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Analytical Report # 2

**Making Community  
Health Workers  
Cost-effective and  
Sustainable**

*December 2001*

*Prepared by:*

Health Finance Team.

ESHE/JSI Project



Federal Democratic Republic of Ethiopia.  
Ministry of Health

*In collaboration with:*



John Snow, Inc.



Abt Associates Inc.



*Funded by:*  
United States Agency for International Development



## Essential Services for Health in Ethiopia

USAID/Ethiopia's primary health sector intervention, Essential Services for Health in Ethiopia-I (ESHE-I) was launched in 1995. It represents a collaborative effort between USAID and the Government of the Federal Democratic Republic of Ethiopia (GFDRE) to (1) increase the use of integrated primary and preventive health care (PPHC) services in Ethiopia; and (2) contribute to the achievement of national sectoral goals, as articulated in the GFDRE's Health Sector Development Program (HSDP).

### Mission

The goal of ESHE-I is to create sustainable improvements in the overall health status of Ethiopians by slowing the rate of population growth and by improving the population's access to, and the quality and utilization of health care services. ESHE-I is comprised of policy, budgetary, and institutional reforms; family planning; STI/HIV/AIDS prevention and mitigation; and PPHC service delivery activities in the Southern Nations, Nationalities and Peoples Regional (SNNPR) State, each with the overall aim of strengthening the health service delivery system and thereby creating a demand in the utilization of PPHC services. ESHE-I is structured into four Intermediate Results (IR) focusing on (1) increasing resources to the sector, (2) improving access and utilization of family planning services, (3) HIV/AIDS prevention and control; and (4) strengthened health systems in the SNNPR.

**Intermediate result (IR) 1**, "*Increased resources dedicated to the health sector, particularly PPHC*", is a key component that USAID aims to support the implementation of national policies which will increase resources to the sector, the implementation of a Health Care Financing (HCF) Strategy, and promotion of private investment in health care delivery. Also, support for increasing the MOH and RHB capacity for sectoral planning and budget development, relative to the Health Sector Development Program (HSDP). These objectives are meant to be achieved through:

- 1.1 Increased government budgetary allocations to health care, particularly PPHC;
- 1.2 Increased share of public health expenditure covered through cost recovery;
- 1.3 Increased government capacity at central and regional levels for resource; and
- 1.4 Increased private sector investment in health care delivery.

John Snow Inc. (JSI) is the prime contractor for ESHE-I under the USAID/GFDRE bilateral agreement. Abt Associates Inc. is the sub contractor supporting the "health care finance reform" activities constituted under IR1 of ESHE-I. To inform the reform process the HCF Secretariat of the Federal Ministry of Health and the Health Finance team have conducted a series of studies, study tours, analysis and interpretation of the information generated on different aspects of health care financing in Ethiopia. This report is part of a series studies and reports, with the aim of contributing data for policy development and implementation of the HCF strategy.

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IR 1: Increased resources dedicated to the health sector, particularly PPHC

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## Acronyms

CBA	Cost-Benefit Analysis
CBRHA	Community Based Reproductive Health Agent
CEA	Cost-effectiveness Analysis
CHA	Community Health Agents
CHW	Community Health Workers
CMCW	Community Malaria Control Workers
CYP	Couple years of protection
ESHE	Essential Services for Health in Ethiopia
ESHE/JSI	Project funded by USAID under ESHE and contracted to JSI
FP	Family planning
GNP	Gross National Product
HCF	Health Care Financing
HSDP	Health Sector Development Program
IEC	Information, Education and Communication
JSI	John Snow Incorporated
MCH	Maternal and Child Health
MOH	Ministry of Health
NGO	Non-governmental Organization
PHCU	Primary health care unit
RDF	Revolving Drug Fund
RHB	Regional Health Bureau
SNNPR	Southern Nations', Nationalities' and Peoples' Region
USAID	United States Agency for International Development
VHC	Village Health Communicator
VHV	Village Health Volunteer
VSC	Village Sanitation Craftsmen
WorHO	Woreda Health Office
ZHD	Zonal Health Department

## 1. Introduction

This is a report on the cost-effectiveness and sustainability of three models of Community Health Workers (CHW) in Ethiopia. It provides a comparative study of costs and sustainability of the three models as implemented in the SNNPR of Ethiopia. There is also a literature review of internationally documented costs and benefits of Community Health Workers. The study also includes models that utilize the CHW in both curative and preventative roles. Finally, the report provides conclusions and recommendations for future investments in Community Health Workers in Ethiopia.

### 1.1 Analytical Report – Scope of Work

The analytical report is part of the Project's annual contractual reporting requirements. It is in compliance with the request from USAID/E to provide "An analytical report to determine the comparative cost-effectiveness and sustainability of three or more types of community health workers – those that work on sales commission, those that work without cash incentives in the JSI focus communities and those that work in the NGO setting. Additionally there should be a review of published and unpublished data to support the decision of whether to use the community health workers in a preventive or curative role"<sup>1</sup>. In-house resources of the ESHE/JSI project team have produced the report during October-December 2001.

### 1.2 Purpose and Structure

The purpose of this report is to respond to the analytical issues raised in the Scope of Work. The following sections will deal with the concepts of cost-effectiveness and sustainability. A literature review on the costs and benefits of community health workers (CHW) is presented to give a consensus of the major factors involved in the cost analysis, the benefits, as well as the definition of CHW. Following the literature review, the paper presents some perspective on the concepts of *CHW* and *community*, as applied in Ethiopia. The report also presents the empirical study carried out in the SNNPR, the region where the ESHE/JSI project has been focusing its work in improved service delivery of primary health care. Curative and preventative roles are considered in light of demand, appropriateness and sustainability. The final section presents conclusions from the empirical study and the literature review and recommendations for future investments in CHW programs in Ethiopia.

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<sup>1</sup> Letter from USAID, Contracting Officer, to the ESHE/JSI Chief of Party, September 18, 2001

## 2 Cost-effectiveness and Sustainability Defined

As a background to the literature review and the empirical study, this section defines the concepts of cost-effectiveness and sustainability as applied when comparing three existing CHW models.

### 2.1 Cost-effectiveness

Cost-effectiveness analysis (CEA) is derived from economics as a tool to make comparative analysis of alternative interventions (where non-intervention is usually an alternative). The tool can be used to compare investment alternatives before the investment is made (*ex ante* analysis) or it can be used to evaluate the effectiveness of interventions after the event (*ex post* analysis). In the latter case, the analysis is facilitated when the alternatives have been identified in terms of impact in advance, to enable comparison of the intervention impact. Otherwise, the alternative interventions may not have had the same objectives in terms of health outcomes.

In the context of welfare economics, the usual way of comparing interventions is the Cost-Benefit Analysis (CBA). CBA permits the identification in monetary terms of the optimal solution for society from a welfare point of view.

In the field of health care, CBA is often met with skepticism because it uses monetary valuation of health benefits, thus offending sensibilities in relation to attaching dollar valuations to life expectancy, for example<sup>2</sup>. When comparing investment alternatives with CEA, the effectiveness measure is health outcomes instead. While CBA can compare disparate comparisons, such as between investments in different sectors, CEA is restricted only to interventions whose benefits are measured in the same units of effectiveness. This is probably the major reason for the broad acceptance within the field of health care of the CEA.

The central measure for comparing alternatives in the CEA is the cost-effectiveness ratio. The comparison is the difference in the alternatives' costs divided by the difference in their effectiveness (cost-effectiveness ratio). This provides the analyst with the incremental price of obtaining one additional unit of the desired health effect (from a given intervention compared to an alternative)

In the present study, the objective is to compare three types of CHWs (cf. below for their definition). The investment cost for each should be divided by the produced health effect (impact). This study, being a limited investigation over a short time, cannot measure the impact of the different types of CHWs under consideration. There has been no common baseline established, they operate in different geographical areas and produce different units of effectiveness.

