



Economic Strengthening Interventions to Address Known Barriers to PMTCT and Improve Health Outcomes: Review of the Evidence



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ACRONYMS LIST

ASPIRES	Accelerating Strategies for Practical Innovation & Research in Economic Strengthening
AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ARV	Antiretroviral
ART	Antiretroviral Therapy
CCT	Conditional Cash Transfer
ES	Economic Strengthening
EBF	Exclusive Breastfeeding
FNS	Family Nutritional Support
FBP	Food by Prescription
HAART	Highly Active Antiretroviral Therapy
HIV	Human Immunodeficiency Virus
HTC	HIV Testing and Counseling
MTCT	Mother-to-Child Transmission
NGO	Non-governmental Organization
NAC	Nutrition Assessment and Counseling
NVP	Nevirapine
PEPFAR	President's Emergency Plan for AIDS Relief
PLWHA	People Living With HIV/AIDS
PMTCT	Prevention of Mother-to-Child Transmission
RCT	Randomized Control Trial
RUTF	Ready-to-Use Therapeutic Food
TB	Tuberculosis
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

EXECUTIVE SUMMARY

The human immunodeficiency virus (HIV) is known to be a significant contributor to infant morbidity and mortality in many countries, particularly in sub-Saharan Africa. Strategies for the prevention of mother-to-child transmission (PMTCT) dramatically reduce the risk of HIV transmission to an infant—from nearly 40 percent to less than five percent. The PMTCT services can also serve as a gateway for HIV prevention, treatment, care, and support services for the mother and the whole family. However, a number of barriers, including economic factors, prevent women from accessing PMTCT services and following recommended PMTCT interventions. Identifying economic barriers to PMTCT and economic strengthening (ES) interventions that may improve access and adherence to the PMTCT cascade—which refers to each step of PMTCT service delivery from the first contact, through counseling, HIV testing, collecting results, receiving antiretroviral therapy (ART) or prophylaxis, safe delivery practices, infant feeding recommendations up to postnatal follow-up—can strengthen PMTCT programs, contributing to better health outcomes and further reduction in mother-to-child transmission of HIV.

This literature review was conducted by the Accelerating Strategies for Practical Innovation & Research in Economic Strengthening (ASPIRES) project of FHI 360. The ASPIRES project supports evidence-based, gender-sensitive programming to improve the economic security and wellbeing of vulnerable families and children, particularly those infected with or affected by HIV/AIDS, and others at high risk of acquiring HIV. The project is supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) through the U.S. Agency for International Development (USAID).

The purpose of this review is to: 1) assess the evidence associated with economic barriers to PMTCT services and the effects that economic strengthening interventions have on access to PMTCT services, retention in the PMTCT cascade, and adherence to PMTCT prophylaxis/treatment regimens for mother and infant; 2) identify the effects that ES interventions have on the use of and adherence to health services that are relevant to the PMTCT cascade, such as antenatal care (ANC) services, HIV care and treatment programs or HIV testing and counseling; and 3) identify evidence gaps to inform future research and programming of ES interventions for PMTCT.

We searched electronic databases for articles on economic barriers to PMTCT and economic strengthening interventions within PMTCT or other relevant health services that had been published through July 2014. We identified 52 publications that described economic barriers and 22 publications on ES interventions within PMTCT and other health settings relevant to PMTCT cascade.

The results of this review are divided in two sections: 1) the evidence on economic barriers to PMTCT and 2) the evidence on economic strengthening interventions.

Key Findings on Economic Barriers

- The most commonly cited barriers to accessing and adhering to PMTCT, antiretroviral therapy (ART) and ANC services are distance to clinics and transportation costs.
- Food insecurity represents a significant barrier to adherence to ART. Although a large proportion of the studies were conducted within traditional ART programs, the findings are relevant to PMTCT settings because adherence to antiretroviral (ARV) medications is critical for preventing HIV transmission to an infant. The perceived need to take ARVs with food and the increased appetite associated with ARVs often lead to treatment interruption (because the food required to take all daily doses of ARVs or to stop the hunger is unaffordable). Low-income clients were often forced to choose between food and ARVs. Food insecurity also undermined a woman's ability to breastfeed exclusively.
- Gender-related economic barriers can affect a woman's access to and use of PMTCT and other relevant health services. Because many women are financially dependent on their husbands or partners, the fear of abandonment makes it less likely that they will access and adhere to PMTCT services (because doing so reveals their HIV-positive status). In addition, a man's economic responsibilities as the head of the household makes it less likely that he will accompany his female partner to PMTCT services because he may lose an opportunity to earn money, or he may not be able to afford the transportation fees for two people. Also, some men are prioritizing other family needs (such as food and clothing) over the need to pay for health services.

Key Findings on Economic Strengthening Interventions

- Almost all of the ES interventions we identified were implemented within health services relevant to the PMTCT cascade, but not directly within PMTCT settings. The majority of the studies (n=12) examined whether food assistance might increase ARV adherence and access to services. Six studies looked at cash transfers as a means to increase access to and retention in services, and four studies assessed the effects of transportation assistance on the use of health services.
- The evidence on cash transfers is limited, but promising. One study (in Honduras) and two program evaluations (in Peru and Bangladesh) confirmed that cash transfers can have a positive effect on the use of ANC services. One randomized trial (in Uganda) demonstrated that HIV treatment adherence scores and retention in care were higher among recipients of cash transfers. One study (in Malawi) has shown that small monetary incentives increase

HIV result-seeking behaviors. The only study (in the Democratic Republic of Congo) that is examining the effects of cash transfers on adherence to PMTCT is currently in progress and the results are not yet available.

- Three studies and one program evaluation examined the effects of support for transportation costs. In Uganda, transport vouchers led to a dramatic increase in attendance of ANC services. Studies in Tanzania and Zambia and a program in Haiti showed that transportation allowances increased the uptake of ART referral and adherence to treatment.
- Six of seven studies (conducted in Kenya, Zambia, Haiti, Niger, and Mozambique) reported that food support to patients on ART had a positive effect on adherence to treatment. Two assessments (in Uganda and Kenya) found that food support to people living with HIV also had a positive effect on ART adherence. In addition, two studies (one in Malawi and another in Malawi, Zimbabwe and Zambia) reported that food aid facilitated access to PMTCT services.

Our literature review confirms that the evidence is limited with respect to the effects of ES on HIV health-seeking behaviors and ART adherence and, especially, on treatment outcomes. Even less is known about the effects of ES interventions on PMTCT programs, although the economic barriers to PMTCT and other health services relevant to the PMTCT cascade are well known. At the same time, there is a great need for effective approaches to increase access, utilization, and retention in the PMTCT cascade—all of which remain less than optimal.

In the discussion section of this report, we consider the reasons why the available evidence is limited to ES interventions that provide immediate relief and what types of ES interventions may be appropriate for other prongs of PMTCT—such as those aimed at preventing HIV among uninfected women, preventing unintended pregnancies among women with HIV, and providing ongoing care and support to women and their children and families. We also discuss the need for data from PMTCT programs that adopt more effective (and more complex) ARV-based prevention regimens. Finally, we formulate some of the research questions that would increase the evidence base and guide programmatic decisions about ES interventions to enhance access and adherence to PMTCT services by women.

INTRODUCTION

This literature review was done by the Accelerating Strategies for Practical Innovation & Research in Economic Strengthening (ASPIRES) project with the purpose to assess economic barriers to prevention of mother-to-child transmission (PMTCT) services and examine the evidence of the effects various economic strengthening (ES) interventions have on PMTCT access, retention in the PMTCT cascade, and adherence to PMTCT prophylaxis/treatment regimens for both mother and infant.

PMTCT refers to interventions to prevent transmission of HIV from an HIV-positive mother to her infant (so called vertical transmission), which can occur during pregnancy, labor and delivery, or after delivery through breastfeeding. Without prophylactic treatment, approximately 15–30 percent of infants born to HIV-positive women will become infected with HIV during gestation and delivery, with a further 5–15 percent becoming infected through breastfeeding. HIV infection of infants creates a chronic condition that shortens life expectancy and contributes to substantial human, social, and economic costs. Primary prevention of HIV, prevention of unintended pregnancies, effective access to testing, counseling, antiretroviral therapy (ART), safe delivery practices, and appropriate infant feeding practices (including access to antiretroviral drugs to prevent HIV transmission to infants) all contribute to prevention of mother-to-child transmission (MTCT) and also reduce child mortality (World Health Organization 2014). With specific interventions in non-breastfeeding populations, the risk of MTCT can be reduced to less than two percent, and to five percent or less in breastfeeding populations (World Health Organization 2010).

The possibility of having a healthy child born free of HIV constitutes a strong motivator for attending PMTCT services. Nevertheless, substantial barriers persist that impede women following recommended PMTCT interventions (Ferguson 2012). Systematic review that assessed the uptake of integrated PMTCT programs in low- and middle-income countries (Tudor et al. 2013) confirms that even when the uptake of HIV counseling and testing among pregnant women attending antenatal care (ANC) is high, the retention in PMTCT programs remains low, and that PMTCT services experience loss-to follow-up at each step of the program delivery also referred to as the PMTCT cascade—from the first contact, through counseling, HIV testing, collecting results, receiving antiretroviral therapy (ART) or prophylaxis, safe delivery practices, infant feeding recommendations up to postnatal follow-up—thereby reducing program effectiveness. The review also highlights the fact that, given the low uptake of older/simpler PMTCT regimens, it is very important to assess the uptake of more recent PMTCT programs as they implement more effective, but more complicated and potentially lifelong regimens as recommended by the World Health Organization (WHO).

Economic strengthening aims to improve the economic circumstances and address the

economic determinants of poor health outcomes for specific populations. Identifying ES interventions that positively affect all or any of the steps of the PMTCT cascade can strengthen PMTCT programs, contributing to better health outcomes and further reduction in vertical transmission of HIV. Additionally, identifying ES interventions that were applied within other health services, such as ANC services, HIV care and treatment programs or HIV counseling and testing, but may have a potential of being effective in PMTCT settings, as well as identifying evidence gaps, can inform future research and programming in the area of ES interventions for PMTCT.

METHODS

Our search methodology consisted of searching the PubMed, Popline, Econlit, Embase, Global Health, Web of Science, and Google Scholar electronic databases for any articles on economic barriers to PMTCT and economic strengthening interventions within PMTCT or other relevant health services published through July 2014. To search for economic barriers, we have used a combination of “PMTCT” and “economic barriers,” or “economic obstacles,” or “economic factors.” Search terms for ES interventions included combinations of “PMTCT” or “ART,” or “VCT,” or “HTC,” or “HIV” with key ES interventions, such as “cash transfers,” “food assistance,” “food security,” “food-for-work,” “cash-for-work,” “microfinance,” “microcredit,” “loans,” “savings,” “skills development,” “livelihood programs,” “livelihood skills,” “transportation vouchers,” “transportation allowance,” and “social protection.”

Reference sections of the relevant papers and reports found through the initial search were further reviewed for additional references. We did not limit our search to any particular study design—the inclusion criteria were very broad and we considered any study, survey, or program report that described economic barriers to PMTCT or ES interventions to address the barriers and improve health outcomes for HIV-positive pregnant women. We also included publications describing ES interventions applied to ANC programs, ART programs, and HIV testing and counseling situations. Because of the logical overlap between these programs and PMTCT, findings from the ES interventions within these programs may be applicable to PMTCT settings to some degree.

RESULTS

Our initial search produced 1,497 references. After eliminating duplicates and publications that were not relevant (in spite of containing some of the key search terms), we narrowed our selection to 190. After careful reading of the remaining publications, we eliminated another 116 because they did not meet our selection criteria described above. The remaining 74 publications are included in this review and a breakdown by topic area is presented in Table 1.

Table 1. Number of publications selected for review by topic area

Economic Barriers	
Economic barriers: total	52
Economic barrier: distance and transportation	26
Economic barrier: food insecurity	20
Gender-related economic barriers	6
Economic Strengthening (ES) Interventions	
ES interventions: total	22
ES interventions: cash transfers	6
ES interventions: transportation assistance	4
ES interventions: food assistance	12

The overview of the results that follow is divided into two sections: 1) economic barriers to PMTCT and 2) evidence on ES interventions.

Evidence on Economic Barriers to PMTCT

Understanding economic factors that prevent women from entering PMTCT services and adhering to the PMTCT cascade is necessary in order to decide what ES intervention may be appropriate to address these barriers. A number of literature reviews were conducted in the past to assess common barriers to PMTCT and, while economic barriers were not a focus of these earlier reviews, many of them captured economic barriers to some extent.

