

Community health workers as a cornerstone for integrating HIV and primary healthcare

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Abstract

Haiti is the poorest and most heavily HIV-burdened country in the Western hemisphere, with even less health infrastructure than many countries of sub-Saharan Africa. Since the early 1980s the HIV epidemic has affected the poorest communities in Haiti, who lack access to even basic healthcare. Large-scale HIV treatment requires that basic healthcare services be built and scaled up simultaneously with HIV-prevention and -care programmes. Such improvement in access to general healthcare will require substantial investments in health infrastructure, service delivery and human development. This study describes the contribution of the non-governmental organization, Zanmi Lasante (ZL) to the HIV prevention and treatment scale-up and to the ongoing efforts to improve primary healthcare (PHC) services in the public health system in Haiti. The model depends on community health workers (CHWs) who supervise antiretroviral therapy (ART) and provide community outreach, including active case finding and outreach to marginalized populations. Zanmi Lasante has recruited, trained and financed a large cadre of CHWs to provide such linkages between communities and health centres in rural Haiti. The study analysed key components of their work—their self-perception, their role in enhancing community uptake of services and their role in targeting vulnerable groups. We found that most patients at risk were properly identified at a community level. The CHWs are facilitating the uptake of PHC services, including by the most vulnerable households. The general training of CHWs has created a positive self-definition in these cadres of their medical, patient support and health service roles; although with some variability across different groups. The results of this study will be used to emphasize, standardized and strengthen the biosocial training of CHWs.

Introduction

The challenge of scaling up HIV care in rural Haiti

Haiti is the poorest country in the western hemisphere, with a per capita income of less than US\$400 annually (USAID, 2004). The majority (80%) of the population lives in abject poverty. Healthy life expectancy at birth is 43 years and just 6% of the population is over 60 years of age (WHOSIS, 2005). Under-five child mortality is 110 per 1,000 live births, infant mortality is 76 per 1000 live births (UNICEF, 2005). Infectious diseases, led by HIV and TB, are the major causes of adult mortality. Maternal mortality, largely due to obstructed labor and hemorrhage is at 523 per 100,000 live births (PAHO, 2001a). In comparison, Nicaragua, the poorest country in Central America has a maternal mortality of 100 per 100,000 live births (PAHO, 2001b). The leading causes of child mortality in Haiti are diarrhoeal diseases, acute respiratory infections and malnutrition and plasmodium falciparum malaria continues to be a major problem for both adults and children. The HIV sero-prevalence is 6% nationally and is as high as 13% among

women presenting to prenatal clinics in poor urban areas. HIV is now the leading infectious cause of young adult death and approximately 50% of those infected with HIV in Haiti present with TB co-infection (Farmer, 2001b). While Haiti has had a history of good HIV-prevention programmes, political turmoil with both international and domestic determinants has prevented the country from developing, leading to risks of loss of many of the prior gains made in HIV control.

President Jean Bertrand Aristide was democratically elected in a process widely considered fair and legitimate and was inaugurated in January 2000. However, following legislative elections in May 2000, in which irregularities were reported, the US and European Union (EU) suspended almost all aid to Haiti. More than US\$500 million of blocked loans were earmarked for health, education, water and roads (Farmer, 2003). During the following five year period, the only aid that came from the US and EU for health was channeled through the non government sector, further weakening the public health system. The Haitian government spends less than US\$2 dollars per capita on health per annum. Less

than 40% of health expenditures occur in the public sector (WHO, 2005). The remaining 60% of health expenditures occur in the private sector (including both the for-profit and not-for-profit health sectors (WHOSIS, 2005). Of the private sector spending, 70% is out-of-pocket expenditure. This large share of out-of-pocket spending in one of the world's poorest countries is a significant barrier to health-care.

After the suspension of aid and decreased foreign investment, Haiti's gross domestic product shrank by 26% between 2000 and 2003 (World Bank, 2005). On February 29, 2004, President Jean Bertrand Aristide was forcibly removed from Haiti by paramilitary forces and the subsequent two years have seen a rise in inflation, extreme poverty, violence and political instability (Library of Congress, 2005). In a context of poverty and instability an increasing number of women are turning to transactional sex for money (UNFPA, 2005). Further, widespread sexual violence, both at the hands of police and paramilitary groups and as a result of lawlessness, has increased HIV risk in urban areas (Oxfam UK, 2006). Among rural areas, the major risk factors that link poverty to HIV are migration for work. Men go to factories in Port Au Prince or to sugar cane plantations in the Dominican Republic and women to the city for domestic work.