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<sup>2</sup> Cf. Gold, Siegel, Russel & Weinstein, Oxford University Press, 1996.

The theoretical basis for CEA requires that one of the following two conditions hold<sup>3</sup>:  
1) There is one unambiguous objective of the interventions and therefore a clear dimension along which effectiveness can be assessed; or 2) there are many objectives, but that the alternative interventions are thought to achieve these to the same extent.

The first condition is based on a comparison in terms of one single measurable objective. An example could be a desired number of vaccinations of a specified type given during a defined time period. The effectiveness is then measured by the number of vaccinations. The second condition is based on a multidimensional effectiveness, which is assumed to be the same for alternative interventions. Alternative ways of producing a given number of hospital beds could, for example, be compared under the assumption that the hospital beds in each alternative would produce the same quality of service.

Our goal is to compare existing CHW models *ex post*, which is an evaluative approach but without an *ex ante* defined clear dimension of effectiveness. We are obliged to opt for condition number two as stated above. The comparison in this study is therefore assuming that the three types of CHWs produced identical health impact and will then compare the costs of the alternatives.

## 2.2 Sustainability

For the purpose of this study, the broad concept of sustainability needs to be confined to a precise context. Further, the different versions of sustainability, like organizational, managerial, operational, financial, etc. need to be reduced for purposes of comparison.

The remaining active share, of the original number of trained CHWs, provides an empirical measure of sustainability of the three types of CHWs. This measure of operational sustainability is then supplemented by plausible explanations of why people have stopped operating, based on the interviews with CHWs and with representatives of their supervisory and/or funding organizations. The financial sustainability of the models has been analyzed by comparison of the additional needed inputs over time, i.e. additional requirements of funding per time unit.

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<sup>3</sup> Drummon, O'Brien, Stoddart, Torrance, Oxford Medical Publications, 1999

### 3 Literature Review

Community health workers serve as the lifeline for health services in some of the world's most distant and underserved locations. The notion of providing the first line of health service by community grown volunteers or paid workers transcends time and distance resulting in a common feature of countries on every continent. Developing countries have used community health workers to deliver health services, as well as health education and referrals.<sup>4</sup> Well-known efforts such as the Bamako Initiative, which addressed the rapid deterioration of the public health system in developing countries of Africa, revolved around the delivery of health care services, by community health workers.<sup>5</sup> Other arrangements have incorporated prominent village leaders, such as Buddhist Monks, as the community health workers in Thailand.<sup>6</sup> Community health workers have also been a prominent component of the health care system of some industrialized countries such as Australia, Great Britain, the U.S. and Canada.<sup>7</sup> The Indian Health Service in the U.S. has successfully delivered health care to its Native American Indian population by selecting, employing, and supervising members from the tribes who serve as community health workers and provide specific health care services at the community level.<sup>8</sup>

#### 3.1 Community Health Worker Defined

For purposes of this paper the term community health worker will be used, but other common terms include village health worker, lay health worker, village health promoter, primary health care worker, traditional healer, indigenous health care worker, community health assistant, rural health assistant, community health aid, auxiliary health worker, front line health worker, community volunteer, nutritional aid, village health volunteer, outreach worker, barefoot doctor, felsher, kader, and prokesa.<sup>9</sup> These terms are not necessarily interchangeable, since each has its own practical, historical and political significance.

Common characteristics of community health workers include the following:

- Come from the community in which they work.
- Focus on reaching hard-to-reach populations.
- Their expertise is in knowing their communities rather than formal education.
- Are defined by their active stance within the community and health care setting.
- Promote health among groups that have traditionally been denied adequate health care.
- Work for a more equitable distribution of health services.
- Respond creatively to local and national realities.
- Act as bridges between the community and the clinical health service providers.

<sup>4</sup> Ramprasad, V. (1988). Community Health Workers-An Evolving Force. *World Health Forum*, 9 (2):229-34. McCoy, D. et al. (1994). Promote the Community Health Worker. *South African Medical Journal*, Dec., (12):872-3.

<sup>5</sup> UNICEF. *The Bamako Initiative: Rebuilding Health Systems*. New York: United Nations Children Fund.

<sup>6</sup> Hathiarat, S. (1983). Buddhist Monks as Community Health Workers in Thailand. *Soc Sci Med*, 17(19):1485-7.

<sup>7</sup> Moran, L.J. (1976). Community Health Centre Evaluation. Paper I: Working Patterns of Allied Health Professionals. *Australian Family Physician*, Mar., 5(2):232-246. Jay, P. (1983). Health for All: A Role for the Community. *Journal of the Royal College of Physicians*, April, 17(2):93-4.

<sup>8</sup> Lay Health Promoters found at <http://community.gorge.net/ncs/background/promoters.htm>

<sup>9</sup> Ibid. University of Arizona. (2001). *Lay Health Worker-to-Health Professional*. Rural Health Office. Zuvekas, A., Nolan, L., Tumaylle, C. Griffin, L. (1999). Impact of Community Health Workers on Access, Use of Services, and Patient Knowledge and Behavior. *Journal of Ambulatory Care Management*, October 22, (4):33-44. Abu-Zeid, H.A., Dann, W.M. (1985). Health Services Utilization and Cost in Ismailia, Egypt. *Soc Sci Med*, 21(4):451-61.

Community health workers are well trained and expected to deliver a prescribed, limited scope of services. They are not doctors and nurses without a license, but rather highly skilled practitioners who deliver primary care and preventive services that are essential to raising the health status of their community. The role of community health workers is three-fold:

- Increase access to care by providing health care in the home or community, then, referring to specialized health care providers as necessary.
- Reduce the costs of health care by providing education, disease screening and detection that promote health and prevent disease.
- Improve the quality of care by enabling better communication between the patient and the health care provider.<sup>10</sup>

### 3.2 A Framework for Assessing the Cost and Benefit of Community Health Workers

Because the use of community health workers often accompanies other structural and financial reforms in the health care system, it is difficult to determine the actual cost and benefits resulting from community health workers' involvement in the health care system. The numerous names for community health workers reflects the different remuneration arrangements existing for services delivered by community health workers - i.e., volunteers, payment in currency, or payment in bartered and in-kind items. Additionally, unlike a physical or educational investment, it is difficult to identify all the costs and benefits of health services. Even if all the elements of a health service can be identified, it is still difficult to assess the monetary value of community health workers. To compensate for this deficiency in measurement, it is common to measure community health workers more in terms of their effectiveness rather than on the direct cost-benefits.

Health services, such as those delivered by the community health workers, are considered in terms of consumption and investment. The consumption aspects of health services are measured in terms of the amount of satisfaction engendered by being healthy, as compared to the social and psychological costs of poor health. Indices for consumption of health services commonly focus on reduction in mortality rates, reduction of infectious diseases, and the sense of security provided by easy access to health services. The investment aspect focuses on individuals, as well as the society as a whole. This investment aspect of health services is the relationship between health status and labor productivity, which in turn is measured in terms of output.

Cost of the community health workers services can be considered as follows<sup>11</sup>:

- Cost of providing training
- Cost of receiving the training
- Cost of providing services
- Non-measurable costs may include the trade-off between the quality and quantity of services

<sup>10</sup> Global Health Action. (2001). *Community Health Workers*. Atlanta:GHA. Witmeer, A. Seifer, E.D., Finocchio, L., Leslie, J., O'Neil E.H. (1995). *Community Health Workers: Integral Members of the Health Care Work Force*. San Francisco: Pew Health Professionals Commission. Zuvekas, A., Nolan, L., Tumaylle, C., Griffin, L. (1999). Impact of Community Health Workers on Access, Use of Services, and Patient Knowledge and Behavior. *Journal of Ambulatory Care Manage.* October 22(4) 33-44

Several economic benefits that could potentially result from the services rendered by community health workers include:

- Reduction of days lost due to illness (means more working days devoted to production)
- Improved productivity due to improvements in the health of the labor force (physically stronger than before)
- Savings of time previously spent in traveling and waiting for treatment (means more time for production)
- Decrease in the mortality rate (resulting in longer labor force participation than previously)<sup>12</sup>

The following sections (3.3 and 3.4) provide a brief overview of the costs and benefits of community health workers. It uses the framework of cost and benefits to identify the outcomes accompanying the introduction and use of community health workers.

