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HIV Prevention in Resource Limited Settings: A Case Study of Challenges and Opportunities for Implementation

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Abstract

Background—Sub-Saharan Africa has the highest global prevalence of HIV, and the prevention of transmission between HIV-seropositive and -serodiscordant sexual partners is a critical component of HIV prevention efforts. Behavioral interventions that have demonstrated efficacy in reducing risk behaviors associated with HIV transmission and infection and have been translated, or adapted, to a variety of settings.

Purpose—This manuscript examined implementation of behavioral interventions within resource limited health care delivery settings, and their adoption and integration within service programs to achieve sustainability.

Methods—The CDC/Partner Program, an evidence-based risk reduction intervention, was implemented in Community Health Centers (CHCs) in Zambia using a staged technology transfer process, the Training the Trainers Model. Provincial workshops and training workshops on the provision of the intervention were used to establish a cadre of trainers to provide on-site intervention facilitators capable of ultimately providing coverage to over 300 CHCs.

Results—CHC staff provided the intervention to clinic attendees in four provinces over 4 years while also training new facilitators. The implementation process addressed multi-level issues within the context of training, consultants, decision making, administration, and evaluation as well as practical considerations surrounding travel, training, staff compensation and ongoing quality assurance.

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Ethics statement All procedures followed were in accordance with the ethical standards associated with the Helsinki Declaration of 1975, as revised in 2000, concerning human rights and informed consent. All procedures concerning the treatment of research participants were in accordance with the ethical standards of the Institutional Review Board of the University of Miami Miller School of Medicine and the Research Ethics Committee of the University of Zambia.

Conflict of interest The authors have no conflicts of interest to disclose.

Conclusions—The majority of challenges to implementation and maintenance were addressed and resolved, with the exception of structural limitations related to restricted resources for personnel and funding. Strengths of the program included its collaborative structure, active program leadership, commitment and support at the provincial level, the use of task shifting by existing clinic staff, the train the trainer model and ongoing quality control. Enhanced infrastructure is needed in for future implementation, such as training centers within each province, certified expert coaches and annual workshops and system changes to ensure available staff.

Keywords

HIV; Sub-Saharan Africa; Implementation; Zambia

Introduction

Sub-Saharan Africa has the highest global prevalence of HIV, and the prevention of transmission between HIV-seropositive and -serodiscordant sexual partners is a critical component of HIV prevention efforts. In Zambia, it is estimated that over 1 million persons are living with HIV/AIDS; the national HIV prevalence in 2011 was 14.3 %, with incidence rates as high as 17.29 % and 30.2 % among men and women, respectively, in the capital province of Lusaka (personal communication, Provincial Health Office, Lusaka, Zambia, 2012). While effective treatment regimens have reduced HIV-related morbidity and mortality, concurrent HIV prevention programs are necessary to limit the expansion of the epidemic.

Behavioral interventions for HIV prevention have demonstrated efficacy in reducing risk behaviors associated with HIV transmission and infection and have been translated, or culturally adapted, to a variety of contexts across sub-Saharan Africa [1]. Integrated into existing HIV counseling and testing (HCT) services, evidence-based behavioral interventions enhance the uptake of protective behaviors associated with reduced transmission [2]. The Partner Program, an evidence-based behavioral intervention designed to reduce sexual risk behavior, was found to be effective in decreasing sexual risk behavior and increasing partner communication among couples living with HIV in Zambia [3]. Results were sufficiently compelling to merit the implementation of the CDC/Partner Program nationally in Community Health Centers (CHCs) as a strategy to reduce HIV transmission in Zambia.

Implementation of translated behavioral interventions within resource-limited, community-based health care delivery settings requires their adoption and integration within service programs in order to achieve sustainability [4]. CHCs in Zambia vary in size; urban centers may serve catchment areas from 50,000 to over 100,000 persons; rural CHCs may serve 1,000 to 8,000 persons. CHCs provide the majority of services for HIV prevention and care, i.e., HCT, prevention-of-mother-to-child transmission (PMTCT), medical male circumcision (MMC) and distribution of no-cost medication for antiretroviral therapy (ART) [5].

