Acceptability and feasibility of a financial incentive intervention to improve retention in HIV care among pregnant women in Johannesburg, South Africa

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ABSTRACT

Women initiating antiretroviral therapy during pregnancy are at high risk of dropping out of HIV care after delivery. We assessed the acceptability and feasibility of a financial incentive – a one-time R50 (~USD4) supermarket voucher for completing one postpartum visit ≤10 weeks of delivery – to improve postpartum retention. We enrolled 100 pregnant, HIV-positive women at a primary health clinic in Johannesburg, South Africa. Participants were interviewed at enrollment and we reviewed files to assess retention ≥14 weeks postpartum. Median (IQR) respondent age was 28 years (24–31) and 31% were employed. Most (86%) said the incentive would motivate them to return and 76% supported clinics offering incentives. Among the 23% who found the intervention unacceptable, the most frequent reason was perceived personal responsibility for health. Feasibility was demonstrated, as 79.7% (51/64) of eligible participants received a voucher. When asked to rank preferred hypothetical incentive interventions, assistance with social services ranked first (29%), followed by infant formula (22%) and cash (21%); assistance with social services was the top-ranked choice by both those who found the voucher incentive intervention acceptable and unacceptable. To encourage HIV-positive women to remain in care, respondents most frequently suggested health education (34%), counseling (29%), financial incentives (25%), home visits (13%), and better service (6%). Our results suggest financial incentives are acceptable, but women frequently expressed preference for integrated services and improved education and counseling to improve retention. Interventions exploring the feasibility and efficacy of education and counseling interventions to improve postpartum HIV care are warranted.

Background

In South Africa, which has more people living with HIV than any other country in the world, (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2013) women of reproductive age carry a disproportionate burden of disease (Joint United Nations Programme on HIV/AIDS (UNAIDS), 2010). Nearly 30% of pregnant women in South Africa are HIV-positive. (Republic of South Africa Department of Health, 2013) In 2012, the World Health Organization outlined Option B+, which seeks to initiate all HIV-positive pregnant women on lifelong three-drug antiretroviral therapy (ART) regardless of CD4 count. (World Health Organization, 2012) South Africa adopted Option B+ in 2015 (Republic of South Africa Department of Health, 2014), and later expanded ART eligibility to all HIV-positive individuals in 2016. (Republic of South Africa Department of Health, 2016) While this increased access to ART for pregnant women brings South Africa in line with WHO guidelines and may lead to elimination of vertical HIV transmission, studies from before and after Option B+ implementation suggest that women who initiate ART during pregnancy have poor retention in care, particularly after delivery (Clouse et al., 2013; Kaplan, Orrell, Zwane, Bekker, & Wood, 2008; Tenthani et al., 2014; Wang et al., 2011).

In South Africa, the prevention of mother-to-child transmission (PMTCT) of HIV care cascade is fragmented geographically, with each step typically located in a different clinical setting: HIV testing and ART initiation is integrated into antenatal care at primary care facilities (Republic of South Africa Department of Health, 2015), births occur in obstetric healthcare facilities (Shisana et al., 2009), and postnatal check-ups and infant HIV testing occur back at the primary care facility. Routine HIV care may occur at the primary care facility, but...
often on a different day or in a different section of the clinic. A successful transition through this cascade from antenatal care back to routine HIV care proves challenging for many women. In addition to geographically fragmented care, other policy-level, structural, social, and psychological factors impose barriers to retention, including a lack of perception of need for treatment (Solarin & Black, 2012; Wang et al., 2011), stigma (Clouse et al., 2014; Ferguson, Grant, et al., 2012; Hoffman et al., 2010; Ngarina et al., 2014; Thorsen, Sundby, & Martinson, 2008), financial burden (Ngarina, Poponoe, Kilewo, Biberfeld, & Ekstrom, 2013; Wang et al., 2011), and travel or relocation (Clouse et al., 2017; Ferguson, Lewis, et al., 2012; Hoffman et al., 2010; Tweya et al., 2014; Wang et al., 2011). Interventions to facilitate linkages to care from antenatal care to routine HIV services after delivery are urgently needed.

