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Qualitative evaluation of a Positive Prevention training for health care providers in Mozambique

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Abstract

The rapid scale-up of HIV care and treatment in Mozambique has provided an opportunity to reach people living with HIV (PLHIV) with prevention interventions in HIV care and treatment settings. A three-day Positive Prevention (PP) training intervention for health care providers that focused on pressing issues for PLHIV in Mozambique was adapted and delivered at sites in three provinces. In-depth interviews were conducted with 31 providers trained in the PP curriculum. Qualitative data were used to assess the appropriateness of the training materials and approach, which lessons providers learned and were able to implement and which PP messages were still difficult to deliver. Providers reported gaining numerous insights from the training, including how to conduct a risk assessment and client-centered counseling, negotiating disclosure, partner testing, condom use, PMTCT, treatment adherence and approaches for positive living. Training topics not commonly mentioned included discordance counseling, STIs, family planning, alcohol and drug use, and frank sexual risk discussions. While areas for improvement exist, the PP training was useful in transferring skills to providers and is a viable component of HIV care. This evaluation helps identify areas where future PP trainings and specific strategies and messages can be refined for the Mozambican context.

Keywords

Positive Prevention; Prevention with Positives; HIV prevention; Training intervention; Mozambique; Qualitative evaluation

1. Introduction

Each year, approximately 2.5 million people worldwide become newly infected with HIV, 69% of whom are in sub-Saharan Africa (UNAIDS, 2012). In Mozambique, one of the most

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affected countries in the world, approximately 130,000 people are newly infected annually (UNAIDS, 2012). The national HIV prevalence is estimated at 11.5% among adults aged 15-49 years. In some of the hardest hit provinces, prevalence is as high as 25.1% (Instituto Nacional de Saúde, Instituto Nacional de Estatística, & ICF Macro, 2010). This situation is expected to continue unless effective prevention interventions are rapidly brought to scale (UNAIDS, 2008). In many countries, including Mozambique, the main HIV prevention goal has been to reduce HIV acquisition through consistent condom use, partner reduction and increased HIV testing to increase sero-status awareness. The Government of Mozambique Ministry of Health (MOH) has done much to stem the epidemic including implementing a Prevention-of-Mother-to-Child Transmission (PMTCT) program and providing free antiretroviral therapy (ART). Still, continued high prevalence rates demonstrate the need for additional prevention strategies to effectively reduce HIV transmission.

Given that HIV is transmitted from someone who is positive to someone who is uninfected, a change in the risk behavior of a person living with HIV/AIDS (PLHIV) may have a greater impact on the spread of HIV than a similar change in the behavior of an uninfected person (King-Spooner, 1999). In order to build on this concept, prevention interventions designed specifically for people who are aware of their HIV-positive sero-status have been developed. Programmatic guidance from the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) (PEPFAR, August 2011) and the World Health Organization (WHO) (World Health Organization, 2008) now include such interventions – known as Positive Prevention (PP), Prevention with Positives (PwP), or as Positive Health, Dignity and Prevention (PHDP) – as cornerstones of HIV prevention efforts (Bunnell, Mermin, & De Cock, 2006; Global Network of People Living with HIV, April 2009; Kennedy, Medley, Sweat, & O'Reilly, 2010; PEPFAR, August 2011; World Health Organization, 2008). The focus of PP is on building skills to meet the needs of those who are HIV-infected, including skills to help with disclosing to partners and family members, preventing transmission to partners or unborn children, negotiating sexual relationships, and addressing the stigma of HIV infection. To this end, PP was endorsed by the Mozambican MOH as an HIV prevention strategy and is included as a priority in Mozambique's 2010–2014 National Strategic Plan for HIV/AIDS (PEN III) (CNCS, 2009; Government of Mozambique, 2008).

The rapid scale-up of HIV care and treatment in resource-limited settings has provided the opportunity to reach many PLHIV when they access healthcare services. As part of the standard of care for HIV, PP services should optimally be integrated into existing HIV care, treatment, and support services, whether in a health clinic or in the community. Studies have illustrated that communicating prevention messages within the HIV care system is most effective when done by a health care worker (Cornman, et al., 2008; Myers, et al., 2010). While several studies conducted in the U.S. have shown the efficacy of provider-delivered HIV prevention messages for changing high risk behavior among patients attending HIV clinical care, these interventions have not been widely studied in resource limited settings (Crepaz, et al., 2006; Author, et al., 2010; Fisher, et al., 2006; Gardner, et al., 2008; Healthy Living Project Team, 2007; Kennedy, et al., 2010; Myers, et al., 2010; Richardson, et al., 2004). In developing countries, PP interventions have been shown to have a positive impact on condom use and reduction in risky sexual acts (Bunnell, Ekwaru, et al., 2006; Cornman, et al., 2008; Mola, et al., 2006) and a reduction in multiple sexual partners (Peltzer, Tabane,

Matseke, & Simbayi, 2010). Based on these various findings, trainings introducing prevention techniques into HIV care have been adopted by several U.S.-based HIV clinics as well as in many developing country contexts. Based on this prior work, a PP intervention emphasizing a tailored approach to risk reduction (Catania, Kegeles, & Coates, 1990) was adapted for the Mozambican context using strategies found to be useful with HIV-infected individuals.

In this evaluation, we have used qualitative data to assess how appropriate the training materials and approach were for providers, which lessons they learned and were able to implement in their interactions with PLHIV, which PP messages were still difficult to deliver and the applicability of the training topics to the Mozambique context.

2. Methods

2.1. Overview of the Mozambique PP intervention

In 2006, the University of California, San Francisco (UCSF), in partnership with the Mozambique MOH and the U.S. Centers for Disease Control and Prevention (CDC) - Mozambique, adapted and piloted a PP intervention that targeted health care providers in Mozambique. The first intervention step was to involve the clinic as a whole in the PP process, mirroring techniques used by Richardson and colleagues, who trained all clinic staff on behavior change theories, communication skills and how to conduct brief counseling sessions as part of the Partnership for Health intervention (Richardson, et al., 2004). This model was employed because the few clinicians who are present in health care facilities in Mozambique are often seeing large numbers of patients. Thus, both clinical and non-clinical personnel are likely to see patients and are able to deliver prevention messages. Based on the HIV Intervention for Providers (HIP) approach (Author, et al., 2010), health care providers who offer services to PLHIV were trained to: 1) build their own skills to assess behavioral and contextual risk among their patients; and 2) provide a risk reduction-based prevention intervention focused on incremental change, tailored to the patient's transmission risk behavior and prevention needs. By addressing these needs, PP aimed to increase the ability of PLHIV to protect their own health and minimize the risk of transmitting HIV to others through behavior change.

The pilot program consisted of a three-day PP training that was delivered over a two-year period at several sites in three provinces (Maputo, Sofala, and Zambézia) where ART treatment was supported by PEPFAR. The theoretical basis of the training was the AIDS risk reduction model (Catania, et al., 1990). This behavioral change theory stipulates that risk behaviors can be changed incrementally with the goal of eliminating risk behaviors over time. Risk reduction was operationalized by discussing risk assessment, tailoring messages, focusing on specific behaviors and assessing what a patient can do to decrease risk or transmission. Teaching methodologies included experiential learning, didactic presentations, interactive skills-building activities, case-based discussions that highlighted opportunities for risk reduction, and role-plays of patient interactions. Key technical PP components included an overview of the PP Model, risk reduction counseling and prevention messages, discussing disclosure, family planning, PMTCT, and living positively, which is defined as taking action as it relates to one's health and well being (see Table 1 for details).

