X	
D	Tetanus toxoid Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X O X	
E	Deworm Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	 X O X	
2	CHILDBIRTH and IMMEDIATE NEWBORN CARE		
A	Prevent Infection/Clean Delivery (Hand washing, clean blade +/-or clean delivery kit)	 O O	Kit provided only for TBAs
B	Provide Essential Newborn Care a. Immediate warming and drying b. Clean cord care c. Early initiation of breastfeeding	 X X X	They do not provide but promote these practices especially as part of the Integrated Maternal and Newborn and Child Health.
C	Recognize, initially stabilize (when possible) and refer for maternal and newborn complications a. newborn asphyxia b. sepsis, c. hypertensive disorder d. hemorrhage e. prolonged labor and post-abortion complications	 O X X O X X	
D	Prevent PPH: AMTSL or use of uterotonic alone in absence of full AMTSL competency (e.g. oral Misoprostol)	O	
E	Provide special care for Low Birth Weight newborns (Kangaroo Care)	X	
3	POST-PARTUM and NEWBORN CARE		
A	Provide counseling on evidence-based maternal newborn health and nutrition behaviors a. clean cord care; b. exclusive BF through 6 months; c. thermal protection; hygiene;	 X X X	

	MCH INTERVENTIONS	YES	COMMENTS
	d. danger sign recognition;	X	
	e. maternal nutrition, etc.	X	
B	Assess for maternal newborn danger signs and provide appropriate referral.	X	
C	Provide Treatment for severe newborn infection (when community-based treatment supported by national guidelines.)	O	They refer when infection recognised
4	EARLY CHILDHOOD		
A	Infant and young child feeding, IYCF: Provide counseling for immediate BF after birth; exclusive BF < 6 months; age-appropriate complementary foods	X	
B	Promote growth monitoring, weighing infants and recording progress	X	They recognize and refer
C	Provide community based management of acute malnutrition (CMAM) using Ready to Use Therapeutic Foods (community-based recuperation of children with acute moderate to severe malnutrition without complications)	O	They recognize and refer to health facility
D	Community-based treatment of pneumonia Counsel re recognition of danger signs, seeking care/ antibiotics Assess and treat with antibiotics	O O O O	Started in some provinces to provide treatment using cotrimoxazole
G	Refer for antibiotics Refer after treating with initial antibiotics Community-based prevention and treatment of diarrhea Counsel on hygiene Counsel on point-of-use water treatment Provide point-of-use water treatment Refer point-of-use water treatment Counsel on ORS Provide ORS Refer for ORS Counsel on Zinc Provide Zinc Refer for Zinc	O O O O X X O O O O	There are plans to introduce zinc supplementation
H	Vitamin A supplements (twice annually children 6-59 months) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	X O X	
I	Effectively assess and recognize severe illness in children (danger signs) with appropriate referral.	X	
j	Counsel on immunizations Mapping/tracking for immunization coverage Provide Immunizations: -DTP -polio and or measles	X O O O	APEs participate to help the health worker in carrying out these activities but not by themselves

	MCH INTERVENTIONS	YES	COMMENTS
	- +/- HIB - Hep B -Pneumovax -Rotavirus Refer for immunizations	<input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/>	
5	FAMILY PLANNING/HEALTHY TIMING AND SPACING OF PREGNANCY		
A	Counsel on HTSP/contraceptives Provide contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - depo Refer for contraceptives: - condoms - Lactation Amenorrheic Method (LAM) - oral contraceptives - long-acting and permanent methods Provide FP counseling +/- administer contraceptives (e.g.;Oral Contraceptives)	<input checked="" type="checkbox"/> <input type="radio"/> <input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input type="radio"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Oral contraceptives being provided in some areas
6	MALARIA (Optional - Dependent Upon Country)		
A	Insecticide-treated mosquito nets to pregnant women and children Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Government provides ITNs within health facilities Treatment for malaria provided as part of home management of malaria
B	Intermittent preventive malaria treatment (IPTp) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="checkbox"/> <input type="radio"/> <input checked="" type="checkbox"/>	
C	Community-based treatment of malaria (testing with Rapid Diagnostic Test or presumptive treatment per antimalarial per national guidelines.) Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/>	Rapid Diagnostic Tests (RDTs) are being introduced in some areas.
7	PMTCT (Optional - Dependent Upon Country)		
A	Healthy timing and spacing of pregnancy Counsel Provide commodity or intervention/ Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/>	
B	Antibody testing to pregnant women and mothers Counsel Provide commodity or intervention/ Assess and treat	<input checked="" type="checkbox"/> <input type="radio"/> <input type="radio"/>	Discussion are going on to introduce community level testing for HIV
C	Refer for commodity, intervention, or treatment Prophylactic ARVs/HAART to pregnant women mothers Counsel	<input checked="" type="checkbox"/> <input type="radio"/>	