### 3.3 Costs of Community Health Workers

A poll of programs using community health workers in the U.S. (N=281) provided a glimpse into the life and responsibilities of those who deliver services at the community level. Nearly one-half of the programs provided services related to HIV/AIDS and/or cancer (40 percent). Many programs also focused on maternal health and prenatal care (32 percent). Domestic violence was a concern of 26 percent of the programs. In addition, twenty-six percent of the programs provided advocacy services with regard to poverty, housing, food, and employment resources. Results of the national survey indicate that between 75 percent and 85 percent of the programs pay their workers rather than depend on volunteers. The most common wages were from \$7.90 to \$10.90 per hour. However, the median number of hours worked per week was only 20. One of the programs reduced hospitalization payments for admissions for ambulatory care sensitive conditions from \$1,647,200 in the year before the clients enrolled in the program to \$233,666 during the year following enrollment. Likewise, emergency room costs were reduced from \$20,723 before enrollment to \$5,300 after enrollment. The differences were the result of linking clients with these conditions to primary care and preventive services on a routine basis.<sup>13</sup>

A community volunteer program was initiated in rural Jamaica in May 1990, with the purpose of monitoring the growth of children less than 36 months of age and improving their nutritional status. At the end of the second year, the program was evaluated to determine its effectiveness. The results of the evaluation indicated that almost all (95.6 percent) of the children were covered by the community health volunteer. In addition, the participation rate was high (78.5 percent). However, only 50 percent of the children were adequately covered. Nonetheless, 81 percent of them gained adequate weight. Malnutrition levels declined by 34.5 percent. The annual cost per child per year for the total program was fairly moderate (U.S. \$14.50) with growth monitoring accounting for nearly half (42.7 percent). The results suggest that community health volunteers can play an important role in primary health care programs in developing countries.<sup>14</sup>

<sup>12</sup> The-wei, Hu. (1976). The Financing and the Economic Efficiency of Rural Health Services in the People's Republic of China. *International Journal of Health Science*, 6:2:239-249.

<sup>13</sup> National Rural Health Association. (2001). *Community Health Advisor Programs*. Kansas City: NRHA.

<sup>14</sup> Melville, B., Fidler, T. Mehan, D., Bernard, E., Mullings, J. (1995). Growth Monitoring: the Role of Community Health Volunteers. *Public Health*, March, 109(2):111-6.

Two approaches, i.e., a national program and a regional program, for training village health workers were compared in Tanzania. The national program used two blocks of two months each of theoretical training and two months of practical training in the villages with a heavy concentration on preventive actions. The six month regional program (Kilombero) used repeated short blocks of theory (usually in one to two week blocks for a total of two months) interspersed with long periods (several months) of practical training in the local villages with a heavy concentration initially on introducing curative skills but evolving steadily to cover preventive actions. A comparison of financial costs showed the regional program was less expensive by 80 percent. The costs for the national program would be reduced if training for a region were to take place within that region. Salaries for the trainers were consistently lower for the national program because the trainers were full-time salaried employees, whereas, the regional program used trainers who were part-time as the need arose for training. The attrition rate for village health workers who graduated from the regional program was one out of eight after three years. No data were provided on the attrition rate for the national program. Other findings showed the acceptability of the village health workers in the community had a direct bearing on the costs of the health services because it assumed that villagers will use the local worker as their first level of health care, rather than contacting more expensive providers. Acceptance and respect of the village health worker was related to how he or she responded to the felt needs of the local community. Cost was also affected by the amount of time the village health worker spent on curative versus preventive activities. In the regional program the village health workers were spending only one day out of a six-day workweek on preventive actions. Local villages were able to fund the operational costs of village health posts, but had difficulty funding training activities. The difficulty of financing training was one reason for ensuring that the most cost-efficient scheme be selected.<sup>15</sup>

Barefoot doctors in the Republic of China are peasants who receive three to six months of medical training and then return to the farm to (1) treat the "light diseases," i.e., minor injuries, gastrointestinal illnesses, colds, bronchitis, and similar health problems, of the villagers and (2) administer immunizations, birth control, and other public health activities. Barefoot doctor services were found to be economically valuable in rural health care delivery in the Republic of China. In addition, the sense of security and accessibility for health care services that barefoot doctors provided for lower-income peasants was a major non-economic benefit. The economic benefits resulting from the barefoot doctor were (1) a reduction of days lost due to illness meaning more working days were devoted to production and (2) savings of time previously spent in traveling and waiting for treatment resulting in more time for production. Because of training, the medical personnel available in the city to deliver health care services were reduced by one-third. There was also a loss of productivity by the trainees as they were unavailable to work on the village farms losing approximately 150 days per year per barefoot doctor.<sup>16</sup>

A study conducted eight years later of barefoot doctors showed that because their salaries were correlated with the median farmer's incomes, the attrition rate was very low. Adjusting the salaries to the farmer's income allowed the barefoot doctors to share in the increased productivity and profits of their community while maintaining satisfaction and good performance in their work.<sup>17</sup>

<sup>15</sup> Mayombana, C., Jenkins, J., de Savigny, D., Tayari, S., Lubomba, G., Burnier, E., and Tanner, M. (1990) Training of Village Health Workers in Tanzania: A Comparison of Two Approaches, *Tropical Doctor*, April 20(2) 63-7

<sup>16</sup> The-wei Hu. (1976). The Financing and the Economic Efficiency of Rural Health Services in the People's Republic of China *International Journal of Health Services*, 6(2), 239-249.

<sup>17</sup> Koplan, J.P., Hinman, A.R., Parker, R.L., Gong, Y.L., and Yang, M.D. (1985) The Barefoot Doctor. Shanghai: Revised. *American*

### 3.4 Benefits of Community Health Workers

A rapid deterioration of the public health systems in the developing countries of Africa during the 1970s and 1980s resulted in the Bamako Initiative, a multifaceted effort that increased community control and community financing of essential health care. Launched in 1987 by African Ministers of Health at a meeting sponsored by WHO and UNICEF, the Initiative has spread to over 30 countries throughout Africa, Asia, and Latin America. At the heart of the initiative is the delivery of health care by community workers who have been empowered to diagnose and treat minor illnesses, promote healthy lifestyles and refer cases. The multi-faceted approach has increasingly been recognized as one of the most cost-effective, sustainable approaches to revitalizing health systems in countries with poor primary health care structures. The most readily apparent success has been in improving access to health services and thereby increasing utilization of immunization services and antenatal care. Another credited success is the accessibility of low-cost drugs to a large population. Community-managed health services have been able to generate sufficient resources to cover total essential drug costs and small local expenses. The community health care worker has served as the media for the delivery of services, but the revenue generated through the Bamako Initiative results not only from the community health worker, but also because of the revitalized approaches used in delivering and financing of care. Patients living in villages where the Bamako Initiative was adopted spent on average the equivalent of twelve U.S. dollars per capita annually (including transportation costs) compared with twenty-one U.S. dollars in villages without the initiative. Part of the cost reduction for treatment was attributable to the use of community health workers.<sup>18</sup>

During the early to mid-1960s, Thailand embarked on a community resource program including the use of village volunteers in a malaria control program that was credited with a dramatic decline in morbidity and mortality rates. A redesigned approach to the delivery of health care was introduced in a pilot study involving village health volunteers (VHV) who were trained to undertake all services including basic treatment of minor illnesses, village health communicators (VHC) who were responsible for the dissemination of health information, village sanitation craftsmen (VSC) who were responsible for toilets, water and community sanitary training, and midwives who were responsible for the health care of mothers and babies. A program whereby the VHV were to sell essential drugs to the community residents failed because the village volunteers were unable to get a re-supply of drugs and because residents were reluctant to purchase drugs when they believed the government should be supplying the drugs free of charge. Again, the system was redesigned during the 1980s, but this time with a community financing initiative to support health services and to develop community capabilities including primary health care activities, a drug fund, and support for local businesses. Results of this initiative, specifically because of the actions of the VHV and VHCs, was a dramatic increase of services delivered to the citizens of Thailand including growth monitoring for children 0-5 years and nutritional education. No costing data were available.<sup>19</sup>

The Mainha Project, initiated in 1994 by the Brazilian Government offered basic health care by community health workers to all children under five year of age living in Vale do

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*Journal of Public Health*, July, 75(7):768-70.

