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Acceptability and feasibility of integration of HIV care services into antenatal clinics in rural Kenya: A qualitative provider interview study

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Abstract

The aim of this study was to explore the perspectives of healthcare providers on the advantages and disadvantages of integrating HIV care services, including highly active antiretroviral therapy (HAART), into antenatal care (ANC) clinics in rural Kenya. We conducted a qualitative study using in-depth interviews and thematic analysis; 36 healthcare providers from 6 health centres in Nyanza Province, Kenya participated. Effects on service providers included increased workload due to the incorporation of specialised HIV services into ANC clinics. Providers observed that integration results in decreased patient time spent at the health facility, increased efficiency, and closer provider-patient relationships; all leading to increased patient satisfaction. Providers also said that women would be more likely to receive HAART and adhere to their treatment as a result of improved confidentiality and decreased stigma. However, a minority of providers noted that integration could result in longer appointment times for HIV-positive women at ANC clinics leading to inadvertent disclosure. Integration could lead to strengthened antenatal care, postpartum care, prevention of mother-to-child transmission and HIV care for women and their families. However, integration efforts need to take into account potential negative effects on ANC provider workload, disclosure, and the quality of care.

Keywords

HIV/AIDS; service integration; health care providers; Africa; PMTCT

Introduction

In 2009, UNAIDS called for the virtual elimination of vertical transmission of HIV by 2015. One of the major approaches identified to achieve this goal was integration of prevention of mother-to-child transmission (PMTCT) programmes into antenatal care (ANC) clinics. In many settings, single-dose and short-course PMTCT regimens are already being provided in ANC. The 2010 World Health Organization (WHO) guidelines recommend that all pregnant

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women receive antiretroviral (ARV) therapy and that women who qualify for ARVs based on their own health receive triple ARV therapy (HAART). Studies have demonstrated that early initiation of HAART improves outcomes for both the mother and child (Tonwe-Gold *et al.* 2007). However, this presents a new challenge because pregnant women who qualify for HAART are often referred to separate HIV clinics, leading to significant dropout and delays in initiation of treatment, in many countries including Kenya (Manzi *et al.* 2005, Stringer *et al.* 2008, Horwood *et al.* 2010).

In 2009, ARV coverage in Kenya was estimated at 48% of those in need (WHO *et al.* 2009). Ninety-two percent of pregnant women attended at least one ANC visit in Nyanza Province (Kenya National Bureau of Statistics 2009). WHO estimated that in 2009 63% of pregnant women in Kenya were tested for HIV and 73% of pregnant women living with HIV received ARVs for PMTCT (WHO *et al.* 2009). Given the high rate of ANC attendance, ANC clinics are prime settings to implement programmes aimed at boosting PMTCT and promoting HIV care enrolment among pregnant women and their infants (Askew and Berer 2003).

Experiences in sub-Saharan Africa suggest that integrating ANC and PMTCT services results in better uptake of services, more women receiving counselling, reduction of the time to treatment initiation, and reduction of stigma (Bond *et al.* 2002, Etiebet *et al.* 2004, Welty *et al.* 2005, Killam *et al.* 2010). Furthermore, there is evidence that integration of PMTCT services into ANC clinics may improve the overall quality of antenatal care (Delvaux *et al.* 2008). Going a step further, having ANC providers delivering all aspects of HIV treatment and care to pregnant women (including HAART) could result in even greater benefits.

However, the integration of ANC and HIV care could have significant effects on healthcare providers who offer these services; for example, current ANC providers would need to perform extra tasks such as adherence counselling, administration of complex ARV regimens, and close monitoring for side effects and opportunistic infections (Dieleman *et al.* 2007). Several studies have shown that increased workload and resultant provider burnout negatively affect quality of care (Wagner *et al.* 2007, Turan *et al.* 2008).

The successful rollout of integration of ANC and HIV care is dependent on the buy-in of providers and thus their perspectives are critical in assessing the acceptability and feasibility of integration interventions. Most previous studies that endeavoured to monitor and evaluate PMTCT services have lacked qualitative indicators of programme effectiveness (Reithinger *et al.* 2007) and to our knowledge, no previous studies have examined healthcare provider perspectives on HIV care service integration into ANC clinics. We collected data on healthcare providers' perspectives on integration of antenatal and HIV care services to explore its effects on providers as well as the quality of care that patients receive at health facilities in Nyanza Province, Kenya.