	INTERVENTIONS	YES	COMMENTS
	Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	<input type="radio"/>	
E	Prophylactic ARVs/HAART to infants Counsel Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>	
F	Early infant diagnosis Counsel Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>	
G	Pregnant HIV-infected women tracking Counsel Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>	
H	HIV-exposed infant tracking Counsel Provide commodity or intervention/Assess and treat Refer for commodity, intervention, or treatment	<input checked="" type="radio"/> <input type="radio"/> <input type="radio"/>	

Summary / Conclusions

Mozambique has chosen to develop and implement a preferred unified program of community health workers, Agentes Polivalentes Elementares (APE), as a means to increase access to basic health services to its people. Although CHW training is said to have started way back in 1978, the APE program is still considered to be under development and national plans, strategies, curricula and guidelines have only recently been put in place. Implementation is still in its early stages. This is further seen in the fact that the APE only scores 19 (Min 24, Max 36) on the CHW program functionality score. It is also clear that they are only offering a narrow scope of MNCH activities. The APE score on the MNCH functionality matrix was only 10 out of possible total of 34.

The APEs are expected to come from the communities which they will serve and communities are to be fully involved in their selection and monitoring their activities. An assessment of the context shows that while plans for their training as well as content seems to be clear and guidelines developed and in place, the link they will have with the formal health care delivery structures, their supervision, and career development are not yet well articulated. The APE are expected to work as part and as an extension of the health care delivery system and will receive a monthly remuneration close to the minimum wage, effectively making them civil servants. The program design was informed by wide scale reviews and consultation with the majority of the health stakeholders and thus has wide buy in. How effective the APE program will be in reaching the people with the impressive essential package of services that is being planned remains to be seen.

Table 47: Scoring Chart for Functional CHWs.

Country	CHW Program	Region/ Department	Total Program Functionality Score (Min: 24/ Max: 36)	Total Program Functionality Score (Min: 24/ Max: 36)	Number of CHW's in Program	
					Baseline	New/newly functional CHWs
Pakistan	Lady Health Workers Program – Pakistan	National Level	28	13	< 20,000 in 1994-95	> 92,957 in 2005-06
Bangladesh	Bangladesh Rural Advancement Committee	NGO organization given coverage to the whole Bangladesh	25	18	1,080 in 1990	78,000 in 2008
Thailand	Village Health Volunteer Program Thailand	National Level	20	10	500,000 in 1970	1,200,000 in 1996
Brazil	Programa Saúde da Família (Agentes Comunitários da Saúde)	National Level	34	4	5,000 in 1994	1240,000 in 2009
Haiti	Zanmi Lazante's CHW Program	Mountainous Central Plateau of Haiti and half of the Artibonite region (Lower Artibonite)	31	12	< 30 in the village of Cange in 1985	> 1,600 in 2009
Ethiopia	Health Extension Program	Country-wide implementation	29	17	-	30,190
Uganda	Uganda Village Health Team CHW Program	Proposed country-wide implementation	20	8	-	have trained up to 7,000 as of 2009
Mozambique	Agentes Polivalentes Elementares CHW Program	Proposed country-wide implementation	19	10	-	<1,000 trained as of 2009

Summary of Country Case Studies

We summarized a typology of CHW programs based on the country case studies performed, taking into consideration the context and the diversity of training program (including duration and content of training, supervision activities, and tasks assigned to CHWs), while acknowledging the existing limitations in the available information and in the methods used (Functionality assessment tool, desk review and interviews with key informants during country visits).

