

Session 203: HIV, anti-retroviral therapies and counselling: access, sustainability and behavioural issues

Organiser: Carla Makhoul Obermeyer

Kiersten Johnson, PhD - Macro International/Demographic and Health Surveys

Priscilla Akwara, PhD - UNICEF

150 word abstract:

Access to and utilization of antenatal HIV counseling and testing services in countries heavily affected by AIDS: Who is offered the test, who accepts the test, and what is the effect of policy on testing uptake?

Antenatal care-based interventions to prevent mother-to-child transmission of HIV (PMTCT) could eliminate vertical transmission of HIV, prevent new infections among women who test negative for HIV, and improve maternal health and survival among women who test positive. The prerequisite for achieving these desired outcomes is taking an HIV test to know one's status. Yet women in developing countries are often not offered a test at antenatal care; if they are offered, many refuse testing. The purpose of this paper, therefore, is to use DHS data to explore the levels and differentials in PMTCT service availability and uptake, and discern factors associated with failure to take an HIV test even when one has been offered. We also look for associations between the policy environment and HIV testing uptake. Our findings indicate that knowledge of special drugs to PMTCT and stigma are significantly associated with uptake of HIV testing at antenatal care.

Extended abstract:

Access to and utilization of antenatal HIV counseling and testing services in countries heavily affected by AIDS: Who is offered the test, who accepts the test, and what is the effect of policy on testing uptake?

Introduction:

In countries heavily affected by the AIDS epidemic, HIV is the underlying factor in more than one third of all deaths among children under age five (UNAIDS 2008), most of whom acquired HIV through vertical transmission (WHO 2007). AIDS remains a leading cause of mortality among women of reproductive age in all global regions, and is the primary cause of death in sub-Saharan Africa (UNAIDS 2007). Antenatal care-based interventions to prevent the transmission of HIV from mother to child (PMTCT) have the potential to virtually eliminate the vertical transmission of HIV, to prevent new infections among women who test negative for HIV during their pregnancy, and to improve maternal health and survival among women who test positive for HIV. But the prerequisite for taking these preventive steps is taking an HIV test to know one's status, and national survey data indicate that in most developing countries, women are simply not being offered a test when they go for antenatal care. The purpose of this paper, therefore, is to explore the levels and differentials in PMTCT service availability and uptake, and discern factors associated with failure to take an HIV test even when one has been offered. We also look for an association between the national policy environment and uptake of HIV testing.

This analysis is undertaken in an effort to identify possible locations for policy or programmatic intervention.

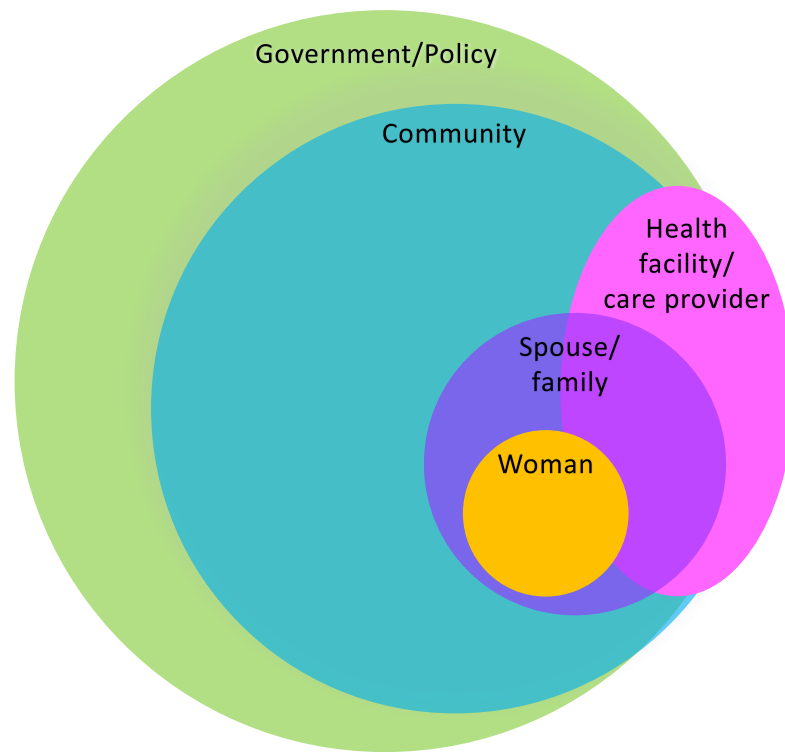
Literature review:

This literature review serves two purposes. First, and most broadly, it aims to review the challenges and limitations associated with the uptake of PMTCT interventions, primarily in resource-limited settings. The review therefore focuses on issues important to Pillar Three and, to a lesser degree, Pillar Four of the PMTCT strategy. Second, it serves to identify relevant variables that are important to include in the bivariate and multivariate analyses of selected PMTCT-related outcomes.

Recognizing the multifactorial influences on a woman’s ability to uptake PMTCT services, the literature review is organized within an ecological framework, such that we describe factors at the woman-level, household-level, community-level, health facility and health care provider-level, and government and policy level that have been found to influence the likelihood that a woman accesses or accepts PMTCT services (see Figure 2.1 for ecological framework). This review of the literature informs the data analysis: where data availability allows, variables shown in the literature to be important to the uptake of PMTCT services are incorporated into the data analysis.

Figure 2.1. Ecological framework reflecting the multiple levels and types of social organization that influence women’s access to and use of PMTCT services

Ecological framework



Literature on the challenges associated with accessing and using services to prevent mother-to-child transmission of HIV

Introduction

The four-pillar strategy for preventing mother-to-child transmission (PMTCT) of HIV infection constitutes a politically and scientifically accepted approach to reducing the impact of HIV, especially its impact on children (Nguyen et al., 2008). While several international studies confirm that the risk of MTCT can be reduced substantially depending on interventions, assessments of PMTCT programs have shown that progress in implementing PMTCT interventions in resource-limited countries has been slow. Policymakers and scientists at large have recognized that there exist several challenges at multiple levels (individual, community and government levels) that limit the scale-up of PMTCT programs in most sub-Saharan and Asian countries. This section of Chapter II reviews the scientific literature on the elements that influence optimal uptake of PMTCT services in the developing world.

Woman-level factors

Knowledge of PMTCT. PMTCT programs cannot be successful without first ensuring adequate knowledge of MTCT and PMTCT among potential service recipients. More than two decades since the AIDS epidemic emerged, less than one third of young women age 15-24 years have a full understanding of how to avoid HIV/AIDS (UNAIDS/UNICEF, 2005). Some women still perceive HIV infection as a punishment or curse from God (Okonkwo, et al. 2007), and many women lack even basic knowledge of PMTCT in most resource poor countries (Nguyen et al. 2008; Peltzer et al. 2007). Although some studies have found high proportions of women with knowledge of MTCT (Bajunirwe and Muzoora 2005, Okonkwo et al. 2007), far fewer have

knowledge of how to prevent MTCT (Peltzer et al. 2007). Ekanem and Gbadegesin (2004) and Kominami et al. (2007) have made similar observations of women's adequate knowledge about HIV transmission in general, but, conversely, poor knowledge about specific aspects of MTCT. Even when women have knowledge of MTCT, they may believe that if a mother is infected, transmission of the HIV virus to the infant will "always" happen (Peltzer et al. 2008). These findings are complemented by a qualitative study in Guyana which discerned that even when women's knowledge about vertical transmission was high, they often did not know exactly how or even when the transmission to the fetus or infant could occur (Henry and Carlson, 2005).

Perceived benefits and drawbacks of HIV testing. For PMTCT uptake to expand, women and families must perceive that there is a benefit to being tested for HIV, and this benefit must outweigh any perceived drawbacks associated with knowing one's status. A frequently-cited drawback to knowing one's status was incessant worry, while receiving support to prevent MTCT is the most frequently-cited benefit associated with knowing one's status.

Worry. Though PMTCT services and ARVs are available in Botswana, the HIV testing acceptance in the population remained low during initial phase of PMTCT implementation programs (Creek et al. 2007). "I am just afraid, if I find out I am HIV-positive, I will always be waiting for death" was the reason one of the participants gave for not testing for HIV and receiving the test results (Urassa et al. 2005). Similarly, respondents in a Ugandan study feared that if they knew that they were HIV-positive, they would literally "worry to death" (Karamagi et al. 2006).

Availability of interventions. When women are aware that being tested for HIV can lead to services that will help reduce MTCT, they are more likely to take up services. Okwonko et al. (2007) found an association between women's perception that counseling and testing might reduce MTCT and increased uptake of HIV testing at antenatal care. Conversely, where it is known that PMTCT services are not available, women are less likely to agree to be tested. Karamagi et al. (2006) found that though a high proportion (82 percent) of women were not afraid of taking an HIV test, only a small proportion (10 percent) ultimately accepted the HIV testing in Mbale, Uganda. This was largely because women did not perceive any benefit of testing because commercial baby formula was not available at the health facility and there were frequent stockouts of nevirapine as well. They felt that, in the absence of the availability of baby formula, knowledge of one's serostatus would not change the risk to the child: the baby would be breastfed regardless of the mother's serostatus, and if the mother was infected, the child would be as well through breastfeeding – there was thus no perceived benefit to learning one's status.

Fear, stigma and discrimination. Stigma and discrimination against HIV-infected people, and lack of disclosure and denial in HIV-infected women, severely weaken PMTCT efforts (UNAIDS, 2001). Women who learn that they are HIV-positive during pregnancy must deal – often alone – with the inevitable challenges associated with the birth of a new child, compounded by the new and unexpected challenges and worries imposed by a positive serostatus finding, including discrimination and abuse. Fear and stigma may prevent women from getting tested at ANC to find out their status, and, once status is known, stigma and discrimination may also result in early drop-out from PMTCT programs (Moth et al. 2005).

Fear. Participant women from most of the country studies report fear of discrimination and stigma associated with HIV testing (Segurado et al. 2003). Women may fear that if they agree to be tested for HIV, others will presume they are infected, or that they engage in socially-unacceptable behaviors linked to HIV infection (Karamagi et al. 2006). Sometimes women do not want to be tested and have their status disclosed to health providers because of fear that she

may be maltreated at the health facility or because of the fear that health providers may “deliver their baby badly” (Urassa et al. 2005). Fear of gossip, fear of beatings from husbands and lack of support from families, fear of social isolation and fear of poor care in health facilities were some of the barriers to HIV testing and participation in PMTCT programs (Misiri et al. , 2004; Karamagi et al., 2006; Peltzer et al., 2007; Kebaabetswe, 2007; Okonkwo et al. 2007; Oosterhoff et al., 2008; Giuliano et al., 2008). Many HIV-positive women fear disclosure of their HIV status to their family (Medley et al. 2004; Doherty et al. 2005; Mawar et al. 2007). Yet if family members are not informed about the mother’s status, they cannot support the mother or her infant, particularly with regard to feeding practices.

Stigma and discrimination. Health workers are often the first source of discrimination and stigma that women are faced with, and this can have an immediate and direct impact on women’s access to and uptake of services. Health workers’ negative attitudes were a key impediment to uptake of PMTCT services in Botswana (Kebaabetswe, 2007). In Uganda, some women fear being “recognized” by health providers once their serostatus is known; this lack of confidentiality is mostly feared in women who live close to a hospital or clinic (Magoni et al. 2007). The non-confidential nature of HIV test results notification in Vietnam also resulted in lower acceptance of the HIV test; women who did accept the test often provided false names and addresses to avoid any adverse repercussions (Oosterhoff et al. 2008), making it difficult for health workers and researchers to establish contact with HIV-infected pregnant women (Nguyen et al. 2008). In Vietnam, women with a known HIV-positive status experienced stigma and discrimination at all points of seeking services, including counseling, ANC visits, abortion, delivery and post delivery care.

Access to health facilities that offer PMTCT services. Women in many of the reviewed studies indicated the difficulties they face regarding access to health facilities. This is especially significant in poor, rural settings where the majority of women have to walk to the nearby clinic or hospital (Peltzer et al. 2007), there is little public transport available, and emergency transport is difficult to arrange. In a zidovudine trial in Abidjan, Cote d’Ivoire, researchers found that accessing institutions that provide social and health care services was a hindrance for women to participate in the program; this was particularly true for women who came from lower socio-economic backgrounds with little or no education (Painter et al. 2005).

Women’s perception of their risk and HIV status. Although the literature is inconsistent on the association between perception of own risk for being HIV-positive and actual serostatus (Johnson 2006, Mpairwe 2005), one study found that women who perceived themselves to be at high risk for HIV infection were more likely to accept voluntary counseling and testing (VCT) and PMTCT services.

Spousal/family-level factors

The Glion Call to Action states that PMTCT programs should promote and facilitate men’s participation both as individuals and as a partner in a relationship. However, it must be recognized that bringing men in to PMTCT services involves both potential risks as well as potential benefits.

Benefits. Male participation in ANC/PMTCT programs can enable women to get support from their partners for HIV testing and other aspects of PMTCT programs (Medley 2004, Peltzer et al. 2008). One study found that couples counseling increased the acceptance of HIV test (96% in women counseled with partners compared to 79% in women counseled alone); however, it was

not associated with the higher acceptance of nevirapine (Semrau et al. 2005). Bajunirwe and Muzoora (2005) reported that husband's approval of the testing was by far the strongest predictor that a woman would be willing to get tested for HIV. Women were six times more likely to accept HIV testing when their husbands approved the testing. Further, women who participated with their partners in the VCT were more likely to disclose their status to the men (64%), adhere to nevirapine regimen, and follow up with the PMTCT program. They were also more likely not to breastfeed their babies (Farquhar et al. 2004).

Risks. Despite the benefits that accrue for families when men participate in PMTCT programs, male partner involvement is often lacking in all elements of PMTCT (Kebaabetswe, 2007); worse, men may also serve to obstruct women's access to PMTCT services. One major factor that prevents some women from accepting HIV testing at ANC is the need to seek their partner's consent or assent (Painter 2001, Abdallah et al. 2006, Sarker et al. 2007). Some women feel they cannot discuss HIV in general terms with their partner without being accused of having an affair (Urassa et al. 2005). A focus group on men's attitudes to VCT highlights the risks of involving men in antenatal testing and counseling programming: one man stated that he would literally kill his wife if she accepted HIV testing during ANC, while other men in the group said that if their female partner went for testing without their consent, they would end the relationship with the woman (Urassa et al. 2005).

Once a woman learns of her HIV-positive serostatus, the risks they face from their partners may be exacerbated. There are concerns that women who disclose their HIV-positive status to their partners, whether through couple counseling or other circumstances, have an increased likelihood of adverse social outcomes like abandonment or violence. One study in Tanzania found that women believed that their husbands would "blame them for bringing the disease home" – despite the sense that the men themselves knew that their own promiscuity put the couple at risk of infection – and therefore it was better not to disclose the results to men (Urassa et al. 2005). Kiarie et al. (2006) found in a prospective study that domestic violence was associated with HIV infection: a history of domestic violence before and after HIV testing was conducted in women and their partners attending ANC; after the test results were given to the couples, HIV-positive women were five times more likely to have been abused by their husbands than women who were HIV-free. The abuse inflicted on HIV-infected women was physical, financial and psychological in nature. In addition to concerns about violence from their partners, women are also often concerned about being dispossessed or put out of the house; a study in Guyana found that changes in living arrangements were forced upon some women who disclosed their status to their partners (Henry and Carlson, 2005).