A WHO systematic literature review (Ferguson 2012) identified 31 studies documenting women's experiences in PMTCT services. In a majority of these studies, women mentioned the time and cost of frequent travel to the health facility as a barrier to accessing PMTCT services, including long travel time to facility (seven studies), need for frequent visits to PMTCT services (one study), perceived costs of PMTCT services (six studies), and transport and food costs (nine studies).

A systematic review conducted by Goulray et al. (2013) with the objective to investigate and

synthesize reasons for low access, initiation and adherence to antiretroviral drugs by women in PMTCT programs in sub-Saharan Africa, identified the distance to facilities and frequency of visits required as one of the key issues affecting access to PMTCT treatment for mothers and infants.

Another review by Hiarlath et al. (2014) examines the literature to determine common reasons for women to fall off the PMTCT cascade and disengage from PMTCT care and treatment. In this review, transportation is the most frequently mentioned socioeconomic barrier.

A systematic literature review by Govindasamy et al. (2012) looked at the predictors for retention and barriers to accessing and remaining in HIV care. Transportation costs, distance to health facility, food shortage, patient-related time constraints, and employed patients unable to take time off work for clinic appointments were the main reported economic barriers. Transportation costs and long distance were the only economic predictors of attrition.

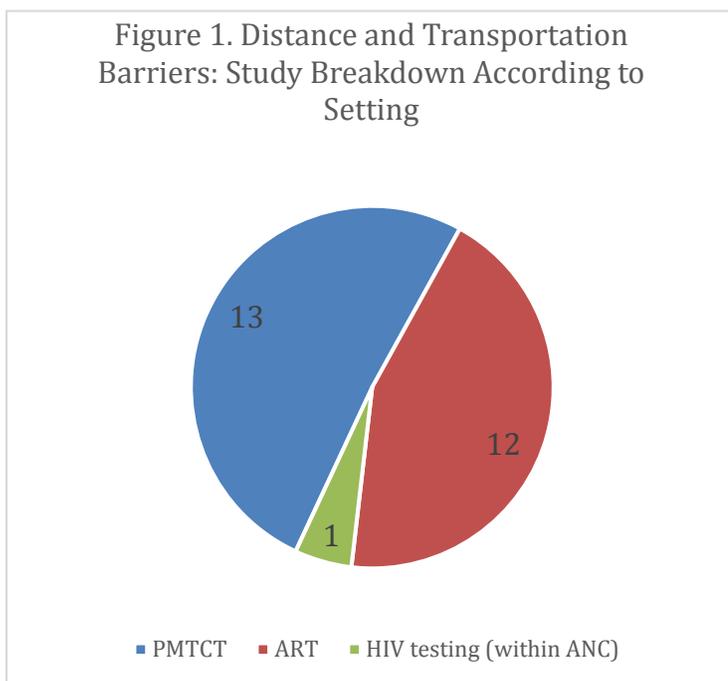
Although most of the 52 studies and surveys on barriers we identified for this literature review are limited in size, the economic barriers highlighted are consistent across the studies and include distance and transportation cost, food insecurity, and to a lesser degree, gender-related barriers.

Distance and Transportation Cost

Long distance to clinics and high transportation costs were the most commonly cited barriers to accessing PMTCT and ANC services, especially for women in rural areas and for low-income women. The majority of the studies included in this review were conducted in East and Southern Africa, particularly Uganda, Malawi, and South Africa. The remaining studies were conducted elsewhere in Africa and only one study in India. In total, 26 studies representing nine countries all had similar findings with the evidence on transport cost and distance as a barrier to accessing HIV/AIDS services, including PMTCT, being very consistent.

Transport can be a barrier to accessing services even when HIV/AIDS is not a factor. For example, transport costs have been estimated at almost half of total expenditure for a normal delivery in studies in Tanzania and Nepal. Travel and waiting time costs were estimated at 9–14 percent of total household expenditure for a delivery in Nepal (Borghi et al., 2006) and 65–93 percent in Tanzania (Kowalewski et al. 2002). While very few studies quantify travel costs and provide information on what proportion of household income these costs represent, the expenses associated with reaching PMTCT or ANC services are likely to be significant because they require multiple visits for women who may already be experiencing economic hardship or reduced mobility due to pregnancy. Thus, even when women access these services with the intent to use, distance and transportation costs could make it hard for many to adhere to visit schedule and loss-to-follow up could be high. A qualitative study in Uganda supports this link between reduced access to services and economic difficulty: 93 percent of HIV-positive mothers interviewed said that transport fees were the major factor preventing them from enrolling in a PMTCT program (Duff et al. 2010).

The same is true for ART programs where patients are expected to come back on regular basis for refills and monitoring. In every relevant study or survey on this topic that was included in this review, the cost of transport was cited as a barrier. (See Figure 1 for a breakdown of the studies based on the study setting). In the majority of studies, it was the most important barrier cited by women. Of note is that there did not appear to be large gaps between men and women who cite transport cost as a barrier. In studies examining both men and women, men generally cited transport costs slightly less frequently than women, but the difference was minimal. In a large study in Kenya, reasons for missing a clinic visit among HIV-positive men and women were examined and while a higher percentage of women cited transport cost as a reason (17 percent, n=2,117) compared to men (12 percent, n=1,037), the difference is relatively small (Ochieng-Ooko et al. 2010). This suggests that transport costs may not be deeply connected to gender disparities or norms; however, it is important to note that most of the studies included here were conducted in Africa and this finding would of course be context specific.



One study of HIV-positive individuals (women and men) points to the importance of transport cost as compared to other potential barriers to accessing services. This study, conducted in southeastern Uganda, examined reasons that people eligible for ART did not start treatment. Among the 158 eligible patients, 44 percent said that cost for transport was the major barrier, while only four percent cited fear of disclosure as the main barrier (Amuron et al. 2009).

A related but less frequently cited barrier was the distance to health services. Nine studies examined distance to services or travel time as a barrier to accessing PMTCT and other HIV/AIDS services. Two studies specified an exact maximum distance in kilometers at which point access is affected. A study in rural Malawi showed that living less than five kilometers from a hospital was associated with attended delivery and adherence to a prescribed ARV regimen (nevirapine) in a PMTCT program (Kasenga et al. 2007). The second study on HIV testing in ANC services showed that living more than three kilometers from a facility was associated with not being tested (Larsson et al. 2012).

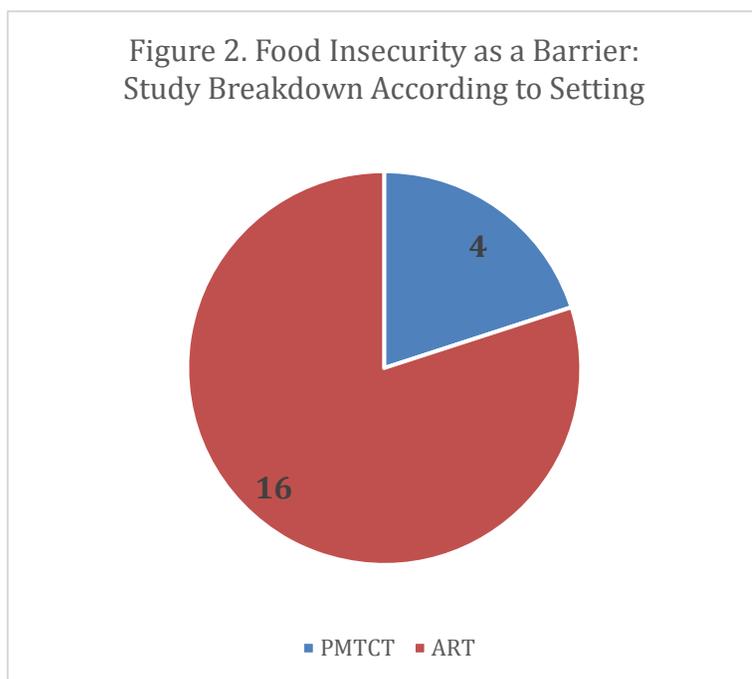
The overall finding of transport cost being a significant barrier to both PMTCT initiation and retention points to a larger situation of economic struggle. In several studies, clients cited this larger struggle in terms of competing financial demands. For example, a study in Uganda on the

barriers to ARV adherence showed that patients had to deal with competing needs for money to obtain transport and other necessary costs such as food and housing (Tuller et al. 2010).

For further description of the studies, refer to Table 1 in the Appendix.

Food Insecurity

Although the specific impact of food insecurity on vertical transmission of HIV is not well documented, some data exist linking malnutrition to MTCT. According to the review done by Anema et al. (2009), insufficient micronutrient intake and poor dietary diversity have been associated with elevated risk of MTCT in several studies. Moreover, food insecurity can affect access to services and adherence to treatment. To date, most research has examined associations between food insecurity and adherence to ART among the general population of HIV-infected adults (see Figure 2 for study breakdown based on study setting). Little is known about how food insecurity affects HIV-positive pregnant women's adherence to PMTCT drug regimen(s). However, it is reasonable to expect that food insecurity will affect pregnant women in a similar manner, especially those who are taking combination ARV regimens to prevent MTCT. Because the latest WHO consolidated ART guidelines (Nybert et al. 2011) recommend that all pregnant women should be on combination ART regimens at least for the duration of pregnancy and breastfeeding, regardless of the stage of HIV disease, it is likely that the barriers to adherence will be very similar to those in traditional ART programs. Overall, 20 studies, representing 11 countries, were found to document food insecurity as a barrier to accessing HIV services, including PMTCT, and to adhering to ART as prescribed.



Four key findings related to food insecurity emerge from the evidence base: 1) The perceived need to take ARVs with food results in non-adherence to ART; 2) The increase in appetite while on ARVs causes unbearable hunger that leads to treatment interruption (as food required to stop the hunger is unaffordable); 3) Limited income causes clients to have to choose between food and ARVs; and 4) Women's ability to breastfeed exclusively can be undermined by food insecurity.

Although many ARVs should be taken on empty stomach or can be taken regardless of food intake, some of the common ARVs, such as ritonavir and ritonavir-boosted protease inhibitors,

should be taken with food to ensure adequate absorption (Nybert et al. 2011). In addition, in clinical practice, it is often recommended to take ARVs with food to minimize the side effects (Hope and Israel 2007). In a number of the studies examined, clients are either told or believe that they must take ARVs with food; therefore, clients miss doses of their ARVs when they are unable to afford regular meals. For example, Hardon et al. (2006) reported that in a multi-country study (Botswana, Tanzania, and Uganda) one of the main reasons for non-adherence to ART was that clients were told to take ARVs with meals and since many patients could only afford one meal a day, the patients were only taking one dose of ARVs a day rather than two. A qualitative study in Zambia found similar results, as many patients believed that ARVs could not be taken without food (Sanjobo et al. 2008). This finding is echoed in the results of the Ngarina et al. study in Tanzania (Ngarina et al. 2013), which is the only study on barriers to adherence that was conducted among women utilizing a triple ARV regimen for PMTCT. Not having money for food was a common reason for women in this study to miss taking their drugs. The stated reasons were because the ARVs make them feel more hungry and also because they had been informed to take the drugs with food. A qualitative study conducted by Duff et al. (2010) in Uganda, found that one of the financial constraints expressed by HIV-positive mothers who attended a PMTCT program was the cost of food while waiting to see health care providers and the cost of nutritious foods that highly active antiretroviral therapy (HAART) patients are recommended to eat while taking the medication. In a study in Kenya that explored why patients who were offered free ARVs chose not to be treated, a fear of taking ARVs on an empty stomach due to the lack of food emerged as one of the main reasons for not accepting ART (Unge et al. 2008). A qualitative study in Malawi found that access to food and food support was an important facilitator to PMTCT care (Iroezi et al. 2013).

Adhering to ART increases the overall health of patients, and for many, brings back their appetite which was diminished due to advanced HIV disease. This causes what patients often describe as unbearable hunger. In situations where patients are food insecure and cannot afford enough food, they may stop taking ARVs as a method of stopping hunger. A study in Uganda interviewed 47 men and women in an AIDS treatment program and found food insecurity contributed to ARV non-adherence for multiple reasons, including ARVs increasing appetite and resulting in “intolerable hunger” (Weiser et al. 2010). A study in Kenya had similar findings with several patients stopping ARVs because they could not bear the hunger and had no money for additional food (Nagata et al. 2012). Even the fear of developing an appetite without the ability to afford additional food was enough to cause patients to either not initiate or not adhere to ART (Au et al. 2006).