Implementation of intervention programs in these settings, however, can be beset by systemic (e.g., funding, government mandates, health care priorities), contextual (e.g., clinic

burden, space, patient volume, staff turnover) and individual challenges (e.g., staff burden, salaries, job satisfaction) [6] that must be addressed in order for programs to succeed. Skill building workshops have been used to achieve an expanded scope of practice for clinic staff [7, 8]. Clinics may employ trained, certified community health workers available to implement interventions on a large scale [6, 8–10], or utilize existing CHC staff, doctors, clinic officers, nurses and HCT counselors trained to provide interventions. In response to the increasing need for HIV treatment and prevention services in resource-limited settings facing health care provider shortages, the Zambian Ministry of Health (MOH) utilizes an integrated program of task shifting, the redistribution of tasks to enhance efficient use of available CHC staff [11–15].

As described in earlier publications [16], the Partner Program utilized Glasgow's (2004) RE-AIM strategy as the model for program translation (RE-AIM: Reach or number of individuals participating, Efficacy/Effectiveness or impact of the intervention, Adoption, or number of CHCs incorporating the intervention into their health care delivery program, Implementation or the fidelity to the elements of the intervention, and Maintenance of the program as an element of the standard of care) [4]. The Partner Program used an active process to address the core implementation and maintenance components of the model, in which Program team experts established alliances with the existing health care system, working within the organizational context of each clinic to engage the local practitioners to achieve optimal diffusion of the intervention [17, 18]. Similar to other behavioral intervention programs, implementing the Partner Program required meeting challenges at the systemic, contextual, and individual levels.

Informed by the CDC/Partner Program, which remains a “work in progress,” this manuscript outlines innovative and evidence-based implementation strategies for behavioral interventions in resource-limited settings, i.e., those setting in which funds, space and personnel are at a premium. This manuscript describes the implementation of the CDC/ Partner Program in CHCs in the first four of ten Provinces in Zambia. Challenges, both anticipated and unexpected, inherent in implementation of interventions within resource limited settings, are addressed. Finally, strategies designed to enhance the uptake of the program and to overcome systemic, contextual, and individual challenges to implementation and sustainability and their relevance within the local context are presented.

Methods

History of the NOW/Partner Intervention

Publications from four studies conducted over 16 years in the US and Zambia confirmed the evidence base of the New Opportunities for Women (NOW)/Partner Program as an effective risk reduction intervention (see Fig. 1) [3]. The NOW Project, a group-based program designed to reduce risk behavior among culturally diverse women living with HIV, was developed in 1997 and pilot-tested in the US in 1998 (Florida, New York, New Jersey [19]). The NOW Project was adapted and pilot-tested in Zambia in 1999 [20], and in 2000, a large-scale study began in academic hospital settings in the US and Zambia.

In 2002, the Partner Project offered an adapted version of NOW as a demonstration project in Zambia, evaluating the relative influence of male partner involvement in the intervention on behavioral risk reduction [21]. Evidence of the effectiveness of the adapted intervention led to a large scale expansion of the gender-concordant, group-based program for HIV seropositive and serodiscordant couples in 2005 (NOW2) in Florida [22] and further cultural adaption in Zambia.

Partner Project study progress and outcomes were disseminated yearly from 2003 to 2007 through public forum presentations at the University of Zambia School of Medicine, the Lusaka Provincial Health Office and the Zambia CDC. In 2007, a summary of Partner Project outcomes and recommendations was presented to the MOH and the Lusaka Provincial Health Office. The Partner program was then translated from the academic hospital setting to the CHC setting and pilot-tested in an urban community clinic [23]. In 2008, the Partner Project 2, designed to test the feasibility of translating, implementing and sustaining the Partner intervention at multiple CHCs, was offered at six sites in Zambia.