Typology of CHW programs based on training, supervision, task assignment characteristics, and on strength and profile of health system

Short to intermediate duration training programs, with preventive and basic curative tasks for CHWs, with relatively strong supervision activities, and within a weak health system: Haiti. Initial training lasts 3 months for health agents, 2 weeks for accompagnateurs, and 1 month for traditional birth attendants, and on-going training is performed during one year on a monthly basis. Content of training privileges promotional and preventive activities, with inclusion of theoretical and practical lessons, and through the use of a problem-based learning methodology. Specific training content varies depending on the type of CHW. The supervisory system is well organized and involves all levels of hierarchy of each institution, starting from the head of the Commune to public health nurses, HIV program nurses/ social workers to senior health agents/accompagnateurs to the rest of each group. These CHW programs are implemented by NGOs in the context of a weak health system, and they have a weak link with the health system, being restricted therefore to the NGO geographical influence area. Scaling-up of this kind of programs is unlikely to happen across the country, unless the public health system is

effectively strengthened. They have shown a positive impact on utilization of health services and on infant mortality in the influence area of the running NGOs.

Long duration training programs with preventive and basic curative tasks for CHWs, with a relatively weak supervision system, and within a weak health system: Ethiopia Health Extension Program (HEP) and Mozambique Agentes Polivalentes Elementares (APE) Program. In Ethiopia, initial training lasts one year and includes diverse aspects such as community documentation, family health care, disease prevention and control, environmental health promotion, supportive courses and common courses (English, mathematics, IT and entrepreneurship). Practical lessons are based on models training, group assignment, demonstration and role play, and there are also apprenticeship activities related to health facility attachment and community attachment. As for on-going training, the CHWs are expected to attend integrated refresher training courses to improve their skill and sustain their motivation and contribution, and the district health office identifies gaps in knowledge and skills of CHWs through regular supervision visits. Supervision activities are receiving further attention, although they need still substantial improvement. In Mozambique, initial training lasts 18 weeks, and on-going refreshment training activities are organized from time to time by health authorities, based on the training needs identified during the supervision process. Content of training is basically the same to that in Ethiopia, with emphasis on promotive, preventive and basic curative messages to be learned through theoretical and practical lessons. Supervision is not well structured and planned. These programs are implemented in Ethiopia and Mozambique within weak health systems, and their link with the health system is incipient. For Ethiopia, there is an external evaluation which is suggesting an association between the program implementation and increased uti-

lization and coverage. Whereas, in Mozambique there is no evidence that they have an impact on coverage and utilization of health services, let alone on health outcomes.

Short duration training programs with preventive and basic curative tasks for CHWs, with a relatively strong supervision system, and within a weak health system: Uganda Village Health Teams. This program is relatively new and is being implemented by the public sector with important support from donors. CHWs are not considered part of the health system and therefore there is no formal link with it. Initial training lasts 10 days. Continuous training of CHWs is largely through needs based sessions which are conducted during the quarterly meetings at the health facility or as these members collect the supplies. Content of training courses include aspects of community mobilization and sensitization for activities like immunization, pregnancy monitoring to ensure compliance with safe motherhood for traditional birth attendants, drug distribution, referring patients, filling the registers, organizing health education events, and participating in outreach activities, as well as diagnosis and management of prevalent maternal, neonatal and childhood problems. Supervision activities are well structured and are aimed to happen as both supportive and fault finding ways. No evaluation studies have been performed yet. Although the Uganda Village Health teams program receives continued support from the government, there are several drawbacks needing improvement, which include deficient on-going training, irregular supply of provision equipment and supplies, and inadequate provision of incentives and integration in a referral system, as well as lack of clear plans for professional advancement.

Long duration training programs, with promotional, preventive and basic curative tasks for CHWs, with a relatively strong supervision system, and within a relatively weak health system: Pakistan's

Lady Health Workers (LHW) Program. This is implemented by the central government within a mixed public and private health system. Initial training lasts 15 months. As for on-going training, all LHWs attend their respective health facility/ training center for one day each month to get refresher training on an identified topic. Training courses are divided into integrated training and task based training. Primary health care topics receive emphasis during the first period and field work is privileged during the second period. Major promotive, preventive and basic care topics are included during the whole training program. There is a well structured supervision system. The program link to the wider health system is quite strong, as revealed by a formal referral system and a continued political and budgetary support by the public sector. This LHW program is being implemented within a relatively weak health system. There is quite convincing evidence that this type of CHW program has an impact on health outcomes, although several health system limitations should be addressed to guarantee an effective scaling up.