The Clinique Bon Sauveur (CBS) was founded in 1985 by Partners In Health (PIH) or ZL in Haitian Creole. Partners In Health is a non-governmental organization affiliated with the Harvard Medical School that has been at the forefront of HIV service provision in Haiti since the first case of HIV was detected in Haiti's central plateau in 1986. It has done so within a framework of wider PHC services for the range of public health problems affecting low-income households. Because the public sector has been nearly non-existent, the clinic has operated as the main referral hospital for Haiti's Central Department, which has a catchment area of 500,000 people. There are ten communes in the Central Department, each of which as a government health post. Few patients use the posts as they are understaffed and have little in the way of tests or medications. Most of the healthcare in the Department has been provided by CBS. It also provides outreach through bi-monthly mobile clinics to the ten communes and a cadre of 200 healthcare workers who perform health promotion and disease prevention activities.

The CBS has offered free serologic testing and counselling since 1988 and has supported extensive AIDS prevention activities. Community based studies have generated important understanding on the risk for sexually transmitted diseases, especially among women (Smith Fawsi, 2003; 2005). Most

recently, findings from this program were used to develop an epidemiologic risk assessment tool for the treatment of sexually transmitted diseases (Smith Fawsi, 2006). This study found that specific social and demographic risk factors, such as extreme poverty and lack of food security, were more commonly associated with the presence of a sexually transmitted disease in women than the presence or absence of symptoms. In 1995, antiretroviral medicines were offered to HIV-positive pregnant women in order to prevent mother-to-child transmission of the virus. In 1998, HAART was offered by ZL to patients with clinically advanced HIV (Farmer, 2001a).

Community health workers have served to bridge gaps in access to care that arise from lack of communication for patient follow-up and long distances for patients to travel for health problems. Community health workers are lay people who are selected by the community to be trained and employed as health agents. Such cadres had been involved in directly observed administration of tuberculosis medicines since the mid 1980s in Haiti. In 1999, modeled after the successful outpatient treatment of tuberculosis, access to HAART was expanded through a community based program called the HIV Equity Initiative. A cadre of CHWs was trained to administer HAART to patients in their homes as directly observed therapy (DOT). The CHWs were also trained to provide prevention education to communities, to minimize stigma and to refer to the clinic possible HIV and TB contacts or those at risk for infection. The CHWs thus became a critical interface between patient, community and the CBS.

Beginning in 2003, with financial support from the Global Fund to Fight AIDS, TB and Malaria, ZL expanded the HIV Equity Initiative to the region surrounding CBS and to six public clinics in Haiti's Central Department in the communes of Lascahobas, Belledere, Boucan Carre and Thomonde (in 2003), Hinche (in 2004) and Cerca La Source (in 2005). This collaborative effort between ZL and the Haitian Ministry of Health aimed to serve a population of 500,000, with an estimated HIV seroprevalence of 5%. In this region there were thus estimated to be approximately 25,000 people living with HIV, of whom 20%, or 5,000 people, needed therapy. The weakness of the public sector meant that public facilities had little medication and diagnostics, while staff was poorly paid and not consistently present. As a result the clinics stood largely empty and the population did not utilize the services. To expand the HIV Equity Initiative through this weak and dysfunctional system implied that we needed to also improve the primary care services and rebuild the communities' faith that the

clinics would provide help to them. The three elements that ZL brought were: a trained, paid and supported cadre of CHWs, the supplementation of MOH staff salaries and a large stock of essential medications provided free of charge. Because of the remote nature of the region, simply stocking the pharmacy and ensuring staff presence was not enough to alert the community to the presence of meaningful healthcare. Active community outreach was critical.

While initially trained to identify and treat patients with HIV and TB, CHWs have become an important part of the provision of PHC. They support a range of health promotion, disease prevention and treatment services, including infant vaccination and prenatal care, treatment of diarrhoeal disease and acute respiratory infection and the diagnosis and treatment of tuberculosis. By tapping this important cadre to strengthen the wider health system at primary care level, the program aimed to create a virtuous cycle between strengthening the wider PHC services that support poor households and antiretroviral treatment outreach, widening the health impact on communities.

Initial evidence indicated improved service uptake, shown in Figure 1. This shows the uptake of voluntary testing and counseling (VCT) for HIV in the Lascahobas public clinic (dark line in Figure 1) from the time of introduction integrated HIV Equity-PHC model in the first quarter of fiscal year 2002. The light line in Figure 1 is the referral centre in Cange CBS—where HIV testing and full PHC services have been available since 1986. As the graph demonstrates, there was a marked increase in the number of VCT sessions performed at Lascaho-