In addition to the lack of spousal support, women may also be ostracized by other family members: Peltzer et al. 2007 found that less than half of mothers-in-law and less than forty percent of husbands or partners believe that love, emotional support and hope for future should be provided to the HIV-infected mother.

To increase male involvement in PMTCT program, some countries have programs to integrate fatherhood and PMTCT such as Recipe, Brazil had "Pappi (Daddy) Project" involve participation of young men to educate them on reproductive health issues and to encourage them get more involved in child rearing beyond the limited role as dictated by their culture (Rutenberg et al. 2003).

Community-level factors

For PMTCT programs to be most efficacious, it is important to involve families and the community at large. Studies have shown that despite accepting counseling at the health facility, when women return to their homes, their decision to continue with the services provided at the health facility is greatly influenced by beliefs in the community. If the community lacks awareness of PMTCT programs they are more likely to deter the woman from taking an HIV test (Karamagi et al. 2006). Further, many women indicate that after disclosure of their HIV status, their partners and family members do not usually support them. Therefore, community education and awareness campaigns on PMTCT (Perez et al., 2006; Karamagi et al., 2006) are essential for successful dissemination of information on the PMTCT programs to support women during pregnancy and post-delivery for both the mother and infant.

For women in rural areas or those who do not have easy access to health facilities, testing and counseling for PMTCT can be integrated into community prenatal and immunization outreach services (Bolu et al., 2007). Mobile testing and counseling services provided in Uganda and the traveler tester and counselor program in Kenya are some of the innovative PMTCT services which involve the community as a whole (De Cock et al., 2006). Increasing community involvement using information and communication strategies is also required to increase knowledge and awareness of HIV and PMTCT services. The knowledge of HIV/PMTCT in turn has been associated to reduce stigma, which is associated with the uptake of these services (Painter 2004; Perez et al. 2006).

Chandisarewa et al. (2007) found that by offering routine testing, which can be perceived by family members as “standard of care,” in addition to providing community sensitization by highly motivated community counselors, near-universal coverage of HIV testing was obtained. Other studies have similarly found that women feel that routine testing of HIV may result in reduced abuse and discrimination, higher HIV testing acceptance, and subsequently greater access to antiretroviral therapy (Weiser et al. 2006).

Community mobilization, engaging local communities and involving people living with HIV into the programs may help reduce stigma and discrimination (United Nations, 2005). “Mothers 2 Mothers 2 Be” (South Africa), and networks of PLWHA groups (India, Nigeria, Brazil) and female health extension workers (Ethiopia) are examples of some programs with community involvement (WHO, 2007a). Additionally, women’s religious orientation may also influence participation and treatment in a PMTCT program (Painter et al. 2005).

Health facility/provider level factors

The characteristics of health care providers and the facilities in which they work have considerable impact on women’s willingness and ability to participate in the full range of PMTCT interventions required to prevent transmission of HIV from mother to child. Jackson et al. (2007) observed that the probability of HIV transmission and infant survival was highly correlated with the quality of healthcare the women received in the PMTCT programs. Nkonki et al. (2007) observed that shortfalls in national health systems were responsible for failure to conduct ANC-based HIV testing in 40 percent of the study participants. Elements such as staffing (sufficient number of qualified and caring staff), counseling procedures, and infrastructure all impact the likelihood of service uptake and continuation.

Staffing and efficiency of care. Incorporating PMTCT services into routine antenatal care often results in an increased demand on the existing staff, and may require additional health personnel to implement the interventions. This can pose challenges to already-overstretched health facilities to retain staff and increase their motivation (Sripipatana et al. 2007). In some clinics, nurses are often trained to counsel HIV-infected women, but they may be reluctant to take on the additional responsibilities due to pre-existing heavy workloads (Shetty et al. 2005); this may result in failure to provide VCT services, or failure to spend sufficient time on PMTCT counseling for HIV-positive women (Moth et al. 2004; Rakgoasi, 2005; Nyugen et al. 2008). Similarly, Nguyen et al. (2008) observed that lack of training and lack of time were the main factors affecting the quality of PMTCT counseling (women did not receive counseling or information on PMTCT was not given as part of the counseling). Staffing constraints can also lead to long waiting periods for post-test counseling, and some women may leave the facility without getting their HIV test results. Comparisons of different ANC sites offering testing revealed testing uptake to be strongly associated with the testing site: sites with the highest levels of testing acceptance had shorter waiting periods and faster recruitment and screening of the women. Overcrowding at testing sites also deters women from accepting testing because they not only have to wait longer but are often counseled in areas that lack privacy (Westheimer et al. 2004).

Staffing and stigma/discrimination. HIV-related fear and discrimination among health care providers is also a barrier to the scale-up of PMTCT interventions. Women may be maltreated or refused procedures to reduce MTCT such as caesarean section because of fear that medical personnel will be exposed to the blood and could become infected (Nguyen et al. 2008). HIV-positive mothers may be assigned to isolation wards during delivery and after delivery, and their newborns may be kept in different pediatric wards, making the mother's serostatus obvious to family members regardless of the mother's desire for confidentiality (Mawar et al. 2007). It is revealing that one study in Malawi found that 81 percent of midwives believe that HIV-infected women should never become pregnant and 37 percent admitted that they would not be comfortable assisting HIV pregnant women during delivery (Misiri et al. 2004). Given these findings, it is not surprising that women are sometimes afraid to go back to the hospitals (Painter et al. 2004), which usually translates into programmatic dropout.

Bringing in other care-givers to expand programmatic reach. Given the challenges and constraints associated with PMTCT service delivery in the formal health care sector, it has been suggested that training health care providers in key elements of HIV testing and counseling (Kanshana and Simonds, 2002) and distributing work to appropriately trained lay providers can help alleviate the human resource crisis faced in many resource limited countries (Sripipatana et al., 2007). The role of traditional birth attendants (TBA) in PMTCT programming is controversial. Wanyu et al. (2007) argues that TBAs can be successfully trained to support PMTCT programs in rural areas. They could assist in the dissemination of HIV/AIDS information, and women may be more willing to accept HIV testing since they trust and highly regard TBAs in their communities. However, Berer (2003) disagrees that TBAs should be relied upon to implement PMTCT interventions, including administration of nevirapine, because an overwhelming proportion of births in the developing countries happen without a trained birth attendant.

Counseling strategies. A high level of acceptance of HIV testing (89 percent) was observed in Harare, Zimbabwe in a context where initially all women received group counseling on PMTCT and later were given pre-and post-test counseling on a one-to-one basis. This counseling

strategy led to higher acceptance rate for HIV testing and reduced programmatic drop-out: 70 percent of infants of HIV-positive women received nevirapine (Zvandasara et al. 2006). Quality of counseling can help pregnant women have a clear understanding of HIV/MTCT, so they can make informed choices with regard to the available interventions (Perez et al. 2004).

Availability of medications and other supplies. Adequate amounts of the recommended ARVs and other supplies should be available at the PMTCT facilities. However, in many African countries, supply-side factors affect the capacity to scale up HIV testing and counseling. A study of five PMTCT sites surveyed in Uganda observed that infrastructure including staff and supply shortages including test kits and nevirapine (Rakgoasi 2005, Karamagi et al. 2006) led to various challenges in implementing the PMTCT interventions (Homsy et al. 2006; Nuwagaba-Biribonwoha et al. 2007).

Administration of nevirapine. Despite robust PMTCT programs, a large proportion of HIV-infected women (32%) do not ingest the nevirapine tablet given to them during ANC or when they present in labor. Perez et al. (2004) report that complete antiretroviral prophylaxis for both mother and child was provided to less than quarter of all HIV positive women in a rural PMTCT program in Zimbabwe. In their study of factors affecting uptake of PMTCT services in Guyana, Henry and Carlson (2005) observed several reasons for the failure to take nevirapine including transportation-related problems, long waiting times at the clinic, and arriving too late to the clinic to take the nevirapine, which is not effective when taken too close to delivery. In addition, Henry and Carlson found that women who did not bring an ANC card to the clinic or did not have an HIV test result recorded on their card due to the health care provider's neglect were denied nevirapine. MIRIAD (mother-infant rapid intervention at delivery) shows that it is feasible to administer a rapid test when a woman comes to the clinic without knowing her HIV status (Dennis et al. 2007); by doing so antiretroviral prophylaxis can be given to the women and their babies to reduce the risk of transmission (Kissin et al. 2007).

Government/policy-level factors

There are steps that governments can take, by creating a conducive policy and programmatic environment, that can increase the availability and uptake of PMTCT services. These include signing onto international agreements to prioritize the problem of MTCT, establishing PMTCT as a priority issue on national agendas, and facilitating the expansion of relevant services within the health care system.

Planning to improve uptake of PMTCT services. Though almost all countries have developed policies and implementation plans for PMTCT programs, most of them do not have population-based targets (UNICEF, 2005). Without appropriate targets, it is impossible for countries to monitor their progress (or lack thereof) in the delivery of PMTCT services to the populations in need.

Policies to improve uptake of PMTCT services. In an effort to incorporate PMTCT interventions into routine antenatal practice, governments may have to shift existing policies to accommodate the need for services. For example, the Ministry of Health in Uganda now provides health services to women for five days a week compared to the traditional one day that had been reserved for women's services. This results in more coverage and makes the workload more manageable as it is spread over five days. Further, it reduces the crowding that results in women and their babies gathering at one location on a given day (Sripipatana et al. 2007).

Shifting HIV testing policies from “opt-in” to “opt-out” is seen as one of the most important developments in ensuring increased uptake of HIV testing at ANC. In Botswana, routine testing for HIV in 2004 led to significant increases in HIV testing uptake (76 percent pre-opt-out to 95 percent post-opt-out). The percentage of women who received their test results also increased from 72 percent to 82 percent. More women knew their status at the time of delivery (47 percent compared to 78 percent under the opt-out approach), and the percentage of women who received AZT also increased under the opt-out approach (Creek et al. 2007).

Decentralization of services. Substantial health system gaps limit PMTCT implementation in resource-poor countries. One study (Karamagi et al., 2006) suggests that the most frequent reason for not testing for HIV was unavailability of testing and counseling services; lack of services is more widespread in rural, hard-to-reach areas. For a successful scale-up of PMTCT programs, it is important to involve local governments at the district and community levels (Basset 2002; Perez 2004).

Even when women do access testing services during antenatal care, there is often loss to follow up at the point when women are expected to return to the health facility to receive nevirapine at the end of gestation (Sripipatana et al. 2007). This loss to follow up of HIV-infected women in Malawi was associated with Malawi’s centralized, hospital-based PMTCT service delivery strategy: it often proves impossible for a pregnant woman or a woman with a newborn to travel long distances from rural areas during labor or in the immediate postpartum. Under such circumstances, women frequently deliver in rural areas close to their home (Manzi et al. 2005). Therefore, decentralization to peripheral sites and introducing nevirapine at these sites as strategies is recommended to improve the uptake of nevirapine both for mother and child; decentralization of counseling, HIV testing and nevirapine administration to selected health centers and TBA sites already offering routine antenatal, natal and postnatal services is also recommended (Manzi et al. 2005).

Testing protocols. As part of the PMTCT programs, women are tested once during the ANC visit. Women who test negative undergo post-test counseling but are not tested again during their follow up visits. However, it has been found that some women do seroconvert between the first test and delivery (Stringer 2005, Kissin et al. 2007). Therefore, countries may need to revisit and revise the testing guidelines for pregnant women to capture women who may seroconvert during pregnancy and lactation.

Data and methods:

This analysis uses data from the DHS to describe the current levels of access to and use of selected PMTCT services – counseling, offering of a test, and acceptance of a test – and to discern associations between the selected indicators and key background variables in an effort to identify areas amenable to programmatic intervention that could increase uptake of services. This section describes the datasets that were used in this analysis, the statistical methods employed, and other methodological and data-related considerations.

Data: The MICS and DHS Household Survey Programs

The analyses presented in this report are based on data from the MICS and the DHS household survey programs, which collect nationally-representative data on topics including fertility, reproductive health and family planning, mortality, nutrition, maternal and child health, and HIV. Both survey programs are capable of producing statistically sound, internationally comparable estimates of key outcome indicators.

The Multiple Indicator Cluster Surveys (MICS) is a household survey program developed by UNICEF to assist countries in filling data gaps for monitoring the situation of children and women in the developing world. The current (third) round of MICS is focused on providing a monitoring tool for major international commitments including the Millennium Development Goals (MDGs) and the UNGASS on HIV/AIDS. UNICEF works closely with other household survey programs, in particular the Demographic and Health Surveys (DHS) program, to coordinate survey questions and modules and to ensure a coordinated approach to survey implementation. DHS surveys have been conducted in more than 70 countries in the developing world and, alongside the MICS, are the primary source of data on many health and population indicators for these countries. The MICS and DHS programs coordinate their respective efforts to ensure that data are collected in as many countries as possible without overlap, and to ensure that data collected to produce key indicators are comparable across the two survey programs. Additional information about the MICS program is available at <http://www.childinfo.org> and about the DHS program at <http://www.measuredhs.com>; datasets from both survey programs are publicly available.

This analysis uses recent data (2002-2007) from all MICS and DHS surveys that included questions related to knowledge of mother-to-child transmission of HIV and use of PMTCT services. Table 3.1 shows the surveys included in this analysis: the year of fieldwork; the number of households, women and men included in the sample; the corresponding response rates; and the age criteria for eligibility. Respondents are women age 15-49 and men age 15-54 (data from men are available only for DHS; the age range for men may vary by survey).

Survey response rates provide an indication of the representativeness of statistics based on data from a given sample, and may also provide a clue as to the quality of the data collection effort for the particular survey, assuming appropriate sampling procedures were followed during data collection activities. The top panel of Table 3.1 indicates that all but two DHS surveys have a household response rate of 95 percent or higher (Guyana and Colombia being the exceptions at 93 and 88 percent, respectively). Nearly all DHS/AIS surveys have women's response rates of 90 percent or greater, the exception again being the Guyana AIS with an 87 percent response rate. The Cote d'Ivoire AIS and Zimbabwe DHS also have comparatively low women's response rates at 90 percent. It is common for men selected for survey interview to have lower survey response rates than selected women; this phenomenon is clearly observable in Table 3.1, where men's response rates are lower than women's in all but one country (Burkina Faso). In several countries, the response rate differential between male and female respondents is 10 percentage points or greater (Dominican Republic, Guyana, Lesotho, Malawi, and Mozambique).

With regard to response rates in the MICS, many countries do not yet have final reports available, and therefore response rates are not presented for those countries. Of the countries with published response rates, Macedonia and Jamaica have household response rates lower than 90 percent (89 and 85 percent, respectively). Only Bangladesh has a women's response

rate lower than 90 percent. It should also be noted that during the course of data analysis, a particularly low women's response rate was noted for Sierra Leone (about 80 percent).