Methods

The setting

Migori and Rongo are rural districts in the southern part of Nyanza Province, Kenya. In addition to limited availability of PMTCT services, health officials have identified poor uptake of services and lack of enrolment of pregnant women infected with HIV into HIV care programmes as major problems. Family AIDS Care and Education Services (FACES), a CDC-PEPFAR-funded collaborative programme of the Kenya Medical Research Institute and the University of California, San Francisco, partners with the Ministry of Public Health and Sanitation to provide comprehensive HIV prevention, care, and treatment services. The current study was conducted prior to beginning enrolment for a cluster-randomised trial of ANC and HIV care service integration being conducted in these districts (SHAIP, Study of

HIV & Antenatal Care Integration in Pregnancy, Clinicaltrials.gov # NCT00931216). At the time this study was conducted, each health facility had been randomly assigned to provide integrated ANC, PMTCT and HIV care services (intervention arm) or non-integrated services (control arm). All providers were oriented to the concept of integration and were trained in their randomised service model during August-September 2007. Sites began offering services according to these models immediately after training.

Study sites

Six health facilities were selected to participate in the current study, including one district hospital, three sub-district hospitals, and two dispensaries, in order to capture the effects of varying levels of site resources. One district hospital and one sub-district hospital had started providing fully integrated care in September 2007, one month prior to the start of this study, and four were providing non-integrated services. All ANC clinics provided HIV counselling and testing to pregnant women and if the women tested positive they were given PMTCT education, counselling, and ARV prophylaxis. In the control arm, ANC providers referred women who tested positive for HIV to the HIV clinic, known as the Patient Support Centre (PSC), which was usually within the same compound, for enrolment into HIV care, including HAART, and treatment for opportunistic infections. In the intervention arm, ANC clinics provided pregnant women with integrated ANC, PMTCT, and HIV treatment in the same room (including HAART, if clinically indicated). The current study was conducted during October-December 2007, soon after the site trainings and prior to the beginning of enrolment for SHAIP. Although providers had not yet seen the long-term effects of service integration, we found that the time immediately following training and beginning an intervention was a period rich with feedback as the transition was prominent in the participants' minds.

Sample selection

Fifty-seven healthcare providers were identified at these six sites by site assessment. A list of all the providers was compiled and participants were purposively selected for maximum variation in characteristics, including provider type and employer (Ministry of Health, FACES, or foundation). Types of providers interviewed included clinical officers, nurses, midwives, community health workers, volunteers, medical students, and administrators. Five providers from a mobile team that visits all six sites (and thus had experience with both integrated and non-integrated models of care) were also selected (Table 1).

Data collection

Data collection included in-depth interviews with an average of 5 providers from each facility (n=36), followed by a brief self-administered questionnaire. Providers were asked about their work responsibilities, the changes they have observed at their health facility recently, and their opinions of those changes. They were specifically questioned about the effect service integration has on service providers, patients, the quality of care, and on stigma and confidentiality of HIV status at ANC clinics.

An in-depth interview guide developed by the research team was used by a single interviewer. Signed informed consent was obtained from each provider. Interviews were conducted in English (an official language of Kenya) in a private room, were audio-recorded, and lasted approximately one hour.

Analytical methods

The digitally recorded interviews were transcribed by an experienced Kenyan transcriber who did not have access to identifying information on the participants or specific knowledge

of the aims of the study. Coding structure and assignments were discussed by the investigators and a coding framework was established. Initial coding of the transcripts was performed according to major topics included in the interview guides, but new codes and themes were then developed based on the data. Data were coded and analysed by one of the investigators (LW), using the Atlas.ti (ATLAS.ti GmbH, Berlin, Germany) qualitative data analysis software programme. Four of the interviews were coded by a second investigator (JT) to increase the validity of findings. There was substantial inter-rater reliability between the two coders in terms of major themes identified; thus one researcher completed the coding of the remaining 32 interviews. Through a constant comparison approach, sub-themes and variant views were highlighted within each theme. Statements were coded with ample context to avoid data fragmentation. Quotations, observations, and memos regarding each topic were brought together and evaluated to identify common themes and variant views, using a thematic analysis approach (Braun & Clarke 2006).