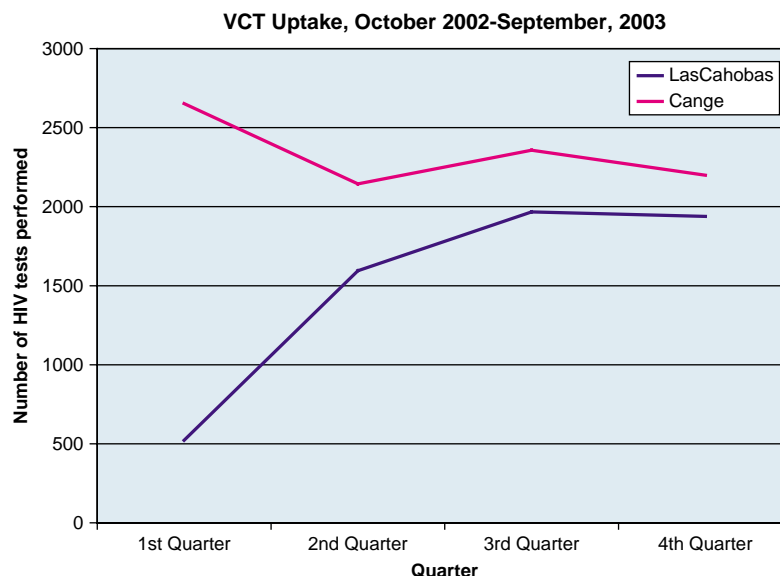
bas clinic once the initiative began. The graph also suggests that the demand for VCT at the referral hospital decreased slightly as testing became available elsewhere (Walton et al., 2004).

This paper addresses the impact of the CHWs trained to help in the care of HIV patients on the utilization of primary health services. We carried out the evaluation between June 2005 and March 2006, exploring the roles of the CHW within the programme of HIV prevention, antiretroviral treatment and the utilization of AIDS and PHC services.

Methods

This study used both qualitative and quantitative measures to evaluate the role of the CHW in enhancing the interface between PHC oriented health services and households in responses to HIV and AIDS. The study was carried out in three parts.

As a background to the field work, structured interviews were held in July 2005 with eight CHWs from PIH sites internationally—two from Haiti, two from Boston, two from Peru and two from rural Mexico. These CHWs had served with PIH for 2–14 years (average of seven). The questionnaire contained open-ended questions and the interviews took about 60–90 minutes. Results from individual interviews were used to inform the questions for the focus groups of CHWs. The qualitative interviews with health workers covered the following topics: focus of the work, groups targeted by the CHWs, CHWs' self-perception, why CHWs increase uptake of services and why CHWs increase access among disadvantaged groups. The interviews were conducted by the same interviewer (Dr. Mukherjee) in



Source: Walton, 2004

Figure 1. VCT uptake at Cange and Lascahobas clinics.

the CHWs native language of Haitian Creole, English or Spanish. Results were recorded by the interviewer by note taking rather than a tape recorder.

Based on these responses, questions were developed and focus group sessions held with CHWs from two public health clinics operated jointly by ZL and the Haitian Ministry of Public Health—Lascahobas and Belledere. The clinics were selected through quota sampling because they were the first two public clinics that benefited from the expansion of the HIV Equity Initiative and revitalization of the PHC in 2003. Both are public clinics that had an average daily count of 10–20 patients prior to the expansion of the HIV Equity Initiative. Although both sites are in the rural Central Department, the sites differed in the services offered prior to the initiative and in the population size and level of migration in their catchment areas.

Lascahobas is a slightly more urban centre, serving a population of about 50,000 and better connected through road and transport networks to larger urban centres. It has a small commercial sector that employs a significant percentage of the peri-urban population. The health centre itself did not have an inpatient facility or an operating room capacity at the start of the initiative.

Belledere, in contrast, is more isolated than Lascahobas, with sporadic transportation and poor road infrastructure. Its population is about 30,000. Located 30 minutes drive from the border with the Dominican Republic, it has significant migration from the district to the Dominican Republic, resulting in less stable community bonds. Those who do not migrate out for work are subsistence farmers. The hospital in Belledere was much larger than the health centre in Lascahobas—with a 30-bed inpatient facility and an operating room. Due to lack of staff, however, the outpatient clinic and inpatient wards were empty prior to the ZL initiative.

All of the CHWs from each site were required to participate, obviating the need for random selection. In Lascahobas this included 105 participants and in Belledere 50 participants. Groups were facilitated by a native Haitian speaker and psychologist (Fr. Eustache) and results were recorded by the group leader.

The third part of the study was to collect data from the two clinics in the catchment areas of the CHWs to determine the uptake of AIDS and PHC services and the linkage with community health work. This was done by reviewing clinic records for primary care visits, HIV testing and by interviews with the nurse and doctor in charge of each clinic to determine their perception of the percent of clinic attendees that were referred by CHWs.

