

# **Case Studies of Large-Scale Community Health Worker Programs: Examples from Bangladesh, Brazil, Ethiopia, India, Iran, Nepal, and Pakistan**

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# Introduction

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Throughout this guide we have referred to specific community health worker (CHW) programs, but in a cursory fashion, referring to one aspect of the program or another. Here, we provide an overview of seven large-scale CHW programs. All of these are public-sector programs except for the example from Bangladesh, which describes the CHW program of BRAC. BRAC (formerly the Bangladesh Rural Advancement Committee and now sometimes known as Building Resources Across Communities) has recently become the largest nongovernmental organization, or NGO, in the world. It has almost 100,000 CHWs in Bangladesh.

The examples provided below are meant to inform policymakers and program implementers in designing, implementing, scaling up, and strengthening large-scale CHW programs. CHW programs, by their very nature, are a product of the local context because many geographical, historical, cultural, social and health-system factors influence how CHW programs emerge and evolve. Thus, as is appropriate for a guide such as this, these case studies provide examples of how CHW programs emerge and operate in regions throughout the world—Asia, the Middle East, Africa, and South America.

# THE BRAC SHASTHYA SHEBIKA COMMUNITY HEALTH WORKER IN BANGLADESH

## Summary

### Background

Bangladesh has a history of using CHWs to support health services. BRAC has been a driving force and has been refining its strategies. The *Shasthya Shebika* (SS) Program is rooted in a gendered perspective, focusing on the need for female health workers in Bangladesh to address socio-cultural barriers to access to health care services. BRAC first adopted the Barefoot Doctor approach used in China a half-century ago and trained male paramedics, but then shifted the approach in the early 1980s to focus on women with lesser training who were often illiterate.



### Implementation

In 1990, there were 1,080 SSs, and by 2008 the number had grown to 70,000. At present, there are approximately 100,000 SSs.

### Training

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

### Roles/Responsibilities

During monthly household visits, SSs provide health promotion sessions and educate families on nutrition, safe delivery, family planning (FP), immunizations, hygiene, and water and sanitation. They also use this time to sell health products, such as basic medicine, sanitary napkins, and soap. BRAC introduced the sales component to provide a small profit as an additional incentive for and motivation to the community health volunteers (CHVs) to continue working. When someone has an illness that the SS cannot manage, the person is referred to government health centers or a BRAC clinic.

### Incentives

CHVs are given small loans to establish revolving funds, which they use to make some money by selling health products at a small markup.

### Supervision

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

## Impact

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

## What Is the Historical Context of BRAC's Shasthya Shebika Program?

Community-based programming with CHWs has been widespread in Bangladesh, especially through the national implementation of Bangladesh's well-known and highly successful national family program. This program relied on family welfare assistants to visit every home on a regular basis to promote the uptake of FP at a time when women were not able to leave the immediate environs of their home.<sup>1</sup> BRAC set up the CHV program to address the health needs of the communities where it works. BRAC community-based integrated programs now reach more than 110 million people in Bangladesh.

The development of the SSs Program has been deliberate, slow, and organic. There was no preconceived national blueprint that was scaled up rapidly. Rather, a viable role was established for these CHWs appropriate for the Bangladeshi context, and BRAC found a way to provide sufficient locally generated financing to motivate the women to carry out their responsibilities. Then, as BRAC was able to provide appropriate training and supervision, the program began to grow over the course of 2 decades.

## What Are Bangladesh's Health Needs?

The health status of the poor and vulnerable remains challenging, and families may suffer financial catastrophes if a member falls ill. Communicable diseases, poor maternal and child health (MCH), and malnutrition are responsible for high levels of preventable morbidity and mortality. New challenges of the epidemiological shift to chronic and non-communicable diseases are arising, along with environmental hazards from air and water pollution, injuries, and unhealthy behaviors such as tobacco use and violence.<sup>1</sup>

## What Is the Existing Health Infrastructure?

While officially Bangladesh has a health system involving a three-tier service delivery system from the Ministry of Health (MOH) with a comprehensive network of public facilities at tertiary, secondary, and primary levels, in practice it is quite pluralistic and unregulated, with low utilization of public sector health centers and district hospitals.<sup>2</sup> There is a mix of public, private, NGO, and traditional providers. These all have different reach and quality, and the public sector is responsible for less than 20% of curative services. The public and private sector have a porous boundary and doctors move between the sectors.<sup>2</sup> Village doctors (informally trained providers who practice allopathic medicine) are the dominant providers of care at the community level.<sup>3</sup>

## What Type of Program Has Been Implemented?

BRAC started in the early 1970s by adopting the Barefoot Doctor approach first used in China, but applying it to male paramedics. This approach failed, and BRAC shifted to lesser-trained female CHWs, often illiterate, who were oriented to health promotion and disease prevention.<sup>2</sup>

At present, SSs work part-time in the afternoon, providing services to an average of 250–300 households through monthly household visits.<sup>2</sup> SSs serve as the primary source of health information for their particular catchment areas. They also collaborate with trained traditional birth attendants (TBAs) in the village as well as mobilize women to participate in national disease control campaigns, come to clinics for basic MCH services, and carry out growth monitoring of children.<sup>1</sup>

During the monthly household visits, SSs provide health promotion sessions educating families on safe delivery, FP, immunizations, hygiene, and water and sanitation. They also use this time to sell health products, a component introduced by BRAC to increase the incentives for and motivation of SSs. When someone has an illness that the CHV cannot manage, the person is referred to government health centers or a BRAC clinic.

Other activities that SSs carry out include the following:<sup>1</sup>

- identifying pregnancy
- providing antenatal care including supplemental food to malnourished pregnant women
- identifying high-risk pregnancies
- referring women for tetanus toxoid immunization
- referring women to a trained TBA for delivery
- providing postnatal care
- promoting exclusive breastfeeding during the first 5 months of life and continued breastfeeding with appropriate weaning foods thereafter
- monitoring nutrition and providing supplemental food for low-birth-weight infants when the infant reaches 6 months of age
- promoting vitamin A supplementation at the time of national campaigns for vitamin A supplementation for children 12–59 months of age
- providing health and nutrition education and nutritional surveillance for adolescent girls (11–16 years of age)
- de-worming children
- treating uncomplicated acute illnesses
- promoting awareness about reproductive tract infections and AIDS

SSs link into the formal MOH system in important ways. They mobilize women and children in the catchment areas to attend satellite clinic sessions when a mobile government team comes to give immunizations and provide FP services, usually once a month. They also mobilize their clientele to participate in the national government's health campaigns and usually serve as outreach workers for special campaigns such as vitamin A distribution and de-worming. In addition, SSs identify patients with symptoms suggestive of TB and, on selected days, collect sputum specimens from them. A second-level supervisor (the program organizer) takes these specimens to the district health facility, where they are tested. Then, patients who tested positive are given directly observed treatment, short-course (DOTS) by the SS under authorization from the MOH (Akramul Islam, personal communication, 2013).<sup>1,2</sup>

### **What About the Community's Role?**

SSs are accepted by the community because they are from the community, answerable to the communities for their activities, and supported by the health system through both BRAC and the government. They serve as health promoters, as the first point of care, and as sellers of medical products.<sup>2</sup>

### **How Does BRAC Select, Train, and Retain the shasthya shebikas?**

BRAC works at the village level through Village Organizations, which are small groups of women who participate in BRAC's microcredit savings and loan program. SSs are self-selected

from within these groups.<sup>2</sup> The identification of prospective SSs is made first by the Gram Committee, which is the local village health and development committee. The Gram Committee is made up of 8–10 women, 1 SS, and 1 TBA. The final selection is made by BRAC staff together with local village leaders and government officials.<sup>1</sup> To be an SS, a woman must be supported and selected by the community, between the ages of 25 and 35, married with no children younger than 5 years, and motivated; have some schooling preferably; and not live near a health care facility or large bazaar, which would create competition.<sup>2</sup>

CHVs receive 4 weeks of basic training by the local BRAC office. They are trained on treatment of everyday conditions such as skin and eye infections, common cold and cough, and diarrhea and other abdominal complaints. Some are additionally trained to detect symptoms suggestive of TB and provide drugs to patients who are diagnosed with TB. Many SSs are also trained to diagnose and treat pneumonia in children. Refresher training, done in an interactive and problem-solving way, is central to BRAC's method and serves to keep the knowledge of SSs updated, provide opportunities for discussion of problems, and facilitate regular contact; it also allows SSs to replenish supplies including drugs.<sup>2</sup>

### **How Does BRAC Supervise Its shasthya shebikas?**

SSs are supervised by SKs, who are also recruited from their communities. SKs are paid a sum equivalent to about \$40 per month to supervise the SSs and perform antenatal care in villages. The SKs, all women, have a minimum of 10 years of schooling and work between 4 and 5 hours per day. They accompany each of the SSs in their charge on community visits at least twice per month and meet monthly with their group of SSs to discuss problems, gather information, and provide supplies and medicines. BRAC program staff members also participate in supervision. There is a formal link to the local government's health service delivery system for referral when necessary.<sup>1,2</sup>

### **How Is the Program Financed?**

SSs earn an income from selling supplies such as oral contraceptives, birthing kits, iodized salt, condoms, essential medications, sanitary napkins, and vegetable seeds at cost plus a small markup. They receive incentives for good performance that are based on achieving specific objectives during that month, such as identifying pregnant women during their 1st trimester. Supervisors verify and monitor performance during their visits to communities, where they have the chance to talk with village women.<sup>2</sup> Like most other program activities at BRAC, the SS Program is subsidized by income-generating activities that BRAC operates at scale, including commercial enterprises in handicrafts, milk and poultry production, printing, and banking.

### **What Are the Program's Demonstrated Impact and Continual Challenges?**

Supervisors track SS performance, and BRAC provides support to address challenges as they occur.<sup>2</sup> One formal study assessed how well SSs managed childhood pneumonia using the protocol approved by the World Health Organization (WHO); the study revealed the SSs performed as well as physicians in implementing this protocol.<sup>4</sup> Another formal study compared the prevalence of TB in districts where SSs were identifying suspected cases and providing DOTS for those diagnosed with TB and demonstrated that the prevalence of TB in BRAC areas was half of that in control districts.<sup>5</sup>

Challenges of supervision, livelihoods, accountability, and focus are mostly addressed with systematic supervision, logistic support, and formal links to the health system. SSs still struggle for legitimacy in the pluralistic health environment, where they may be viewed as second-rate and not as good as doctors.<sup>2</sup>



# THE COMMUNITY HEALTH AGENT PROGRAM OF BRAZIL

## Summary

### Background

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



### Implementation

Originally, CHAs provided vertical (centrally directed) MCH services (such as immunizations and family planning) in isolated rural areas where services were limited, but have evolved into the cornerstone of the national primary health care (PHC) program that reaches virtually the entire population of the country. CHAs operate as members of the family health care teams that are managed by municipalities. With usually 4–6 CHAs on each team (but sometimes more), each CHA is responsible for 150 families (ranging from 75 to 200 households). Some teams also include a dentist, an assistant dentist, a dental hygienist, and a social worker.

### Training

The CHAs are often selected by local health committees, and they must be literate adults who work in the community where they reside. The training of CHAs is conducted at the national MOH, but the training curriculum is approved by the Ministry of Education. Nurses provide 8 weeks of formal didactic training at regional health schools. Following this, CHAs receive 4 weeks of supervised field training. CHAs also receive monthly and quarterly ongoing training.

### Roles/Responsibilities

The scope of work for the health care teams varies with geographic distribution, but most teams provide comprehensive care through promotive, preventive, recuperative, and rehabilitative services. CHAs register the households in the areas where they work and are also expected to empower their communities and link them to the formal health system.

### Incentives

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

### Supervision

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



## Impact

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

## What Is the Historical Context of Brazil's Community Health Worker Program?

The Brazilian health system dates back to large-scale vaccination and other public health campaigns that were implemented by sanitary police in the late 1800s and early 1900s. The history of the health system is well-characterized by Paim and colleagues in the recent *Lancet* Series on Brazil.<sup>6</sup> Briefly, the health system was shaped by the country's tumultuous history. Public health was institutionalized under the Vargas dictatorship in the 1930s and 1940s, and the first MOH was later formed in 1953. A strong private health care system also developed in the 1950s; it continued to expand with the support of the federal government, as did PHC programs. In the 1980s, the country transitioned from dictatorship to democracy, and 1985 marked the start of the New Republic. The Eighth National Health Conference in 1968 established the notion that health is "a citizen's right and the state's duty."

The *Sistema Único de Saúde* (SUS, or Unified System of Health) was instituted as part of the constitution in 1988. The system has its origins in the struggle for democracy within the country. Government responsibilities for health are defined broadly as encompassing social and political realities along with traditional medical services.<sup>6</sup> This includes the support of efforts to provide free access to health care services as well as social protection, social mobilization, and expansion of social rights to facilitate "community participation, integration, shared financing among the different levels of government, and complementary participation by the private sector."<sup>7-9</sup> States and municipalities were given taxation authority, and federal guidelines mandated that 10% of this revenue be allocated to health (since then this minimum has been raised to 12% for states and 15% for municipalities).<sup>10</sup>

CHW programs have been implemented in Brazil for decades, including the successful *visitadora sanitária* (health visitor) program in which CHWs provided immunizations, information, and various other MCH interventions.<sup>11</sup> The CHA program was initiated in the 1980s as a pilot program in Ceará, one of the poorest areas of Brazil. Its success influenced subsequent PHC programs.<sup>12</sup>

The CHA program started during a drought and followed several successful pilot projects, including a project that trained 6,000 women in 112 municipalities. The women received 2 weeks of training to promote breastfeeding, the use of oral rehydration solution (ORS), and immunization uptake.<sup>10</sup> In 1989, 1,500 of these original 6,000 CHWs were incorporated into a new CHA system, supervised by local nurses. These CHAs provided mostly health promotion and health education services in clearly defined geographic areas near their homes. This program was highly successful and served as a model for subsequent CHA programs.<sup>10</sup> It did, however, face formal resistance from nurses for a variety of reasons, including unclear roles and overlap of CHA work with that of auxiliary nurses.<sup>13</sup> The first national CHA program was developed in 1991 and implemented as part of Brazil's first national PHC program; later, it was integrated into the PSF.<sup>14</sup>

The PSF was launched in 1994 to expand health care access to the poorest Brazilians.<sup>9</sup> CHAs in programs like the Ceará one were integrated into the PSF.<sup>10</sup> In 1996, the federal government transferred control of the management and financing of health care services to the PSF and in 2002 CHAs were officially recognized as professionals by Law No. 10.507/2002.<sup>15,16</sup> CHAs originally provided vertical MCH services, but have evolved into the cornerstone of PHC services.<sup>6</sup>

Brazil has made important advances in other areas of health care. It was one of the first middle-income countries to provide free antiretroviral medication for patients with HIV/AIDS. It has developed legislation supporting the use of generic drugs, and it has strong government regulation of private health plans.

