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Health facility challenges to the provision of Option B+ in western Kenya: a qualitative study

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Abstract

Current WHO guidelines recommend lifelong antiretroviral therapy (ART) for all HIV-positive individuals, including pregnant and breastfeeding women (Option B+) in settings with generalized HIV epidemics. While Option B+ is scaled-up in Kenya, insufficient adherence and retention to care could undermine the expected positive impact of Option B+. To explore challenges to the provision of Option B+ at the health facility level, we conducted forty individual gender-matched in-depth interviews with HIV-positive pregnant/postpartum women and their male partners, and four focus groups with thirty health care providers at four health facilities in western Kenya between September-November 2014. Transcripts were coded with the Dedoose software using a coding framework based on the literature, topics from interview guides, and emerging themes from transcripts. Excerpts from broad codes were then fine-coded using an inductive approach. Three major themes emerged: 1) Option B+ specific challenges (same-day initiation into treatment, health care providers unconvinced of the benefits of Option B+, insufficient training); 2) facility resource constraints (staff and drug shortages, long queues, space limitations); and 3) lack of client-friendly services (scolding of patients, inconvenient operating hours, lack of integration of services, administrative requirements). This study highlights important challenges at the health facility level related to Option B+ rollout in western Kenya. Addressing these specific challenges may increase linkage, retention and adherence to life-long ART treatment for pregnant HIV-positive women in Kenya, contribute towards elimination of mother-to-child HIV transmission, and improve maternal and child outcomes.

Keywords: Adherence and retention, health facilities, Kenya, treatment, Option B+, prevention of mother-to-child transmission of HIV

Key Messages

- The results of our study suggest high acceptability of initiation of lifelong antiretroviral therapy for all HIV-infected pregnant and postpartum women (Option B+) in rural western Kenya among providers and patients.
- Option B+ specific challenges identified in the study included same-day initiation into treatment, health care providers unconvinced of the benefits of Option B+, and insufficient training in this specific strategy.
- Facility resource constraints that affected the successful implementation of Option B+ included staff and drug shortages, long queues, and space limitations.
- Lack of client-friendly services also emerged as an important barrier to the success of Option B+, and included scolding of patients, inconvenient operating hours, lack of integration of services, and administrative barriers.

Introduction

Among the estimated 1.5 million HIV-positive pregnant women globally, over 90% live in Sub-Saharan Africa (SSA). With no intervention, the mother-to-child transmission (MTCT) rate of HIV ranges from 15% to 45% (UNAIDS 2013). The current World Health Organization guidance on prevention of MTCT (PMTCT) recommends life-long antiretroviral therapy (Option B+) for all pregnant and breastfeeding women in settings with generalized HIV epidemics (WHO 2012). Option B+ represents a promising approach that is expected to substantially contribute towards the goals set by the Joint United Nations Programme on HIV/AIDS Global Plan for the Elimination of New HIV Infections in Children (the Global Plan) (UNAIDS 2011).

Early results from the PROMISE study indicate that triple antiretroviral therapy (ART) therapy in pregnant women with high CD4 counts to be more effective in reducing MTCT during pregnancy than prophylaxis alone (Fowler *et al.* 2015). In addition to this outcome, Option B+ might also facilitate a reduction in new HIV infections in sero-discordant couples and contribute to general improvement of mother's well-being (Thyssen *et al.* 2013; Minniear *et al.* 2014). Immediate treatment versus deferred treatment until lower CD4 counts decreases likelihood of AIDS, serious non-AIDS illness, and mortality (Johansson *et al.* 2010; Lundgren *et al.* 2015). Option B+ reduces logistical barriers by eliminating the need for CD4 testing (WHO 2013) and may be more cost-effective (Ciaranello *et al.* 2013; Fasawe *et al.* 2013; Gopalappa *et al.* 2014).

With rapid scale-up of ART services and lifelong ART treatment under the Option B+ regimen in SSA, retention in care and ART adherence will be critical. A meta-analysis of 51 studies conducted in SSA showed that only 73.5% of pregnant women and 53% of postpartum women report adequate ART adherence prior to implementation of Option B+ (Nachega *et al.* 2013). Acceptability of Option B+ in Malawi among pregnant and breastfeeding women has been high; however, high rates of "non-starters" (women who default after their first visit) were reported and 20-30% of women were lost to follow-up in the first 3-6 months after ART initiation (Centers for Disease Control and Prevention 2013).