The financial strain associated with HIV treatment, including transportation to treatment as discussed earlier, can lead to patients having to make the difficult choice between medical care or purchasing food. Weiser et al. (2010) found that patients either defaulted from treatment or gave up food and wages to get medication. Another study in Uganda by Weiser et al. (2012) found that participants who were severely food insecure were significantly more likely than others to report giving up ART for food. A study in Cameroon also showed that among patients paying for HIV care, non-adherent patients were more likely to report being unable to afford food

(Boyer et al. 2011). General food insecurity caused by the inability to afford food was found to be predictive of non-adherence to ARVs. A study in Botswana looking at barriers to ART adherence found the cost of food as a main barrier (Hope and Israel 2007) and a study in Zambia found the same results (Birbeck et al. 2011). The three studies based in the United States also found food insecurity was associated with non-adherence as well as with “suboptimal immunological response to treatment,” which was most likely due to non-adherence (CHAIN 2011, Kalichman et al. 2010, McMahon et al. 2011). In Latin America, similar results were found. A prospective study among a cohort of HIV-infected adults in Peru (60 percent female, more than 26 percent pregnant at baseline) looked at the relationship between food insufficiency and ART adherence and found food insufficiency to be a statistically significant predictor of suboptimal adherence to ART (Franke et al. 2011).

There is also limited evidence that food insecurity can undermine women’s ability to breastfeed exclusively. For example, a study among HIV-positive mothers and mothers of unknown HIV status in Kenya assessed whether food insecurity was affecting exclusive breastfeeding practices. Women in food insecure households had significantly greater odds of believing that they won’t have enough milk to breastfeed for six months, that women who breastfeed exclusively for six months would experience health problems, that women need adequate food to support exclusive breastfeeding for six months, and that they would be unable to follow a counselor’s advice to breastfeed exclusively for six months (Webb-Girard et al. 2012).

At the same time, having enough food doesn’t necessarily mean that optimal breastfeeding practices will be maintained. For example, a study in Bangladesh investigated the effects of food security on infant feeding practices in the first 12 months of life (Saha et al. 2008). Greater food security was associated with better feeding practices during six to 12 months, but poorer during three to six months. The authors contribute negative association between food security and feeding practices to availability of supplemental foods in food secure households (e.g., cow milk, fruit juices). However, introducing supplementary foods too early could negatively affect MTCT. This is because the other liquids and foods given to the baby alongside the breastmilk can introduce bacterial infection and damage the already delicate gut wall of the small infant, allowing HIV virus to be transmitted more easily. Thus, the rates of transmission during the first six months of life are generally higher with mixed feeding than with exclusive breastfeeding (Fowler 2008, Jackson et al. 2009). These findings suggest that any economic interventions to support recommended breastfeeding practices should be combined with education and counseling support.

For further description of the studies, refer to Table 2 in the Appendix.

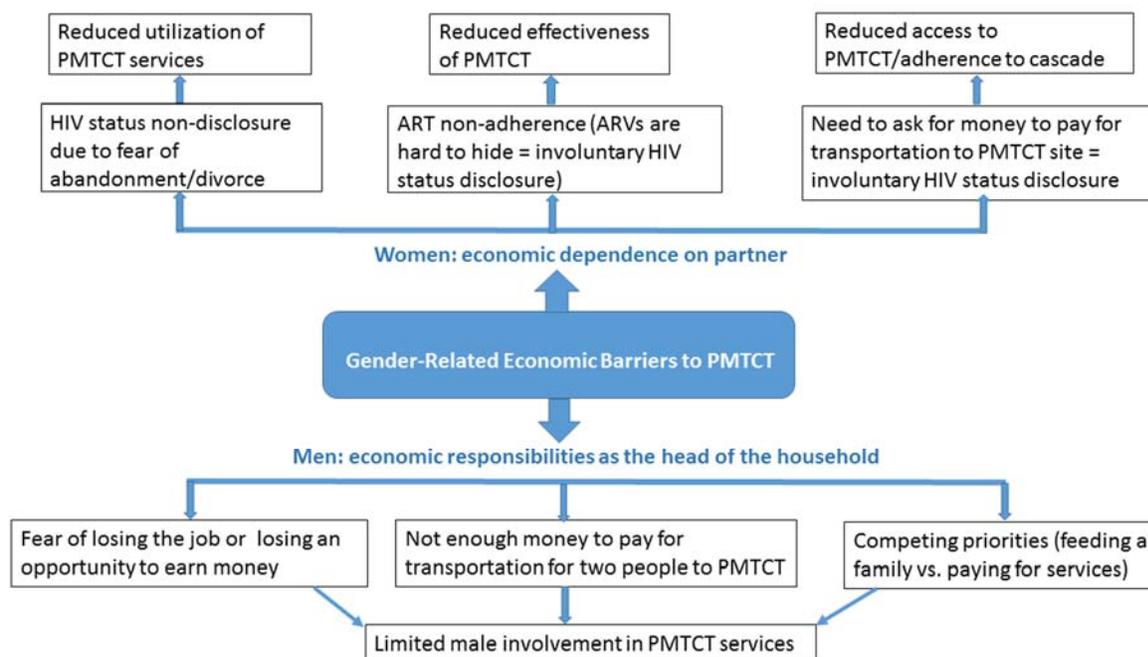
Gender-Related Economic Barriers

Numerous studies have shown that gender dynamics affect women’s access to and utilization of health services, including PMTCT, and that women with supportive partners are more motivated to undergo HIV testing, return for the test result, and adopt lower risk/preventive behaviors, including PMTCT. For example, a non-randomized prospective study in Kenya assessed the

impact of couple counseling on perinatal intervention uptake and condom use. Women whose partners came to the antenatal clinic for counseling were more likely to receive nevirapine during follow-up and report condom use. The association between partner participation and uptake of these interventions was stronger when partners who came to the clinic agreed to couple counseling compared to those who were counseled separately (Farquhar et al. 2004). Similarly, a study in Malawi found that women in PMTCT program who disclosed their status to partners were more likely to return for follow-up (Chinkonde et al. 2009). A prospective cohort study from Kenya investigated the relationship between male involvement in PMTCT services and infant HIV acquisition and mortality. The number of infants infected by one year of age was lower among women with partner attendance compared to those without. Infants born to women with male attendance had a combined incidence of vertical transmission or death of 22.89 per 100 person-years. Comparatively, for infants born to mothers without partner attendance, the composite event incidence was 47.33 per 100 person-years (Aluisio et al. 2011). Fewer infant infections and better infant survival in this study could be attributed in part to better adherence to the PMTCT cascade by women with supportive partners.

Economic barriers related to gender inequality may play a role when it comes to HIV status disclosure as well as access and utilization of PMTCT and other health services (see Figure 3). However, few studies isolated gender-related economic barriers from other types of gender-related barriers. A study in Tanzania suggests that there is an association between financial dependency and HIV serostatus non-disclosure to partners. Women who were more likely to disclose their HIV status had secondary or higher education, had partners who had secondary or higher education, had high income and did not depend on their partner for payment of food/rent/school fees (Kiula et al. 2013). Another study in Tanzania similarly showed that women having higher monthly income were more likely to bring their partners to antenatal HIV counseling and testing and more likely to adhere to services (take nevirapine at delivery and adhere to their chosen infant feeding approach) (Msuya et al. 2008). In a qualitative study conducted in Uganda, HIV-positive mothers who attended PMTCT-Plus program indicated that they were economically dependent on their husbands, who either provided or controlled the household finances. This was found to limit some women's control over treatment-seeking decisions and ability to begin and adhere to HAART. Economic dependence on a spouse was a notable barrier among those women who had not disclosed their HIV-positive status to their partners (Duff et al. 2010).

Figure 3. Gender-Related Economic Barriers to PMTCT



However, it is hard to disentangle gender-related economic barriers from other gender-related barriers, such as fears of stigma, discrimination, violence, and abandonment. Qualitative research conducted among participants in the Zambia Exclusive Breastfeeding Study provided insight into factors affecting HIV-infected women’s decision to accept or continue with ART. One of the major themes that emerged from this study was the effect of ART on interpersonal relationships, particularly between husbands and wives. Many respondents indicated that women do not start or continue with ART because the medications are difficult to hide. Respondents described fear of divorce or mistreatment by husbands once ART use or HIV status was discovered. Respondents also suggested that women lack the possibility of economic independence, and many “would rather die than lose the marriage,” and that therefore ART adherence is highly affected. These responses suggest competing motivating factors such as sustaining a marriage and economic livelihood. Problems with husbands were compounded by perceptions that men “did not know much about HIV/AIDS,” with respondents suggesting that health programs need to educate and otherwise reach out to men (Murray et al. 2008). A WHO review (Medley et al. 2004) synthesized the rates, barriers, and outcomes of HIV serostatus disclosure among women in developing countries. The disclosure rates reported in this review ranged from 16.7 to 86 percent, with women who were tested within ANC programs less likely to disclose to their sexual partners than women tested in free-standing voluntary HIV testing and counseling clinics. This may be because pregnant women are often more vulnerable and less likely to risk losing partner’s support. Barriers to disclosure included fear of accusation of infidelity, discrimination, violence, and abandonment. Women’s fear of abandonment was closely tied to fear of loss of economic support from a partner.

All this suggests that overcoming economic barriers, such as inability to pay for transportation to the health clinic, may not be enough. Fear of violence or abandonment can still prevent some women from accessing the health services even when they are given the means to do so. Combining ES interventions with interventions to address cultural, social and interpersonal aspects of gender relations may provide women with economic means while removing or minimizing “fear factor” (Pronyk et al. 2006).

In addition, limited evidence suggests that even when men are supportive of women using ANC or PMTCT services, they may still not be able to participate in more meaningful ways due to economic constraints. We were able to identify only three qualitative studies where men specifically cite economic barriers among other reasons they were not able to accompany their wives. A study conducted in Uganda by Larsson et al. (2012) found that some of the reasons men do not accept couple counseling for HIV was that the clinics were too far away, cost of getting to the health facility was high, and time required for travel was taking time away from work and other activities. In Kenya, men identified challenges related to their work among those that influenced their engagement in PMTCT (Reece et al. 2010). These challenges included fear of losing the job if they take time off to attend PMTCT or losing an opportunity to earn money (in case of casual labor) and not being able to feed their family. In Uganda, some men reported that they were not able to attend services with their partners due to socio-economic difficulties (Byamugisha et al. 2010). Having too much time occupied by income-seeking activities, and not having enough money for transport for two people were given as the reasons. Programs that are looking to increase male involvement in PMTCT services may need to consider addressing economic barriers among other barriers that prevent men from accessing the services with their wives/partners.

For further description of the studies, refer to Table 3 in the Appendix.

Evidence on Economic Strengthening Interventions

We identified 17 studies and five program evaluations of ES interventions aimed at improving access to health services relevant to the PMTCT cascade and adherence to treatment. All of the ES interventions in these studies or programs are reflective of the economic barriers to PMTCT described in the previous section of this review: 12 explored if food assistance may increase ARV adherence and access to services, four assessed effects of transportation assistance on health services utilization, and six looked at cash transfers as a means to increase access to and retention in services (see Figure 4). Only three of these studies focused on a PMTCT population/setting directly; all other studies were conducted among HIV-infected men and women within ART settings or those undergoing HIV testing, as well as among populations that included pregnant women in need of ANC. Because all of these other health services are relevant to the PMTCT cascade, we consider the findings being informative, even if not fully applicable to PMTCT settings because HIV-positive pregnant women may have somewhat different facilitators and barriers to access and adherence than uninfected pregnant women or women with HIV who are not pregnant. The summary of our findings below is divided in three

sections, focusing on the evidence obtained for each individual ES intervention.

Cash Transfers

Programs that use cash payments to improve individual wellbeing have been in existence for a number of decades and are currently estimated to reach over one billion people in the developing world. These payments have been both unconditional (when payments go to eligible households, but individuals are not required to do anything to receive payments) and conditional (payments are tied to behaviors believed to be beneficial to the individual) (PEPFAR 2012, Pettifor et al. 2012, DFID 2007).

It is theorized that increasing poor households' income through cash transfers makes health care, food, or education more affordable and thus can improve health outcomes. Such programs have aimed to increase uptake of preventive health services (e.g. immunizations), and to improve growth outcomes, primarily in children.

