Community health workers:

What do we know about them?

The state of the evidence on programmes, activities, costs and impact on health outcomes of using community health workers

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Content

Executive summary

The use of community health workers has been identified as one strategy to address the growing shortage of health workers, particularly in low-income countries. Using community members to render certain basic health services to the communities they come from is a concept that has been around for at least 50 years. There have been innumerable experiences throughout the world with programmes ranging from large-scale, national programmes to small-scale, community-based initiatives.

This review paper revisits questions regarding the feasibility and effectiveness of community health worker programmes. It was commissioned by the World Health Organization as a follow-up to the *World health report 2006: working together for health*, which identified as a research priority the feasibility of successfully engaging community health workers. This review aims to assess the presently existing evidence. It constitutes a desktop review, very broad in scope, as is evident from the title, which draws together and assesses the evidence as it can be found in the published and selected "grey" literature since the late 1970s.

The umbrella term "community health worker" (CHW) embraces a variety of community health aides selected, trained and working in the communities from which they come. Generalizations about the profile of community health workers internationally are difficult. While there are some broad trends, CHWs can be men or women, young or old, literate or illiterate. More important is an acknowledgement that the definition of CHWs must respond to local societal and cultural norms and customs to ensure community acceptance and ownership.

The roles and activities of community health workers are enormously diverse throughout their history, within and across countries and across programmes. While in some cases CHWs perform a wide range of different tasks that can be preventive, curative and/or developmental, in other cases CHWs are appointed for very specific interventions.

While it is difficult, given the extensiveness of the topic and the diversity of the literature informing the review, to make generalizations about experiences with CHW programmes or answer the question of what makes a good CHW programme, there is consensus in the literature on a number of issues:

First, CHWs can make a valuable contribution to community development and, more specifically, can improve access to and coverage of communities with basic health services. There is robust evidence that CHWs can undertake actions that lead to improved health outcomes, especially, but not exclusively, in the field of child health. However, although they can implement effective interventions, they do not consistently provide services likely to have substantial health impact, and the quality of services they provide is sometimes poor.

Second, for CHWs to be able to make an effective contribution, they must be carefully selected, appropriately trained and – very important – adequately and continuously supported. Large-scale CHW systems require substantial increases in support for training, management, supervision and logistics.

Third, CHW programmes are therefore neither the panacea for weak health systems nor a cheap option to provide access to health care for underserved populations. Numerous programmes have failed in the past because of unrealistic expectations, poor planning and an underestimation of the effort and input required to make them work. This has unnecessarily undermined and damaged the credibility of the CHW concept.

Fourth, by their very nature CHW programmes are vulnerable unless they are driven, owned by and firmly embedded in communities themselves. Where this is not the case, they exist on the geographical and organizational periphery of the formal health system, exposed to the moods of policy swings without the wherewithal to lobby and advocate their cause, and thus are often fragile and unsustainable. However, the concept of community ownership and participation is often ill-conceived and poorly understood as a by-product of programmes initiated from the centre. Evidence suggests that CHW programmes thrive in mobilized communities but struggle where they are given the responsibility of galvanizing and mobilizing communities.

Examples of successful programmes can thus be found in the wake of community mobilization efforts, either as part of large-scale political transformation, such as in Brazil or China; or through local mobilization, often facilitated by nongovernmental, community-based or faith-based organizations. In many cases programmes last through the lifespan of the mobilization effort and wither or collapse entirely as the momentum of mobilization is lost. The rhythms and dynamics of community participation lie outside the scope of this review, yet are crucial to better understanding and discussing the future of CHW programmes.

A key challenge lies in institutionalizing and mainstreaming community participation. To date, the largest and most successful programme in this regard is the Brazilian Family Health Programme, which has integrated CHWs into its health services and institutionalized community health committees as part of municipal health services to sustain social participation. This means that community participation does not become an alternative, but an integral part of the state's responsibility for health care delivery.

Fifth, the question of whether CHWs should be volunteers or remunerated in some form remains controversial. There exists virtually no evidence that volunteerism can be sustained for long periods: as a rule, community health workers are poor and expect and require an income. Although in many programmes they are expected to spend only a small amount of time on their health-related duties, leaving time for other breadwinning activities, community demand often requires full-time performance. The reality is that CHWs as a rule and by their very nature provide services in environments where formal health services are inaccessible and people are poor. This also complicates the issue of community financing, which is rarely successful unless institutionalized, as in China. Most of the evidence reflects failures of community financing schemes, leading to high drop-out rates and the ultimate collapse of programmes.

Given present pressures on health systems and their proven inability to respond adequately, the existing evidence overwhelmingly suggests that particularly in poor countries, CHW programmes are not a cheap or easy, but remain a good investment, since the alternative in reality is no care at all for the poor living in geographically peripheral areas. While there is a lot to learn, there is a lot we do know about making programmes work better: appropriate selection, continuing education, involvement and reorientation of health service staff and curricula, improvement supervision and support are non-negotiable requirements. These need political leadership and substantial and consistent provision of resources. We need to learn from examples of large-scale successful programmes in this regard, particularly providing longitudinal evidence of what works and what does not work. This presently constitutes the biggest knowledge gap.

CHW programmes have been revered as a panacea and decried as a delusion in the past. A sober view reveals today, as it did in the late 1980s, that "with political will, however, governments can adopt more flexible approaches by planning CHW programmes within the context of overall health sector activities, rather than as a separate activity. Weaknesses in training, task allocation and supervision need to be addressed immediately. CHWs represent an important health resource whose potential in providing and extending a reasonable level of health care to undeserved populations must be fully tapped" (Gilson et al., 1989).

Abbreviations

ARI	acute respiratory infection
CBD	community-based distributor
CHW	community health worker
DOTS	directly observed treatment support
FBO	faith-based organization
HAART	highly active antiretroviral treatment
IMCI	integrated management of childhood illnesses
LGA	local government area
LHW	lay health worker
MoH	Ministry of Health
NGO	nongovernmental organization
ORS	oral rehydration solution
PLWHA	people living with HIV/AIDS
RTC	randomized controlled trial
TB	tuberculosis
TBA	traditional birth attendant
VHC	village health committee
VHW	village health worker
WHO	World Health Organization

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Introduction

The most recent *World health report* focuses the world's attention on human resources as the key ingredient to successful health systems functioning and it highlights the growing human resource crisis, particularly in low-income countries. In its foreword the late Director-General of WHO argues that:

> there is a chronic shortage of well-trained health workers. The shortage is global, but most acutely felt in the countries that need them most. For a variety of reasons, such as the migration, illness or death of health workers, countries are unable to educate and sustain the health workforce that could improve people's chances of survival and their well-being (WHO, 2006).

The *World health report* is a culmination of initiatives acknowledging the significance of human resources that began with the *Joint Learning Initiative* (JLI, 2004) on health human resources in 2003.

Shortages of skilled health workers, particularly in underserved areas, have been identified as a key facet of the growing human resource crisis. These shortages are driven by a number of factors: the dramatic increase in demand for health workers in high-income countries that has created a tremendous pull of health workers into these countries; increasing morbidity, mortality and absenteeism rates, coupled with increasing workloads due to the impact of the HIV/AIDS pandemic; and inadequately funded and poorly managed and performing health systems, which lead to deteriorating working conditions in many underserved areas, creating a strong push factor.

While the multifaceted crisis must be addressed through multiple measures, one strategy identified by both the JLI report and the *World health report* is so-called "task-shifting" – a review and subsequent delegation of tasks to the "lowest" category that can perform them successfully. It is in the context of task-shifting that the concept of using community members to render certain basic health services to their communities has gained currency again.

This review paper revisits questions regarding the feasibility and effectiveness of community health worker programmes. It was commissioned by WHO as a follow-up to the *World health report*, which identified as a research priority the feasibility of successfully engaging community health workers (WHO, 2006). This review aims to assess the presently existing evidence and has the following objectives:

- to review the existent evidence on community health workers and their impact on health outcomes;
- to identify gaps in knowledge and evidence on the use of CHWs to deliver basic health care services;
- to provide policy recommendations on the use of CHWs in response to acute shortages of health workers, particularly in areas with significant shortages of health workers, such as sub-Saharan Africa, Latin America and Asia.

The paper constitutes a desktop review, very broad in scope, as is evident from the title, which draws together and assesses the evidence as it can be found in the published and selected "grey" literature since the late 1970s. Given the volume and diversity of the literature, it draws particularly heavily on reviews conducted over the years.

After a brief discussion of the methodology of the review and the state of the evidence, the subsequent two chapters define the concept of the community health worker and give a short overview of the history of CHW programmes.

Chapters 6 to 9 then review different aspects of CHW programmes, starting with a profile of CHWs, analysing the different facets making up performance of CHW programmes and then examining different components of CHW programme management. Chapter 9 considers the role of community participation and other aspects of governance and accountability. Chapter 10 summarizes the lessons learnt.

Methodology

The authors drew on previous work conducted by themselves in this area (Lehmann, 2004). We then searched a number of databases (PubMed, POPLINE, Healthstar, Omni, SOSIG), of which PubMed proved by far the most productive.

The search terms initially used were the following:

- CHWs
- LHWs
- VHWs
- lay health workers
- lady health workers
- volunteer health workers
- voluntary health workers
- community health workers
- community health distributors
- community health surveyors
- community health assistants
- community health promoters
- *promotoras de salud*.

These were later supplemented with the following:

- community health agents (*agentes de saúde*)
- rural health auxiliaries (used primarily in the 1970s)
- traditional midwives
- TBAs
- traditional birth attendants
- health promoters.

The criteria for inclusion were a focus on developing countries and publication in a peer-reviewed publication, a published book or a formal evaluation report.

The review takes a narrative inductive approach.

The state of the evidence

The literature discussing community health workers and their numerous permutations is both voluminous and diverse. Our various searches, as discussed above, generated well over 650 titles, of which about 250 were retained in our data base. Discussions in academic journals and books were particularly lively throughout the 1980s, as CHW programmes mushroomed in the aftermath of the Alma Ata Declaration. Interest then waned in the 1990s, only to pick up again during the past two to three years, in response to increasing service needs, primarily due to the impact of the HIV/AIDS pandemic and the increasing shortages of professional health workers.

The available literature is quite varied in character. A great number of the early publications are programmatic rather than academic in character, narrating experiences with CHW programmes and making the case for their importance, rather than providing rigorous scientific evaluations and analyses.

However, there are also a substantial number of systematic evaluations, some of them making use of controlled or intervention trials, others using a range of qualitative and quantitative evaluation methods.

Furthermore, there are a number of large evaluation reports that were commissioned by either governments, NGOs or multilateral organizations. While we have no sense as to how many such reports exist, we were able to gain access to a small number of them through personal contacts.

There now are a number of web sites that report on mostly small CHW programmes in different parts of the world. As a rule, these do not contain any element of evaluation, but are meant to inform about and advocate specific programmes.

In this review we have considered and included the first three categories of publications. We very consciously did not limit this review to controlled trials and similarly rigorous evaluations, as a great deal of very rich evidence would then remain unexplored.