<sup>18</sup> UNICEF. (1995). *The Bamako Initiative: Rebuilding Health Systems*, New York: United Nations Children Fund. McPatke, B. Hanson, K. and Anne Mills. (1991). *Experience to Date of Implementing the Bamako Initiative: A Review of Five Country Case Studies*, London London School of Hygiene and Tropical Medicine.

<sup>19</sup> Wibulpolprasert, S. (1991). Community Financing: Thailand's Experience, *Health Policy and Planning*, 6(4):354-360.

Ribeira. After three years of intervention, the infant mortality rate was reduced 4.2 times from 65 in 1000 to 15 in 1000. The annual hospitalization rate decreased nearly six times, from 13 percent to 2 percent. The prevalence of the height-for-age deficiency was diminished 22 percent, from 28 to 23 percent; and the use of oral rehydration therapy during diarrhea episodes increased 2.4 times, from 38 percent to 91 percent. Finally, basic immunizations for children increased 31.5 percent during the three years, a change to 96 percent from 73 percent. No costing data were presented.<sup>20</sup>

A comparison of nurse-delivered care to community health worker-delivered care in the inner city of Chicago showed that the use of community workers as part of the home-visiting team is as effective as the nurse-only team in meeting the needs of families at high risk of poor infant outcomes. This approach, built on the World Health Organization's primary care model of reducing infant mortality through home visits by community health workers, is of national interest because of its potential to achieve the desired outcomes in a cost-effective manner.<sup>21</sup>

Women residing in villages in three districts of Pakistan were recruited, trained to deliver primary care, assigned to limited catchment areas, provided with supervisory and managerial support, and remunerated. Their comprehensive activities substantially reduced infant, child and maternal mortality within a year and generated positive perceptions of family planning in the communities. The program was cost-effective and appeared suitable as a model for reforming the organization and provision of health care services.<sup>22</sup>

Community health workers under close supervision were charged with conducting a demographic and health survey in Zaire, where reliable data are difficult to obtain. Conducted in 1968 and 1988, findings indicated that community health workers are able to perform rapidly and at low cost for collecting demographic data needed for the implementation and monitoring of health programs at the local level.<sup>23</sup>

An evaluation of the effectiveness of traditional health practitioners in providing primary health care services in Ghana, Mexico and Bangladesh was funded by the World Health Organization's Division of Strengthening Health Services. Findings indicated incorporating traditional health practitioners into primary health care programs can be cost effective in providing essential and culturally relevant health services to communities.<sup>24</sup>

Volunteer community health workers comprised an essential portion of the Kibwezi Rural Health Scheme that was developed by the African Medical and Research Foundation in a semi-arid district in eastern Kenya. The effectiveness delivering health promotion, family planning and nutrition services and receiving payment was directly related to the community's support and acceptance of the health workers.<sup>25</sup>

<sup>20</sup> Cesar, J.A., Lima, G.S., Houlthasuen, R.S. (1998). Evaluating the impact and cost of interventions by community health workers on child health: A Brazilian experiment

<sup>21</sup> Barnes-Boyd, C., Fordham, N., K. Nacion, K.W. (2001). Promoting Infant Health Through Home Visiting by a Nurse-Managed Community Worker Team. *Public Health Nursing*, July-August, 18 (4) 225-35

<sup>22</sup> Barzgar, M.A., Sheikh, M.R., Bile, M.K. (1997). Female Health Workers Boost Primary Care. *World Health Forum*, 18(2) 202-10

<sup>23</sup> Reynders, D., Tonglet, R., Lembo, E., Mertens, T., Isu, D.K., Dramix, M., Hennart, P. (1992). Community Health Workers are Capable of Determining Reliably the Target Population for Health Programs. *Ann Soc Belg Med Trop*, June, 72(2) 145-54

<sup>24</sup> Hoff, W. (1997). Traditional Health Practitioners as Primary Health Care Workers. *Tropical Doctor*, Supplement 1 52-5

<sup>25</sup> Johnson, K.E., Kisubi, W.K., Mbugua, J.K., Lackey, D., Stanfield, P., Osuga, B. (1989). Community-Based Health Care in Kibwezi Kenya: 10 Years in Retrospect. *Soc Sci Med*, 28(10):1039-51.

The Expanded Food and Nutrition Education Program of the Maryland (U.S.) Cooperative Extension Service hired nutrition aids to work with poor, rural homemakers. Results from an annual interview with 93 homemakers and a control group of 58 designated friends indicated there were various points of diminishing returns beyond which behavioral and attitudinal changes are too small to justify continued visits to a homemaker. To sustain cost-effective home visits after the first year, more emphasis must be placed on reinforcement of first-year gains, and on expanding the scope of nutrition education to include more health education of other kinds.<sup>26</sup>

Forty villages in Gambia served as the site for a fifteen-year study on the effectiveness of a primary health care program that was supervised by nurses, but delivered by community health workers. Funded by villages, the community health workers often received their remuneration with goods such as chickens and eggs. By 1985, more than 2000 villages in Gambia had access to primary health care services, which also included health centers and dispensaries. Overall results indicated that village-level primary health care can significantly lower the mortality rate of young children when programs are well supported and supervised.<sup>27</sup>

A frank appraisal of the village health promoters in El Salvador was not so positive. Low-skilled health promoters posted in rural villages were doing little to improve health or health-seeking behaviors. In a supply-driven system, such workers had too few incentives, too little knowledge, and too little supervision. The authors believed, however, that results could be improved without cost. It was determined that NGO workers were more successful than government-sponsored village health promoters were, but neither group performed to satisfactory levels.<sup>28</sup>

### 3.5 Major Points for Ethiopia

Community health workers serve a vital role in countries throughout the world. Known as an essential community servant since nearly the beginning of time, their fame and virtues come in cycles. Most recently popular in the 1960s and 1970s, their emergence as a key player in primary health care for rural, underserved areas is once again in vogue. The notion of taking a promising individual from a village or community setting and giving them a new skill-set to better the status of health for individuals, villages, and communities seems a noble deed. While costs and benefits are not easily measurable, the literature indicates the benefits accruing to the host community clearly outweigh the costs for providing training and the delivery of services. The lessons learned from the rich history of community health workers should continue to be transferable throughout the world in an effort to maximize and equalize primary health care and the health status of this world's citizens.

The following are the main relevant points from the international literature review to be brought into the Ethiopian context

- There have been a variety remuneration arrangements tried in the world and not all of them have been tried out in Ethiopia;

<sup>26</sup> Wang, V.L., Ephross, P.H., Green, L.W. (1975). The Point of Diminishing Returns in Nutrition Education Through Home Visits by Aids: An Evaluation of EFNEP. *Home Edu Monogr*, Spring, 3 (1):70-88.