### **What Are Brazil's Health Needs?**

Brazil has undergone a demographic, epidemiological, and nutritional transition since the 1970s. During this transition, fertility, infant mortality, and illiteracy have all decreased as life expectancy and urbanization have increased.<sup>6</sup> For example, the infant mortality rate (IMR) has declined from 114 deaths per 1,000 live births in 1975 to 19 deaths per 1,000 live births in 2007. Life expectancy has increased from 52 years in 1970 to 73 years in 2008.<sup>6</sup> The country also has a strong HIV/AIDS program; has completely eliminated polio; and has almost eliminated measles, diphtheria, and Chagas disease.<sup>17</sup>

Despite these positive advancements, the country is plagued by increasing levels of non-communicable diseases, including very high levels of hypertension and diabetes.<sup>6</sup> Other persistent health challenges include overuse of health care services and medications, and challenges in the field of reproductive health such as high levels of utilization of unsafe abortion services, high rates of adolescent pregnancy, and high rates of mother-to-child transmission of sexually transmitted infections.<sup>9</sup> There is also a large burden of homicide and traffic-related deaths, and dengue and visceral leishmaniasis remain important problems.<sup>17</sup>

### **What Is the Existing Health Infrastructure?**

There are three levels of health care provided in Brazil, but the country strongly emphasizes the first level—basic PHC. This level is the entry point to more advanced care and includes promotive and preventive components. Family health care teams are the main service providers and comprise one doctor, one nurse, one auxiliary (assistant) nurse, and a minimum of four CHAs.<sup>6, 8</sup> Secondary care, consisting of community-level hospitals, has many challenges, including its high reliance upon the private sector.<sup>6</sup> Tertiary care is provided at specialty referral hospitals, mostly by the private sector and public teaching hospitals, leading to high costs among other challenges.<sup>6</sup>

The current health system consists of the SUS, a private subsector, and a private health insurance subsector. The private sector is regulated by the National Supplementary Health Agency (*Agência Nacional de Saúde Suplementar*).<sup>15</sup> Private providers are often subcontracted by the SUS to provide a range of services at the secondary and tertiary levels. Coordinating the mix of public and private services remains a challenge for Brazil's health system.<sup>18</sup> The private subsector has grown substantially with state support, while the public subsector of PHC services remains often underfunded, which potentially compromises its ability to guarantee quality of and access to PHC.<sup>6</sup> Additionally, private health insurance is disproportionately used in the southeast and south regions of Brazil. Overall, 75% of Brazilians are dependent solely on the SUS for health care.<sup>19</sup>

CHAs employed by the PSF are hired through special contracts in order to expedite hiring and provide more competitive salaries than is legislated for civil servants in Brazil. This has many benefits, but it means that CHAs lack job security and fringe benefits afforded to other civil servants, leading to higher staff turnover.<sup>17</sup>

Finally, a central feature of the Brazilian health system is the engagement of civil society in decisions about government health programs. This is structured by the formation of councils at the federal, state, and municipal levels, along with the periodic use of health conferences.<sup>7</sup>

## What Type of Program Has Been Implemented?

CHAs are closely integrated into formal health services.<sup>10</sup> They operate as members of the family health care teams described above that are managed by municipalities.<sup>12</sup> Throughout Brazil's population of approximately 200 million people, there are 236,000 CHAs working in 33,000 family health care teams.<sup>6</sup> These teams are based within PSF clinics and provide services to usually 600–1,000 families have 1,500–3,000 people, but they occasionally serve as many as 4,500 people.<sup>6</sup> With 4–6 CHAs on each team normally, each CHA is responsible for 150 families (ranging from 75 to 200 households). Some teams also include a dentist, an assistant dentist, a dental hygienist, and a social worker.<sup>19,20</sup> CHAs are part of the team that primarily operates outside of the health facility to provide health education promotion and linkage to referral services.<sup>8</sup> One study of CHAs in Araçatuba, a city in São Paulo state, found that 83% of CHAs reported good communication within the teams, although some CHAs felt that physicians undermined their work.<sup>13</sup> Unfortunately, there are no structured opportunities for career advancement for CHAs.<sup>19</sup>

The scope of work for the health care teams varies with geographic distribution, but most teams provide comprehensive care through promotive, preventive, recuperative, and rehabilitative services. Key services provided by CHAs include the promotion of breastfeeding; the provision of prenatal, neonatal, and child care; the provision of immunizations; and participation in the management of infectious diseases, such as screening for and providing treatment for HIV/AIDS and TB.<sup>21,22</sup> CHAs register the households in the areas where they work and also are expected to empower their communities and link them to the formal health system.<sup>19</sup> However, not all CHAs receive training on community mobilization and not all are engaged in this activity.<sup>13,19</sup>

In the 1990s, CHAs were trained to provide integrated management of childhood illness in the home, including providing prescription antibiotics for children suspected of having pneumonia. Unfortunately, this stopped in 2002 following pressure from medical societies.\* Nurses have also pressed against allowing CHAs to administer injections.<sup>17</sup>

Other significant cadres of CHWs in Brazil include those trained and supported by the Catholic NGO Pastorate of the Child. This NGO has a network of 260,000 volunteer CHWs who promote child survival through low-technology interventions such as the administration of ORS for childhood diarrhea.<sup>9</sup>

## What About the Community's Role?

One of the goals of the PSF program is to “promote the organization of the community” and to analyze the community's needs.<sup>23</sup> Thus, CHAs are expected to serve as the link between family health care teams and the communities served by the teams.<sup>14</sup> The community is also involved in the organization and budget of the health system, and some municipalities and states have developed a system in which the public is able to vote on the proportion of the municipal budget allocated to health.

In 1993, health councils were functioning in 84% of the rural municipalities of the state of Ceará in northeastern Brazil. These councils were responsible for conducting assessments and making recommendations on health priorities and collection and disbursement of funding, among other roles.<sup>10</sup> A 2001 review of CHAs in the city of Araçatuba, São Paulo, found that municipal health councils—comprising representatives from government, health services, and the community—were responsible for the allocation of financial resources for health. They also developed health strategies and mobilized communities' involvement in health.

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\* In many countries where the need to expand access to services is great, commonly there is pressure from medical and nursing societies to limit CHWs' management of conditions that involve dispensing medications.

There are now health councils operating at a national, state, and municipal level with over 5,500 municipal councils throughout the country. Council membership is allocated as follows: 50% are users, 25% are health workers, and 25% are health managers and service providers. Health conferences are also held every 4 years to “propose directives for health policies.”<sup>17</sup>

### **How Does Brazil Select, Train, and Retain Community Health Agents?**

The CHAs in the early Ceará program were selected by local health committees. There were two selection criteria: (1) they had to come from and reside in the area where they would be working and (2) they had to be literate.<sup>21,22</sup> At the outset, priority was given to recruiting CHAs in households most affected by the drought as well as on their responses to hypothetical community problems presented during the selection process.<sup>10,19,24</sup>

CHA training is conducted in regional health schools operated by the national MOH using curricula approved by the Ministry of Education.<sup>19,24</sup> CHAs receive 8 weeks of training from local nurses, followed by 4 weeks of supervised fieldwork. This includes training on home visits and how to conduct a family census, and then on specific priority health care interventions. CHAs receive monthly and quarterly ongoing education training during meetings<sup>10,19</sup> Those who teach CHAs receive an 80-hour training module.<sup>19,25</sup>

CHAs are salaried, full-time workers. In 2006, CHAs in Araçatuba earned a monthly salary of 500 Brazilian reals (US\$228), representing 22.3% of the total family health care team’s salary costs. However, the Araçatuba CHAs had higher education levels than most CHAs in the national program, where the monthly salary is 40% to 50% lower.<sup>13,19</sup>

### **How Does Brazil Supervise Its Community Health Agents?**

CHAs are supervised by nurses and physicians from the local clinics.<sup>25</sup> Supervisory nurses spend 50% of their time in these supervisory roles and the rest of the time staffing the local clinic. The role of the nurse as a supervisor is clearly defined, and nurses have protected time to perform their supervisory role. Strong supervision of CHAs has been identified as one of the important contributors to the program’s success.<sup>26</sup>

Brazil also has strong referral systems. CHAs report any ill person within their catchment area to a nurse and the CHA may, at times, escort the person to the local health facility. Upon the patient’s release, the CHA is expected to maintain the continuum of care and follow up with the patient. This role performed by CHAs helps to ensure accountability of the health system to local health needs.<sup>19</sup>

The PSF has an information system that utilizes data collected by CHAs.<sup>19</sup> This has helped to strengthen vital statistics reporting, rapid identification of problems, and implementation of locally relevant solutions.<sup>6,10</sup>

### **How Is the Programa Saúde da Família Financed?**

The recent health advancements in Brazil have occurred alongside an evolving health system and increased investment in health. Between 1990 and 2010, the proportion of the gross domestic product (GDP) spent on health increased from 6.7% to 8.4%. Out-of-pocket expenditures have increased steadily as have other expenditures in the private sector such that now, 57% of health-related expenditures are from the private sector. The growth of funding from the public sector has been more constrained.<sup>6</sup>

The financing of the health system in Brazil is decentralized and arises from a variety of funding sources, including taxes, social contributions, out-of-pocket expenditures, and employer health insurance purchases.<sup>6</sup> The PSF provides services free of charge to recipients, and the

program is financed on a capitation basis with incentives for municipalities to increase coverage.<sup>12</sup> Since 1996, states and municipalities have been responsible for the management and financing of health care. Now, states must allocate at least 12% of their total budget to health; municipal governments are required to spend 15% of their total budget on health—a requirement met by 98% of municipalities.

In 2006, the Brazilian government health expenditure was \$252 per person, which is less than in neighboring countries such as Argentina (\$336) and Uruguay (\$431). An estimated additional \$100 per person is spent each year in order to achieve universal health coverage in Brazil.<sup>15</sup>

### **What Are the Program's Demonstrated Impact and Continual Challenges?**

Brazil has experienced dramatic improvements in a broad range of national health indicators over the past 3 decades. This includes marked increases in access to MCH interventions and marked reductions in maternal, infant, and child mortality as well as marked reductions in childhood stunting. There have also been reductions in the health disparities within the country. The Millennium Development Goal (MDG) 1 indicator of a 50% reduction in the percentage of underweight children and the MDG 4 indicator of a two-thirds reduction in under-5 mortality between 1990 and 2015 have already been met.<sup>9,17</sup>

A variety of factors such as socioeconomic development, social improvements, and conditional cash transfers have facilitated this progress, but the PSF and various health interventions have been critical components in the improved health indicators.<sup>9</sup> Victora and colleagues used vital statistics, United Nations model life tables, and census data to compare infant mortality in areas with different levels of PSF coverage. They found that while infant mortality was highest within poor communities irrespective of level of PSF coverage, when PSF coverage was higher, the mortality differences between poor and rich communities were less.<sup>9</sup>

Macinko and colleagues used public data from each state to determine the impact of the program on infant mortality from the pre-intervention period (1990 to 1994) to the period from 1999 to 2002, when PSF expansion had occurred.<sup>8</sup> During this time period, the IMR decreased from 49.7 per 1,000 live births to 28.9 and PSF national coverage increased by 36.1%. The authors found a significant and temporal relationship between coverage by PSF and decreased IMR. A 10% increase in PSF coverage was associated with a 4.6% decrease in the IMR, holding all other variables constant. A different analysis found that the program was associated with a 13% to 22% reduction in the IMR, depending on the level of PSF coverage.<sup>22</sup> Additional analyses of municipal-level data found that exposure to the PSF program was associated with a reduction in mortality, with the greatest impact on under-5 mortality. The programmatic impact was largest in the poorest municipalities as well as in the more rural regions in the country with worse baseline health indicators.<sup>22,23</sup>

Current challenges within the Brazilian health system include a high turnover of the PHC workforce, lack of integration between different primary health clinics, lack of investment in linkages and integration between PHC and other levels of care, and management challenges. The competing interests of the health system subsectors also require a reconsideration of the most appropriate roles of the public and private sectors.<sup>6</sup> Additionally, patients are provided very different levels of care by private providers depending on whether their care is funded by the SUS or by private health insurance, and there are concerns related to low quality of care provided for patients whose care is funded by the SUS. There are perverse incentives for private providers to provide more services (such as cesarean sections) since they are reimbursed by fee-for-service (as in much of the United States). There are also rising costs for private health care, and the SUS remains underfunded.<sup>6,17</sup> Progress has been made toward reducing socioeconomic and regional gaps in service access and in health indicators, but gaps remain and there are some charges of insufficient commitment by the federal government to the SUS.<sup>15,17</sup>



# PAKISTAN'S LADY HEALTH WORKER PROGRAM

## Summary

### Background

The Lady Health Worker Program (LHWP) was established in 1994, with the goal of providing primary care services to underserved populations in rural and urban areas. In 2003, the national strategic plan set two goals: (1) improving quality of services and (2) expanding coverage of the LHWP through the deployment of 100,000 lady health workers (LHWs) by 2005.



### Implementation

LHWs are deployed throughout all five provinces† of Pakistan. These workers are attached to a local health facility, but they are primarily community based, working from their homes.

### Training

LHWs are trained in classrooms for 3 months and then have 1 year of on-the-job training. This should include 1 week of training per month for a period of 12 months as well as 15 days of refresher training each year, although there is substantial variation in training patterns across provinces.

### Roles/Responsibilities

The scope of services provided by LHWs has grown from an initial focus on MCH to include participation in large health campaigns, newborn care, community management of TB, and health education on HIV/AIDS. LHWs visit an average of 27 households a week, providing advice and conducting consultations with an average of 22 individuals each week.

### Incentives

LHWs receive a salary of about \$343 per year. They are not supposed to engage in any other paid activity, although some do. The LHW stipend is often the only source of family income and is a critical family support.

### Supervision

Supervision is highly organized and tiered in the Pakistani LHWP. LHWs are each attached to a public health clinic and are supervised on a monthly basis by an LHW supervisor (LHS). LHWs should have community-based supervision at least once a month in which LHSs meet with clients and with the LHWs, review the LHWs' work, and make a work plan for the next month.

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† Officially, Pakistan has four provinces, one territory, and one capital province. For the purpose of our discussion here, we will refer to all as provinces.

## What Is the Historical Context of Pakistan’s Community Health Worker Program?

Pakistan’s support for PHC dates back to the country’s signing of the 1978 Alma Ata Declaration.<sup>27</sup> In 1993, Pakistan established the Prime Minister’s Program for Family Planning and Primary Health Care, which employed CHWs to provide PHC services in their communities. The program subsequently employed only female CHWs, and the LHWP was introduced in 1994.<sup>28</sup> The goal of the program was to reach rural areas and urban slums with a set of essential PHC services, including promotive, preventive, and curative services; to improve patient-provider interactions; to facilitate timely access to services; to increase contraceptive uptake; and, ultimately, to reduce poverty.<sup>27,29,30</sup> In 2000, the program was renamed the National Program for Family Planning and Primary Health Care, but it is still commonly called the Lady Health Worker Program (LHWP).<sup>19</sup>

The 2003–2011 Strategic Plan set two goals: (1) improving quality of services and (2) expanding coverage of the LHWP through the deployment of 100,000 LHWs by 2005. Key determinants of provision of high-quality service by LHWs include the following: selection based on merit; provision of professional knowledge and skills; supply with necessary medicines and other supplies; and adequate remuneration, performance management, and supervision. A management information system was also essential to assess and encourage quality performance and to facilitate informed programmatic decision-making.<sup>31</sup> The 2001–2011 National Health Policy described “investment in the health sector as a cornerstone of the government’s poverty reduction plan.”<sup>29</sup>

The LHWP has evolved over time. The scope of services provided by LHWs has grown from an initial focus on MCH to now include participation in large health campaigns, newborn care, community management of TB, and health education on HIV/AIDS. LHWP activities have also been advertised in a series of mass media campaigns that promote community uptake of and respect for LHW services.<sup>32</sup>

## What Are Pakistan’s Health Needs?

MCH indicators in Pakistan have lagged behind the same indicators in other South Asian countries. In 1991, the under-5 mortality rate was 117 deaths per 1,000 live births and the maternal mortality ratio (MMR) was 533 maternal deaths per 100,000 live births.<sup>33</sup> Since then, Pakistan has made insufficient progress toward meeting MDG 4 (reducing under-5 mortality). The average annual rate of reduction from 1990 to 2010 was only 1.8% and there were 87 under-5 deaths per 1,000 live births in 2010. Pakistan is, however, making progress in meeting MDG 5 (for reducing maternal mortality) and the MMR has had an annual reduction of 3% from 1990 to 2010. In 2010, the MMR was 260 deaths per 100,000 live births.<sup>34</sup> Part of the high maternal mortality earlier was attributable to the high total fertility rate (5.4 children in 1991) and low access to health services; only 15% of women reported at least one antenatal care visit during their most recent pregnancy.<sup>33</sup> (The total fertility rate measures the average number of children a woman would have if she lived through her entire reproductive life at the age-specific rates of fertility in her country.) Health care access in Pakistan is further restricted by social and cultural barriers such as women’s limited mobility outside of the home without an escort.<sup>35</sup>

## What Is the Existing Health Infrastructure?

There are three tiers of governance in the Pakistani public health system: federal, provincial, and district. The federal government historically was responsible for broader policies, planning, and budgeting as well as the health management information system. However, in 2011, the Federal Ministry of Health (FMOH) was dissolved and responsibility for health services was delegated to provinces, with the exception of a national Ministry of Regulation.<sup>36</sup>



Provinces are responsible for LHW allotment, training, and performance. The district level is responsible for allocation and supervision of LHWs.<sup>30,31</sup> All tiers of government are involved in the LHWP and LHWs are integral to service delivery of most community health initiatives in the country.<sup>33</sup>

There has been tremendous growth in the number of health care providers in Pakistan. For example, the number of physicians increased from 70,692 in 1995 to 127,859 in 2007, according to data from the Pakistan Medical and Dental Council and Pakistan Nursing Council.<sup>29</sup> There is also a private health care system in Pakistan that provides services for wealthier inhabitants.<sup>19</sup>

### **What Type of Program Has Been Implemented?**

LHWs are deployed across the nation in all five provinces of Pakistan.<sup>25</sup> These workers are attached to a local health facility, but they are primarily community based, working from their homes.<sup>29</sup> The homes of LHWs are called Health Houses; emergency treatment and care are provided therein.<sup>27</sup>

An external evaluation of the LHWP carried out in 2008 and reported the following in 2009:

- LHWs visit an average of 27 households a week.
- LHWs provide advice and conduct consultations with an average of 22 individuals each week.
- 85% of households reported that they were visited by an LHW in the previous 3 months.
- 80% of LHWs reported that they worked 6–7 days a week.
- Most LHWs worked an average of 5 hours a day.<sup>28</sup>