This study was conducted as part of that larger qualitative evaluation to assess the feasibility and acceptability of Mozambique's PP intervention, and utilized a descriptive, cross-sectional design to examine the success of the training in terms of provider knowledge and implementation ability.

2.2. Evaluation study design

Individual in-depth interviews were conducted with providers trained in the PP curriculum. Interviews were designed to provide a descriptive evaluation of the PP training program and to ascertain how appropriate the training materials and approach were for providers, including which lessons providers learned and were able to implement in interactions with PLHIV, which PP messages were difficult for them and the applicability of training topics.

2.3. Study population

For this study, providers were defined as clinicians (including medical technicians and nurses), counselors (including counseling and testing staff, adherence support staff, support group leaders), and other site staff (such as pharmacists, lab technicians, and project management staff) who received the PP training. Although their educational backgrounds and job functions differ, these cadres were chosen to receive PP training and to be evaluated because they represent the types of health care workers who have contact with the patient population. For example, counselors, social workers and peer educators generally provide counseling and refer for clinical services. In contrast, medical technicians and nurses provide clinical care. To be eligible, providers had to be at least 18 years old, fluent in Portuguese, have participated in a PP training, and be regularly providing care to HIV-infected patients.

2.4. Study settings

Interviews were conducted at five rural MOH clinics. These sites included: the Namaacha Health Center and Esperança-Beluluane Counseling and Testing Center in Maputo Province, Mafambisse Health Center in Sofala Province, and the Namacurra Health Center and Inhassunge Hospital in Zambézia Province. Each site was chosen because it employed health care providers who had received the PP training, and was located in a province with both a high HIV prevalence and PEPFAR-funded treatment services.

2.5. Sample size

At each site, interviews were conducted with a minimum of five providers for a total sample of 31. This sample consisted of 5 clinical care providers (2 medical technicians and 3 nurses) and 26 non-clinical care providers (19 counselors or social workers, 4 peer educators, 1 project director and 2 pharmacists or laboratory technicians). This sample size was chosen based on prior qualitative research activities conducted in Mozambique and the project budget. Although achieving saturation was not a criteria used to establish the sample size, saturation was observed during analysis through the consistency and redundancy of information during the interviews (Pope, Ziebland, & Mays, 2000).

2.6. In-depth interview methods

Providers were selected by the study staff using PP training attendance lists for each clinic. Every other (i.e., every second) provider on the list was selected for inclusion until the minimum of five provider participants was reached at sites in Maputo and Zambézia Provinces. In Sofala Province, where trained staff came from health care centers, NGOs, and the government health department, providers were selected based on training attendance lists but were not all present at one clinic. Providers who were interested in participating in the study gave written informed consent prior to being interviewed.

2.7. Data collection procedures

Data collection took place from January through June 2010 and involved one round of interviews at each study site. Interviews were conducted at different time intervals from when each site received the PP training. Two sites were evaluated two years after receiving the training (Namaacha Health Center and Esperança-Beluluane Counseling and Testing Center in Maputo Province); one site was evaluated six months post-training (Mafambisse Health Center in Sofala Province); and two sites (Namacurra Health Center and Inhassunge Hospital in Zambézia Province) were evaluated two months post-training. The providers who were trained two years prior to this evaluation received ongoing small-group follow-up and technical assistance sessions in that time.

All interviews were conducted by trained interviewers in private rooms at the sites, or in other private spaces on the site grounds. Interviewers were hired study staff members who were not affiliated with the MOH or the PP training program. All interviews with providers were conducted in Portuguese and were digitally recorded. On average, interviews took 35 minutes to complete. The semi-structured interview guides were adapted from similar tools used to assess clinical trainings. Question domains included basic demographics (e.g., age, gender, racial/ethnic background, education, and socioeconomic status); knowledge, attitudes, and beliefs about HIV/AIDS, PLHIV, and risk behaviors (e.g., sexual activities and substance use); possible barriers and best practices that may affect the delivery of the PP intervention; the level of comfort and skill at providing PP, and the types and quantity of HIV prevention messages that providers reported providing to their HIV-infected patients.

2.8. Data analysis

All digital audio recordings of individual in-depth interviews were transcribed verbatim into Portuguese. Transcripts were then translated into English. Back translation was used to verify accuracy of the translation on a selected sub-sample of interviews. No names were disclosed during interviews. A participant code number was used to identify each audiotape and transcript, in place of names. Coding and analysis were managed using ATLAS.ti qualitative analysis software (Version 6.2, Berlin, Scientific Software Development, 2011).

Content analysis was utilized to interpret the data and answer the questions of this study (Charmaz, 2004). To ensure consistency during analysis, a codebook was developed by the study investigators to create universal definitions for each code. The analytic team systematically worked through each transcript, assigning codes throughout the text. Codes included: healthcare staff experience in the training, what they felt they learned, how they

applied the training upon return to their worksite, their experience utilizing their new skills, and the challenges of integrating HIV prevention into care. Following this initial coding, additional coding based on topical areas was conducted. These topical areas included risk assessment and client centered counseling, disclosure and partner testing, condom use, PMTCT and family planning, treatment adherence, STIs, discordancy, drug and alcohol use, and living positively.

A quality assurance protocol was built into data management and analysis to monitor transcription accuracy and inter-coder reliability. Twenty-five percent of the transcripts were checked to verify accuracy. Fifteen percent of the transcripts were double-coded to ensure inter-coder reliability of 90% or greater.

2.9. Ethical approvals

The Committee on Human Research at UCSF and the Bioethics Committee for the Mozambican Ministry of Health granted approval for this study.

3. Results

Thirty-one providers across five sites were interviewed, representing a diverse group of medical and community care professionals. Provider demographic characteristics are shown in Table 2.

3.1. Key PP topic areas learned by providers

As part of the PP training curriculum, providers received instruction on key topic areas to enable them to address the needs of their HIV-positive clients. Across the six main topics discussed and analyzed here, there were no differences noted by cadre or length of time elapsed since the training.

Risk assessments and client centered counseling—The theoretical basis for the training was a risk reduction approach that used patient risk assessments and discussions around risk reduction to achieve incremental changes in behavior. Providers found this approach to be useful for assessing patient risk behaviors. In addition, by using this approach, providers learned to be non-judgmental when speaking to patients about their behaviors. Providers reported that they could now deliver client-centered counseling and discuss behaviors free from judgment. Providers also understood that it was not their place to make health decisions for patients, but rather to offer information, and enable patients to make informed decisions for themselves. The following quotes, one from a project-trained director who leads a peer education health group, illustrate these points:

“I had the opportunity to have the technique of expression which is something that practically is its own training, it is so essential, it is not deciding for the person but giving our opinion from both sides.... Giving the advantages and disadvantages, to provide the views so that only the person will have the opportunity to reflect and decide for themselves ... That is a technique and skill that was very important to me that I did not have.” ~ Male Project Director of community peer education health group, 21 years old, Sofala

“It is fundamental for me to know how to listen and, as they say, ... put yourself in someone else’s shoes, imagine if I were that person, be aware of the suffering or the feelings of another person in order to take action.” ~ Male Counselor, 32 years old, Maputo

Providers also spoke of using their new skills to engage patients in discussions about their risk behaviors:

“You try to find out if they are married or not. If they are married, how many partners are there? What are their sexual habits? Is it oral, ... vaginal? ... Do they normally use a condom or not? And if they use it, how? Why do they use it? So they tell me and let me in.... If he drinks he may also ... forget the condom but think he didn’t. Trying to push them from the wrong way onto the right track. ... I have to raise awareness. ... But you have to soften it so that gradually they think that they can stop or decrease that habit.” ~ Male Medical Technician, 47 years old, Maputo

