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An Assessment of Services for Adolescents in Prevention of Mother-to-Child Transmission Programs

Youth Research Working Paper No. 4

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Abbreviations

ANC	Antenatal Care
ARV	Anti-Retroviral
FP	Family Planning
FGD	Focus Group Discussion
IUCD	Intra-Uterine Contraceptive Device
MCH	Maternal and Child Health
MTCT	Mother-to-Child Transmission
NASCOP	National AIDS and STD Control Programme
NVP	Nevirapine
PMTCT	Prevention of Mother-to-Child Transmission
PHSC	Protection of Human Subjects Committee
RA	Research Assistant
VCT	Voluntary Counseling and Testing

Executive Summary

Programs designed to prevent mother-to-child transmission (PMTCT) of HIV are usually part of the care pregnant women receive. These services typically include HIV counseling and testing during antenatal care and, if they test HIV-positive, provision of antiretroviral drugs to prevent transmission of HIV to the baby (called vertical transmission). Another critically important service that could be offered as part of PMTCT activities—but rarely is—is the provision of contraceptive information during the antenatal period and methods in the postpartum period.

PMTCT services are relatively new additions to antenatal programs, and little information exists about young women's access to, and use of, these services. Moreover, because adolescents and young women are early in their reproductive years, they are likely to want children in the future. How family planning services and messages are integrated into PMTCT services for these younger women requires particular attention.

Objectives

To better understand these issues, a study was conducted to identify and evaluate strategies for meeting youth's HIV and reproductive health needs within PMTCT services. The study assessed youth clients' patterns of use and content of PMTCT services. Among youth clients, young women in the community, and supervisors and providers, the study assessed HIV/AIDS, PMTCT, and contraceptive related knowledge, awareness, and attitudes and perceptions of factors influencing service use. Contraceptive experiences and fertility desires of youth clients and of young women in the community were also studied.

Methods

The study was conducted at four antenatal care (ANC) clinics with PMTCT programs in four regions of Kenya. Primary data were collected through interviews with youth PMTCT clients (ages 15-24) and with supervisors and providers of ANC and PMTCT services. Female, out-of-school youth aged 18-21 living in the community where the PMTCT sites are located (i.e., potential PMTCT clients) participated in focus group discussions and discussed childbearing in the context of HIV/AIDS. Secondary data for clients ages 15-29 were collected from the logbooks of the PMTCT programs. Analyses of primary and secondary data from youth clients compare adolescents (15-19) to that of older youth (20-24 or 20-29 depending on the data set).

Results

There was no difference between adolescents and older youth in the percent testing for HIV and receiving the results. More than 98% reported they had been tested for HIV during PMTCT services. Of those tested, at least 85% had received the test results. Logbook data confirmed this finding. The likelihood of receiving HIV results depended more on facility related factors than the individual characteristics of the clients.

The content of PMTCT services was similar by age. Most respondents in both age groups reported that during previous ANC visits someone discussed with them the importance of HIV testing and specifically for the client to get an HIV test (89% to 94%). However, adolescents were less likely to say that a provider demonstrated condom use or that methods to prevent subsequent pregnancies were discussed.

Adolescents had less knowledge than older youth probably because they were younger and more likely to be in their first pregnancies. Adolescents were less likely to know ways to prevent HIV transmission and much more likely than older youth to say they did not have information on contraceptive available methods (31% compared to 16%). Adolescent clients were much more likely to have never used a method of contraception before the current pregnancy, compared to older youth (94% versus 64%). Knowledge about vertical transmission and how to feed infants born to HIV infected women was low among all clients.

Youth have a clear demand for postpartum family planning methods. Almost all youth intended to use family planning within two years after they deliver their baby, and two-thirds wanted to start within the first three months after pregnancy. Spacing births is a priority. The majority of youth wanted to wait four or more years until their next pregnancy.

Providers and supervisors were generally comfortable providing PMTCT services and most of those providers were comfortable providing services to adolescents and HIV infected adolescents. Their attitudes toward adolescents' use of contraceptive and HIV-positive status and contraceptive use were largely positive. While providers and supervisors were fairly knowledgeable about HIV transmission routes from mother to child, some providers and supervisors lack knowledge about how HIV affects fertility and contraceptive method eligibility.

Information about HIV status affects childbearing perceptions. Both youth clients and young women in the community (focus group participants) felt that HIV-positive women would want fewer children after they found out their HIV status, although some participants felt that having at least one child was important to show that a woman was not barren.

Young women ages 18 to 21, who are potential PMTCT clients, suggested in focus group discussions that fear of testing HIV-positive and, to a lesser extent, of partners' reactions, were reasons why women of any age do not accept HIV testing or get their results. Being associated with HIV testing is another problem because it implies one was or is engaging in high-risk behaviors.