Kenya has been identified as one of the priority countries in the Global Plan for elimination of new HIV infections in children (UNAIDS 2011, 2013) with an HIV prevalence among adults of 5.6% (KAIS 2014) and an estimated 1.6 million people living with HIV (National AIDS Control Council of Kenya 2014). Over 92% pregnant women in Kenya undergo routine HIV testing during antenatal care (ANC), yet, the MTCT rate remains high at approximately 14% of infants born to HIV-infected mothers (Kenya DHS 2014; National AIDS Control Council of Kenya 2014). Nearly 80 000 HIV-infected pregnant women per year are in need of ART (National AIDS Control Council of Kenya 2014). Current HIV guidelines of the Kenyan Ministry of Health support ART for all pregnant women where implementation is feasible (Ministry of Medical Services, Kenya 2011). While ART retention in the general population approaches 92%, only about 70% are retained in care after five years (National AIDS Control Council of Kenya 2014).

The full benefit of Option B+ can only be realized if women are tested for HIV, initiated into treatment, retained in care, and adhere to treatment. However, barriers to successful implementation may occur at the individual, interpersonal, community, and the health care facility level (Gourlay *et al.* 2013). Understanding these barriers is critical to the success of Option B+. In this study, we explored health facility level challenges to Option B+ provision from the perspectives of health care providers and clients at low-resource health facilities in western Kenya.

Methods

Qualitative methods were utilized to achieve the study objectives. A total of 40 individual gender-matched one-on-one in-depth interviews with HIV-positive pregnant or postpartum women ($n = 20$) and male partners of such women ($n = 20$), as well as four focus groups with a total of thirty health care providers, were conducted between September and November 2014 at four health facilities in Kisumu, Migori, and Homa Bay Counties (formerly Nyanza Province), Kenya. The four health facilities were selected from 20 facilities that are participating in the Mother Infant Visit Adherence and Treatment Engagement (MOTIVATE!) trial of interventions to support adherence and retention in the context of Option B+ rollout (Clinicaltrials.gov # 14-0331).

Setting

The former Nyanza Province in western Kenya accounts for nearly one third of all HIV infections in the country (Kenya DHS 2014; Williams 2014) with county HIV prevalence rates ranging from 13.4% in Migori to 18.7% in Kisumu, and 27.1% in Homa Bay (National AIDS Control Council of Kenya 2014). In these counties, high pregnancy rates (5.3%-9.0%), fertility rates (3.6-5.3), and underutilization of health care services (Kenya DHS 2014) interact with high HIV prevalence resulting in increased infections, MTCT, and delayed initiation into treatment for both women and infants (Kassebaum *et al.* 2014). Over 15 000 Kenyan women received maternal prophylaxis in 2013 with estimated 62–88% coverage (MOH Kenya 2014). About half of women (58.7%) in

Nyanza Province have four or more antenatal visits, 65% deliver with a skilled birth attendant, and 60% do not receive postnatal care. Only 35% of eligible infants are tested for HIV at six weeks (Kenya DHS 2014).

Data collection methods

Qualitative in-depth interview and focus group discussion guides were developed based on a review of the literature and prior studies on pregnancy and HIV in this setting (Turan *et al.* 2012; Walcott *et al.* 2013). Both guides included topics related to the acceptability of Option B+, barriers and facilitators to adherence and retention in HIV care, and the acceptability of proposed interventions for the trial (community mentor mothers and text messaging). Experienced interviewers/moderators (one male, one female), fluent in English and the local languages, underwent additional training in qualitative research methods and the study topics prior to the initiation of the study.

Eligibility

Participants eligible for the study were: (1) HIV-infected pregnant/postpartum women (2) male partners of HIV-infected pregnant/postpartum women (3) health workers currently working/supervising at one of the study sites (4) aged 18 years or older.

Individual in-depth-interviews

A total of twenty in-depth interviews with pregnant/postpartum HIV-positive women, were conducted in the four selected study communities, five women per each community. Participants were identified from health care facilities providing Option B+ services during a routine ANC or maternal and child health (MCH) visit. Eligibility and interest in participating was determined during a short private session. Clear explanations were given to the participants that the study was separate from their regular medical care and that they had the option of refusing to participate in any part of the research. Pregnant/postpartum women who had previously disclosed their HIV status to their male partner were also asked if they would be willing to have their male partner contacted by a researcher regarding potential participation in an interview. Male partners were contacted through the information provided by the woman and invited to participate in an interview. Half of males recruited were HIV-positive partners (concordant relationship) and half were HIV-negative partners (discordant relationship).