A great gap remains nevertheless, as it is very evident from personal experiences and communication that many experiences with CHW programmes in the developing world are not appropriately documented or not documented at all. While some experiences may have found their way into publications and unpublished reports, much remains undocumented.

Finally, given the long interest in CHW programmes, it is not surprising that over the years a number of researchers have summarized the evidence on various subtopics. We have found at least eight such summaries and reviews: Gilroy & Winch, 2006; Bhattacharyya et al., 2001; Ofosu-Amaah, 1983; Gilson et al., 1989; Walt, 1992; Parlato & Favin, 1982; Lehmann, Friedman & Sanders, 2004; Haines et al., forthcoming. And while we worked through and summarized about 250 publications to establish a sound knowledge base, the text below, where appropriate, draws heavily on these summaries to answer the overarching question of this review: CHWs – what do we know about them?

Defining community health workers

The umbrella term "community health worker" (CHW) embraces a variety of community health aides selected, trained and working in the communities from which they come. A widely accepted definition was proposed by a WHO Study Group (WHO 1989):

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

Internationally, CHWs had and have a large number of different titles. Bhattacharyya et al. and Gilroy & Winch list altogether 36 different terms by which CHWs are known in different countries, which is not exhaustive and which does not include a range of lay health workers who now render different forms of services for people living with HIV and AIDS (PLWHA) (Bhattacharyya et al., 2001; Gilroy & Winch, 2006).

Table 1. Alternative titles for CHWs

Title	Country
Activista	Mozambique
Agente comunitario de salud	Peru
Agente comunitário de saúde	Brazil
Anganwadi	India
Animatrice	Haiti

Title	Country
Barangay health worker	Phillippines
Basic health worker	India
Brigadista	Nicaragua
Colaborador voluntario	Guatemala
Community drug distributor	Uganda
Community health agent	Ethiopia
Community health promoter	various countries
Community health representative	various countries
Community health volunteer	Malawi
Community health worker	various countries
Community nutrition worker	India
Community resource person	Uganda
Female community health volunteer	Nepal
Female multipurpose health worker	Nepal
Health promoter	various countries
Kader	Indonesia
Lady health worker	Pakistan
Maternal and child health worker	Nepal
Monitora	Honduras
Mother coordinator	Ethiopia
Outreach educator	various countries
Paramedical worker	India
Promotora	Honduras
Rural health motivator	Swaziland
Shastho shebika	Bangladesh
Shastho karmis (leaders of *shastho shebika*)	Bangladesh
Sevika	Nepal
Traditional birth attendant	various countries
Village drug-kit manager	Mali
Village health helper	Kenya
Village health worker	various countries

Source: Bhattacharyya et al., 2001; Gilroy & Winch, 2006

All these types of CHWs carry out one or more functions related to health care delivery and are trained in some way for the interventions they are expected to perform. Not included, for example, are formally trained nurse aides, medical assistants, physician assistants, paramedical workers in emergency and fire services and others who are auxiliaries, mid-level workers and self-defined health professionals or health paraprofessionals. CHWs may receive training, which is recognized by the health services and national certification authority, but this training does not form part of a tertiary education certificate.

Some would include in this group traditional, faith and complementary healers as well as traditional birth attendants, whom we will not deal with in this review, as these important groups warrant separate and quite detailed treatment in their own right.

For the purposes of this review we follow the definition used by Lewin et al. in their Cochrane review (Lewin et al., 2005): “any health worker carrying out functions related to health care delivery; trained in some way in the context of the intervention; and having no formal professional or paraprofessional certificated or degreed tertiary education”.

The history of community health worker programmes

The concept of using community members to render certain basic health services to the communities from which they come has a 50-year history at least. The Chinese barefoot doctor programme is the best known of the early programmes, although Thailand, for example, has also made use of village health volunteers and communicators since the early 1950s (Kauffman & Myers, 1997; Sringernyuang, Hongvivatana & Pradabmuk, 1995).

Barefoot doctors were health auxiliaries who began to emerge from the mid-1950s and became a nationwide programme from the mid-1960s, ensuring basic health care at the brigade (production unit) level (Zhu et al., 1989; see also Hsiao, 1984; Sidel, 1972; Shi, 1993). Partly in response to the successes of this movement and partly in response to the inability of conventional allopathic health services to deliver basic health care, a number of countries subsequently began to experiment with the village health worker concept (Sanders, 1985).

The early literature emphasizes the role of the village health workers (VHWs), which was the term most commonly used at the time, as not only (and possibly not even primarily) a health care provider, but also as an advocate for the community and an agent of social change, functioning as a community mouthpiece to fight against inequities and advocate community rights and needs to government structures: in David Werner's famous words, the health worker as "liberator" rather than "lackey" (Werner, 1981). This view is reflected in the Alma Ata Declaration, which identified CHWs as one of the cornerstones of comprehensive primary health care.

Examples of VHW initiatives in Africa driven by this rationale include Tanzania's and Zimbabwe's VHW programmes in their early phase. Both were set in the political context of wholesale systemic transformation (decolonization and the Ujamaa movement in Tanzania, and the liberation struggle in Zimbabwe), and both focused on self-reliance, rural development and the eradication of poverty and societal inequities.

Then came the economic recession of the 1980s, which seriously jeopardized particularly the economies of developing countries, and brought shifts in the policy environment as the focus on liberation, decolonization, democratization, self-reliance and the "basic needs" approach to development was replaced by World Bank-driven policies of structural adjustment and its successors. CHW programmes were the first to fall victim to new economic stringencies and most large-scale, national programmes collapsed (although numerous nongovernmental organizations (NGOs) and faith-based organizations (FBOs) continued to invest in mostly small, community-based health care). The collapse was further facilitated by the fact that many large-scale programmes had suffered from a number of conceptual and implementation problems such as "unrealistic expectations, poor initial planning, problems of sustainability, and the difficulties of maintaining quality" (Gilson et al., 1989).

While many policy-makers turned their attention away from CHWs altogether, others, wanting to rescue the concept and practice, suggested subtle shifts, as the following quote from a WHO publication on CHWs illustrates:

> CHW programs have a role to play that can be fulfilled neither by formal health services nor by communities alone. Ideally, the CHW combines service functions and developmental/promotional functions that are, also ideally, not just in the field of health….Perhaps the most important developmental or promotional role of the CHW is to act as a bridge between the community and the formal health services in all aspects of health development….the bridging activities of CHWs may provide opportunities to increase both the effectiveness of curative and preventive services and, perhaps more importantly, community management and ownership of health-related programs… CHWs may be the only feasible and acceptable link between the health sector and the community that can be developed to meet the goal of improved health in the near term (Kahssay, Taylor & Berman, 1998).

Although this concept of CHWs continues to focus on their role in community development and bridging the gap between communities and formal health services, their role as advocates for social change has

been replaced by a predominantly technical and community management function. Over the years, and within the prevailing political climate, this pragmatic approach to CHWs has gained currency, and undoubtedly today constitutes the dominant approach, although the fundamental tension between their roles as extension worker and change agent remains and will be discussed below.

Examples of CHW programmes implemented as part of wider health sector reform processes, aiming to enhance accessibility and affordability of health services to rural and poor communities within a PHC approach, can be found in numerous low-income countries in the 1970s and 1980s, three of which are sketched below.

Indonesia restructured its health system in 1982, with a focus on district health development. Village health volunteers, selected and paid by local communities, became part of health posts set up within each district. Their activities included family planning, health education, growth monitoring, nutrition support, immunization and treatment, particularly of diarrhoeal diseases. Initial reports showed remarkable results. Yahya reports that the dramatic increase in village health posts led to significant health status achievements: infant mortality dropped by 30% within seven years and immunization coverage improved many-fold (Yahya, 1990).

In Ghana, the Ministry of Health introduced substantial numbers of community or village health workers in the late 1970s as part of a substantial review and reorganization of MoH activities aimed at implementing PHC strategies (Morrow, 1983). The initiative was driven by the MoH and integrated into the national health service structure, with the MoH providing training, technical supervision and necessary supplies.

In Niger, CHW programmes evolved from the work of volunteer health workers whose work started in the late 1960s in the primarily agricultural Maradi Department, along the Nigerian frontier, with a population of 730 000 people (Fournier & Djermakoye, 1975). Since 1963 Niger had a rural extension service (*animation rurale*), which promoted community development schemes characterized by voluntary participation. In the Ministry of Health, a 10-year plan from 1965 to 1974 set out the principles governing the training of village health workers and traditional birth attendants.

While emphasizing community ownership and participation, all these projects were initiated and driven by central government. Unfortunately, we could not find any literature on lifespan or impact of these programmes.

Another source of CHW initiatives is faith-based organizations, which, over the decades, have combined missionary with practical work to improve the health, education and social conditions of communities. By their very nature, these initiatives are driven by a different rationale, and the challenges they confront are often somewhat different.

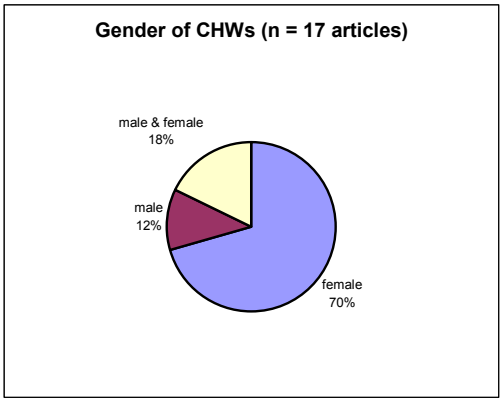
Today's renewed focus on the use of CHWs has its rationale primarily in a recognition that service needs, particularly in remote and underprivileged communities, are not met by existing health services, particularly given increased needs created by HIV/AIDS in many countries and worsening health worker shortages. CHWs are used primarily to render basic, mostly curative health services within homes and communities and to assist health professionals with their tasks.

Profiling community health workers

Who are they?

The question of who CHWs were and are in terms of gender, age, status, etc., finds many different answers in the literature that reflect the diversity of CHW programmes. There is agreement on two factors, though: in virtually all cases in the literature, CHWs come from the communities they serve and they have little or no secondary and no tertiary education.

With regard to gender, the majority of articles do not comment specifically on whether CHWs were male or female. In 17 articles that do specify gender, female CHWs dominate (Briend et al., 1989; Fauveau et al., 1991; Hailu & Kebede, 1994; Iyun, 1989; Odebiyi & Ondolo, 1993; Ratnaike & Chinner, 1992; Ronsmans et al., 1997; Shah, Pratinidhi & Bhatlawande, 1984; Taha, 1997; Yunus et al., 1996; Zeighami et al., 1977; Bang et al., 2005; Brown et al., 2006; Douthwaite & Ward, 2005; Knowles, 1995; Majumdar, Amarsi & Carpio, 1997; Tumwine, 1993).