<sup>27</sup> Hill, A. (2000). Primary Care More Effective in Villages Than Previously Thought in Gambia, *Trop Med*, February.

<sup>28</sup> Lewis, M., Gunnar, S., Ximena, T. (1999). *Challenging El Salvador's Rural Health Care Strategy*. Washington, D.C.: World Bank.

- The costing items for CHW have been identified and are applied in the analysis in Section 5;
- The benefits of CHW have been identified and we conclude that is not possible to generate impact data for this study;
- The review of the programs in Tanzania observes that the cost of the CHW was affected by the amount of time spent on curative versus preventive activities. This is an area for further research in Ethiopia;
- Several countries have credited success in terms of accessibility of low-cost drugs to a large population through the CHW model. This is demonstrated in our survey in Ethiopia, as well;
- Re-supply of drugs is a key factor in the CHW models. The importance of a reliable source for re-supplying drugs/commodities in the CHW Commission model, is reflected in our study as well;
- Reports on cost savings from the Bamako initiative (from 21 USD to 12 USD per patient) illustrate how far away Ethiopia still is, in terms of annual spending per capita for health.
- Studies suggest that there is a direct relation between effectiveness of CHWs, and a community's support and acceptance of the health workers;

## 4 Communities and Community Health Workers in Ethiopia

The concept of community is ambiguous in Ethiopia. It needs to be defined to encompass the variety of different social organizations of the country. The traditional definition and organization of communities were not only different between the highlands and the lowlands, but also between different land tenure contexts, different pastoral modes and different ethnicities. The established rules of decision making, organization and health seeking behavior of these communities were and still are very different.

### 4.1 Evolution of Community Health Worker Models

To the extent that traditional values still reign in communities, CHW models need to be adapted to each local context to have effective impact. Since the fall of the emperor in 1974, laws and political developments have tried to unify the different traditional communities by national model organizations. In the 1970's, the military rulers proclaimed two major socio-economic changes. In March 1975, a far-reaching rural land reform law was proclaimed, including the establishments of peasant associations over the entire country. These peasant associations were of similar design in all geographic areas, in spite of the existing disparate ways of organizing production and community life<sup>29</sup>. The declared objective of the peasant associations was to empower the peasants. A similar organizational idea was launched with the proclamation of the nationalization of urban land and "extra houses", in July 1975. This law regulated the establishment of urban dwellers' associations. The purpose was to empower the poor urban population and to organize collection of rent, etc.

During the first years of military rule and after the two reforms mentioned above, these community organizations evolved into the armed extension of the state apparatus. The Amharic term, *kebele*, is used in a simplified way and refers to both rural and urban associations. It must be kept in mind, though, that the rural local administrative unit comprises huge areas, far wider than would be considered a rural "community" in other countries. The community concept, in rural areas, is better defined in terms of "village belonging". The *kebele* became the lowest layer of state administration, an effective instrument of control and coercion. During seventeen years of military rule, the *kebele* was used to collect taxes (including extra taxes to pay for the war), to forcefully recruit men and boys into the army, and to impose political views on the population. The *kebeles* were not only armed, but they also had their own shops - where only "obedient" *kebele* members could obtain rationed items. During the period of the former regime, the Gross National Product (GNP) per capita was cut in half.

In the field of health services, the military government used the model of Community Health Agents (CHA). CHAs were salaried CHWs working in the organizational context of the local administration. The degree to which the CHA identified with the needs of the population and the extent to which the population trusted the CHA, varied considerably between communities. In some areas, where the CHA was identified as representing an oppressive state, s/he would not be in place after the fall of the military regime. In some areas, where the CHA was well integrated with the community and trusted as an individual, s/he has sometimes continued on a voluntary basis after the collapse of the previous government.

<sup>29</sup> Some mentioning was made on special arrangements for pastoral communities, however.

The long period of the military rule and abuse, through its local administration, created a deep mistrust on the part of the population towards anything that represented the State apparatus. When the military dictatorship was overturned in 1991, the population's distrust of government did not change overnight. The new government has not abolished the *kebele* as an administrative unit, and it may be a long time before the people trust the administration again.

In many areas of the country, the *kebele*, as a political organization for community decision-making, does not fit into the traditional way of organization. There is a significant difference between those areas, where currently the ethnic political agenda is settled, (e.g. Tigray, where the people may feel that their own people rule them) and other areas, (e.g. some zones in the SNNPR) where the local population does not accept their leadership.

Against this historical backdrop, it is possible to conclude that a given CHW model will have different impact in different villages depending on the historical and political context. The choice between a model based in the government administration and an alternative model based on NGO's should be addressed in this context.

The impact of the NGO model will strongly depend on how the community perceives its relations to the State and the funding sources of the NGO. Most faith-based NGOs operate in the southern part of Ethiopia, where the Orthodox Church is less dominant than in the northern highlands. The expansion of the number of mosques in the south, for example, is based on important foreign funding. Most protestant NGOs are also found in the south and are receiving foreign funding. Catholic NGOs, being closer to the Orthodox Church, are also found in the north of the country. Added to this, faith-based NGOs will never have only health impact on their agenda, but will also have the impact in terms of their main mission as a priority. The funded NGOs are perceived differently in different geographical areas, as well as by different social layers of Ethiopian society. The NGO model is therefore, just like the State model, completely *context dependent* (geographical area and socio-economic conditions) when it comes to potential impact.

It is reasonable to conclude that there is unlikely that one given model would create optimal returns when applied over the whole country. Different models adapted to local conditions will be more cost-effective and sustainable. The additional research cost to adapt the model to local conditions would be recovered in terms of health outcomes.

## 4.2 Preventive and Curative Roles

As was shown in section 2.1, the measurement of cost-effectiveness and the choice between preventive and curative roles are not compatible. In order to compare the welfare impact of preventive and curative roles, it would be necessary to define a different set of health outcomes for the two roles and hence CEA is not applicable (CEA requires one unambiguous objective or assumed equal impact). An economic CBA, attaching monetary values to the different outcomes of the two roles, would allow the comparison, however.

In Ethiopia, most CHWs of different models are engaged in both preventive and curative work. This is probably important to consider for the future design of CHW models and investment schemes (cf. the literature review). There are few CHW models where preventive or curative roles are exclusive of each other. The broader approach of combining

the two roles is demand driven, i.e. clients do not make the distinction between preventive and curative needs when they express their demand through health seeking behavior and out-of-pocket expenditure. Based on expressed demand, a demand driven model would have a broad range of services. Supply driven models, by specialized NGO's, tend to offer a restricted range of services based on the respective NGO specialty.

## 5 Empirical Survey of Three Types of CHW

This section presents the empirical study of three CHW models in the SNNPR. It discusses the availability of data for the comparative study, defines the three CHW models studied, and describes the design and data generation methods.

### 5.1 Availability of Community Health Worker Data

Major Government health administrative levels (Regional Health Bureau [RHB], Zonal Health Department [ZHD], Woreda Health Office [WorHO]) have a limited knowledge of Government trained/organized CHWs<sup>30</sup>, and little knowledge of the CHWs affiliated with the more than 50 NGOs operating in the health sector in the SNNPR. There is no comprehensive or composite listing, at any Government level, of CHWs associated with NGOs in the Southern Region.

- Regional Health Bureau: Data on CHWs is incomplete and limited to salaried CHWs trained by Government within the past 12 months.
- Zone Health Departments/Woreda Health Offices: Data on CHWs is not fully maintained in the six target zones of the ESHE/JSI Project. Available data includes only Government affiliated CHWs. However, this data is not regularly updated or verified. There is no indication whether these CHWs are active or inactive, or performing preventive or curative work. Data on NGO CHWs is not available in the ZHD or WorHO offices.
- NGOs: Only one NGO (World Vision) is organized and administered in Awassa, the capital city of the SNNPR. All other NGOs, operating in the SNNPR, are headquartered in Addis Ababa and/or decentralized to the local community level. This makes the collection of complete information on NGO CHW activities both difficult and inefficient.