Figure 4. Study Breakdown Based on ES Intervention



Overall these programs have been effective in increasing the use of preventive health services although the evidence on improving health outcomes is mixed (Lagarde et al. 2009). Adato and Hoddinott (2010) provide an overview of the evidence from conditional cash transfers programs in Latin America. The findings suggest increase in the frequency of routine contacts between young children and health services. As a result, the coverage of growth monitoring increased markedly and significantly in all studies, but there was only weak evidence that immunization coverage was similarly affected. A World Bank policy research report (Fiszbein et al. 2009) draws on a large number of impact evaluations of conditional cash transfers (CCT) programs in Latin America. Some evaluations have found that program beneficiaries make more use of health services than they would have made in the absence of the intervention; however, service utilization is only an “intermediate” outcome. Data on health outcomes are limited. Some improvements in nutritional status (positive shifts in child height for age and weight for height, hemoglobin levels and anemia) as well as infant mortality reduction are documented by some studies, although even this limited evidence is mixed with many studies finding no effect. In the case of PMTCT, the expected result—prevention of vertical transmission of HIV—is a much better defined outcome and much more dependent on “intermediate” outcome of service utilization and adherence to the PMTCT cascade than with some other preventive services. Thus, it is reasonable to expect that any intervention aimed at increasing utilization of PMTCT services will have a more measurable effect on health outcomes.

A review focusing on social protection and cash transfers as a means to strengthen families affected by HIV/AIDS (Adato and Bassett 2012) suggests cash transfers can affect health in several ways: by covering costs directly associated with accessing healthcare (including transportation expenses, medical fees, and the opportunity costs of time), increasing food consumption (both the quantity and the quality of nutrients), and by incentivizing participation in preventive healthcare and health education when transfers are conditional.

In our search, we found no program evaluations or published studies where cash transfers were offered specifically to HIV-positive pregnant women or linked in any way to PMTCT services directly. The first randomized controlled study looking at CCT to increase uptake of and retention in PMTCT services is currently in progress (Yotebieng 2014). The study is being conducted within a well-established PMTCT program in Kinshasa, Democratic Republic of Congo, with two main goals: 1) test whether cash payments to HIV-infected pregnant women, on the condition that they attend scheduled clinic visits and receive proposed services, will increase the proportion of women who receive the most effective antiretroviral regimen they are eligible for by the time of delivery, and 2) identify factors that facilitate or inhibit the uptake and adherence to the PMTCT cascade, and to what extent the conditional cash payment program addresses these factors. As secondary outcome measures, the study will also look at the proportion of HIV-exposed infants who tested positive at six week postpartum, the proportion of children born to HIV-positive enrolled mothers who are alive and HIV-free at 18 months postpartum, and the proportion of infants born to HIV-infected participants who at six weeks postpartum are receiving the extended nevirapine prophylaxis and have been tested for HIV (DNA PCR test). So this study will provide information not only on service utilization, but health outcomes as well.

We found some evidence of cash transfers improving utilization of other health services relevant to the PMTCT cascade, such as ANC and ART services. One study and two program evaluations confirmed that cash transfers can have a positive effect on ANC utilization. The study—a large randomized trial in Honduras—evaluated if conditional payments to households would increase use of preventive health-care services by pregnant women, new mothers, and children younger than three years of age and found that vouchers distributed directly to households had a significant impact on the uptake of ANC and routine well-child check-ups. Both of these indicators increased by 18–20 percentage points in the groups receiving the vouchers. Other arms in the study included resources to local health teams combined with a community-based nutrition intervention, both packages (household level and health teams/community level), and neither. The household-level package also resulted in large increases in the coverage of growth monitoring. The study conclusion was that there is convincing evidence that direct payments to households do increase the use and coverage of preventive health care services (Morris et al. 2004).

Two program evaluations, in Peru and in Bangladesh, noted the same positive effect. In Peru, access to ANC services was improved among women in eligible households that were given monthly cash transfers of approximately \$30 per month on condition that they will be accessing

health services. In this program, pre- and post-natal visits have increased by 65 percent and there was a reported reduction in home birth (Jones et al. 2008). Similarly, the DFID supported “Ultra Poor” program in Bangladesh directly linked cash transfers to health services. The results included the increase in antenatal coverage to 96 percent and postnatal coverage to 93 percent (although the report doesn’t offer baseline figures) and an increase of 45 percent in immunization coverage (from 53 to 98 percent) (Arnold 2011, Davies 2009).

These findings are relevant to PMTCT programs as PMTCT services are often integrated within ANC services, require multiple visits, and have similar economic barriers to access.

Only one study in our search explored the effects of cash transfers on ART, comparing adherence to ART and loss to follow-up among Ugandan patients who received cash transfers and those who didn’t. In this randomized study, HIV treatment adherence scores, as well as retention in care, were higher among the intervention group, leading researchers to conclude that “modest cash transfers of \$5-8 per month to defray cost of transportation may be an important strategy to reduce costs and improve treatment outcomes in rural, resource-limited treatment settings” (Emenyonu et al. 2009). The result may have implications for PMTCT programs as many are starting to implement combination ARV treatment for all women, not just those who need ARVs for their own health.

Small monetary incentives were shown to increase HIV result-seeking behaviors in Malawi, where study participants were offered a free door-to-door HIV test and randomly assigned vouchers between zero and three dollars, redeemable upon obtaining their HIV test results at a voluntary counseling and testing (VCT) center. The demand for HIV test results among those who received no monetary incentive was moderate, at 34 percent. However, individuals who received any cash value voucher were twice as likely to go to the VCT center to obtain their HIV test results as were individuals receiving no incentive (Thornton 2008). The results of the study may be relevant to PMTCT programs where a significant number of women are dropping off at every step of PMTCT cascade (although it is common now for women who are tested for HIV to receive their test results during the same visit).

For further description of the studies, refer to Table 4 in the Appendix.

Transportation Support

Transportation support is meant to address the most common barrier to access. Many health services are not provided at community level and long distances make it hard to reach for potential users who cannot afford transportation costs. While transportation support can be provided in different forms, including cash transfers, in this review we considered only interventions that were more directly linked to transportation (e.g. transportation vouchers, or reimbursements at a time of clinic visits, or community escorts to assist with referrals and make sure that transportation allowances are really used for transportation). As with cash transfers, we didn’t find any studies where transportation support was offered to women in need of PMTCT, but identified three studies and one program description where transportation support

was provided for accessing services relevant to PMTCT cascade. One pilot study in Uganda showed a dramatic increase in attendance of ANC services during a time period when they were receiving a transport voucher and a service voucher (to help cover any additional fee associated with services). ANC attendances declined when vouchers for transport were stopped (Pariyo et al. 2011).

Two studies provided some insight into how access to ART services were affected by transportation support. One of these studies, conducted in Tanzania, introduced transportation allowances and “community escorts” as part of the referral system for ART and found a gradual increase in referral uptake. Most patients reported that the referral system facilitated their arrival at the HIV clinic, but expressed a desire for HIV treatment services to be in closer proximity to their homes (Nsigaye et al. 2009). The aim of the second study was to explore the barriers to ART adherence in Zambia. While transportation was not singled out as a barrier, patients who were registered and supported by NGOs mentioned that the transport support they received each time they went for their medical reviews facilitated their adherence to treatment (Sanjoko et al. 2008). The link between access/adherence and transportation assistance is also supported by an ART program in Haiti that implemented a package of interventions to promote access to care and adherence to ART. Several components were put into place to reduce economic barriers, such as providing all services and medications free of charge, providing a monthly transportation stipend to attend follow-up appointments and covering transportation costs for emergency visits, providing food or cash transfers for food to the most vulnerable patients. The program description provides no baseline data, but states a dramatic increase in HIV counseling and testing and low rates of clinical or immunologic failure that required a change to second-line ART, suggesting good adherence to ART and medical follow-up (Mukherjee et al. 2006). While it is impossible to say how much of the success could be contributed to transportation assistance, it is clear that any comprehensive package to address economic barriers to HIV services should include transportation support for those who don't live in immediate proximity to services.

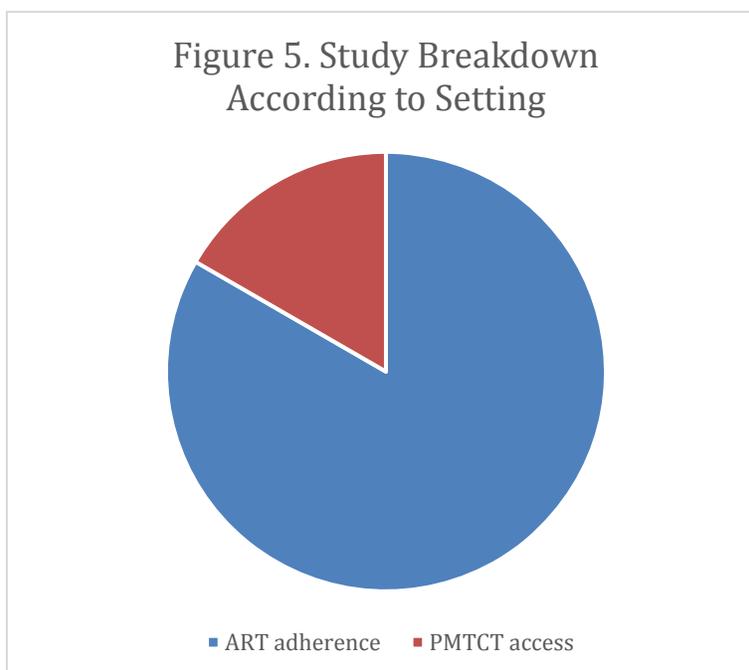
For further description of the studies, refer to Table 5 in Appendix.

Food Support to Improve Treatment Adherence and Access

Food insecurity is a known barrier to accessing health services and adhering to treatment. A number of studies explored if providing food support may improve access, treatment adherence, and ultimately treatment outcomes for HIV-infected individuals. However, to date, research has examined associations between food support and adherence to ART only among the general HIV-infected population (see Figure 5 for study breakdown based on setting). None of the studies we identified assessed how food support affects HIV-positive pregnant women's adherence to a PMTCT regimen. Nonetheless, it is reasonable to expect that improving food security will affect pregnant women who are taking combination ARV regimens for PMTCT in a manner similar to that among general adult ART population.

The latest WHO Consolidated Guidelines on the Use of Antiretroviral Drugs for Treating and

Preventing HIV Infection (Nybert et al. 2011) recommend that all pregnant women should be taking the same first- and second-line combination ARV regimens as patients in ART programs throughout the pregnancy and breastfeeding (Option B) and, ideally, for life (Option B+). Therefore, adherence data from the traditional ART programs can be applicable to PMTCT settings. Among the seven studies on adherence we identified, one was qualitative (Byron et al. 2008), three were prospective non-randomized (Cantrell et al.



2008, Ivers et al. 2010, Serrano et al. 2010), and three were retrospective cohort studies (Posse et al. 2013, Tirivayi et al. 2010, Tirivayi et al. 2012). The qualitative study in Kenya (Byron et al. 2008) looked at treatment adherence as part of the broader objective of determining key benefits and challenges of interventions to strengthen the nutrition security of people living with HIV and receiving ART. This study found that ART patients enrolled in a food program reported fewer side effects and greater adherence to medication. All three prospective non-randomized studies compared intervention cohorts (those who received food rations) to controls, and all three found better adherence among food recipients: in Zambia 95 percent adherence was achieved by 70 percent of the patients in the intervention group compared to 48 percent in control (Cantrell et al. 2008); in Haiti only 14.4 percent of ART patients who were receiving food assistance reported difficulties taking their medications compared to 28.1 percent of those who did not receive food assistance (Ivers et al. 2010); in Niger (Serrano et al. 2010) adherence was significantly improved for patients receiving food support in combination with nutritional advice compared to controls who received nutritional advice only—98.4 vs. 77.4 percent.

Two retrospective studies were conducted in Zambia (Tirivayi et al. 2010, Tirivayi et al. 2012) with the second one being a follow-up on the first study. Both had an objective to evaluate the effects of food assistance on ART adherence among patients with HIV. The results of the first study demonstrated a positive overall effect of food assistance on adherence, but when patients were stratified by the duration of ART treatment the results were mixed. Among patients on treatment for less than the sample median of 995 days, receiving food assistance had more significant positive effect compared to full sample estimates. However, food assistance did not appear to increase adherence among patients who had been on ART for more than the median of 995 days. The second study also found a greater impact of food assistance on adherence among patients earlier in treatment (in the first three years of treatment, and particularly in the

first 7.5 months after ART initiation), thus confirming the results of the first study. Additionally, the effect was greater among those with several indicators of more advanced illness. The authors warn that the results should be interpreted with caution due to the small sample size, but there is still a possibility of a greater impact of food assistance on adherence during earlier days of ART rather than later. One of the explanations they offer is that as ART patients' health improves, some of them start prioritizing other activities (such as work) over treatment, which could lead to missed appointments and/or doses. Even if this effect is a true effect, it may be less of a problem for PMTCT settings because pregnant women have a shorter timeframe to receive the greatest benefit (if they can adhere to ART at least for the length of pregnancy and breastfeeding, the majority of infant infections could be averted).