Recently-evaluated interventions to improve retention in postpartum care, including cell phone-based designs, integrated healthcare delivery models, male participation, peer mentoring, and others, have found mixed results (Ambia & Mandala, 2016; Geldsetzer et al., 2016). Incentive programs offering economic compensation to modify a wide range of health behaviors have been implemented around the world, including in sub-Saharan Africa. Examples include the use of food vouchers to increase voluntary male medical circumcision in Kenya (Thirumurthy et al., 2014), and cash transfer programs – conditional or unconditional – to improve timely child immunization in Kenya (Wakadha et al., 2013), increase immunizations and school attendance in Zimbabwe (Robertson et al., 2013; Skovdal et al., 2013), and increase school attendance and reduce risk of HIV and sexually transmitted infections in Malawi and South Africa (Baird, Garfein, McIntosh, & Ozler, 2012; MacPhail et al., 2013). Incentive-based programs offer the ability to target specific groups at greatest risk of negative health outcomes – such as postpartum women dropping out of care – and to provide a short-term “nudge” that may act as a motivator of longer-term change (Sindelar, 2008). Dropping out of care poses great personal risk of morbidity and mortality through advanced immunosuppression, uncontrolled viremia, and the potential for drug resistance (Emery et al., 2008; Gardner et al., 2010; Sethi, Celentano, Gage, Moore, & Gallant, 2003; Sterne et al., 2009), as well as the public health risk of disease transmission (Cohen et al., 2011). Compared to the future costs (economic, societal, and personal) of caring for those who drop out of care and return ill, small incentives to encourage continuous care may prove to be both effective and cost-effective.

To date, only one other study has evaluated the use of a modest conditional cash transfer to improve retention in PMTCT services in sub-Saharan Africa (Yotebieng et al., 2016). Through a randomized controlled trial in the Democratic Republic of Congo, the authors found an 11% improvement in retention at six weeks postpartum in the intervention arm that received the cash incentive. Given these promising results, we sought to assess the acceptability and feasibility of a one-time financial incentive to encourage postpartum care among HIV-positive women in South Africa.

**Methods**

**Study context, design and intervention**

We conducted the pilot study at one public primary health clinic operated by the City of Johannesburg, South Africa. The clinic area is Ivory Park, a region of Johannesburg with densely-populated formal and informal settlements, and high poverty and crime (Masuku, 2015). Offering antenatal and postnatal care, HIV testing and treatment, as well as other primary care services, HIV care is integrated with antenatal care for pregnant women at the study clinic, with assessment for and initiation of ART occurring within antenatal care. HIV testing occurs during a woman’s first antenatal visit and, per national guidelines implemented in January 2015, all pregnant women are initiated on lifelong antiretroviral therapy (Option B+). The study clinic does not perform deliveries, so all women who receive antenatal care are referred for delivery to nearby hospitals, which do not routinely report delivery information back to the study clinic. Following delivery, patients return for postnatal care and HIV treatment services at the study clinic for 10 weeks and then resume general adult care, all within the same facility and using the same clinic file. Mothers and infants make three postnatal care visits together: 3–7 days after delivery; six weeks after delivery (for an infant polymerase chain reaction HIV test to determine the HIV status of the baby); and 10 weeks after delivery (for infant HIV test results).

HIV-positive pregnant women were eligible for enrollment if they were at least 18 years old and able to speak and understand spoken English. From May 2015 to March 2016, we used a convenience sample approach to recruit 202 women during routine antenatal care; of these, 99 were excluded due to poor English comprehension, and 3 were excluded due to transferring clinics on the same day as enrollment. Women who met the eligibility criteria were asked to provide written informed consent prior to enrollment. After enrollment, participants completed one face-to-face, structured questionnaire with a research coordinator.
At enrollment, participants were offered a one-time Pick-n-Pay supermarket (a major supermarket chain in southern Africa) voucher incentive valued at R50 (approximately US $4) for completing one postpartum visit to the study clinic within 10 weeks of delivery. To determine clinic attendance, paper and electronic medical records were reviewed a minimum of 14 weeks after delivery; data collection ended in March 2017.

### Study outcomes

Feasibility of the intervention was defined as the proportion of participants who qualified for a voucher who successfully received one during the study period. Acceptability of the intervention was assessed at enrollment by asking participants if they thought the voucher would motivate them to return to the clinic. We also assessed acceptability of incentives generally by asking participants: (1) if they thought clinics should offer incentives to encourage people to attend visits, and (2) what clinics could do to encourage postpartum retention in HIV care. This pilot study was not designed to assess intervention efficacy; however, we still report here the proportion of participants who completed at least one postpartum visit within 10 weeks of delivery.

### Data analysis

Cohort characteristics are described using counts and proportions for categorical variables, and medians and interquartile ranges (IQR) for continuous data. Questionnaire and file review data were captured on paper forms, then entered into a REDCap electronic database. (Harris et al., 2009) SAS 9.4 (SAS Institute, Cary, NC) was used for statistical analysis of quantitative data. For open-ended questions, we created a list of categorical themes that emerged over multiple readings, calculated the proportions for the response categories, and identified key, illustrative quotes. This study was approved by the Institutional Review Board of Vanderbilt University Medical Center, Boston University, and the Human Research Ethics Committee of the University of the Witwatersrand.