The LHWP offers professional advancement opportunities for LHWs. LHWs can receive additional training to serve as an LHS, which is an incentive for good performance.<sup>19</sup>

LHWs have a broad scope of work that includes 22 different tasks.<sup>27</sup> These include promotion of use of contraceptives, provision of FP services (distribution of oral contraceptives and condoms and provision of injectable contraceptives), antenatal care (alongside traditional and formal medical birth attendants), treatment of illnesses (such as diarrhea, malaria, acute respiratory tract infection, and intestinal worms), and referral of community members with more serious illnesses.<sup>29,30,33,35</sup> In addition, LHWs are expected to keep comprehensive records for all of their patients.<sup>27</sup>

The most frequent LHW services, as reported by the 2008 survey of clients, were hygiene promotion, vaccination promotion, and FP services.<sup>28</sup> Seventeen percent of households reported that they consulted with an LHW for curative services.<sup>28</sup> LHWs also frequently support other health campaigns such as polio campaigns.<sup>33</sup>

A 2000 evaluation estimated that 150,000 LHWs were needed to obtain optimal coverage in the country.<sup>29</sup> This led to a strategic plan in 2003 to have 100,000 functioning LHWs by 2005. This goal was still not achieved by 2008. In 2003, there were a total of 75,038 LHWs working or in training and the number grew to 83,280 in 2005 and 90,074 in 2008.<sup>31</sup>

The expansion of the program from 2000 to 2008 increased LHW coverage in more rural and poorer areas, but the program still does not reach the most disadvantaged areas. Coverage rates have, however, improved.<sup>28</sup> In 2006, the LHWP covered 60% to 70% of Pakistanis in rural areas.<sup>30</sup> There are now plans to double the number of LHWs.<sup>33</sup>

## What About the Local Community's Role?

There is a community member on each LHW selection committee and on each LHS selection committee. The community is also involved in programmatic decision-making, planning, and monitoring and evaluation. LHWs are expected to link the community to formal health services and to be members of the community where they work. They also provide a range of community development services and participate in community meetings.<sup>19</sup>

## How Does Pakistan Select, Train, and Retain Lady Health Workers?

LHWs are women who have a minimum of 8 years of education. This requirement has been a challenge in some areas where there are no or few women with this level of education.<sup>33</sup> They also must be between 18 and 50 years old; reside in, be accepted by, and be recommended by the communities they serve; and preferably be married with children. LHWs must also be willing to work from their homes. Preference is given to women who have experience in community development.<sup>31</sup> Of LHWs included in a 2008 external evaluation of the program, 66% were younger than 35 years of age, 97% resided in the community where they worked, 66% were currently married, and the average education level was 9.9 years of schooling.<sup>28</sup>

LHWs are selected using a clearly delineated process. LHW posts are advertised; applicants are then interviewed and selected based on the above criteria by a selection committee. The committee is expected to comprise the following members: a medical-officer-in-charge who is the chairman, a female medical officer, a lady health visitor (female medical technician), a dispenser (male health technician), and a community member. They also must be recommended by the councilor, who is a local elected official, and provide a written affidavit that they will perform their duties for at least 1 year after the completion of their training.<sup>25</sup> The selected LHW is then formally appointed by the district health officer.<sup>31</sup> LHWs are then initially employed for 1 year, although many continue the work long after the first year.<sup>19</sup>

LHWs receive 3 months of classroom training in PHC and then have 1 year of on-the-job training. This should include 1 week of training per month for a period of 12 months, followed by 15 days of refresher training each year, although there is substantial variation in training patterns across provinces.<sup>27,28,31</sup> The Federal Project Implementation Unit is responsible for approval of all LHW training and, with the FMOH, develops the training curriculum, organizes and coordinates training, and trains master trainers; Provincial and District Project Implementation Units are responsible for the local trainings.<sup>31</sup>

The fourth external programmatic review reported in 2009 that 100% of the LHWs had attended the initial training and 96% had some kind of refresher training in 2008. Eighty percent of LHWs had attended training on child health in the previous year. Seventy-two percent had obtained training on counseling cards, 70% on optimal birth spacing intervals, and 62% on injectable contraceptives during 2008. Eighty-eight percent reported receiving training by male medical doctors and 67% reported receiving training by lady health visitors. Eighty-two percent of LHWs had at least one female trainer.<sup>28</sup>

Recently, training has focused more on counseling skills and competency, although challenges persist. LHW knowledge increased between the third and fourth external programmatic evaluations, but according to the findings of the 2008 survey, there were very low levels of knowledge on certain subjects. For example, only 9% of LHWs stated the correct dosage of chloroquine for children despite having access to manuals and medicine boxes, and only 50% could determine the appropriate weight of a child from a standard-growth monitoring card.<sup>28</sup> Additionally, some LHWs felt they had insufficient communication skills, particularly for addressing difficult topics such as communication with men on FP, establishment of village health committees, and discussion of sexually transmitted infections. These LHWs felt they

needed additional training through role plays as well as additional information, education, and communication materials.<sup>32</sup>

LHWs receive a salary of about \$343 per year and are not supposed to engage in any other paid activity, although some do.<sup>29</sup> The LHW stipend is often the only source of family income and is a critical family support.<sup>33</sup> Salaries are paid monthly into the LHWs' personal bank accounts, but delays in LHW remuneration are common. Additionally, 9% of patients reported that they paid their LHW for services, which are supposed to be free.<sup>28</sup>

### **How Are Lady Health Workers Supervised?**

Supervision is highly organized and tiered in the Pakistani LHWP. LHWs are each attached to a public health clinic and are supervised on a monthly basis by an LHS.<sup>29</sup> LHSs are then regularly supervised by the LHWP district coordinator and assistant coordinator. LHWs should have supervision take place in the community at least once a month, at which time LHSs meet with clients and with the LHWs, review the LHWs' work, and make a work plan for the next month.<sup>28</sup>

The evaluation of the LHWP found that 80% of LHWs had had a supervision meeting in the previous month. Ninety percent of supervision occurred in the village, and in 59% of the cases, the supervisor met with clients of the LHW. Ninety-one percent of LHWs also reported that they had had meetings in the health facility within the previous 30 days, and 98% reported that they had produced a work plan for the previous month. Supervisors frequently used checklists during the meetings and scored LHW performance, although often LHWs were not told their score.<sup>28</sup>

This same evaluation also assessed the characteristics and knowledge of the LHSs. LHSs are required to have passed 12th grade, but 66% had achieved a higher level by completely graduating or even obtaining some postgraduate education. The LHSs are, on average, 32.5 years old; 69% are currently married. LHSs receive 3 months of full-time basic training at the District Health Office, followed by 1 week per month of classes for the next 9 months. According to the evaluation, 100% of LHSs had attended the 3-month training and 79% had received at least some additional training. They generally had high levels of knowledge, although on a few subjects, their level of knowledge was quite low. LHSs were each responsible for 23 LHWs on average. Sixty percent had full-time access to a vehicle, although not all receive their petrol, oil, and lubricants allowance.<sup>28</sup>

LHW performance is monitored by provincial and district coordinators, and the LHWP also has its own monitoring system.<sup>29</sup> The Monitoring Information System is the monitoring system implemented by the LHWP using standardized monthly reports.<sup>31</sup> LHWs keep comprehensive health records on their community and track individual care and community health indicators.<sup>27</sup> This information is consolidated in monthly reports, and data are presented by managers and inspectors at regular meetings held at all levels to assess programmatic performance and to facilitate discussion of possible resolutions to identified barriers hindering successful program implementation.<sup>31</sup>

A 2006 rapid assessment of the monitoring system by the World Bank found that there were substantial issues with the system, including irregular and inappropriate quality checks, inaccuracies in the aggregation of LHW reports, and poor understanding and analysis of the data. The 2008 external review found that key indicators such as annual recruitment of LHWs were not collected, internal inconsistencies in the data persisted, and there was little demand for quality information from program managers. The review did find that progress had been made in monthly reporting.<sup>31</sup>

## How Is the Lady Health Worker Program Financed?

The Pakistani government is the largest funder of the LHWP, but the program has been underfunded since its inception. The LHWP cost \$155 million in its first 8 years (through 2003) and was largely supported by government funding, with only 11% provided by external donors. In 2004, \$356.6 million was approved for extension of the program from 2003 to 2008. Overall, the program spent approximately \$570 per LHW per year between 2003 and 2008.<sup>29</sup>

Approximately 70% of LHWP costs are for LHW stipends, drugs, and contraceptives; and additional 4% are for training.<sup>31,37</sup> LHW salary costs increased 31% between 2003 and 2008, leading to a reduction in other expenditures, especially for LHW kit supplies.<sup>37</sup> Other estimates indicate that the cost per LHW (including her salary, supplies, training, supervision, and administration) is approximately \$745 per year (or 75 cents per person served per year).<sup>29</sup>

## What Is the Program's Demonstrated Impact and What Are the Continual Challenges?

The LHWP has undergone four external evaluations since its inception, most recently in 2008. The 2008 evaluation included a nationally representative survey of 554 LHWs. There was also a survey of 5,752 households with varying levels of exposure to LHWs (ranging from unexposed households to those that had extensive exposure to LHWs) and extensive qualitative interviews with programmatic supervisors and managers, medical staff, and community groups. The evaluation found that overall LHW performance, defined as the percentage of households who received services from LHWs, improved between 2000 and 2008. Coverage was similar in rural and urban areas. Higher LHW performance was associated with longer LHW experience, increased hours worked in the previous week, and LHW reports indicating that LHWs had a higher level of autonomy in the home, attendance at training, regular meetings with supervisors, and work in communities with Women's Health Committees, among other factors.<sup>28</sup> Ninety percent of community members surveyed indicated that there were health improvements associated with the LHWs' work.<sup>31</sup>

The 2008 evaluation assessed improvements in health indicators and found improvements in tetanus toxoid coverage, percentage of deliveries attended, percentage of children fully immunized, awareness in mothers of how to prepare ORS, and levels of exclusive breastfeeding. There were, however, some negative trends from 2000 to 2008, such as decreases in maternal knowledge of how to prevent diarrhea and a persistently low prevalence (less than 10%) of certain important health-related behaviors such as purifying water prior to drinking it.<sup>28</sup>

The LHWP is highly accepted, and the LHWs have proven adept at taking on additional tasks.<sup>27</sup> The population served by LHWs had substantially better health than the population without LHWs, including an 11% increased likelihood of using modern FP and a 15% increase in immunization coverage among children younger than 3 years of age. The effect of LHW services was generally greatest in poorer households. The program has, however, had little impact on skilled attendance at delivery, growth monitoring, and incidence of diarrhea and respiratory infections in children.<sup>28</sup>

The effect of LHW services has also been demonstrated in smaller, intervention studies. In 2008, Bhutta and colleagues assessed the feasibility of a package of perinatal health care interventions delivered by LHWs and TBAs.<sup>38</sup> The researchers found that the villages where LHWs and TBAs were linked and received a brief training on newborn care and service delivery had significant reductions in the number of stillbirths and in the neonatal mortality rate. A different study of the impact of the LHWP on contraceptive use found that women in LHW service areas were 50% more likely to use modern reversible contraceptives than those who did not receive LHW services.<sup>35</sup>

Some of the challenges facing the Pakistan LHWP are underfunding and insufficient coverage, with up to 40% of eligible families still not being served by an LHW.<sup>29</sup> Other challenges include low-quality LHW training, poor supervision, and inadequate supply systems. Broader health system challenges include shortages and misdistribution of human resources for health, weak management, absence of quality-control systems, and a lack of coordination across human resources for health stakeholders.<sup>36</sup>

There has also been dissatisfaction from LHWs, leading to increased organization of LHWs and demands for additional formalization and benefits. LHWs also have become resistant to participating in intermittent campaigns—such as the polio eradication campaigns—because they had become vulnerable to violence; 11 LHWs were abducted and beaten when they were participating in a 2007 vaccination campaign. LHW boycotts of a 2010 campaign led to a subsequent Supreme Court order for a higher salary (7,000 Pakistani rupees each month).<sup>33</sup> There are concerns, though, that the expansion in LHWs' responsibilities has increased their job-related stress.<sup>39</sup>

# ETHIOPIA'S HEALTH EXTENSION PROGRAM

## Summary

### Background

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



### Implementation

HEWs are supposed to split their time between health posts and the community. The HDA volunteers' role is to increase utilization of primary health services through part-time work (less than 2 hours per week) within their communities.

### Training

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

### Roles/Responsibilities

The main responsibilities of HEWs include health promotion, disease prevention, and treatment of uncomplicated and non-severe illnesses, such as cases of malaria, pneumonia, diarrhea, and malnutrition in the community.

### Incentives

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

### Supervision

Supervision is conducted by the *woreda* (district) supervisory team, which comprises a health officer, a public health nurse, an environmental/hygiene expert, and a health education expert. In 2005, HEWs had an average of three supervisory visits over the course of 9 months.

## What Is the Historical Context of Ethiopia's Community Health Worker Program?

CHWs have a long history in Ethiopia, dating back to around the time of the 1978 Alma Ata Conference on Primary Health Care. One early program in Tigray, during the time of the civil war there in the 1970s and 1980s, trained 3,000 CHWs. These workers were selected by their communities to receive training in maternal, child, and environmental health and in malaria diagnosis and treatment. The Tigray program was suspended in 1991 at the end of the war, but various CHW programs continued throughout the country.<sup>40</sup>



In the 1997–1998 fiscal year, the Ethiopian FMOH launched the National Health Sector Development Program (HSDP). This program shifted the health system focus from predominantly curative to more preventive and promotive care, and it prioritized the needs of the rural inhabitants, who make up 83% of the Ethiopian population.<sup>41</sup> A review of the first 5 years of the HSDP found that challenges remained in obtaining universal PHC coverage.<sup>42</sup>

In response to these unmet needs, the Government of Ethiopia launched in 2003 two programs: (1) the Accelerated Expansion of Primary Health Care Coverage and (2) the Health Extension Program (HEP).<sup>43</sup> Multiple stakeholders, including the Federal Ministries of Health, Education, Labor, Finance, and Capacity Building, were all involved in the development of the HEW model.<sup>24</sup> The program was designed to expand health service coverage, particularly in rural areas, using locally available human resources. These included community-based human resources such as HEWs and CHPs, now HDA volunteers.<sup>43</sup> The first group of HEWs was trained in 2004–2005.<sup>44</sup> Between 2005 and 2008, the HSDP aimed to deploy 30,000 HEWs in 15,000 health posts with the goal of achieving universal PHC access by 2008.<sup>45,46</sup>

There have been numerous recent changes in the HEP. Following the rapid expansion of HEP coverage in rural areas, attention shifted to scaling up these services in urban and pastoralist communities. In 2009, the FMOH launched the Urban HEP, which trained female clinical nurses for 3 months as urban HEWs.<sup>47</sup> Rural HEWs were initially used in health promotion and disease prevention; in 2010 their services were extended to include treatment of uncomplicated diseases. The CHP Program has also undergone changes and these volunteers are now called the Health Development Army (HDA). Associated with the title change is a shift from an NGO-directed program where each volunteer is responsible for 25–30 households to a government program with one volunteer for every 5 households. HDA volunteers' new scope of work also includes broader development work beyond health.