Throughout this study, the data cross checks were done internally within the research team. No ex-

ternal data checks were done due to the operational linkages of the study. While neither the qualitative statements nor the quantitative data on service utilization are claimed to be representative for all CHWs in the program, the weight of the qualitative evidence was used to explore the issues considered important by health workers. The study thus gave CHWs a direct voice on their role and how to focus training to harness the best elements of this program. These sources of evidence were used to address the following questions:

- How have CHWs impacted on overall service uptake and equity in service uptake within households affected by HIV and AIDS?
- How have CHWs impacted on the barriers and facilitators for community access to HIV prevention and treatment services and wider PHC services, especially for the most vulnerable households?
- How have CHWs themselves perceived, performed, and been affected by the work they do?

Results

Qualitative results on CHW perceptions of their work

The responses of the CHW interviews are shown in Table I. The CHWs perceived that they had an important role in increasing access to care, particularly among vulnerable groups, a role that also gave them self-esteem. The findings were used to identify areas that the focus group discussions and field data would explore further, including how CHWs impact on the community health service relationships, particularly for disadvantaged social groups.

The findings of the focus group discussions indicated how CHWs understand HIV and AIDS and their role in facilitating household access to AIDS services and more in general.

CHWs' understanding of HIV, AIDS and TB

A review of the social aspects of the disease prompted an intense discussion of the role of the CHW in integrating the principle of the complementary duality of the man-body (soma) and a spirit (psychè). Community health workers understood that the somatic illness of AIDS has profound psychological effects. They perceived their role as a strong promoter of the integration of the medical aspects of the disease with the spiritual components, particularly in providing emotional support and helping affected persons discuss and disclose their status to their families. Several examples of the CHW role in addressing this important duality were given by the CHWs themselves. In Haiti, HIV is either treated by a traditional healer or within a big

Table I. Summary of responses of the CHW interviews.

Questions	Haiti	Chiapas	Peru	Boston
1. Focus of work	Prevent HIV and treat AIDS	Prevent disease and promote health	Prevent and treat TB	Prevent HIV and treat AIDS
2. Self-perception	Rural peasant, same as my patients	Rural peasant same as my patients	More educated and affluent than my patients, but have family from similar backgrounds	More educated and affluent than my patients, may or may not be from a similar ethnic group
3. Why do CHW increase uptake of services?	Trust, encouragement, better understanding of why they should be tested	Better understanding of disease	Trust, encouragement	Trust, encouragement
4. Why do CHWs improve access among disadvantaged groups?	Help people access clinic who live very far, are too poor to pay for transport, or are too sick to walk	Provide accompaniment for those who distrust the medical system, overcome discrimination against indigenous people, help people who have no money to pay for services	Help people who cannot access the system due to extreme poverty, or cannot take the time because of other responsibilities, decrease fear of disease and stigma	Provide accompaniment for those who distrust or lack understanding of the medical system, improve understanding of disease and decrease fear
5. Who are the disadvantaged groups targeted by the CHWs in your program?	The poorest families in villages and youth	Rural women and indigenous people	Poor people who live in urban slum areas	Immigrants who may be discriminated against, substance users, youth

hospital complex. In both cases, AIDS is often categorized by the healer as immoral. The CHWs felt that they provided a link of acceptance of the disease and individual to enter the medical establishment. The CHWs also showed excellent familiarity with the drugs used in treatment of these diseases and the complications of the disease and secondary effects of the drugs.

CHWs' understanding of the characteristics and role of a CHW

Table II demonstrates striking similarity of the perception of the role of the CHWs at the two sites. The key elements described by the CHWs

were provision of support, a leader who can maintain confidentiality and a collaborator with the family and bridge to the medical centre. These are all critical not only to the continuing care of HIV patients but also in creating an environment in the community where care-seeking is supported and trusted. This concept makes it possible for the CHWs to fulfill their other important role as agents of active case finding—encouraging attendance to clinic if they identify people who are in need of care.

The CHWs were also asked about their perception of the 'ideal role' for a CHW. Their perceptions are summarized in Table III.

Table II. Summary of CHW focus groups findings on CHW self-perception.

CHW views from Lascahobas	CHW views from Belledere
Capable of providing psychosocial support	Provides support as a friend
Agent of health (technical direction)	Technically capable
Pillar and representative of the program in the community	Representative of the hospital. Essential to the survival of the program
Faithful provider of medication with patients.	Give care
A person who is respected in the community. A leader	Leader in the community
A person who is reliable, credible, responsible	Credible, reliable
Capable of finding new cases and mobilizing patients for medical care	Capable of active case finding
Bridge between the medical centre and patient	Intermediary between the patient and the health institution
Collaborative with the patient and family	Collaborator of the patient and family
Servant of the community	Considered by the patient like a slave
Able to maintain confidentiality	Able to maintain confidentiality
	Deserve promotions

Table III. Role of the CHW in their own words.