Implementation of the NOW/Partner Intervention

As outlined below, the Program was implemented at the structural, organization and provider level. The Program implementation strategy was structured to respond to each of the core components as described by Fixsen et al. [17, 18], staff selection, pre- and in-service training, ongoing coaching and consultation, staff evaluation, decision systems, facilitative administrative support, and systems interventions.

Implementation at the Structural Level

Government and Community Partners for Systems Interventions—Effective strategies for implementation begin with establishing coalitions with provincial leaders, ministry policy makers, and community organizations, and with applying the experiences of health care providers and end-users during implementation in order to facilitate the primary systems intervention, provision of the intervention and task shifting. In order to successfully implement the CDC/Partner Program, it had to be integrated into the existing public health structure and disseminated through the MOH of Zambia. The MOH disseminates health care priorities and initiatives through ten Provincial Offices, which are further disseminated through District Offices. Public health initiatives are implemented in the ~300 CHCs which work closely with Health Center Advisory Committees comprised of community leaders of Zones drawn from Neighborhood Health Committees that represent the overall clinic catchment area. These committees also disseminate information to community-based health agents such as traditional birth attendants and healers. Figure 2 provides an overview of the flow of government and community partners engaged at each level of the implementation process.

Decision Making—A 1-day workshop meeting of MOH officials and Provincial Health Officers (PHOs) was held in 2009 to review the Partner Project outcomes and recommendations, and to consider implementation of the CDC/Partner Program in the ten Zambian Provinces. PHOs agreed to implement the Program, and selected the four Provinces with the highest HIV prevalence, Lusaka, Southern, Copperbelt and Central, to

follow sequentially in the process of implementation. Provincial leaders reviewed potential challenges to implementation (e.g., monsoons, remote communities, limited staff, funding restrictions) inherent in the existing environment and health care delivery system in order to plan solutions to sustain ongoing training of trainers and the implementation of the intervention. The decisions reached at the meeting were necessary in order to provide a mandate from the provincial and district level administrators to implement the program at the organizational level of the community clinics. The Program team, including staff, district coordinators, consulting facilitators and coaches, and community supporters, was then able to establish a foundation for the implementation of the intervention that was well-tailored to the local community.

Implementation at the Organizational Level

Site and Staff Selection—Translation of the Partner Project to the CHC level began with a survey to identify large clinics in urban Lusaka with adequate HIV seropositive patient census (minimum of 150 HIV seropositive or serodiscordant couples currently being seen at the site), in order to provide sufficient patients to meet recruitment goals. With the approval of the Lusaka Provincial Office, in 2008, the Lusaka District Health Office reviewed the clinics surveyed and selected six clinics for translation of the program. Meetings were held at each clinic with CHC Clinic Officers, Sisters in Charge and HCT, PMTCT and ART program staff to present Partner Project strategies and goals. Based on criteria outlined by the Partner Project regarding the duties associated with conducting the intervention, senior CHC staff selected those staff they deemed appropriate for training as behavioral intervention facilitators. The Partner Project 2 intervention was delivered to 200 couples within the six selected CHCs from 2008 to 2011, and implementation of the CDC/ Partner program was conducted from 2009 to 2013 in Lusaka Province as a model for implementation in the remaining Provinces.

The program was designed to move from six clinics in the Lusaka Province to over 300 clinics throughout Zambia. The overarching plan was to work with one Province at a time, and every 6 months, to add an additional Province. It was envisioned that the program would be implemented over a 5-year period. A representative group of 12–15 clinics were to be selected in each Province, and the train the trainers model would be used to conduct the program and to train other clinic staff, thereby stimulating each clinic to train at least one other clinic within the Province. The Train the Trainers Model is illustrated in Fig. 1, in which Program staff train CHC clinic staff in leading the intervention; Program staff then act as coaches when CHC staff lead the next cohort through the intervention. CHC staff then train their colleagues; CHC staff then act as coaches while their colleagues lead the next cohort through the intervention.