Negotiating disclosure and partner testing—The PP training included discussions about approaches to disclosure and the need for partner testing. This message resonated with providers and they spoke of the inter-related issues of supported disclosure and partner testing:

“The disclosure of your status is a very complicated issue which needs support. Positive Prevention also helps in these terms ... [and] gives the vision of living positively. ... So the Positive Prevention has helped in terms of these aspects in the decision of revealing your status to someone else. I think that if a person has adequate information in relation to Positive Prevention, it is so easy to be open or disclose the results to a spouse or family. And if the family has information it is easier having that help.” ~ Male Project Director of community peer education health group, 21 years old, Sofala

“... For me it is to encourage the patient to continue, you know, if they weren't doing it to do it now, use a condom, tell your partner about your state of health, invite your partner to get tested, so that you both know your HIV status ...” ~ Male Nurse, 41 years old, Zambézia

Partner reduction and condom use—One approach to risk reduction discussed in the PP training was a reduction in the number of sexual partners. In the interviews, providers mentioned speaking with patients about decreasing the number of sexual partners and increasing condom use with non-regular partners. This was a shift for many providers who previously had only told patients to use condoms. The message about having fewer sexual partners was a new way of discussing HIV prevention and risk reduction for many providers who attended the PP training:

“if you're a man, have one wife, not wanting to live with five, six partners, ... have only one partner and...if you sleep around with others, you know, use preventative measures, because this can lead to disease there, you can infect your wife at home.” ~ Female Peer Educator, 23 years old, Sofala

“I prefer to talk about prevention in terms of not having sexual relations without a condom, ... and not having sex with many women, you know, at least with a single partner, now when you sleep with many women, who knows, you might not be using condoms, you may only be distributing the HIV virus, so if you do not want to spread it you need to prevent, if you want to sleep around at least use a condom...”
~ Male Counselor, 39 years old, Zambézia

PMTCT and treatment adherence—Providers found information on PMTCT to be educational and useful. For some, information about vertical transmission was novel, while others did not previously understand the relationship between treatment and prevention. Many of the providers interviewed were counselors or social workers whose previous PMTCT training had varied. Often, providers spoke of their frustration at seeing HIV-infected women return to the clinic pregnant when they had been instructed to use condoms to prevent the spread of HIV to their partners:

“...we counsel people, but then, pregnant people show up too. ... For example, discordant couples, ... they come, we counsel them, maybe this man is negative and the woman is positive but they will not use condoms, ... even those who are couples with the same result, many times pregnant women come ... So I don't know what kind of method we can use ... we inform [about]the risk of positive people having children... It does not mean that a positive person cannot have them, they should have children, but ...they have to see a doctor, they have to tell the doctor that they want to have kids, ask for tips ...”~ Female Counselor, 28 years old, Zambézia

After the training, however, providers understood that it was possible for HIV-infected women to have safe and healthy pregnancies with the help of appropriate treatment and medical care:

“... I learned that while condom use is a form of prevention, treatment was also part of prevention, because there are young HIV-positive people who want to have children, but when they are not being treated it is difficult for them to have children that are not HIV-positive, so I learned that the treatment reduces the viral load and they can have children who meet all PTV standards, they can have HIV negative children. So it is important to encourage treatment, prevention, condom use, a change of behavior and also fidelity to one's partner.” ~ Female Medical Technician, 42 years old, Maputo

Providers also received information about the need for strict adherence to ART and learned that with such adherence, PLHIV could have long and productive lives. One provider said:

“A positive person has to know that ... being positive is not the end of life. You can do a lot more in the future. You have to adhere to treatment... And you have to know how to take care of yourself, to prevent because a lot of people think that once you are positive you no longer have to protect against HIV... You have to show the advantages and disadvantages of treatment. ...The person who is positive has to know, there is no other alternative if you have HIV. The first is to adhere to treatment.” ~ Female Counselor, 33 years old, Maputo

Positive living—Providers were enthusiastic about sharing the message of positive living, which encompasses the promotion of health (e.g. taking medications as prescribed, avoiding consumption of alcohol and drugs, trying to have a balanced diet, being treated for STIs, reducing stress) and the prevention of disease (e.g. being tested and treated for diseases like TB and diabetes, preventing malaria, receiving proper immunizations). Providers spoke of the need for patients to accept their status, to understand that although they are HIV-infected, they are no different from other people, they still have much to offer and can live long, productive lives. According to one provider:

“... patients have to understand and ..., accept living with their status, they must agree to live that positive life, therefore encouraging a diet, how to look for people suffering from that disease as an experience exchange, that life does not end there, HIV/AIDS can be a disease like any other, a chronic disease that people can monitor following all of the medical indications.” ~ Female Nurse, 43 years old, Maputo

Non-discriminatory practices—In the interviews, many providers discussed new skills that were not specifically PP training messages, but that were positive outcomes of the training. Providers learned not to discriminate against their HIV-infected patients and to treat them with respect. Possibly due to their own shift in dealing with patients, providers also encouraged the spouses and families of HIV-infected individuals not to abandon or discriminate against them:

“Before I would discriminate to talk with them, truth be told, but now I learned through training that you should not discriminate anymore.” ~ Female lab technician, 31 years old, Sofala

“...when we identify a person living positively, who is HIV positive, we can't discriminate against that person... We should also sensitize the family, you know, not to snub someone when they say that they have HIV/AIDS. We advise them to talk to them...give moral support.” ~ Female Peer Educator, 23 years old, Sofala

3.2. Key PP topics that challenged providers

Analysis of these data highlighted several topic areas that posed challenges to providers. No differences were noted based on cadre or length of time from training to evaluation follow-up.

Discordant couples—While providers felt that it was often easier to test and counsel couples together about their HIV status, many providers had difficulty explaining discordant results. The training did not emphasize the skills that providers required to address the needs of HIV sero-discordant couples. Providers commented as follows:

“... cases of discordant couples ... let's say, because it's difficult ..., if there are two people, there is that conception of saying, yes, because this person is always with me, how could we have different results? So we have had many questions ...” ~ Female Counselor, 34 years old, Zambézia

“It is very difficult to seek counseling for discordant couples. It's been very difficult for a partner to accept the HIV positive status of one and the HIV negative status of the other. It is very difficult to reconcile that. It normally ends in divorce, but we are struggling to try to iron out this issue.” ~ Male Pharmacist, 27 years old, Maputo

Alcohol and drug use—Another message that was addressed in the PP training was the need for PLHIV to reduce alcohol and drug use. This message was often mentioned by providers as a continuing barrier to prevention. Here one provider discussed the effect that alcohol and drug use has on HIV transmission risk behaviors:

“The role of alcohol and drugs...if the patient is on drugs they never follow anything. They can't follow prevention because they are not 100% concentrated. On drugs ... they forget everything... I forgot that I have no condoms... I forget that I have to use a condom. That is the problem of the interaction of alcohol and drugs.” ~ Male Medical Technician, 47 years old, Maputo Province

STIs and Family Planning—Regarding PLHIV sexual and reproductive health, the PP training covered the need for STI screening and treatment, as well as the need for comprehensive family planning counseling and methods. In provider narratives, however, these themes were not often discussed. STIs were mentioned rarely and providers did not discuss routinely screening PLHIV and using STIs as an opportunity to address risk and prevention.