The third retrospective study (Posse et al. 2013) is the only one that contradicts the results of other studies identified by our review and finds no difference in adherence rates between food assistance recipients and control group. The authors, who analyzed three years of data extracted from randomly selected clinic and pharmacy records in Mozambique, suggest that the contradictory results could be explained by several limitations in study design, such as its retrospective nature, possibly incomplete data, inability to ensure that ARVs collected at the pharmacy were actually taken, and lack of information on how well the food assistance program was implemented.

In addition to the studies, we identified two assessments of food support interventions for people living with HIV/AIDS (PLWHA), including those on ART. The AIDSTAR-One assessment of the NuLife Food and Nutrition Interventions for Uganda showed that the food prescribed in the facilities has dramatically improved the nutrition status and the quality of life for clients and improved their ability to better adhere to drug regimens. Ninety percent of the clients interviewed said that having food helps them take their medication (Bergmann and Stone- Jiménez 2011). Another AIDSTAR-One assessment—this time of the Kenya Food by Prescription program—notes that providers within this program reported improved ART adherence among food recipients (Gerberg and Stansbury 2010).

We found only two studies where relationships between food security and access to services were examined. A qualitative study in Malawi found that many women see receiving aid in the form of food as an important facilitating factor for accessing PMTCT (Iroezi et al. 2013). Another study in three countries—Malawi, Zimbabwe, and Zambia—found that food aid attached to PMTCT programs would increase program participation. However, this was based on interviews only and it is not clear if it would translate into actual participation (Egge and Strasser 2006).

In addition, an ongoing study in Tanzania (McCoy 2014) compares food and cash assistance for food-insecure HIV-positive men and women who recently initiated ART. Participants are randomized into three groups: one receives a monthly food basket, one receives monthly cash transfers, and one serves as control. Receipt of the food and cash transfers is conditional on attending scheduled treatment and care visits at the clinic. The researchers will evaluate the comparative effectiveness of food and cash assistance to determine their effects on HIV

outcomes including adherence to ART, retention in care, food security, body mass index, CD4 cell count, and participation in the labor force. Additionally, a qualitative study will be conducted to understand participant attitudes, beliefs, and preferences to reveal how they utilized the food and cash transfers.

For further description of the studies, refer to Table 6 in the Appendix.

DISCUSSION

ES interventions have become an important dimension in the prevention, care, treatment, and mitigation of HIV/AIDS (Gillespie 2006). While there is evidence that livelihood interventions for families and households affected by HIV have positive effects on their wellbeing and overall quality of life (Stene et al. 2009), data on the effects of ES on health-seeking behaviors and treatment adherence and, especially, treatment outcomes are very limited. Even less is known on how ES interventions can affect PMTCT programs despite the fact that there is a need for effective approaches to increase access, utilization, and retention in the PMTCT cascade, all of which remain less than optimal (Hiarlath et al. 2014).

Overall, barriers to PMTCT are well studied and documented and include health system barriers, provider-related barriers, cultural and individual barriers, as well as socioeconomic barriers (Anderson et al. 2012). In the first portion of our review we focused specifically on economic barriers and found sufficient evidence on transportation costs restricting access to PMTCT as well as other health services, such as ANC and ARV treatment. While adherence to PMTCT treatment regimens is known to be another common problem, all the data on economic barriers to adherence we were able to find are coming from ART programs with the most commonly mentioned barrier being food insecurity.

It is also important to note that most of the available data on PMTCT access and adherence were obtained for older programs that were using a single-dose nevirapine regimen or short course of zidovudine for prevention of vertical transmission of HIV. Very little is known about access and adherence to programs that transitioned to WHO-recommended combination ARV regimens/HAART for all HIV-positive pregnant women, regardless of the stage of HIV disease, for the duration of pregnancy and breastfeeding (Option B) or for life (Option B+). Economic factors may play an even greater role when combination ARV prophylaxis is implemented by PMTCT programs. The concern is that more complex regimens require more monitoring and refill visits (thus more clinic visits overall and more transportation expenses), and carry a greater risk of suboptimal adherence. One observational study (Kirsten et al. 2011) from Tanzania

supports this concern. This study assessed the adherence challenges to combination prophylaxis regimen used by the integrated ANC/PMTCT program and found that over 60 percent of women were not fully adherent and had missed at least one drug collection episode. Some of these women mentioned transportation difficulties as one of the reasons they missed an appointment. Only 8.3 percent of mother-child pairs achieved at least 80 percent adherence rates in all phases before, during and after delivery, and only one single mother-child pair (0.8 percent) achieved a 95 percent adherence level for the entire PMTCT intervention. In addition, in this study, close to 30 percent of women enrolled declined pre-delivery prophylaxis altogether. Two of the variables associated with declining pre-delivery prophylaxis were young age and having no income-generating activity, which may be a proxy for “not being able to pay for transportation and/or food.” It is clear that more research is needed to measure economic consequences of the increased visit frequency and more complex drug regimens as more PMTCT programs are moving towards Option B and B+.

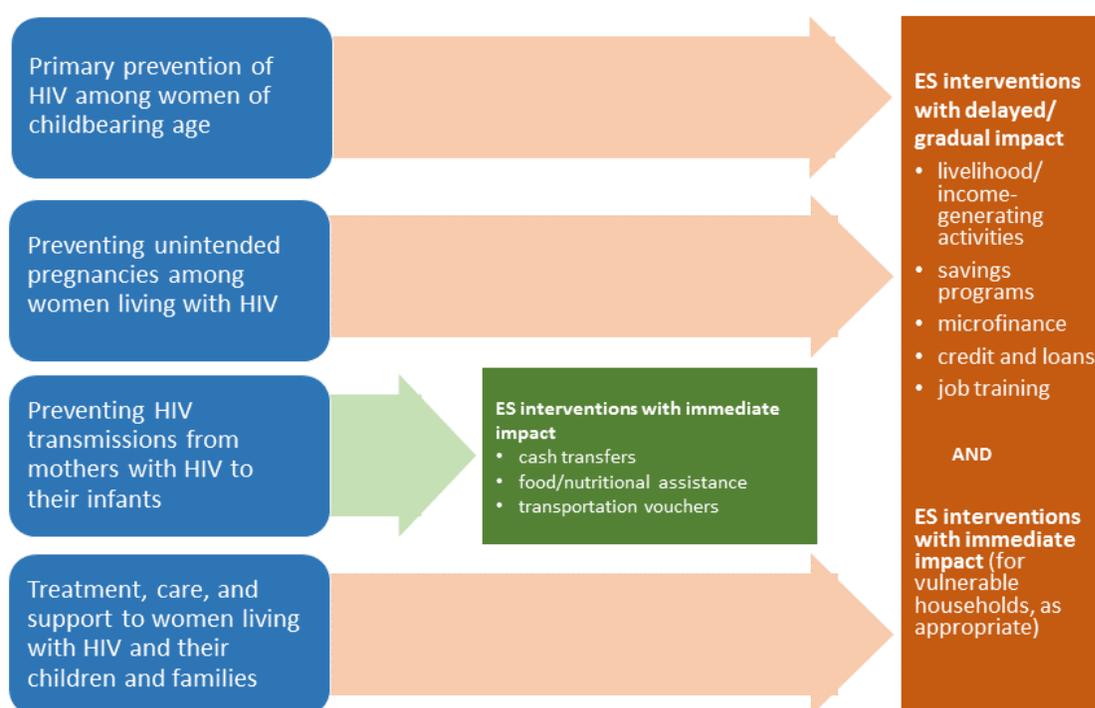
In spite of economic barriers to PMTCT and related health services being well defined, we found no studies that introduced ES interventions in PMTCT settings. Thus we extended our search to include other health programs—those that are relevant to the PMTCT cascade, such as ANC, HIV counseling and testing, and ARV treatment. Even though we can't be certain that the evidence from these programs and interventions can be fully applicable to PMTCT settings, it is reasonable to expect some strong similarities. The only ES interventions that were implemented within these other health settings/programs were cash transfers (both conditional and unconditional) and transportation vouchers, which were shown to increase access and utilization, as well as food/nutritional support, which was shown to improve adherence to ART. However, these three ES interventions seem to be the most logical for PMTCT settings as well. This is because the impact of the ES intervention for PMTCT has to be immediate—the intended beneficiaries are already HIV-positive and pregnant, and the window to prevent transmission to a child is narrow. ES interventions that provide immediate relief are most appropriate when access to care is needed without a delay. Economic improvement and financial gains that may result from other interventions, such as vocational skills training, microfinance/microcredit, or income generating activities take time to materialize and won't affect women's immediate ability to access services or to take their medication correctly.

However, this is not to say that interventions that may lead to eventual economic improvement on individual and/or household level have no place in PMTCT. It may be helpful to consider a comprehensive PMTCT approach instead of just PMTCT services. This comprehensive approach includes four components (also referred to as prongs): preventing primary HIV acquisition among women of childbearing age; preventing unintended pregnancies among women living with HIV; preventing HIV transmission from mothers with HIV to their infants; and providing appropriate treatment, care, and support to women living with HIV and their children and families. When all four prongs of PMTCT are considered, ES interventions with “delayed benefit” are still appropriate (see Figure 6) and can be implemented to:

- Promote better HIV preventive behaviors among young uninfected women by reducing their financial dependence and empowering them to negotiate safe sex, refuse sex with unsafe

- partners, and minimize or eliminate money-for-sex or food-for-sex transactions (Prong 1);
- Increase access to safe and effective family planning for women with HIV who don't desire pregnancy by improving their financial ability to access services and strengthening their decision-making power within relationships, which is often linked to having independent income (Prong 2); and
- Improve nutritional status, adherence to treatment (especially now that PMTCT programs are gradually adopting Option B+), and overall health of women living with HIV and their children (Prong 4) by increasing their individual and household economic stability and food security.

Figure 6. Four Prongs of PMTCT and Possible ES Interventions



ES interventions that may lead to gradual financial gains (even relatively small) may also build a future foundation for prevention of MTCT as some of these women are likely to consider having another child and when they do, they will be in a better position to access PMTCT services again.

Another way to consider what types of ES interventions may be appropriate in PMTCT settings would be through PEPFAR framework describing a continuum of ES interventions based on family's economic status/vulnerability (PEPFAR 2012). While this framework (see Table 2) doesn't specifically include pregnant women (or any other specific populations), many pregnant women do fall under the "families in destitution" category and should be considered vulnerable not necessarily because they are unable to engage in economic activities, but because there may be not enough time for them to obtain a desired benefit from this activity (such as

accessing services and preventing vertical transmission of HIV). Thus, the most appropriate interventions for women who need to access PMTCT services in a timely manner and adhere to PMTCT regimen would be “direct transfers of resources,” such as cash transfers and food aid.

Table 2. Economic Strengthening Programing based on Family Situation (adapted from the Guidance for Orphans and Vulnerable Children Programming, PEPFAR 2012)

Approach	Consumption Support	Money Management	Income Promotion
Service	<ul style="list-style-type: none"> Direct transfers of resources, usually in the form of cash transfer (both conditional and unconditional) and food aid 	<ul style="list-style-type: none"> Mechanisms for group and individual savings Accessing prudent consumer credit Fostering the knowledge and behaviors needed to better match household expenses with income 	<ul style="list-style-type: none"> Microenterprise activities Labor-based opportunities (such as formal employment or casual labor) Business loans Skills training Income-generating activities
Focus	<p>Families in destitution: Unable to engage in economic activity, trouble paying for basic necessities (e.g., food); have no predictable source of income but potentially a lot of debt they cannot pay; very few liquid assets (e.g., cash savings, livestock, etc.)</p>	<p>Families struggling to make ends meet: Usually paying for basic needs (e.g., food), but not regularly paying for other needs (e.g., school fees); have one or more predictable sources of income and some liquid assets, which may fluctuate throughout the year</p>	<p>Families prepared to grow: Usually paying for both basic needs and other needs (including basic health care) on a regular basis; have predictable source of income and some liquid assets that fluctuate less throughout the year than for struggling families</p>

Although not the focus of this review, there is some evidence of positive impact of the long-term ES interventions—those that “restore or maintain economic resources” and those that “strengthen or increase economic resources”—on HIV preventive behaviors among uninfected women (Lukas 2008), as well as on overall wellbeing and quality of life of those living with HIV (Xiong 2012).