Following this sequence of training four staff at each clinic, Program staff and CHC staff would train staff at additional clinics. This strategy would then result in a second wave of activity that would reach the majority of, and ultimately all, clinics in the Province.

Implementation at the Provider Level

Training Workshops, Coaching, Consultation and Evaluation—Beginning with Lusaka Province, District Health Offices selected CHCs for initial implementation, and CHC leaders selected staff to be trained as trainers. Applying the strategy from the preliminary translation, 2-day training workshops were conducted to establish a cadre of facilitators from the largest clinics in urban Lusaka. Workshops were composed of up to 35 clinicians, representing eight to nine clinics, and training was both didactic and conducted in small groups, using hands-on practice-based strategies. Two coaches or “key trainers,” those appearing most highly skilled, were identified at each workshop; these key trainers participated in subsequent training workshops as training consultants and provided support for new facilitators in their region. Every 6 months, additional clinics were trained utilizing both CDC/ Partner Program staff and CHC trainers from the original Partner Project. The train the trainer model was designed to provide not only more rapid and broader training but also to offer ongoing supervision, coaching, and evaluation, to enable staff members to provide real time performance assessment. This process continued, using workshops to train one third of the CHCs in each of the four Provinces, until all Provinces were in the process of training, implementation or maintenance of the intervention.

Due to limited numbers of CDC/Partner support staff, consultant and coaching support was available for half of the clinics to begin offering the intervention following the workshop. Workshop attendees voted to select the first facilitators at each workshop to begin the implementation process upon returning to their clinics, those who would be able to rapidly recruit the first two cohorts of participants and conduct the intervention together with male and female CDC/Partner Trainers. Recruitment for the intervention was integrated with the HCT program; clinic attendees were invited to participate in the intervention as an adjunct to HIV testing. Intervention sessions were first conducted with CDC/Partner facilitators as leaders and newly trained CHC facilitators as co-leaders. In subsequent cohorts, CHC facilitators led sessions and CDC/ Partner facilitators served as co-leaders (see Fig. 3). Thereafter, CHC facilitators trained new staff, while CDC/Partner staff moved to additional clinics. Neither CHC staff offering the intervention nor clients participating in the intervention were compensated. Ongoing meetings were conducted with Neighborhood Health Committees and Community Advisory Boards at each clinic to facilitate community acceptance and uptake of the intervention across the duration of the study.

Evaluating Implementation

Administrative Support and Sustainability at the Clinic and Provider Level—

District Health Office staff selected a Coordinator for each active region to liaise with CDC/ Partner Program staff, and collect and provide data on program implementation by all CHC facilitators. Both key trainers and coordinators, who provided administrative support, received a modest stipend; workshop participants receiving training were compensated for travel and per diem.

Evaluation—Process evaluation of the delivery of program activities was used to determine the degree to which the intervention was feasible and acceptable within the CHC setting, as well as the extent to which the intervention was implemented as planned and the

extent to which it reached the targeted participants. Implementation data consisted of number of clinics, staff trained, sessions, drop out and discontinuation [24].

Feasibility—Assessment of study feasibility included the content validity of the elements utilized in the intervention, and was assessed during workshops and intermittently during intervention delivery. Additionally, competence in the delivery of the intervention as intended was included as a measure of the feasibility of the provision of the intervention by locally trained CHC staff. Review of sessions by lead trainers was also used to ensure fidelity [24].

Acceptability assessment included providers' intentions to initiate and continue provision of the program and comfort with delivering the intervention. Efficacy addresses the potential to successfully reduce risk behavior with the intended population and was assessed during the initial Partner program [3]. Qualitative reports were compiled monthly and quarterly to address implementation challenges experienced by each Province and by CHC site and used to recommend and/or implement solutions.