Table 3.1 Characteristics of surveys
 Characteristics of surveys with PMTCT-related data, Demographic and Health Surveys 2003 and later and MICS-3 Surveys, 2005-06

Country	Year of fieldwork	Households		Women			Men		
		Number of households	Household response rate	Age criteria for eligibility (women)	Women's response rate	Number of women with completed interviews	Age criteria for eligibility (men)	Men's response rate	Number of men with completed interviews
DHS									
Benin 2006	2005	17,511	99.1	15-49	94.4	17,794	15-64	91.4	5,321
Bolivia 2003	2003	19,207	98.9	15-49	95.5	17,654	15-64	89.7	6,230
Burkina Faso 2003	2003	9,097	99.0	15-49	96.3	12,477	15-59	99.3	3,179
Cambodia 2005	2005/06	14,243	98.0	15-49	97.5	16,823	15-49	93.1	6,731
Cameroon 2004	2004	10,462	97.6	15-49	94.3	10,656	15-59	93.0	5,280
Chad 2004	2004	5,369	99.4	15-49	97.2	6,085	15-59	94.4	1,887
Colombia 2005	2004/05	37,211	88.4	13-69	92.4	41,344	na	na	na
Congo 2005	2004	5,879	99.2	15-49	94.8	7,051	15-59	89.5	3,146
Cote d'Ivoire 2005 (AIS)	2004/05	4,368	95.5	15-49	90.0	5,183	15-49	88.0	4,503
Dominican Republic 2002	2002	27,135	98.0	15-49	93.0	23,384	15-59	81.0	2,833
Egypt 2005	2005	21,972	98.9	15-49	99.5	19,474	na	na	na
Eritrea 2002	2002	9,389	98.7	15-49	96.2	8,754	na	na	na
Ethiopia 2005	2005	13,721	98.5	15-49	95.6	14,070	15-59	89.0	6,033
Ghana 2003	2003	6,251	98.7	15-49	95.7	5,691	15-59	93.8	5,015
Guinea 2005	2005	6,282	99.2	15-49	97.2	7,954	15-59	94.5	3,174
Guyana 2005 AIS	2005	2,608	93.1	15-49	87.4	2,425	15-49	76.8	1,875
Haiti 2005-06	2005/06	9,998	99.6	15-49	98.8	10,757	15-59	97.3	4,958
India 2005-06	2005/06	109,041	97.7	15-49	94.5	124,385	15-54	87.1	74,369
Indonesia 2002-03	2002/03	33,088	99.0	15-49	98.3	29,483	15-54	95.1	8,310
Jordan 2002	2002	7,825	99.0	15-49	97.6	6,006	na	na	na
Kenya 2003	2003	8,561	96.3	15-49	94.0	8,195	15-54	85.5	3,578
Lesotho 2004	2004	8,592	95.2	15-49	94.3	7,095	15-59	84.6	2,797
Madagascar 2003-04	2003/4	4,980	98.4	15-49	95.9	5,193	15-59	91.4	1,642
Malawi 2004	2004/05	13,664	97.8	15-49	95.7	11,698	15-54	85.9	3,261
Moldova 2005	2005	11,095	95.2	15-49	95.1	7,440	15-59	86.6	2,508
Morocco 2003-04	2003/04	11,513	98.8	15-49	96.3	16,798	na	na	na
Mozambique 2003	2003/04	12,314	94.8	15-49	91.0	12,418	15-64	80.6	2,900
Niger 2006 (DHS MICS)	2006	5,585	97.5	15-49	96.0	6,129	na	na	na
Nigeria 2003	2003	7,225	98.6	15-49	95.4	7,620	15-59	91.2	2,346
Philippines 2003	2003	12,586	99.1	15-49	97.8	13,633	15-54	95.1	4,766
Rwanda 2005	2004	10,272	99.7	15-49	98.1	11,321	15-59	97.2	4,820
Senegal 2005	2005	7,412	98.5	15-49	93.7	14,602	15-59	86.0	3,761
Swaziland 2006-07	2006/07	4,843	95.2	15-49	94.1	4,987	15-49	88.9	4,156
Tanzania 2004	2004/05	9,735	98.8	15-49	97.3	10,329	15-49	91.8	2,635
Uganda 2006	2006	8,870	97.5	15-49	94.7	8,531	15-54	90.7	2,503
Zimbabwe 2005-06	2005/06	9,285	95.0	15-49	90.2	8,907	15-54	81.7	7,175

Table 3.1 (cont.) Characteristics of surveys

Characteristics of surveys with PMTCT-related data, Demographic and Health Surveys 2003 and later and MICS-3 Surveys, 2005-06

Country	Year of fieldwork	Households		Women			Men	
		Number of households	Household response rate	Age criteria for eligibility (women)	Women's response rate	Number of women with completed interviews	Age criteria for eligibility (men)	Men's response rate
MICS								
Albania 2005	2005	-----report not available-----				na	na	na
Bangladesh 2006	2006	62,463	92.5	15-49	89.3	69,860	na	na
Belarus 2005	2005	6,707	95.8	15-49	99.8	5,895	na	na
Belize 2006	2006	-----report not available-----				na	na	na
Bosnia & Herzegovina 2006	2006	5,549	93.4	15-49	98.2	4,890	na	na
Burundi 2005	2005	-----report not available-----				na	na	na
Cuba 2006	2006	8,343	99.0	15-49	97.3	8,448	na	na
Georgia 2005	2005	-----report not available-----				na	na	na
Ghana 2006	2006	-----report not available-----				na	na	na
Guinea Bissau 2006	2006	-----report not available-----				na	na	na
Guyana 2006-07	2006-2007	-----report not available-----				na	na	na
Iraq 2006	2006	17,873	98.6	15-49	98.6	27,186	na	na
Jamaica 2005	2005	4,767	85.1	15-49	96.6	3,647	na	na
Kyrgyzstan 2005-06	2005-06	5,179	99.6	15-49	99.0	6,973	na	na
Macedonia 2005	2005	4,701	89.0	15-49	98.0	7,397	na	na
Malawi 2006	2006	30,553	97.9	15-49	97.0	26,259	na	na
Mongolia 2005	2005	6,220	98.3	15-49	92.6		na	na
Montenegro 2005-06	2005-06	2,358	95.0	15-49	95.0	2,258	na	na
Niger 2006	2006	-----report not available-----				na	na	na
Serbia 2005-06	2005-06	8,730	93.0	15-49	95.0	7,516	na	na
Sierra Leone 2005	2005	-----report not available-----				na	na	na
Somalia 2006	2006	5,969	99.5	15-49	93.0	6,764	na	na
Syria 2006	2006	-----report not available-----				na	na	na
Tajikistan 2005	2005	6,684	96.0	15-49	96.0	10,243	na	na
Thailand 2005-06	2005-06	40,511	95.8	15-49	99.4	36,960	na	na
Trinidad and Tobago 2006	2006	-----report not available-----				na	na	na
Ukraine 2005	2005	-----report not available-----				na	na	na
Uzbekistan 2006	2006	10,198	98.5	15-49	98.0	13,919	na	na
Vietnam 2006	2006	8,355	100.0	15-49	94.1	9,473	na	na

It should be noted that the DHS and MICS programs vary in terms of availability of key variables used in this analysis. Further, not all countries within each survey program collected the same data. Each of the analyses was conducted for all datasets where the respective dependent variable exists, which results in slightly different subsets of countries included for each bivariate and multivariate analysis.

Methods

1. Descriptive analyses.

To describe the levels and patterns of important PMTCT-related indicators, univariate and bivariate analysis was conducted for the following dependent variables: whether the respondent received counseling on MTCT at ANC, whether she was offered an HIV test at ANC, and whether she was tested for HIV at ANC. Independent variables included in all of the bivariate analyses included age (grouped into five year increments), residence (urban or rural), marital status (never married, currently married, or formerly married), education (none,

primary, and secondary or higher), asset-based household wealth quintiles (for methodological details see Rutstein and Johnson 2004), exposure to media (radio, television and newspaper), and region (categories vary by country).

All dependent variables are presented in tables (not shown here) crosstabulated by selected background characteristics; *p*-values for chi-square tests of independence are presented for all crosstabulations, indicating whether or not the bivariate relationship between the dependent variable and the background characteristics is statistically significant (*p*<0.05).

2. Multivariate analyses.

To gain insights into the factors associated with the availability and use of PMTCT services, we conducted three sets of multivariate analyses (logistic regression) using data from women who attended ANC for their most recent birth in the past 2 years.

In addition to the basic set of independent variables included in the descriptive analyses (described above), the multivariate analyses also incorporated additional relevant independent variables as appropriate to the specific dependent variable. Given differences in data availability, the DHS multivariate models have more independent variables than do the MICS multivariate models.

Figure 3.4 Dependent variables used in the analyses, their categorization according to the four-pillar PMTCT strategy, and their operationalized definitions

Dependent variable	Operationalization of variable
Whether counseled on HIV/AIDS at ANC (<i>Pillar Three – Service availability</i>)	Dichotomous variable (0/1): Whether or not respondent received any counseling about HIV/AIDS during ANC.
Whether offered a test for HIV at ANC (<i>Pillar Three – Service availability</i>)	Dichotomous variable (0/1): Test was or was not offered.
Whether tested for HIV at ANC (<i>Pillar Three – Service use</i>)	Dichotomous variable (0/1): Test was or was not taken.

A. “Offer” analysis: Analysis of factors associated with being offered an HIV test in ANC setting among all women attending ANC. In a few DHS surveys, data were collected on whether women were offered an HIV test during the course of their ANC. It is of interest to know the breadth of availability of ANC-based HIV testing services, and that can be assessed by determining the percentage of women who were offered the chance to be tested for HIV, and the factors associated with being offered a test. Therefore, among women with a birth in the past 2 years who attended ANC, we conducted a logistic regression to discern factors associated with being offered the opportunity to take an HIV test during pregnancy. The dichotomous dependent variable reflects whether or not women attending ANC were offered an HIV test, based on data collected in response to the following question: “Were you offered a test for the AIDS virus as

part of your antenatal care?” This analysis was conducted for the six DHS countries that had data that could support a multivariate analysis (Benin, Cambodia, Cote d’Ivoire, Haiti, Swaziland, Uganda).

B. “Test” analysis: Analysis of factors associated with being tested for HIV in ANC settings among all women attending ANC. The MICS 3 survey instrument and more recent DHS surveys collected data on whether women were tested for HIV during ANC. In order to inform policy makers and program implementers about the factors that either increase or decrease the likelihood of being tested for HIV at ANC, we conducted a logistic regression to discern the variables associated with being tested for HIV during pregnancy among women with a birth in the past 2 years who attended ANC. The dependent variable is dichotomous, reflecting whether or not the woman reported having been tested for HIV at ANC. This analysis was conducted for 20 DHS countries and 18 MICS countries (DHS: Guyana, Haiti, Cambodia, Moldova, Benin 2006, Cameroun, Chad, Congo, Cote d’Ivoire, Ethiopia, Ghana, Guinea, Malawi, Niger, Rwanda, Senegal, Swaziland, Tanzania, Uganda, and Zimbabwe; MICS: Belize, Guyana, Jamaica, Thailand, Vietnam, Burundi, Ghana, Guinee Bissau, Malawi, Sierra Leone, Bosnia Herzegovina, Georgia, Kyrgyzstan, Mongolia, Serbia, Tajikistan, Ukraine, and Uzbekistan).

C. “Offer and test” analysis: Analysis of factors associated with being tested for HIV in ANC settings among women who were offered an HIV test at ANC. While analyzing the factors associated with getting an HIV test among all women attending ANC is useful in capturing a broad set of factors associated with that outcome, it nevertheless requires that disparate sets of factors be included in a single statistical model, including woman- and family-level factors, factors associated with geographical or other difficulties in accessing ANC services that provide PMTCT services, and facility- and healthcare provider-level factors. Most importantly, with the majority of the datasets available for the analysis, it is not possible to discern the role of the woman’s choice to get tested: whether the woman herself declined HIV testing, or whether the testing was never offered to her in the first place. This is because for many surveys, data were not collected on whether a woman was offered a test – only whether she was tested. Yet this is probably the most important risk factor for not being tested for HIV at ANC.

However, for ten countries, there are data on whether women were offered an HIV test at ANC, as well as data on whether she was tested for HIV. We used these data to illustrate the degree to which HIV testing at ANC is accepted once it has been offered; this approach provides a clearer picture of which factors are most directly associated with uptake of HIV testing. Data from the ten countries (Guyana, Niger, Congo, Cambodia, Cote d’Ivoire, Benin, Uganda, Zimbabwe, Haiti, and Swaziland) permitted a descriptive analysis of the rates of acceptance of HIV testing at ANC, while sufficient data¹ to conduct a multivariate analysis were available only for three countries: Haiti, Swaziland, and Uganda. The dependent and independent variables used in this analysis are the same as those used in the “test” analysis; it is only the study sample that is different by virtue of having been selected only for women who were offered an HIV test.

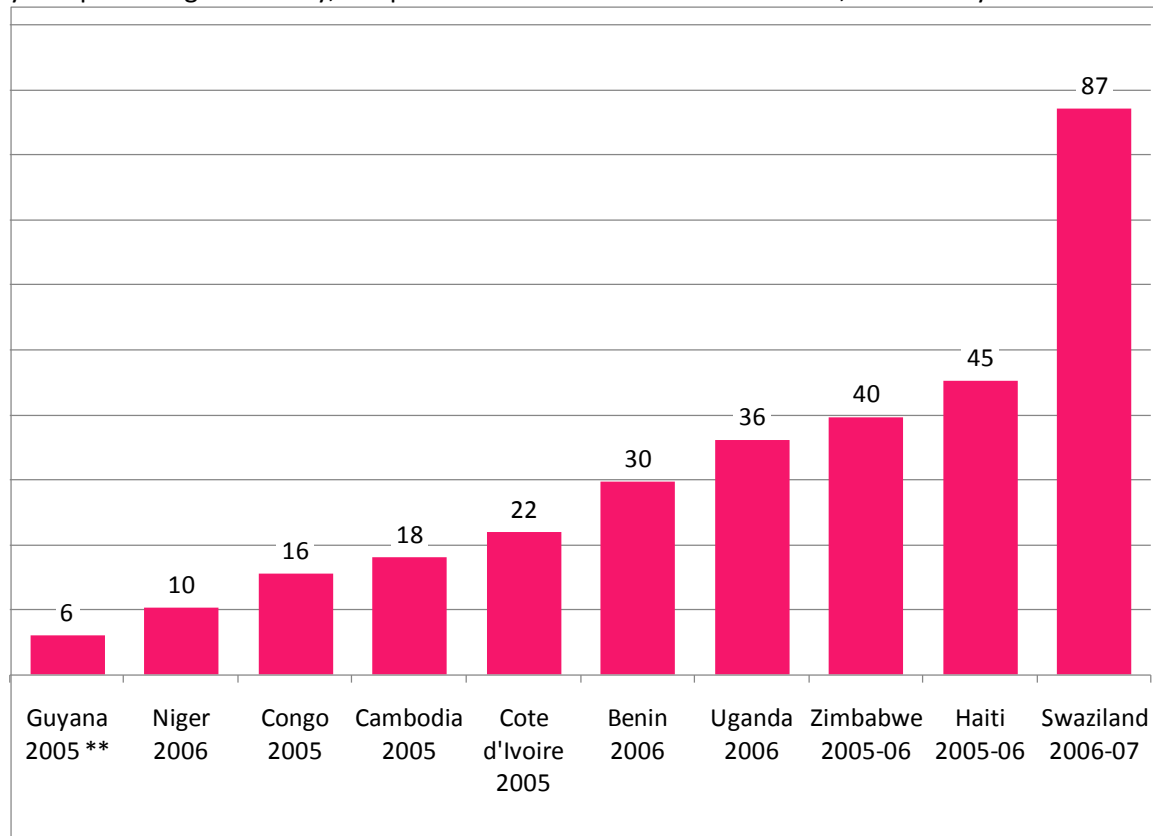
¹ It was necessary to have a large enough sample of women who had been offered an HIV test at ANC, and also necessary to have sufficient variation in uptake among those who were offered an HIV test.