Moving forward, it is likely that there is a role for ES interventions to play in facilitating women’s access to PMTCT services and improving their adherence to the PMTCT cascade, however the evidence will remain weak until these interventions are tested directly within PMTCT settings. Even though ANC and ART programs have much in common with PMTCT programs, the facilitators, drivers, and barriers may be (and likely are) somewhat different. For example, a woman who is concerned about HIV transmission to her baby may have a stronger motivation to

access PMTCT services compared to an uninfected pregnant woman who needs to access ANC services. Or she may be less likely to do so because of the fear of stigma, disclosure to her partner, and possibly partner violence or abandonment. We won't know how ES interventions will interact with these other drivers and to what degree the knowledge gained within ANC or ART programs is generalizable until we test them with women in need of PMTCT services.

The limited nature of the evidence in terms of the number of studies, study design and population size, the fact that almost all data on ES interventions are coming from settings other than PMTCT (although they are relevant to PMTCT cascade), and the changing nature of PMTCT programs means that we still need the answers to the following questions:

- How different ES interventions—those that were already tested within health settings other than PMTCT and, especially, those that were not tested at all—may affect women's access and adherence to PMTCT cascade?
- Can food support improve adherence to combination ARV regimen by pregnant women with HIV?
- What are the most effective models of delivery of cash transfers and transportation/food support to potential PMTCT users/women entering PMTCT programs?
- What are the minimum requirements (e.g., size, frequency, conditionalities) of cash transfer or/and food assistance to lead to the desired outcomes in PMTCT settings?
- How to better complement health system strengthening interventions for PMTCT with ES interventions? For example, bringing services closer to women/decentralizing PMTCT services, better integration with existing services, and task-shifting may address the issue of access in some, but not all situations; ES interventions can “fill the gaps.”
- How might ES interventions for PMTCT be supported or hindered by other factors, such as male involvement, couple counseling/disclosure, gender relations, etc.? Studies that incorporate these other factors may provide insight on what combination of approaches may maximize the effectiveness of ES interventions.
- How retention in the PMTCT cascade (from early ANC visit up to HIV testing in infants) can be supported by other creative ES approaches that are rooted in behavioral economic principles (e.g., loss aversion)? This may include setting up small saving accounts for women in PMTCT programs who live in relative proximity to services (and thus may not require transportation assistance to access program) with small deposits made for every visit, but being accessible only at completion of infant testing (Taylor and Bottenheim 2013).

Answering these questions will provide more evidence base for program implementers and guide decisions about how to increase women's utilization of PMTCT services and adherence to PMTCT cascade.

APPENDIX 1: SUMMARY TABLES OF STUDIES

Table 1. Barriers: Long Distance and Transportation Cost

Study	Relevant outcomes/economic barriers
<i>Adedimeji et al.</i> 2012	According to a study of PMTCT barriers in Ethiopia, out of the 74 women diagnosed with HIV, only five (7%) returned to the facilities for delivery. Focus group participants and key informants reported that while PMTCT services were offered for free, access remains severely restricted for many low-income women who could not afford the significant cost associated with transportation and other logistics.
<i>Amuron et al.</i> 2009	In Uganda, among 158 patients who were eligible for ART, but did not start treatment, 44% said that they could not afford transport cost. In comparison, just 4% reported difficulty in disclosure as the reason for not initiating ART.
<i>Anderson et al.</i> 2012	Participants of the consultation conducted by the International Community of Women Living with HIV and the Global Network of People living with HIV consistently noted that users of existing programs to prevent vertical transmission of HIV were challenged in accessing services due to cost issues and travel time to facilities.
<i>Bwirire et al.</i> 2008	Transport cost was one of the main barriers to attending PMTCT services in a qualitative study conducted in rural Malawi among antenatal mothers participating in the PMTCT program, post-natal mothers who dropped out, and nurse midwives.
<i>Chinkonde et al.</i> 2009	A small qualitative study in Malawi looked at why some women who were enrolled in a PMTCT program did not fully participate in follow-up visits in the first six months after testing HIV-positive. It found that women who dropped out of the PMTCT program mostly did so before delivery and cited difficulties accessing services, including long walking distances, as one of the reasons.
<i>Cleary et al.</i> , 2012	A study in South Africa looked at barriers to accessing ART services from the perspective of 1,267 users interviewed in 12 facilities within two urban and two rural health sub-districts. The results revealed that total expenditure on healthcare was considerably higher in the two rural sites and respondents in these sites were also more likely to report catastrophic expenditure, including spending far more on travel and other factors associated with reaching and spending time at the ART facility.

Study Relevant outcomes/economic barriers

<i>Duff et al.</i> 2010	A qualitative study in Uganda conducted individual in-depth interviews with 45 randomly selected HIV-positive mothers who attended PMTCT-Plus program and who either never enrolled in HAART, enrolled but did not come back to receive HAART, interrupted HAART, or who are currently adhering to HAART. Lack of finances emerged as the greatest barrier to taking HAART among all four groups. Costly transportation fees for monthly check-ups were cited as the most prevalent barrier to enrolling in the PMTCT-Plus program and adhering to HAART, with 42 of 45 (93%) respondents citing this as the major barrier.
<i>Geng et al.</i> 2010	A cohort study in Uganda used a sampling-based approach to explore reasons for loss to follow-up in ART program. Among 111 ART patients lost to follow-up, the most common reasons for absence were lack of transportation and excessive distance (50% and 42% respectively).
<i>Hardon et al.</i> 2006	A Study in Botswana, Tanzania, and Uganda found that although participants in all three studies received ARVs free of charge, transport costs were an important reason why ARV users fail to visit the health facility for follow-up.
<i>Iroezi et al.</i> 2013	A qualitative study in rural Malawi identified transportation to the hospital or health center sites as the most common barrier to accessing PMTCT. Ninety percent of the women spoke of transportation problems, specifically the distance needed to travel to the PMTCT site and the cost of transport. Nine women lived at least two hours walking distance from the hospital. The average cost for transportation was reported by women to be close to the average cost of food for an adult for one day.
<i>Jackson et al.</i> 2006	A lack of money for transport was cited as a common barrier by women in a community situational analysis to determine factors that impact on the utilization of PMTCT and ANC services conducted in three sites in South Africa located in the Western Cape, KwaZulu-Natal, and the Eastern Cape. In this analysis, between 28% and 38% of the women indicated they had problems attending PMTCT/ANC services.
<i>Kasenga et al.</i> 2007	A study looked at implications for adherence to Nevirapine (NVP) in a PMTCT program in rural Malawi and found that about 40% of mothers who did not deliver in the hospital didn't take NVP prophylaxis, and none of the mothers who didn't deliver in the hospital brought their babies to the health facility for NVP syrup. Only distance of less than 5 km to hospital was associated with hospital delivery. There were no significant differences in socio-demographic characteristics between the women who had picked up NVP and those who did not, or those women who delivered at the hospital and those who did not.

Study Relevant outcomes/economic barriers

<i>Kirsten et al.</i> 2011	A study in Tanzania explored adherence to combination ARV prophylaxis within PMTCT programs. Among the 19 women who had stated one or more reasons for occurred missed drug collection episodes, transportation difficulties were mentioned by three women (15%).
<i>Larsson et al.</i> 2012	A population-based cohort study in eastern Uganda collected data related to ANC services, including HIV testing. In this study, living more than three kilometers away from a health facility with HIV testing services was associated with not being tested both among the poorest and the least poor women.
<i>Lubega et al.</i> 2013	A small qualitative study in Uganda explored the reasons for loss to follow-up of clients in PMTCT programs. High transport cost was often mentioned as a barrier to retention. Some clients reported that they did not have money for transport and had to seek alternative assistance to access the services. Others reported that they had to sell off some of their assets to access PMTCT. The transport barrier was echoed by some members of the focus group discussions who thought that many PMTCT clients would adhere to PMTCT care if the government could provide transport.
<i>Muchedzi et al.</i> 2010	A cross-sectional study in Zimbabwe assessed utilization of ART services by HIV-positive women who were referred from ANC/PMTCT programs. Of the 147 clients surveyed, 35% did not access HIV care and treatment. Seven women (13.5%) sited high transportation cost as the reason for not accessing services. Other reasons, such as perceived long queues/laborious registration process (50%) and competing priorities (32.7%) may have also included economic components (e.g., missing work or having to decide between spending money on food or healthcare).
<i>Nsigaye et al.</i> 2009	A prospective study in Tanzania to evaluate a referral system for ART found that referral uptake increased gradually following the introduction of the transportation allowances and community escorts. The study cited transport cost as a key reason for delays in referral uptake for ARTs following HIV diagnosis.
<i>Ochieng-Ooko et al.</i> 2010	Retrospective analysis of the clinical data routinely collected from patients enrolled in HIV treatment programs in Kenya identified high transport cost as a barrier for 12% of men and 17% of women. Travel time was also the only factor significantly associated with failure of retention among women.
<i>O'Gorman et al.</i> 2010	A qualitative study in Malawi identified long distance from the hospital and transport costs as barriers to PMTCT access. Long distance proved to be a physical barrier to delivering in the hospital and to bringing a baby there for Nevirapine syrup after birth.

Study	Relevant outcomes/economic barriers
<i>Peltzer et al.</i> 2007	A cross-sectional survey conducted among 1,534 pregnant women in five PMTCT sites in South Africa asked about the assistance women would like to get in order for them to attend antenatal clinics. Most (66.3%) indicated that they wanted money for the bus fare, some wanted better ambulatory services for delivery (18.4%), and transport availability of taxis and buses (14.2%).
<i>Skinner et al.</i> 2005	A qualitative study in rural South Africa found that long travel distances and the restricted opening times were particularly significant hindrances to mothers and newborns who must take doses of Nevirapine at appropriate times.
<i>Taneja et al.</i> 2013	In a cross-sectional study in India among ART clients, desire for provision of free/subsidized tickets for transport was mentioned by 21% of respondents.
<i>Tuller et al.</i> 2010	A study among people living with HIV/AIDS and attending a clinic in Mbarara, Uganda, to understand structural barriers to ARV adherence and clinical care. Almost all respondents cited the need to locate funds for the monthly clinic visit as a constant source of stress and anxiety, and lack of money for transportation was a key factor in cases of missed doses and missed medical appointments. Participants struggled with competing demands between transport costs and other necessities such as food, housing, and school fees.
<i>Yu et al.</i> 2007	In rural Malawi, 35% of ART patients who were lost to follow-up and then traced, cited the high cost of transport to the clinic as the reason for absence.
<i>Hope and Israel</i> 2007	A study in Botswana examined barriers to ART adherence among patients receiving ARV treatment. Fifty five percent of patients stated that their overall economic situation interfered with their ability to take ARVs. In addition to the cost of ARVs, other economic constraints included additional medical expenses and lack of food. Frequency of clinic visits posed a barrier to treatment for 30% of patients. Some of the reasons cited included problems leaving work to make clinic appointments and the need to travel long distances to the clinic.
<i>Zachariah et al.</i> 2006	A retrospective cross-sectional study in Malawi among tuberculosis patients who tested positive for HIV and were offered ART found that acceptance rates were very low (13.6%). Cost of transport to the centralized hospital based ART site was significantly associated with ART acceptance—the higher the cost, the less probable it was that a TB patient accepted ART.

Table 2. Barriers: Food Insecurity

Study	Relevant outcomes/economic barriers
<i>Au et al.</i> 2006	A study in Rwanda found that fear of developing too much appetite without enough to eat was an obstacle to ART initiation and adherence for 76% of patients. In contrast, other factors such as inconvenience to daily routine, drug toxicities, and acceptance of their HIV illness were concerns to only a minority of patients. Study concluded that access to adequate nutrition might be a major determinant for long-term adherence to ART.
<i>Birbeck et al.</i> 2011	A prospective cohort study among HIV-positive adults starting ARV treatment in Zambia found that food insecurity was one of the strong predictors of poor adherence (more than a half of food insecure patients reported poor adherence).
<i>Boyer et al.</i> 2011	A survey conducted among a random sample of 3,151 HIV-positive adults in Cameroon demonstrated that, when compared with adherent patients, a higher proportion of non-adherent individuals reported financial difficulties paying out-of-pocket expenditures for HIV-care and not always being able to take at least two meals per day.
<i>CHAIN project</i> 2011	A study among PLWHA in New York City and NY suburbs found that close to 90% of the population are experiencing food insecurity or rely upon food and nutrition programs to address their most basic needs. PLWHA who are food insecure reported more missed appointments for HIV primary care and ART.
<i>Duff et al.</i> 2010	A qualitative study in Uganda among HIV-positive mothers who attended PMTCT-Plus program found that one of the financial constraints expressed by participants were the cost of food while waiting to see health care providers and the cost of nutritious foods that HAART patients are recommended to eat while taking the medication.
<i>Franke et al.</i> 2011	A prospective study among a cohort of HIV-infected adults in urban Peru examined the relationship between food insufficiency and ART adherence. Of the 134 HIV-infected adults included in these analyses, almost 60% were female. Twenty-one women (26.6% of all women) were pregnant at baseline. In an unavailable analysis, any household food insufficiency was associated with a two-fold increase in the odds of suboptimal ART adherence. In multivariable analysis, any food insufficiency remained a statistically significant predictor of suboptimal ART adherence.