### Results

#### Participant characteristics

Characteristics of the one-hundred participants are shown in Table 1. At enrollment, median age was 28 years (IQR: 24–31), median CD4+ was 349 cells/µL (IQR: 245–525) and most women (78%) had been previously pregnant; 72% had a living child. Median gestation was 19 weeks (IQR: 13–23) at the first antenatal visit and most women enrolled in the study within the first month of antenatal care (median: 23 days [IQR: 0–80.5]). The majority of participants were diagnosed with HIV during antenatal care for the current pregnancy (71%), and most (81%) reported that the current pregnancy was unintended. All participants had been prescribed ART by study enrollment.

One-third of participants (33%) were born in Gauteng Province, the province where the clinic is located; nearly half (46%) were born elsewhere in South Africa and 21% were born outside of South Africa. Among the foreign born, most (86%) were from Zimbabwe. Most women (82%) had a history of employment; only 31% were currently employed, with domestic work and retail sales as the most common types of work. Median hours worked per week was 40 (IQR: 40–50) and median monthly salary was R3200 (IQR: 2400–4000), or approximately US $250 (IQR: US $190–315). Just over half (57%) of respondents at enrollment planned to breastfeed; 32% did not plan to breastfeed and 11% were undecided.

Nearly all (99%) respondents had a current partner. Most partnerships were long-term, with a median duration of 46 months (IQR: 27–88 months). The majority of male partners (83%) were employed, most frequently as a driver. Most women (71%) had disclosed their HIV status to their male partner but fewer than half (46.5%) knew their partner’s HIV status.

### Feasibility and retention

Overall, 64 (64%) participants completed a postpartum visit within 10 weeks of delivery and were eligible for a
vouchers (Table 2). Among eligible patients, 79.7% (n = 51) received a voucher. Thirty participants (30%) did not return to the clinic within 10 weeks of delivery and thus were not eligible to receive a voucher; one ineligible patient received a voucher during a later visit. Additionally, three participants (3%) experienced miscarriages during the study period and were considered eligible for a voucher. One of the three participants who miscarried received a voucher. Three women requested a clinic transfer after enrollment but prior to delivery.

Acceptability

Most participants (86%) responded at enrollment that the supermarket voucher incentive would motivate them to return to the clinic. When asked why, 81.2% (n = 69) reported wanting to use the voucher to buy something, most commonly for the baby (71.0%). Illustrative quotes include, “As I’m not working, the voucher will help me buy something for the baby” and “I’ll buy baby stuff, like Pampers.” Others (20.3%) reported specifically wanting to buy food with the voucher, stating, “It will motivate me to come to the clinic because I can buy food” and “As I am HIV-positive, I will buy healthy food.” Another 13.0% said the voucher would motivate them to return but stressed the importance of coming for their own health, stating, “It’s not only the R50 that will motivate me. I’ll come for the sake of my health.” Acceptability did not differ by retention in care.

Of the 14% who did not think the voucher would motivate them to return, personal responsibility for their own health was the overwhelming factor reported, with statements like, “I cannot come because of a Pick-n-Pay voucher. I have to come. My life comes first.” and “As I tested HIV-positive, it is my responsibility to come to the clinic.”

Responses were similar when participants were asked if clinics should offer incentives to encourage people to attend visits. Three-fourths (77%) of participants supported clinics offering incentives; responses in support of incentives (in general) included, “If you know that you’ll get something, you won’t miss your appointment” and “People need to be encouraged to do things. With these incentives, I think it will encourage them to attend their visits regularly.” Another respondent said, “Some of the people are not working and some are coming from other provinces and they don’t qualify for a child grant, so they will benefit from getting these incentives.”

Among the 23% (n = 23) who found incentives unacceptable, the most frequent reason was perceived personal responsibility for one’s own health (95.7%), with responses including, “People should attend their visits without getting anything” and “It’s like they bribe them for their health.” Another respondent noted the free health care provided by the government clinics saying, “Because we get service for free; people should appreciate that, nothing more.” Another suggested that incentives may be reserved for those especially in need, “Not for everyone. They can offer to those who are in need. People should attend their visits without getting anything; it’s their own life and health.”

As shown in Table 3, when participants were asked to rank their preference for hypothetical incentive interventions, assistance with social services ranked first (29%), followed by provision of infant formula (22%), and cash (21%). Assistance with social services was the top-ranked choice by both those who found the voucher incentive intervention acceptable and unacceptable. Regarding the ideal amount for incentives, median responses ranged from R400 (IQR: R200–500) for cash, R60 (IQR: R30–115) for cell phone airtime, and R300 (IQR: R200–400) for a supermarket voucher.

When asked what clinics could do to encourage HIV-positive women to remain in care, respondents suggested health education (34%), regular counseling (29%), financial incentives (25%) home visits (13%), and better service (6%).