Results:

PMTCT service coverage: The offer of an HIV test

One of the major impediments to the scale-up of comprehensive PMTCT services is the fact that the most fundamental of PMTCT services – the HIV test – is not offered by all or even most ANC providers. This section presents both descriptive results – percentages of women who were offered an HIV test during ANC – as well as multivariate results that attempt to discern which women are more likely to be offered an HIV test during the course of their pregnancy.

Figure 4.15 Among women age 15-49 who attended ANC for a pregnancy delivered in the two years preceding the survey, the percent who were offered an HIV test, DHS surveys 2005-2006



** It appears from the data that Guyanese women are generally not offered an HIV test, but that they are simply routinely tested; thus, HIV testing coverage in Guyana is far higher (62 percent) than this figure would suggest. In all other countries, the percent of women tested is lower than the percent offered a test.

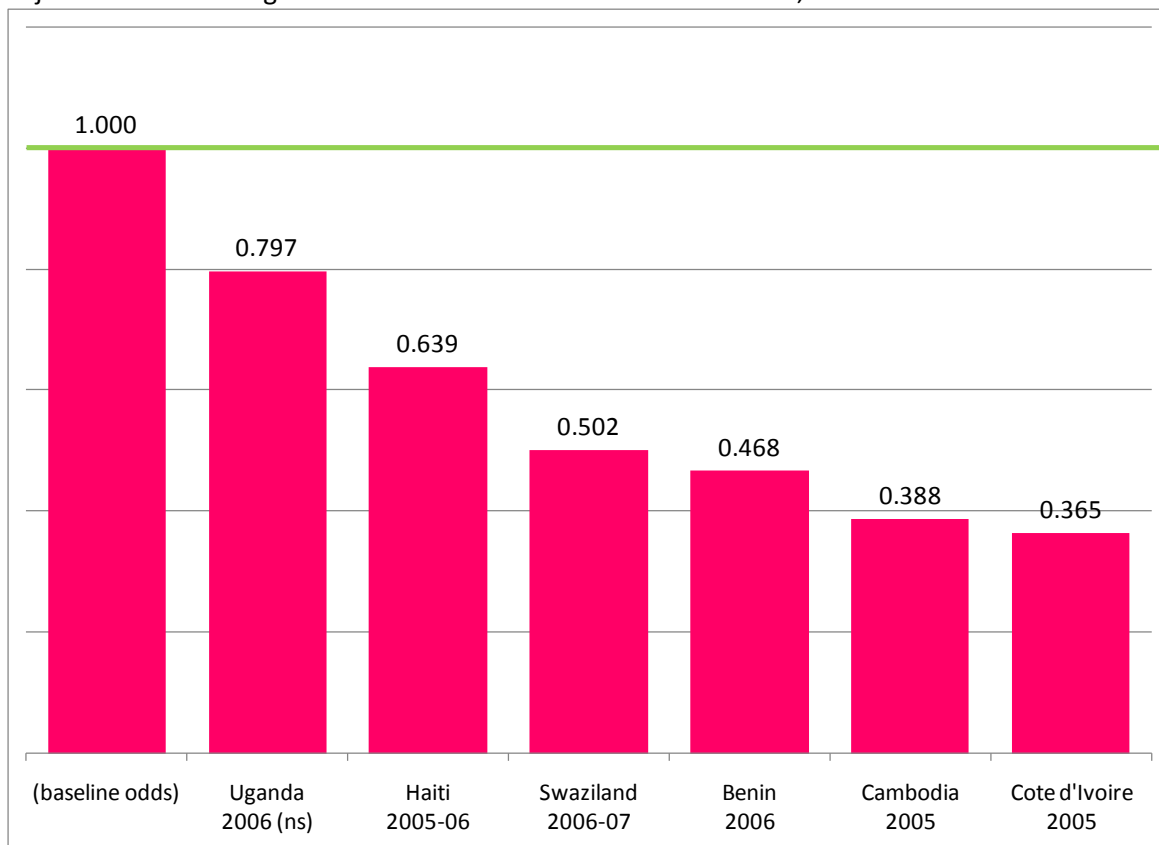
Figure 4.15 shows that in nine of the ten countries in the figure, less than half of women were offered an HIV test during their antenatal care. Swaziland has the highest proportion of women who were offered an HIV test, while Niger has the lowest proportion of women who were offered a test.

Given that most women are not offered an HIV test during ANC, it is important to be aware of the factors that may influence whether the lifesaving test is offered. Some disparities in HIV testing coverage might be appropriate: in a context of scarcity, it may be most rational to ensure that all women in highly affected geographical areas are tested, while de-emphasizing testing

for women who live in areas little affected by the virus. However, disparities in access to HIV testing at ANC that are derived from socioeconomic inequalities are unlikely to be rational and thus could be a focal point for programmatic intervention. Conducting a multivariate analysis of the likelihood of being offered an HIV test is one way to better understand the factors associated with being offered a test, and may highlight locations for programmatic intervention.

In the multivariate analysis of factors associated with being offered an HIV test at ANC, variables like age, educational attainment, marital status, exposure to media, parity, knowledge about modes of transmission or knowing someone who has or had AIDS were not consistently associated with the dependent variable. Wealth was positively and significantly associated with being offered a test in only 3 out of 6 countries (Benin, Cambodia and Uganda). The variables that were most strongly and consistently associated with the likelihood of being offered an HIV test included knowledge of special drugs to prevent transmission of HIV from mother to child, residence, region, and, in four out of six countries, number of ANC visits that took place during the pregnancy. Figures 4.16-4.18 show the key results from a multivariate analysis of factors associated with being offered an HIV test at ANC.

Figure 4.16 Among women with a birth in the past two years and at least one ANC visit, the adjusted odds of being offered an HIV test at ANC: Rural residence, selected DHS 2005-2006

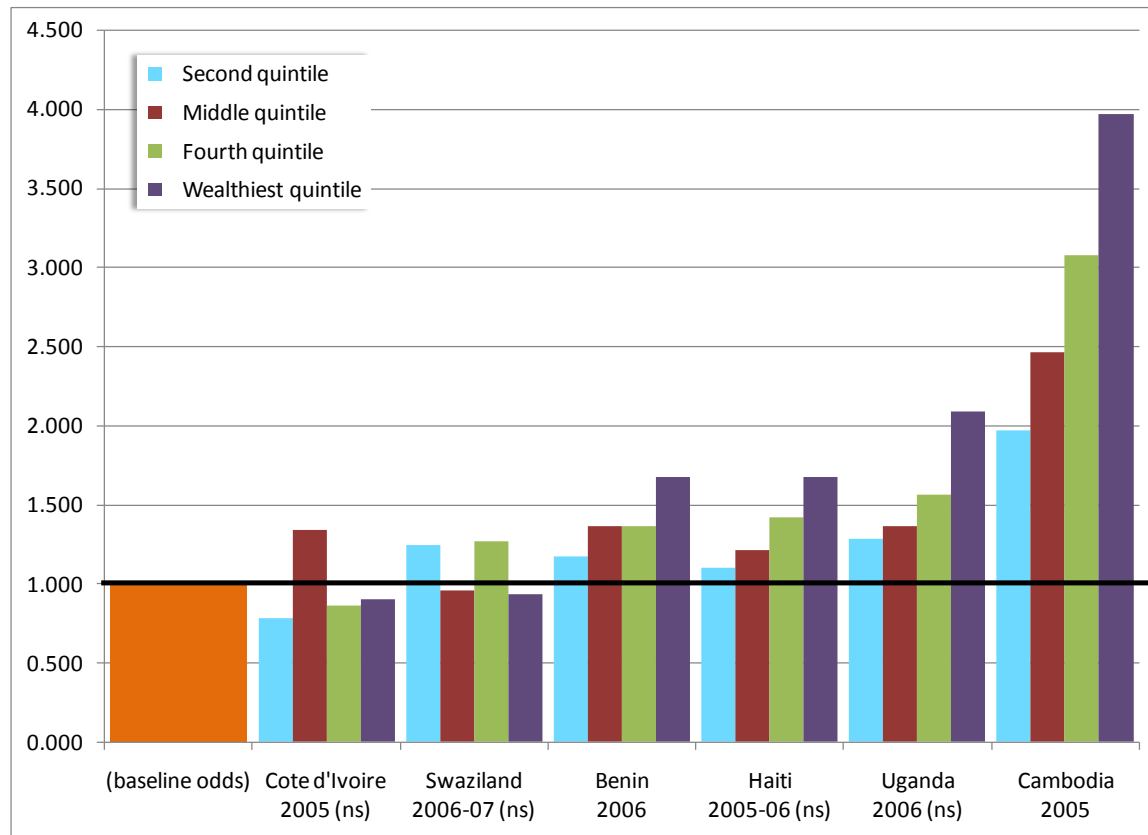


ns: indicates that the independent variable of interest was not significant in the model

Figure 4.16 shows that, compared to women living in urban areas in each respective country, women living in rural areas are significantly less likely to be offered an HIV test during their ANC visits, and the relationship remains after controlling for confounding factors. Although the relationship is not significant in Uganda, it is nevertheless in the expected direction.

Figure 4.17 shows that household wealth is not consistently associated with whether or not a respondent is offered an HIV test at ANC, after adjusting for other factors that could also affect the likelihood of being offered an HIV test. One explanation for this finding is that women whose economic status might impact their access to services were *de facto* excluded from our analysis – the analysis only includes women who had the resources to make at least one ANC visit. The relationship between wealth and being offered an HIV test is significant in Cambodia and Benin, which may reflect implicit or explicit facility-based protocols in those countries.

Figure 4.17 Among women with a birth in the past two years and at least one ANC visit, the adjusted odds of being offered an HIV test at ANC: Household wealth index, selected DHS 2005-2006



ns: indicates that the independent variable of interest was not significant in the model

Figure 4.18 shows the relationship between knowledge of drugs to prevent MTCT and being offered an HIV test at ANC. For every country in the analysis, women who know about drugs for preventing mother-to-child transmission are significantly more likely to be offered a test for HIV

at ANC. Compared to women who do not know about drugs to prevent MTCT, women who do know about the drugs are between 80 percent (Haiti) and 270 percent (Benin) more likely to have been offered an HIV test.

Summary and discussion of results: The offer of a test. Comprehensive PMTCT services cannot be scaled up until women are able to access HIV testing services at ANC. Currently, few women are being offered testing services at ANC, but further analysis indicates that certain variables are associated with an increased likelihood of being offered a test for HIV.

The variables that were most strongly and consistently associated with the likelihood of being offered an HIV test included residence, region, the number of ANC visits that took place during the pregnancy, and knowledge of special drugs to prevent transmission of HIV from mother to child.

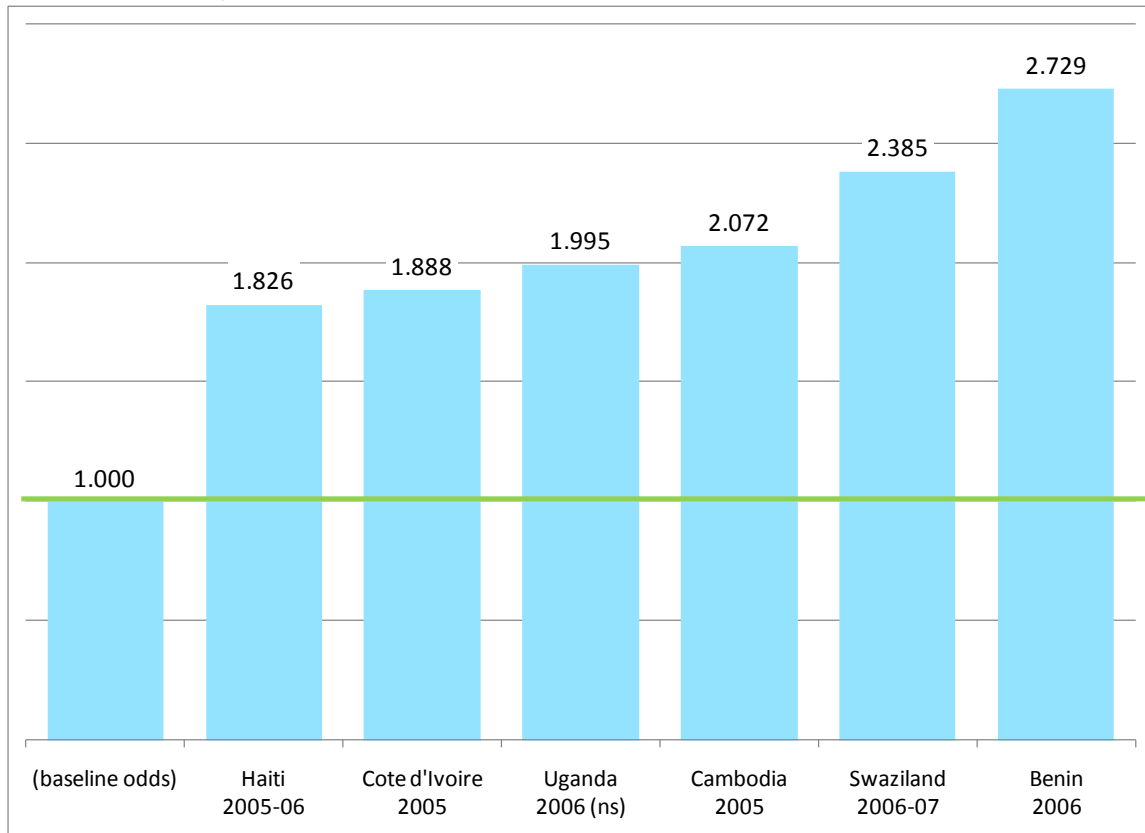
It is not surprising that women living in rural areas are significantly less likely to be offered an HIV test during their ANC visits; decentralizing PMTCT services and offering them in community-based or non-facility-based settings has already been identified as a priority area for action. Similarly, regional variation in availability of services is not unexpected. Presenting several times for ANC services also logically increases the number of opportunities for a woman to be offered a test. Knowledge of special drugs to prevent mother-to-child transmission of HIV, however, is a variable the significance of which is not straightforwardly interpretable. This variable is among the strongest predictors of outcomes in this analysis, and the task is to discern whether the relationships are spurious or whether women's knowledge of the availability of drugs for PMTCT is somehow driving some of the uptake of services, to the degree that women who know about the drugs seek out providers who offer relevant services.