It is interesting to note that especially articles on CHW programmes in Bangladesh and Pakistan mention the sex of their health workers, while articles on programmes in Latin America and Africa in most cases do not. Clearly, the gender issue is to a very large extent influenced by wider societal practices and beliefs, and gender relations more generally. This is borne out by a Somali case example.

In the Somali VHW programme, where most VHWs were male, an interesting gender problem emerged in that (male) CHWs had little contact with women.

> When children had diarrhoea, frequently it was the husband who came to the centre to collect medicine. Oral rehydration salts were provided, but apparently little information transfer was occurring from husband to wife. The CHW had no direct contact with the mother so as to be able to advise and help. In a new strategy, each community elected a woman helper. This person became the key informant for the CHW in that community. She was trained in the use of oral rehydration therapy and preparation of oral rehydration salts and in the importance and methods of preventing anaemia in pregnancy. This woman, who was often also the TBA, was supplied with ORS, iron and chloroquine by the CHW (Bentley, 1989).

In Peru, on the other hand, the fact that the vast majority of health promoters and indeed traditional birth attendants and traditional healers are male appears problematic only because they dramatically skew gender equality in community leadership positions. Resistance from husbands was identified as a key barrier to the participation of women in the programme (Brown et al., 2006).

Comments on age are even less frequent in the literature, although mature age (between 20 and 45 years) and often married status are reported to be a criterion in a number of cases (Ofosu-Amaah, 1983). Examples are the Church of the Brethren initiative in Nigeria (Hilton, 1983), the Somalia and Kenya VHW programmes (Kaseje et al., 1987a; Bentley, 1989), and a Safe Motherhood initiative in Uganda (Kasolo, 1993). In the case of a Peruvian project, the age of health promoters ranged from 19 to 57, with an average age of 29, whereas TBAs were considerably older by comparison (52) (Brown et al., 2006).

A great deal of variation exists in required qualifications. Many, but not all, programmes require certain levels of literacy. In the Democratic Republic of the Congo, Peru, Somalia and Uganda, for example, literacy was a prerequisite (Kasolo, 1993; Bentley, 1989; Brown et al., 2006; Delacollette et al., 1996), while the Tanzanian VHW programme and Kenyan AMREF programmes required seven years of primary education (Johnson et al., 1989; Chagula & Tarimo, 1975). The Church of the Brethren project in Eastern Nigeria (Hilton, 1983) required the ability to read and write in Hausa, the local language, as well as good communication skills. In Quechua, Peru, as well, knowledge of the local language was identified as crucial, together with a certain amount of schooling (Brown et al., 2006). However, in the community self-help health development programme in Saridid, Kenya, literacy was not considered a selection criterion (Kaseje et al., 1987a). Bhattacharyya et al. comment that "literacy requirements often affect the age of the selected CHWs: literate people tend to be younger. There is some evidence, on the other hand, that older CHWs are more respected in their communities" (Bhattacharyya et al., 2001).

It is evident that generalizations about the profile of community health workers internationally are difficult. While there are some broad trends, CHWs can be men or women, young or old, literate or illiterate. More important is an acknowledgement that who and what CHWs are has to respond to local societal and cultural norms and customs to ensure community acceptance and ownership.

Roles and activities

There is a wide range of different community health workers, performing an even wider range of tasks. A typology is therefore not easy. One simple distinction, however, is that between generalist and specialist CHWs.

Generalist

Generalist village health workers have been working in developing country health programmes from before the Alma Ata declaration; some in large national programmes, such as, most prominently, the Chinese barefoot doctor programme, but also programmes in India, Indonesia and a number of African and Latin American countries; others in innumerable smaller programmes run by nongovernmental, faith-based and community-based organizations. Some of these programmes and models have been described in books such as *Health by the people* (Newell, 1975) and *Practising health for all* (Morley, Rohde & Williams, 1983).

Ofosu-Amaah, in her extensive 1983 review of CHW programmes based in 46 countries, wrote:

> the CHW is expected to perform a wide range of functions, which according to country reports generally include: home visits, environmental sanitation, provision of water supply, first aid and treatment of simple and common ailments, health education, nutrition and surveillance, maternal and child health and family planning activities, communicable disease control, community development activities, referrals, record-keeping, and collection of data on vital events (Ofosu-Amaah, 1983).

There has been a long and unresolved debate about the question how many functions one CHW can effectively perform, considering the potential scope of activities (Ofosu-Amaah, 1983; Bhattacharyya et al., 2001; Gilroy & Winch, 2006. Coupled with concerns about how many tasks a CHW can realistically perform are questions about the primary role of CHWs. Gilson et al., in their 1989 assessment of three large national CHW programmes, found that while CHWs had been set up to be change agents in communities, in reality they were functioning as extensions of formal health services – as auxiliaries rather than independent agents, even then.

This finding highlights a key tension in the conceptualization of CHWs in the post-Alma Ata period. While developmental and educational activities are considered important, curative services are demanded by communities that do not have access to these services. There is substantial evidence in several countries that CHW programmes floundered due to disappointment among the community about the range of health services the CHWs could provide. One such example is documented in Burkina Faso (Sauerborn, Nougtara & Diesfeld, 1989). The authors report that two thirds of ailments had to be referred to the next level of care, rendering CHWs largely ineffectual. Sanders argues that "equipping VHWs with curative skills does not simply provide health care to more people, more quickly and more cheaply, but it also gives the VHW greater credibility in the eyes of the community" (Sanders, 1985). This needs to be weighed against other stakeholders' expectations and a realistic assessment of CHWs' capacity, given their training, other commitments and the size of the population they are expected to serve.

It is impossible to comprehensively assess the full scope and depth of these programmes. Instead we have chosen to present two recent large CHW programmes as case examples.

Case study: Brazil

One example of a recent, large-scale, government-initiated and -driven CHW programme can be found in Brazil in the *Programa Agente Comunitário de Sáude*. This programme started in the mid-1980s in the north-eastern state of Ceará (Cufino Svitone et al., 2000), but was integrated into the national Family Health Programme (*Programa Sáuda da Família*) in 1994 (Gilroy & Winch, 2006; Lobato & Burlandy, 2000; McGuire, 2002).

McGuire summarizes the Ceará programme as follows:

> When a drought hit the region in 1987, Ceará's state government began to hire community health agents, mostly women, as part of a job-creation programme. Each of the new health agents was given three months' training and assigned to make monthly visits to 50-250 households to provide prenatal care, vaccinations, and checkups, as well as to promote breastfeeding and oral rehydration. By 1992, 7,300 community health agents had been hired, along with 235 half-time nurse supervisors. These health workers served 65 percent of Ceará's population at a cost of less than US $8,000,000 per year, or about $1.50 for each person served (McGuire, 2002).

The agents were paid about USD 112 per month (double the amount of a rural worker) and supervised by local nurses who also provided continuing training in regular meetings (Cufino Svitone et al., 2000).

The programme led to a 32% drop in infant mortality within five years and a substantial increase in exclusive breastfeeding (Cufino Svitone et al., 2000). By 1994 the national government adopted the Ceará programme and integrated it into the newly developed Family Health Programme.

The Family Health Program (Programa Sáuda da Família or PSF in Portuguese) can be considered the main government effort to improve primary health care in Brazil. The PSF provides a broad range of primary health care services delivered by a team composed of one physician, one nurse, a nurse assistant, and (usually) four or more community health workers. In some places, the team also includes dental and social work professionals.

Each team is assigned to a geographical area and is then responsible for enrolling and monitoring the health status of the population living in this area, providing primary care services, and making referrals to other levels of care as required. Each team is responsible for an average of 3450 and a maximum of 4500 people. Physicians and nurses typically deliver services at health facilities placed within the community, while community agents provide health promotion and education services during household visits.

As of 2004, the programme covered about 66 million people [nationally] – nearly 40% of the entire population. The results showed that PSF expansion, along with other socioeconomic developments, were consistently associated with reductions in infant mortality. The policy implication is that a broad based approach to improving child health, with primary health care at its core, can make considerable improvements in outcomes (Macinko et al., 2006).

By early 2006, 60% of the population was looked after by 25 000 health teams. In areas covered by family health teams, hospitalization has dropped from 52 to 38 per 10 000 in the past three years (information gleaned from presentations at 3rd National Conference on HRH in Brasilia, March 2006).

Several features make this programme different from most others. First, its sheer scale appears unrivalled, as roughly 50 million people are served by the programme at the moment. Second, Brazil took the bold decision to fully integrate CHWs into their PHC services, making them paid members of the Family Health Teams. The issue of local ownership has been and is challenging, and is addressed in the following way: first, with decentralization, municipalities are responsible for delivery of services at primary level. Municipalities are to actively ensure the existence of community health committees. Public service regulations regarding the national advertising of civil service posts were amended to ensure that health agents came from and served their own communities (input and discussion at 3rd National Conference on HRH in Brazilia, March 2006).

India case study

India has a long and rich history of small and large CHW programmes. A large national CHW scheme was established in the late 1970s that aimed to provide one CHW for every 1000 population in order “to provide adequate health care to rural people and to educate them in matters of preventive and promotive health care” (Chatterjee, 1993; Bose, 1983).

However, the programme ran into problems virtually from the start: resistance from the medical profession, demands for payment and vacillating government policies with regard to funding meant that the scheme collapsed in most states within a few years. Furthermore, it would appear that the scheme was not well anchored in and owned by communities and there was role confusion between CHWs and multipurpose health workers. Interestingly also, CHWs were trained

for a very limited scope of curative tasks, to the exclusion of any preventive or promotive work, leading to frustration and demotivation among themselves and the communities they served (Chatterjee, 1993; Bose, 1983).

While the government considered CHWs volunteers who were appointed by and accountable to the communities they served, they themselves, their communities and the health services considered them government employees, leading to demands for higher salaries rather than small honoraria. By the late 1980s, although there were large numbers of CHWs registered, few of them functioned effectively.

On a smaller scale of NGOs, India, like so many other countries, has seen a number of successful projects. Kaithathara reports of a project called MOTT (mobile orientation and training team) which set up CHW projects in a number of villages in the Indian state of Orissa. Here, community participation was central to the programme:

> communities decided and planned whether and when they wanted a health care programme, and what kind: the cost, type and location of the health centres. They chose the women who were to be trained from among women in their community. They also formed a small committee of seven to ten people, women and men, to help the health workers in their day-to-day problems (Kaithathara, 1990).

Training and supervision was done in circular fashion, on a continuing basis, involving health centre staff. Kaithathara points out that "in addition to health workers, there must be other 'agents of change' in villages, so that a comprehensive approach can accelerate the people's awakening, enabling them, by cooperative effort, to build their own future together". Unfortunately, as in so many cases, we have neither a systematic evaluation of the project, nor any firm figures regarding impact on health status, nor a sense of the lifespan of the project. The reported time span lies between 1968 and 1985.

Very recently another large-scale programme called the *mitanin* programme was initiated by the government in the Indian state of Chhattisgarh in 2002. The programme is seen to be following the long tradition of Indian CHW programmes and was preceded by intensive studies of these previous experiences (SOCHARA, 2005). The programme was evaluated by the Society for Community Health Awareness, Research and Action (SOCHARA) at the request of the Chhattisgarh government in early 2005. This summary is based on their evaluation report (SOCHARA, 2005).