“Yes, I implemented, for example when it comes to a discordant couple ..., I implemented, like today, how they can live positively ..., so an infected person does not contract other viruses, and to not re-infect yourself.” ~ Female Counselor, 33 years old, Zambézia

Family planning was only discussed by providers who voiced frustration that HIV-infected women who are instructed to use condoms often return with pregnancies, many of them unwanted. However, providers only offered PLHIV patients condoms and, even when these were clearly not being used effectively, still did not offer other effective methods. In the following quote, a provider admits there are unwanted pregnancies but does not go so far as to suggest family planning methods and seems focused only on condoms:

“... I have seen many unwanted pregnancies. I do not think they want it, so if that happens, it means they do not use condoms often. For me, the conclusion that I give is, they do not use condoms.” ~ Male Nurse, 41 years old, Zambézia

Risk assessment and counseling related to specific sexual behaviors—Providers also spoke about difficulties in discussing certain sexual behaviors, particularly oral and anal sex. It was also difficult for providers to discuss sexual risk reduction behaviors with patients who were older than themselves. Although the training focused on helping providers to discuss risk activities, providers were not always comfortable conducting a sexual risk assessment:

“The process is not so easy because, ... there are a lot of intimacies in that area, for example when you want to explore the sex lives of patients ... sometimes it is not easy...there are patients who come here and explain to the nurse or provider and say "...so far I have neglected to use it [condoms] because my partner won't use them or get tested" and the partner does not accept the other partner's HIV status. So anyway, we have to go back to counseling, arrange more sessions, and it is necessary that they get their partners to come, to personally listen to our advice.” ~
Female Nurse, 43 years old, Maputo

Providers' own discomfort with certain sexual behaviors created a barrier to fully discussing sexual risk and possible lower risk activities.

4. Discussion

Increasingly, HIV prevention programs around the world are seeking ways to engage PLHIV in care, treatment, and support in order to reduce the risky behaviors that further transmit HIV (Bunnell, Mermin, et al., 2006; da Silveira & dos Santos, 2006; Healthy Living Project Team, 2007; Jones, Weiss, Bhat, & Bwalya, 2006; Kennedy, et al., 2010; Myers, et al., 2010; San Lio, et al., 2008). PP programs strive to address these needs by tackling the specific issues that PLHIV face in their daily lives. To address these issues, we adapted an evidence-based training and initiated the Mozambique PP training program, a course for health care providers utilizing a risk reduction framework.

The evaluation described here assessed the appropriateness of the PP training materials and approach, and helped elucidate which lessons providers learned and were able to implement. It also helped identify areas where future PP trainings can be strengthened and refined for the Mozambican context. PP literature from developing countries, and Africa specifically, is limited. However, PP interventions in these settings have been found to have a positive effect on condom use, reduction in multiple sexual partners, and increases in HIV status disclosure (Kennedy, et al., 2010; Peltzer, et al., 2010) as well as reductions in risky sexual behavior including alcohol and drug use in a sexual context (Bunnell, Ekwaru, et al., 2006; Peltzer, et al., 2010) and number of unprotected sexual acts (Cornman, et al., 2008).

Overall, providers described the importance and utility of the topics covered in the PP training. This is similar to findings from South Africa where a counselor-delivered HIV risk reduction intervention was found to be useful to patients and providers (Cornman, et al., 2011). Our findings support the overall training methodology, as providers gained knowledge about many of the lessons in the training, including: how to conduct a risk assessment and client-centered counseling, negotiating disclosure, partner testing, reducing the number of sexual partners, condom use, treatment adherence, PMTCT, and approaches for positive living. These topics have previously been found to be important in HIV transmission risk and important to PLHIV (Donnell, et al., 2010; Dorenbaum, et al., 2002; Gordon, Forsyth, Stall, & Cheever, 2005; Greeff, et al., 2008; Healthy Living Project Team, 2007; Johnson, Carey, Chaudoir, & Reid, 2006; Levy & Storeng, 2007; Mills, et al., 2006). Providers also reported learning skills that were not specific goals of the training, but were inherent in the teaching style, such as not to discriminate against patients and providing patients with information that would allow them to make their own choices. These findings

demonstrate that many of the PP training topics were appropriate and dealt with issues providers were facing in their everyday interactions with PLHIV.

The topic of risk assessment and client-centered counseling was particularly well received by providers. Risk assessment and client centered counseling is an evidence-based approach used in many PP interventions (Crepaz, et al., 2006; Fisher, et al., 2006; Gardner, et al., 2008; Richardson, et al., 2004). Providers found this useful in assessing patient risk behaviors and in helping them be more respectful of patients and their choices. It also helped providers communicate more effectively while not discriminating against or judging patients. Providers appreciated that although risk reduction takes time to implement with patients, it is an approach that fosters behavior change over time.

Providers felt that the topics of supported disclosure and partner testing were inter-related. Partner testing has been shown to be an effective and important prevention approach (Allen, et al., 2003; Burton, Darbes, & Operario, 2010; Rosenberg, et al., 2013), as most heterosexual HIV transmissions occur within married and cohabitating couples (S. Allen, et al., 2003; Celum, et al., 2010; Dunkle, et al., 2008). Data also suggests that voluntary counseling and testing of couples and couple-focused interventions can reduce HIV transmission among sero-discordant partners (S. Allen, et al., 2003; S. Allen, et al., 1992; Curran, et al., 2012). In many African contexts, however, gender dynamics and culturally prescribed gender roles influence disclosure and the ability to ask for partner testing (Barnabas Njizing, Edin, & Hurtig, 2010; Falnes, et al., 2011). Our data from Mozambique suggests a similar situation. Fears surrounding discrimination and rejection are a barrier that makes it difficult to deliver effective prevention messages, particularly when men are not engaged. These gender issues also affected condom use and reproductive choices.

While providers spoke to their patients about condoms, they noted that practicing consistent condom use was difficult for patients, particularly with a main/primary partner or spouse, an issue noted in other African contexts (Allen, et al., 2011; Pettifor, et al., 2011) and within other PP interventions (Cornman, et al., 2011). Rather than discussing condom use in general, it was easier for providers to discuss condom use in terms of risk reduction and using condoms with non-regular partners. This approach, linked with reducing the number of sexual partners, was seen as a more useful risk reduction option, as many patients felt it was not possible to ask for or use condoms with spouses.

Providers valued messages about PMTCT since condoms were not always used as an option for HIV prevention. While providers recognized the desire of PLHIV to have children, many expressed concern about patients having unsafe pregnancies, having HIV-infected babies, and about patients not consulting their doctors. Through the PP training, providers became more aware that PLHIV have the right to have children and engage in sexual intercourse despite HIV-infection.

Although the concept of positive living was new to many providers, it seemed relatively easy for them to relay to their patients, perhaps because it is an empowering, positive message that encourages PLHIV to make healthy choices for themselves that can also affect their partners and children. The choice to live positively can include a range of options that

may help PLHIV feel more in control of their health and wellbeing such as being open about their status when possible, trying to eat a balanced diet, taking medications as prescribed, and treating ailments such as TB or STIs. In this way, the topic of positive living is in line with the PHDP values of health promotion, empowerment, preventing new infections and focusing on the holistic health of PLHIV (GNP+ & UNAIDS, 2011).

PP training topics that were not mentioned as frequently included discordance counseling, STIs, family planning, alcohol and drug use, and frank discussions about sexual risk behaviors. Although these are important topics for PLHIV, it may be that these issues were not as pressing for PLHIV in Mozambique. Or that, despite the training, providers did not feel comfortable discussing these topics or did not feel that the training prepared them to speak about them comfortably. For example, although the PP training dealt with discordance counseling, providers reported difficulty explaining discordant results to couples. It may also be the case that, although the training discussed the subject, it did not emphasize the actual skills that providers needed to discuss the issue of sero-discordance with their patients.