Study	Relevant outcomes/economic barriers
<i>Grant et al.</i> 2008	A Study in Zambia explored factors that facilitate or challenge access and adherence to ART. Out of 40 patients, several stopped taking ARVs because they could not bear the hunger and had no money for food.
<i>Hardon et al.</i> 2006	Study in Botswana, Tanzania, and Uganda found that lack of food was one of the reasons for non-adherence to ART (although significantly behind transportation). Because they were told to take ARVs with meal, many patients were taking one dose a day instead of two because one meal was all they could afford.
<i>Iroezi et al.</i> 2013	A qualitative study in Malawi found that access to food and food support was an important facilitator to PMTCT care. Many of the women reported receiving aid in the form of food and food supplements for their infants and/or money from support groups when they came for meetings. They also had access to a garden near the hospital and 20% of them voiced interest in having a garden closer to their homes.
<i>Kalichman et al.</i> 2010	A study examined effects of food insecurity on HIV-related health and treatment among 344 men and women with HIV in Atlanta, Georgia. Approximately half of the study population lacked sufficient food, which was associated with multiple indicators of poor health. Food insufficiency was also the greatest predictor of HIV treatment non-adherence.
<i>McMahon et al.</i> 2011	A prospective cohort study investigated the causes and consequences of nutritional and metabolic abnormalities in HIV-infected adults in the Boston and Providence area. Food insecure patients had suboptimal immunological response to treatment with poor adherence being one of the reasons.
<i>Nachega et al.</i> 2006	An exploratory qualitative pilot study in the Western Cape Province of South Africa identified food and transport support among other material needs that, if unattended to, could be barriers to HAART adherence.
<i>Nagata et al.</i> 2012	In the cross-sectional study in Kenya among ART patients, three themes related to the consequences of food insecurity emerged: (1) an increase in hunger or appetite since initiating ART; (2) worsening of ART gastrointestinal side-effects; and (3) skipping a dose of ART due to hunger.

Study	Relevant outcomes/economic barriers
<i>Ngarina et al.</i> 2013	A study of prevention of MTCT by triple antiretroviral therapy conducted in Tanzania retrospectively found high and increasing frequency of detectable viral load during two year follow-up in women given continuous ART for their own health suggesting poor adherence. Not having money for food was one of the common reasons for women to miss taking their drugs. The stated reasons were because the ARVs make them feel more hungry, experience more side effects and also because they had been informed to take the drugs with food.
<i>Sanjobo et al.</i> 2008	A qualitative study in Zambia found that lack of food was perceived as a barrier to adherence by many patients who believed that ART could not be taken without food.
<i>Unge et al.</i> 2008	A study in the urban slum in Kenya to explore why patients, who were offered free ARVs, choose not to be treated despite signs of AIDS. A fear of taking medication on an empty stomach due to lack of food emerged as one of the main reasons for not accepting ART.
<i>Webb-Girard et al.</i> 2012	A cross-sectional study conducted in Nakuru, Kenya used mixed methods (148 quantitative interviews and six FGD with 50 women) to investigate associations between indicators of food insecurity and attitudes and beliefs about exclusive breastfeeding (EBF) with women in severely food insecure households. The data show that women in severely food insecure households were significantly more likely to believe that EBF for six months was not possible and unhealthy for the infant under the food insecure circumstances.
<i>Hope and Israel</i> 2007	A study in Botswana examined barriers to ART adherence among patients receiving ARV treatment. Cost of food was mentioned as one of the economic barriers (in addition to the cost of ARVs and transportation).
<i>Weiser et al.</i> 2010	A study in Uganda interviewed 47 men and women in an AIDS treatment program. The study highlighted five ways food insecurity contributed to ARV non-adherence, treatment interruption, or postponing initiation: 1) ARV increases appetite and results in intolerable hunger; 2) Side effects are getting worse in absence of food; 3) Believe that the dose should be skipped or ARV should not be initiated at all if patient cannot afford the added nutritional burden; 4) Competing demands between food costs and medical expenses—people either default from treatment, or give up food and wages to get medications; and 5) While working for food for long days in the fields, participants sometimes forgot medication doses.

Study Relevant outcomes/economic barriers

<i>Weiser et al. 2012, 2014</i>	A longitudinal study in Uganda investigated how food insecurity affected patterns of healthcare utilization among HIV-positive individuals with the majority being women. Food insecurity was associated with missed clinic visits and ART adherence. Seventeen percent gave up ART in order to get food and 24% gave up obtaining other medications for food. Thirty percent did not access outpatient care when needed, and 32% did not access inpatient care when needed due to competing demands with food. Participants who were severely food insecure were significantly more likely than those who were not severely food insecure to report giving up ART for food. In 2014 analysis of the same cohort, food insecurity associated with 67% higher odds of ART non-adherence in unadjusted models, and 56% greater odds of ART non-adherence in adjusted models.
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Table 3. Gender-related Economic Barriers

Study	Relevant outcomes/economic barriers
<i>Kiula et al.</i> 2013	A cross sectional study in Tanzania where simple random sampling was used to select 250 HIV positive pregnant women from six government health facilities. The proportion of women who had disclosed their HIV serostatus to their partners was 41%. Among 148 pregnant women who had not disclosed, 43% (64) planned to disclose to their partners in the future, while 84 women did not plan to disclose at all. Some of the characteristics associated with disclosure were having secondary or higher education, having high income, and not depending on their partner for payment of food/rent/school fees.
<i>Larsson et al.</i> 2012	A qualitative study in rural Uganda explored the reasons why men do not accept HIV couple counseling. The distance and cost of getting to the health facility was given as one of the reasons. Health facilities were often far away from where the men lived, and going there was not only costly, but took time away from work and other activities.
<i>Msuya et al.</i> 2008	Prospective study in Tanzania aimed to describe the prevalence and predictors for male partner participation in HIV voluntary counseling and testing (VCT) at two primary healthcare clinics as well as the effect of partner participation on uptake of HIV perinatal interventions. A total of 332 (12.5%) male partners came for HIV counseling and testing at the clinics; 34 (18.5%) were partners of HIV-positive women. A high proportion of HIV-seropositive women whose partner attended took Nevirapine during delivery (91%), compared with the women whose partners didn't attend (74%). HIV-seropositive women whose partners attended were also more likely to choose not to breastfeed their infants (19% versus 6%), more likely to adhere to the infant feeding method the woman selected at post-test, whether it was exclusive breastfeeding or formula feeding (67% versus 28%), and more likely to bring children for testing at 18 months (81% versus 67%) than the others. In this study, having high monthly income was one of the factors predictive of women bringing their partners for VCT.

Study Relevant outcomes/economic barriers

<p><i>Murray et al.</i> 2008</p>	<p>Qualitative study conducted among participants in the Zambia Exclusive Breastfeeding Study provided insight into factors affecting HIV-infected women’s decision to accept or continue with ART. One of the major themes that emerged from this study was the effect of ART on interpersonal relationships, particularly between husbands and wives with economic factors playing a role. Respondents stated that women lack the possibility of economic independence, and many “would rather die than loose the marriage,” and that therefore women really have no choice as to whether or not to take ART. These responses suggest competing motivating factors such as sustaining a marriage and economic livelihood. Many respondents indicated that local women do not start or continue with ART because the medications are difficult to hide. Respondents described fear of divorce or mistreatment by husbands once ART/HIV status was discovered. Problems with husbands were compounded by perceptions that men “did not know much about HIV/AIDS”, with respondents suggesting that health programs need to educate and otherwise reach out to men.</p>
<p><i>Reece et al.</i> 2010</p>	<p>Study in Kenya collected information from 146 men and women during 16 in-depth focus group discussions held in four geographically and culturally diverse areas of the western part of the country. Participants were recruited if they were: 1) women living with HIV who were participating in at least one component of a comprehensive PMTCT program; 2) women who were HIV negative and participating in at least one component of a PMTCT program; 3) men who were spouses of women living with HIV and participating in at least one component of a PMTCT program; and 4) men who were active participants in an HIV-related psychosocial support group program. In this study, men identified challenges related to their work among those that influenced their engagement in PMTCT. These challenges included fear of losing the job if they take time off to attend PMTCT or losing an opportunity to earn money (in case of casual labor) and not being able to feed their family.</p>

Study Relevant outcomes/economic barriers

<i>Byamugisha et al.</i> 2010	A cross-sectional survey of 388 men in Uganda, whose spouses were attending ANC/PMTCT services. One of the areas mentioned as an obstacle to male participation was socio-economic. Several of the men reported that due to socio-economic difficulties, they did not have time to attend ANC with their partners as demonstrated by the following quotations: "I am busy trying to make ends meet. I don't have time to go with her to the antenatal clinic. I don't have enough money for transport for two people." Another factor limiting male involvement was related to the fact that some health providers were charging extra beyond the official ANC fees to bridge their own financial gaps/substitute low salaries.
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Table 4. Economic Strengthening Interventions: the Evidence on Cash Transfers

Author	Study Design/Size	Description/Relevant Outcomes
<i>Morris et al. 2004</i>	Randomized trial in Honduras with approximately 5,600 households surveyed at baseline and roughly two years later.	The study evaluated if conditional payments to households would increase use of preventive health-care services by pregnant women, new mothers, and children younger than three years of age. The primary outcome measures for this trial were the proportion of pregnant women attending at least five antenatal checkup visits; the proportion of new mothers going for a check-up within ten days of delivery, and the proportion of children younger than three years of age brought to the health center at least once during the month preceding the interview. The secondary outcomes were coverage of immunization (including proportion of pregnant women immunized against tetanus) and growth monitoring. The participants were allocated at random to four groups: money to households; resources to local health teams combined with a community-based nutrition intervention; both packages; and neither. Based on mothers' reports, the household-level package had a significant impact on the uptake of ANC and routine well-child check-ups. Both of these indicators increased by 18–20 percentage points in the groups receiving the vouchers. There was no increase in use of services associated with the service-level package alone, and neither package affected uptake of the 10-day check-up. The household-level package also resulted in large increases in the coverage of growth monitoring. The study conclusion was that there is convincing evidence that direct payments to households do increase the use and coverage of preventive health care services.

Author	Study Design/Size	Description/Relevant Outcomes
<i>Emenyonu et al.</i> 2009	Randomized trial with a crossover design in rural Uganda among patients initiating ART: 146 participants total, 79 in intervention group, and 67 in control group. Over 60% of study participants were women.	The study compared adherence to ART and loss to follow-up among patients who received cash transfers and those who didn't. The participants in the intervention group received cash transfers of 10,000-15,000 Uganda shillings (\$5-8 US dollars) for the first 12 months or the second 12 months of 24 months. As a result, the HIV treatment adherence scores and retention in care were higher among the participants in intervention group compared to controls. Only 18% of patients were lost to follow-up from the intervention group, versus 34% lost from the control group.
<i>Jones et al.</i> 2008	The assessment of the cash transfer Junto's program in Peru (with the coverage of approximately 60,000 households)	Fixed monthly cash transfers of approximately \$30 per month were provided to eligible households on condition that they will be accessing basic public services for their children. This resulted in 30% increase of children under one year of age receiving vaccinations and 200% increase in health clinic visits for children under five years. Pre- and post-natal visits have increased by 65% and there has been a reported reduction in home birth.
<i>Davies</i> 2009	Program evaluation report. Poor households (pregnant women included)	DFID supported "Ultra Poor" program in Bangladesh directly linked cash transfers to health services. Some of the results include: increase in antenatal coverage to 96% and postnatal coverage to 93% (although the report doesn't provide a baseline) and an increase of 45% in immunization coverage (from 53% to 98%).