Chhattisgarh is a new state, formed in 2000 after the separation of two others. It has a population of 20 million and all the characteristics of a rural, underserved community, with low health and education indicators. The creation of the new state was seen as an opportunity to "strengthen measures to improve health and health care".

> The core idea was to have a *mitanin* (trained community health worker) for every one of the 54 000 *majra tola's/para's* (hamlets) in the state. There was political commitment and pressure from the highest level, with the Chief Minister taking personal interest in its launch and progress (SOCHARA, 2005).

The programme initiation was a collaborative effort between the state, NGOs and funders, who set up a dedicated structure – the State Health Resource Centre (SHRC) – which was charged with operationalizing and managing the programme.

Mitanin are women, selected from their communities, who receive altogether 20 days of training and who work closely with primary health staff. Training was organized as follows:

> The Block Medical Officer (BMO) would organize the training programmes for Mitanins and the cost would be borne by government. The first stage of training would consist of six rounds and was expected to be institutional based. The second stage of training would be mainly refresher training at regular intervals and at cluster and panchayat level. The first stage of training would include preparation, and building of certain basic attitudes, knowledge, and skills. She would be expected to perform the following tasks after training: blood smear preparation, anemia detection, antenatal care, weighing children, malnutrition detection and care, ARI (Acute Respiratory Infection) treatment, chloroquine treatment for fever, early detection and referral, treatment of dehydration, health education for specific groups.

After training they were expected to work for two to three hours per day for two to three days per week, thus leaving time for farming or other breadwinning activities.

In contrast to the Brazilian programme, it was decided that compensation (in cash or kind) should be the responsibility of communities, while "government would guarantee training and retraining; integration of the mitanins' work with government services, and supply free medicines and material".

The SOCHARA evaluation summarized their findings of the early implementation of the programme as follows:

> The team found that the Mitanin programme has covered all areas, and there are Mitanins in almost all places. Supportive institutional mechanisms have been established at state level with the SHRC advisory committee, and at district and block level with district RCH [reproductive and child health] Societies and a variety of arrangements. However the programme is struggling at the field level on several fronts including Mitanin's demand for drugs, remuneration, training, and referral support; non payment of BRP-DRPs [block respource person-district resource persons] for long periods; relative indifference of the health system, and

> lack of adequate meaningful community participation at several stages (in selection, implementation). The knowledge level of Mitanins, their home visits, provision of primary medical care, referral, cooperation with ANM-AWW [auxiliary nurse midwife/*Aganwadi Worker*], Panchayat connection, gender-rights etc are presently at low levels. Their training, follow-up and support systems need considerable strengthening. The document search suggests thoughtful planning with potential problems considered and options weighed. Due to several reasons spanning design, strategy and implementation, the programme is performing below expectations. Despite good efforts on some fronts like preparation of good training booklets, separate support system for Mitanins, picture – symbols on the tablet-packs, *kalajathas* to generate enthusiasm and community awareness and ensuring a Mitanin everywhere, the programme faces serious challenges. Continuing the process of learning by doing with technical, training, supervisory and referral support at block and district level (…) could help to make the difference.

Several aspects stand out in the Chhattisgarh *mitanin* programme:

First, the programme very explicitly sees itself as continuing a tradition of CHW programmes in India, and the programme initiators took great care to study and learn from previous programmes.

Second, as in Brazil, the programme was initiated during a time of political transformation, by a government that seriously endeavours to address issues of inequity in health service delivery. There is considerable political leadership in the process of initiating and implementing the programme. Of particular interest and well worth studying in greater detail is the decision to establish a dedicated structure tasked with the operationalization of the programme, as well as the fact that three years into the programme it had seen one internal and one external evaluation, indicating an awareness that this was not an easy process and a willingness to learn from experience. This is also reflected in the language of the evaluation report.

The findings of the evaluation raise challenges entirely common to CHW programmes throughout the world: problems with community ownership, demands for training, remuneration and supplies, lack of supervision and negative attitudes from the formal health services. However, rather than abandoning the programme, there appears to be great resolve to view and address these challenges in the context of broader human resource and systems development.

Specialist CHWs

While in some programmes the lines between generalist and specialist CHWs are blurred, many programmes established in the past 20 years make use of CHWs to address specific health issues.

This is often, but not only, true for programmes run by NGOs, which frequently have a programme-specific focus. Specialization may also be a response to the difficulty experienced in finding the optimal mix of CHW functions and tasks and the right balance between breadth and depth of tasks (Bhattacharyya et al., 2001).

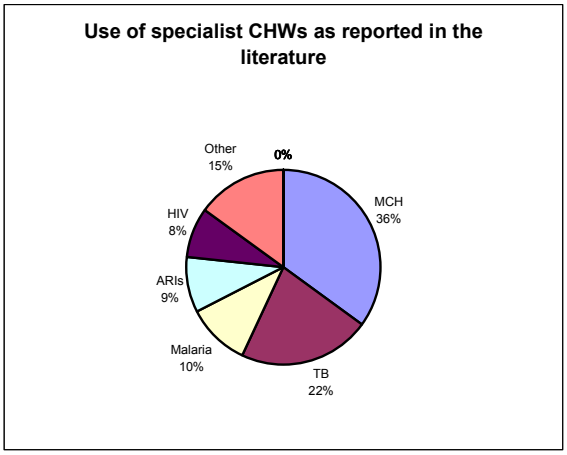
Key areas in which the use of specialist CHWs is reported frequently in the literature are the following:

- Maternal and child health, including reproductive health and family planning (Cesar et al., 2002; Goldhaber-Fiebert et al., 2005; Kelly et al., 2001; Majumdar, Amarsi & Carpio, 1997; Haider et al., 2002; Integration, 1990; Bairagi, Islam & Barua, 2000; Kasolo, 1993; Haspel, 1994; Kamanzi, Avutsekubwimana & Hakiruwizera, 1990; African Alternatives, 1995; Miller, 1998; Maro, 1988; Leite et al., 2005; Morrison et al., 2005; Jacobson, 1991; De Francisco, 1994; Ogunfowora & Daniel, 2006; Velema et al., 1991; Kuhn & Zwarenstein, 1990; Yach, Hoogendoorn & Von Schirnding, 1987; Cesar et al., 2005; Bang et al., 2005; Jokhio, Winter & Cheng, 2005; Douthwaite & Ward, 2005; James, Howat & Binns, 1998; Nougtara et al., 1989; Paul & Singh, 2004).
- TB care (Barker, Millard & Nthangeni, 2002; Chopra & Wilkinson, 1997; Chowdhury et al., 1997; Connolly, Davies & Wilkinson, 1999; Daniels et al., 2005; Dudley et al., 2003; Kironde & Kahirimbanyi, 2002; Lwilla et al., 2003; Sinanovic et al., 2003; Tanser & Wilkinson, 1999; Wilkinson 1999a, 1999b; Zwarenstein et al., 2000; Floyd et al., 2003; Islam et al., 2002; Khan et al., 2002; Nganda et al., 2003; Okello et al., 2003).
- Malaria control (Ghebreyesus et al., 2000; Ghebreyesus et al., 1996; Delacollette, Van der Stuyft & Molima, 1996; Allen et al., 1990; Bell et al., 2005; Cho Min & Gatton, 2002; Greenwood et al., 1988; Sirima et al., 2003).
- HIV/AIDS care (Howard, 1995; Schneider et al., 2006; Shah, Rollins & Bland, 2005; Koenig, Leandre & Farmer, 2004; Wendo, 2003; Kipp, Kabagambe & Konde-Lule, 2002; Farmer et al., 2001).

- Treatment of acute respiratory infections (ARIs) (Kallander et al., 2006; Winch et al., 2005; Mehnaz et al., 1997; Charleston, Johnson & Tam, 1994; Brewster et al., 1993; Zeitz et al., 1993; Pandey et al., 1991; Rai & Tatochenko, 1988).

Less frequent reports can be found about the use of CHWs in food security and nutrition, immunization, community rehabilitation, diarrhoea management, environmental health and sanitation, treatment of skin diseases and the collection of basic health information in communities, including recordkeeping.

Of 86 articles discussing the use of specialized CHWs in developing countries, 30 focused on maternal and child health (including reproductive health and family planning), 19 on the treatment of TB, 9 on malaria control, 8 on ARIs, 7 on HIV/AIDS, 13 on other intervention areas.



It would be impossible to comprehensively summarize or even represent the range of activities of specialist health workers. Instead, a few case studies below aim to give an impression of the scope and character of roles and activities.

By far the most comprehensive review of the use of CHWs in a specific area, with a strong clinical perspective, can be found in *Management of sick children by community health workers* (Gilroy & Winch, 2006). Based on an extensive literature review, the authors identified seven intervention models, which they categorized according to according to a number of factors (see table below).

Table 1. Overview of intervention models for case management of children with malaria or pneumonia outside of health facilities

Intervention model		Treatment with antimicrobials			Referral to nearest health facility: Verbal or facilitated
Number	Title	CHW dispenses antimalarials	Family dispenses antimalarials	CHW dispenses antibiotics for ALRI	
Model 1	CHW basic management and verbal referral	No	No	No	Verbal
Model 2	CHW basic management and facilitated referral	No, may give initial treatment prior to referral	No	No, may give initial treatment prior to referral	Facilitated for all sick children needing an antimicrobial
Model 3	CHW-directed fever management	Yes	No	No	Verbal or facilitated
Model 4	Family-directed fever management	Family only or shared responsibility		No	Verbal
Model 5	CHW malaria management and surveillance	Yes	No	No	Verbal or facilitated
Model 6	CHW pneumonia case management	No	No	Yes	Verbal or facilitated
Model 7	CHW integrated multiple disease case management	Yes	No	Yes	Verbal or facilitated

Source: Gilroy & Winch, 2006

The role of CHWs in child survival has also been reviewed in a forthcoming article by Haines et al. (forthcoming). They found that in a number of trials, reductions in child mortality through the use of CHWs could be proven. They warn, however, that:

> CHWs are not a panacea for weak health systems and will require focussed tasks, adequate remuneration, training, supervision, and the active involvement of the communities in which they work. The introduction of large-scale CHW programmes requires evaluation research to document the impact on child survival and cost effectiveness as well as to elucidate factors associated with success and sustainability (Haines et al., forthcoming).

The potential for using CHWs to administer treatment of malaria was evaluated in the Katana health zone in the Democratic Republic of the Congo (Delacollette, Van der Stuyft & Molima, 1996). In each of the 12 villages of the intervention area, a CHW selected by the village was trained for two weeks in the use of a simple fever management algorithm. After training, the CHWs started their activities. Since they were also local farmers, they were, in principle, always accessible to the villagers, who had been motivated through health education to consult the CHW for any fever episodes.

The CHWs performed their services under the supervision of the nurse in charge of the area's health centre and attended monthly meetings. They received only a symbolic monetary award, as well as increased standing in the community. Nevertheless, no CHW dropped out of the programme.