Individual interviews were conducted in private settings in English, Dhuluo or Kiswahili language, depending on the preferences of the participant by gender-matched interviewers who identified themselves as members of an external research team. Participant characteristics were collected, including demographics, job characteristics, pregnancy and HIV-related information.

Focus groups

Participants in focus groups were purposively selected for maximum variation in occupational characteristics, to ensure all types of health workers providing services to pregnant women were included. Potential participants were contacted in person by the research coordinator and asked to participate in a focus group located at their health facility. A total of thirty health care providers, 7–8 from each of the selected facilities participated in the four focus groups and included nurses, community health workers, health educators, mentor mothers, HIV counselors, laboratory technicians, facility incharges, program technical advisors, and administrative staff. Participant characteristics were collected, including demographics and job characteristics.

Data management and analysis

Interviews and focus groups were digitally recorded, translated to English if applicable, and transcribed verbatim by professional transcriptionists, excluding any identifying information. All files were password-protected and stored in a secure location. Subsequently transcripts were coded by a team of three researchers using the Dedoose qualitative software program. Coding and analysis followed a thematic analysis approach (Attride-Stirling 2001; Braun and Clarke 2006). The coding framework was based on the literature, topics from interview guides, and emerging themes from transcripts. Transcripts were initially broad-coded by two individuals trained in qualitative coding. Consistency of coding between two individuals was established by initially coding the same transcripts and through frequent discussion between coders. Excerpts from broad codes were then fine-coded using an inductive approach. Major themes were refined and subthemes identified.

Results

Participant characteristics

Seventy participants, including twenty HIV-positive pregnant/postpartum women (mean age 24.7 years ±4.8), 20 male partners (mean age 33.5 years ±8.8), and 30 health care providers (mean age 32.2 years ±7.2) participated in the individual interviews or focus groups. The majority of participants were married (84%), currently living with their spouse (93%), and had at least two living children (66%). Seventy percent of women and male partners participating in individual interviews had not attained more than primary education. All health care providers in the study completed at least secondary education and 67% had worked in their current health/community services profession for at least 3 years. Forty-five percent of the interviewed female clients were housewives while the majority of male partners were either skilled workers (45%) or worked in agriculture (45%). By study design, half of the individual interview participants were in HIV concordant and half were in HIV discordant relationships. Socio-demographic characteristics of participants are presented in Table 1.

Qualitative themes

Overall, our study showed high acceptability of Option B+ among all the different participant groups. The major advantages included elimination of CD4 assessment as a requirement for treatment initiation, easy administration due to the same regimen used during pregnancy, labour and delivery, and perceived effectiveness of PMTCT. High acceptability of Option B+ was also expressed in individual interviews with HIV-positive women and their male partners. The main motivation for women was expressed as protection of their child during pregnancy up to 18 months of age. However, health care providers warned that postpartum women may disengage from care after the child tests HIV-negative at 18 months. Importantly, perceived effectiveness of PMTCT seems to be increasing in the communities, as people are seeing more infants born without HIV and increasingly believe that adhering to treatment will result in a birth of HIV-negative infant.

Specific challenges to the success of Option B+ at the health facility level described by the participants fell under three major themes,

Table 1. Socio-demographic and HIV-related characteristics

Characteristics	Females $n = 20$	Males $n = 20$	Health workers $n = 30$
Age: Mean (SD)	24.7 (4.8)	33.5 (8.8)	32.2 (7.2)
Participant education: N (%)			
Did not complete primary	11 (55.0)	6 (30.0)	0 (0)
Complete primary	5 (25.0)	6 (30.0)	0 (0)
Did not complete secondary	1 (5.0)	3 (15.0)	0 (0)
Complete secondary	3 (15.0)	5 (25.0)	10 (33.3)
Any college	0 (0)	0 (0)	20 (66.7)
Marital status: N (%)			
Monogamous marriage	16 (80.0)	18 (90.0)	20 (66.7)
Polygamous marriage	3 (15.0)	2 (10.0)	
Single	1 (5.0)	0 (0)	8 (26.7)
Widowed	0 (0)	0 (0)	2 (6.7)
Current occupation: N (%)			
Agriculture	3 (15.0)	9 (45.0)	0 (0)
Business/sales	5 (25.0)	2 (10.0)	0 (0)
Health/community services	0 (0)	0 (0)	30 (100.0)
Skilled worker	2 (10.0)	9 (45.0)	0 (0)
Housewife	9 (45.0)	0 (0)	0 (0)
None	1 (5.0)	0 (0)	0 (0)
Length of time in current occupation: Mean (SD)	Not asked	Not asked	4.7 (5.1)
Number of Living Children: Mean (SD)	2.2 (1.1)	3.2 (1.9)	1.8 (1.8)
Pregnant participants/partner: N (%)	12 (60.0)	12 (60.0)	Not asked
Postpartum participants/partner: N (%)	8 (40.0)	8 (40.0)	Not asked
Concordant HIV Partner Status: N (%)	10 (50.0)	10 (50.0)	Not asked