Discussion

The problem of poor retention in postpartum HIV care is well documented, but few successful interventions have been found. In this pilot study, we found that providing a one-time supermarket voucher incentive was both acceptable and feasible within a population of HIV-positive postpartum women. While diverse factors likely contribute to high drop-out, financial incentives may address the structural barriers of lack of money and the high opportunity cost of long clinic queues, as
well as providing psychological motivation for completing a visit. At the time of enrollment, 86% of women reported that the voucher incentive would motivate them to return to the clinic. While still favorable, acceptability of incentive interventions overall was less at 77%. The top reason cited for the high acceptability was the financial nature of the incentive; most wanted to use the voucher to buy something, usually items for the baby or food. Less than one-third of women in this study were employed, and those that were worked full-time and earned a median of only R3200, about US $250 per month. A small proportion (14%) felt that the voucher would not influence their motivation because they already were determined to continue their care for their health. When asked about incentives for other people, nearly one-quarter (23%) found them unacceptable, commonly citing the need for personal responsibility over financial incentives.

While 64 women completed a postpartum visit within 10 weeks of delivery and were eligible for a voucher, 51 (79.7%) received a voucher. This demonstrates the feasibility of the intervention, but underscores the difficulty of implementing interventions within real-world settings. A study team member – who was not a clinic staff member – was available at the clinic every day, but still was unable to connect to all eligible participants when they presented at the clinic. This may have been because the participant was no longer interested in the incentive or forgot, the attending clinician failed to mention the incentive again, unclear referral systems, or other factors. As with many interventions implemented within a busy clinic, successful adoption requires the buy-in and participation of all clinic staff and is difficult to achieve and maintain over time. Future studies may wish to explore the perspectives of health care providers regarding incentive interventions.

Our results suggest a financial incentive intervention is acceptable, but women more frequently expressed preference for integrated services and improved education and counseling to improve retention in postpartum HIV care. Among a list of proposed incentives, assistance with social services – the only non-financial incentive on the list – ranked the highest. Currently applications for child support grants in South Africa are processed through the South African Social Security Agency (SASSA). Monthly child support grants of R380 (US $30.50) are provided to households that qualify through means-testing; SASSA distributes approximately 12 million child support grants per year to nearly 31% of the South African population (Republic of South Africa Department of Social Development, 2016). Our study’s results support better integration of government services within public clinics. Provision of infant formula at the clinic was the second-highest ranked intervention. South Africa previously offered free formula milk for infants up to 6 months of age at public health facilities, but ceased this policy in 2011 to promote exclusive breastfeeding (Republic of South Africa Department of Health, 2011). South Africa has low prevalence of exclusive breastfeeding (Goga et al., 2012; Ijumba et al., 2013); in our study, only 57% of women said they intended to breastfeed. Overall, when asked to suggest how clinics may encourage women to remain in HIV care, only 25% of participants named financial incentives. Instead, health education and counseling were the top responses, followed by home visits and improved clinic service. Our findings support the development of interventions exploring the feasibility and efficacy of education and counseling interventions to improve postpartum HIV care.

Overall, 64% of women completed one postpartum HIV visit at the clinic within 10 weeks of delivery, and over one-third (36%) did not return within this period. This represents high drop-out in a short period of time. Studies measuring PMTCT retention often use different time points for measurement, such as six weeks, 10 weeks or six months postpartum, or focus only on infant testing outcomes, making comparisons difficult. Still, our results were similar to the loss to follow-up proportion of 33.9% of infants found at six-weeks after delivery in a meta-analysis of 11 sub-Saharan African studies that were not offering an intervention (Sibanda, Weller, Hakim, & Cowan, 2013). Though our pilot study was not designed to measure the efficacy of the financial incentive, we expected higher retention than found in studies without an intervention.

These results should be viewed with an understanding of study limitations. First, this was an intervention implemented within a busy clinic with a small add-on study team that was separate from clinic staff. A more controlled environment may have found higher feasibility, but would not provide the same opportunity to report on implementation within a typical clinic setting. Retrospective data collection presents a number of challenges, including incomplete and missing data; thus, retention in care may have been underestimated. Additionally, our study only recorded attendance at the study clinic; if participants sought care at a different clinic without requesting a transfer from the study clinic, we were unable to account for this continued care.

In this pilot study, we determined that a one-time financial incentive intervention was acceptable and feasible within a population of postpartum, HIV-positive women. These results provide useful information for those considering an incentive-based intervention that
among this population. However, women more often stated a desire for better integrated services and improved opportunities for health education and HIV counseling, rather than financial incentives. Health education opportunities and enhanced counseling interventions provide an avenue for improved retention in postpartum HIV care that is supported by the findings within this population of women in Johannesburg.

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Meetings
This work will be presented as a poster presentation at the 9th International AIDS Conference in Paris, France, in July 2017.

Registry information
This study is registered as NCT02351362 on Clinical Trials.gov.

Disclosure statement
No potential conflict of interest was reported by the authors.

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