Lascahobas: Role of the CHW	Bellede: Role of the CHW
To track treatment and supply drugs to the patient	To give drugs
To give counsel	To be in charge health of the others
To educate about prevention	To prevent other cases of infection
To help the patient to find health	To help the patient to live longer
To communicate with the patient	To refer patients to the hospital
To direct patients towards the institution	To encourage the patient
To sensitize the patient	To detect new cases and to refer them
To give the patient moral support	To educate and remind patients of appointments

The ZL goal is that the CHWs job should be, at its core, aimed at social justice and solidarity. As such, their work should be focused not only on their medical role but also on their role in the community at large. This includes community mobilization, education, destigmatization and work with the communities of faith and other supportive groups to reduce social isolation of affected individuals and households. The roles outlined by the CHWs in Table III indicate that these social and solidarity goals have been integrated into their understanding.

Of note (shown in bold in Table II) are the differences between the two sites. The Bellede CHW groups expressed more feelings of oppression in their role—stating that they should be paid more and that the patients treated them like slaves. The negativity left them insufficiently liberated in their role to link compassion with the medical aspects of the work, when comparing them with their colleagues in Lascahobas.

This observation has a negative connotation and implies a potentially negative impact in terms of the linkages that the CHWs provide to marginalized and vulnerable members of the community. Our assumption, given that CHWs are members of, and chosen by, the community, was that compassion for the families and willingness to help the sick in an altruistic way would be a self-selected quality. This cannot, however, be taken for granted. Both groups felt that the honorarium given to the CHW was completely suitable motivation in a context of chronic unemployment and extreme poverty. However, some of the Bellede CHWs reported that they felt threatened and treated as a servant at

times by patients, who wanted to receive their drugs on a different schedule or in a different manner than prescribed. The Bellede CHWs also felt that the low remuneration would increase the chance of a CHW seeking to bribe or obtain financial compensation from the families.

A contrasting positive aspect of this difference was, however, in the possible impact of the training provided on these two different outcomes. The head doctor of the Lascahobas programme providing the training has residency level training in family and community health and a strong seminarian background in liberation theology. The Lascahobas CHWs had more respect for their role as public servant and viewed it in a positive, progressive light rather than an oppressive one.

Service uptake and equity within households affected by HIV and AIDS

The utilization of public PHC services has risen significantly since the expansion of the integrated HIV Equity Initiative with improved PHC. As indicated in the earlier sections, three inputs contributed to the service inputs to this trend—the trained, paid and supported cadre of CHWs, the supplementation of MOH staff salaries and a large stock of essential medications provided free of charge.

The evidence of improved service uptake of VCT for HIV was described earlier (Walton et al., 2004). A similar increase was found in the utilization of PHC services with the implementation of the integrated HIV-PHC initiative (See Table IV).

Table IV. Utilization of services after the HIV-PHC integrated model of care was implemented.

Public clinic	July 02—prior to MOH/ZL community partnership Average # ambulatory visits/day	December 03—after initiation of MOH/ZL community partnership Average # ambulatory visits/day
Lascahobas	20	400
Bellede	10	150
Thomonde	10	250
Boucan Carre	10	250

Impact of the CHWs on community access to PHC and HIV prevention and treatment services

It is not possible to discern exactly how much of the increase in VCT or PHC uptake was due to the CHW model, but we were able to begin to understand the importance of the CHWs in encouraging service utilization. Nearly all of the patients presenting to the clinics are rural subsistence farmers. The average length of time a family walked to the Lascahobas clinic was three hours. Since the CHWs are themselves from the community, they often accompany patients, families or even groups of patients from villages to the clinic.

Currently, 20% of the CHW are living with HIV or have been treated and cured successfully from tuberculosis. In most cases, the CHWs themselves are very open about their status and encourage community members to present for testing.

Interview with patients provided further information on the factors leading to these changes. The quantification of this data was not possible by the end of the study period, but that work is ongoing. Existing anecdotal evidence indicates that the investments made by ZL in the clinics in terms of staffing and support for essential medicines were better known and used by the communities because of the outreach of the CHWs.

We tested our hypothesis that the CHW model of care facilitated utilisation of services including for the HIV prevention, care and treatment program by exploring the VCT statistics. A patient presenting for testing was asked by the doctor or nurse in charge of the clinic if the patient was referred directly by a CHW or could name a CHW.

Table V demonstrates that at Lascahobas and Belledere over half of the patients with a new diagnosis of HIV were referred directly by, or could name, a CHW.

Of those who received HIV testing, a large proportion were referred directly by, or had contact with, a CHW. Referral for HIV testing is important whether the test is positive or negative. A negative test offers opportunities for prevention among HIV-negative persons and earlier diagnosis of HIV-positive persons can help to target prevention in couples where partners do not have the same HIV

status and are still healthy enough to be sexually active. Not only does HIV screening of negative persons provide an avenue for prevention, but earlier detection of people living with HIV can prolong survival by introduction of prophylaxis for opportunistic infections and even ART prior to the immune system becoming severely weakened.