Results

We present the providers' perspectives on service integration in four major domains: 1) effects on service providers themselves, 2) effects on patient satisfaction, 3) effects on HIV prevention, care, and treatment, and 4) effects on maternal and child health service provision (Table 2).

Experience with ANC and HIV care integration

In this study 56% (20/36) of providers had some direct experience providing fully integrated ANC and HIV care services, while the remaining providers had learned about integration in training for the SHAIIP trial, but had not yet experienced it directly. Although opinions and perceptions in the two groups of providers were very similar overall, we highlight differences where they do exist. In particular, we found that those providers with direct experience with the integrated model appeared better able to identify and acknowledge downsides and disadvantages of integration—such as the specific components of increased workload, the challenges of providing complex antiretroviral regimens, and the logistical aspects of patient flow.

Effects of integration on service providers

Workload—According to most providers at both integrated and non-integrated sites, staffing plays a pivotal role in ensuring the success of integration of HIV care into ANC clinics. Many participants at non-integrated sites assumed that if additional services were going to be offered in ANC as part of the integrated model, then additional staff would also be allocated. As the provider below notes, the patient time spent is dependent on the number of providers.

The integration however would help the clients to take little time, that is, if there are more providers at the ANC. If the integration is done and the health provider is alone, then the time taken might be still the same because the clients are many...so it depends on the number of healthcare providers. (*Foundation nurse, non-integrated sub-district hospital-ID#12*)

Providers in both types of settings identified the effect on workload in ANC and the strain on already overextended human resources as a major concern. With the increased workload, providers said that the quality of care could suffer.

After finishing, you get tired... You can even get confused...seeing more people per day...And at the same time you are...seeing the clients and you are the same

nurse doing everything...You might give a wrong medication...(FACES volunteer, integrated district hospital-ID#29)

Of note, providers at smaller facilities were not as concerned about the effect on workload. In fact, some providers at small integrated facilities said that it simplified their work because, rather than having to escort the patient to another section of the facility where the HIV documentation and medications were available, they could provide HIV care in the same place.

Recordkeeping—Providers at integrated sites observed that integration increases the amount of time spent on recordkeeping. Each HIV-positive woman requires her own individual medical record containing information about the history and treatment of her HIV.

There is a lot of work which has come as pertaining [to] the integrated services: so many reports are being filled at the same time. You need to write the file; you need to write the HIV care file; you need to fill the register; you need to fill the mother-child booklet...(FACES nurse, integrated sub-district hospital - ID#20)

On the other hand, providers at integrated sites also felt that integration simplified recordkeeping and led to more ease and accuracy in reporting data. Moreover, patient tracking is easier and summary statistics are simpler to tabulate when all the data pertaining to PMTCT and HIV care are kept in one place. They pointed out that in the non-integrated service model patients' medical records are either shuttled back and forth between two different clinics or not shared at all.

Quality of care and efficiency—These differing opinions about the effect on recordkeeping were paralleled in the discussion regarding time spent with each patient. A few providers at non-integrated sites feared that the quality of care would suffer when a single ANC provider offered HIV care alone without the support of HIV clinic providers who are more experienced and well-equipped to address complex cases. In addition, when a patient is referred from one clinic to another, there is the opportunity for a new provider to ensure that all tasks were performed correctly.

[Integration] can be worse because of mismanagement of patients...you are seeing a patient alone, so it will not be like now: when I can see a patient in MCH [Maternal and Child Health], somebody will check whether this patient was given toxoid...[with integration] there is nobody else to countercheck whether that was given. (Foundation nurse, non-integrated sub-district hospital - ID#14)

Conversely, providers at both types of sites cited coordinated treatment and its effect of a higher standard of care as a benefit of integration; they pointed out that in the non-integrated service model, when a patient is seeing multiple providers in different settings, there is no clear communication among these providers, resulting in duplication of efforts and errors.

For the provider it means that you make sure that the patient is taken care of...This patient, if I have changed them to AZT... I can make sure that the [haemoglobin] is not going too low... it is easier for you to manage the patient because you are taking care of everything yourself. (FACES medical student, mobile team - ID#18)

Providers also said that centralised, comprehensive records and complete knowledge of the patient's condition enabled the provider to be more efficient in an integrated service model.