Table 2. Identified health facility challenges and recommended strategies

Themes	Challenges	Recommended Strategies
Option B+ specific challenges	Same-day initiation into treatment Health care providers unconvinced of the benefits of Option B+ Insufficient training of health care providers on Option B+	Individual level: Continuous adherence counselling, tracing of clients lost to follow-up, text messages Couples/groups: Couple testing, assisted disclosure, treatment buddies, support groups Community: Reducing stigma, increased awareness, community mentor mothers, health educators Changes in service provision: Appropriate staff training on the Option B+ guidelines
Resource constraints	Staff shortages Drug shortages Long queues Space limitations	Changes in service provision: Private space for individual counselling, improved efficiency to decrease long waiting times, consistent drug supply, appropriate staff numbers
Lack of client-friendly services	Scolding of patients for lack of retention and adherence Inconvenient operation hours for patients Lack of integration of services Paperwork and other administrative requirements	Changes in service provision: Integration of ART with other services, more convenient clinic hours of operation, promotion of positive attitudes of health providers towards patients and Option B+, elimination of administrative requirements

including 1) Option B+ specific challenges, 2) resource constraints, and 3) lack of client-friendly services, as presented in Table 2.

Theme 1. Option B+ specific challenges

Same-day initiation into treatment. Possibly the most challenging aspect of Option B+ from the perspective of service providers is the practice of same-day initiation into treatment immediately after the woman tests HIV-positive. Providers expressed concern that pregnant women have little time to accept and disclose their HIV status when they are immediately initiated on treatment; which could potentially lead to stigma, conflict, domestic violence, or problems with retention to care. The providers expressed that women in discordant relationships in particular may have problems with the initial acceptance of their HIV-positive status. Some women initially refuse to enroll into treatment and return after they have accepted the fact that they are HIV-positive.

> *"Put yourself in her shoes, you have come to the facility with a headache then you are sent for pregnancy test which turns positive then you are sent for ANC to start your clinic and at the same time you are required to start your drugs. You realize you have pain today, you realize you are pregnant today and that you are also HIV-positive and again you are required to start the HIV drugs immediately. It is too much and the patient hasn't even internalized her condition as HIV-positive." (Nurse, female, 26 years)*

However, many health care providers also related that through pre-initiation and ongoing counselling, education, and positive experiences with treatment, patients tend to gradually accept their status and develop more positive attitudes towards HIV treatment.

> *"When a client comes here you test them. Then counsel them. You see there is that part of crying and how did I get it then you tell the client that we want to initiate you because we want to protect you and we also want to protect your baby." (Clinical officer, female, 28 years)*

Many health care providers expressed that women should be given some time to accept their HIV-positive status, disclose their status to their partners, and/or their family members prior to treatment initiation.

> *"Initially when a woman tested HIV-positive, they were given time to go think about it, consult. They give you Septrin [cotrimaxazole] for even three days then when you come back you can get enrolled, but now we are enrolling pap [immediately]." (Community and Clinical Health Assistant, female, 33 years)*

Potential care recipients might be lost to follow-up due to the same-day initiation practice under the Option B+.

> *"It was very difficult before for the mothers because you are tested at the same time, you haven't disclosed your status to anybody and you are being told to go home with drugs, you don't even know how to go about it. Some were picking the drugs, they go home with them and you don't see them again". (Mentor mother, female, 26 years)*

In contrast to providers' perspectives, same-day initiation as a challenge to Option B+ acceptance was rarely mentioned in the individual interviews with women and their male partners. This may be due to the fact that individuals were not probed on the immediate initiation aspect, but rather on the life-long therapy aspect of Option B+ since the importance of same-day initiation as a barrier emerged only during data analysis. In those few interviews where participants commented on same-day initiation, most agreed that for the sake of child and the health of a woman immediate initiation into treatment is justified.