Staff at the Lascahobas and Belledere clinics reported that the majority of children with malnutrition presented to the clinic as a result of CHW intervention. This suggests that CHWs are facilitating the uptake of PHC services even in the most vulnerable households, even though their specific training was in HIV and TB. Doctors, nurses and patients themselves anecdotally report the importance of the emotional support, physical accompaniment to clinic and aiding with logistic barriers—such as seeking help for transportation and in motivating community members to access services.

Discussion

Today, 8,000 HIV-positive persons are followed, 2,000 are receiving HAART administered by CHWs and over 800 CHWs have been trained (for both HIV and TB management). The HIV programme currently does not have a waiting list for those people with HIV who need to start HART. All persons positive for HIV receive a free clinical and laboratory evaluation, as well as medications for AIDS-related infections or, if needed, ART. Because CHWs are very active in reaching community members who might be ill with HIV or family members or partners of known HIV contacts, new HIV patients are identified promptly, often well before they are extremely ill. This affords the chance to maintain health, have a more effective response to ART and promote safe sexual practices in couples where one partner is infected and the other not. The follow-up provided by the CHW has reduced the time from which an HIV patient is identified as needing ART, to the actual initiation of therapy to just two weeks on average and there are no patients lost to follow-up in this critical period.

Because unemployment is over 70% in the central department of Haiti, jobs associated with the health

Table V. Community health worker referrals over the 4th quarter of 2005*.

	Lascahobas	Belledere
Number of VCT sessions	320	504
Number of patients tested who were referred by or could name a CHW	204	210
Number of new HIV-positive patients identified	5	8
New HIV patients referred by CHW	3/5	5/8
Estimated percent children at risk referred by CHWs	60	70

*reported by the doctor/nurse in charge of the two clinics between September and December 2005.

sector are very much in demand. The CHWs in the HIV and TB programs are paid a stipend of about US\$500 per year. The ZL programme justifies this cost on the basis of: (1) community empowerment—paying people for meaningful and respected work and (2) cost savings associated with delay of resistance to first line antiretroviral drugs. The program has a policy of preferentially hiring people to be CHWs who are extremely poor (defined by home visits and indicators associated with extreme poverty—eating one meal or less per day, not having a tin roof, radio or latrine) or are themselves living with HIV or cured in the DOTS program from TB. Moreover, given the specific vulnerabilities of women in the HIV epidemic, 50% or more of the CHWs are women. By selecting CHWs from the groups that have HIV infection or are vulnerable to HIV infection, the health services money stays in, and can help empower, the most affected communities. The CHWs understand at first hand the nature of the medical and social-economic situation of the people they serve.

The payment of lay CHWs is often criticized as unsustainable by other groups, especially those who have relied on volunteers to perform community work. However, there are several reasons for paying the CHWs. Payment for meaningful work provides needed income in a very impoverished area. Recruiting and retaining CHWs as part of the professional medical team serves to elevate the importance of this role in the health structure. Investments in CHWs can, if effective, yield a return in a delay in the development of resistance to the standard first line ART using generic drugs.

Resistance to antiretroviral medicines occurs when a patient does not take medications reliably, resulting in low levels of the drugs in the blood stream, which allows the virus to replicate despite therapy. The first line drugs, such as Lamivudine, Zidovudine (or Stavudine) and Nevirapine, cost approximately

US\$150 per person per year. If the virus becomes resistant to these, second line antiretroviral medications, typically Lopinivir, Tenofovir and Abacavir are given; these are not available as generic drugs and cost approximately ten times more (US\$1,500 per patient per year).

In the US, where adherence support is not typically given, approximately 50% of patients on a new antiretroviral regimen develop detectable viral load (the precursor of resistance) at the end of one year (Gross et al., 2001). It is estimated that 95% adherence to the twice daily regimen is needed to prevent the development of strains of HIV that are resistant to antiretroviral drugs (Ickovics et al., 2002). Community health workers who visit daily assure adherence by observing the patient ingesting medicines once a day, checking that the medicines that were left for the evening dose were taken and working with the patients to address barriers to adherence (such as poor understanding of the medicines and addressing lack of food or water with which to take the medicines). This method of adherence support has been used widely in the treatment of tuberculosis to assure that medicines are taken as prescribed and to prevent or delay the development of resistance.

Community health worker interventions to assure adherence can potentially result in enormous per patient cost savings if a change to second line drugs is delayed by one, two or three years. If a CHW follows five patients, a cost of US\$100 per patient regimen per year is added to the overall treatment cost. If this delays the need for a second line regimen drug for one year the 100 dollar investment in this work results in a cost savings of US\$1,500 minus the US\$150 for the first line drugs and the \$100 for the CHW time, or a savings of US\$1,250. This potential cost benefit from the CHW programme is shown in Figure 2. The study to test this empirically is currently underway in the ZL project.