If the relationship between knowledge of drugs to PMTCT and being offered an HIV test is spurious, it may be that ANC providers who have ARTs for PMTCT available are also more likely to both offer an HIV test as well as counsel on the drugs to PMTCT.

On the other hand, it is suggestive that, while knowledge of drugs is significantly associated with being offered a test, knowledge of all three modes of transmission is not significant in the models. Assuming that care providers who counsel on the drugs to PMTCT also counsel on the modes of transmission, this could suggest that it really is women's knowledge about the availability of the drugs that is leading them to a provider who has the capacity to offer testing and perhaps ARVs, rather than – or in addition to – women being influenced by information that the provider gave them that both resulted in their knowledge about PMTCT drugs and in being offered a test for HIV.

Finally, the analysis indicates that household wealth is not consistently associated with whether or not a respondent is offered an HIV test at ANC, after adjusting for other factors. However, the effect of wealth probably had an *a priori* filtering effect on the data, given that only women who attended ANC were included in the analysis, and in many countries, the poorest women are less likely to access ANC services than wealthier women.

Figure 4.18 Among women with a birth in the past two years and at least one ANC visit, the adjusted odds of being offered an HIV test at ANC: Knowledge of drugs to prevent mother-to-child transmission, selected DHS 2005-2006



ns: indicates that the independent variable of interest was not significant in the model

PMTCT service coverage: HIV counseling and testing among ANC attendees

Being offered an HIV test is a fundamental step in the delivery of PMTCT services; no less so is receiving counseling on HIV and its transmissibility from mother to child. Being tested for HIV provides the most critical information, leading either to counseling about how to stay HIV-free for women who test negative, or to provision of additional services to help reduce the chance of MTCT for women who test positive. In this section, we present results on the delivery of HIV counseling and testing services. We also look for correlations between service delivery and the policy & program environment.

Figure 4.19 shows the percent of women who received counseling and testing services for each country that collected this information. In nearly every country, the percentage of women receiving counseling services far exceeds the percentage of women who are tested for HIV. In a few countries, however, the proportion of women tested exceeds the proportion of women counseled, notably Belarus, Moldova, Kyrgyzstan, Uzbekistan, and, in the Caribbean, Jamaica.

Figure 4.19 demonstrates that although counseling is more frequently provided than testing, levels of counseling about PMTCT are nevertheless too low. By 2006, in only two countries in

our sample were more than 70 percent of women counseled about preventing mother-to-child transmission of HIV. In only 7 out of 31 countries did proportions of women tested for HIV at ANC exceed 40 percent. Only in Belarus and Jamaica were greater than 90 percent of women attending ANC tested for HIV.

Figure 4.19 Among women age 15-49 who attended antenatal care for the most recent birth in the past 2 years, the percent who were counseled about HIV and who were tested for HIV, selected MICS and DHS 2002-2006

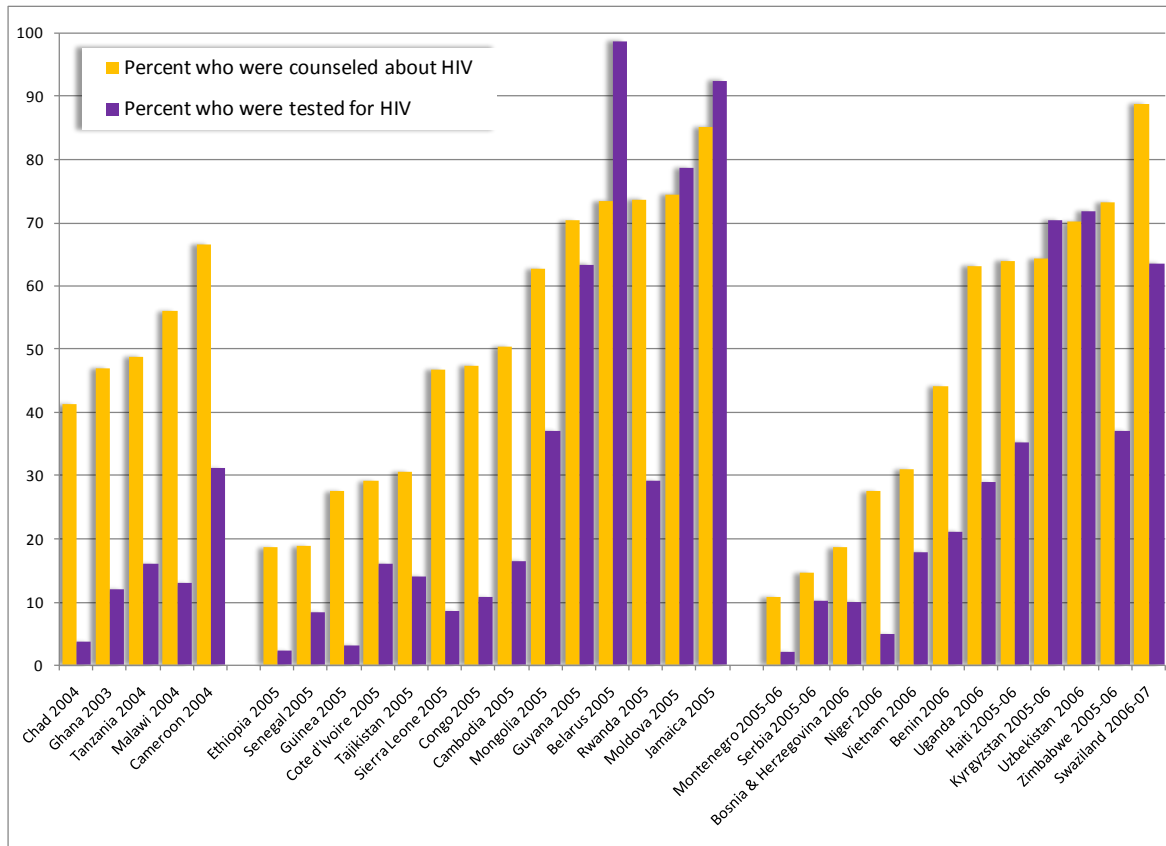


Figure 4.19 shows clearly that most countries included in the study are far from attaining complete coverage of HIV testing among women attending ANC. To improve strategies to increase the uptake of PMTCT services, critically HIV testing, it is useful to know what factors are associated with getting tested for HIV. We therefore conducted both bivariate and multivariate analyses of this variable. The next several figures present the highlights of the multivariate findings, while all bivariate and multivariate results tables assessing the factors associated with getting tested for HIV appear in Appendix Table 4.8a.

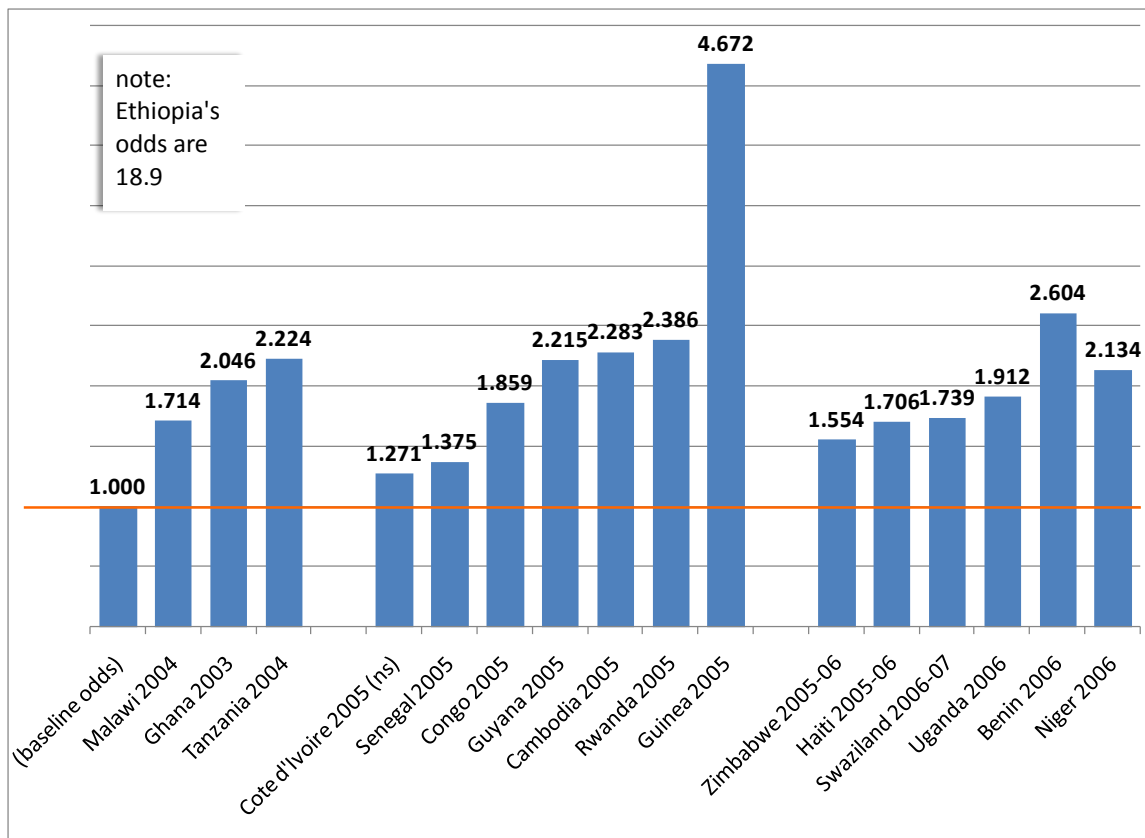
When comparing across countries the factors that were most significantly associated with getting tested for HIV, there were 6 factors that stood out most consistently. Three of them were “the usual suspects” – urban residence, household wealth status, and region of residence. Women who were urban residents and women who came from wealthier households were more likely to be tested for HIV, and the expected regional variations in HIV testing uptake were evident and significant. The three additional variables that were consistently significant – and

suggestive in terms of policy and program relevance – included respondent’s knowledge of special drugs to prevent mother-to-child transmission, respondent’s knowledge of the three modes of transmission (only consistently significant among countries with a MICS survey), and whether respondents know someone with HIV or who has died of AIDS.

Odds of getting tested: Knowledge of special drugs to prevent mother-to-child transmission

Figure 4.20 shows the association between knowledge of special drugs to prevent transmission of HIV from mother to child and the odds of getting tested for HIV at ANC. For nearly all countries in the analysis with the necessary data, knowledge that there exist drugs to reduce the risk of MTCT is associated with a significant increase in the odds of being tested for HIV at ANC. Cote d’Ivoire is the only country where the relationship is not significant, though it is in the same direction as the other countries. In Ethiopia, women who know about drugs to PMTCT are nearly 19 times more likely than women who do not know about the drugs to be tested for HIV (the bar for Ethiopia is not shown because it is out of scale compared to the other countries). In most other countries, knowledge of drugs to PMTCT approximately doubles the odds of being tested for HIV.

Figure 4.20 Among women with a birth in the past two years and at least one ANC visit, the adjusted odds of getting tested for HIV at ANC: Respondent knows of special drugs to PMTCT, selected DHS 2003-2006

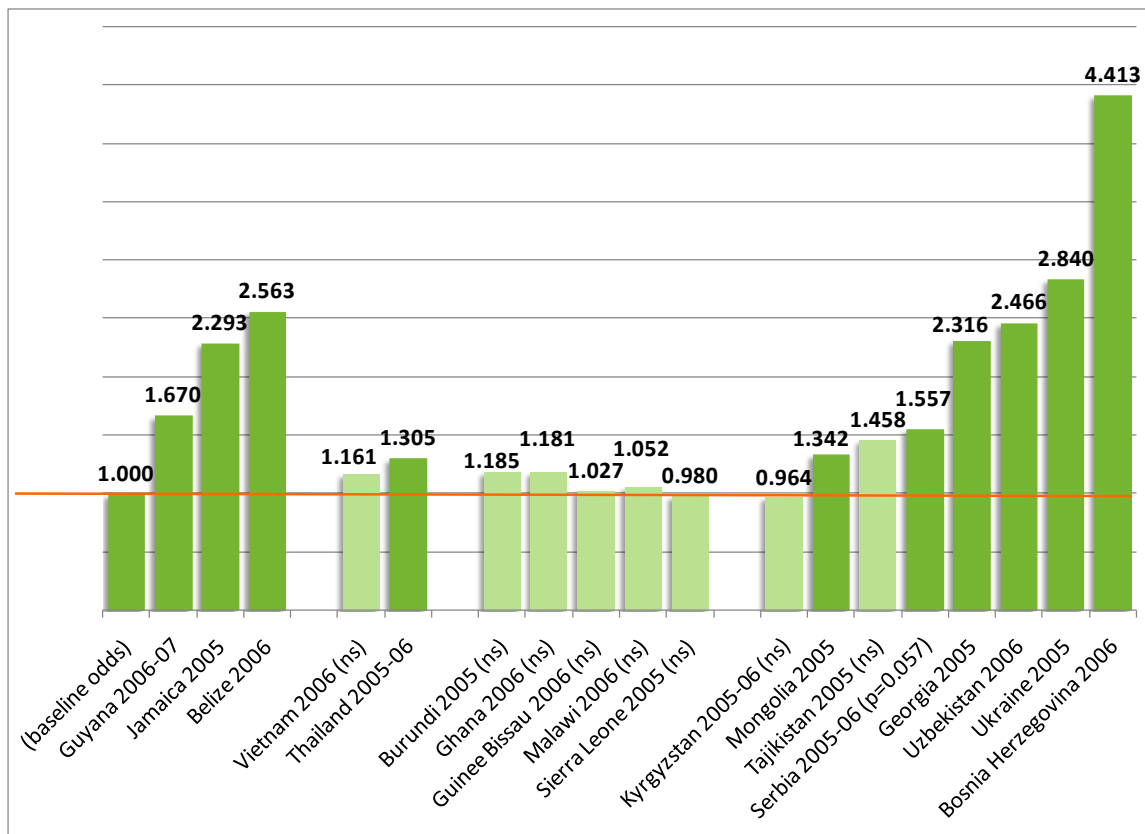


ns: indicates that the independent variable of interest was not significant in the model

Odds of getting tested: Knowledge of the three modes of mother-to-child transmission

Figure 4.21 shows the association between knowledge of all three modes of MTCT and the odds of getting tested for HIV at ANC. While knowing all three modes of MTCT was only inconsistently associated with the odds of getting tested in the DHS surveys, in the MICS surveys, it was significant in 10 out of 18 of the MICS surveys. Notably, the variable is not significant in MICS sub-Saharan African surveys. Among those countries where the variable is significant, the increase in the odds of being tested among those who know all three modes as compared to those who do not ranged from about 30 percent (Thailand, Mongolia) to 440 percent (Bosnia Herzegovina).