> *"P: There should not be a duration. She [pregnant woman] should start [ART] immediately she tests positive. [. . .] So as to save the child in the womb". (postpartum female, concordant couple, 24 years)*

However, a few male participants did voice their concern about immediate initiation into treatment during individual interviews and expressed that women should be given some time to accept their HIV-positive status, disclose their status to their partners and involve them in decision-making regarding treatment.

> *"In case she is tested for HIV and advised to take the drugs immediately even before she experiences any signs of sickness, my advice would be that she gets counseled to understand why she needs to be initiated not that you just ambush her that you need to be initiated on HAART now for life. It is not an easy thing taking the drugs and she needs to be supported and counseled well until she accepts then she can be initiated on the drugs." (male partner, discordant couple, 38)*

Health care providers unconvinced of the benefits of Option B+. Although most health care providers seem to favour Option B+, a few health care providers expressed doubts about the validity and effectiveness of Option B+, especially for women with high CD4 counts.

> *"The first disadvantage is that you find that a woman has a CD4 of 1000 and she will be given ARVs with other women whose CD4 is below 500. I am introduced on ART when my time is not yet, I start using it when my time is not yet reached." (Pharmaceutical technologist, female, 31 years)*
>
> *"You know it will depend on the CD4, if the CD4 is low and the mother is going to get into the pregnancy and is down then we will put mother into Option B+, it is okay and in a situation where CD4 is high, I feel that option A should be used. So to me we should use two depending on our assessment of the client." (Nurse, male, 33 years)*

Insufficient training of health care providers on Option B+. Some health care providers expressed the need for more training related to Option B+ and HIV care for pregnant and breastfeeding women due to frequent changes in guidelines and the need to provide consistent information to patients.

> *"Concerning the Option B+, the health care workers need to be trained so that they all speak the same thing when it comes to Option B+, because presently you find people are every conversant with it and others not so conversant." (Nurse, male, 27 years)*

Need for additional training of staff is apparent from the experience of this study participant (client).

> *"I: You were never issued with drugs when you first came to the clinic?*
>
> *P: No, they told me that my pregnancy was still not big enough.*
>
> *I: How old was your pregnancy by then?*
>
> *P: A month old. I just obliged and went home after they told me so. When I came back for the HIV clinic appointment, I was told to carry my card. The nurse I found on that day asked for the card but I told her I was to come with it in October. She overruled the other nurse's direction and told me that once a HIV-positive woman has conceived then she should immediately start taking the medication to protect the unborn child." (pregnant female, concordant couple, 25 years)*

Theme 2. Resource constraints

Staff shortages. Several providers expressed concerns about staff shortages related to the additional work required to provide Option B+ including adherence/retention interventions proposed to support Option B+. Staff shortages might undermine the quality of services provided and ultimately have negative impact on patients' adherence to medications and retention in care.

> *"There are times when the number of staff working at the facility is reduced, so the person attending to this client is having burn out so that information is not given correctly. Like giving medication without following how the client will use the medication." (HIV Testing Counsellor, female, 32 years)*
>
> *"Some people will keep you waiting on the bench. "Just wait for me. I am coming." This person is the only one who will handle those who are having antenatal clinic visits as well as those who are here for HIV treatment. He also needs to educate you. These guys have mixed everything up. One person wants to handle two different departments. Work will therefore be difficult." (male partner, discordant couple, 36 years)*

Drug shortages. Drug shortages could result in inconsistent ART treatment and pose a barrier to adherence. One of the four clinics included in the study reported drug shortages. A few patients

mentioned instances where the drugs were not available the day of their clinic visit and were asked to return the following day.

> *"With Option B+ there is a new guideline with new regimen for drugs, then the challenge we have is that when we make phone calls to the higher authority in our case the XX sub-county hospital then they tell you that the drug is not available in fact they tell you not to initiate many people on it because the drug is still not available…" (Nurse, male, 27 years)*

Long queues. Understaffing and high demand for HIV-related services increase waiting time and result in significant barriers when accessing HIV care. Long queues were discussed by many interviewed women and male partners, especially in the context of required monthly visits for the rest of her life under the Option B+.