### 5.2 Selection of Community Health Workers to Review

The Scope of Work for the Analytical Report identified three categories of CHWs to be reviewed. These included: 1) CHWs working on sales commission; 2) CHWs working without cash incentives; and 3) CHWs in an “NGO setting”. These 3 categories in the SNNPR have been defined and reviewed as follows:

- Sales Commission - CHWs working for sales commission are normally involved in the sale of drugs and contraceptive commodities. Sales support both a small income for the CHW and the repurchasing of supplies that were sold. In the SNNPR, health workers in this category include individuals supported through Government and NGO sponsored revolving drug funds and NGO related CHWs. **For purposes of this analytical report, sales commission data will be collected from Irish Aid sponsored Community Malaria Control Workers (CMCW) in the Sidama Zone.**

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<sup>30</sup> Some CHWs have been assigned to health post and receive salaries; others remain on a volunteer basis as former CHAs

- Without Cash Incentives - This category of CHW has been defined as those who receive neither a salary, a subsidy for transport nor any other form of allowance, such as per diem payment or cash benefit from Government or an NGO. In actual practice, there are very few active health workers in the region who fall under this category. Examples would include Community Health Agents not salaried by Government and NGO trained CHWs who no longer receive any financial support. **For purposes of this analytical report, CHWs working without cash incentives have been taken from those individuals who were trained by the BASICS Project.**
- NGO Setting - All current NGO community based health workers in the SNNPR receive some form of compensation - whether through sales commission or direct allowance/salary. Therefore, in order to differentiate from the “sales commission” model, this category refers only to those NGO CHWs who are receiving a salary or allowance, but not a sales commission. **For purposes of this analytical report, CHWs working in an “NGO setting” have been taken from the Mekaneyesus Evangelical Church (Pathfinder grantee) in the Hadiya Zone.**

### 5.3 Definition of Terms

- Active versus Inactive CHWs - An active CHW is defined as one that works at least 4 hours per month in community based health delivery services and provides a written report at least quarterly to a Government, NGO or community organization level. All other CHWs are considered inactive.
- Preventive versus Curative Health Service- Preventive services are defined to include the distribution of medical supplies, FP commodities/drugs, environmental health activities, health education and community mobilization. Curative services will include the diagnosis and/or treatment of illnesses and include distribution of drugs that treat an illness. It has been noted earlier that most CHWs perform both preventive and curative services.

### 5.4 Data Collection Methodology

#### *Organization Level Discussions*

Discussions were held with the Irish Aid representatives in Awassa and Addis Ababa, with the Mekaneyesus Evangelical Church in the Hadiya Zone and with Pathfinder International in Addis Abeba. Background information on BASICS community activities was gleaned from interviews with former employees and through existing BASICS documents. A questionnaire was developed to:

- Identify the number of CHWs trained, their names and work locations;
- Determine the length and scope of training;
- Determine current supervisory support/controls;
- Determine the nature of the work (curative versus preventive) being performed;
- Determine the number of CHWs still active (compared against the number trained).
- Identify the reason(s) why trained CHWs may no longer be active.

### *Community Health Worker Interviews*

A selected number of CHWs identified by Irish Aid, the Mekaneyesus Evangelical Church and former BASICS employees were interviewed. A questionnaire was used to collaborate the data provided by the supporting NGO or in the case of BASICS, by BASICS Reports and former employees. Where CHWs were no longer “active”, the reason(s) for their inactivity was identified.

## **5.5 CHWs Working on Sales Commission (Irish Aid in the Sidama Zone)**

### *Background*

Since 1989, Irish Aid has provided funding for the training of 1,088 former CHAs in nine Woredas in the Sidama Zone, SNNPR. Of these, 178 CHAs have been converted in the past 3 years to Community Malaria Control Workers (CMCW) in Sidama Zone<sup>31</sup>.

The CMCWs receive an 80% sales commission on the profit margin of malaria prophylaxis and treatment sales. The net amount of money received by a CMCW will vary from 35 -150 Birr per month, depending on the level of malaria prevalence in his/her community and the seasonal variation of the disease. This is the single financial support received by the CMCW for community health (malaria) activities.

While initial funding for the CMCWs came from Irish Aid, the actual conducting of training, administration, and supervision of these cadres is the responsibility of Government health officials in the Sidama zone and Woredas. Essentially, Irish Aid was the funding source to establish the activity, while actual implementation and oversight is the responsibility of Government. CHA training was for a full 3-month period. Specialized training in malaria prevention and control was for a 15-day period. Refresher training is provided annually for a 2-3 day period.

The CMCWs provide both malaria preventive and curative activities within a community. In the former instance, they assist in community mobilization, malaria spraying and health education. In the latter instance, they provide medication for the treatment of malaria (sales commission) and, when appropriate, refer severely ill community members to Government health facilities for more intensive treatment.

### *Financial Input*

- Initial training: 3 months for the original CHA training and 15 days for malaria training.
- Refresher training 2-3 days per year.
- Initial cost of malaria prophylaxis drugs and supplies: cost of re-ordering/processing, etc.
- Supervision and follow-up
- Irish Aid provides annual technical assistance to the zones for all sectors. It could not be measured to what extent this cost could be assigned to the CMCW scheme.

<sup>31</sup> Currently, this scheme has expanded into Guragi Zone. The empirical study covered Sidama Zone

*Active or Inactive Status*

# CMCWs Trained	# CMCWs Interviewed	# CMCWs Interviewed Who Are Still Active	% Active of Interviewed sample
178	26	17	65%

# CMCWs Currently Active (Estimated) <sup>1/</sup>	# Clients Seen per week <sup>2/</sup>	HMIS Records Maintained By CMCW (Y/N)	Responsible for Supervision	Frequency of Supervision
116	4-20	Yes	WorHO	1-2 times per year

<sup>1/</sup> Application of the 65% active CMCWs among interviewees to the total number of CMCWs trained; <sup>2/</sup> varies on a seasonal (malaria) basis

Reasons For Being Inactive (9 Respondents from interviewed sample)	
	Inadequate Payment Or Benefits
	Lack Of Drugs Or Supplies
	Lack Of Transport
	Lack Of NGO, Govt Or Community Support Or Interest
	Problems With Supervisors, Community Members, Etc.
	Disinterest In Job
X	Fired by WorHO Supervisors for misuse of funds or drugs
X	Accepted another position (promotions to higher paying jobs)

*Preventive or Curative Work*

	Type of Training Provided for CMCW	Actual Work Being Performed
Preventive Only		
Curative Only		
Both	X	X

## 5.6 CHWs Working without Cash Incentive (BASICS Trained CHWs)

### *Background*

In 1997, the USAID funded BASICS Project commenced an “interactive approach for planning and continual community participation in all community (health) activities”. The Project piloted the “revitalization” of community health activities by conducting a situation analysis of community health needs, coordinating and planning with local government partners and community members, and the retraining of previously trained (but generally inactive) CHAs.

The five pilot community health programs (villages) were selected by BASICS in consultation with local kebele leaders and community members. This same process was also used to select the CHAs invited to participate in the program. In total, ten CHAs from five villages were selected and trained. It was envisioned that, over a period of time, these ten CHAs would become trainers of additional CHAs.

The BASICS trained CHAs were assigned to work under the umbrella of a health post. To facilitate this activity, BASICS (with community labor) rehabilitated health posts and also provided small items such as bicycles, umbrellas and clothing to the CHAs. No salary or allowance was provided for the re-trained CHAs.