Fulfilment from work—Providers at integrated sites noted that the additional training and new knowledge they gained in order to provide integrated services made them feel more motivated, intellectually challenged, and satisfied with their work. Furthermore, providers

commented that being able to offer specialised services to a particular patient population, such as ANC patients, led to increased fulfilment at work.

'Cause they like when you are providing care to some patients, like providing care to the pregnant women specifically. You are used to them, you know them, you understand them and you know them better than when they are in the PSC [HIV clinic]. (*FACES volunteer, integrated district hospital - ID#15*)

Effects of integration on patient satisfaction (providers' views)

Provider relationship—Many providers at both types of sites saw integration as an opportunity to create long-term relationships with their patients. This therapeutic relationship not only increases efficiency and the quality of care, but it creates trust and instils confidence. There was the notion among providers that sending women to a different clinic led to dissatisfaction among patients.

You give all the care on one table, they will have confidence with us and they'll accept the care....[they] have gone home very happy so she will have confidence with this to come and tell me any other problem, she will have confidence to tell the husband to come. (*Foundation nurse, non-integrated sub-district hospital - ID#14*)

Providers recognised that in addition to being inefficient, having to repeat the details of the case to multiple providers frustrates patients. In contrast, a minority of providers were concerned that a negative encounter with a single provider could decrease the woman's likelihood of returning to clinic. If the patient had the opportunity to interact with several providers, she would be more likely to encounter one with whom she was able to establish rapport.

Wait time and service time—Most providers noted HIV-positive women spent less total time seeking healthcare in the integrated service model because they only had to go to one clinic and wait in one queue. In the non-integrated approach, women spend a large portion of their day queuing at the ANC clinic and then subsequently have to queue again at the HIV clinic. In the transfer between the two clinics, women frequently end up simply leaving prior to receiving HIV care services.

If you keep on tossing patients from room to room, room to room, they also get tired. Sometimes they disappear even before getting the services...She came at nine [AM]...and then maybe she leaves here at two [PM]...Now they feel irritated. They'll never come back to the hospital, so it may make us lose patients...(*MoH nurse, non-integrated dispensary - ID#34*)

While this was seen as a major benefit that has implications for enrolment and adherence to HIV care, some providers were concerned about the effect that integration had on other patients. They pointed out that spending more time with HIV-positive women increased the time other patients waited to see ANC providers. Some even went as far as to say this increased wait time might lead to such frustration that women would leave clinic before receiving their antenatal care.

As much as it is timesaving for a woman who is HIV-positive, it wouldn't be timesaving for women who are HIV-negative because within the ANC it is just that one person who will be seeing both HIV-negative and HIV-positive. So when this HIV-positive one goes inside she will have to take all her time with the nurse inside there and the negative one will be seated outside waiting in the queue...(*FACES nurse, mobile team - ID#19*)

Effects on HIV prevention, care, and treatment

Privacy, confidentiality, stigma, and disclosure—Benefits for patients in terms of privacy and confidentiality were among the positive aspects of service integration most frequently mentioned by providers at both integrated and non-integrated sites. Practically all providers cited decreased stigma as an advantage associated with integration, as women do not have to be seen visiting a separately labelled HIV clinic in the integrated model. They reported that women's fears of stigma associated with the HIV clinic made them less likely to accept referrals and enrol in HIV care and treatment in the non-integrated service model.

At the PSC [HIV clinic] I think it will reduce the number of patients who are seen there and also stigma on the clients...Nobody will ever know even her status apart from the caregiver and the client...You only go there [PSC] when you are positive...(*Foundation nurse, non-integrated sub-district hospital - ID#22*)

However, once patients learn that some women get their HIV care in the ANC, several providers at non-integrated sites pointed out the increased time spent with HIV-positive patients could become a marker for one's HIV-positive status. A few providers also drew attention to the role that support from other HIV-positive patients plays in promoting acceptance of one's diagnosis. They felt that women might have more difficulty coming to terms with their status in an entirely anonymous setting like the ANC clinic, where they are unaware of the status of their peers.