Malaria morbidity and mortality trends were monitored over two years in area A (the project area) and in an ecologically comparable control area (area B), where malaria treatment continued to be available at the health centre only. Health care behaviours changed dramatically in the intervention area, and by the end of the observation period 65% of malaria episodes were treated at the community level. Malaria morbidity declined 50% in area A but remained stable in the control area. Malaria-specific mortality rates remained, however, at essentially the same levels in both areas.

Key problems in the project revolved around the limited scope of the CHWs' practice and their ambiguous role within the health care system. More specifically, Delacotte et al. observed that CHWs wanted to be more than symbolically remunerated for their services; they were eager to receive further training so as to expand their scope of practice, and they wanted to become a formal part of the health structure. Furthermore, the project management and supervision placed an increased burden on health centre staff, and communities became increasingly disenchanted with the limited scope of services delivered by the CHWs. This, in the authors' opinion, would in the long term compromise the sustainability of the project.

One of the fastest-developing areas for the use of CHWs is HIV/AIDS prevention and care. Today CHWs are widely used as lay counsellors (Kipp, Kabagambe & Konde-Lule, 2002), and a number of countries, particularly Haiti, have explored the use of CHWs in treatment support (Farmer et al., 2001; Koenig, Leandre & Farmer, 2004). In addition there is a proliferation of community-, church- and NGO-initiated activities, particularly in countries with high HIV prevalence, which make use of lay personnel for a wide range of prevention, support and care activities (Johnson & Khanna, 2004). These are often unregulated (Chaava, 2005), not well documented and, as Schneider et al. point out, their potential for addressing the overwhelming human resource challenges in HIV care is inadequately understood (Schneider et al., 2006). A systematic assessment of these programmes and activities is an urgent research requirement.

Having discussed the range of CHW profiles, their roles and activities, we will now turn to questions of performance of programmes and how this is affected by issues of management and governance. Given the diversity of programmes, generalizations must be approached with caution, but trends are discernable.

Performance

Performance is made up of different but closely interlinked elements: individual health worker performance, use of services, impact effectiveness and financial performance or cost-effectiveness. All of these will in turn be discussed below.

Health worker performance

Individual health worker performance, while an important element, is somewhat difficult to discuss as a stand-alone issue, as it depends on all aspects of management, as discussed below: selection, training, supervision and support. Two studies that explicitly explore the performance of CHWs illustrate this.

Evaluations of CHW performance in 1998, 1999, and 2001 in Siaya, Kenya (Kelly et al., 2001) found that "key reasons for the deficiencies [in performance] appear to be guideline complexity and inadequate clinical supervision".

An assessment of health worker performance in the management of children with acute respiratory infections (ARI) in two local government areas (LGAs) in Nigeria found that:

> many of the health workers had not attended a continuing education programme in the previous two years and supervision which could have provided on-the-spot training was irregular. Improvements in ARI case management will require attention to policy, logistics, training (including in-service education) and supervision (Fagbule & Kalu, 1995).

Use

Low use of CHW programmes is a commonly expressed concern in the literature (De Francisco et al., 1994; Sringernyuang, Hongvivatana & Pradabmuk, 1995; Develay, Sauerborn & Diesfeld, 1996; Nougtara et al., 1989; SOCHARA, 2005; Sauerborn, Nougtara & Diesfeld, 1989; Menon, 1991).

As a rule, use is seen to be linked to poor community introduction of the programme, which often, as in the case of a CHW initiative in Burkina Faso, then leads to political tensions between traditional hierarchies and the structures set up under the new regime (Sauerborn, Nougtara & Diesfeld, 1989) or to a preference for formal, established health services.

In Thailand it was found that use of well-established programmes was dropping (Kauffman & Myers, 1997; Sringernyuang, Hongvivatana & Pradabmuk, 1995):

> Many of the once rural villages of Thailand have greater access to secondary and tertiary services located in larger cities and communities. Consequently, more and more people self-refer into this level of care, based on information they receive from radio or television.

They suggest a context-sensitive adjustment of existing CHW programmes.

Like CHW performance, use is clearly context-sensitive and linked to a number of factors internal and external to the programme. That use can be influenced and improved is convincingly shown by Curtale et al. (1995). They report that the implementation of a specific intervention in Nepal that improved training, support and supervision of CHWs not only improved their performance, but also led to a significant increase in usage rates and improved rates in choice of CHWs as "first stop" providers.

Retention/attrition

High attrition rates have been reported in many CHW programmes, as summarized by Bhattacharyya et al. (2001):

> Attrition rates for CHWs of 3.2 percent to 77 percent are reported in the literature, with higher rates generally associated with volunteers. One review (Parlato & Favin, 1982) found attrition rates of 30 percent over nine months in Senegal and 50 percent over two years in Nigeria. CHWs who depend on community financing have twice the attrition rate as those who receive a government salary. In the Solomon Islands, attrition was attributed to multiple causes in addition to inadequate pay, including family reasons, lack of community support, and upgrading of health posts (Chevalier et al., 1993). High attrition rates cause several problems. Frequent turnover of CHWs means a lack of continuity in the relationships established among a CHW, community, and health system. Considerable investment is made in each CHW, and programme costs for identifying, screening, selecting, and training the CHW rise with high attrition rates. When CHWs

leave their posts, the opportunity is lost to build on their experience and further develop their skills over time through refresher training. The very effectiveness of CHW work usually depends on retention.

These points are elaborated in several studies.

In a study in the Solomon Islands, training before the age of 20 and irregularity in remuneration were found to be the main factors explaining why village health workers leave their posts (Chevalier et al., 1993):

> Attrition occurred when VHWs were trained before they reached age 20 and when their remuneration was irregular; only 58% of VHWs surveyed had been paid regularly, and 66 of the non working VHWs surveyed had quit because of pay-related reasons. (…) Many of the younger workers abandoned the job of VHW when they married and sought other employment to support their families or had children to tend. For others, the VHW post was a steppingstone to becoming a nurse. In the Solomon Islands, local communities try to have their VHW posts upgraded to that of nurse's aid. If this practice were restricted, more VHWs would drop out.

In Bangladesh's BRAC programme CHWs "discontinued their work due to lack of time, lack of 'profit', and family's disapproval. The effects of the dropouts were decreased achievement of targets, and a loss of money in the amount of $24 (U.S.) per dropout [CHW] for their training and supervision" (Khan et al., 1998).

Ofosu-Amaah (1983) found in her study of the literature available in 1983 that "turn-over of CHWs is high for a number of reasons, the most important being poor selection and low remuneration". Another frequently cited reason was "movement upwards to higher positions in the health system, marriage or family matters, and finding better positions in other fields".

The cost of high attrition rates is also discussed by Gilson et al., who found that, although volunteer programmes were cheaper in terms of salaries, "very high attrition rates mean not only that frequent training of new volunteers is required, but also that it is difficult to keep track of volunteers and to judge their usefulness" (Gilson et al., 1989).

Hence, retention is affected by central concerns with governance and management, such as sources of financing, community ownership and selection practices. It stands to reason that retention can and should be addressed as part of a broader package of management interventions.

Impact effectiveness

When discussing the impact effectiveness of CHW programmes, the question needs to be asked: impact on what?

Lewin et al. conducted a Cochrane review to "assess the effects of LHW interventions in primary and community health care on health care behaviors, patients' health and wellbeing, and patients' satisfaction with care" (Lewin et al., 2005).

Based on 43 RTCs included in the study they concluded that:

> LHWs show promising benefits in promoting immunization uptake and improving outcomes for acute respiratory infections and malaria, when compared to usual care. For other health issues, evidence is insufficient to justify recommendations for policy and practice. There is also insufficient evidence to assess which LHW training or intervention strategies are likely to be most effective.

The already quoted review of evidence for the management of sick children by CHWs (Winch et al., 2005) found that of seven intervention models, "that of CHW pneumonia case management has the strongest evidence for an impact on mortality".

Numerous programmes may have impacts on communities, such as social mobilization, building of trust, etc., that are difficult to quantify, yet may be of great importance (see below) (Walker & Jan, 2005).

In a study of rural Nepal, Curtale et al. report a general improvement of CHW skills and utilization as a result of a specific intervention that brought with it improvements in training, supervision and supplies (Curtale et al., 1995).

Therefore, while impact effectiveness is clearly a crucial benchmark for programme planners and managers, it is important to note that it cannot be discussed in general, but needs specific definition – not only regarding impact on what, but also impact over what time period. The literature discusses effectiveness in relation to a range of impacts, of which mortality and morbidity rank prominently, not only due to their obvious importance, but also because they are quantifiable much more easily than measures such as client satisfaction or community mobilization and are also mostly relatively short-term, i.e. over one- to five-year periods. Within these parameters, most studies indicate some degree of impact effectiveness. Below is one example.

> The strategy of the Planned Parenthood Association of Ghana (PPAG) for helping poor communities, which includes concrete and practical health education; community involvement; encouragement of voluntary activities; use of the skills of the community; and self-reliance, including family planning, has gained wide acceptance. The practice rate of family planning among nine intervention villages ranged from 24.6% to 43.6%, far higher than the national average of 5.2%. And while immunization coverage rates for nine villages range from 74.7% to 87.0%, nearby villages have coverage rates of about 30%. Furthermore, village women have themselves begun promoting maternal and child health and family planning. As the results indicate, the community health project has been successful in improving the living conditions of the villagers by mobilizing local resources (Integration, 1990).

Cost-effectiveness of CHW programmes

Services provided by community health workers are expected to be more appropriate to the health needs of populations than those of clinic-based services, to be less expensive and to foster self-reliance and local participation. Furthermore, because CHWs are more accessible and acceptable to clients in their communities, they are expected to improve the overall coverage of services as well as equity, i.e. increased service use by poorer individuals and households (Berman, 1984). In short, these programmes are expected to improve the cost-effectiveness of health care systems by reaching large numbers of previously underserved people with high-impact basic services at low cost (Berman, Gwatkin & Burger, 1987).

However, there is a dearth of data on the cost-effectiveness of CHW programmes to confirm these views. "The limited studies available suggest that CHWs increase the coverage and equity of health service delivery compared with alternative modes of service organization" (Walker & Jan, 2005). But most studies, while useful and necessary for decision-makers, miss key elements of CHW programmes that do not lend themselves to economic analysis: "institutional factors such as altruism, volunteerism, community norms, reciprocity and duty and these tend not to be reflected well in estimates of cost effectiveness." Hence cost-effectiveness analyses are insensitive to a range of social benefits (including community mobilization), which often constitute the strength of CHW programmes.

A number of studies have examined the cost-effectiveness of specific programmes. One of the first papers to evaluate the "value for money" of CHW programmes was published by Wang'ombe (1984). The study reports on a project in two locations in Kenya's Western Province. CHWs were trained for 12 weeks and deployed as providers of basic health care and promoters of selected health, sanitation and nutrition practices. A cost-benefit analysis was performed using the willingness-to-pay approach to compare the costs and benefits of the project. The evaluation illustrated a large net present value and a benefit-cost ratio of between 9.36 and 9.85, depending on the choice of discount rate. The author concluded that the results were "…strongly in favour of decentralization of primary health care on similar lines in the rest of the country" (Wang'ombe, 1984).