## What Are Ethiopia's Health Needs?

Ethiopia has a large burden of communicable diseases, nutritional disorders and maternal/neonatal conditions, but progress has been made in the past 5 years.<sup>48</sup> Key health issues in Ethiopia include high rates of maternal and child mortality and malaria.<sup>49</sup> The MMR for Ethiopia is 470 deaths per 100,000 live births and women have very low prenatal and postnatal service utilization.<sup>50,51</sup> Leading causes of maternal mortality include obstructed/prolonged labor, pre-eclampsia/eclampsia, and malaria.<sup>46</sup> The country also has a high IMR of 59 deaths per 1,000 live births and a high under-5 mortality rate of 88 deaths per 1,000 live births.<sup>51</sup> The leading causes of deaths among children younger than 5 year of age are pneumonia, diarrhea, malaria, neonatal problems, malnutrition, and HIV/AIDS.<sup>46</sup>

Infectious diseases in Ethiopia stretch the health system's resources and are associated with substantial morbidity and mortality. Ethiopia is among the five countries in sub-Saharan Africa with the highest prevalence of malaria. In Tigray, malaria is the leading cause of hospital admission and death.<sup>52</sup> TB and HIV are important problems. The national HIV prevalence was 2.3% in 2009. At that time, only 8.2% of HIV-positive pregnant women received prophylaxis to prevent mother-to-child transmission of HIV. Although the national TB cure rate and treatment success rate are relatively high at 67% and 84%, respectively, it is estimated that only 34% of cases are detected.<sup>46</sup> Additionally, environmental factors facilitate disease transmission. For example, 38% of Ethiopian households report no toilet facility.<sup>51</sup>

## What Is the Existing Health Infrastructure?

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



(one hospital for 1 million to 1.5 million people). And Tier 3 involves specialized/referral hospitals (one hospital for 3.5 million to 5 million people).<sup>46,53,54</sup>

In addition to the expansion of HEWs, the Ethiopian government has increased the number of medical students and health officers, some of whom are trained using an accelerated curriculum.<sup>55</sup> This expansion of health personnel is motivated by substantial deficits in human resources. For example, the country has a shortage of 19,489 midwives, and only 3% of births in rural areas are attended by a skilled birth attendant.<sup>43</sup>

### **What Type of Program Has Been Implemented?**

HEWs are a formally recognized cadre that has strong political support, including from the FMOH and the prime minister.<sup>26</sup> HEWs are supposed to manage the other CHW cadres, but their relationship with these cadres in the field is not clear.<sup>43,45</sup>

HEWs are full-time employees who are meant to split their time between health posts and the community. These expectations have changed considerably since the HEW program was initiated. HEWs were originally conceived as links between their local community and the formal health services, dedicating at least 75% of their time to community outreach activities.<sup>56,57</sup> Despite these guidelines, there is some evidence that HEWs spend more time at health facilities, and recent reports indicate that HEWs should spend 50% of their time in the health posts.<sup>58</sup>

There have been four HSDPs since 1997–1998. In 1997, there were 76 health posts, 243 health centers, and 87 hospitals.<sup>46</sup> Rollout has occurred in steps; the speed of expansion has been influenced by available resources for health posts and presence of eligible women to become HEWs. As of June 2007, the HEP covered 59% of villages (with 17,653 HEWs) and had constructed 66% of 9,914 projected health posts.<sup>56</sup> By the end of 2009, 33,819 HEWs had been trained and deployed and 14,416 health posts had been constructed.<sup>46</sup>

The main role of the HEW is in health promotion, disease prevention, and treatment of uncomplicated and non-severe illnesses such as malaria, pneumonia, diarrhea, and malnutrition. HEWs provide a range of services, including prevention, health promotion, and health education; support role for outreach health services; distribution at the community level of commodities whose use does not involve clinical judgment; clinical case-management that involves exercising clinical judgment; ongoing care or support to assist people with a chronic illness (e.g., HIV/AIDS); and participation in and support of campaign-type activities. They also provide immunizations, injectable contraceptives, basic first aid, diagnosis and treatment of malaria and diarrhea, and treatment of intestinal parasites.<sup>53</sup>

The role of HDA volunteers is to increase utilization of primary health services. They work less than 2 hours per week within their communities. Their services include prevention, health promotion, and health education; support for outreach work by health services; and participation in or support of campaign-type activities. They are expected to be model community members and to share health information with others in their communities. This includes information on latrine construction, waste disposal, personal hygiene, antenatal care, immunization, infant feeding, and FP.<sup>59</sup> Other cadres that provide community-oriented services include community counselors, peer educators, and home-based care providers who provide HIV-related services.<sup>57</sup>

### **What About the Community's Role?**

Village health committees are involved in the selection and oversight of HEWs. In some geographical areas they are also engaged with HDA volunteers. Additionally, the *kebele* (ward)

council is supposed to be involved in every step of the HEP, from program planning through to evaluation.<sup>60</sup>

## How Does Ethiopia Select, Train, and Retain Health Extension Workers and Community Health Promoters?

HEWs are adult women who have completed 10th grade. HDA volunteers can be male or female and must be older than 15 years old and, preferably, literate. However, the literacy level in Ethiopia is very low: 51% of women have no education and only 29% of rural women are literate.<sup>46,51</sup> This necessarily limits the number of eligible women in each community.

HEWs and HDA volunteers are also supposed to work in or close to their community of origin or their permanent residence, yet the first HEWs largely did not meet this criterion. Only 8% of interviewed HEWs were assigned to work in the village where they were born, and 52% were from urban areas. Many trained HEWs preferred to be placed in a community other than that in which they were born, and only 16% expected to stay in the *kebele* where they were currently employed for more than 3 years.<sup>45</sup>

HEWs have more than 1 year of pre-service training conducted by trainers who have been taught by a higher level of trainers.<sup>61</sup> HEW training is a collaboration of the MOH and the Ministry of Education and occurs at 40 technical and vocational education training schools.

HEW training includes didactic and clinical training in modules on (1) family health services, (2) disease prevention and control, (3) hygiene and environmental sanitation, and (4) health education and communication.<sup>43</sup> HEWs also recently received a one-time 1-month in-service training provided in response to identified inadequacies in their initial training. As of 2007, 4,772 HEWs had completed integrated refresher training conducted by *woreda* health offices and health center staff.<sup>60</sup> A 2007 study of this continuing education for HEWs found that most HEWs underwent multiple continuing education trainings on malaria and reproductive health, among other subjects. There was, however, little coordination of these trainings, and HEWs expressed a desire for additional training on basic nursing care, home delivery, and care of children with common childhood diseases.<sup>62</sup>

Before CHPs became HDA volunteers, they received an initial training conducted by the HEWs. CHPs were given 96 hours of training on prevention of communicable diseases, family health, environmental and household sanitation, and health education.<sup>44</sup>

Compensation for the two cadres of health workers is as follows: HEWs are regular government employees with a regular salary and benefits, while HDA volunteers do not receive financial compensation. A range of nonfinancial incentives has been effective with CHPs and now HDA volunteers, including formal recognition, ongoing mentorship, certificates, and recognition at community celebrations.<sup>59</sup>

## How Does Ethiopia Supervise Its Health Extension Workers?

HEW supervision has varied throughout the history of the program, and it currently varies from one geographical location to another. In 2005, HEWs had relatively high levels of supervision: each HEW had an average of three supervisory visits over the course of 9 months.<sup>45</sup> There are supposed to be multiple levels of HEW supervision, including by the *woreda* supervisory team that comprises a health officer, a public health nurse, an environmental/ hygiene expert, and a health education expert.<sup>60</sup> HEWs supervise the cadres such as HDA volunteers as well as TBAs and community-based reproductive health agents.<sup>63</sup>

The program has extensive monitoring and evaluation systems that include routine reports and monitoring of indicators for maternal, neonatal, and child health; disease prevention and control; nutrition; and hygiene and environmental health. Among the indicators that are reported are contraceptive acceptance rate, deliveries attended by skilled birth attendants and by HEWs, TB case detection and cure rates, and proportion of households using latrines.<sup>58</sup>

### **How is the Health Extension Program financed?**

The HSDP has been financed by national and sub-national government entities, bilateral and multilateral donors, NGOs, private contributions, and user fee revenues. Current HSDP funders include the GAVI Alliance's Health System Strengthening Program; the Global Fund to Fight AIDS, Tuberculosis and Malaria; and the Carter Center, among others.<sup>55</sup>

The total per capita health expenditure in 2007–2008 was \$16.09.<sup>46</sup> A costing exercise determined that an additional \$11.96 per capita per year for 5 years (totaling \$8.83 billion) would be required to meet Ethiopia's health-related MDGs. This investment would reduce under-5 mortality by 32% and maternal mortality by 55%. Forty-five percent of the budget would be allocated to sustain and strengthen the HEP. There is, however, a substantial gap between the amount required to achieve the MDGs and the current level of funding.<sup>46</sup>

The costs of HEWs are as follows: \$234 for 1 month of training; \$178 for the apprenticeship; and \$84 monthly for the salary of one HEW.<sup>54</sup> At the local level, financing and planning are decentralized and the *woredas* receive block grants to cover the expenses of the HEP.<sup>57</sup>

### **What Are the Program's Demonstrated Impact and Continual Challenges?**

By 2008, 24,534 HEWs had been trained to provide services, leading to substantial increases in health service coverage. The percentage of the population that is served by the program has increased from 61% in 2003 to 87% in 2007.<sup>64</sup> The program has also demonstrated success in health service areas such as increased use of insecticide-treated nets (ITNs).<sup>56</sup> The percentage of pregnant women and under-5 children using an ITN was over 40% in malarial regions.<sup>46</sup> Significant, positive associations were also found between exposure to the HEP and child vaccination uptake, ITN use by children and pregnant women, utilization of antenatal care early in pregnancy, and proper disposal of babies' fecal matter.<sup>65</sup> Additionally, some regions have achieved increases in institutional deliveries and tetanus vaccination coverage.<sup>66</sup>

In 2009, antenatal care coverage was 68% and postnatal care coverage was 34%. The percentage of deliveries performed by HEWs was 11% and the percentage performed by skilled health personnel increased to 18.4%. Full immunization coverage reached 66%,<sup>46</sup> and HEWs were found to be making an important contribution to improving the effectiveness of TB control at a modest cost.<sup>67</sup>

The HEP has faced a number of challenges in its implementation, including delayed construction of health posts, delayed provision of health kits to HEWs, inadequate supervision for HEWs, and deficiencies in training.<sup>64</sup> The reach of HEWs is also limited in some settings.<sup>56</sup> Additionally, a survey of HEW knowledge of maternal and neonatal health, skills, and confidence in providing services found substantial gaps.

HEWs are often younger women who may not be trusted by the community to assist during delivery.<sup>63</sup> A recent analysis of strengths, weaknesses, opportunities, and threats identified numerous weaknesses in the HEP, including low health service utilization; weak referral systems; low service quality; shortage of drugs, medical supplies, and equipment; and lack of a career trajectory for HEWs.<sup>46</sup> The analysis also raised a concern that the increasing number of tasks allocated to HEWs and their growing workload will compromise their ability to complete

their tasks. Finally, additional challenges for the HEP include high levels of staff turnover and lack of integration of services.<sup>47</sup>

# NEPAL'S FRONTLINE HEALTH WORKERS

## Summary

### Background

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



### Implementation

Each health facility has, in addition to one professional health worker, one village health worker, one MCH worker (MCHW), and usually nine (but sometimes more) female community health volunteers (FCHVs) to serve a catchment population of 5,000–10,000 people.

### Roles/Responsibilities

Each of the three types of CHWs has a defined scope of work. The MCHWs are full-time employees who offer reproductive services for women. The village health workers are also full-time workers, and they offer family-oriented services such as immunizations and management of newborn infections. The FCHVs are part-time volunteers who provide basic services and health education.

### Incentives

MCHWs and village health workers are formally employed and paid by the government for their services. Motivating factors for FCHVs include nonfinancial incentives like a clothing allowance and community recognition.

### Supervision

Village health workers and MCHWs supervise the FCHVs who work in their catchment areas. Village health workers and MCHWs are responsible for resupplying the FCHVs and for providing support, advice, and feedback during monthly supervision visits.

## What Is the Historical Context of Nepal's Community Health Worker Program?

The FCHV Program began in 1988, but faced early difficulties such as a lack of well-trained volunteers, a lack of supplies, and an inability to provide locally desired services, not to mention the challenges of working in mountainous areas with a highly dispersed rural population often reachable only by foot.<sup>68</sup> In the 1990s, the National Vitamin A Program began to work with FCHVs to distribute vitamin A to all children 6–59 months of age.<sup>69</sup> The FCHVs' role was further solidified in 1991 with the development of the first National Health Policy under democratic rule. The policy restructured the health system to bring health services closer to the people through health posts and sub-posts, vertically integrated programs, and the development of a new cadre of frontline workers, the MCHWs.<sup>70</sup>

The first NHSP from 2004 to 2009 was developed to increase equality of access and to improve health outcomes. It also sought to coordinate external donors to improve aid effectiveness. In

2006, an Interim Constitution was developed that defined the rights of Nepalis to “free basic health services,” among other rights.<sup>71</sup>

Following the success of the first NHSP, Nepal developed a second NHSP for 2010–2015, which set forth the following goals:<sup>71</sup>

- To increase access to and utilization of quality essential health care services
- To reduce cultural and economic barriers to accessing health care services and harmful cultural practices, in partnership with non-state actors
- To improve the health system to achieve universal coverage of essential health services

The second NHSP describes the need to scale up FCHV services and to increase the demand for formal health services such as institutional delivery. A broad range of goals are also described to improve overall health service functionality, such as improved financial management, increased timeliness of procurement, and increased governmental financing of health services.

### **What Are Nepal’s Health Needs?**

Nepal is a country with immense health needs and substantial barriers to service delivery. It is a very poor country and most rural inhabitants live in mountainous areas. Service delivery within Nepal is complex given the country’s geography. For example, 40% of individuals in the Mountain Region have to travel 1–4 hours to reach their closest health facility.

Nonetheless, substantial progress has been made in health outcomes over the past 20 years, such as an under-5 mortality rate of 48 per 1,000 live births in 2011 compared to 135 in 1990, but challenges remain. For example, nearly half (41%) of all children younger than 5 years are stunted from chronic malnutrition. Although health outcomes and service usage have become more equitable across castes, ethnic groups, and wealth quintiles, major disparities still remain. For example, women in the highest income quintile are 12 times more likely to have a trained health worker attend their delivery than women in the poorest quintile.<sup>71</sup>

TB is an additional challenge in Nepal: approximately 45% of the population has latent TB and 40,000 people each year develop active disease.<sup>71</sup> There is also a chronic shortage of health workers in Nepal.<sup>72</sup>

As mentioned previously, the National Health Policy of 1991 restructured the health system to bring health services closer to the people by constructing health posts and sub-posts and introducing a new cadre of workers, the MCHWs.<sup>73</sup> An effort was also made to integrate vertical programs (e.g., immunization and family planning) at the district level. The health system in Nepal continues to be centralized and confronts many challenges regarding human resources, including low worker retention, low productivity and morale, and high turnover.<sup>72</sup>

### **What Type of Program Has Been Implemented?**

Village health workers, MCHWs, and FCHVs are all based out of local health facilities that serve catchment populations of 5,000–10,000 people. Each health facility has one professional health worker, one village health worker, one MCHW, and usually nine (but sometimes more than nine) FCHVs.<sup>25</sup> These cadres work closely together, supporting one another’s scope of work. For example, FCHVs mobilize the communities for immunization by village health workers while FCHVs distribute vitamin A with the logistical support of the other cadres.<sup>25</sup>

FCHVs are frontline, part-time service providers who work an average of 8 hours each week.<sup>74</sup> They receive some financial compensation for certain functions, but they are predominantly volunteers. There is, however, currently discussion regarding provision of cash incentives and



some FCHVs are asking for salaries (Sabina Pradham, personal communication, 2012). MCHWs are full-time salaried government employees (R Shesthra, personal communication).

FCHVs primarily promote healthy behavior through motivation and health education,<sup>71</sup> but they also mobilize communities to participate in immunization campaigns, detect and treat common childhood illnesses, provide medications for DOTS for TB, distribute ORS packets and zinc for treatment of childhood diarrhea, and treat children with symptoms of pneumonia with cotrimoxazole tablets.<sup>68,69,71,75</sup>

Furthermore, FCHVs are now involved in reproductive and maternal health care through distribution of FP supplies and the dispensation of misoprostol, a tablet taken immediately after childbirth to reduce the risk of postpartum hemorrhage. FCHVs also provide community education and counseling to facilitate healthy practices and generate demand for maternal, neonatal, and child health services.<sup>73</sup> FCHVs are currently being trained to place an antiseptic on the umbilical cord immediately after birth as well as to resuscitate newborns who have birth asphyxia.<sup>71</sup>

MCHWs are full-time workers whose services include FP, treatment of patients at outreach clinics, clinical case management of childhood illnesses, health education/promotion, and participation in immunization and vitamin A campaigns. They also facilitate referrals and are responsible for the supervision of FCHVs.<sup>73</sup>

Village health workers are also full-time workers whose services are similar to those offered by MCHWs.<sup>25</sup> These include provision of immunizations, management of newborn infections, and supervision of FCHVs.<sup>73</sup>

### **What About the Community's Role?**

Women's groups and local Village Development Committees (VDCs) are highly involved in the selection and oversight of FCHVs. Women's groups are also expected to discuss FP and to provide information to other women who are not in the groups. There have been challenges with some women's groups that did not function well, though, so guidelines were developed on how to strengthen women's groups. Following the development of these guidelines, a pilot program was implemented that improved the functioning of women's groups and provided increased support to FCHVs. These groups also became more aware of their authority to remove FCHVs. New guidelines have now been finalized and are being implemented in the western part of the country; they will later be scaled up nationally (S Pradhan, personal communication, 2012).

There should be a VDC everywhere FCHVs work. There are at least nine FCHVs associated with every VDC, but at times there may be as many as 50, depending on the population for which the VDC is responsible (S Pradhan, personal communication, 2012).<sup>76</sup> There are also local FCHV associations, but none of these are fully representative of all FCHVs or national in scale.<sup>77</sup> There are local health committees in Nepal that assist with FCHV selection and oversight, but they are not involved with MCHW selection.