Short duration training programs, with mostly promotional, preventive and basic curative tasks for CHWs and with a relatively strong supervision system, within a relatively strong health system: BRAC in Bangladesh, run by the private sector. Context: This program has been implemented within a context of relatively strong health systems. There is evidence showing that implementation of BRAC is related to increased coverage and utilization of health services in Bangladesh. It has been replicated in other countries such as Afghanistan. A high drop-out rate is the main limitation of the BRAC program. However, the referral system needs to be further strengthened and the formal evaluation of the CHWs should also be done on a regular basis to further improve their performance.

Short duration training programs, with mostly promotional, preventive and basic curative tasks for CHWs and with a relatively weak supervision system, within a relatively strong health system:

The Village Health Volunteers Program (VHV) in Thailand, run by the public health sector. Context: this program has been implemented within a context of relatively strong health systems. CHWs activities are strongly linked to the wider health system, although supervision activities in Thailand are rather limited. There is convincing evidence about the impact of the VHV worker program on health indicators such as malaria control, management of TB and HIV/AIDS and other infectious diseases like avian H5N1. In addition, the decentralization of health care system in Thailand has proved the inherent sustainability of the CHW program which continues to show improvement in the health scenario of the country by consistently decreasing the burden of diseases prevalent in the country. However, the referral system needs to be further strengthened and the formal evaluation of the CHWs should also be done on a regular basis to further improve their performance.

Long duration training programs, with mostly promotional and preventive tasks, and very restricted and basic curative tasks for CHWs, with a strong supportive supervision, and within a relatively strong health system, such as the Family Health Program (FHP) in Brazil. Initial training lasts 3 months, and on-going education is provided during local monthly and quarterly meetings.

This training is oriented toward local concerns of the agents or clinical family health team. Standardized training is provided whenever new practices are instituted, such as care for acute respiratory infections or procedures for reporting causes of deaths. The content of training privileges understanding of social and environmental determinants of health, as well as promotive and preventive aspects. Curative topics are restricted to very basic aspects, as CHWs are not expected to replace tasks regu-

larly performed by health professionals. They are expected instead to timely and adequately identify families and individuals at risk and refer them to the family health team. Supervision activities are regularly performed. Periodically, the instructor/supervisor (a nurse) brings together the CHWs, to evaluate their work and to reorient their activities. Alternatively, a nurse-supervisor visits each agent under her charge at least once a month to review problem cases and collect services data. In addition, one of the nine staff members of the agent program at the central office meets with each municipal supervisor every 2 to 4 months. The FHP is being implemented within a relatively strong and unified health system. CHWs activities are strongly linked to the wider health system. Specifically, CHWs are a key part of Family Health Teams, and all their activities are integrated to such family teams. There is compelling evidence about the positive impact of the FHP on health coverage, utilization and various health outcomes. Challenges to be overcome include development of effective recruitment and retention strategies, balance between CHWs personal expectations and managerial objectives aiming at reducing leakage of human health resources, need to change training from a narrow "medicalized" vertical approach to further emphasis on social determinants of health, and a continued resistance of professional corporations to the FHP innovative approach.

Synthesis of country case studies

Evidence shows that human force drives health system performances. Throughout history, periods of acceleration in health have been sparked by popular mobilization of workers in society.¹¹³ Higher worker density and better work quality improve population based health and population survival. In this section we took an in-detail ride of eight different CHW programs across the world.¹¹⁴

A lot of similarities were found across these programs with very few differences which were rather existed to meet the country specific targets and goals. According to the paramount functionality of CHWs program, CHW must be from the community and it even becomes the best if CHWs are chosen by the community. All these programs that we reviewed followed the best practice criteria and recruited CHWs from the community. In Brazil, Haiti, Ethiopia, Uganda and Mozambique, community is involved in their final selection; whereas in Pakistan and Thailand, they are chosen by community leaders; and in BRAC Bangladesh, they are nominated by village health organization. Apart from these characteristics, CHWs in all these programs are also scrutinized on their age limits, sex, marital status, occupational status etc. taking into considerations their culture and social values.