A study of five CHW programmes delivering primary health care services and one CHW training centre in South Africa found that the CHW unit costs were comparable to those of other health services, although the comparison failed to account for differences in disease severity and professional training (Makan & Bachman, 1997). Unfortunately, a failure to assess the effectiveness of the programmes did not allow for an assessment of cost-effectiveness.

A number of studies have compared the cost and cost-effectiveness of community-based TB care versus other strategies. One study illustrated that the cost to both health service and patient can be substantially reduced by using community-based directly observed therapy (short-course) (DOTS) for tuberculosis (TB) in South Africa. It found that this strategy was more cost-effective than hospitalization or sanatorium care (Wilkinson, Floyd & Gilks, 1997). Similar findings have been reported from a number of other developing countries: Bangladesh (Islam et al., 2002), Kenya (Nganda et al., 2003), Malawi (Floyd et al., 2003), Pakistan (Khan et al., 2002), South Africa (Clarke, Dick & Bogg, 2006) and Uganda (Okello et al., 2003).

For example, a recent paper compared the cost-effectiveness of an NGO TB control programme that uses CHWs with the government's programme, which does not. The cost per patient cured was USD 64 in the NGO area compared to USD 96 in the government area, suggesting that the involvement of CHWs represents a more cost-effective use of resources in rural Bangladesh (Islam et al., 2002).

Similarly, an economic study was conducted alongside a clinical trial at three sites in Pakistan to establish the cost-effectiveness of different strategies for implementing DOTS (Khan et al., 2002). Patients were randomly allocated to one of three arms: DOTS with direct observation by health workers (at health centres or by CHWs); DOTS with direct observation by family members; and DOTS without direct observation. The clinical trial found no statistically significant difference in cure rate for the different arms. However, the economic analysis found that direct observation by health centre-based health workers (the model recommended by WHO and the International Union against Tuberculosis and Lung Disease) was the least cost-effective of the strategies tested (USD 310 per case cured). The self-administered group came out as most cost-effective (USD 164 per case cured). However, the CHW subgroup achieved the highest cure rates (67%), with a cost per case only slightly higher than the self-administered group (USD 172 per case cured). The authors concluded that this approach should be investigated further, along with other approaches to improving patient compliance.

In a recent review of the effects and costs of expanding the coverage of immunization services in developing countries, one of the interventions with the highest impact on full coverage was CHWs (Pegurri, Fox-Rushby & Damian, 2005). The employment of CHWs in outreach programmes was evaluated in relatively small but diverse communities, vis-à-vis vaccination campaigns offered periodically. In one case, it was the urban areas of Mexico (Calderón-Ortiz & Mejía-Mejía, 1996) and in the other it was communities dispersed along a river in the Amazon, Ecuador (San Sebastian et al., 2001). The involvement of communities improved services, as it meant that houses were located with precision, they were registered and the days of vaccination were chosen in accordance with parents. The paper by San Sebastian et al. was one of only two papers for which cost-effectiveness was also evaluated. The use of CHWs was reported to be a successful strategy, i.e. it cost less *and* was more effective than outreach teams by health staff in the Amazon areas of Ecuador. Such comparisons can help to distinguish whether differences in cost-effectiveness are due to the nature of the interventions or to the circumstances of the countries. For example, in this paper, the characteristics of the Amazon area in Ecuador substantially influenced the effectiveness (due to the extraordinary potential of CHWs in such an isolated community) and cost results (given the peculiarity of transportation by canoe and the possibility of employing volunteers).

Managing CHW programmes

Management is one of the most crucial, yet often sorely neglected, factors of CHW programmes. Their geographical and organizational location on the periphery, often with ill-defined ownership and accountability, means that while they need particularly careful and attentive management, in practice they are often forgotten and dropped off the list of priorities. In this section we will discuss key elements of CHW programme management: i.e. recruitment and selection, training, support and supervision. The related topic of governance – who owns and takes responsibility for programmes and also their management – will be discussed in the following section.

It must be stressed that, while the different aspects of management will be discussed separately, as a rule the success or failure of programme management is made up of a combination of these factors, as is illustrated by the short case summary below:

> In Zambia, a large CHW programme in Kalabo District "almost completely collapsed". Key reasons identified were a shortage of drugs and poor selection criteria (Stekelenburg, Kyanamina & Wolffers, 2003). Erratic drug supply is an indication of a programme's low priority and also has a very negative effect on CHWs' standing in community. Furthermore, authors found that the community members in charge of CHW selection knew little about selection criteria. Further, quality of supervision was poor and in 50% of cases nonexistent. Both community members and CHWs felt that the latter were not well supported by communities.

Recruitment and selection

Virtually every document discussing community health workers emphasizes: (1) that CHWs should be chosen from the communities they will serve and (2) that communities should have a say in the selection of their CHWs. "As far as the selection of the CHW is concerned, the consensus today is that non-negotiably, she should be directly chosen by the households that she will work with. Neither health or other officials, nor even Panchayat members should make this choice. She should be accountable to the local neighborhood community that she volunteers to serve, for which she will be trained and supported by the health bureaucracy and Panchayats" (Mander, not dated).

But while the practice of selecting CHWs from local communities is widely accepted and implemented, direct and meaningful participation of communities in the selection process is not. In the evaluation of the Indian *mitanin* programme, for example, it was found that as a rule local bureaucrats, village chiefs or other dignitaries held sway over who was selected (SOCHARA, 2005). This is a common experience, as selection is often considered a form of patronage.

Gilson et al. found in a study of three countries' programmes that "CHWs are mostly selected by health personnel rather than the community – even where, as in Botswana, the local institutions through which selection could occur are well known (Gilson et al., 1989).

Whether and how communities are in practice involved in selection processes will largely depend on issues of governance, the role of formal health services and particularly forms and structure of broader community participation, which will be discussed below. The most common approach employed by organizations to initiate CHW selection has been the setting up of village health committees (VHCs), which then are responsible for selecting VHW/CHW candidates (Knowles, 1995; Kaseje, 1987b; Daniel & Mora, 1985; Diallo, Ly & Sakho, 1995; Ghebreyesus et al., 1996; Kaseje, 1987a and b; Bamisaiye et al., 1989; Kaseje, 1986; Mitchell, 1995; Opoku, 1997; Sepehri & Pettigrew, 1996; Tumwine, 1993). Little detail is available on the finer details of selection processes and how the VHCs were constituted – although issues of domination through village elders and issues of gender inequities are raised repeatedly. In some cases, as in Somalia, existing village committees were used to play the role of VHC (Bentley, 1989). However, most studies report only that CHWs were chosen or selected "by the communities themselves".

Ofosu-Amaah argues that "a balance is needed between the views of the community, the health system and also the training institutions, since the pattern of allegiance is said to be influenced by who does the selection". She also noted that "where the community is actively involved in the selection process, those selected for training may turn out, in many cases, to be acknowledged opinion leaders in the community, e.g. a member of the village panchayat (village council), the vice-president of the school society, (…)" (Ofosu-Amaah, 1983).

In summary, while the selection of CHWs from local communities is common practice, participatory selection processes remain an ideal that is relatively rarely practised, particularly in large-scale programmes. Questions of whether and how selection processes could and should be structured differently relate directly to broader issues of community participation, as discussed below.

Initial and continuing training

While a large number of articles discuss or at least mention the training of CHWs, not surprisingly length, depth, organization of, responsibility for and approaches to training vary dramatically across programmes.

At Maradi in Niger, for example, courses of seven to ten days (seven days' medical training, three days' literacy) were provided at the rural dispensary base to which the project was attached. The courses were simple and offered in the local vernacular. They covered: "general health concepts, emergencies and referrals, epidemic diseases, health education (including nutrition), elementary health care, environmental sanitation and some record keeping" (Sanders, 1985). Each year the VHWs were sent to a 10-day refresher course, where they would be introduced to new items such as the treatment of malnutrition and the preparation of weaning foods.

In Tanzania, VHWs would undergo three to six months' training (Chagula & Tarimo, 1975), while in Nigeria, VHWs were trained for three months in groups of 20, and sent for refresher courses twice a year subsequently (Hilton, 1983).

Training is in many cases conducted by members of the formal health services, either doctors or nurses, as in Brazil, or, in the case of NGO-driven programmes, by the NGOs themselves.

Approaches to training have changed over the years. While in the past complaints about inappropriate training – which was too theoretical, too classroom-based or too complicated – were quite common (Gilson et al., 1989), today competence-based approaches are usually used, as Gilroy & Winch report in the case of CHW training in the management of sick children (Gilroy & Winch, 2006):

> In this approach, the skills and competencies required of the CHW are defined and usually expanded into steps and standardized procedures required for a specific skill. The training materials and activities all focus on the learners' mastery of the specifically chosen competencies. The competencies that are achieved during training are also those that should be assessed during supervisory visits or follow-up, frequently with the checklists used during training.

They further comment:

> The ideal location of training, where CHWs will have sufficient opportunity to practise, varies by CHW programme. Some programmes recommend that the training take place in the community rather than in health facilities to provide hands-on experience in the work environment of the CHW. In other contexts, training may take place in the facilities because there are more cases of sick children presenting within the training period, thus providing more opportunities for the trainer to demonstrate skills in a real-life situation and for CHWs to practise newly learned skills.
>
> Because CHWs work within the constraints of the community and usually have limited formal education, programmes often develop or adapt training materials and activities specifically for CHWs rather than using training packages developed for facility-based workers. For example, CARE India, in collaboration with the Government of India and WHO, has developed an IMCI training package for basic health workers, or CHWs, based on the facility-based IMCI course but with simpler language, more illustrations and more interactive components for the less-educated basic health workers.

But while the literature reflects a great diversity of approaches, location, organization and length of training, there is agreement on one matter: that continuing or refresher training is as important as initial training. A number of studies have found that if regular refresher training is not available, acquired skills and knowledge are quickly lost (Ashwell & Freeman, 1995) and that, on the other hand, good continuing training may be more important than who is selected (Ande, Oladepo & Brieger, 2004).

> Community-based distributors (CBDs) have been trained ad utilized to promote a variety of health commodities. In addition, a variety of different types of community residents have been trained ranging from traditional birth attendants (TBAs) to patent medicine vendors. A training programme for CBD agents in the Akinyele Local Government Area of Oyo State, Nigeria, provided the opportunity to compare the knowledge of two different types of CBD agents, TBAs

> and volunteer village health workers (VHWs). Although VHWs were younger and better educated than the TBAs, the two groups had similar levels of knowledge about diarrhea recognition, cause and prevention. (…)Overall knowledge results showed some gaps that may likely be a natural result of knowledge decay. The major lesson learned is that the type of CBD agent may not be as important as the fact that they receive follow-up after they have been trained (Ande, Oladepo & Brieger, 2004).