### **How Does Nepal Select, Train, and Retain Its Community Health Workers?**

The selection criteria for FCHVs are that they should be women aged 25–45 who are married with children, and preference is given to those who are literate and who are from or residing in the local community. In practice, FCHVs are often illiterate.<sup>78</sup> FCHVs undergo an initial 18 days of training with 5 days of refresher training every 5 years.<sup>71</sup>

MCHWs are women from or residing in the local community who have a 10th-grade education. Village health workers can be male or female, but they must be literate, and they are recruited locally. MCHWs and village health workers both have an initial training of about 3 months.<sup>25</sup>



Compensation of FCHVs has been a very controversial component of the program because "there is a balance to be struck between compensating the women for the real financial and time costs that they incur in carrying out their duties, without losing the spirit of voluntary service to the community."<sup>79</sup> Initially, FCHVs were paid a monthly stipend, but this was not sustainable and the stipend was discontinued.<sup>77</sup>

FCHVs receive an incentive for timely retirement at the age of 60 (although many do not want to retire). They also receive free services from Nepal's Ex-Servicemen Contributory Health Scheme, which provides medical insurance for all ex-service personnel eligible for pension, as well as the serviceperson's spouse and dependent children.<sup>79</sup> In addition, FCHVs are given an identification card and an annual day of honor in recognition of their service to the community.<sup>77</sup> They are currently requesting access to income-generation schemes, free schooling for their children, and health insurance (S Pradhan, personal communication, 2012). A 2010 study by Glenton and colleagues explored policymakers', program managers', and FCHVs' perceptions of motivation and incentives. The study highlighted the need for "context-specific incentives" for FCHVs.<sup>77</sup> Despite being staffed by volunteers, the program has very low attrition rates, with less than 5% turnover each year.

A fund was developed by the Nepalese government in 2008–2009 that provided 50,000 Nepalese rupees (approximately US\$600) for each of the 3,914 VDCs. The government is contributing an additional 10,000 rupees (approximately \$120) to each of these funds every year. The interest from this endowment fund can be accessed by the FCHVs to support income-generation activities. Early evidence shows the program to be successful, although there are challenges with accounting at the village level (S Pradhan, personal communication, 2012).<sup>71</sup> MCHWs and village health workers are formally employed and paid by the government for their services.<sup>80</sup>

### **How Does Nepal Supervise Its Female Community Health Volunteers?**

Village health workers and MCHWs supervise the FCHVs that work in their catchment areas. They are responsible for providing the FCHVs with the supplies they need and for providing support, advice, and feedback during monthly supervision visits. Additionally, all FCHVs meet with their respective VDCs every 4 months to review progress.<sup>71</sup> Although the FCHVs receive commodities from their supervisors, there are many challenges with the supply system and the demand for commodities often exceeds the supply.<sup>25</sup>

Data, particularly program evaluations and research in the field, are highly influential in programmatic policy development and implementation. There are, however, many challenges with the current health management information system. The current registers are complicated and have 30–40 indicators, representing a burden for FCHVs. This burden, coupled with the low levels of literacy among FCHVs, have led to concerns regarding the quality of the data collected (S Pradhan, personal communication, 2012).

### **How Is the Community Health Worker Program Financed?**

Village health workers and MCHWs are salaried staff of the MOH, so they receive their salary and benefits according to government rules and regulations. The costs of the FCHV program (basic training, refresher training, training materials, in-kind incentives, and so forth) are financed by donor agencies. Generally, the US Agency for International Development pays for the cost of training through its implementing partners (John Snow, Save the Children, Plan International, and others) and the United Nations Children's Fund (UNICEF) provides materials for training and patient education (R Shrestha, personal communication, 2013).

## **What Is the Program's Demonstrated Impact and What Are the Continual Challenges?**

Nepal has made important progress in the past 20 years in improving health outcomes, particularly those related to the MDGs. The MMR has decreased from 539 deaths per 100,000 live births in 1991 to 229 in 2009, and the total fertility rate has decreased from 5.3 in 1991 to 2.9 in 2009. The under-5 mortality rate has had a similarly dramatic reduction, from 158 per 1,000 live births in 1991 to 50 in 2009.<sup>71</sup> A number of factors have contributed to the improved health outcomes, but there is widespread agreement that CHWs have made important contributions to these achievements.

Challenges faced by the FCHV program include growing expectations that FCHVs will provide more services without increased support or incentives; this may compromise retention and recruitment of new FCHVs.<sup>70</sup> Further, there are concerns that FCHV services are hampered by political affiliations and an aging workforce, problems with the supply chain, and a lack of human resources.<sup>70,81</sup>

Another challenge is the current process of gradually phasing out the village health worker cadre, who are traditionally responsible for first-line supervision of FCHVs. The village health workers will be replaced with better-qualified auxiliary health workers; however, the latter may be less likely to be local to the area they serve.<sup>71</sup>

# INDIA'S COMMUNITY HEALTH WORKERS

## Summary

### Background

Accredited social health activists (ASHAs) are the most recent incarnation of CHWs in a long history of national- and state-level CHW programs in India.



### Implementation

ASHAs are health activists in the community who create awareness on health and its social determinants and mobilize the community toward local health planning.

### Training

ASHAs receive 23 days of training over their first year, based on five training manuals. They are then to receive 12 additional days of training each year thereafter.

### Roles/Responsibilities

Although service delivery varies by state, in general, ASHAs attend weekly meetings at their local primary health center and make home visits to people in the community as needed. They work approximately 2.3 hours a day, 4 days per week, except during training and mobilization events, when they are expected to work more.

### Incentives

Although ASHAs are considered volunteers, they receive outcome-based remuneration for facilitating institutional deliveries, immunization, FP (surgical sterilization), and toilet construction.

### Supervision

According to national guidelines, there is to be one ASHA facilitator for every 20 ASHAs. The facilitator is to help with the selection of the ASHA, run monthly ASHA meetings, accompany ASHAs on home visits, maintain records of ASHA activities, attend Village Health and Nutrition Days with the ASHAs, and attend monthly block primary health center meetings.

## What Is the Historical Context of India's Community Health Worker Program?

ASHAs are the most recent addition to India's long history of national- and state-level CHW programs in India. In the 1940s, the Planning Committee of the Indian National Congress recommended training one health worker for every 1,000 people within 5 years. In 1975, the Srivastava Committee Report again proposed that a CHW cadre become a formal part of the Indian public health system.<sup>82</sup>

In 1978, the Government of India introduced the CHV Program, which was renamed the Village Health Guide Program in 1981. Villagers selected one CHV per 1,000 people. CHVs received 3 months of training in basic preventive and curative care. Then they received a drug kit for treatment of simple illnesses.<sup>83</sup> The program was criticized for selecting persons who were not properly motivated to do the work (and were often selected because of political connections), for

expecting far too much of poorly trained volunteers, for having weak accountability and poor linkage to health facilities, and for being male dominated (70% of these CHVs were male).<sup>84</sup> By the late 1980s, most states had abandoned the program.

In the early 2000s, the Government of India was in the final stages of developing the National Rural Health Mission (NRHM), whose goal was to revitalize the rural PHC system.<sup>85</sup> The NRHM has presided over an increase in government health care expenditure from 0.9% of GDP to 2% to 3%, as well as state-level efforts to improve accountability and community engagement in the provision of government health services.<sup>85</sup> The initial draft for the NRHM included a provision for a national CHW cadre focused only on FP and promotion of births at facilities. Civil society actors argued that such a narrowly defined role for CHWs would be a lost opportunity and was “not in conformity with the spirit and experience of CHW programmes.”<sup>86(p13)</sup> The Ministry of Health and Family Welfare responded by creating a stakeholder task force to design the new CHW program. The task force, together with the Ministry of Health and Family Welfare, developed guidelines for this new cadre.<sup>86</sup>

When designing the ASHA Program, the task force drew lessons not only from earlier, relatively unsuccessful state-run CHW programs, but also from several successful civil-society-run programs.<sup>86</sup> These civil society programs included the Comprehensive Rural Health Program in Jamkhed in Maharashtra state (1970–present) and Society for Education, Action and Research in Community Health (SEARCH) in Gadchiroli, Maharashtra state (1988–present). Both programs have shown that female CHWs with minimal formal education can bring about significant improvements in the health of mothers and children in rural villages, provided they have strong training and support.

In 2005, when the NRHM was launched, one ASHA per 1,000 people was a key feature.<sup>85</sup> In many states, the ASHA Program was built upon pre-existing CHW programs. For instance, in Rajasthan, *Anganwadi* (preschool) Center helpers were nominated to become ASHAs. Andhra Pradesh’s women health volunteers were renamed ASHAs. The Chhattisgarh *Mitanin* (friends) CHW program, launched in 2003 as a precursor to the ASHA Program, has retained the name *mitanin* for their health workers, but has otherwise been absorbed by the ASHA Program.<sup>87</sup>

## What Are India’s Health Needs?

In the past 60 years, the health status of Indians has improved markedly. The IMR has declined from 120 per 1,000 live births in the 1970s to 48 in 2010. Life expectancy at birth has risen from 36 years in 1951 to 65 years in 2010. In 1951, women had an average fertility rate of 6.0, and in 2010 it was 2.6. The MMR has also declined from 400 maternal deaths per 100,000 live births in 1998 to 230 in 2008.<sup>88</sup>

However, despite rapid growth in India’s GDP over the last 20 years, India has consistently failed to meet national and international health targets and has made slower progress than a number of other Asian countries, including Bangladesh, China, Sri Lanka, and Thailand.<sup>89,90</sup> Even in spite of progress, rural villages continue to have high rates of maternal mortality and child death from communicable disease, and chronic disease identification and management remains limited.<sup>91-94</sup> India’s Human Development Index ranking among 177 countries has risen by only two positions, from 128th in 1999 to 126th in 2004.<sup>90</sup> A quarter of the world’s child deaths and a fifth of the world’s maternal deaths occur in India.<sup>94,95</sup> Rural people, lower-caste people, religious minorities, women, and the poor in particular suffer gross health inequalities and lack of access to good-quality care because of social, geographic, and economic barriers.<sup>90,96-98</sup>

India is facing a double burden of disease, meaning that large proportions of mortality in the population can now be attributed to both communicable diseases and chronic conditions. Communicable diseases—such as respiratory infections and diarrheal diseases—are diseases of poverty and disproportionately affect children and the poor. Chronic non-communicable conditions—such as cardiovascular diseases, diabetes, and mental health disorders—have traditionally occurred mostly in more affluent populations and typically cause death among adults later in life. At present, chronic diseases account for more than 50% of deaths in India<sup>99,100</sup> while communicable diseases still cause 29% of deaths.<sup>99</sup> The remaining mortality is from injuries (10%), perinatal conditions (7%), maternal conditions (0.6%), and severe malnutrition (0.5%). In 2008, one-third of all deaths in India were among people younger than 14, and 86% of these deaths were due to communicable diseases or perinatal conditions.<sup>101</sup> Of adult deaths, approximately 25% can be attributed to communicable diseases and 65% to chronic diseases.<sup>101</sup>

### What Is the Existing Health Infrastructure?

In addition to an ASHA worker, each rural village is supposed to have an *anganwadi* worker (AWW), who provides basic child health information, medicine, and nutritional supplementation to children younger than 6 years of age, to pregnant and lactating women, and to adolescent girls.<sup>102</sup> The AWW is based out of an *Anganwadi* Center and is the key functionary of India's massive Integrated Child Development Scheme.<sup>102</sup>

A multipurpose worker, generally male, and a female auxiliary nurse midwife (ANM) conduct outreach services to the villages on a monthly basis. There they identify and treat infectious diseases and promote MCH. The multipurpose worker is based at a sub-center, a clinic that serves several villages. The ANM is based out of a primary health center, a larger clinic that is supposed to be open at all times and has a doctor on staff. The multipurpose worker and the ANM can then refer patients up to the next level, the community health center, or on to the district hospital. In terms of accountability, the state's minister of health and family welfare oversees the system, delegating responsibility to district medical officers who, in turn, oversee block medical officers.

India also has a prominent private health care sector. In fact, most Indians seek care at private facilities instead of free government health centers because of greater convenience and a perception that the quality of services is higher. Even 76% of the poorest quintile of the population obtain PHC services from the private sector and 58% obtain their hospital care from the private sector.<sup>103</sup> Health care spending makes up 4.1% of India's GDP, which is a fairly typical percentage for a developing country.<sup>104</sup> However, with households paying out of pocket for over 70% of these expenses, India is far below average in terms of government shouldering the burden of health care spending.<sup>104</sup>

### What Type of Program Has Been Implemented?

ASHA workers are to be based in their villages, and they refer people to their local primary health center and community health center. Village Health and Sanitation Committees, composed of village residents and the ASHA worker, also provide support for the ASHA's activities (see also the section on the community's role below). Although the precise manner of ASHA functioning varies by state, in general, ASHAs are expected to attend weekly meetings at their local primary health center and make home visits to people in the community as needed. They are supposed to work approximately 2.3 hours a day, 4 days per week, except during training and mobilization events (such as health education or immunization promotion), when they are expected to put in more time.<sup>105</sup>

The Government of India describes the ASHA's role as having three key components: First, ASHAs are to play a central role in achieving national health and population policy goals.<sup>106</sup>

Second, they are to act as a bridge between the rural people and the government health system. Third, they are to serve as social change agents, described as follows:

**ASHA will be a health activist in the community who will create awareness on health and its social determinants and mobilize the community towards local health planning and increased utilization and accountability of the existing health services.<sup>105</sup>**

This third component of the ASHA's role is ambitious. Early programmatic evaluations have found limited scope for this type of awareness raising, with many ASHAs working primarily on tasks such as immunization and promoting institutional delivery.<sup>107</sup>

The ASHA's formal tasks are as follows:<sup>87,108</sup>

- Create awareness and provide information to the community on determinants of health such as nutrition, basic sanitation and hygienic practices, healthy living, and work conditions.
- Provide information on existing health services and the need for timely utilization of health and family welfare services.
- Counsel women on birth preparedness, safe delivery, care of the young, breastfeeding and complementary feeding, immunizations, contraception, and prevention of common infections, including sexually transmitted infections.
- Mobilize the community and facilitate access to health services.
- Work with the Village Health and Sanitation Committee of the *panchayat* (the village-level local government) to develop a comprehensive village health plan.
- Accompany pregnant women and children requiring treatment/admission to the nearest health facility.
- Provide primary medical care for minor ailments such as diarrhea and fevers, and provide first aid for minor injuries.
- Provide DOTS for patients with TB.
- Carry essential provisions (ORS packets, TB medicines, iron and folic tablets, chloroquine [in malaria-endemic areas], disposable delivery kits, oral contraceptive pills, and condoms) for use in the community.
- Inform the health system of births, deaths, disease outbreaks, and unusual health problems.
- Promote construction of toilets under the Total Sanitation Campaign.
- Provide home-based newborn care (a new role added in 2011).

### **What About the Community's Role?**

ASHAs are selected by and accountable to the local village-level government, called the Gram Panchayat, through a participatory process involving the whole village. After selection, ASHAs work closely with the Village Health and Sanitation Committee. This committee is composed of key stakeholders in the village, including the ASHA worker, the AWW, Self-Help Group members (women's groups), members of the Gram Panchayat, representatives from marginalized communities in the village, and—in some cases—a representative from a health center, such as an ANM.<sup>87</sup> The Village Health and Sanitation Committee is expected to work with the ASHA to prepare and implement Village Health Plans and “serve as a mechanism to promote community action for health, particularly for social determinants of health.”<sup>87(p 1)</sup> The



Village Health and Sanitation Committee has a provision of 10,000 Indian rupees (approximately \$163) in unrestricted funds to spend each year on whatever local health issues they determine to be of greatest importance.

### **How Does India Select, Train, and Retain the Accredited Social Health Activists?**

The selection criteria for ASHA workers include an eighth-grade education or higher, an age preferably between 25 and 45, and a status as a “daughter-in-law” of the village, meaning that they are currently married, widowed, or divorced. This latter criterion is so that women who are likely to remain in the village for the foreseeable future will be selected.<sup>109</sup> Unmarried women generally marry outside their village and then move to their husband’s village upon marriage. During their first year, ASHA workers receive 23 days of training. Then they are supposed to receive 12 additional days of training each year thereafter. Two additional training modules have just been added to the training regimen.<sup>87</sup> ASHA training has in some states been outsourced to NGOs, while in other states it is being conducted by health staff within the public system.

Training generally takes place in a cascading manner, meaning that state teams are trained, and then these teams pass on their training knowledge to district teams. These district teams then pass on their training to block-level ASHA trainers. ASHA workers are trained at the block or sub-block level.