Implementation and Reach—Implementation data focused on providers, and outcomes were assessed from data on the frequency of intervention sessions provided, provider drop-out rates, and rate of discontinuation of intervention sessions. The sustained implementation of the intervention, or maintenance, relied on the continued training of new facilitators at each CHC site. The elements of implementation evaluation included (1) the number of CHC staff members who were trained to become facilitators at workshops, (2) the number of CHC facilitators training new clinic staff to become facilitators, (3) the number of interventions conducted by clinic, by trainee, and (4) the number of participants enrolled. Additional data collected included the (1) number of workshops conducted and (2) number of persons attending workshops [24].

Results

From 2009 to 2012, four meetings were held with District and Provincial leaders ($n=47$). Coordinators ($n=4$) and key trainers ($n=5$) were identified for each of the four Provinces and six workshops were conducted.

Process Evaluation

Feasibility—Quality assurance was assessed at every clinic for the first four cohorts of participants attending the program, and a random sample (10 %) of sessions at each clinic were recorded, reviewed and rated using a checklist to evaluate the provision of key study elements in each of the four sessions. Ratings indicated that in cohort 2, the first CHC lead cohort, providers delivered 45–75 % of intervention elements, and in cohort 3, the CHC lead and co-lead cohort, providers delivered 55–75% of intervention elements. Provision of 75 % of intervention elements was established as a cut off indicating effective intervention delivery, and additional refresher training programs ($n=4$) were provided in Lusaka, Central and Copperbelt Province between 2012 and 2013 to enhance intervention delivery. Following additional training, delivery rates achieved 75 % in 80 % of clinics delivering the intervention to cohort 4.

Acceptability—Workshop evaluations of acceptability indicated that 100% of providers trained felt the intervention would be valid within their CHC setting, 100 % felt adequately prepared to implement the intervention, and 20 % felt they would complete recruitment and be prepared to co-lead the intervention post-workshop within the following 2 months. The remainder (80 %) felt they would achieve the recruitment goal of at least two participant cohorts every 6 months.

Implementation—The Program was implemented at 61 clinics, utilizing facilitators ($n=130$) who then provided the intervention to clinic participants ($n=1,148$). Participant recruitment and retention was evaluated at a sample of six clinics in Lusaka; all clinics achieved adequate recruitment of participant cohorts and retention of a minimum 70 % of participants over the course of the intervention. Long-term provider retention was assessed 2 years after the workshop training in a sample of the CHC facilitators in six clinics in Lusaka; 74 % of facilitators were retained; 21 % of the original facilitators continued to provide the intervention, and all six clinics continued to provide the intervention with original or subsequently trained facilitators.

In all Provinces, additional facilitators were trained ($n=52$ from 44 clinics) who subsequently conducted the intervention. In Lusaka and Southern, trainers worked with Program staff to undertake the training of new facilitators at their clinics. The majority of facilitators led two or more interventions and conducted an additional session, training a second facilitator. In the two subsequent Provinces, fewer trainers trained new facilitators, and fewer interventions were conducted. As maintenance of the CDC/Partner Program appeared less effective in the latter two Provinces, Program staff provided refresher training in the two new Provinces and further developed the training model in Lusaka to establish a more effective strategy for uptake and maintenance of the intervention. However, as the Program progressed and the number of Provinces increased, the distance between Provinces and training sites became a significant barrier to implementation for the limited number of CDC/Partner staff (three part time trainers, a Coordinator, a Director, and two part time administrators).

Periodic visits and regular conference calls were held with all sites, coordinators and the District Health Offices, to guide strategies to enhance Program maintenance. Regular reports derived from clinic data and qualitative summaries enabled the team to track the progress of the Program and provide feedback to funding, which was disbursed through a cooperative grant to the University Teaching Hospital of the University of Zambia School of Medicine. The following summary details structural, staff and client challenges and solutions addressed during Program implementation.