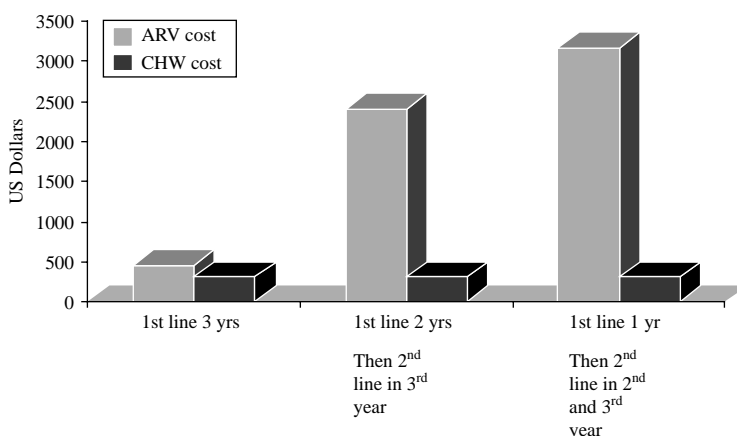


Figure 2. Estimated ART and CHW cost over a three-year period depending on whether the first line regimen of ART can be used for 3 years versus 2 years versus 1 year.

Conclusions

This study begins to identify, in both quantitative and qualitative terms, the role that CHWs play in the integrated HIV-PHC program in Haiti's Central Department. We found that the CHWs in both clinic areas are well trained in the basic outpatient drug administration for patients with HIV and TB and could recognize side effects and other medical conditions.

The first specific goal of this study was to understand how CHWs have impacted on overall service uptake and equity in service uptake within households affected by HIV and AIDS. By quantitative means we were able to determine that more than half of the patients that presented to Belledere and Laschobas for VCT were either referred directly by a CHW or knew of a CHW in their area. The additional finding of the proportion of people who tested HIV-positive who were referred by CHWs suggests that the most at-risk patients were properly identified at a community level.

The second goal of this study was to describe the impact of CHWs on the barriers and facilitators for community access to HIV prevention and treatment services and wider PHC services. The findings indicate that CHWs are facilitating the uptake of PHC services by the most vulnerable households, such as those with childhood malnutrition. The CHWs are reported to provide emotional, physical and logistic support to community members to access services.

Lastly, this study served to clarify for ZL how CHWs themselves perceived, the work they do. The study signaled the important factors of their work (particularly the psychosocial support and community solidarity) that should be given greater focus in training and supervision. The qualitative analysis of CHWs' perception of their role revealed that the general training of CHWs did create a positive self-definition for themselves as providers of patient support and facilitators of medical adherence and service uptake. However the two sites differed in the CHWs feelings in providing these services, particularly in relation to their sense of self-worth versus external demand and 'oppression'. The study highlights the need to deal with feelings of oppression and to promote notions of service and solidarity, such as through the training.

This exercise created the opportunity for the CHWs themselves to define the ideal characteristics they would like to see in their peers. This participatory process will be continued as new CHWs are selected, trained and supervised. These results will be used in the development of curriculum for

training and re-training CHWs in the ZL-MOH program. From the study discussions, the CHWs developed a 'profile of an ideal guide' that will be shared with teams at other sites and eventually posted in pictorial form and become part of the training curriculum.

Several concrete changes in the selection, training and supervision of CHWs to maximise their impact on equity have already begun to be put in place in the ZL program based on the findings of this study.

First, the CHWs have, themselves, defined the ideal qualities of a CHW. The selection of new CHWs in the program will be performed by a team—physician, nurse and CHW with this ideal profile in mind.

Second, the training of CHWs will become more standardised. This work is currently in progress for the bio-medical information, but will also focus on the psychosocial role of the CHW in mitigating stigma and reaching out to vulnerable community members. Similarly, an increase focus on training of the TB-HIV doctors and nurses in building rapport, focusing on social skills, building empathy and trust will be introduced to the curriculum at doctor and nurse so that they are able to reinforce the sociological aspects of CHW work. We will specifically use trainers—for doctors, nurses and CHWs who have experience in community-based solidarity and liberation pedagogy.

Third, a set of supervision criteria for CHWs will be formalized. Senior CHWs selected on the basis of years of experience and also motivation and appreciation of the solidarity model will be selected for the year, honored and presented to their colleagues. Community health workers from each site will be invited to the central facility to participate in additional training and other reinforcements of their motivation.