> *"Getting the drugs from the clinic is a major difficulty. They try because people are many and sometimes I am number eighty something. And I have to be seen. So I am forced to be there until when my wife goes back home. When I come with her it is usually easier because I see them jump the queue for us … When we come with her they jump the queue for us but when she is alone she has to queue." (male partner, discordant couple, 49 years)*
>
> *"They [patients] are just kept waiting endlessly and that discourages. […] you are just there and no one is attending to you or telling you anything." (pregnant female, concordant couple, 26 years)*

Space limitations. Limited space available in clinics precludes privacy, resulting in increased risk of inadvertent disclosure and stigmatization of HIV patients. Some participants discussed the need to integrate HIV services in the same space with other services to reduce stigma but provide individual services in a private space.

> *"One is privacy. You need to get a private place. Don't shout. "We want those who came for HIV treatment." You will get into the clinic without anyone knowing the reason of your visit. They don't know whether you are sick or whether you have come to visit a patient. They will serve you and then you leave. But sometimes you get people are being isolated. They say that the sick will be educated separately. Someone will see the group and ask, "Who are they?" "Those are people suffering from HIV. He is a member of the group that is being educated there." These are some of the things that might prevent people from coming for such lessons which are very important. If you can educate someone alone-like the way we are seated here today-no one will know what I am doing in this room." (male partner, discordant couple, 36 years)*

Theme 3. Lack of client-friendly services

Scolding of patients for lack of retention and adherence. The health workers reported that most women adhere to the scheduled appointments or provide a valid reason for missing an appointment. However, it was mentioned across interviews and focus groups that in some facilities if someone doesn't adhere to their clinic appointments, she is subject to scolding and punishment from health care providers. In many cases, this may be driven by established belief among health workers that this approach is in the best interest of the patient and will result in improved adherence and retention to care.

> *"Here we don't punish them; we tell them to attend the retention class where we talk to them and tell them that it is very, very important for them to keep their scheduled clinic visits and you have to tell them that very firmly!" (Nurse, male, 58 years)*

Many patients expressed their feelings and emotions related to negative attitudes of health care providers, especially when they miss their appointments. They frequently mentioned questioning about reasons for missed appointments, quarreling, and applying various forms of punishment, including retention classes, counseling, more frequently scheduled visits, transfer to the end of queue, declining of care or not receiving medications.

> *"P: So you may be told either to go back or they make you be the last person on the queue even if you came very early in the morning just because you had missed your scheduled visit. […]They feel that you are undisciplined so they punish you.*
>
> *I: You go back home without your drugs? P: Yes. I: Then what do you do? They ask you come back another day?*
>
> *P: Yes. That day they are busy with the people that came on their appointed dates.*
>
> *I: Okay. What do you do when you drugs get finished?*
>
> *P: That is why some people beg them and they end up giving them. Sometimes I would see someone give a bribe so that they are given drugs because he missed his visit."(postpartum female, discordant couple, 20 years)*

However, in some instances, patients believed that scolding and punishments are justified.

> *"They told me I had come late, past working hours and that I should go back and come the next day and mark you it was so early but because I had wronged them by missing my appointment I understood their anger." (male partner, concordant couple, 28 years)*

Importantly, some participants mentioned how scolding and other negative provider attitudes at the clinic may result in poor retention or defaulting.

> *I: How did you feel when you were quarreled?*
>
> *P: I felt bad because that is being disrespectful to patients. I felt they didn't know how to counsel patients.*
>
> *I: How did that make you feel about taking the ARVs, when they subjected you to humiliation yet it's human nature to forget?*
>
> *P: At first I thought of not going for the medicine then I later told myself that if I fail to go it would be my health and life that will be at risk." (pregnant female, discordant couple, 22 years)*
>
> *"For example if I miss to go to the clinic and I am called to find out why I didn't come, I shouldn't be talked to or shouted at in a humiliating way, telling you things like it is your health and it's up to you if you don't want to come. Some just talk to you carelessly and that may offend and discourage someone." (pregnant female, discordant couple, 21 years)*

Inconvenient operation hours for patients. Some health care providers and participants mentioned the need for more convenient operation hours of the clinic. For some women, it's a challenge to ask their employer for permission to attend clinic every month for the fear of losing their jobs. Inadvertent disclosure and stigma was another reason cited for non-traditional clinic operation hours, e.g. late evening or weekend hours. Several patients mentioned that sometimes they have difficulty reaching the clinic in time due to distance, inclement weather, or access ability of the clinic.