Curtale et al. suggest that "three additional training days provided regularly to the CHV every year, will result in improved quality of service with consequent increased utilization" (Curtale et al., 1995).

Supervision and support

It is widely acknowledged and emphasized in the literature that the success of CHW programmes hinges on regular and reliable support and supervision (Ofosu-Amaah, 1983; Bhattacharyya et al., 2001). It is equally acknowledged, however, that supervision is often among the weakest links in CHW programmes.

Small-scale projects are often successful because they manage to establish effective support and supervisory mechanisms for CHWs, often including a significant amount of supervision and oversight by the community itself. National programmes are rarely able to achieve this consistently, as has been shown in the Zimbabwe experience, for example (Sanders, 1992).

Many evaluations have documented the weakness of supervision and support in national programmes, which are often irregular or nonexistent (WHO 1990) Gray & Ciroma, 1988). In the worst cases, CHWs do not even know who their supervisors are or what they can expect from them.

There are a number of reasons for the lack or poor quality of supervision. Gilson et al. (1989) point out that "the cost of supervision has, in particular, been overlooked, although the frequent contact required to support CHWs effectively can generate supervision costs that represent 40% of the cost of one CHW". But not only has the cost been overlooked: often the need for supervision has been either overlooked or underestimated, or not adequately planned for. Also, who supervisors should be and what their tasks are is often ill-defined. Ofosu-Amaah (1983) mentions cases in which community participation in supervision was successfully implemented, but this remains the exception; supervision is left mostly to staff (mainly nurses) in the health services. They, however, may not understand the CHWs' or their own role properly and furthermore may resent the additional task (Gilson et al., 1989).

Most importantly, however, the greatest need for supervision exists in the most remote areas, where health services are most overstretched and ill-equipped.

> Although supervision is often identified as the vehicle through which the quality of health care services can be assured, it typically receives neither the human nor financial support needed to fully conduct and sustain the necessary supervisory activities. In the current decentralization of health services management occurring in many countries, full responsibility for the supervision of facility and community health workers has been shifted to area and district levels, often without providing the training and resources needed to undertake supervisory functions. Furthermore, the activities with which supervisors are charged are often poorly defined. Health care systems have a wide range of options in developing a locally appropriate and sustainable supervision strategy at the primary level. Key issues are who supervises and how often, and the use of supervisory job aids in measuring the quality of care (Stinson et al., 1998).

What difference supervision can make is described by Curtale et al. (1995) in their study of the impact of a nutrition intervention on a CHW programme. They found that "continuous supervision diminishes the sense of isolation that CHVs usually experience in the field and helps to sustain their interest and motivation to do their assigned tasks". These findings are echoed by experiences in a Bolivian CHW programme (Charleston, Johnson & Tam, 1994).

Hand in hand with supportive supervision go other forms of support, in particular logistics and infrastructure support. Issues such as the reliable provision of transport, drug supplies and equipment have been identified as another weak link in CHW effectiveness. Reasons can again be found in the fact that

CHWs as a rule operate on the periphery, both organizationally and geographically. They are the first to lose training opportunities and supervisory visits, but also transport and drug supplies (Gilson et al., 1989). The result is not only that they cannot do their job properly, but also that their standing in communities is undermined. "Failure to meet the expectations of these populations [with regard to supplies] , will destroy the image or the credibility of the CHW" (Ofosu-Amaah, 1983). If CHWs are used in programmes that have drug treatment at their core, such as TB DOTS or HAART, the situation becomes more critical (Farmer et al., 2001), but most programmes include the need for supply of drugs and/or equipment, including transport (SOCHARA, 2005).

While not abundant, the literature does report success stories in organizing drug and equipment supplies. In Somalia and Burkina Faso, for example, supplies were organized through district or regional dispensaries, and collected and delivered by CHWs (Bentley, 1989; Sauerborn, Nougtara & Diesfeld, 1989).

> In some parts of Senegal, village dispensaries have been established to cater for the drug needs of the populations of very remote villages. The dispensaries are given a 20% rebate on drug purchases and villagers are required to pay for the drugs dispensed to them. (…) In China, the cooperative medical service organization to which community members contribute, entitles them to free drugs (Ofosu-Amaah, 1983).

As a rule, however, forms of infrastructure support remain a weak and unresolved area even in well-thought-through and -supported programmes such as the Indian *mitanin* programme (SOCHARA, 2005). But Gilson et al. (1989) make the important point that "problems of support and supervision are not peculiar to CHW programmes but affect all peripheral health services. They are as true for nurses and other health workers at the primary care level as they are for CHWs". This again raises the need of discussing the logistics of CHW programmes as part of a broader need for strengthening primary level services, particularly in remote areas.

Governance, ownership and accountability

At the heart of debates around CHW programmes lie questions about who owns and governs these programmes and to whom CHWs are accountable. The literature is unanimous in its assertion that CHW programmes should be owned and driven by communities and that CHWs should be accountable to their communities. Yet most articles also acknowledge that the reality of programmes often strays quite far from this ideal. In this section we will discuss three elements central to these debates: the role of communities and community participation, the relationship between CHW programmes and formal health services, and the question of whether CHWs should be paid or should render services on a voluntary basis.

Community participation

One would be hard-pressed to find an article that does not emphasize the importance of community participation for the success of CHW programmes. However, there is much less clarity about the exact meaning and purpose of community participation. It carries with it a number of different underlying philosophies and political agendas. Muller, in the early 1980s, distinguished between community participation as the *mobilization* of community resources (people, money, materials) to carry out health programmes versus community participation as increasing "people's *control* over the social, political, economic and environmental factors determining their health" (Muller, 1983), a distinction reflecting the Alma Ata discourse. Today's debates are unlikely to make use of this discourse, although the tension it reflects undoubtedly still exists.

And while today's discourse tends to be much more pragmatic and technical, it is nevertheless widely acknowledged that a considerable gulf exists between the ideal of programmes driven and owned by communities and programme realities. It is further agreed that while there are few success stories of lasting community participation, the sustainability and impact of programmes require the ownership and

active participation of communities as a non-negotiable pre-condition (Mathews, van der Walt & Barron, 1994; Quillian, 1993; Bhattacharyya et al., 2001; Gilson et al., 1989).

This appears to be easier to achieve in small-scale programmes initiated within and by communities, often with assistance from an NGO or a church group. Examples of these can be found right through the history of CHW programmes, such as in the Philippines in the 1970s (Barcelon & Hardon, 1990), in India in the 1970s and 1980s (Kaithathara, 1990), in Kenya in the 1980s and 1990s (AKHS, not dated) or in Belize since the mid-1990s (Council, 2004). There is also experience that active participation of communities in health and social action, including CHW programmes, is more likely to occur and be sustained in conditions of popular mobilization, such as in the aftermath of a liberation struggle or after the replacement of military or repressive regimes by popular governments (Cufino Svitone, 2000; Sanders, 1992; Garfield, 1993).

In most of these, cases substantial and time-consuming investments were made in: (1) securing participation of communities and (2) involving them in all aspects of the programme, including the identification of priorities and project planning. In other words, community mobilization precedes and accompanies the establishment of CHW programmes. An AKHS policy brief summarizes the experiences with a project in Western Kenya (AKHS, not dated):

> One of the most important conditions for sustainability is the capacity of the community members for organizing themselves. And it is perhaps one of the most important achievements of KPHC [Kisumu PHC project] that the local people had been mobilized in such a way that they were able to carry on solving their own problems and securing the health services that they wanted. Right from the beginning, the project staff encouraged representative groups to identify and prioritize their needs, to contribute money for the construction and maintenance of water points and other facilities, and to select their own health workers. It is crucial for the continuation of the project's work that, in both Kajulu and Nyakach, committees have been formed to coordinate the efforts of the volunteers, to secure support of the Ministry of Health, donors and NGOs engaged in health care and health education, to promote the training of CHWs.

National or state-wide programmes are usually initiated from the centre (Brazil, China, Ghana, India, Indonesia, to name but a few). While in these cases, too, community participation is explicitly part of the agenda, for a number of reasons it is much more difficult to achieve. Rifkin argues that a key reason is that "community participation has been conceived in a paradigm which views community participation as a magic bullet to solve problems rooted both in health and political power. For this reason, it is necessary to use a different paradigm which views community participation as an iterative learning process allowing for a more eclectic approach to be taken. Viewing community participation in this way will enable more realistic expectations to be made" (Rifkin, 1996). This iterative process is described by AKHS above and also by Ahluwalia et al., who suggest that community capacity building increases community participation, which in turn leads to increased support for VHWs (Ahluwalia, 2003).

Evidence also seems to suggest that problems arise when CHWs are expected to take responsibility for mobilizing communities, rather than working with the support of already active communities. Mangelsdorf, for example, conducted a quantitative analysis to evaluate the effectiveness of the health care worker (CHW) training programme used by the Ministry of Public Health in Ecuador (Mangelsdorf, 1988). He found that "higher levels of community organization were associated with improved CHW knowledge". He also assessed the community impact of the programme:

> Surprisingly, neither the demographic characteristics of the health worker nor his or her level of competence affected the impact of the programme on the community, as measured by patient satisfaction, utilization indices, and adoption of preventive health behaviors. It was the characteristics of the beneficiaries themselves that accounted for the variance in community impact.

Similar findings were reported in Nicaragua, where *brigadistas* were trained as CHWs "with the intention of encouraging local community involvement in health. However, in field research at two sites, these

primary health care brigadistas were found to have rather limited roles and were dependent upon the nurse auxiliary for direction" (Scholl, 1985).

Where community participation is institutionalized, it is usually through village health committees (VHCs), known often by different names, which are charged with managing and guiding the work of community health workers. But VHCs also play an ambiguous role within CHW initiatives. The position of VHCs within village hierarchies is not always clear and is often contested, leading to tensions between VHC members and other community leaders or becoming the site of political contestation (Sanders, 1992; Sauerborn, Nougtara & Diesfeld, 1989; Twumasi & Freund, 1985; Streefland, 1990; Ebrahim, 1988).

The character, role and organization of community participation in health care in general and in the running of CHW programmes in particular form an immensely complex and contested area with a vast literature of its own. This section barely scratches the surface of this rich debate.

Relationships with the formal health services

The attitudes and interactions of health personnel in the formal health services with CHWs have an immediate impact on critical aspects of CHW programme management, such as selection, continuing training and supervision. In many cases these interactions have been affected by how programmes have been introduced. CHW programmes have commonly been advocated by enthusiasts with local experience, who persuade policy-makers to scale up initiatives and implement programmes on a large scale (Gilson et al., 1989). This has frequently resulted in the implementation of inadequately-thought-through schemes without the full participation of health personnel at the local level. In many programmes, even those personnel who come into most contact with CHWs, usually nurses, are not involved in the planning, implementation, monitoring and evaluation of such programmes. It is hardly surprising, therefore, that they lend little support to these initiatives.