Structural Issues—Many programs were being conducted at the CHCs concurrently with the CDC/Partner Program, creating competing service delivery demands on time to offer the intervention. MOH initiatives took precedence over provision of the intervention, and sessions were sometimes delayed. Facilitators typically utilized the afternoon period, which is traditionally used for non-clinical duties, to offer the Program. CHCs often experienced shortages of HIV test kits, making testing and referral to the Program erratic; to achieve adequate recruitment, some clinics required more time to recruit participants; while others

reduced the recruitment goal per intervention cohort to a minimum of five couples. Due to the logistics of implementing the intervention, some clinics proposed revisions to the intervention protocol. Therefore, it was necessary to define the minimum criteria for fidelity to the intervention: eight couples, four sessions, gender concordant groups. Most clinics reported limited space to conduct group sessions, but facilitators and CHC staff used creative strategies to offer the sessions in tea rooms, waiting areas and larger offices. Program meetings with CHC staff were incorporated into existing CHC meetings in order to assess and respond to challenges to implementation as they arose. In some regions, less invested or involved Coordinators were changed out to enhance regional Program activity.

Trainer Issues—CHC facilitators were frequently away from their clinic site due to temporary relocation, leave, studies or illness. As the Program was presented to clinic facilitators as an adjunct to routine HIV testing service delivery with no additional compensation for provision of the intervention provided by the MOH, Provincial leaders were unable to identify funding streams for compensation independent of the Ministry's existing priorities. As an incentive, certificates of completion were provided to both facilitators and clients who completed all sessions. As the Program required the participation of both a male and female facilitator, in the event one was unavailable, the other trainer might unexpectedly be required to identify a replacement before a scheduled intervention could be conducted. Additional facilitators were added to the cadre following to provide support in such circumstances.

Though facilitators were often heavily burdened by the existing demands of health care delivery and generally were considered underpaid, most reported satisfaction with the Program and their work, described it as fulfilling and important, and the majority felt a sense of cohesion with their colleagues. Teamwork and a commitment to HIV prevention appeared to be a key element in the overall functioning of the CHCs.

Participant Issues—Due to the accepted practice of providing compensation to participants in research studies, some participants expected to be compensated for participating in the intervention. Refreshments (e.g., soft drinks) were provided to participants as the sessions were typically 2 h in duration. Though the lack of compensation this did not appear to impact overall implementation, funds for transportation to the clinic for the four session intervention sometimes presented an impediment to attendance, and the demands of employment also reduced client attendance. Nursing staff elected to provide medical slips to clients to enable them to attend sessions when they conflicted with working hours.

Model Issues—In order for the program to expand from one clinic to another, the *Train the Trainer Model* necessitated personnel resources that were not always available. Trainers were not able to provide training to additional clinics when the new clinics did not have personnel available to conduct the intervention; therefore sometimes trainers focused their efforts on training additional trainers at their own clinics. This sustained the program within that clinic, but did not further the expansion of the program to additional clinics, which created a shortfall.

Discussion

Implementation of behavioral HIV prevention interventions in resource limited settings presents both challenges and opportunities. Integrated as an adjunct to existing clinical HIV testing services, the CDC/Partner Program was designed to reduce risk behavior associated with transmission of HIV. Overall, the CDC/Partner Program, established in 2008 and implemented from 2009 to 2013, met with varying degrees of success among sites and regions. The majority of challenges to implementation and maintenance were addressed and resolved, with the exception of structural limitations, restricted resources for personnel and funding for both the Program and the CHC facilitators. The primary strength of the Program lay in its collaborative structure, which incorporated existing healthcare providers at the Provincial, District and Clinic level. Active Program leadership and commitment and support at the Provincial level were essential to ensure Program continuity.