The majority of PMTCT clients interviewed (84%) were very satisfied with PMTCT provider counseling, although young women in the community were less positive about how they thought they would be treated by providers. Nonetheless, both groups of youth would like the services to be more "youth friendly." For participants this meant friendly, confidential, and timely services that are separate and exclusively for young people. More information is needed to know how making services more youth friendly would improve outcomes, since ANC use is relatively high in Kenya, and at least in the study sites, most clients are getting HIV testing.

Discussion and recommendations

This is the first known study to assess youth in PMTCT services and from several perspectives. Although the level of use of services is adequate, the content of services for adolescents should be strengthened to address the fact they have less experience with health care. Provider knowledge should be strengthened to address issues related to condoms, probability of vertical transmission, and feeding practices, although provider attitudes were largely positive. Youth

provided a mixed picture of fertility desires in the face of HIV infection. More information is needed to understand how use of ARV prophylaxis or therapy may influence fertility desires and how to communicate balanced and comprehensible messages on the risks of pregnancy and childbearing to HIV-positive women and to women on ARV prophylaxis or therapy. Finally, because a demand for postpartum family planning methods exists, efforts are needed to meet the demand for postpartum contraception regardless of HIV status.

I. Introduction

Programs designed to prevent mother-to-child transmission (PMTCT) are rapidly being introduced and scaled up in many developing countries. The United Nations PMTCT strategy outlines four approaches necessary to reduce mother-to-child transmission (MTCT): 1) prevention of HIV infection among parents-to-be, 2) prevention of unintended pregnancies in HIV-infected women, 3) anti-retroviral (ARV) prophylaxis during pregnancy and delivery, and 4) continuing need to support mother and family following HIV diagnosis and childbirth.(1)

Currently, few programs take the comprehensive approach outlined by the UN strategy; rather, most PMTCT efforts focus on the third approach—ARV prophylaxis during pregnancy and delivery. Therefore, when people refer to "PMTCT programs," they are usually talking about those activities that occur during antenatal care (ANC) and maternity care services. These activities include routine HIV counseling and testing for pregnant women seeking ANC services and women in maternity services, and for those women testing HIV-positive, provision of ARVs—usually nevirapine. Because of the current programmatic emphasis, we refer in this report to those services in ANC and maternity clinics as "PMTCT services" or "PMTCT programs."

The enthusiasm for and attention to PMTCT services during pregnancy and delivery come from the highly efficacious ARV regimes. Nevirapine, which is considered the most cost-effective because of its relatively simple two-dose regimen, reduces the rate of vertical transmission from approximately 30% in the absence of prophylaxis to 15%.(2) With total access to PMTCT services, perfect use of HIV testing and counseling, and perfect nevirapine adherence among a population of 100,000 pregnant women with an HIV prevalence of 15%, 2,250 children would avoid being infected with HIV (half of the 4,500 who would be infected in the absence of prophylaxis). More efficacious regimens than nevirapine alone do exist, which in most cases include AZT added to single-dose nevirapine. However, nevirapine alone is the most practical regimen for settings in which the infrastructure does not allow for more complex regimens.

PMTCT in Kenya

PMTCT services in Kenya are rapidly being scaled up. Kenya's HIV prevalence is relatively high; regional variation and sentinel surveillance of pregnant women suggest that the HIV prevalence may be 14% and up to 30% in some sub-populations,(3) although in the general population, Kenya's HIV prevalence of 6.7% is actually lower than previously thought.(4)

Because ANC use in Kenya is relatively high, PMTCT programs have the potential to reach a large proportion of pregnant women. Most (91.9%) pregnant women ages 20-34 in Kenya have at least one ANC visit with a trained provider, and women under age 20 are slightly less likely to seek skilled ANC at 88.5%.(4)

During 2002-2003, an estimated 12% of pregnant women in Kenya were offered PMTCT services.(5) Given the increasing attention and resources being committed to PMTCT programs, this coverage is expected to increase rapidly. However, the greatest obstacle to increasing use of PMTCT services is not the availability of the services, but the low level of uptake that has been observed when services are available. Data from Elizabeth Glaser PMTCT sites in Kenya

suggest that around 50% of pregnant women attending ANC where PMTCT is available get information and pre-test counseling for HIV tests; of those women, around 75% agree to be tested; and of those testing HIV positive, 68% get prophylaxis.(6) Another study in the provincial hospital in Mombasa found that 97% of ANC women got health education, 71% of those received pre-test counseling, 99% accepted testing, 82% of those tested returned for test results (even though rapid tests were used), 89% got posttest counseling, 60% received nevirapine to take at delivery, and 70% of those who received nevirapine actually took it.(7) This dropout resulted in only 20% of HIV-positive ANC clients completing the regimen.

Some of the reasons for low uptake of HIV testing and ARV acceptance in Kenya have been documented. In a study to explore the feasibility, acceptability, and impact of a comprehensive PMTCT package in Kenya, the Horizons Project found low levels of HIV testing and ARV acceptance.(8) In addition, they identified the following limitations to women's use of PMTCT: fear of negative community reaction if HIV positive, lack of motivated health workers, the challenges of meeting demand and addressing the follow-up needs of mothers, and shortages of staff and supplies that affect all areas of service delivery.