The training manuals have been criticized for being overly simplistic, insufficient, and inconsistent.<sup>86</sup> In addition, reference manuals that are supposed to accompany the training materials are often not available. Trainers have often simply read through the manual with the ASHAs and not include any structured skill-development process.<sup>86</sup>

Although ASHAs are considered volunteers, they receive outcome-based remuneration for facilitating institutional deliveries, immunization, FP (referral for surgical sterilization) and toilet construction. Most recently, an incentive of 250 Indian rupees (approximately US\$4.10) has been added for providing home-based newborn care. Facilitating institutional deliveries is the most common activity for which ASHAs receive payments: under the *Janani Suraksha Yojana* (Pregnant Woman Safety Scheme) Program, if an ASHA worker facilitates an institutional delivery, she receives 600 rupees (approximately \$10) and the mother receives 1,400 rupees (\$23).<sup>110</sup> ASHAs also receive 150 rupees (approximately \$2.50) for each child completing an immunization session and each individual who begins to use FP.<sup>111</sup> ASHAs are compensated for training days, meetings, and for additional health-related activities on a state-by-state basis.

### **How Are Accredited Social Health Activists Supervised?**

According to national guidelines, there is to be one ASHA facilitator for every 20 ASHA workers. The ASHA facilitator is to help with the selection of the ASHA, run monthly ASHA meetings, respond to grievances, accompany ASHA workers on home visits, maintain records of ASHA activities, attend Village Health and Nutrition Days with the ASHAs, and attend monthly block PHC center meetings.<sup>112</sup> The ASHA facilitator is supervised at the block level by the block community mobilizer, who is in turn supervised by the District Mobilization/Coordination Unit. This unit liaises with the state-level ASHA Resource Center. In their 2011 evaluation, the National Health Systems Resource Centre, which is a technical support institution for the NRHM, found that some states had supervision only at the block level or delegated ASHA worker supervision to ANMs or to other staff at the PHC center instead of hiring separate ASHA facilitators.<sup>113</sup> In other states, the ASHA facilitator was hired to help only with ASHA selection and nothing else.



At the national level, the ASHA Mentoring Group meets twice annually and advises the Ministry of Health and Family Welfare on ASHA policy and programming. The National Health Systems Resource Centre serves as the secretariat for the ASHA Mentoring Group.<sup>87</sup>

Several states have introduced initiatives to motivate and recognize ASHAs, such as cash awards for the best-performing ASHAs (in Bihar), newsletters and radio programs (in several states), bicycles for all ASHAs (in Assam), and career development opportunities through scholarships to study nursing (in Chhattisgarh).<sup>87</sup>

ASHA drug kits are refilled through a state-to-village distribution system. Drug kit supplies are procured at the state level by the Office of the Chief Medical Officer of Health. They are then distributed to the block-level health facilities and then on to each PHC center in the block. At monthly ASHA meetings, drug kits are restocked when only 25% of the needed contents are present. ASHA facilitators maintain Drug Kit Stock Registers and send drug supply requests to the block-level medical officer.<sup>112</sup> AWWs are also supposed to act as depot holders for drug kits and help resupply the ASHA workers.<sup>102</sup>

An ASHA monitoring system has been developed by the Ministry of Health and Family Welfare but has not yet been put into place. ASHA facilitators are supposed to generate a report based on monthly meetings with the 20 ASHA workers each facilitator oversees. The reports provide summaries of ASHA worker performance and summaries of births, deaths, pregnancies, deliveries, and newborn care provided, based on the ASHA worker's records or oral reports. The reports on ASHA performance record whether ASHA workers are completing such tasks as visiting newborns within the first day (if born at home), attending immunization camps, visiting households to discuss nutrition, and acting as DOTS providers for TB.<sup>112</sup> These reports are then submitted to the block community mobilizer on a monthly basis and assessed quarterly to determine what percentage of ASHA workers are functional. These results are then submitted to the district coordinator, who grades each block in the district based on ASHA functionality. Finally, the monitoring data is consolidated at the state level and each district is graded.

### **How Is the Accredited Social Health Activist Program Financed?**

In 2006, the Ministry of Health and Family Welfare stipulated that the program would cost 10,000 Indian rupees (approximately US\$163) per ASHA worker per year. This included the cost of the selection process, social mobilization, training, drug kits, identity cards, and support for ASHA workers by the primary health center and the ASHA facilitator. This amount did not, however, include the cost of ASHA worker remuneration, which was supposed to come from the budgets of various other Ministry of Health and Family Welfare initiatives such as the *Janani Suraksha Yojana* Program to support institutional delivery in rural areas.<sup>87</sup>

The program has consistently absorbed less than 50% of its allocated budget because of lack of support structures and other support activities, limited internal capacity, and reluctance to provide support for entities outside of the public sectors such as NGOs.<sup>87</sup> From 2005 to 2011, the program spent only 48% of the total available funds available, amounting to 5,400 rupees (approximately US\$88) per ASHA worker.

### **What Is the Program's Demonstrated Impact and What Are the Continual Challenges?**

The National Health Systems Resource Centre has released information about the ASHA Program providing information about finances as well as the status of ASHA training and selection. It is still somewhat early to assess the impact of the program on health indicators, and in many states, ASHA selection has only recently been completed. A recent report, prepared

for the International Advisory Panel by the Earth Institute of Columbia University, stated that the impact of the program is only as strong as each ASHA.<sup>114</sup>

There is currently one evaluation carried out by the National Health Systems Resource Centre which seeks to assess at a national level the impact of the program by carrying out a representative national survey. The document, entitled “ASHA: Which way forward?,” reported discrepancies in coverage across states for ASHA tasks. For example, the percentage of all women with children younger than 6 months of age who had received a service from their ASHA worker ranged from 50% to 70%. Considering that ASHAs are supposed to provide postnatal counseling and encourage breastfeeding after all births, this finding indicates limited functionality. The study found that ASHA workers appear to play a role in increasing institutional deliveries, although the rollout of the ASHA Program coincided with the introduction of financial incentives for institutional birth (through the *Janani Suraksha Yojana* Program) for both the ASHA worker and the mother.<sup>86</sup>

The study also found that it was not the educational level of the ASHA worker (defined as whether or not she had passed eighth grade) but the number of days of training and the quality of this training that had an impact on the ASHA worker’s knowledge and skills. The study found no evidence that the ASHA worker had influenced immunization levels, pointing out that the ASHA workers’ effectiveness in this area was limited by supply-side factors. Although 70% of survey respondents reported that they had consulted an ASHA worker about a sick child, they also reported that few ASHA workers were able to provide appropriate care because they lacked drugs, skills, or support. For example, in Bihar, respondents reported that ASHA workers could supply packets of oral rehydration salts to prepare ORS in only 27% of diarrhea cases for which they were consulted.<sup>86</sup>

There have been concerns expressed about a lack of clarity on roles and responsibilities. Many ASHAs are unable to specify their job responsibilities.<sup>115</sup>

The ASHA payment system fails to reflect the amount and type of work expected. Although ASHA workers are tasked with a wide range of activities, including developing and implementing Village Health Plans, they receive remuneration for only a very few highly specific activities (such as bringing in women for institutional deliveries). Understandably, ASHA workers tend to focus on the tasks they are paid for. Moreover, many ASHAs are dissatisfied with the current level of remuneration, reporting that they work far more hours than is sustainable for a volunteer position.<sup>115</sup>

There are major concerns about the adequacy and quality of training.<sup>86,115</sup> The manuals and training process have been criticized as knowledge-based rather than skills-based and irrelevant to many day-to-day ASHA activities. The ASHA training period is very short (and few ASHAs even receive the requisite 23 days), and assessments of ASHA knowledge and retention have identified deficiencies in the training.<sup>86</sup>

A central challenge at the heart of the ASHA Program is supervision and feedback. Despite detailed national guidelines on ASHA supervision, in most states support structures are weak and were set up several years after ASHA workers began to function in the field, almost as an afterthought rather than as a priority activity.<sup>86</sup>

Although ASHA workers are supposed to be representatives of and accountable to the people, they receive their payments through the ANM at the primary care center and are often treated as extensions of the health system. ANMs consider ASHA workers to be their assistants, which diminishes the ASHA worker’s “social health activist” role.<sup>107</sup> ANMs try to provide mentoring

and support for the ASHA workers linked to their primary health centers, yet they have no official supervisory position.<sup>115</sup>

# IRAN'S COMMUNITY HEALTH WORKER PROGRAM

## Summary

### Background

Currently, 90% of health services in Iran are provided by the public sector, and a large portion of basic health services are provided by the over 30,000 village health workers, called *behvarzes*, who focus on the health needs of the rural population and specifically on MCH.<sup>103</sup>



### Implementation

Following health care reforms in the early 1980s, Iran built Health Houses, each of which was meant to serve approximately 1,500 people living within a 1-hour walking distance. Each Health House (*Khaneh Behdasht*) is staffed by one man and one or more women who provide preventive and basic care.<sup>104</sup> Today 17,000 Health Houses serve 23 million rural Iranians.<sup>104</sup>

### Training

The *Behvarz* Training Centers provide pre-service as well as in-service training programs that consist of coursework divided into three grades over a 2-year period.

### Roles/Responsibilities

*Behvarzes'* responsibilities include MCH care, communicable and non-communicable disease management and detection, care of the elderly, oral health care, health care in schools, environmental and occupational health, annual population census, completion of reports and forms, attendance at in-service training sessions, and membership on the *Behvarz* Council.

### Incentives

Because the CHW program is an integral component of Iran's PHC system, financing of these workers is regulated into national health planning. The *behvarz* workers are paid a fixed salary approximately one-sixth that of physicians.

### Supervision

Regular supervisory visits to Health Houses are planned and performed by rural health centers. Provincial and national teams also evaluate program effectiveness and quality of care.

## What Is the Historical Context of Iran's Community Health Worker Program?

The *Behdar* (healer) Training Project in 1942, the West Azerbaijan Project in 1972, and the Village *Behdar* Training Scheme of Shiraz University are all earlier examples in Iran of utilizing local health workers to address health concerns of the rural poor.<sup>116,117</sup> Following the Alma Ata Declaration of 1978, Iran established a network for PHC with a new CHW program that refined and expanded on projects such as the *Behdar* Training Project.<sup>118</sup> The West Azerbaijan Project, developed in one province in Iran, aimed to expand medical and health services by establishing a comprehensive health delivery system and training auxiliary health

personnel, which was the translation of a PHC approach into practice. In the same years as the West Azerbaijan Project, similar experiments in the use of auxiliary health personnel to deliver health services were also conducted in other parts of Iran. The PHC program in Iran has expanded beyond MCH services and now also provides services pertaining to elder health, youth health, and non-communicable diseases.

### **What Are Iran's Health Needs?**

CHW programs in Iran are focused on the health needs of the rural population, specifically in terms of infant mortality, maternal mortality, and childhood illnesses such as diarrhea. The content of CHW training is adapted according to changing rural health care needs. For example, midwifery programs in rural areas have been added relatively recently. Needs addressed beyond maternal health include non-communicable diseases, immunization, personal hygiene issues, acute respiratory infection, and FP.<sup>118</sup>

### **What Is the Existing Health Infrastructure?**

There are four levels of health workers: the family, informal and traditional workers, CHWs, and professionals. Health system reform, focusing more on primary care, coincided with the Iranian revolution in 1979. The new health system also integrated medical education and health care services. A goal of the new health system has been the reduction of urban-rural disparities in health outcomes.

### **What Type of Program Has Been Implemented?**

The Health House is the first contact between the rural population and health providers in the PHC network. Each Health House provides MCH care, FP services, health education, environmental and occupational health services, and disease control activities. CHWs conduct home visits. The Health House facilitates referrals to higher levels of care. An annual census of the population is also conducted.<sup>118</sup>

Specific CHW roles and responsibilities include vaccination, growth monitoring, integrated management of childhood illness, breastfeeding promotion, and nutrition support for infants and children. Prenatal care and postnatal care are provided along with FP services, treatment of minor illnesses, and first aid. CHWs provide care for the elderly, oral health care, care of young people at school, and occupational health. CHWs receive a salary that is approximately one-sixth of a physician's salary.<sup>119</sup>

### **What About the Community's Role?**

Community engagement in health promotion activities became part of the policy agenda in 2004.<sup>118</sup> Promotion of community participation and promotion of collaboration at the local level of other social sector programs with health programs is part of the role of CHWs.

### **How Does Iran Select, Train, and Retain the Community Health Workers?**

Selection and recruitment of CHWs (*behvarzes*) in Iran strongly reflects the WHO definition of CHWs as "members of the communities where they work [who] are selected by their communities."<sup>120</sup> Local people, including religious leaders and families, are involved in the selection of *behvarzes*. By 2004, a more formal process involving *behvarz* recruitment committees had been established in each district to assess vacancies and to find the most appropriate candidates using local media. A written examination and interview with the candidates are the final steps of *behvarz* recruitment.

Qualifications for *behvarz* candidates include a high school degree. Since 2005, more and more are being selected who have undergraduate university degrees in a health-related field. Both men and women are eligible. *Behvarz* candidates have to be resident in the rural area for at

least 1 year. If there is no applicant from the main village, applicants from neighboring villages can be recruited.<sup>118</sup> Moreover, to promote long-term retention of *behvarzes* in rural areas, priority is given to the local candidates or to female candidates whose husbands have a permanent job in the village. The appointment of *behvarzes* should be confirmed by a committee consisting of representatives of the *Behvarz* Training Center, the district PHC division, and the local rural council.

District *Behvarz* Training Centers, which are part of the district health system, provide pre-service as well as in-service training to *behvarzes*.<sup>121</sup> The *behvarz* training program consists of theoretical and practical coursework over a 2-year period as well as clinical placements in Health Houses and rural health centers. *Behvarz* trainers have university degrees in family health, disease management, environmental health, midwifery, and nursing. Training courses are held twice a year for 7–15 *behvarzes*. Students receive free training and financial support (free accommodation, meals, transport) throughout the 2-year period of their training. In return, they are formally obliged to remain in and serve at the village for a minimum of 4 years after the completion of their study.

An important policy change has been the inclusion of *behvarz* training at the university level. The rationales for this change were the following:

- Provision of *behvarz* training at the university level will encourage a larger number of rural high school graduates to choose *behvarz* as their future job.
- A better-educated *behvarz* is more accepted by the community and can provide higher-quality health care to rural families.

The course is still 2 years long and leads to an undergraduate degree. Course topics are constantly under review. In 2006, several new topics—including health education, oral health, elderly health, research methods and problem solving, introduction to statistics, intersectoral collaboration, and natural disasters—were added to the training material. Other new topics include the health system and rural communities, social determinants of health and well-being, communication skills, human rights, and cultural beliefs. These new topics demonstrate a policy shift toward a more comprehensive notion of PHC in Iran.

### How Does Iran supervise its *behvarzes*?

Regular supervisory visits to Health Houses are planned and performed by staff from rural primary health centers. In addition, provincial and national teams evaluate program effectiveness and quality of care. A number of checklists which are designed by provincial and national health deputies are used to check:

- data recording,
- the *behvarz*'s knowledge,
- drug supplies and equipment, and
- work-related problems and suggestions identified by the *behvarzes* themselves.

A recent approach to CHW collaboration in Iran is the *behvarz* council, established in 2006 with the aim of engaging *behvarzes* in problem identification, problem solving, knowledge transfer, and policymaking. *Behvarz* councils have been established at different levels of the health system, from the local health center to the district, provincial, and national levels.

*Behvarz* council meetings are held on a regular basis to discuss a broad range of issues concerning the *behvarzes*' work, such as recent policies, *behvarzes*' viewpoints about in-service trainings, work-related problems, and recommendations to overcome problems. Meeting



minutes and the final report are submitted to the higher-level council for further follow-up. *Behvarzes'* representatives are responsible for transferring ideas and solutions to other team members and for following up on issues raised in the meeting.

### **How Is the Program Financed?**

Because the CHW program is an integral component of Iran's PHC system, financing of these workers is stipulated by national health planning regulations.<sup>118</sup>

### **What Are the Program's Demonstrated Impact and the Continual Challenges?**

After almost 3 decades, the *behvarz* program in Iran has contributed to significant progress for many health indicators. In particular, the gap between rural and urban areas in terms of various morbidity and mortality indicators has narrowed considerably. IMR per 1,000 live births in 1976 was at 60.4 in urban Iran and 123.7 in rural Iran. Since the development of PHC and the *behvarz* program, the IMR per 1,000 live births in 2000 was at 27.7 in urban Iran and 30.2 in rural Iran, showing a distinct improvement.<sup>122</sup>

Studies have examined the job satisfaction of *behvarzes* and the contribution of *behvarzes* to rural health outcomes.<sup>123-127</sup> It has been suggested that the significant improvement in rural health outcomes is strongly related to the performance of community-friendly health workers, although these improvements are unlikely to have been achieved through PHC alone; the period also saw economic growth, a rise in literacy rate, and improvement in environmental services such as access to safe water and sanitation.<sup>124</sup> Common challenges cited by *behvarzes* included insufficient support systems; inadequate infrastructural support such as Health House facilities, physical space, and maintenance; lack of recognition by higher authorities; and the level of incentives.<sup>118</sup> Despite formal supervisory mechanisms being in place, as revealed in policy documents, poor-quality supervision was one of the barriers reported by *behvarzes*. In most cases, supervisory teams do not provide sufficient technical and emotional support and give too much attention to deficiencies.