The success of the Program rested in part on forward planning and support from District, Regional and Provincial Health Officials, who were willing to promote the implementation of the Program into health service delivery. The commitment expressed by Health Officers and CHC staff to reducing the notably elevated rates of HIV seroprevalence in their communities played a significant role in their enthusiastic support for the uptake of the intervention. The use of an intervention manual, the train the trainer model, and ongoing quality control enabled systematic scale-up in CHC venues throughout the four Provinces. Qualitative reporting from clinics and district coordinators enabled targeted provider support within specific clinics and regions in real time. The Program team, of Program staff, district coordinators, consulting facilitators and coaches and community experts, worked within a framework tailored to the needs of the local communities by raising awareness regarding the intervention and eliciting the support of Community Advisory Board members, some of whom participated in the intervention and became spokespersons for the Program.

The overall goal of the Train the Trainers strategy was to establish a sustainable program that would go beyond simply training to establish a cadre of expert consultants available to support an ongoing, expanding program capable of broad coverage. This strategy, with sufficient resources, was designed to provide the scope to reach over 300 Zambian CHCs, Province by Province. The CDC/Partner Program has reached four of ten Zambian provinces. As such, it remains a work in progress. The continued implementation of the intervention rests on ongoing funding to provide training and support to the remaining six provinces, and its sustainability within the original four provinces requires continued endorsement from the Province, in the form of approval for task shifting, the inclusion of the duties associated with the intervention within the overall role of the clinic staff. Periodic meetings were held with Provincial and/or District Health Officers to review the progress of the Program and address issues when additional support for implementation was required. PHOs explored a variety of strategies to obtain funding support from the MOH, including collection of outcome data illustrating Program efficacy such as condom uptake and couples testing, neither of which were routinely collected in clinics at the time of Program delivery. Though implementation of evidence-based interventions typically relies on provision of the intervention, future programmatic activities will include a variety of outcome measures.

What have we learned from implementation of the first CHCs? A more measured and cautious approach to implementation may be required to ensure successful outcomes. Simultaneous scale up of the intervention at too many sites may lead to personnel and financial resources becoming over-extended; subsequent implementation has been characterized by reevaluation of program objectives and more gradual implementation, focused on devoting more time to fewer sites. The model for implementation, in which trained staff train staff at additional clinics, may necessitate each clinic to establish a larger cadre of trained staff prior to addressing new clinics. Additionally, the size of the country and the available infrastructure for traveling to provide workshops and supervision may overextend the program staff when more than two provinces are actively training. Alternatives to this ambitious approach include enhanced infrastructure, such as establishing training centers within each province, with certified expert coaches and annual workshops, and has been noted in previous literature [17, 18]. Revisions to the system include staff role expansion to include provision of behavioral prevention interventions.

The implementation process provided both challenges and opportunities in these resource limited settings, including practical considerations surrounding clinic burden, quality assurance, staff compensation and ongoing training. Sustainability of the Program was found to depend, in large measure, on proactive identification of sources of funding for continued support within existing health care reimbursement structures, and continued support for task shifting to include additional duties. Consideration of the financial and clinical requirements of resource limited settings is essential to the achievement of successful program implementation. In-country initiatives such as child health month and male circumcision programs also require staff to regularly take on additional duties that compete with existing programs, and Program staff must be prepared to work within, rather than against, competing priorities.

Recommendations from the overall CDC/Partner Program team for future implementation of this behavioral intervention for HIV prevention have emphasized the continued sensitization of clients, facilitators, trainers, clinic staff and clinic leaders on the importance of the establishment of an HIV-knowledgeable community. The team agrees that successful implementation of the program lies in continued discussions with clinic leaders and trainers on the importance of the program for the health centers and the wider community, and the active participation of health care providers in the delivery of this program. It is hoped that taking responsibility for and ownership of the program by all stakeholders will enhance its sustainability at all levels of the health care system.

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Fig. 1.
Timeline of NOW/Partner studies

Fig. 2.
The translation and implementation process

Fig. 3.
The train the trainer model