The literature also shows that merely being a person from community is not enough to ensure that they can create an impact on the health and social wellbeing of community, education has its own imperative effects. The educated person gives responsible direction to the community and at the same time has his/her own social standing and respect in community, which makes his/her role easy in imparting knowledge and bringing up healthy modifications in attitudes and practices. In Thailand, Haiti, Uganda and Mozambique, CHWs are selected if they are able to read and write, while the educational criteria was updated from read and write to 8 years of schooling in Brazil after 2004. CHWs in Pakistan and Ethiopia are only given a privilege to become a worker if they have 8 years or above school education.

Training is the most crucial element in the implementation of the program. This is the phase where the much touted transfer of knowledge from professionals to community representatives takes place.¹¹⁴ Though universal guidelines for the extent of training are not laid down but it

ought to be extensive, thorough and complete which should always be appraised by the exam or viva, so that it assures their competency in working in the community. The period of initial training varied in these programs, and ranged from 10 days in Uganda to 18 months in Pakistan, while none of the program has outlined any refresher courses. CHWs are usually given updates in monthly supervisory meetings. The basic role of CHWs in primary health care services is same throughout these programs but it varied a lot in more specified and focused delivery of interventions related to MNCH, Malaria, TB and AIDS control and other non communicable diseases. Overall, the role of CHWs in services delivery for MNCH, nutrition, malaria, tuberculosis is profound and showed improved maternal and child health and reproductive health indicators in their catchment areas, but interventions initiatives for the control and treatment of HIV/AIDS are in infancy in many of these programs particularly in Asia. Programs from Latin America and Africa have given special attention to the prevention, control and treatment of HIV/AIDS, and several pieces of evidence showed consistent results of benefits under supervised interventions. All in all, their roles in relation to MDGs were promotive, preventive, therapeutic and in few cases rehabilitative.

For a competent program, investment in provision of proper supervision, equipment and supplies, and linkages with health system in also required to compliment their training. Supervision has proven to be effective in improving the impact of CHWs driven interventions. Pakistan, Bangladesh and Ethiopia have trained and deployed assigned supervisors for CHWs who also work and support them in community, but there are programs in Haiti and Mozambique which are utilizing the services of health care staff like doctors and nurses for supervising CHWs. They are all fully equipped with necessary equipment and essential supplies but major shortages in the stock has been

recorded and reported in almost all of these programs because of intermittent deficiency in the overall funding and lack of proper logistic management in the program. The services from CHWS with proper skills and handful supplies can be further enhanced if they work hand to hand with formal health system. The role of CHWs in the community would be incomplete if they work in isolation, without creating a link with health care system. Key functional areas for CHW activity include creation of effective linkages between communities and the health care system, where they can refer cases. Across all these countries that we reviewed had created a link with health system.

The main programmatic advantage to cash incentives is lower attrition rate among CHWs. One of the most critical problems for CHW programs is the high rate of attrition which leads to a lack of continuity in the relationship between a CHW and community, and increased costs in selecting and training CHWs. Indeed, the very effectiveness of CHW work usually depends on retention. CHWs in Pakistan, Brazil, Haiti, Ethiopia, and Mozambique are paid workers but drop-outs among them are still their main concern. On the other hand, BRAC has allowed their CHWs to earn meager amount from the sales of drugs and are given performance based incentives for referring patients for complications during pregnancy and bringing women to health care center for delivery. Apart from monetary rewards, in countries where these CHWs are volunteers, they are given non-monetary rewards in terms of career advancement, and recognition and rewards for their services.

Countries under review from South Asia, Sub Saharan Africa, and Latin America have surely reached impressive health and social gains from their CHWs programs. However, these achievements are not exempt of challenges and difficulties. As discussed earlier, according to program functionality assessment criteria, CHW

program must score at least level 2 in each of the 12 components in order to be considered minimally functional, as we can observe countries had scored less than 2 in different components showing their limitation in those areas. In the bullets below we have identified some common limitations across these countries.