*Financial Input*

- Community Demand Study conducted in nine villages in five Woredas. Eight people conducted study for approximately 4 weeks.
- BASICS Consultants
- Rehabilitation of 5 health posts & village infrastructure - wells, etc. (USD \$ 23,750)
- Revolving Drug Fund Established in 5 locations
- Two-week Refresher Training for 10 former CHAs - conducted by BASICS staff and the Regional Training Center, SNNPR
- Purchase of bicycles, umbrellas, bags, megaphones, etc. for 10 CHAs
- BASICS follow-up to 5 locations for approximately 6 months

*Active or Inactive Status*

# CHAs Trained	# CHAs Currently Active	# Revolving Drug Funds Established	# Revolving Drug Funds Still Active
10	2	5	2

# Clients Seen per week	HMIS Records Maintained By CHA (Y/N)	Responsible for Supervision	Frequency of Supervision
15	Yes	WorHO	Monthly - Quarterly

Reasons For Being Inactive (8 Respondents from interviewed sample)	
X	Inadequate Payment Or Benefits
X	Lack Of Drugs Or Supplies
	Lack Of Transport
X	Lack Of NGO, Govt Or Community Support Or Interest
	Problems With Supervisors, Community Members, Etc.
	Disinterest In Job
	Other

*Preventive or Curative Work*

	Type of (BASICS) Training Provided for CHAs	Actual Work Being Performed By Active CHAs ( )
Preventive Only	10	
Curative Only		
Both		2

## 5.7 CHWs Working on Salary or Allowance (Mekaneyesus in the Hadiya Zone)

### *Background*

The Mekaneyesus Evangelical Church supports 200 Community Based Reproductive Health Agents (CBRHA) in four *Woredas* in the Hadiya Zone. The Church activities are funded by a grant from Pathfinder International (USAID sponsored)<sup>32</sup>.

Starting in 1998, 15 CBRHAs in four *Woredas* were trained for a two-week period. Additional recruitment and training has subsequently occurred that has increased the number of CBRHAs in each *Woreda* to 50 (total of 200 in the 4 *Woredas*). Initially the CBRHAs received a “travel allowance” of 120 Birr per month. However, this amount has been reduced to 60 Birr per month. This has resulted in an increased attrition rate, estimated at approximately 10%. New recruits have replaced individuals who have left the program. Therefore, the figure of 200 CBRHAs has been maintained.

The CBRHAs provide a multitude of reproductive health services which include: a) conducting public meetings and group discussions; b) making home visits; c) distributing non-clinical contraceptives; and d) serving as a referral linkage to static government and NGO health facilities. Statistics provided by Mekaneyesus indicate sharp increases in the demand for reproductive health services in the *Woredas* serviced by the CBRHAs. Data on reproductive health care services are provided monthly to *Woreda* Health Offices.

CBRHAs in each of the four *Woredas* are supervised by two supervisors affiliated with the Mekaneyesus. In addition, Mekaneyesus has two overall supervisors stationed in Hosanna, the capital city of the Hadiya Zone. Pathfinder is active in monitoring the Project and in providing technical assistance, as well

### *Financial Input*

- Two week initial training for 200+ CBRHAs
- Annual refresher training of 3 days
- Monthly travel allowance of 60 Birr for 200 CBRHAs
- Yearly uniform allowance of (up to) 415 Birr per year for 200 CBRHAs
- Ten supervisors (two in each *Woreda* and two overall in the zone)
- Periodic oversight from Pathfinder

### *Active or Inactive Status*

# CBRHAs Trained	# CBRHAs Interviewed	# CBRHAs Interviewed Who Are Still Active	% Active of interviewed sample
220	15	13	90%

<sup>32</sup> The empirical study covered Hadiya Zone. Pathfinder has also expanded to Kat Zone, adding another 85 CBRHAs and nine more supervisors.

# CBRHAs Currently Active <sup>1/</sup>	# Clients Seen per week	HMIS Records Maintained By CBRHAs (Y/N)	Responsible for Supervision	Supervision Frequency
200	25	Yes	Mekaneyesus	Monthly

<sup>1/</sup> Application of the 90% active CMCWs among interviewees to the total number of CMCWs trained

Reasons For Being Inactive (2 Respondents from interviewed sample)	
	Inadequate Payment Or Benefits
	Lack Of Drugs Or Supplies
	Lack Of Transport
	Lack Of NGO, Govt Or Community Support Or Interest
	Problems With Supervisors, Community Members. Etc.
	Disinterest In Job
X	Received better salary elsewhere
X	Died
X	Marriage or domestic issues
X	Other

#### *Preventive or Curative Work*

	Type of Training Provided for CHWs	Actual Work Being Performed by Active CHWs (200)
Preventive Only	X	X
Curative Only		
Both		

## 5.8 Summary of the Empirical Study

The following table presents a comparative summary of the three models that were studied. The table is based upon the empirical data generated from the field study in SNNPR. The results of the analytical study have been supplemented by discussions with Pathfinder International and Irish Aid in Addis Abeba. Comparison with the BASICS model is limited by the fact that there currently is no BASICS staff in Addis Abeba to provide supplementary information. Hopefully, this has not had a negative bias in the interpretation of the field data.

The BASICS approach was included as an example of a Volunteer model, in which the CHWs have no salary, commission or allowance. The BASICS model included other forms of support, mainly to the community rather than to the CHWs. The underlying assumption most likely was that the CHWs would be supported by the communities they served.

After BASICS, the CHW program ended and most of the health workers became inactive. One, of the remaining two active workers, is no longer representative of the Volunteer model. He receives a commission on drug sales and therefore works on the Commission model. The other active worker has continued to serve the community without compensation. One of the reasons for the failure of the BASICS model is that the underlying assumption of community support to volunteers rarely holds in current Ethiopia. In spite of the fact that BASICS had selected ten of the best CHAs at the time of training and from seemingly motivated and committed communities, the model was not sustainable.

The initial investment costs of the BASICS model are far higher than the two other models studied. The financial inputs include not only improvements in the physical infrastructure in the community, costing more than twenty thousand USD, but also conducting studies, developing revolving drug funds and purchasing commodities.

The other two models are more similar in terms of financial inputs: one provides compensation through sales commissions and the other provides compensation through monthly allowances<sup>33</sup>. The initial inputs are very similar. Both of these models are considered sustainable in the sense that after three to five years, more than 65% of the initially trained CHAs are still active (90% in the Allowance model). It should be noted that many of those who are not active have been promoted to better jobs.

There are two major differences between the Commission model and the Allowance model studied in this report. One difference is in the preventive and/or curative role of the workers. The CMCWs are doing both preventive and curative work in malaria control, while the CBRHAs are doing only preventive work in reproductive health. The other difference is the source of funding for the operational costs of the program. The CMCWs are funded by out-of-pocket expenditures for drugs by clients, while the CBRHAs are funded by NGO and USAID resources. Both cases are similar in that there is a need for an initial financial input for training and purchase of drugs/commodities.

Interestingly, the initial financial input (for training, refresher training and the purchase of commodities/drugs/supplies) is estimated by the two organizations to be almost identical. According to Irish Aid, the initial cost for one CMCW averages 1000 Birr, while the corresponding amount for one CBRHA in the Pathfinder Program is 950 Birr.

It should be noted that the “Added Cost Factors” of the Commission model and the Allowance model implies an initial cost of three months of CHA training, when recruiting CHAs for training as CHWs. As this cost is equal for both models, it can be disregarded in the comparison, but has to be kept in mind when comparing with other models not using former CHAs. The Added Cost Factors in the case of the CBRHAs include Pathfinder oversight, plus free commodities. Again, the principle is different in the two models, as the CMCWs cover the costs of re-supply of commodities by drug sales. Supervision reflects a major cost difference in the approach between the two models. In the NGO Allowance model, supervision is provided and financed by the NGO (Mekaneyesus supervisors and coordinators); in the Sales Commission model, supervision is provided and financed by the local government administration. The annual technical assistance from Irish Aid also serves the purpose of building capacity in the government system.