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## IMAGES/PHOTOS

All global maps were created by others using Generic Mapping Tools (<http://gmt.soest.hawaii.edu/>).

Many photos were obtained through the Photoshare website (<http://www.photoshare.org/>) or WHO.

### Bangladesh

Left: An SS leaving a home following a visit. Right: In the Korail slum of Dhaka where BRAC CHWs are implementing a maternal, neonatal, and child health program called Manoshi, an SS visits a mother at home.

Photographs by Henry Perry

### Brazil

Left: In Ribeirao Preto, Brazil, a mother holds her infant child at a weekly breastfeeding class held at a charity hospital. Social stigma and misinformation continue to plague efforts to promote breastfeeding in Brazil. However, this class was slowly but surely educating and empowering an entire community through the promotion of breastfeeding.

© 2000 Alex Zusman, Courtesy of Photoshare

Middle: Redencao Health Center, one of the clinics in Brazil that achieved accreditation in the PROQUALI Project for reproductive health services.

© 1997 Center for Communication Programs, Courtesy of Photoshare

Right: Brazilian children learn about healthy lifestyles in a local church as part of a program initiated by Lutheran World Relief to raise awareness about the vulnerability of women and children to the AIDS epidemic.

© 1995 Lutheran World Relief, Courtesy of Photoshare

### Ethiopia

Left: A CHV in Benishangul, Ethiopia, refers a child to a district health facility.

© 2011 Yolanda Barbera Lainez/IRC, Courtesy of Photoshare

Middle: A health worker holds up artemisinin-based combination therapy pills (ACTs) for malaria treatment in Ethiopia.

© 2007 Bonnie Gillespie, Courtesy of Photoshare

Right: A young mother and her infant in her village near Shashememe in the Oromiya Region of Ethiopia. She is attending a village gathering to discuss family planning led by the local community leader, who is also a community-based distribution agent.

© 2005 Virginia Lamprecht, Courtesy of Photoshare

### India

Left: An ANM helps a mother learn kangaroo mother care—important for newborn growth—at District Hospital, Shivpuri district, Madhya Pradesh, India.

© 2012 Anil Gulati, Courtesy of Photoshare

Middle: A health provider feeds a group of children on the day of Pulse Polio Immunization, a government-sponsored program held at an Integrated Child Development Services Centre in Bagnan, India.

© 2012 PAB, Kolkata, Courtesy of Photoshare

Right: A woman in Indore, India, travels to collect water for her family.

© 2009 Nitin Khatri, Courtesy of Photoshare

## Iran

Left: Javanparast S, Heidari G, Baum F. Contribution of Community Health Workers to the implementation of Comprehensive Primary Health Care in rural settings. Poster presented at: 138th American Public Health Association Annual Meeting; November 2010; Denver, CO.

Available at:

<http://www.globalhealthequity.ca/electronic%20library/Iran%20Poster%20English.pdf>

Middle: How Obamacare Will Help Mississippi (and America) Implement Lessons Learned from Iranian Health Care

<http://thinkprogress.org/health/2012/07/29/602691/aca-mississippi-community-health-iran/>

Right: Regular medical checkups by CHWs, Islamic Republic of Iran.

<http://www.emro.who.int/cbi/information-resources/health-development-services.html>

## Nepal

Left: A CHW counts the respiratory rate of a young child in Dhanusha, Nepal.

© 2007 Dilip Chandra Poudel, Courtesy of Photoshare

Middle: Women in Nepal receive HIV prevention information.

© 2004 Rebecca Callahan, Courtesy of Photoshare

Right: An FCHV in Nepal counts the respiratory rate of a young child using ARI Sound Timer to diagnose pneumonia.

© 2010 Dilip Chandra Poudel, Courtesy of Photoshare

## Pakistan

Left: At a Basic Health Unit in Punjab province, Pakistan, 23-year-old Tahira Rashid receives counseling from Dr. Fauzia Amin, a female medical officer.

© 2012 Derek Brown for USAID, Courtesy of Photoshare

Middle: A health worker attends to an infant at a free medical camp in a flood-affected area of Larkana district, Sindh, Pakistan.

© 2010 Population Welfare Department Sindh, Courtesy of Photoshare

Right: Women attend a free IUD and medical camp at Udani village in Sindh, Pakistan.

© 2009 Population Welfare Department Sindh, Courtesy of Photoshare

## References

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1. Perry H. *Health for All in Bangladesh: Lessons in Primary Health Care for the Twenty-First Century*. Dhaka, Bangladesh: University Press Ltd; 2000.
2. Standing H, Chowdhury AM. Producing effective knowledge agents in a pluralistic environment: what future for community health workers? *Soc Sci Med*. 2008;66(10):2096-2107.
3. Mahmood SS, Iqbal M, Hanifi SM, Wahed T, Bhuiya A. Are 'Village Doctors' in Bangladesh a curse or a blessing? *BMC Int Health Hum Rights*. 2010;10:18.
4. Hadi A. Management of acute respiratory infections by community health volunteers: experience of Bangladesh Rural Advancement Committee (BRAC). *Bull World Health Organ*. 2003;81(3):183-189.
5. Chowdhury AM, Chowdhury S, Islam MN, Islam A, Vaughan JP. Control of tuberculosis by community health workers in Bangladesh. *Lancet*. 1997;350(9072):169-172.
6. Starfield B. *Primary Care: Concept, Evaluation, and Policy*. New York, NY: Oxford University Press; 1992.
7. Fleury S. Brazil's health-care reform: social movements and civil society. *Lancet*. 2011;377(9779):1724-1725.
8. Macinko J, Guanais FC, de Fatima M, de Souza M. Evaluation of the impact of the Family Health Program on infant mortality in Brazil, 1990-2002. *J Epidemiol Community Health*. 2006;60(1):13-19.
9. Victora CG, Aquino EM, do Carmo Leal M, Monteiro CA, Barros FC, Szwarewald CL. Maternal and child health in Brazil: progress and challenges. *Lancet*. 2011;377(9780):1863-1876.
10. Svitone EC, Garfield R, Vasconcelos MI, Craveiro VA. Primary health care lessons from the Northeast of Brazil: the Agentes de Saúde Program. *Rev Panam Salud Publica*. 2000;7(5):293-302.
11. Rice-Marquez N, Baker TD, Fischer C. The community health worker: forty years of experience in an integrated primary rural health care system in Brazil. *J Rural Health*. 1998;4:87-100.
12. Macinko J, Marinho de Souza Mde F, Guanais FC, da Silva Simões CC. Going to scale with community-based primary care: an analysis of the family health program and infant mortality in Brazil, 1999-2004. *Soc Sci Med*. 2007;65(10):2070-2080.
13. Zanchetta MS, McCrae Vander Voet S, et al. Effectiveness of community health agents' actions in situations of social vulnerability. *Health Educ Res*. 2009;24(2):330-342.
14. Kluthcovsky AC, Takayanagui AM. Community health agent: a literature review. *Rev Lat Am Enfermagem*. 2006;14(6):957-963.
15. Jurberg C, Humphreys G. Brazil's march towards universal coverage. *Bull World Health Organ*. 2010;88(9):646-647.
16. Government of Brazil. Portal da Saude—SUS. 2013. Available from: [http://portal.saude.gov.br/portal/sgtes/visualizar\\_texto.cfm?idtxt=23176](http://portal.saude.gov.br/portal/sgtes/visualizar_texto.cfm?idtxt=23176). Accessed 2013.
17. Victora CG, Barreto ML, do Carmo Leal M, et al., and the Lancet Brazil Series Working Group. Health conditions and health-policy innovations in Brazil: the way forward. *Lancet*. 2011;377(9782):2042-2053.
18. Kleinert S, Horton R. Brazil: towards sustainability and equity in health. *Lancet*. 2011;377(9779):1721-1722.
19. Bhutta ZA, Lassi ZS, Pariyo GW, Huicho L. *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*. Geneva, Switzerland: WHO and Global Health Workforce Alliance; 2010.
20. UNICEF. *State of the World's Children 2009: Maternal and Newborn Health*. New York, NY: UNICEF; 2009.

21. Prado TN, Wada N, Guidoni LM, Golub JE, Dietze R, Maciel EL. Cost-effectiveness of community health worker versus home-based guardians for directly observed treatment of tuberculosis in Vitoria, Espirito Santo State, Brazil. *Cad Saude Publica*. 2011;27(5):944-952.
22. Aquino R, de Oliveira NF, Barreto ML. Impact of the family health program on infant mortality in Brazilian municipalities. *Am J Public Health*. 2009;99(1):87-93.
23. Rocha R, Soares RR. *Evaluating the Impact of Community-Based Health Interventions: Evidence from Brazil's Family Health Program*. Bonn, Germany: IZA; 2009.
24. Celletti F, Wright A, Palen J, et al. Can the deployment of community health workers for the delivery of HIV services represent an effective and sustainable response to health workforce shortages? Results of a multicountry study. *AIDS*. 2010;24(suppl 1):S45-S57.
25. CHW Technical Task Force. *One Million Community Health Workers: Technical Task Force Report*. New York, NY: The Earth Institute; 2011. Available at: [http://www.millenniumvillages.org/uploads/ReportPaper/1mCHW\\_TechnicalTaskForceReport.pdf](http://www.millenniumvillages.org/uploads/ReportPaper/1mCHW_TechnicalTaskForceReport.pdf).
26. Liu A, Sullivan S, Khan M, Sachs S, Singh P. Community health workers in global health: scale and scalability. *Mt Sinai J Med*. 2011;78(3):419-435.
27. Hafeez A, Mohamud BK, Shiekh MR, Shah SA, Jooma R. Lady health workers programme in Pakistan: challenges, achievements and the way forward. *J Pak Med Assoc*. 2011;61(3):210-215.
28. Oxford Policy Management. *Lady Health Worker Programme: External Evaluation of the National Programme for Family Planning and Primary Health Care; Quantitative Survey Report*. Oxford Policy Management; 2009. Available at: <http://www.opml.co.uk/projects/lady-health-worker-programme-third-party-evaluation-performance>.
29. World Health Organization, Global Health Workforce Alliance. *Country Case Study: Pakistan's Lady Health Worker Programme*. Geneva, Switzerland: World Health Organization and Global Health Workforce Alliance; 2008.
30. Jalal S. The lady health worker program in Pakistan—a commentary. *Eur J Public Health*. 2011;21(2):143-144.
31. Oxford Policy Management. *Lady Health Worker Programme: External Evaluation of the National Programme for Family Planning and Primary Health Care; Systems Review*. Oxford Policy Management; 2009. Available at: <http://www.opml.co.uk/projects/lady-health-worker-programme-third-party-evaluation-performance>.
32. Haq Z, Hafeez A. Knowledge and communication needs assessment of community health workers in a developing country: a qualitative study. *Hum Resour Health*. 2009;7:59.
33. Khan A. Lady health workers and social change in Pakistan. *Econ Polit Wkly*. 2011;46(30):28-31.
34. WHO, UNICEF. *Building a Future for Women and Children: The 2012 Report*. Geneva, Switzerland: WHO and UNICEF; 2012.
35. Douthwaite M, Ward P. Increasing contraceptive use in rural Pakistan: an evaluation of the Lady Health Worker Programme. *Health Policy Plan*. 2005;20(2):117-123.
36. Global Health Workforce Alliance. Pakistan. 2012. Available at: <http://www.who.int/workforcealliance/countries/pak/en/index.html>. Accessed August 18, 2012.
37. Oxford Policy Management. *Lady Health Worker Programme: External Evaluation of the National Programme for Family Planning and Primary Health Care; Summary of Results*. Oxford Policy Management; 2009. Available at: <http://www.opml.co.uk/projects/lady-health-worker-programme-third-party-evaluation-performance>.
38. Bhutta ZA, Memon ZA, Soofi S, Salat MS, Cousens S, Martines J. Implementing community-based perinatal care: results from a pilot study in rural Pakistan. *Bull World Health Organ*. 2008;86(6):452-459.

39. Haq Z, Iqbal Z, Rahman A. Job stress among community health workers: a multi-method study from Pakistan. *Int J Ment Health Syst.* 2008;2(1):15.
40. Ghebreyesus TA, Alemayehu T, Bosman A, Witten KH, Teklehaimanot A. Community participation in malaria control in Tigray region Ethiopia. *Acta Trop.* 1996; 61(2): 145-56.
41. Health Extension and Education Center. *Health Extension Program in Ethiopia: Profile.* Addis Ababa, Ethiopia: Health Extension and Education Center, Federal Ministry of Health; 2007. Available at: <http://www.moh.gov.et/english/Resources/Documents/HEW%20profile%20Final%2008%2007.pdf>.
42. Gopinathan U, Lewin S, Glenton C. *An Analysis of Large-Scale Programmes for Scaling Up Human Resources for Health in Low- and Middle-Income Countries.* Geneva, Switzerland: World Health Organization; 2012.
43. Dynes M, Buffington ST, Carpenter M, et al. Strengthening maternal and newborn health in rural Ethiopia: early results from frontline health worker community maternal and newborn health training. *Midwifery.* 2013;29(3):251-259.
44. Banteyerga H. Ethiopia's health extension program: improving health through community involvement. *MEDICC Rev.* 2011;13(3):46-49.
45. Teklehaimanot A, Kitaw Y, Yohannes AM, et al. Study of the working conditions of health extension workers in Ethiopia. *Ethiopian Journal of Health Development.* 2007;21(3):246-259.
46. Federal Democratic Republic of Ethiopia Ministry of Health. *Health Sector Development Program IV: 2010/11–2014/15.* Addis Ababa: Federal Democratic Republic of Ethiopia Ministry of Health; 2010. Available at: <http://phe-ethiopia.org/admin/uploads/attachment-721-HSDP%20IV%20Final%20Draft%2011Octoberr%202010.pdf>.
47. Sime K. Ethiopia's Health Extension Program. USAID CHW Regional Meeting; 2012; Addis Ababa, Ethiopia.
48. World Health Organization. *Ethiopia: Health Profile.* 2012. Available at: <http://www.who.int/gho/countries/eth.pdf>. Accessed 2012.
49. Banteyerga H. Ethiopia's health extension program: improving health through community involvement. *MEDICC Rev.* 2011;13(3):46-49.
50. Central Intelligence Agency. The World Factbook: Ethiopia. 2012. Available at: <https://www.cia.gov/library/publications/the-world-factbook/geos/et.html>. Accessed 2012.
51. Ethiopia Central Statistical Agency, ICF International. *2011 Ethiopia Demographic and Health Survey: Key Findings.* Calverton, MD: CSA and ICF International; 2012. Available at: <http://www.measuredhs.com/pubs/pdf/SR191/SR191.pdf>.
52. Lemma H, San Sebastian M, Lofgren C, Barnabas G. Cost-effectiveness of three malaria treatment strategies in rural Tigray, Ethiopia where both Plasmodium falciparum and Plasmodium vivax co-dominate. *Cost Eff Resour Alloc.* 2011;9:2.
53. Gopinathan U, Lewin S, Glenton C. *An Analysis of Large-Scale Programmes for Scaling Up Human Resources for Health in Low- and Middle-Income Countries.* Geneva, Switzerland: World Health Organization; 2012.
54. Girma S, Yohannes AM, Kitaw Y, et al. Human resource development for health in Ethiopia: challenges of achieving the Millenium Development Goals. *Ethiopian Journal of Health Development.* 2007;21(3):216-231.
55. GHWA Task Force on Scaling Up Education and Training for Health Workers. *Ethiopia's Human Resources for Health Program.* Geneva, Switzerland: World Health Organization and Global Health Workforce Alliance; 2008. Available at: [http://www.who.int/workforcealliance/knowledge/case\\_studies/Ethiopia.pdf](http://www.who.int/workforcealliance/knowledge/case_studies/Ethiopia.pdf).
56. Admassie A, Abebaw D, Woldemichael AD. Impact evaluation of the Ethiopian Health Services Extension Program. *Journal of Development Effectiveness.* 2009;1(4):430-449.
57. Koblinsky M, Tain F, Gaym A, Karim A, Carnell M, Tesfaye S. Responding to the maternal health care challenge: the Ethiopian health extension program. *Ethiopian Journal of Health Development.* 2010;24(1):105-109.