- Most of the programs have shortages or lack of medical equipment for patient examination, and drugs/ supplies useful for promotive, preventive and curative health services. Irregularity in the supply of vaccines, drugs, and necessary equipment has been reported and their availability and sustainability of resources is a major concern.
- Lack of opportunities for upgrading and training and refresher courses on relevant areas such as delivery services, counseling for HIV/AIDS etc. In some countries assessments showed that the CHWs had lower competence in interventions related to some curative services including malaria control and acute respiratory infection.
- Lack of promotion, and professional advancement
- The curriculum and the modules for CHWs training needs to be revised according to country specific MDGS goals and targets. Also the curriculum had more time for theory beyond the needed skill they would implement in the future, but with less time for acquiring practical skills due to little time for hands-on practice.
- Countries had also reported deficiencies in the practical training of CHWs particularly on skilled delivery and key clinical skills due to limited facilities for large numbers of trainees.
- Within countries time use of CHWs and working schedule are not harmonized and varied from one place to the other place.

- There are no clear guidelines for working relationship between CHWs and the other community based health workers (if any) trained previously, such as the community mobilizers and TBAs.
- In some countries, CHWs are expelled on migrating from deployed area. In order to overcome such issues, guidelines needs to be set on the outset regarding their transfers, leave of absence, and career structure.
- Documentation and reporting are not instituted properly.
- Referral system and linkage with the health system is weak. The CHWs do not have good relationship with health workers working in higher level health institutions. Moreover, communities' attitude towards the CHWs is not to the desired level due to their failure to assist in some curative and some preventive health services. The continued demand for curative care services with weakened referral system may compromise community's confidence in CHWs. The other challenge is the limited capacity of health systems to support the CHW program.

Creating practical linkages with the health centers and hospital services and ensuring effective and regular support from the higher levels of the system is also a challenge.

The necessary working and living conditions for CHWs are not created in most of the cases which is compounded by poor communication and transportation system and long distances from health centers.

The resources needed to support the training, supplies and equipment, to pay the salary and to conduct regular supportive supervision requires sufficient funds. By the time the targets are achieved they will make nearly half of the workforce and the financial implications of achieving these would be huge.

Table 48: Summary of CHW Program Functionality Assessment Across Selected Countries

CHW-PFA	Pakistan	Bangladesh	Thailand	Brazil	Haiti	Ethiopia	Uganda	Mozambique
Recruitment	3	3	3	3	3	3	3	3
CHW Role	3	2	3	2	3	3	2	2
Initial Training	3	2	3	3	3	3	3	3
Ongoing Training	2	3	2	3	2	2	1	1
Equipment and Supplies	2	3	2	3	2	2	1	2
Supervision	3	3	0	3	3	3	2	2
Performance Evaluation	3	2	0	3	2	2	2	1
Incentives	2	2	2	3	3	2	1	0
Community Involvement	2	3	3	3	2	2	2	2
Referral System	1	1	1	3	3	2	1	1
Professional Advancement	2	0	1	2	2	2	0	2
Documentation, Information System	2	1	0	3	3	3	2	0
Aggregated Total Score	28	25	20	34	31	29	20	19

Table 49: Summary of CHW Program Functionality Assessment Across Selected Countries

CHW Program	Training duration	Tasks	Supervision	Health system
Pakistan	Long	Promotional, preventive and basic curative	Strong	Weak
BRAC	Short	Promotional, preventive and basic curative	Strong	Strong
Thailand	Short	Promotional, preventive and basic curative	Weak	Strong
Brazil	Long	Promotional, preventive and basic curative	Strong	Strong
Haiti	Short to intermediate	Preventive and basic curative	Strong	Weak
Ethiopia	Long	Preventive and basic curative	Weak	Weak
Uganda	Short	Preventive and basic curative	Strong	Weak
Mozambique	Long	Preventive and basic curative	Weak	Weak

Training Duration: - Long: more than 4 months

- short & intermediate: between 1 month to 4 months
- short: Less than 1 month

Supervision: - strong: where system has trained their own program supervisors and supervision is well structured
- weak: where system has not trained their own program supervisors OR supervision is not well structured OR where supervisors were trained but supervision was provided to less than 50% of the workers

Health System: - weak: linked to a weak health system
- strong: linked to a wider and strong health system