Providers also did not often discuss STIs and family planning with patients. STIs increase the risk for acquisition and transmission of HIV and targeting HIV prevention to populations with STIs remains an important intervention (Cohen, 2004). Since STIs are a biological marker of risky sexual behaviors, it is important to assess PLHIV for symptoms of STIs, treat patients as indicated, and use that time to discuss safer sexual behaviors and prevention of HIV transmission (Holmes, et al., 2008). Similarly, family planning was also stressed in the PP training as many PLHIV have reduced fertility desires following knowledge of HIV infection and may desire to delay or end childbearing (Hoffman, et al., 2008; Taalo, et al., 2009) but, again, providers mainly emphasized condom use over other methods of family planning.

Reducing alcohol and drug use was another prevention topic that was covered in the training and one that is recommended in the PP literature (Medley, et al., 2013) because of its link to risky sexual behaviors (Hutton, et al., 2012; Morin, et al., 2007; Shuper, Joharchi, Irving, & Rehm, 2009). However, providers tended to speak about this as a barrier rather than as a topic they learned about and discussed with patients, particularly in terms of reduced condom use among patients while drinking alcohol, a barrier which was similarly noted by another PP program in South Africa (Cornman, et al., 2011). While providers noted that alcohol and drug use is a barrier to prevention, they may not have discussed this topic with their patients as treatment and support services for alcohol and drug abuse are limited in Mozambique and most providers are not trained to address substance use as part of health care.

Lastly, providers spoke about their difficulty discussing certain sexual behaviors, and few mentioned this as a topic they used in their work. HIV prevention efforts in the U.S. have often adopted an open and candid approach to discussing sexual behaviors and practices. However, this ability to openly discuss sexual practices did not exist among this sample of Mozambican providers who found it challenging to discuss practices that were culturally seen as outside the norm, particularly oral sex, which carries a lower risk for HIV transmission, and anal sex, which carries an increased risk of transmission. This same

challenge was also noted as a barrier to risk reduction counseling in South Africa (Cornman, et al., 2011).

This evaluation had several limitations. The data for this analysis came from provider interviews and it is possible that responses may have been affected by social desirability bias. However, to minimize this potential bias, interviewers were hired study staff and were not affiliated with the PP training program or the MOH. Also, these data were self-reported and we were not able to validate provider reports (for example by triangulating with data from their actual clients). Our study design did not include interviews before the training to assess provider familiarity and comfort with the PP topic areas and so it is not possible to distinguish what providers knew prior to the course and what they learned directly from the PP training, except when they explicitly stated that. Also, providers were not all interviewed within the same timeframe after receiving training. It is possible that the varying lengths of time from training to interview may have affected recall and the degree to which providers were using the PP intervention in their work. However, we did not observe any noticeable variation in the data based on time from training to evaluation follow-up.

The providers trained through the PP program and selected for this study were drawn from peri-urban and rural areas. It is possible that in more urban or cosmopolitan settings, providers may feel more comfortable discussing certain PP topics, such as sexual risk behavior. As a result, these findings may not be generalizable to all Mozambican health care settings. Also, the trained providers were comprised of different cadres and educational backgrounds. Counselors and social workers may have felt less confident communicating certain messages about topics such as STIs and family planning, which were discussed less frequently. In many rural health systems, including those in Mozambique, patients spend more time with, and have greater access to non-clinicians. It is possible that clinicians may be more comfortable giving these messages because they have received more clinical training on these topics and are qualified to offer family planning methods or treat STIs. Still, considering the fact that non-clinicians outnumber clinicians, it is not unreasonable to ask a non-clinician to provide a message about one of these topics, and then refer to the clinician for the service needed.

Throughout the two years of training, the PP training materials were being adapted to deal with gaps and address the needs of providers and PLHIV. Thus, not all providers will have been trained on precisely the same materials. While the materials always retained the same core package of components, more activities and sections were added as trainings were delivered to deal with trainee needs and MOH priorities. Thus, the slight differences in the training received may have influenced provider responses as some may have received more in-depth information on a particular topic than others.

This evaluation also did not look at the impact of the PP training on behavior change. To test the effectiveness of the PP training materials, future evaluations should focus on the link between trained providers and a reduction in the number of high-risk sexual behaviors or the uptake of PP services.

5. Lessons Learned

Our findings highlight areas where the PP curriculum achieved its goal of delivering PP messages and enabling providers to integrate those messages into care for PLHIV. The findings also point to areas that need continued refinement in order to meet the needs of the Mozambican environment. That providers reported being able to use the PP intervention in their day-to-day interactions with patients and found the intervention to be relevant is an encouraging step.

In the future it may be useful to place more emphasis on a comprehensive view of reproductive decision making that equally includes condom use, family planning and PMTCT as valid prevention techniques. While it may not be possible for PLHIV to always use condoms or disclose their status to partners, it is important to focus on risk reducing options that can help to protect PLHIV, their partners and their children. In addition to encouraging patients to use condoms, providers should be trained to discuss and assess reproductive intentions with their patients and direct them to PMTCT or family planning services so patients can either be assisted to have safe pregnancies or delay or end childbearing if they so choose. Patients can also be encouraged to see reproductive decision making as a preventive opportunity that is in their control.

Given that patients will not be able to institute all suggested prevention options, or even the most effective options at all times, it is necessary to focus on prevention techniques that are highly effective and may be under the control of the individual patient. Some approaches that have been effective for PLHIV and their partners include pre-exposure prophylaxis (Baeten, et al., 2012; Celum & Baeten, 2012) and voluntary medical male circumcision for HIV-negative male partners in sero-discordant relationships (Siegfried, Muller, Deeks, & Volmink, 2009). Treatment as prevention has also recently been found to be very efficacious, while the effects of treatment adherence and PMTCT are well known (Cohen, et al., 2011; Donnell, et al., 2010; Dorenbaum, et al., 2002). Studies in heterosexual populations have also shown that adherence to ART is very effective in preventing transmission of HIV to sero-negative partners (Cohen, et al., 2011; Donnell, et al., 2010; Grant, et al., 2010). Patients should be encouraged to start ART and stay adherent on treatment. A key area for improvement in future iterations of PP trainings will be to place more focus on treatment as prevention, treatment adherence, PMTCT and living positively including reductions in problem alcohol and drug use.

Discordance counseling, STIs, family planning, alcohol and drug use, and frank discussions about sexual risk behaviors were the topics least discussed by providers. It is important to acknowledge the difficulty that health care providers had with these various subject areas. In future PP trainings, these messages should be strengthened and we will devise training techniques and tools to help diminish providers' hesitancy to address this subject matter with their patients in an effort to normalize discussions about sex, sexuality, and forms of sexual expression. There is limited evidence from Mozambique about effective approaches to dealing with alcohol and drug abuse. This is an area that needs greater attention.

Lastly, in resource limited settings such as Mozambique, it is important to recognize that prevention trainings must account for the fact that many of the trainers are likely to be non-clinical staff, which may impact the effective delivery of certain messages. Thus, those messages typically suited to a clinician, for example discussions on STIs and family planning, need to be adapted so non-clinical staff can also address these topics.

Lessons learned from this evaluation will aid in ongoing program planning and building a stronger training program so that providers can receive additional skills and follow-up in areas of known difficulty. As care and treatment programs seek to identify and retain larger numbers of persons with HIV over the lifetime of their illness, incorporating an approach such as PP that addresses the concerns of PLHIV will assume greater importance.