Because here you see both negative and positive clients, but when you refer these positive pregnant women to the PSC [HIV clinic], she will feel more comfortable because she will find people who are also positive like her, rather than leaving her at the ANC. She may get stigmatised...(*FACES community health worker, non-integrated dispensary - ID#27*)

On the other hand, providers in both types of settings observed from their experience with standard non-integrated service delivery that newly diagnosed pregnant women often feel intimidated and uncomfortable about attending HIV clinics. Further, they may be frightened by seeing ill-appearing and end-stage HIV-positive patients. From a clinical standpoint, exposing pregnant patients to communicable diseases has concerning implications for pregnancy outcomes.

For the positive women, it is now that they get the services...in an atmosphere [the ANC clinic] which they like. 'Cause you see if they had to go down to the PSC [HIV clinic] where they see even the stage four [advanced disease]... they feel scared...' (*MoH nurse, integrated district hospital - ID#5*)

Conversely, several providers pointed out that with increased privacy women would no longer be forced to disclose their status to their partners and other family members. When someone attends the HIV clinic in the non-integrated service model, it is assumed that she is HIV-positive; because these clinics are based in small, rural communities, word often spreads through the community. The potential decrease in unintended disclosure with service integration was seen by some providers as an advantage, while others saw it as a disadvantage, because while the individual woman's right to privacy is protected, her partners' right to knowledge of his HIV exposure is diminished. Additionally, patients who do not disclose receive less support from family and friends. Providers commented that this lack of support has negative repercussions on adherence as women attempt to hide their status.

They will still not disclose their status at all because several of these women who come to the ANC are very healthy. Nobody would even imagine they are HIV-positive and they learn of their HIV status just when they come for the ANC services and I think somebody would just choose that they are not telling anybody

their status and they would continue with their HIV care and ANC care...(FACES nurse, mobile team - ID#19)

Uptake and enrolment in HIV care services—Providers felt that the time saved and added convenience of receiving all services from the same healthcare provider in the same visit increased enrolment in HIV care and decreased the likelihood of women being lost to follow-up. The main reasons for increased enrolment with service integration cited by the providers were improved relationships with the providers, increased confidentiality, and reduced stigma. Likewise some commented that as women hear from others about their positive experiences with the integrated approach, more women will come to the ANC clinic and enrol in care.

Some thought when they come to the hospital for the ANC services, they will be referred. Most of them know their status, but due to stigma, they fear they would be referred to the PSC [HIV clinic] and start getting services there. Now... they'll get the information and most of them will run there getting the services...FACES volunteer, integrated district hospital - ID#15

Furthermore, providers in both settings cited the context of antenatal care as a powerful opportunity to motivate women to enrol in HIV care given its clear link to their child's well being.

I don't have a problem maybe counselling them to accept the test or not because they care more of their unborn because when you talk to them about the benefits, how the test is going to benefit the unborn child plus also her, they are always willing...MoH clinical officer, integrated sub-district hospital - ID#17)

Infant HIV testing and follow-up—In addition to increasing enrolment of mothers in HIV care services, many providers expected that integration would also increase the likelihood of identifying exposed newborns and providing them with HIV care. Because mothers and children are both cared for in the ANC/MCH Clinic, it is a unique setting for providers to continually educate mothers about infant follow-up.

At the PSC, there is not much focus on the baby. But at the ANC, we talk about more of the child and they are anxious to know the status of the child, so they will automatically come. (Foundation nurse, integrated sub-district hospital - ID#3)

Another provider from an integrated site remarked on the ease of coordination; it is simpler to track infants if the same providers care for mothers receiving HAART. Just as stigma keeps women from seeking services at the HIV clinic, it may similarly prevent them from getting their infants tested there.

Adherence and partner involvement—Providers also mentioned that a woman's concern for her child may extend into the arena of adherence.

You know when they are given drugs at the antenatal [clinic] they really take them... They will take them believing the drugs will take care of the baby. But when they are given [the HIV drugs on] the other side [at the HIV clinic] they strictly believe those drugs are just for HIV and HIV alone so they can still put aside. (Foundation nurse, non-integrated sub-district hospital - ID#22)

Once again, the strength of the bond between patient and provider was cited as an advantage that increases adherence through better communication and increased confidence in the provider in the integrated service model.