Table 50: Summary of CHW Contextual factors across eight selected countries

CHW Contextual Factors												
Country	Recruitment (open merit, community recommendations, others)	Educational criteria for entry?	Training content, duration & role (initial & ongoing)	Certification process (exam, course completion)	Deployment (Public sector, NGO, private)	Key competencies (MNCH/ HIV/ TB/ Nutrition / Malaria)	Pathways & role in relation to MDG Promotive, Therapeutic, Rehabilitation	Monitoring supervision & evaluation	Volunteer/ salaried (US\$)/ reimbursed	Performance incentives (if any)	Career pathway & development	Referral system (linkage with health system)
Pakistan	Recommendations by local counselor Applicant must be -20-50 years of age - from community -female -permanent resident final selection by local counselor and EDO-H	8 years of schooling	Initial: 18 months Ongoing: once per month Key Role MNCH= coordinate ANC, IP and PNC; deliver FP services (oral and injectable) & immunization Nutrition= growth monitoring, nutritional counseling, promotion of BF, anemia control, treat iron deficiency Malaria, TB= prevention, control and treatment AIDS= raise awareness PHC= water, sanitation	course completion	public sector	MNCH, nutrition, Malaria, TB, AIDS (preventive part)	Promotive, Preventive and therapeutic	Lady health supervisors 1LHS : 25 LHW evaluation 4 third party (external) evaluations has been conducted	salaried Rs. 3090 Full time employment	Rs. 3 per cycle of pills and Rs. 0.5 per condom	on completion of minimum education for supervisor they promoted as supervisors on completion of minimum education for FPO promoted as FPO	linkages between local teachers, TBA and health system
Bangladesh	Recommendations by local village organization Applicant must be -25-45 years of age -female -married and with no children less than 2 years of age -acceptable to community	few years of schooling	Initial: 4 weeks Ongoing: once per month Key Role MNCH= coordinate ANC, IP and PNC; deliver FP services & immunization Nutrition= GM, nutritional counseling, BF promotion Malaria, TB= prevention, control and treatment PHC= water, sanitation etc. and treatment for common ailments	course completion	NGO	MNCH, nutrition, Malaria, TB, AIDS (preventive part)	Promotive, Preventive and therapeutic	Shashyo kormi 1LHS : 25-30 LHW regular internal evaluation	volunteer part time employment	-Pregnancy identification Tk.30 -Bringing mothers for delivery Tk.100 -Providing ENC Tk.100 -Refer Tk.100 - ensuring birth wt Tk.30	-	linkages with local health centers

Country	Recruitment (open merit, community recommendations, others)	Educational criteria for entry?	Training content, duration & role (initial & ongoing)	Certification process (exam, course completion)	Deployment (Public sector, NGO, private)	Key competencies (MNCH/ HIV/ TB/ Nutrition / Malaria)	Pathways & role in relation to MDG Promotive, Preventive, Therapeutic, Rehabilitation	Monitoring supervision & evaluation	Volunteer/ salaried (US\$) / reimbursed	Performance incentives (if any)	Career pathway & development	Referral system (linkage with health system)
Thailand	selected by village leaders Applicant must be -have own occupation to earn - not government official living in the community	read and write	Initial: 7 days + 15 days on-the-job Ongoing: once per month key Role MNCH= coordinate ANC, IP and PNC; deliver FP services & immunization Nutrition= growth monitoring, nutritional counseling, promotion of BF, promotion of Malaria, TB= prevention, control and treatment PHC= water, sanitation etc. and treatment for common ailments, dental hygiene NCDs= screening of hypertension, diabetes and vision problems	course completion	public sector	MNCH, nutrition, Malaria, TB, AIDS	Promotive, Preventive and therapeutic	no direct supervisor Health center staff supervises them no formal evaluation system	volunteer free health facility	-	on completion of further education they are hired as public health officers	linkages with health facility
Brazil	Recommendations by community Applicant must be -minimum 18 years of age -resident of the same community	read and write or minimum 8 years of education	Initial: 8 weeks Ongoing: once per month key Role MNCH= coordinate ANC, IP and PNC; deliver FP services and immunization Nutrition= growth monitoring, nutritional counseling, promotion of BF Malaria, TB= prevention, control and treatment PHC= water, sanitation etc. and treatment for common ailments, dental hygiene NCDs= screening of hypertension, diabetes and vision problems	course completion	public sector	MNCH, nutrition, Malaria, TB, AIDS (preventive part)	Promotive, Preventive and therapeutic	local health center nurses frequent external evaluation	salaried USD 112/month	-	-	linkages with local health centers