> *"Some fear asking for permission from their employers each and every time they are asked to come to the clinic for example if they have bad employers […] and maybe they haven't disclosed because they fear losing their jobs. Some even come over lunch*

break and they want to be attended to very fast so that they go back to work so if you can't meet their demands then they simply default." (health care provider)

"The challenging part about this is when it comes to transportation, then after arriving you find so many people waiting to be attended to also. Mostly the clinic opens at 7:00 in the morning and normally by 6:00 AM people will be here already so if one makes a mistake and delays a bit then the hospital will be swarming with people, if 2:00 PM finds you outside the hospital then from 3:00 they start locking the place." (male partner, concordant couple, 28 years)

Lack of integration of services (separate appointments for antenatal and HIV clinics). Although the majority of women indicated that their antenatal clinic and HIV clinic visits are integrated, some said that they still have separate visits creating additional barriers for women when accessing care.

"It did give me hard time of walking all the time. When it is divided you may end up being committed [busy] and they are put together it is very easy." (postpartum female, discordant couple, 20 years)

Difficulties related to separate visits included demands related to increased frequency of visits to clinics once a woman becomes pregnant, distance, time, and costs.

"[…] challenge is distance, one might go to this hospital this week the next time she is required to go to another hospital, and mark you they are all far from home, the next month they are expected to visit another hospital, after two weeks again another clinic, she heads there and you know walking is a challenge when one is expectant." (male partner, concordant couple, 28 years)

Paperwork and other administrative requirements. Examples of administrative issues resulting in challenges when accessing HIV care included requirement of a transfer letter when changing clinics and complex documentation when enrolling into Option B+.

"First, they told me they won't give me any drug without the transfer letter. I asked them if I should miss my drugs because of the transfer letter. They wondered how they could assist me because you must have the letter with you. I wondered how I could walk everywhere with the whole file. I told them to give me the drug because I can go pick the transfer letter when I have money. They said that they won't give me the drug without the letter. I begged them and they later gave me the drugs. They told me to come with the letter next time when I come to pick my drugs." (postpartum female, concordant couple, 21 years)

"I: After testing positive for HIV were you initiated on HIV medications immediately?

P: I wasn't initiated immediately because there were many issues, there were some forms to be filled and I also had to consult. […] It was already evening and I also needed to go back home early, my husband was also rushing to go to work and they still wanted to talk to us. There was no time to take us through the entire enrollment process at that time." (pregnant female, discordant couple, 18 years)

Discussion

The results of our study suggest high acceptability of Option B+ in rural western Kenya among both patients and health care providers. Despite this finding, we found that health facilities are facing many challenges while implementing Option B+, some of which have likely persisted a long time in this setting as well as others that may be specific to this guideline. Overcoming these challenges will be crucial for success of Option B+ in Kenya. Our study highlights the perspectives of HIV-positive pregnant and postpartum women, male partners, and health care providers on the health facility challenges to the provision of Option B+ in this setting.

While health care providers highlighted same-day initiation as possibly the most substantial challenge related to Option B+, individual clients did not identify this as an issue, with the exception of a few individuals. Same-day initiation has been identified as a major challenge by countries implementing Option B+ (Kieffer *et al.* 2014; Chan *et al.* 2015; Parker *et al.* 2015) who report concerns similar to our study, including fear that women do not have time to internalize their status, disclose to partners, experience peer and staff pressure to initiate ART, and are at increased risk for attrition. In a few reports, women had few problems with same day initiation, especially if they were already aware of their status and had disclosed it. However, it is uncertain if non-initiation and high rates of loss to follow-up seen in some settings may be related to same-day initiation. These studies reveal the mixed views on the risks and benefits of same day initiation. Consensus seems to be that under the same day initiation procedures, women are more likely to initiate treatment and initiate treatment in earlier stages. This may outweigh risks of attrition, but same-day initiation needs to be supported by proper counselling and follow-up (Kieffer *et al.* 2014; WHO 2014; Chan *et al.* 2015; Parker *et al.* 2015).