Now the issue of adherence, it will just affect it positively simply because when these clients come back maybe to the clinic if there is any issue maybe cultural or religious issues affecting or the social issues from the family, they will automatically open it up to whoever is dealing with her inside here because it is here just within that unit... *MoH clinical officer, integrated sub-district hospital - ID#17*)

Effects on maternal and child health service provision—On top of all the effects that integration has on HIV care, many providers felt that it also impacts utilization of maternity and other reproductive health services. Providers remarked that women are more likely to get follow-up care for their pregnancy and deliver their babies at the health facility if they receive comprehensive information and counselling on these topics in the context of integrated ANC and HIV care.

More babies will be delivered at the facility... Because once you have told them and they have understood that delivering at the hospital will help in protecting the baby from contracting HIV... I think when they get the services at the ANC, they understand better... The reason is at the ANC, the person there is giving care to the baby, so they have much trust in that person providing care to the infant. *FACES community health worker, non-integrated sub-district hospital - ID#24*)

In addition, the participants noted that ANC providers' experience in family planning counselling promotes use of contraception by HIV-positive women who do not want to get pregnant again.

Discussion

Findings from this study indicate that integrating full HIV care services, including administration of HAART, into the existing antenatal clinic structure is acceptable to healthcare providers, regardless of the setting in which they worked. Clear evidence now exists to suggest that HAART during pregnancy, particularly for those women with advanced disease, is a better choice for preventing mother to child transmission than single-dose nevirapine (Lehman *et al.* 2009a); however the most effective approach to providing newly diagnosed women with HAART has yet to be determined (Lehman *et al.* 2009b). Evidence is beginning to emerge that 'in countries with high HIV prevalence and limited resources, an integrated approach to providing services is both practical and feasible' (WHO *et al.* 2009).

The providers identified many advantages to an integrated approach over a referral approach, including improved quality of care, more accurate records, better provider-patient relationships, and increased fulfilment from work. Providers at integrated sites felt that patients' satisfaction with services has improved with more comprehensive care, which has positive implications for HIV enrolment, follow-up, and adherence. In addition, many providers thought that patient privacy and experiences of stigma have significantly improved with an integrated approach, where patients only interact with a single provider and have no need to attend a separate HIV clinic. One of the greatest advantages to integration mentioned by providers was a decrease in the time spent by HIV-positive patients' accessing healthcare. Having to queue only once at a single clinic not only saves time, but also decreases the likelihood of being lost prior to enrolment in HIV care. Increased enrolment of HIV-positive pregnant women has resulted from service integration in other settings (Killam *et al.* 2010).

Further, providers felt that these advantages extend beyond improving HIV care to strengthening aspects of maternal and child healthcare. For example, providers envisioned

that follow-up in the antenatal clinic would likely increase as women who returned for their HIV care get additional antenatal care during their follow-up visits. Likewise, education for HIV-positive women surrounding the importance of delivery in a health facility and family planning options following pregnancy are both more effectively conveyed and more likely to be accepted when given in the ANC setting. Improvements in the quality of ANC have already been observed with the introduction of PMTCT (Delvaux *et al.* 2008) and are likely to expand with further integration with HIV care services. The far-reaching benefits of integration extend into improved infant follow-up as women who established strong relationships with their providers would continue to be seen with their newborn in the ANC/MCH clinic for the six months following delivery. This could help overcome the considerable challenge of identifying and monitoring HIV-exposed infants (UNICEF *et al.* 2009).

Despite the many advantages identified, important challenges to integration were also identified in this study. Many of these challenges are inherent in resource-limited settings around the globe and include chronically understaffed facilities, lack of adequate physical infrastructure, and lack of materials including drugs, test kits, and cabinets. Still there were some integration-specific disadvantages identified as well. The most prominent was the effect on provider workload, as antenatal clinics that are frequently only staffed with one provider are required to provide additional specialised services to a subset of their patients through an integrated approach. This requires additional records to be maintained and increases the time spent with certain patients, possibly leading to unintended disclosure of those who are HIV-positive, and increased wait time for other ANC patients. In addition, providers require additional training in order to learn about the complexities of providing full HIV care including HAART. In a worst-case scenario, these additional responsibilities could lead to burnout and a decrease in the quality of services provided, as has been reported for HIV care providers in some settings (Kruse *et al.* 2009). There was also concern surrounding the potentially diminished disclosure of HIV status and social support that patients receive if confidentiality is well protected in an integrated setting. Their status would no longer be disclosed by default and thus the onus would be on individual women to reveal their HIV status. Moreover, women might not have the same support from fellow HIV-positive patients as they do in a separate HIV clinic (Wouters *et al.* 2008), Birbeck *et al.* 2009).