Furthermore, many health personnel lack the background and orientation to provide a supportive environment for CHW programmes. They are socialized into the hierarchical framework of disease-oriented medical care systems and have a poorly developed concept of primary health care. Such paradigms are ill-suited to providing an environment supportive of partnerships and teamwork between different health workers, particularly if some categories are thought of as less important.

Health professionals often perceive CHWs as lowly aides (WHO, 1989; WHO, 1990; Walt, 1992) who should be deployed as assistants within health facilities, often completely misunderstanding their health promoting and enabling role within communities. A sense of superiority of health personnel has been observed as a problem (Sanders, 1992), together with some suggestions as to how this was addressed in the training of medical students (Waterston & Sanders, 1987).

The curricula of the medical and other health science teaching institutions often do not equip health professionals to undertake priority tasks that must be performed to deal with the health problems of communities (WHO, 1985). A study of Nigerian medical students found that community health was one of the subjects that students disliked most. Some expressed doubts as to its relevance in their training to become physicians (Otti, 1989). Attitudes to CHWs inevitably suffer as a result.

Although improving attitudes involves a complex process of educational and institutional reform, giving medical and health science students specific experience of working collaboratively can assist in developing positive attitudes towards CHWs. At the Jimma School of Health Sciences, in Ethiopia, for example, doctors, nurses and other health workers were trained as teams in a community-oriented training programme. During the training period, teams lived in villages where they assessed various health and social problems through action-oriented research. Ultimately staff trained in this way developed a new culture of working. As a bonus, even while they were learning, their assistance was supportive to the CHW programme (WHO, 1990). Similar experiences have been reported from Zimbabwe (Waterston & Sanders, 1987). Unfortunately we were not able to find longitudinal impact studies of these initiatives.

Incentives

A range of questions falls under the topic of incentives:

- Should CHWs be paid or should they be volunteers?
- If they are not paid, what other forms of incentives should or could be employed?
- If they are paid, should payment be in cash or in kind?
- Should payment come from individual users, communities, NGOs or the state?

Many of these link directly to broader governance issues and have been discussed above. Here we will briefly discuss the question of whether CHWs should be paid or not, but then focus on the question of what incentives are known in the literature to work or not work. We will draw primarily on the review conducted by Bhattacharyya et al. (2001) on this topic.

Volunteers versus paid workers

Whether CHWs ought to be volunteers supported in kind by the community, or paid through community or government funds, has been much debated. Much of the literature tends to imply that volunteers are the ideal to which most CHW schemes aspire, and assumes that there is a sufficient pool of willingness to conduct voluntary social service in rural areas and informal settlements (Mander, not dated; Walt, 1988). However, the reality is different, probably in acknowledgement of the fact that as a rule CHWs are poor people, living in poor communities, who require income.

Evidence shows that most programmes pay their CHWs either a salary or an honorarium and almost no examples exist of sustained community financing of CHWs. Even NGOs tend to find ways of financially rewarding their CHWs. Moreover, while there are programmes in Zambia in which CHWs work on a completely voluntary basis, attrition rates are high and the few enthusiastic and reliable volunteers become overloaded with tasks from other agencies and sectors. A WHO draft document concludes that there is little evidence that the mobilization of volunteers in CHW programmes is an effective policy (WHO, 1987).

Incentives and disincentives

Bhattacharyya et al. ask in their 2001 study how and which incentives and disincentives affect CHW motivation, retention and programme sustainability. They conclude that:

> there is no tidy package of three incentives that will ensure motivated CHWs who will continue to work for years. Rather, a complex set of factors affects CHW motivation and attrition, and how these factors play out varies considerably from place to place. However, programme planners can draw on the extensive experience of the public health community with CHW programmes.

A tabular listing of what they found to work and not work provides a useful overview:

CHW Incentives and disincentives organized by a systems approach		
	Incentives	**Disincentives**
Monetary factors that motivate individual CHWs	Satisfactory remuneration/ Material Incentives/financial incentives Possibility of future paid employment	Inconsistent remuneration Change in tangible incentives Inequitable distribution of incentives among different types of community workers
Nonmonetary factors that motivate individual CHWs	Community recognition and respect of CHW work Acquisition of valued skills Personal growth and development	Person not from community Inadequate refresher training Inadequate supervision Excessive demands/time

CHW Incentives and disincentives organized by a systems approach		
	Incentives	**Disincentives**
	Accomplishment Peer support CHW association Identification (badge, shirt) and job aids Status within community Preferential treatment Flexible and minimal hours Clear role	constraints Lack of respect from health facility staff
Community-level factors that motivate individual CHWs	Community involvement in CHW selection Community organizations that support CHW work Community involvement in CHW training Community information systems	Inappropriate selection of CHWs Lack of community involvement in CHW selection, training and support
Factors that motivate communities to support and sustain CHWs	Witnessing visible changes Contribution to community empowerment CHW associations Successful referrals to health facilities	Unclear role and expectations (preventive versus curative care) Inappropriate CHW behaviour Needs of the community not taken into account
Factors that motivate MoH staff to support and sustain CHWs	Policies/legislation that support CHWs Witnessing visible changes Funding for supervisory activities from government and/or community	Inadequate staff and supplies

Source: Bhattacharyya et al. (2001).

They further conclude:

> Monetary incentives can increase retention. CHWs are poor people trying to support their families. But monetary incentives often bring a host of problems because the money may not be enough, may not be paid regularly, or may stop altogether. Monetary incentives may also cause problems among different cadres of development workers who are paid and not paid. However, there are some success stories of programmes paying CHWs. Many programmes have used in-kind incentives effectively.
>
> "Non-monetary incentives are critical to the success of any CHW programme. CHWs need to feel that they are a part of the health system through supportive supervision and appropriate training. Relatively small things, such as an identification badge, can provide a sense of pride in their work and increased status in their communities. Appropriate job aides such as counseling cards and regular replenishment of supplies can help ensure that CHWs feel competent to do their jobs.
>
> "Peer support can come in many forms, such as working regularly with one or two other CHWs, frequent refresher training, or even CHW associations.
>
> "In the end, the effectiveness of a CHW comes down to his or her relationship with the community. Programmes must do everything they can to strengthen and support this relationship. First, programme planners must recognize the social complexity of communities and that communities are not all alike. Different communities will need different types of incentives,

depending on the other job opportunities available, prior experience with CHWs, the economic situation of the community, and other factors.

"Unfortunately, very little experience or guidance is available on how best to differentiate communities. It is important to involve communities in all aspects of the CHW programme but especially in establishing criteria for CHWs and making the final selection. Programmes can provide opportunities for quick visible results that will promote community recognition of CHWs' work. CHWs must be trained in appropriate and respectful interactions with all community members and in how to respond to difficult people or situations. Community-based organizations, such as religious groups or youth clubs, can provide support to CHWs and significantly lessen their load by taking on health education activities.

Many successful programmes use multiple incentives over time to keep CHWs motivated. A systematic effort that plans for multiple incentives over time can build up a CHW's continuing sense of satisfaction and fulfillment."

Summary of lessons learnt

The question this review aims to answer is: CHWs – what do we know about them? Given the extensiveness of the topic and the diversity of the literature informing the review, there are few neat and easy answers. Nevertheless, there is consensus in the literature on a number of issues.

First, CHWs can make a valuable contribution to community development and, more specifically, can improve access to and coverage of communities with basic health services. There is robust evidence that CHWs can undertake actions that lead to improved health outcomes, especially, but not exclusively, in the field of child health. However, although they can implement effective interventions, they do not consistently provide services likely to have substantial health impact and the quality of services they provide is sometimes poor.

Second, for CHWs to be able to make an effective contribution, they need to be carefully selected, appropriately trained and – very important – adequately and continuously supported. Large-scale CHW systems require substantial increases in support for training, management, supervision and logistics.

Third, CHW programmes are therefore neither the panacea for weak health systems nor a cheap option to provide access to health care for underserved populations. Numerous programmes have failed in the past because of unrealistic expectations, poor planning and an underestimation of the effort and input required to make them work. This has unnecessarily undermined and damaged the credibility of the CHW concept.

Fourth, by their very nature, CHW programmes are vulnerable, unless they are driven, owned by and firmly embedded in communities themselves. Where this is not the case, they exist on the geographical and organizational periphery of the formal health system, exposed to the vagaries of policy swings without the wherewithal to lobby for and advocate their cause, and thus are often fragile and unsustainable. However, the concept of community ownership and participation is often ill-conceived and poorly understood as a by-product of programmes initiated from the centre. Evidence suggests that CHW programmes thrive in mobilized communities but struggle where they are given the responsibility of galvanizing and mobilizing communities. Examples of successful programmes can thus be found in the wake of community mobilization efforts, either as part of large-scale political transformation, such as in Brazil or China; or through local mobilization, often facilitated by nongovernmental, community-based or faith-based organizations. In many cases programmes last through the lifespan of the mobilization effort and wither or collapse entirely as the momentum of mobilization is lost.

The rhythms and dynamics of community participation lie outside the scope of this review, yet are crucial to better understanding and discussing the future of CHW programmes. A key challenge lies in institutionalizing and mainstreaming community participation. To date, the largest and most successful programme in this regard is the Brazilian Family Health Programme, which has integrated CHWs into its health services and institutionalized community health committees as part of municipal health services to

sustain social participation. This means that community participation does not become an alternative but an integral part of the state's responsibility for health care delivery.

Fifth, the question of whether CHWs should be volunteers or paid in some form remains controversial. There exists virtually no evidence that volunteerism can be sustained for long periods: as a rule community health workers are poor; they expect and require an income. Although in many programmes they are expected to spend only a small amount of time on their health-related duties, leaving time for other breadwinning activities, community demand often requires full-time performance. The reality is that CHWs as a rule and by their very nature provide services in environments where formal health services are inaccessible and people are poor. This also complicates the issue of community financing, which is rarely successful unless institutionalized, as in China. Most of the evidence reflects failures of community financing schemes, leading to high drop-out rates and the ultimate collapse of programmes.

Given present pressures on health systems and their proven inability to respond adequately, the existing evidence overwhelmingly suggests that particularly in poor countries CHW programmes are not cheap or easy but are nonetheless a good investment, since the alternative in reality is no care for the poor living in geographically peripheral areas. While there is a lot to learn, there is a lot we do know about making programmes work better: appropriate selection, continuing education, involvement and reorientation of health service staff and curricula and improvement in supervision and support are non-negotiable requirements. These need political leadership and substantial and consistent financial, technical and material support. We need to learn from examples of large-scale successful programmes in this regard, particularly providing longitudinal evidence of what works and what does not work. This presently constitutes the biggest knowledge gap.

CHW programmes have been revered as a panacea and decried as a delusion in the past. A sober view reveals today, as it did in the late 1980s, that "with political will, however, governments can adopt more flexible approaches by planning CHW programmes within the context of overall health sector activities, rather than as a separate activity. Weaknesses in training, task allocation and supervision need to addressed immediately. CHWs represent an important health resource whose potential in providing and extending a reasonable level of health care to underserved populations must be fully tapped" (Gilson et al., 1989).

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