Author	Study Design/Size	Description/Relevant Outcomes
<i>Thornton 2008</i>	Prospective study in Malawi, in which study participants (main sample 2,812 residents who accepted an HIV test), were offered a free door-to-door HIV test and randomly assigned vouchers between zero and three dollars, redeemable upon obtaining their HIV test results at VCT center. The location of each HIV results center was also randomly placed to evaluate the impact of distance on VCT attendance.	The demand for HIV test results among those who received no monetary incentive was moderate, at 34 percent. However, monetary incentives were highly effective in increasing result-seeking behavior: on average, respondents who received any cash value voucher were twice as likely to go to the VCT center to obtain their HIV test results as were individuals receiving no incentive. Although the average incentive was worth about a day's wage, even the smallest amount, approximately one-tenth of a day's wage, resulted in large attendance gains. Living over 1.5 kilometers from the VCT center reduced attendance by six percent.

Author	Study Design/Size	Description/Relevant Outcomes
<p>Yotenberg 2014, <i>Ongoing study:</i> <i>ClinicalTrials.gov</i> <i>Identifier:</i> <i>NCT01838005</i></p>	<p>Randomized trial in DRC. Approximately 600 of HIV-positive pregnant women in need of PMTCT.</p>	<p>The study will investigate if CCT are going to increase uptake of and retention in PMTCT services. The study is being conducted within a well-established PMTCT program in Kinshasa, Democratic Republic of Congo, with two main goals: 1) test whether small, increasing cash payments to HIV-infected pregnant women, on the condition that they attend scheduled clinic visits and receive proposed services, will increase the proportion of women who receive the most effective antiretroviral regimen they are eligible for by the time of delivery, and 2) identify factors that facilitate or inhibit the uptake and adherence to the PMTCT cascade, and to what extent the conditional cash payment program addresses these factors. As secondary outcome measures, the study will also look at proportion of HIV-exposed infants who tested positive at six week postpartum, proportion of children born to HIV+ enrolled mothers who are alive and HIV-free at 18 months postpartum, and proportion of infants born to HIV-infected participants who at six weeks postpartum are receiving the extended nevirapine prophylaxis and have been tested for HIV (DNA PCR test).</p>

Table 5. Economic Strengthening Interventions: the Evidence on Transportation Support

Author	Study Design/Size	Description/Relevant Outcomes
<i>Pariyo et al. 2011</i>	A pilot study among pregnant and postpartum women in Uganda; two districts, similar in demographic composition and availability of health services infrastructure were selected for intervention and control arms.	The study evaluated intervention package comprised of transport vouchers that allowed women to access free transport for maternal health services (which included ANC, delivery care and postnatal care) and service vouchers that helped to cover any additional fee associated with services. Voucher booklets (12 vouchers for transport and seven service vouchers) were distributed to all pregnant and postpartum women who resided in the study area (a total of approximately 12,000 women). The package resulted in a dramatic increase in attendance of antenatal and delivery care services in intervention arm (up to 3,500 ANC visits per month) compared to control arm (remained at about 500 ANC visits a month). ANC attendances declined when vouchers for transport were stopped.
<i>Nsigaye et al. 2009</i>	Prospective study with quantitative and qualitative components; population of HIV-infected patients in need of ART	A study in rural Tanzania evaluated a referral system for ART, which introduced transportation allowances and “community escorts.” Over the three-year period, there was a steady increase in the overall number of HIV-infected persons who were referred, as well as the number who subsequently registered at the HIV clinic within six months of referral (from 22 to 114, and 15 to 64, respectively) Most patients reported that the referral system facilitated their arrival at the HIV clinic, but expressed a desire for HIV treatment services to be in closer proximity to their homes.
<i>Sanjobo et al. 2008</i>	Qualitative study; 60 ART patients, 12 ART providers, and three pharmacists were interviewed.	Patients who were registered and supported by nongovernmental organizations mentioned the transport support they received each time they went for their medical reviews as a facilitator for their adherence to treatment, as illustrated by the view of a 32-year-old single businesswoman patient: <i>“Availability of free transport to take me to the hospital for review motivates me to continue taking my medicines. Otherwise if I had to use my own means of transport, I was not going to manage.”</i>

Author	Study Design/Size	Description/Relevant Outcomes
<i>Mukherjee et al.</i> 2006	Description of the program implemented by the HIV Equity Initiative of the NGO Partners in Health in conjunction with the Haitian MOH, covering seven public clinics. More than 8,000 HIV-positive persons, 2,300 of whom are on ART were followed at a time of publication.	ART program in Haiti implemented a package of interventions to promote access to care and adherence to ART. Several components were put into place to decrease economic barriers, such as providing all services and medications free of charge, providing a monthly transportation stipend to attend follow-up appointments and covering transportation fee for emergency visits (transportation fees for monthly clinic visit ~ \$60 per patient a year), providing food or cash transfers for food to the most vulnerable patients. The program description provides no baseline data, but states a dramatic increase in HIV counseling and testing and low rates of clinical or immunologic failure that required a change to second-line ART, suggesting excellent adherence to ART and medical follow-up.

Table 6. Economic Strengthening Interventions: The Evidence on Food Support

Author	Study Design/Size	Description/Relevant Outcomes
<i>Bergmann and Stone-Jiménez 2011</i>	Program assessment (conducted by AIDSTAR-One)	NuLife Food and Nutrition Interventions for Uganda focused on the development and integration of nutrition support, such as distribution ready-to-use therapeutic food (RUTF), into HIV treatment, care, and support programs. The beneficiaries included adults and children in ART and care programs as well as HIV-positive pregnant and postpartum women. The assessment of the intervention showed that the RUTF prescribed in the facilities has dramatically improved the nutrition status and the quality of life for clients and improved their ability to better adhere to drug regimens. Ninety percent of the clients interviewed said that RUTF helps them take their medication.
<i>Byron et al. 2008</i>	Qualitative study; Qualitative data were collected from 18 interviews with key informants, nine focus group discussions, and 79 in-depth patient interviews.	The study assessed the effects of a short-term nutrition intervention linked to the provision of free ARV treatment in Kenya and found that patients enrolled in the food program while on treatment regimens had greater self-reported adherence to medication. Among food clients in the sample, 58% perceived that access to food made their adherence to their treatment regimen easier because the food they collected lessened unfavorable side effects of ARVs, including dizziness, and vomiting.
<i>Cantrell et al. 2008</i>	Prospective, non-randomized study; 636 food insecure adults (four study clinics provided food supplementation and four acted as controls).	The study from Zambia looked at food supplementation to improve adherence to ART among food insecure adults (65% were female). Patients in the food group received a median of nine monthly rations. As a result of interventions, 70% of patients in the food group achieved an adherence rating of at least 95% vs. 48% of controls.

Author	Study Design/Size	Description/Relevant Outcomes
<i>Egge and Strasser 2006</i>	Qualitative study; information was also gathered through key informant interviews (#66), group discussions, observational visits, and collection of current monitoring and evaluation tools. Population included the chronically ill, women and infants engaged in PMTCT programs; individuals on ART, and individuals on TB treatment.	The study in three countries—Malawi, Zimbabwe, and Zambia—explored potential effects of targeted food aid on women and infants engaged in PMTCT (among other patient populations). It found that food aid attached to PMTCT programs would increase program participation. However, this was based on interviews only and it is not clear if it would translate in actual participation.
<i>Gerberg and Stansbury 2010</i>	Program assessment (conducted by AIDSTAR-One)	An assessment by AIDSTAR-One conducted in Kenya in order to examine the national Food by Prescription (FBP) program and document lessons learned and promising practices. The program's objective was to provide a set of nutrition interventions as part of comprehensive care and treatment of PLWHA, thus preventing or improving malnutrition, and improving adherence to ART. The food product provided was a fortified blended flour. Providers interviewed for this assessment noted that FBP improved adherence to ART among its recipients.
<i>Iroezi et al. 2013</i>	Qualitative study; population included 22 HIV-positive women in PMTCT program.	The study in Malawi found food support to be an important facilitator for access to PMTCT care. Many of the women reported receiving aid in the form of food and food supplements for their infants as a factor. They also had access to a garden near the hospital although 20% of them voiced interest in having a garden closer to their homes.

Author	Study Design/Size	Description/Relevant Outcomes
<i>Ivers et al.</i> 2010	Prospective observational cohort study; 600 PLWHA (300 eligible and 300 ineligible for food assistance)	The study in Haiti measured the effects of food rations provided to PLWHA if they met certain criteria (such as co-infection with active TB, CD4 count less than 350 cells/mm ³ or severe socioeconomic circumstances). Interviews were conducted before rations were distributed, at 6 months and at 12 months. At both 6 and 12 months, timely attendance at monthly clinic visits was better in the food assistance group than in the non-food group. The mean number of scheduled visits attended at 6 months (out of 6 visits) was 5.49 vs. 2.82 for the food assistance vs. the nonfood group, and at 12 months (out of 12 visits) was 9.73 vs. 8.34. Study also observed a significant improvement in ability to take ART at 6 months and a trend for improvement in this variable at 12 months. Among those on ART, at 6 months, those receiving food assistance reported fewer difficulties taking their medications compared to those who did not receive food (14.4% vs. 28.1%).
<i>Posse et al.</i> 2013	Retrospective study; population of ART patients with and without food assistance (172 food recipients, 185 controls).	The study in Mozambique analyzed three years of data extracted from randomly selected clinic and pharmacy records of HIV/AIDS patients who were receiving ART as well as food assistance (~77% of patients were female). In order to assess the effect of the food assistance program on adherence, the study compared food assistance recipients with a control group—similar patients (also randomly selected), who did not receive food assistance. This study found similar rates of adherence between intervention and control groups, which contradicted findings from other studies and, as authors suggested, could have been explained by several limitations in study design (retrospective, possibly incomplete data, inability to ensure that ARVs collected at the pharmacy were actually taken, implementation of the food assistance program was not evaluated).

Author	Study Design/Size	Description/Relevant Outcomes
<i>Serrano et al.</i> 2010	Prospective, non-randomized study; population of ART patients with and without nutritional support (62 patients in intervention group, 118 in control)	The study in Niger compared adherence to ART among intervention group (patients who received Family Nutritional Support (FNS) and nutritional advice) and control group (patients who received nutritional advice, but no food support). Adherence was significantly improved for patients receiving FNS compared to controls—98.4% vs. 77.4%.
<i>Tirivayi et al.</i> 2010	Retrospective cohort study; population of ART patients enrolled in a food assistance program (200 patients at four clinics participating in the food distribution program and 200 patients at four control clinics not included in food program)	The study in Zambia evaluated the effects of food assistance on the weight and adherence of HIV patients to ART. This study obtained baseline data using the programmatic ART database in conjunction with a household survey. Random sampling was used to select 50 participants from eight public-sector health clinics providing ART in Lusaka. The results demonstrated a positive overall effect of food assistance on the adherence, but when patients were stratified by the duration of ART treatment the results were mixed. Among patients on treatment for less than the sample median of 995 days, receiving food assistance had more significant positive effect compared to full sample estimates. However, food assistance did not appear to increase adherence among patients who had been on ART for more than the median of 995 days.
<i>Tirivayi et al.</i> 2012	Retrospective cohort study (a follow-up to the Tirivayi 2010 study above); population of ART patients receiving food assistance (N=145) and those who did not (N=147)	The study in Zambia used interviewer-administered surveys and retrospective clinical data to compare ART patients receiving food assistance with a control group of non-recipients, found that food assistance recipients had higher ART adherence compared to non-recipients. It also found a greater impact of food assistance on adherence among patients in the first three years of treatment, and particularly in the first 230 days (7.5 months) after ART initiation. Additionally, the effect was greater among those with several indicators of more advanced illness.

Author	Study Design/Size	Description/Relevant Outcomes
<p>McCoy 2014</p> <p><i>Ongoing study:</i> <i>ClinicalTrials.gov</i> <i>Identifier:</i> <i>NCT01957917</i></p>	<p>Randomized trial in Tanzania; study population: over 700 food insecure ART acceptors</p>	<p>The study compares food and cash assistance for food-insecure HIV-positive men and women who recently initiated ART. Participants are randomized into three groups: 1) six months of nutrition assessment and counseling (NAC) alone, which is standard of care; 2) NAC plus six months of food assistance (a monthly food basket consisting of maize meal, beans, and grains); and 3) NAC plus six months of cash transfers (equivalent to the market value of the food basket). Receipt of the food and cash transfers is conditional on attending scheduled treatment and care visits at the clinic. The researchers will evaluate the comparative effectiveness of food and cash assistance to determine their effects on HIV outcomes including adherence to ART, retention in care, food security, body mass index, CD4 cell count, and participation in the labor force. Additionally, a qualitative study will be conducted to understand participant attitudes, beliefs and preferences to reveal how they utilized the food and cash transfers.</p>

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