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References

- Allen C, Mbonye M, Seeley J, Birungi J, Wolff B, Coutinho A, Jaffar S. ABC for people with HIV: responses to sexual behaviour recommendations among people receiving antiretroviral therapy in Jinja, Uganda. *Cult Health Sex*. 2011; 13:529–543. [PubMed: 21390948]
- Allen S, Meinen-Derr J, Kautzman M, Zulu I, Trask S, Fideli U, Musonda R, Kasolo F, Gao F, Haworth A. Sexual behavior of HIV discordant couples after HIV counseling and testing. *AIDS*. 2003; 17:733–740. [PubMed: 12646797]
- Allen S, Tice J, Van de Perre P, Serufilira A, Hudes E, Nsengumuremyi F, Bogaerts J, Lindan C, Hulley S. Effect of serotesting with counselling on condom use and seroconversion among HIV discordant couples in Africa. *BMJ*. 1992; 304:1605–1609. [PubMed: 1628088]
- Baeten JM, Donnell D, Ndase P, Mugo NR, Campbell JD, Wangisi J, Tappero JW, Bukusi EA, Cohen CR, Katabira E, Ronald A, Tumwesigye E, Were E, Fife KH, Kiarie J, Farquhar C, John-Stewart G, Kania A, Odoyo J, Mucunguzi A, Nakku-Joloba E, Twesigye R, Ngure K, Apaka C, Tamoo H, Gabona F, Mujugira A, Panteleeff D, Thomas KK, Kidoguchi L, Krows M, Revall J, Morrison S, Haugen H, Emmanuel-Ogier M, Ondrejcek L, Coombs RW, Frenkel L, Hendrix C, Bumpus NN, Bangsberg D, Haberer JE, Stevens WS, Lingappa JR, Celum C. Antiretroviral prophylaxis for HIV prevention in heterosexual men and women. *The New England journal of medicine*. 2012; 367:399–410. [PubMed: 22784037]
- Barnabas Njosing N, Edin KE, Hurtig AK. 'When I get better I will do the test': Facilitators and barriers to HIV testing in Northwest Region of Cameroon with implications for TB and HIV/AIDS control programmes. *SAHARA J*. 2010; 7:24–32. [PubMed: 21409308]
- Bunnell R, Ekwaru JP, Solberg P, Wamai N, Bikaako-Kajura W, Were W, Coutinho A, Liechty C, Madraa E, Rutherford G, Mermin J. Changes in sexual behavior and risk of HIV transmission after antiretroviral therapy and prevention interventions in rural Uganda. *AIDS*. 2006; 20:85–92. [PubMed: 16327323]
- Bunnell R, Mermin J, De Cock KM. HIV prevention for a threatened continent: implementing positive prevention in Africa. *JAMA*. 2006; 296:855–858. [PubMed: 16905790]
- Burton J, Darbes LA, Operario D. Couples-focused behavioral interventions for prevention of HIV: systematic review of the state of evidence. *AIDS and behavior*. 2010; 14:1–10. [PubMed: 18843530]
- Catania JA, Kegeles SM, Coates TJ. Towards an understanding of risk behavior: an AIDS risk reduction model (ARRM). *Health Educ Q*. 1990; 17:53–72. [PubMed: 2318652]

- Celum C, Baeten JM. Tenofovir-based pre-exposure prophylaxis for HIV prevention: evolving evidence. *Curr Opin Infect Dis.* 2012; 25:51–57. [PubMed: 22156901]
- Celum C, Wald A, Lingappa JR, Magaret AS, Wang RS, Mugo N, Mujugira A, Baeten JM, Mullins JI, Hughes JP, Bukusi EA, Cohen CR, Katabira E, Ronald A, Kiarie J, Farquhar C, Stewart GJ, Makhema J, Essex M, Were E, Fife KH, de Bruyn G, Gray GE, McIntyre JA, Manongi R, Kapiga S, Coetzee D, Allen S, Inambao M, Kayitenkore K, Karita E, Kanweka W, Delany S, Rees H, Vwalika B, Stevens W, Campbell MS, Thomas KK, Coombs RW, Morrow R, Whittington WL, McElrath MJ, Barnes L, Ridzon R, Corey L. Acyclovir and transmission of HIV-1 from persons infected with HIV-1 and HSV-2. *N Engl J Med.* 2010; 362:427–439. [PubMed: 20089951]
- Charmaz K. Premises, principles, and practices in qualitative research: revisiting the foundations. *Qual Health Res.* 2004; 14:976–993. [PubMed: 15296667]
- CNCS. National Strategic Plan for HIV and AIDS 2010–2014. Mozambique: Publishing, Maputo; 2009.
- Cohen MS. HIV and sexually transmitted diseases: lethal synergy. *Top HIV Med.* 2004; 12:104–107. [PubMed: 15516707]
- Cohen MS, Chen YQ, McCauley M, Gamble T, Hosseinipour MC, Kumarasamy N, Hakim JG, Kumwenda J, Grinsztejn B, Pilotto JH, Godbole SV, Mehendale S, Chariyalertsak S, Santos BR, Mayer KH, Hoffman IF, Eshleman SH, Piwowar-Manning E, Wang L, Makhema J, Mills LA, de Bruyn G, Sanne I, Eron J, Gallant J, Havlir D, Swindells S, Ribaudo H, Elharrar V, Burns D, Taha TE, Nielsen-Saines K, Celentano D, Essex M, Fleming TR. Prevention of HIV-1 infection with early antiretroviral therapy. *N Engl J Med.* 2011; 365:493–505. [PubMed: 21767103]
- Cornman DH, Christie S, Shepherd LM, MacDonald S, Amico KR, Smith LR, Shuper PA, Adelaja A, Mahlase G, Frohlich JA, Pillay S, Lalloo UG, Fisher WA, Fisher JD. Counsellor-delivered HIV risk reduction intervention addresses safer sex barriers of people living with HIV in KwaZulu-Natal, South Africa. *Psychol Health.* 2011; 26:1623–1641. [PubMed: 21745150]
- Cornman DH, Kiene SM, Christie S, Fisher WA, Shuper PA, Pillay S, Friedland GH, Thomas CM, Lodge L, Fisher JD. Clinic-based intervention reduces unprotected sexual behavior among HIV-infected patients in KwaZulu-Natal, South Africa: results of a pilot study. *J Acquir Immune Defic Syndr.* 2008; 48:553–560. [PubMed: 18645518]
- Crepaz N, Lyles CM, Wolitski RJ, Passin WF, Rama SM, Herbst JH, Purcell DW, Malow RM, Stall R. Do prevention interventions reduce HIV risk behaviours among people living with HIV? A meta-analytic review of controlled trials. *AIDS.* 2006; 20:143–157. [PubMed: 16511407]
- Curran K, Baeten JM, Coates TJ, Kurth A, Mugo NR, Celum C. HIV-1 prevention for HIV-1 serodiscordant couples. *Curr HIV/AIDS Rep.* 2012; 9:160–170. [PubMed: 22415473]
- da Silveira MF, dos Santos IS. Impact of an educational intervention to promote condom use among the male partners of HIV positive women. *J Eval Clin Pract.* 2006; 12:102–111. [PubMed: 16422785]
- Dawson Rose C, Courtenay-Quirk C, Knight K, Shade SB, Vittinghoff E, Gomez C, Lum PJ, Bacon O, Colfax G. HIV intervention for providers study: a randomized controlled trial of a clinician-delivered HIV risk-reduction intervention for HIV-positive people. *J Acquir Immune Defic Syndr.* 2010; 55:572–581. [PubMed: 20827218]
- Donnell D, Baeten JM, Kiarie J, Thomas KK, Stevens W, Cohen CR, McIntyre J, Lingappa JR, Celum C. Heterosexual HIV-1 transmission after initiation of antiretroviral therapy: a prospective cohort analysis. *Lancet.* 2010; 375:2092–2098. [PubMed: 20537376]
- Dorenbaum A, Cunningham CK, Gelber RD, Culnane M, Mofenson L, Britto P, Rekacewicz C, Newell ML, Delfraissy JF, Cunningham-Schrader B, Mirochnick M, Sullivan JL. Two-dose intrapartum/newborn nevirapine and standard antiretroviral therapy to reduce perinatal HIV transmission: a randomized trial. *JAMA.* 2002; 288:189–198. [PubMed: 12095383]
- Dunkle KL, Stephenson R, Karita E, Chomba E, Kayitenkore K, Vwalika C, Greenberg L, Allen S. New heterosexually transmitted HIV infections in married or cohabiting couples in urban Zambia and Rwanda: an analysis of survey and clinical data. *Lancet.* 2008; 371:2183–2191. [PubMed: 18586173]
- Falnes EF, Moland KM, Tylleskar T, de Paoli MM, Msuya SE, Engebretsen IM. "It is her responsibility": partner involvement in prevention of mother to child transmission of HIV programmes, northern Tanzania. *J Int AIDS Soc.* 2011; 14:21. [PubMed: 21521511]