Figure 4.21 Among women with a birth in the past two years and at least one ANC visit, the adjusted odds of getting tested for HIV at ANC: Respondent knows all three modes of MTCT, selected MICS 2005-2007



Notes:

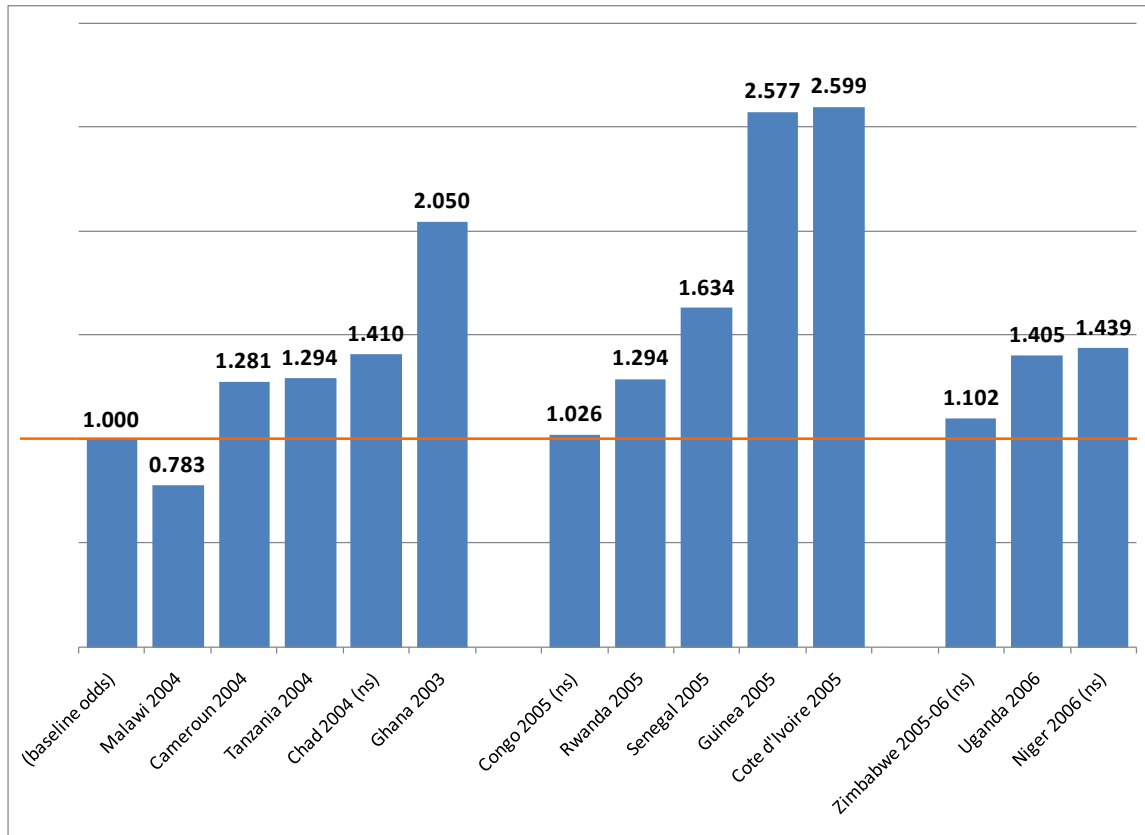
ns: indicates that the independent variable of interest was not significant in the model

Odds of getting tested: Knowing someone with HIV or who has died of AIDS

Figure 4.22 indicates that women who personally know someone with HIV or knew someone who died of AIDS are significantly more likely to be tested for HIV during ANC. This variable is significant in 9 out of 13 countries, in several cases doubling the odds of getting tested for HIV.

The magnitude of the effect of knowing someone with HIV is greatest in countries with lower national HIV prevalence (Ghana, Guinea and Cote d'Ivoire).

Figure 4.22 Among women with a birth in the past two years and at least one ANC visit, the adjusted odds of getting tested for HIV at ANC: Respondent knows someone with AIDS or who has died from AIDS, selected MICS and DHS 2003-2006



Notes:

ns: indicates that the independent variable of interest was not significant in the model

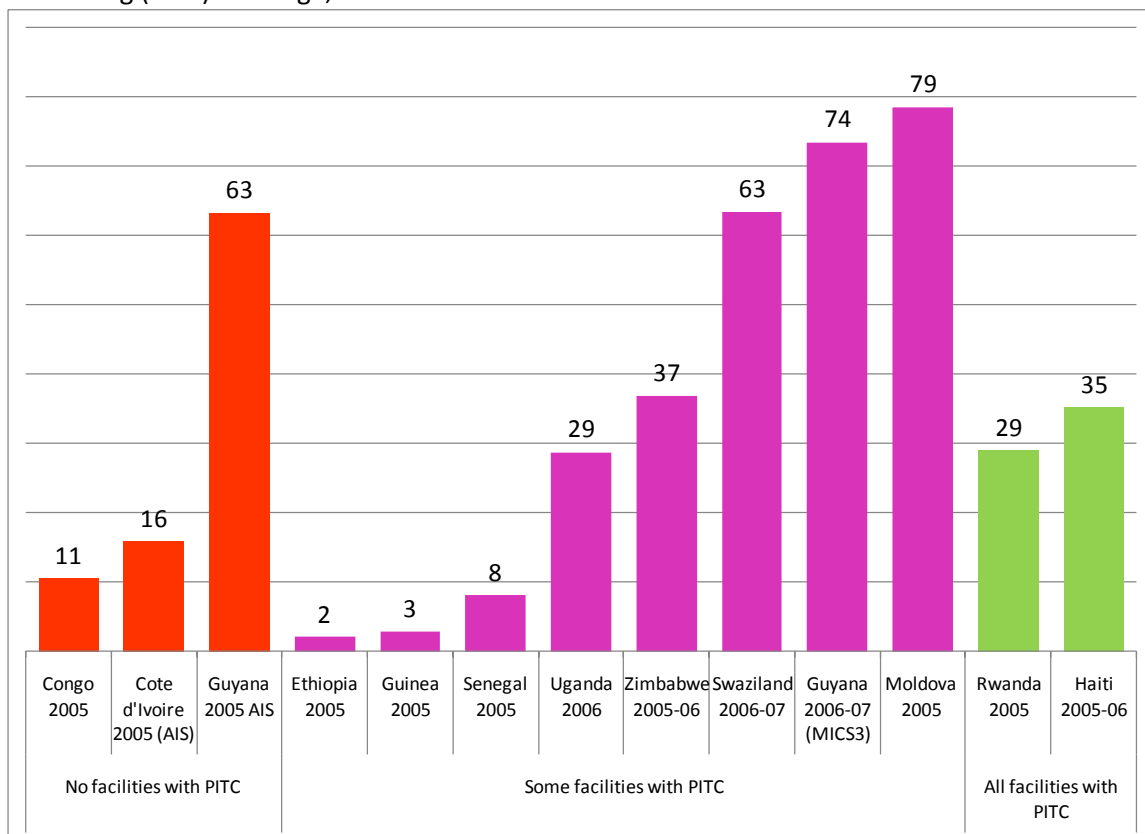
The relationship between testing coverage and the policy environment

In an effort to identify associations between macro-level variables such as PMTCT-related policies and individual-level variables reflecting the delivery and uptake of PMTCT-related services, we generated bar graphs that correlate, at the country level, the prevalence of HIV testing at ANC with whether or not the country had developed specific PMTCT-related national plans or policies. We also plot prevalence of HIV testing at ANC against three additional macro-level indicators (percent of women with secondary or higher education, the GNI per capita, and national HIV seroprevalence) to improve our understanding of what macro-level factors might be correlated with an increased uptake of HIV testing at ANC in the developing world.

Figure 4.23 shows the proportion of women in each country who were tested for HIV at ANC according to the country's coverage of provider-initiation testing and counseling (PITC) at the time of the survey: whether PITC was fully implemented in all health facilities providing relevant services, partially implemented, or not implemented. Data are from countries with a survey

year of 2005-2006, because data on PITC were available only for those years.² The graph essentially demonstrates no relationship between official PITC policies and uptake of testing. Rwanda and Haiti are the two countries where all facilities are expected to conduct PITC, and only about one third of women in those countries are tested – far less than other countries that do not have full PITC coverage. This is not to say that implementing a PITC policy is not useful. Indeed, there are data available here for Guyana at two points in time, first in 2005 when there was no PITC policy, and again in 2006-07, when PITC was implemented in some facilities. Testing uptake increased in Guyana by 10 percentage points between 2005 and 2006-07; this suggests a possible effect of the policy change. However, more in-depth analysis of Guyana’s situation would be required to draw firmer conclusions about the efficacy of the expansion of that country’s PITC policy.

Figure 4.23 Among women with a birth in the two years preceding the survey who attended ANC, the percent who were tested for HIV, according to provider-initiated testing and counseling (PITC) coverage, MICS and DHS 2005-2007



² Xx – How should I cite the source of these PITC data? Same question re the National Scale-up Plan data.

Figure 4.24 shows the proportion of women in each country who were tested for HIV at ANC according to whether the country had a national PMTCT scale-up plan with population-based targets at the time of the survey. This graph also demonstrates no clear relationship between having a national scale-up plan and uptake of testing. It should be noted, however, that many of the scale-up plans were implemented in the year the survey was undertaken, or the year before, leaving little time for the effects of such plans to be shown in the data.

Figure 4.24 Among women with a birth in the two years preceding the survey who attended ANC, the percent who were tested for HIV, according to whether the country had a national PMTCT scale-up plan with population-based targets, MICS and DHS 2005-2007

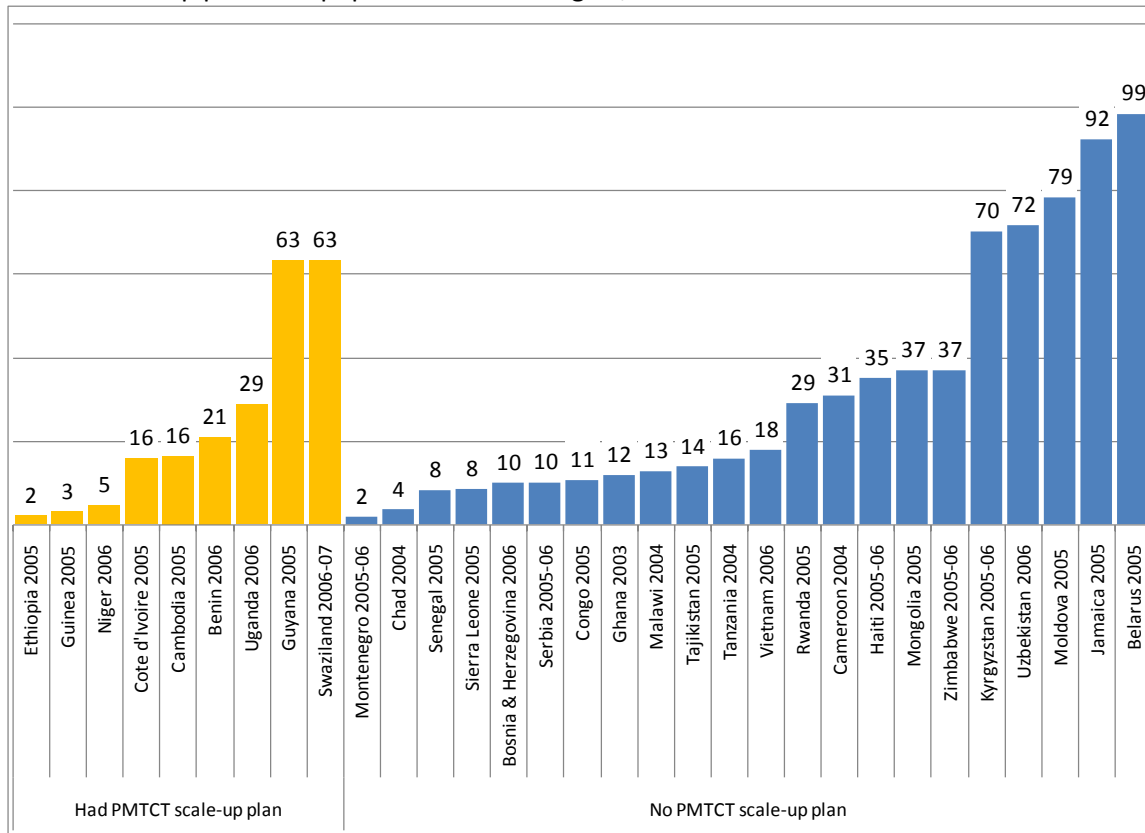


Figure 4.25 presents a macro-level variable that has a clearer association with uptake of testing: the national prevalence of attainment of secondary or higher education among women. This education variable proxies for level of national development; it can also be seen as a general indicator of women's empowerment, both of which are likely to facilitate increased levels of HIV testing at ANC. Figure 4.26, which shows the association between GNI per capita and uptake of HIV testing at ANC supports the interpretation of prevalence of secondary education as a proxy for national development (rather than simply national productivity) that also captures women's empowerment: the relationship between GNI per capita and uptake of testing is much weaker than the relationship between levels of secondary education among women and uptake of testing.