Pathfinder estimates the annual cost of operation of the CBRHA program to be 2450 Birr per worker. The cost per CYP is estimated to be four USD. The cost of oversight, supervision and free commodities in the NGO model was not available. The general overhead, as a proportion of the total assistance provided by Irish Aid, is estimated at 5%. For the sake of comparison, we are assuming that the overhead of the two models could be equalized, and the decisive cost comparisons are initial investment cost and cost of operations, which influence the long term sustainability of the model.

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<sup>33</sup> The salary model studied is based on a minimal allowance, currently 60 Birr per month, which makes the model close to a voluntary model.

**SUMMARY TABLE OF FINDINGS IN SNNPR SURVEY**

Funding Organization	Type of CHW Support	Total Number of CHWs Trained	Location	% Active 3-5 Years After Initial Training	Training Sponsor	Work Performed	Training	Added Cost Factors	Management & Supervision
<i>Irish Aid</i>	<b>Initial Concept:</b> Commission From Malaria Prophylaxis Sales	178	Sidama Zone	65%	Woreda Health Offices - Sidama Zone	<b>Initial Concept</b> Preventive & Curative Related To Malaria Only	3 months CHA 15 days malaria 3 days annual refresher	Initial malaria prophylaxis purchase + subsequent redistribution of RDF	Local Government (WorHO)
	<b>Current Avg. Income:</b> 35-150 Birr monthly					<b>Current</b> No change			
<i>BASICS</i>	<b>Initial Concept:</b> No Salary or other financial benefit	10 Re-trained CHAs	5 Woreda catchment areas in 3 zones	20%	BASICS and Regional Training Center	<b>Initial Concept</b> Preventive For Integrated Health Services	CHAs previously trained by Govt.  2-week initial training by BASICS and RTC	Community Surveys Health Post Rehabilitation Initial commodities such as bicycles, megaphones, etc. Vil. Infrastructure Support	Initially BASICS and health posts. After end of Project - WorHO
	<b>Current Avg. Income</b> 1 of 2 remaining CHWs receives commission on drug sales					<b>Current</b> 1 of 2 remaining CHWs provides both preventive & curative services			
<i>Pathfinder</i>	<b>Initial Concept:</b> 120 Birr monthly travel allowance	220	4 Woredas in the Hadiya Zone	90%	Mekane Yesus us Evangelical Church	<b>Initial Concept</b> Preventive Related to Reproductive Health Only	2-week initial training 3 day annual refresher	Pathfinder oversight 10 Mekane Yesus supervisors Annual uniform allowance	Mekane Yesus Evangelical Church
	<b>Current</b> 60 Birr monthly travel allowance					<b>Current</b> No change			

As has been noted above, the initial costs are very close between the Sales Commission and Allowance models and the active workers over time remain at sufficiently high levels. A major difference is operational costs. The Commission model finances its operational costs through drug sales and its supervision by government support, while the Allowance model needs external finances for operations and supervision.

## 6 Conclusions

The empirical study may now be summarized in terms of costs and sustainability. The three models (Volunteer, Sales Commission and Allowance/Salary) are compared in the following table.

Models	Organizational Sustainability	Financial Sustainability	Initial cost (excluding overhead) Birr/ CHW	Annual operation cost; Birr	Supervision
Volunteer	Not satisfactory	None	Prohibitive	Not available	Project
Sales Commission	Satisfactory	Sustained by clients	1000	Covered by sales, i.e. funded by clients	Subsidized by local government
Allowance/Salary	Satisfactory	Sustained by donor/NGO subsidy	950	2450 per CHW/year funded by NGO	Subsidized by NGO/donor

The Volunteer model is found to be non-sustainable, which is in line with experience of current Ethiopia. Traditional healers are not voluntary, as they are supported by the community with cash or in-kind payment, or in community services (like herding cattle). In the BASICS Volunteer model, the investments in community and commodities, and the expected organization and community support to the CHW by the community stopped when the project ended. This does not necessarily mean that a project, over a longer period of time and supportive oversight, could not realize positive returns on the total investment. The initial cost was felt to be prohibitive in relation to the short life span of the project and its seemingly non-sustainable results.

The study indicates that, of the CHW models studied, the most effective and sustainable is either compensation from sales commission or from salary/allowance. It would be interesting to study a model that combines both features for comparison.

The initial cost of training and equipping a CHW could be compared to the cost of constructing a health post, estimated at 200,000 Birr. The cost for each health post construction could instead be used to train and equip 200 CHWs. Assuming there are about 10,000 villages in Ethiopia, the total cost of initially training and equipping all of them with CHWs would be around 10 million Birr, which is a relatively modest amount in terms of donor funding. This amount corresponds to the construction of just 50 health posts. The implications for and potential impact of allocations within the Health Sector Development Program (HSDP) could be striking from this comparison.

The operational costs need to be funded as well. The Sales Commission model leaves the funding to the clients, while the Allowance/Salary model needs 2450 Birr per year per CHW from a funding agency. Assuming one CHW for each village in the country, this would require an annual operational budget of 24.5 million Birr - equal to the construction cost of about 122 health posts annually.

The operational costs may not be prohibitive in terms of donor funding. However, donor funding may not be sustainable and therefore carries a risk. This risk and dependency could be reduced by funding from out-of-pocket expenditures by clients and government subsidies. Analytical work by the Health Care Financing (HCF) Secretariat, assisted by the ESHE/JSI Health Finance Team, has indicated from studies that there is a willingness to pay for drugs, which can be utilized for important contributions to the finance of the health sector<sup>34</sup>. On the other hand, the willingness to pay for service is dependent on improved quality of services (perceived as availability of drugs, reduced waiting time and improved diagnostic equipment). The demand for and willingness to pay for services and drugs/commodities provided by CHWs could potentially be high. If CHWs are trained to provide a combination of preventive and curative services and have reliable access to procuring affordable drugs/commodities that meet urgent needs (e.g. ORS, FP commodities, malaria drugs, etc.) the Sales Commission model could be highly effective and sustainable. Consumers of CHW services would likely perceive easy access to services and availability of drugs as a qualitative improvement in the health delivery system.

## 6.1 Recommendations

It is recommended that the following criteria should be considered in any future investments in CHW programs, in order to improve financial sustainability and impact on community based health services:

- A combination of preventive and selected curative services should be promoted;
- Preventive and/or curative services should be free for the client, i.e. subsidized by the government or the NGO;
- Drugs should be sold at cost plus mark-up to cover operational costs;
- The product supplied should be a mixed, diversified service package, preferably including drugs;
- Initial training and regular refresher training should be an integral part of the program;
- Regular supervision and referral links with static health facilities must be established;
- Funds may need to be sought for initial capital investment for initial purchase of drugs/commodities, equipment (e.g. bikes, scales, uniforms) and initial large scale training;
- Training and supervision must be part of a the recurrent budget of either the public or private sector involved in the program;
- National guidelines and protocols for CHWs need to be developed;
- Models and programs need to be appropriate to the type of “community” served, and national guidelines need to be adjusted by regions and zones;

CHW programs financed by clients raise the question of equity and the programs financed by donors raise the question of donor dependency. These issues go beyond the scope of this report, but should be kept in mind for future research in the area of CHW models for Ethiopia.

Future models should consider the development of public-private partnerships. The HCF work has produced a study on Contracting of health services in Ethiopia. The HCF Secretariat is currently working on creating an enabling environment for NGOs in the health sector, as well as the formation of a private providers association (cf. list of references).

<sup>34</sup> Cf. Valdelin, Netsanet & Fairbank, in *Economic Focus*, February-March, 2001, Addis Abeba.

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<sup>35</sup> This list of references does not include the works referred to in footnotes.