In summary, this paper presents the background to, and the key dimensions of, the expansion of a community based HIV prevention, care and treatment model, from the experience in a charity hospital, CBS, to public health clinics across central Haiti. In this model HIV services are closely linked to, and integrated with, primary health services. Community health workers are the cornerstones of the approach providing medical therapy and emotional support to people living with HIV and much needed education on HIV prevention and the availability of healthcare to the community at large. The study suggests the areas of value of this approach, particularly for those most marginalized communities and for the PHC services they use.

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References

- Farmer, P., Leandre, F., Mukherjee, J.S., Claude, M., Nevil, P., Smith-Fawzi, M.C., et al. (2001a). Community based approaches to HIV treatment in resource-poor settings. *Lancet*, 358, 404–409.
- Farmer, P., Léandre, F., Mukherjee, J.S., Gupta, R., Tarter, L., & Kim, J.Y. (2001b). Community-based approaches to the treatment of advanced HIV disease, introducing DOT-HAART. *Bulletin of the World Health Organization*, 79, 1145–1151.
- Farmer, P., Smith Fawzi, M.C., & Nevil, P. (2003). Unjust embargo of aid for Haiti. *Lancet*, 361, 420–423.
- Gross, R., Bilker, W.B., Friedman, H.M., & Strom, B.L. (2001). Effect of adherence to newly initiated antiretroviral therapy on plasma viral load. *AIDS*, 15, 2109–2111.
- Ickovics, J.R., Cameron, A., Zackin, R., Bassett, R., Chesney, M., Johnson, V.A., & Kuritzkes, D.R. (Adult AIDS Clinical Trials Group 370 Protocol Team) (2002). Consequences and determinants of adherence to antiretroviral medication: Results from Adult AIDS Clinical Trials Group protocol 370. *Antiviral Therapy*, 7, 185–193.
- Library of Congress, Federal Research Division (2005). *Country Profile, Haiti December 2005*. Available at: <http://lcweb2.loc.gov/frd/cs/profiles/Haiti.pdf> (accessed March 30, 2006).
- Oxfam UK (2006). *Control Arms, Voices from Haiti*. Available at: http://www.oxfam.org.uk/what_we_do/issues/conflict_disasters/ca_haiti.htm (accessed March 28, 2006).
- Pan American Health Organization (PAHO) (2001a). *Country Health Profile Haiti*. Available at: <http://www.paho.org/english/sha/prflhai.htm> (accessed March 27, 2006).
- Pan American Health Organization (PAHO) (2001b). *Country Health Profile Nicaragua*. Available at: <http://www.paho.org/english/sha/prflnic.htm> (accessed March 27, 2006).
- Smith Fawzi, M.C., Lambert, W., Singler, J.M., Koenig, S.P., Léandre, F., Nevil, P., et al. (2003). Prevalence and risk factors of STDs in rural Haiti: Implications for policy and programming in resource-poor settings. *International Journal of STD & AIDS*, 14, 848–853.
- Smith Fawzi, M.C., Lambert, W., Singler, J.M., Tanagho, Y., Léandre, F., Nevil, P., et al. (2005). Factors associated with forced sex among women in rural Haiti: Implications for the prevention of HIV and other STDs. *Social Science & Medicine*, 60, 679–689.
- Smith Fawzi M.C., Lambert W., Singler J., Léandre F., Nevil P., Bertrand D., et al. (2006). Identification of chlamydia and gonorrhea among women in rural Haiti: maximizing access to treatment in a resource-poor setting. *Sex Transm Infect*, 82, 175–181.
- UNFPA (2005). *Haiti: Curbing Sexual Violence at a Time of Political Turmoil*, 25 November 2005. Available at: <http://www.unfpa.org/news/news.cfm?ID=718> (accessed March 30, 2006).
- UNICEF (2005). *The State of the World's Children 2005: Childhood Under Threat*. New York: United Nations Children's Fund. Available at: [http://www.unicef.org/publications/files/SOWC_2005_\(English\).pdf](http://www.unicef.org/publications/files/SOWC_2005_(English).pdf) (accessed March 24, 2006).
- USAID (2004). *Haiti Overview. Report to the Congressional Budget Office* http://www.usaid.gov/policy/budget/cbj2004/latin_america_caribbean/haiti.pdf (accessed March 28, 2006).
- Walton, D., Farmer, P., Lambert, W., Leandre, F., Koenig, S., & Mukherjee, J.S. (2004). Integrated HIV prevention and care strengthens primary healthcare: Lessons from rural Haiti. *Journal of Public Health Policy*, 25, 137–158.
- WHO Statistical Information System (WHOSIS) (2005). *World Health Statistics 2005*. Available at: <http://www3.who.int/whosis/country/indicators.cfm?country=hti> (accessed March 27, 2006).
- World Bank (2005). *World Development Indicators 2005*. Available at: <http://devdata.worldbank.org/data-query/> (accessed March 30, 2006).