Country	Recruitment (open merit, community recommendations, others)	Educational criteria for entry?	Training content, duration & role (initial & ongoing)	Certification process (exam, course completion)	Deployment (Public sector, NGO, private)	Key competencies (MNCH/ HIV/ TB/ Nutrition / Malaria)	Pathways & role in relation to MDG Promotive, Preventive, Therapeutic, Rehabilitation	Monitoring supervision & evaluation	Volunteer/ salaried (US\$) / reimbursed	Performance incentives (if any)	Career pathway & development	Referral system (linkage with health system)
Haiti	chosen by community Applicant must be - minimum 18 years of age -from the community where they will work -patients with TB and HIV are also encouraged to be a worker	literate	Initial: 7 days Ongoing: once per month Key Role MNCH= coordinate ANC, IP and PNC; deliver FP services and immunization Nutrition= growth monitoring, nutritional counseling, promotion of BF Malaria, TB, AIDS (PMTCT)= prevention, control and treatment PHC= water, sanitation etc. and treatment for common ailments, dental hygiene	course completion	public sector	MNCH, nutrition, Malaria, TB, AIDS (preventive part)	Promotive, Preventive and therapeutic	doctors of health centers	salaried USD 50-130	-	-	linkages with local health centers
Ethiopia	involvement of community in their selection Applicant must be -18 years or above -female willing to live and serve community	10 years of schooling	Initial: 6-12 months Ongoing: frequent key Role MNCH= coordinate ANC, IP and PNC; deliver FP services and immunization Nutrition= growth monitoring, nutritional counseling, promotion of BF Malaria, TB, AIDS (PMTCT)= prevention, control and treatment PHC= water, sanitation etc. and treatment for common ailments, dental hygiene	course completion	public sector	MNCH, nutrition, Malaria, TB, AIDS (preventive part)	Promotive, Preventive and therapeutic	village CHWs External evaluation has been conducted	salaried USD 40-63	-	upgrade them as nurses	linkages with local health centers

Country	Recruitment (open merit, community recommendations, others)	Educational criteria for entry?	Training content, duration & role (initial & ongoing)	Certification process (exam, course completion)	Deployment (Public sector, NGO, private)	Key competencies (MNCH/ HIV/ TB/ Nutrition / Malaria)	Pathways & role in relation to MDG Promotive, Preventive, Therapeutic, Rehabilitation	Monitoring supervision & evaluation	Volunteer/ salaried (US\$) / reimbursed	Performance incentives (if any)	Career pathway & development	Referral system (linkage with health system)
Uganda	involvement of community in their selection Applicant must be -18 years or above -willing to live in and serve community	read and write	Initial: 10 days Ongoing: need based key Role MNCH= coordinate ANC, IP and PNC; deliver FP services and immunization Nutrition= growth monitoring, nutritional counseling, promotion of BF- Malaria, TB, AIDS (PMTCT)= prevention, control and treatment PHC= water, sanitation etc. and treatment for common ailments	course completion	public sector	MNCH, nutrition, Malaria, TB, AIDS (preventive part)	Promotive, Preventive and therapeutic	CHW supervisors still no formal evaluation has been conducted	volunteer	-	they train others	linkages with local health centers
Mozambique	involvement of community in their selection Applicant must be -18-35 years of age -preferably female -permanent resident of community	read and write	Initial: 18 weeks Ongoing: need based key Role MNCH= coordinate ANC, IP and PNC; deliver FP services and immunization Nutrition= growth monitoring, nutritional counseling, promotion of BF Malaria, TB, AIDS (PMTCT)= prevention, control and treatment PHC= water, sanitation etc. common ailments	course completion	public sector	MNCH, nutrition, Malaria, TB, AIDS (preventive part)	Promotive, Preventive and therapeutic	health workers from health centers supervise them no formal supervision mechanism	Salaried USD 50 still under consideration	-	-	linkages with local health centers
ANC: Antenatal Care FP: Family Planning PMTCT: Prevention of Mother to child Transfer TB: Tuberculosis ENC: Essential Newborn Care IP: Intrapartum												

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