- Fisher JD, Fisher WA, Cornman DH, Amico RK, Bryan A, Friedland GH. Clinician-delivered intervention during routine clinical care reduces unprotected sexual behavior among HIV-infected patients. *J Acquir Immune Defic Syndr*. 2006; 41:44–52. [PubMed: 16340472]
- Gardner LI, Marks G, O'Daniels CM, Wilson TE, Golin C, Wright J, Quinlivan EB, Bradley-Springer L, Thompson M, Raffanti S, Thrun M. Implementation and evaluation of a clinic-based behavioral intervention: positive steps for patients with HIV. *AIDS Patient Care STDS*. 2008; 22:627–635. [PubMed: 18627280]
- Global Network of People Living with HIV. Information note: Positive health, dignity and prevention. Publishing; 2009 Apr.
- GNP+ & UNAIDS. Positive Health, Dignity and Prevention: A Policy Framework. Amsterdam: Publishing; 2011.
- Gordon CM, Forsyth AD, Stall R, Cheever LW. Prevention interventions with persons living with HIV/AIDS: state of the science and future directions. *AIDS Educ Prev*. 2005; 17:6–20. [PubMed: 15843114]
- Government of Mozambique. Estratégia de Aceleração de Prevenção de Infecção pelo HIV. Boletim da República, Series. 2008; 1(Supplement 7)
- Grant RM, Lama JR, Anderson PL, McMahan V, Liu AY, Vargas L, Goicochea P, Casapia M, Guanira-Carranza JV, Ramirez-Cardich ME, Montoya-Herrera O, Fernandez T, Veloso VG, Buchbinder SP, Chariyalertsak S, Schechter M, Bekker LG, Mayer KH, Kallas EG, Amico KR, Mulligan K, Bushman LR, Hance RJ, Ganoza C, Defechereux P, Postle B, Wang F, McConnell JJ, Zheng JH, Lee J, Rooney JF, Jaffe HS, Martinez AI, Burns DN, Glidden DV. Preexposure chemoprophylaxis for HIV prevention in men who have sex with men. *N Engl J Med*. 2010; 363:2587–2599. [PubMed: 21091279]
- Greff M, Phetlu R, Makoe LN, Dlamini PS, Holzemer WL, Naidoo JR, Kohi TW, Uys LR, Chirwa ML. Disclosure of HIV status: experiences and perceptions of persons living with HIV/AIDS and nurses involved in their care in Africa. *Qual Health Res*. 2008; 18:311–324. [PubMed: 18235155]
- Healthy Living Project Team. Effects of a behavioral intervention to reduce risk of transmission among people living with HIV: the healthy living project randomized controlled study. *J Acquir Immune Defic Syndr*. 2007; 44:213–221. [PubMed: 17146375]
- Hoffman IF, Martinson FE, Powers KA, Chilongozi DA, Msiska ED, Kachipapa EI, Mphande CD, Hosseinipour MC, Chanza HC, Stephenson R, Tsui AO. The year-long effect of HIV-positive test results on pregnancy intentions, contraceptive use, pregnancy incidence among Malawian women. *J Acquir Immune Defic Syndr*. 2008; 47:477–483. [PubMed: 18209677]
- Holmes, KK.; Sparling, PF.; Mardh, P.; Lemon, SM.; Stamm, WE.; Piot, P.; Wasserheit, JN. Sexually Transmitted Diseases. 4th ed. New York: McGraw Hill; 2008.
- Hutton HE, McCaul ME, Chander G, Jenckes MW, Nollen C, Sharp VL, Erbeding EJ. Alcohol Use, Anal Sex, and Other Risky Sexual Behaviors Among HIV-Infected Women and Men. *AIDS Behav*. 2012; 17(5):1694–1704. [PubMed: 22566077]
- Instituto Nacional de Saúde, Instituto Nacional de Estatística, & ICF Macro. Inquérito Nacional de Prevalência, Riscos Comportamentais e Informação sobre o HIV e SIDA em Moçambique 2009. Calverton: INS, INE e ICF Macro; 2010.
- Johnson BT, Carey MP, Chaudoir SR, Reid AE. Sexual risk reduction for persons living with HIV: research synthesis of randomized controlled trials, 1993 to 2004. *J Acquir Immune Defic Syndr*. 2006; 41:642–650. [PubMed: 16652039]
- Jones DL, Weiss SM, Bhat GJ, Bwalya V. Influencing sexual practices among HIV-positive Zambian women. *AIDS Care*. 2006; 18:629–634. [PubMed: 16831792]
- Kennedy CE, Medley AM, Sweat MD, O'Reilly KR. Behavioural interventions for HIV positive prevention in developing countries: a systematic review and meta-analysis. *Bull World Health Organ*. 2010; 88:615–623. [PubMed: 20680127]
- King-Spooner S. HIV prevention and the positive population. *Int J STD AIDS*. 1999; 10:141–150. [PubMed: 10340194]
- Levy JM, Storeng KT. Living positively: Narrative strategies of women living with HIV in Cape Town, South Africa. *Anthropology & Medicine*. 2007; 14:55–68.