This study has certain limitations. First, some of the effects discussed are hypothetical, since a portion of the providers interviewed had not yet worked in an integrated setting (44%). Still, many of the providers did have direct experience with the integrated model (those at integrated sites as well as mobile team members) and were therefore able to base their opinions and observations on direct experience. Second, we did not directly assess patient satisfaction or quantitatively measure effects on time spent, workload, or recordkeeping in this study, although we have separately collected data from antenatal patients to assess the effects of service integration on patient satisfaction.

Findings from this qualitative study suggest that providers would be willing to participate in a system in which comprehensive HIV care is integrated into antenatal clinics. These findings highlight some of the major issues that need to be considered when responding to the recent call to action by UNICEF/UNAIDS/WHO/UNFPA for increased integration of HIV and maternal-child health services. Importantly, the findings suggest that creative solutions need to be found to overcome the potential disadvantages of integration for service providers and patients in very low resource settings. The effects on antenatal care providers' workload could be mitigated by hiring additional healthcare workers, or in the absence of resources, by enlisting and training lay health workers to help with the additional set of tasks required in antenatal care clinics. While many advantages were outlined in the integrated

service model being tested by FACES, six months postpartum, women are referred back to the HIV clinic for the continuation of their care. It remains to be seen what implications that referral has on enrolment, follow-up, and HIV disclosure to family members. Still, this study suggests that integration has the potential to strengthen the services provided to HIV-positive women during pregnancy and in the six months following delivery in a variety of ways, leading to increased synergy between maternity care, PMTCT and HIV care for women and their infants.

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Table 1

Characteristics of Healthcare Providers' Interviewed (n=36).

Characteristic	Category	Total	Integrated	Non-integrated	Both
Workplace	Dispensary	5	0	5	0
	District hospital	9	9	0	0
	Sub-district hospital	17	6	11	0
	Mobile team	5	0	0	5
Health worker type	Nurse/Midwife	16	7	8	1
	Community Health Worker ¹	8	2	5	1
	Volunteer	6	3	2	1
	Clinical officer ²	6	3	1	2
Main responsibility	Administrator/Supervisor	7	2	3	2
	ANC/MCH	16	7	8	1
	HIV clinic/PSC	8	4	3	1
	Multiple sites	5	2	2	1
Employer	Ministry of Health	10	5	4	1
	Private Foundation	8	3	5	0
	FACES	13	4	5	4
	Unpaid	5	3	2	0
Gender	Female	23	9	11	3
	Male	13	6	5	2
Age	<30 years of age	15	7	6	2
	30–40 years of age	17	6	8	3
	>40 years of age	4	2	2	0
HIV-positive person in household	Yes	14	5	7	2
	No	18	8	7	3
	HIV-positive themselves	4	2	2	0
Total		36	15	16	5

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¹Community health workers are similar to medical assistants or nurses aides who have limited training in a variety of basic tasks, such as vital sign measurement and patient education.

²Clinical officers in Kenya function as mid-level providers, equivalent to nurse practitioners or physician's assistants in the United States.

Table 2

Major domains and themes regarding effects of ANC and HIV care service integration identified by providers (+ = positive effect of integration, – = negative effect of integration, ± = mixed effect of integration, ≠ = no effect of integration).

Domains					
	Effects on Providers Themselves	Effects on Patient Satisfaction	Effects on HIV Prevention and Care	Effects on Maternal and Child Health Services	
Themes	• Workload (–) • Record-keeping (±) • Efficiency (+) • Quality of care (+) • Fulfilment from work (+) • Workplace exposure to HIV (≠)	• Provider relationship (+) • Wait time (±) • Service time (±)	• Privacy and confidentiality (±) • Disclosure (±) • Stigma (±) • Uptake of HIV care services (+) • Infant HIV testing and follow-up (+) • Partner involvement (–) • Adherence (+)	• Continued use of ANC (+) • Delivery in a health facility (+) • Postpartum family planning (+)	