58. Sime K. Ethiopia's Health Extension Program. USAID CHW Regional Meeting; 2012; Addis Ababa, Ethiopia.
59. Amare Y. *Study of Implementation of Non-Financial Incentives for Voluntary Community Health Workers*. Addis Ababa, Ethiopia: JSI Research & Training Institute, Inc.; 2010.
60. Health Extension and Education Center. *Health Extension Program in Ethiopia: Profile*. Addis Ababa, Ethiopia: Health Extension and Education Center, Federal Ministry of Health; 2007. Available at: <http://www.moh.gov.et/english/Resources/Documents/HEW%20profile%20Final%2008%2007.pdf>.
61. Liu A, Sullivan S, Khan M, Sachs S, Singh P. Community health workers in global health: scale and scalability. *Mt Sinai J Med*. 2011;78(3):419-435.
62. Ye-Ebiyo Y, Kitaw Y, G/Yohannes A, et al. Study on health extension workers: access to information, continuing education and reference materials. *Ethiopian Journal of Health Development*. 2007;21(3):240-245.
63. Creanga AA, Bradley HM, Kidanu A, Melkamu Y, Tsui AO. Does the delivery of integrated family planning and HIV/AIDS services influence community-based workers' client loads in Ethiopia? *Health Policy Plan*. 2007;22(6):404-414.
64. Wakabi W. Extension workers drive Ethiopia's primary health care. *Lancet*. 2008;372(9642):880.
65. Admassie A, Abebaw D, Woldemichael AD. Impact evaluation of the Ethiopian Health Services Extension Program. *Journal of Development Effectiveness*. 2009;1(4):430-449.
66. The Last Ten Kilometers Project. *Baseline Household Health Survey: Summary Report*. Addis Ababa, Ethiopia: JSI Research & Training, Inc.; 2009. Available at: [http://110k.jsi.com/Resources/Docs/baseline\\_house\\_health\\_survey\\_summary.pdf](http://110k.jsi.com/Resources/Docs/baseline_house_health_survey_summary.pdf).
67. Datiko DG, Lindtjorn B. Cost and cost-effectiveness of smear-positive tuberculosis treatment by Health Extension Workers in Southern Ethiopia: a community randomized trial. *PLoS ONE*. 2010;5(2):e9158.
68. Curtale F, Siwakoti B, Lagrosa C, LaRaja M, Guerra R. Improving skills and utilization of community health volunteers in Nepal. *Soc Sci Med*. 1995;40(8):1117-1125.
69. Gottlieb J. Reducing child mortality with vitamin A in Nepal. In: Levine R, ed. *Case Studies in Global Health: Millions Saved*. Washington, DC: Center for Global Development; 2007:25-31.
70. Pratap N. Technical consultation on the role of community based providers in improving maternal and neonatal health. Community Health Workers Meeting; 2012; Amsterdam, Netherlands.
71. Ministry of Health and Population, Government of Nepal. *Nepal Health Sector Programme - Implementation Plan II (NHSP -IP 2) 2010 – 2015*. 2010.
72. Global Health Workforce Alliance. *CCF Case Studies: Nepal: Strengthening Interrelationship Between Stakeholders*. 2010. Available at: [http://www.who.int/workforcealliance/knowledge/resources/CCF\\_CaseStudy\\_Nepal.pdf](http://www.who.int/workforcealliance/knowledge/resources/CCF_CaseStudy_Nepal.pdf).
73. Pratap N. Technical consultation on the role of community based providers in improving maternal and neonatal health. Community Health Workers Meeting; 2012; Amsterdam, Netherlands.
74. Shresta A. The female community health volunteers of Nepal. Global Health Evidence Summit: Community and Formal Health System Support for Enhanced Community Health Worker Performance. 2012; Washington, DC.
75. Fiedler JL. The Nepal National Vitamin A Program: prototype to emulate or donor enclave? *Health Policy Plan*. 2000;15(2):145-156.
76. Pradhan S. Personal communication. 2012.
77. Glenton C, Scheel IB, Pradhan S, Lewin S, Hodgins S, Shrestha V. The female community health volunteer programme in Nepal: decision makers' perceptions of volunteerism, payment and other incentives. *Soc Sci Med*. 2010;70(12):1920-1927.

78. Hodgins S, McPherson R, Suvedi BK, et al. Testing a scalable community-based approach to improve maternal and neonatal health in rural Nepal. *J Perinatol*. 2010;30(6):388-395.
79. Government of Nepal, Ministry of Health and Population (MoHP). *Nepal Health Sector Programme-2 Implementation Plan (2010-2015)*. Kathmandu, Nepal: Government of Nepal; 2010:267. Available at: [http://www.nhssp.org.np/health\\_policy/Consolidated%20NHSP-2%20IP%20092812%20QA.pdf](http://www.nhssp.org.np/health_policy/Consolidated%20NHSP-2%20IP%20092812%20QA.pdf).
80. CHW Technical Task Force. *One Million Community Health Workers: Technical Task Force Report*. New York, NY: The Earth Institute; 2011. Available at: [http://www.millenniumvillages.org/uploads/ReportPaper/1mCHW\\_TechnicalTaskForceReport.pdf](http://www.millenniumvillages.org/uploads/ReportPaper/1mCHW_TechnicalTaskForceReport.pdf).
81. Global Health Workforce Alliance. Country Coordination and Facilitation (CCF) case studies 2010. 2013. Available at: <http://www.who.int/workforcealliance/knowledge/resources/ccfresources/en/>. Accessed August 16, 2013.
82. MoHFW. *Srivastava Committee Report: Health Services and Medical Education; A Program for Immediate Action*. Bombay: Indian Council of Social Science Research; 1975.
83. Leslie C. What caused India's massive community health workers scheme: a sociology of knowledge. *Soc Sci Med*. 1985;21(8):923-930.
84. Mittal S, Ramji S. Health For All and rural Medicare. *Indian J Pediatr*. 1989;56:559-572.
85. MoHFW. *National Rural Health Mission: Mission Document*. Ministry of Health and Family Welfare, Government of India; 2005. Available at: <http://mohfw.nic.in/NRHM/Documents/NRHM%20Mission%20Document.pdf>.
86. NHSRC. *ASHA: Which way forward? Evaluation of the ASHA Programme*. New Delhi, India: National Health Systems Resource Centre; 2011.
87. MoHFW. *Update on the ASHA Programme*. 2011. Available at: [http://nhsrccindia.org/pdf\\_files/resources\\_thematic/Community\\_Participation/NHSRC\\_Contribution/Update%20on%20ASHA%20Programme%20\\_449.pdf](http://nhsrccindia.org/pdf_files/resources_thematic/Community_Participation/NHSRC_Contribution/Update%20on%20ASHA%20Programme%20_449.pdf). Accessed November 15, 2012.
88. UNICEF. India statistics. 2012. Available at: [http://www.unicef.org/infobycountry/india\\_statistics.html](http://www.unicef.org/infobycountry/india_statistics.html). Accessed October 2, 2012.
89. OECD. OECD economic surveys: India; overview. 2011. Available at: <http://www.oecd.org/eco/48108317.pdf>. Accessed 2011.
90. MoHFW. *National Family Health Survey (NFHS-3), 2005-6*. Mumbai, India: International Institute for Population Sciences (IIPS), Macro International, DHS; 2007. Available at: <http://www.measuredhs.com/pubs/pdf/FRIND3/FRIND3-VOL2.pdf>.
91. MoHFW. Maharashtra: health profile. 2009. Available at: <http://mohfw.nic.in/NRHM/State%20Files/maharashtra.htm>.
92. Hunt P. Oral remarks to the press, Monday 3 December 2007, Delhi, India. December 3, 2007; Delhi, India. Available at: [http://www.essex.ac.uk/human\\_rights\\_centre/research/rth/](http://www.essex.ac.uk/human_rights_centre/research/rth/).
93. Maternal mortality declining in middle-income countries; women still die in pregnancy and childbirth in low-income countries [joint press release]. Geneva, Switzerland; WHO, UNFPA, UNICEF; October 12, 2007. Available at: <http://www.unfpa.org/news/news/cfm?ID=1042>.
94. Vora K, Mavalankar D, Ramani K, et al. Maternal health situation in India: a case study. *J Health Popul Nutr*. 2009;27(2):184-201.
95. UNICEF. *Levels & Trends in Child Mortality*. New York, NY: UNICEF, WHO, The World Bank, UN; 2012.
96. Banerji D. The politics of rural health in India. *Int J Health Serv*. 2005;35(4):783-796.
97. Bang AT, Bang RA, Baitule SB, Reddy MH, Deshmukh MD. Effect of home-based neonatal care and management of sepsis on neonatal mortality: field trial in rural India. *Lancet*. 1999;354(9194):1955-1961.

98. MoHFW. National Family Health Survey (NFHS-2), 1998-9. Mumbai, India: International Institute for Population Sciences (IIPS), Macro International, DHS; 2000. Available at: <http://www.nfhsindia.org/india2.html>.
99. Srinath Reddy K, Shah B, Varghese C, Ramadoss A. Responding to the threat of chronic diseases in India. *Lancet*. 2005;366(9498):1744-1749.
100. Patel V, Chatterji S, Chisholm D, et al. Chronic diseases and injuries in India. *Lancet*. 2011;377(9763):413-428.
101. WHO. *Causes of Death Summary Tables: List of Countries by WHO Regions*. Geneva, Switzerland: World Health Organization; 2011.
102. Ministry of Women and Child Development. Integrated Child Development Services (ICDS) Scheme. 2012. Available at: <http://wcd.nic.in/icds.htm>. Accessed February 16, 2013.
103. NSSO. *National Sample Survey 60th Round*. Delhi, India: Ministry of Statistics and Programme Implementation, Government of India, National Sample Survey Organization (NSSO); 2006.
104. WHO. *Selected National Health Accounts Indicators: Measured Levels of Expenditure on Health 2003-2007*. 2007. Available at: [http://www.who.int/nha/country/nha\\_ratios\\_and\\_percapita\\_levels\\_2003-2007.pdf](http://www.who.int/nha/country/nha_ratios_and_percapita_levels_2003-2007.pdf).
105. NIHFW. *ASHA: Frequently Asked Questions*. 2005. Available at: [www.nihfw.org/pdf/FrequentlyAskedQuestionsASHA.doc](http://www.nihfw.org/pdf/FrequentlyAskedQuestionsASHA.doc). Accessed December 1, 2012.
106. MoHFW. Reading material for ASHA: book 1. In: GoI, ed. *Ministry of Health and Family Welfare*. 2005. Available at: [http://www.mohfw.nic.in/NRHM/Documents/Module1\\_ASHA.pdf](http://www.mohfw.nic.in/NRHM/Documents/Module1_ASHA.pdf).
107. Scott K, Shanker S. Tying their hands? Institutional obstacles to the success of the ASHA community health worker programme in rural north India. *AIDS Care*. 2010;22(suppl 2):1606-1612.
108. MoHFW. NRHM: major stakeholders and their roles. 2005. Available at: <http://mohfw.nic.in/NRHM/stakeholders.htm>.
109. Bajpai N, Sachs JD, Dholakia RH. *Improving Access, Service Delivery and Efficiency of the Public Health System in Rural India: Mid-Term Evaluation of the National Rural Health Mission*. New York, NY: Center on Globalization and Sustainable Development, The Earth Institute at Columbia University; 2009.
110. Liu A, Sullivan S, Khan M, Sachs S, Singh P. Community health workers in global health: scale and scalability. *Mt Sinai J Med*. 2011;78(3):419-435.
111. MoHFW. *Janani Suraksha Yojana: Guidelines for Implementation*. Ministry of Health and Family Welfare; 2009. Available at: [http://www.mohfw.nic.in/layout\\_09-06.pdf](http://www.mohfw.nic.in/layout_09-06.pdf).
112. NHSRC. *Handbook for ASHA Facilitators*. 2012. Available at: [http://nhsrccindia.org/pdf\\_files/resources\\_thematic/Community\\_Participation/NHSRC\\_Contribution/Handbook\\_for\\_ASHA\\_Facilitators.pdf](http://nhsrccindia.org/pdf_files/resources_thematic/Community_Participation/NHSRC_Contribution/Handbook_for_ASHA_Facilitators.pdf). Accessed December 1, 2012.
113. National Health Systems Resource Centre. *ASHA Which way forward...? Evaluation of ASHA Programme*. New Delhi, India: National Rural Health Mission, National Health Systems Resource Centre; 2011. Available at: [http://nhsrccindia.org/download.php?downloadname=pdf\\_files/resources\\_thematic/Community\\_Participation/NHSRC\\_Contribution/ASHA\\_Which\\_way\\_forward\\_-\\_Evaluation\\_of\\_ASHA\\_Programme\\_Report\\_NHSRC\\_417.pdf](http://nhsrccindia.org/download.php?downloadname=pdf_files/resources_thematic/Community_Participation/NHSRC_Contribution/ASHA_Which_way_forward_-_Evaluation_of_ASHA_Programme_Report_NHSRC_417.pdf).
114. Bajpai N, Dholakia RH. *Improving the Performance of Accredited Social Health Activists in India: Working Paper No. 1*. Mumbai, India: Columbia Global Centers, Columbia University; 2011. Available at: [http://globalcenters.columbia.edu/mumbai/files/globalcenters\\_mumbai/Improving\\_the\\_Performance\\_of\\_ASHAs\\_in\\_India\\_CGCSA\\_Working\\_Paper\\_1.pdf](http://globalcenters.columbia.edu/mumbai/files/globalcenters_mumbai/Improving_the_Performance_of_ASHAs_in_India_CGCSA_Working_Paper_1.pdf).
115. Bajpai N, Dholakia RH. *Improving the Performance of Accredited Social Health Activists in India: Working Paper No. 1*. Mumbai, India: Columbia Global Centers, Columbia University; 2011. Available at:

- [http://globalcenters.columbia.edu/mumbai/files/globalcenters\\_mumbai/Improving\\_the\\_Performance\\_of\\_ASHAs\\_in\\_India\\_CGCSA\\_Working\\_Paper\\_1.pdf](http://globalcenters.columbia.edu/mumbai/files/globalcenters_mumbai/Improving_the_Performance_of_ASHAs_in_India_CGCSA_Working_Paper_1.pdf).
116. Amini F, Barzgar M, Khosroshahi A, Leyliabadi G. *An Iranian Experience in Primary Health Care: The West Azerbaijan Project*. New York, NY: Oxford University Press; 1983.
  117. Ronaghy HA, Mehrabanpour J, Zeighami B, et al. The Middle Level Auxiliary Health Worker School: the Behdar Project. *J Trop Pediatr*. 1983;29(5):260-264.
  118. Javanparast S, Baum F, Labonte R, Sanders D, Heidari G, Rezaie S. A policy review of the community health worker programme in Iran. *J Public Health Policy*. 2011;32(2):263-276.
  119. Farzadfar F, Murray CJ, Gakidou E, et al. Effectiveness of diabetes and hypertension management by rural primary health-care workers (Behvarz workers) in Iran: a nationally representative observational study. *Lancet*. 2012;379(9810):47-54.
  120. WHO. *Strengthening the Performance of Community Health Workers in Primary Health Care*. Geneva, Switzerland: World Health Organization; 1989.
  121. Javanparast S, Baum F, Labonte R, Sanders D, Rajabi Z, Heidari G. The experience of community health workers training in Iran: a qualitative study. *BMC Health Serv Res*. 2012;12:291.
  122. Aghajanian A, Mehryar AH, Ahmadnia S, Kazemipour S. Impact of rural health development programme in the Islamic Republic of Iran on rural-urban disparities in health indicators. *East Mediterr Health J*. 2007;13(6):1466-1475.
  123. Asadi-Lari M, Sayyari AA, Akbari ME, Gray D. Public health improvement in Iran—lessons from the last 20 years. *Public Health*. 2004;118(6):395-402.
  124. Mehryar AH, Aghajanian A, Ahmad-Nia S, Mirzae M, Naghavi M. Primary health care system, narrowing of rural-urban gap in health indicators, and rural poverty reduction: the experience of Iran. XXV General Population Conference of the International Union for the Scientific Study of Population; 2005; Tours, France.
  125. Mehryar A. Primary health care and the rural poor in the Islamic Republic of Iran. Scaling Up Poverty Reduction: A Global Learning Process and Conference; 2004; Shanghai, China.
  126. Movahedi M, Hajarizadeh B, Rahimi AD, et al. Trend and geographical inequality pattern of main health indicators in rural population of Iran. *Hakim Research Journal*. 2008;10(4):1-10.
  127. Arab M, Pourreza A, Akbari F, Ramesh N, Aghlmand S. Job satisfaction on primary health care providers in the rural settings. *Iran J Public Health*. 2000;36(3):64-70.