Another significant barrier at health-facility level is a shortage of staff, which is compounded by increasing workforce demands with the provision of Option B+. In response to staff shortages during scale up under Option B+, several countries in SSA have responded with extensive hiring and training of health care staff, as well as task shifting among health care cadres (Kieffer *et al.* 2014). Similar to our study, previous reports suggest that training is insufficient and staff often don't feel comfortable implementing Option B+. Several studies suggest that insufficient training led to confusion, delays, or incorrect implementation of WHO guidelines on Option B+ (Finocchario-Kessler *et al.* 2015; WHO 2014). Importantly, the results of our study revealed that some health care providers are still unconvinced of the benefits of Option B+ over other regimens, especially for women with higher CD4 counts. Lack of space at the clinics for counselling, testing, ART treatment, and drug storage is well-known but more prominent challenge for HIV health care facilities under Option B+ in Kenya and elsewhere (WHO 2014). The combination of high demands on the health care system under Option B+, lack of space, and staff shortage leads to long queues, often creating frustration of both patients and health care providers. Additionally, inconvenient operation hours for patients create barriers when accessing care, especially among employed patients. Patients often fear inadvertent disclosure of HIV status at the clinic (Govindasamy *et al.* 2014). However, integration with antenatal care and/or infant testing substantially increases likelihood of ART initiation and retention to care (Iroezi *et al.* 2013; Govindasamy *et al.* 2014; WHO 2014). More convenient operation hours for patients might not be possible due to prevalent staff shortage and confidentiality in integrated clinics might be compromised by a lack of space.

In concordance with previous research, participants in our study revealed a common problem of scolding and various forms of punishment of patients for lack of retention and ART adherence that represent major barriers to access of care (Duff *et al.* 2010; Iroezi *et al.* 2013; Ware *et al.* 2013; Gourlay *et al.* 2014; Hatcher *et al.*

2015). It has been suggested that they are result of frustration of health care providers with high demands of HIV services and based on the beliefs that this often harsh treatment of patients helps to increase adherence and retention to care. Despite this common belief, growing evidence links poor treatment of patients in HIV care and negative patient-health care provider interaction to lowered uptake and retention to care (Nuwagaba-Biribonwoha *et al.* 2007; Duff *et al.* 2010; Gourlay *et al.* 2013). Importantly, long-standing customer service issues and weak patient-provider relationships may result in lower effectiveness of interventions targeting adherence and retention in care in the context of Option B+ (Gourlay *et al.* 2013).

Multi-level strategies to overcome these challenges have been suggested by our participants to ensure successful implementation of Option B+. These strategies are summarized in Table 2 and are supported by the findings in recent reviews (Gourlay *et al.* 2013; Govindasamy *et al.* 2014). At the individual client level suggested strategies included continuous adherence counselling, tracing of clients lost to follow-up, text messages, and incentive programs. Couple/group strategies discussed included couple testing, assisted disclosure, treatment buddies, and support groups. Community strategies included reduction of stigma, community mentor mothers, health education, and increased awareness. Potential changes in service provision discussed included integration of ART with other services, privacy for individual counselling, more convenient clinic hours, efficiency to decrease long waiting times, appropriate staff training and staff numbers, elimination of administrative barriers, consistent drug supply, and promotion of positive patient-provider relationships.

Strengths and limitations

Our study is one of the first to explore barriers at the heath care facility level in the context of Option B+ in Kenya. This study includes perspectives of health care providers, pregnant and postpartum women, and their male partners using qualitative in-depth interviews and focus groups. Despite these strengths, this study has some limitations. Perceived acceptability of same-day initiation among patients based on individual interviews in our study must be considered with caution. Female client participants in this study had agreed to HIV testing and disclosure of HIV status to their partner. Thus, their perception might be inherently different from women who were not tested, women who have not disclosed their status, women who have not utilized antenatal/postnatal care, or are categorized as non-starters. Other possible biases include recall bias and social desirability bias. This study represents three counties in western Kenya and results might not be generalizable to other communities.

Conclusion

This study highlights important challenges at the health facility level related to Option B+ rollout in western Kenya. Addressing the identified challenges using some of the suggested strategies may increase linkage, retention and adherence to life-long treatment for pregnant women in Kenya, contribute towards elimination of mother-to-child HIV transmission, and improve maternal and child outcomes.

Ethical approvals

Ethical approval was obtained from the Kenya Medical Research Institute (KEMRI) Scientific and Ethical Review Unit (SERU), the University of Colorado, Denver Institutional Review Board, and the University of Alabama at Birmingham Institutional Review Board. All participants provided their written consent and were reimbursed for travel or other expenses related to study participation.

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