Figure 4.25 The correlation between national prevalence of HIV testing at ANC and the percent of women in each respective country with secondary or higher education, selected MICS and DHS 2005-2007

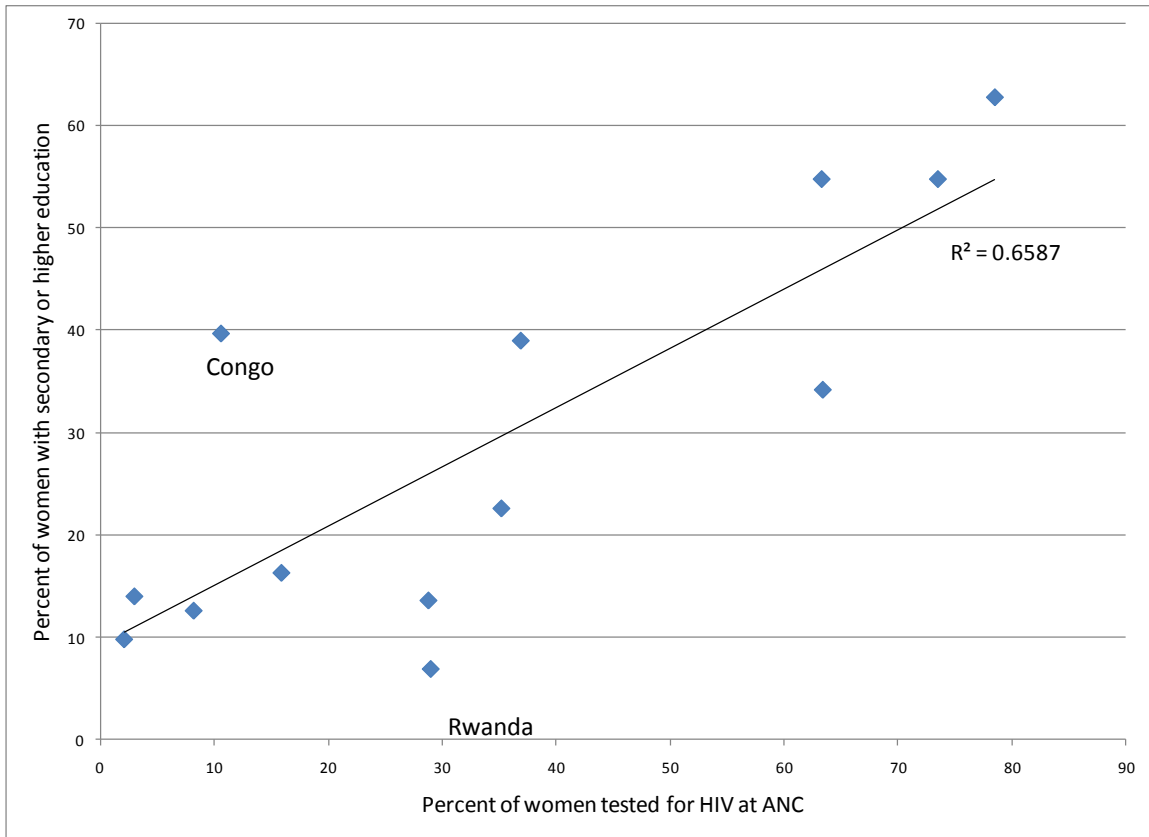


Figure 4.26 The correlation between national prevalence of HIV testing at ANC and the national GNI per capita (Atlas method), selected MICS and DHS 2005-2007

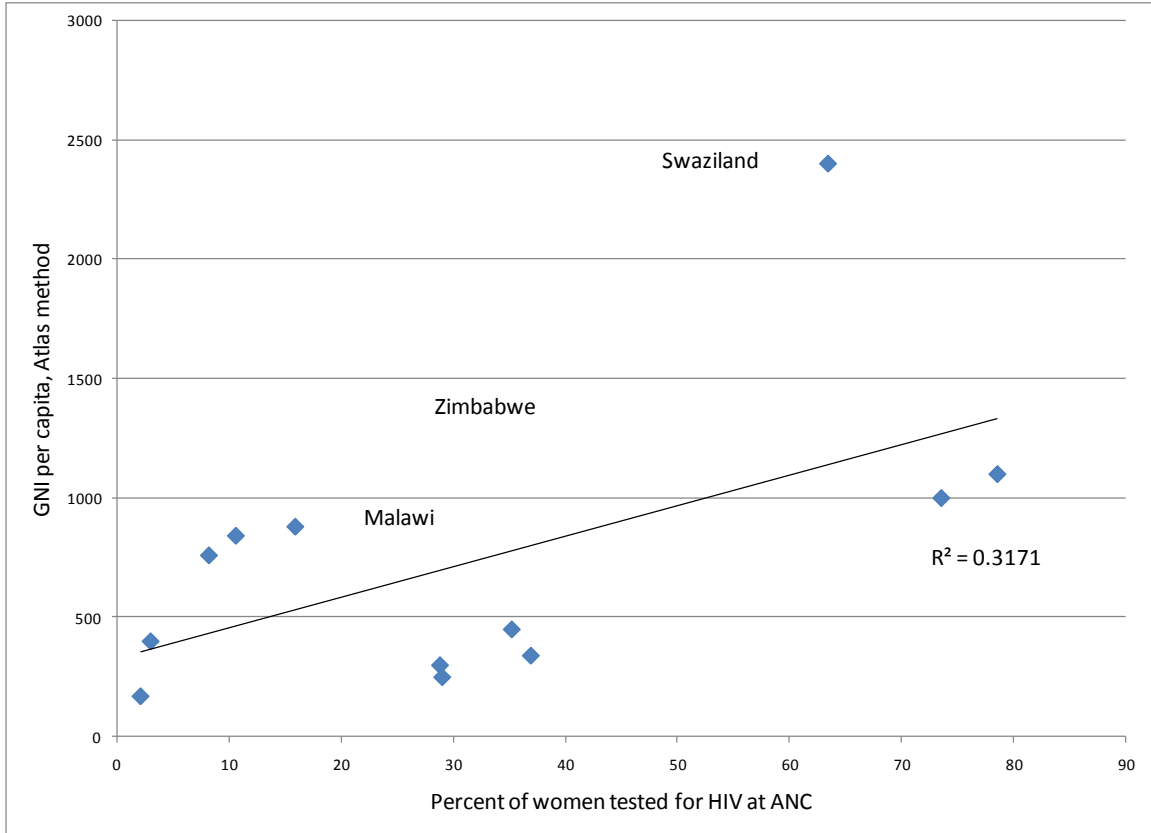
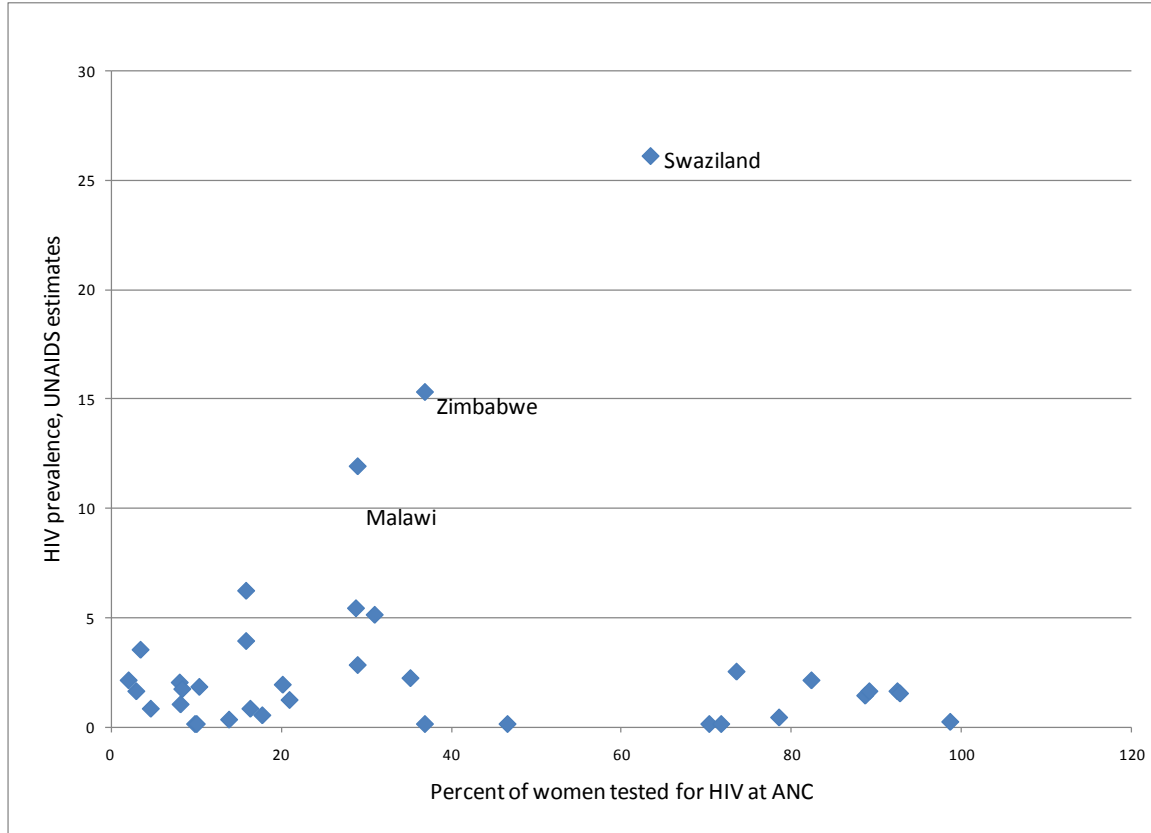


Figure 4.27 The correlation between national prevalence of HIV testing at ANC and the national estimated HIV seroprevalence, selected MICS and DHS 2005-2007



Finally, Figure 4.27 shows the relationship between national prevalence of HIV and uptake of HIV testing. With the exception of three countries that are essentially outliers, there appears to be no relationship between national HIV seroprevalence and uptake of HIV testing at ANC.

Summary and discussion of results: Getting counseled and tested for HIV at ANC

These findings indicate that counseling on PMTCT is obtained at ANC far more frequently than testing for HIV. It seems likely, in light of the results reflecting the low proportions of women who were offered a test, that testing services are just not available to the large majority of women in the developing world. In a few countries, however, the proportion of women tested exceeds the proportion of women counseled on PMTCT, notably Belarus, Moldova, Kyrgyzstan, Uzbekistan, and, in the Caribbean, Jamaica. This is problematic because women need counseling to ensure that they understand the importance of staying HIV-free if negative, and the importance of participating in PMTCT programming if they are positive.

Again, women who know about drugs to PMTCT are significantly more likely than women who do not know about the drugs to be tested for HIV. Interpretation of the relationship between knowledge of drugs to PMTCT and access to services will determine how the information can be used.

Women who personally know someone with HIV or knew someone who died of AIDS are significantly more likely to be tested for HIV during ANC, often doubling the odds of getting tested for HIV. The magnitude of the effect of knowing someone with HIV is greatest in countries with lower national HIV prevalence (Ghana, Guinea and Cote d'Ivoire). One explanation for the large association between knowing someone with HIV and getting tested for HIV could be that the person who is known to be HIV-positive is the woman's partner.

With regard to the relationship between official PITC policies and uptake of testing, at first blush it would seem that there is no association between the two. However, while full coverage of health facilities with PITC policies might not result in everyone being tested, it probably does increase testing uptake over and above non-intervention levels.

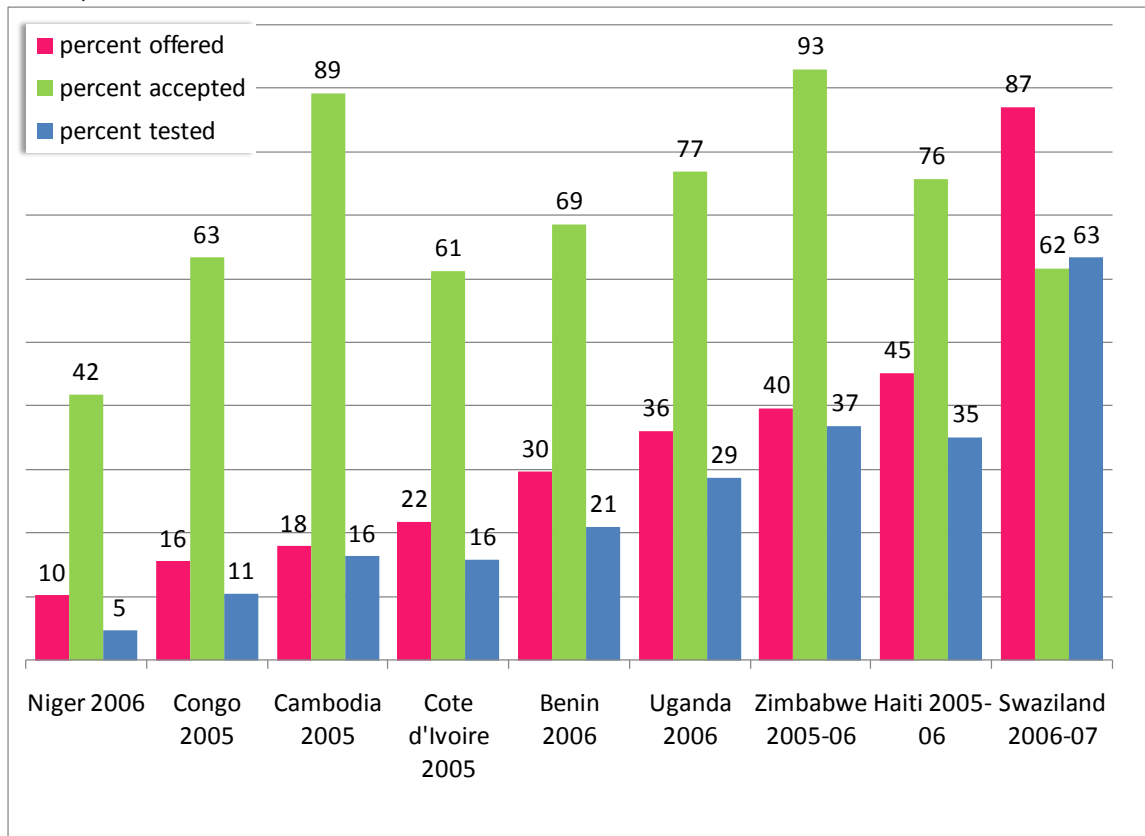
The full set of bivariate results of this analysis can be found in Appendix Tables 4.6a-4.6c while the multivariate results can be found in Appendix Table 4.8a.

5. PMTCT service coverage: HIV testing among those offered a test

The rationale for this analysis is the same as that for the foregoing analysis: being offered an HIV test is a fundamental step in the delivery of PMTCT services, because being tested for HIV provides the critical information needed to prevent new cases of HIV. However, this analysis differs in that it restricts the study sample to women who were actually offered an HIV test during their antenatal care. It is expected that this restriction will provide a clearer picture of which factors are most directly associated with uptake of HIV testing.

Figure 4.28 shows that out of nine countries with available data, eight have a testing acceptance rate in excess of 60 percent, with Zimbabwe and Cambodia having the highest levels of acceptance, and Niger having the lowest. These data demonstrate that when women are offered testing services, they usually accept them. Nevertheless, in several countries, there is a considerable proportion of women that, even when offered a test, do not end up being tested for HIV during their ANC. To take a closer look at the factors that are associated with testing uptake once a woman has been offered an HIV test, we conducted a multivariate analysis of testing uptake in this group for Haiti, Swaziland, and Uganda.

Figure 4.28 Among women age 15-49 who attended antenatal care for the most recent birth in the past 2 years, the percent who were offered an HIV test; among those offered an HIV test, the percent who accepted the test; and the overall percent of women attending ANC who were tested, selected DHS 2005-2006



We present the results for this analysis side by side with the results obtained in the original analysis where there was no sample selection on the basis of having been offered an HIV test. The following three slides show all of the variables that were significant for either the “test” (original analysis) or “offer and test” (selected sample) analyses for each of the three countries analyzed. Blue bars indicate the “test” analysis, where all women who attended ANC were included in the study sample, and red bars indicate the “offer and test” analysis, where only women who were offered an HIV test were included in the study sample. Yellow stars are used to indicate the significant variables. By presenting results this way, it is possible to see the ways that the results changed once the sample was selected only for women who were offered a test.