- Medley A, Baggaley R, Bachanas P, Cohen M, Shaffer N, Lo YR. Maximizing the impact of HIV prevention efforts: Interventions for couples. *AIDS care*. 2013; 25(12):1569–1580. [PubMed: 23656251]
- Mills EJ, Nachega JB, Buchan I, Orbinski J, Attaran A, Singh S, Rachlis B, Wu P, Cooper C, Thabane L, Wilson K, Guyatt GH, Bangsberg DR. Adherence to antiretroviral therapy in sub-Saharan Africa and North America: a meta-analysis. *JAMA*. 2006; 296:679–690. [PubMed: 16896111]
- Mola OD, Mercer MA, Asghar RJ, Gimbel-Sherr KH, Gimbel-Sherr S, Micek MA, Gloyd SS. Condom use after voluntary counselling and testing in Central Mozambique. *Trop Med Int Health*. 2006; 11:176–181. [PubMed: 16451341]
- Morin SF, Myers JJ, Shade SB, Koester K, Maiorana A, Rose CD. Predicting HIV transmission risk among HIV-infected patients seen in clinical settings. *AIDS Behav*. 2007; 11:S6–S16. [PubMed: 17577655]
- Myers JJ, Shade SB, Rose CD, Koester K, Maiorana A, Malitz FE, Bie J, Kang-Dufour MS, Morin SF. Interventions delivered in clinical settings are effective in reducing risk of HIV transmission among people living with HIV: results from the Health Resources and Services Administration (HRSA)'s Special Projects of National Significance initiative. *AIDS Behav*. 2010; 14:483–492. [PubMed: 20229132]
- Peltzer K, Tabane C, Maseke G, Simbayi L. Lay counsellor-based risk reduction intervention with HIV positive diagnosed patients at public HIV counselling and testing sites in Mpumalanga, South Africa. *Eval Program Plann*. 2010; 33:379–385. [PubMed: 20416948]
- PEPFAR. Guidance for the Prevention of Sexually Transmitted HIV Infections. Publishing; 2011 Aug.
- Pettifor A, MacPhail C, Corneli A, Sibeko J, Kamanga G, Rosenberg N, Miller WC, Hoffman I, Rees H, Cohen MS. Continued high risk sexual behavior following diagnosis with acute HIV infection in South Africa and Malawi: implications for prevention. *AIDS and behavior*. 2011; 15:1243–1250. [PubMed: 20978833]
- Pope C, Ziebland S, Mays N. Qualitative research in health care. Analysing qualitative data. *BMJ*. 2000; 320:114–116. [PubMed: 10625273]
- Richardson JL, Milam J, McCutchan A, Stoyanoff S, Bolan R, Weiss J, Kemper C, Larsen RA, Hollander H, Weismuller P, Chou CP, Marks G. Effect of brief safer-sex counseling by medical providers to HIV-1 seropositive patients: a multi-clinic assessment. *AIDS*. 2004; 18:1179–1186. [PubMed: 15166533]
- Rosenberg NE, Pettifor AE, De Bruyn G, Westreich D, Delany-Moretlwe S, Behets F, Maman S, Coetzee D, Kamupira M, Miller WC. HIV testing and counseling leads to immediate consistent condom use among South African stable HIV-discordant couples. *Journal of acquired immune deficiency syndromes*. 2013; 62:226–233. [PubMed: 23117500]
- San Lio MM, Carbini R, Germano P, Guidotti G, Mancinelli S, Magid NA, Narciso P, Palombi L, Renzi E, Zimba I, Marazzi MC. Evaluating adherence to highly active antiretroviral therapy with use of pill counts and viral load measurement in the drug resources enhancement against AIDS and malnutrition program in Mozambique. *Clin Infect Dis*. 2008; 46:1609–1616. [PubMed: 18419498]
- Shuper PA, Joharchi N, Irving H, Rehm J. Alcohol as a correlate of unprotected sexual behavior among people living with HIV/AIDS: review and meta-analysis. *AIDS Behav*. 2009; 13:1021–1036. [PubMed: 19618261]
- Siegfried N, Muller M, Deeks JJ, Volmink J. Male circumcision for prevention of heterosexual acquisition of HIV in men. *Cochrane Database Syst Rev*. 2009:CD003362. [PubMed: 19370585]
- Taulo F, Berry M, Tsui A, Makanani B, Kafulafula G, Li Q, Nkhoma C, Kumwenda JJ, Kumwenda N, Taha TE. Fertility intentions of HIV-1 infected and uninfected women in Malawi: a longitudinal study. *AIDS Behav*. 2009; 13(Suppl 1):20–27. [PubMed: 19308718]
- UNAIDS. 2008 Report on the Global AIDS Epidemic. Geneva: Publishing; 2008.
- UNAIDS. Global Report : UNAIDS Report on the Global AIDS Epidemic 2010. Geneva: Publishing; 2012.
- World Health Organization. Essential Prevention and Care Interventions for Adults and Adolescents Living with HIV in Resource-Limited Settings Publishing. 2008.

Table 1

Components of the Mozambique PP Training

Module Number	Module Title	Main topics covered / Goals for each section	Time per module
1	Introductions and Overview	<ol style="list-style-type: none"> 1 Introduce trainers and participants to each other. 2 Begin to create a comfortable and interactive learning environment. 3 Provide an overview of the Positive Prevention program, priority prevention areas, and discuss HIV/AIDS in Mozambique. 	2 hours and 5 minutes
2	Intervention Overview and Positive Prevention Model	<ol style="list-style-type: none"> 1 Introduce the Positive Prevention Model to participants. 2 Introduce model for conducting HIV prevention counseling with HIV-positive patients in hospital and community-based settings. 3 Involve participants in skills-building exercises related to opening prevention conversation and risk assessment. 	1 hour and 5 minutes
3	Risk Reduction and Prevention Messages	<ol style="list-style-type: none"> 1 Give providers the skills necessary to provide clear and relevant prevention messages to PLHIV by: <ul style="list-style-type: none"> - Identifying ways to design prevention messages for PLHIV. - Examining ways to make risk reduction suggestions. - Describing skills for interactive risk reduction planning. - Identifying additional ways of prevention support for PLHIV. - Discuss alcohol and drug use as it relates to patient risk 	2 hours and 15 minutes
4	Discussing Disclosure	<ol style="list-style-type: none"> 1 Explore the important role disclosure plays in HIV prevention with PLHIV. <ul style="list-style-type: none"> - Discuss steps in disclosure - Discuss HIV discordance counseling 2 Understand the impact of stigma on disclosure, steps in supporting disclosure, and unique issues for providers counseling discordant couples. 	2 hours and 10 minutes
5	Reducing Risk and Family Planning	<ol style="list-style-type: none"> 1 Make the connection between risks for HIV/STIs and issues of family planning. 2 Present strategies for family planning and a chance for providers to practice discussing methods of family planning and negotiating sexual risk reduction or strategies to avoid an unintended pregnancy. 	2 hours and 2 minutes
6	Prevention of Mother to Child Transmission	<ol style="list-style-type: none"> 1 Discuss strategies for women living with HIV/AIDS to reduce transmission of HIV from mother to child. 2 Present the biomedical aspects of PMTCT. 3 Identify ways to equip healthcare workers with tools to support HIV-positive women who are pregnant or breastfeeding. 	1 hour and 50 minutes
7	Living Positively	<ol style="list-style-type: none"> 1 Understand the role of living positively in maintaining the good health of HIV infected persons. 	50 minutes

Module Number	Module Title	Main topics covered / Goals for each section	Time per module
		2 Encourage patients to make healthy choices, such as being open about sero-status, eating well, taking medications as prescribed and treating ailments such as TB and STIs	
8	Wrap Up and Conclusion	1 Address any issues that may have come up during the training and have not been addressed. Once those issues are covered, participants have an opportunity to evaluate the trainers and the course.	45 minutes

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Table 2

Provider Demographics (n=31)

Characteristic	Total number of Providers N=31 (%)
Gender	
Female	17 (55)
Male	14 (45)
Language	
Portuguese	31(100)
Age	
Under 30	8 (26)
30–39	16 (52)
40+	7 (22)
Interview Provinces	
Maputo	9 (29)
Sofala	10 (32)
Zambézia	12 (39)
Occupation	
Clinical Care Providers	
Medical Technician	2 (6)
Nurse	3 (10)
Non-Clinical Care Providers	
Counselor / Social worker	19 (61)
Peer Educator	4 (13)
Project Director of community peer education health group	1 (3)
Pharmacist/Lab Technician	2 (6)