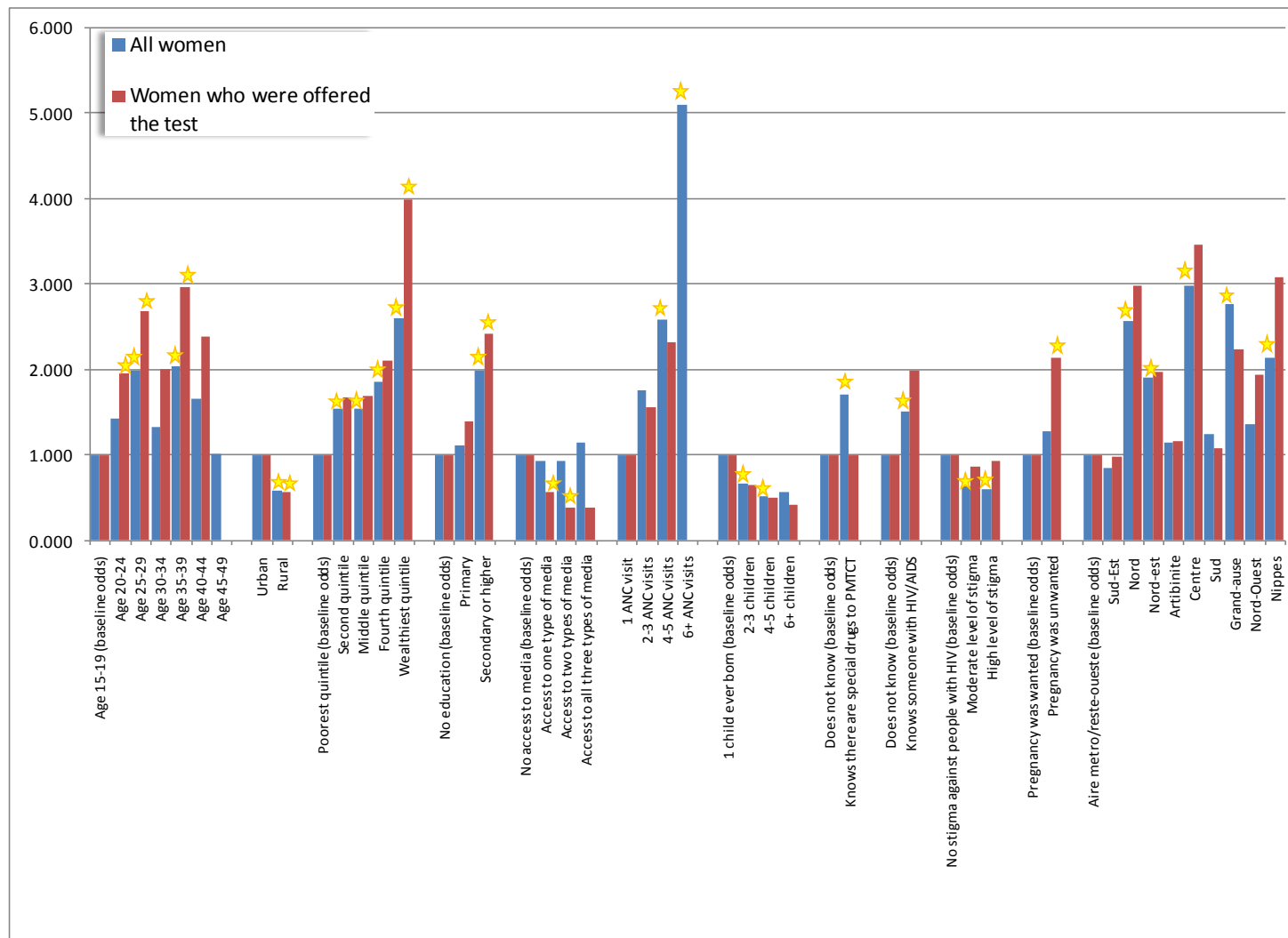
Figure 4.29 shows the factors that were significantly associated with getting tested for HIV at ANC for the country of Haiti. Reading the figure from left to right, the first variable that was significantly associated with the odds of getting tested for HIV was age. In both models (selected and unselected), older women showed increased odds of being tested for HIV compared to women who were 15-19 years old. However, selecting only women who were offered an HIV test intensified the association between age and the odds of getting tested, with the odds of getting tested among 20-25 year olds and 34-39 year olds being of greater magnitude for the selected model than for the unselected, and with the 20-24 year old age

group becoming significantly more likely than the 15-19 year olds to be tested for HIV in the selected model, whereas this group was not significantly different from the youngest age group in the unselected model.

The effect of rural residence did not differ between the selected and unselected models – in both, rural women were less likely than urban women to have been tested for HIV. The same can be said for education: in both models, women with secondary or higher education were significantly more likely to be tested for HIV; however, in the selected model, the magnitude of the relationship is greater. In the unselected model, compared to women in the poorest quintiles, women in each of the remaining quintiles were significantly more likely to be tested for HIV; however, upon selection, only the wealthiest women remained significantly more likely to be tested for HIV than the poorest.

Number of visits for antenatal care is significant for the unselected model, but not for the selected model. The lack of significance in the selected model indicates that the more frequently women go for ANC, the more likely they are to be offered a test; as we have seen, most women who are offered a test do accept it. But once the test has been offered, the frequency of visits has no impact on whether she actually does get tested.

Figure 4.29 Among women with a birth in the past two years and at least one ANC visit (blue bar), and among women with a birth in the past two years who were offered an HIV test at ANC (red bar), the adjusted odds of getting tested for HIV at ANC: all variables that were significant in either model, Haiti 2005



Note: The yellow star indicates statistical significance at p < 0.05

Both parity and stigma are negatively associated with the odds of getting tested in both models, but the variable loses significance in the selected model. Conversely, knowing someone with HIV is positively associated with the odds of getting tested in both models, but loses significance in the selected model. Regional variation in the odds of getting tested for HIV loses significance in the unselected model, suggesting that the reason women are more likely to get tested in those regions is by virtue of the fact that the test is more available there.

The most interesting difference between the unselected and selected models is the loss of significance of the variable reflecting knowledge of drugs to prevent mother-to-child transmission. This is interesting because this variable was consistently significant across all countries in the unselected analyses of the factors associated with getting tested for HIV.

Figure 4.30 Among women with a birth in the past two years and at least one ANC visit (blue bar), and among women with a birth in the past two years who were offered an HIV test at ANC (red bar), the adjusted odds of getting tested for HIV at ANC: all variables that were significant in either model, Swaziland 2006-07

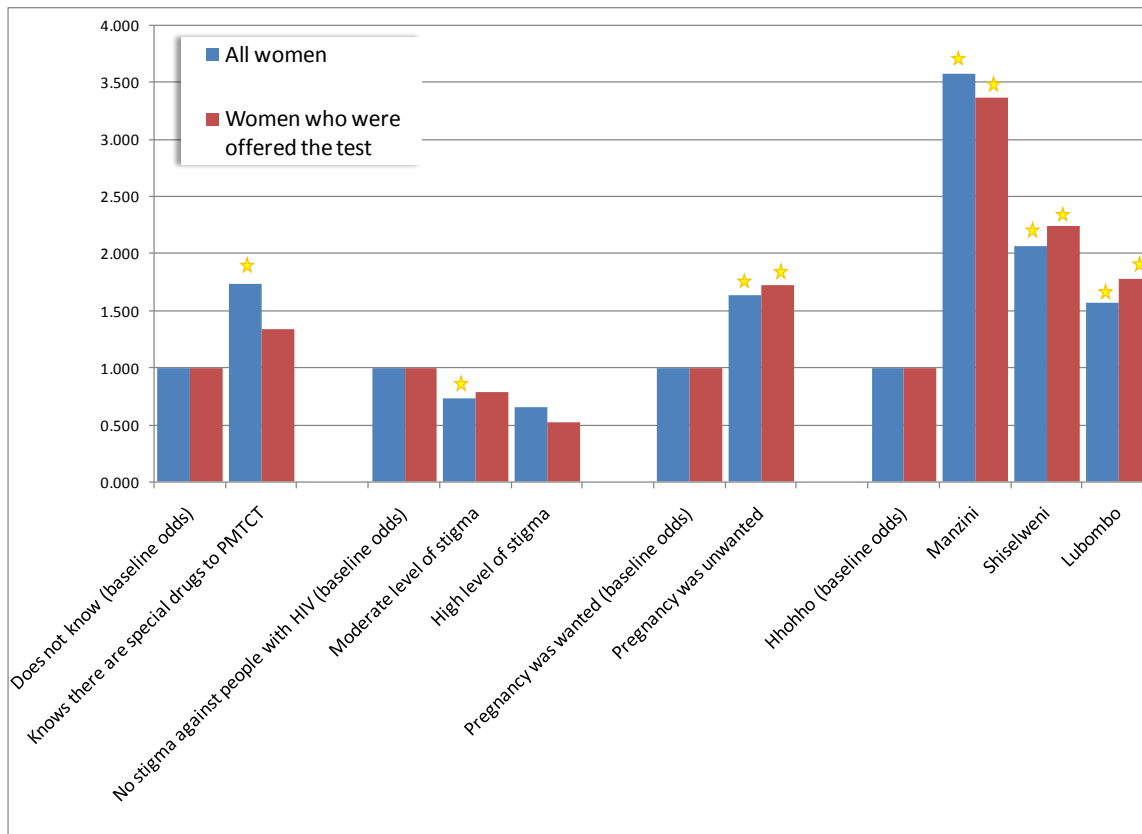


Figure 4.30 shows the factors that were significantly associated with getting tested for HIV at ANC for the country of Swaziland. Again, knowledge of drugs to PMTCT loses significance in the selected model, as does the effect of stigma. The significance and direction of the region variable and the variable reflecting the wantedness of the index pregnancy do not differ between models.

Figure 4.31 Among women with a birth in the past two years and at least one ANC visit (blue bar), and among women with a birth in the past two years who were offered an HIV test at ANC (red bar), the adjusted odds of getting tested for HIV at ANC: all variables that were significant in either model, Uganda 2006

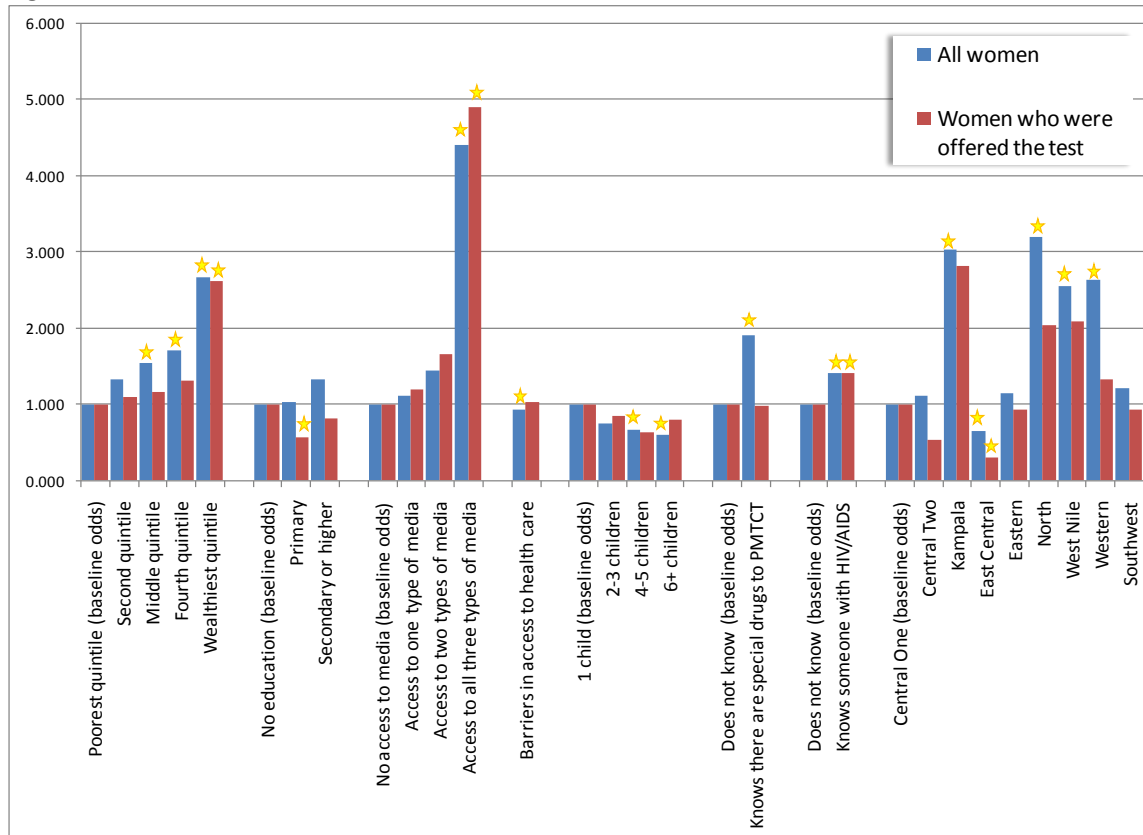


Figure 4.31 shows the factors that were significantly associated with getting tested for HIV at ANC for Uganda. As in Haiti (Figure 4.29), the effects of wealth lose significance for all categories except the wealthiest. Access to media and knowing someone who has HIV are significant for both models. Access to health care, parity, and the region variable are essentially the same for both models, and once again, knowledge of drugs to PMTCT loses significance in the selected model.

Summary and discussion of results: The offer and the acceptance of a test

These data clearly indicate that the low uptake of HIV testing services at ANC is more that result of non-availability of testing services, rather than lack of interest in testing, refusals, or other kinds of barriers to testing: when women are offered the chance to get tested for HIV, the majority of them take the opportunity to do so.

Wealth effects are positive and significant in the unselected models, with odds of getting tested increasing with wealth status. Once selection of only women who have been offered a test occurs, it is clear that the wealth effects from the unselected model were reflecting lower availability of HIV testing services to poorer women. These results again indicate the need for decentralized service provision, perhaps at non-facility-based locations, and including community-based approaches to service

provision. Upon selection, only the wealthiest women remained significantly more likely to be tested for HIV than the poorest; this nevertheless indicates that access to wealth remains a key means of obtaining desired services.

The most interesting difference between the unselected and selected models is the loss of significance of the variable reflecting knowledge of drugs to prevent mother-to-child transmission. This is interesting because, as previously noted, this variable was consistently significant across all countries in the unselected analyses of the factors associated with getting tested for HIV.

Conclusions:

Despite international agreement on the UNGASS 2010 goals and numerous other political commitments to PMTCT, as well as a set of evidence-based, affordable interventions to prevent infections in infants and the knowledge of how to implement them, the global uptake of PMTCT has been slow in the first few years of implementation and uneven between contextual settings, falling short of the initial five-year targets set by UNGASS. These data demonstrate that despite near-universal attendance at antenatal care, women are simply not being offered the most basic PMTCT service: an HIV test.

Failure to deliver even this most basic service has clear implications for the health of the mother as well as that of the newborn: HIV-negative mothers will not receive counseling about how to stay HIV-free; HIV-positive mothers will not receive the medical and counseling services that will help them to prevent the transmission of HIV to their newborns, nor will they receive follow-up services to protect their own health in the face of HIV infection; and their newborns will not receive the life-saving antiretrovirals and antibiotics (cotrimoxazole) to increase their odds of HIV-free survival.

....

(Basically, the analysis has all been done, but the discussion/conclusions have not been finalized yet).

References

- UNAIDS. 2008. Report on the global HIV/AIDS epidemic 2008. Geneva: UNAIDS.
- UNAIDS. 2007. AIDS epidemic update: December 2007. Geneva: UNAIDS.
- WHO. 2007. Guidance on global scale-up of the prevention of mother to child transmission of HIV: towards universal access for women, infants and young children and eliminating HIV and AIDS among children/ Inter-Agency Task Team on Prevention of HIV Infection in Pregnant Women, Mothers and their Children. Geneva: World Health Organization.