PMTCT and Kenyan youth

Youth make up an important proportion of PMTCT clients. Because of Kenya's typical developing country age structure where in 2005 over 65% of the population was age 24 or younger and because the median age at first birth in Kenya is 20,(4;9) from a public health perspective, the magnitude of the HIV epidemic is particularly devastating for the younger population.

As PMTCT clients, youth are different from older women. Kenyan adolescents ages 15-19 are much more likely than older women to have incorrect beliefs about HIV/AIDS.(4) They are more likely to be in their first pregnancy, so not only do they have less experience with pregnancy and childbirth, ANC may be one of their first contacts with the health system.

Because adolescents are more likely to be in their first pregnancies, a diagnosis of HIV infection may unexpectedly complicate future childbearing decisions. It is widely known that young women in most African countries face strong social pressure to bear children. The majority of women in African countries have had their first birth by their 20th birthday, and many do not use contraceptive methods until they "prove" their fertility. Among currently married women in Kenya, adolescents 15-19 are more likely to want to have another child "soon" compared to women ages 20-24 (27.6% vs. 19.1%).(4) On the other hand, adolescents are less likely to have ever used contraception compared to older women. Of 15-19 year olds in Kenya, 10.5% have ever used a modern method of contraception, compared to 38% of 20-24 year olds.(4) Thus, adolescents have less experience with obtaining a method, with using a method, and with managing side effects. An adolescent who tests HIV positive may continue childbearing—even if further pregnancies are undesired—if appropriate postpartum fertility counseling and family planning services are unavailable to them.

For those reasons, it is important to understand how PMTCT programs are currently meeting the reproductive health needs of their adolescent and youth populations. Adolescents may need PMTCT services and messages that are different from those targeting older women. With more

information, strategies can be identified to improve PMTCT programs to meet these needs in a more holistic manner.

Study objectives

The main goal of this study was to identify and evaluate strategies for meeting youth's HIV and reproductive health needs within PMTCT programs.[1] The study assessed:

1. Patterns of use of PMTCT services by adolescents compared to those of older youth
2. The content of PMTCT services adolescents received compared to older youth
3. HIV/AIDS and PMTCT related knowledge, awareness, and attitudes of youth clients, young women in the community, and providers and supervisors
4. Contraceptive experiences and fertility desires of youth clients and of young women in the community
5. Providers' and supervisors' fertility and family planning knowledge and attitudes
6. Factors influencing use of PMTCT services and service delivery preferences according to youth clients, young women in the community, and providers and supervisors

[1] There is no universal definition of "youth" or "adolescents." Widely used are the United Nations General Assembly definition of "youth" as people between the ages of 15 and 24 years and the World Health Organization definition of "adolescents" as people between the ages of 10 and 19. Generally, for this study we frequently make the distinction between younger youth—or "adolescents"—between the ages of 15 and 19 and older youth between the ages of 20 and 24.

II. Methods

With input from the Kenya National AIDS and STD Control Programme (NASCOP), FHI identified four large PMTCT sites in which to conduct the study. The sites selected were Kakamega District Hospital, Nakuru Provincial General Hospital, Karatina District Hospital, and Thika District Hospital. These sites were selected purposively to capture geographic variation. Selecting a representative sample was less of a concern because of the descriptive nature of the study and the rapid scale up of PMTCT services in Kenya.

The study made use of multiple data collection methods to meet the study's objectives. Primary data were collected through interviews with youth PMTCT clients and providers of PMTCT services, as well as through focus group discussions (FGDs) with potential future PMTCT clients. Secondary data were obtained from logbooks in the clinics at the same time primary data were collected. Primary data collection activities focused on adolescents ages 15-19 and youth ages 20-24, while secondary data collection focused on young women ages 15 to 29.

Target population

Because PMTCT services are incorporated into broader ANC services, study participants included PMTCT supervisors, providers of ANC who also provided PMTCT services, ANC clients who received some PMTCT services, and young women in the community who were potential clients of ANC and PMTCT services. Specifically, they were:

- Supervisors of PMTCT services
- Providers of ANC and PMTCT services
- Returning youth clients of ANC between 15 and 24 years old
- Female, out-of-school youth in the community between 18-21 years old

Study methods

The study used four methods of data collection. Each of these components is described briefly below:

Survey of returning youth clients: Youth between the ages of 15 and 24 who were returning to ANC clinics with PMTCT programs were recruited for this study. Because of the way ANC and PMTCT services are organized, returning ANC clients should have received some PMTCT services and be able to speak of their experiences with these services. An off-duty staff person in each facility was recruited to approach clients while they were waiting for services and escort the clients to the research assistant. Clients were then asked if they would like to participate in the study. The off-duty staff person was not present when the client was asked for consent to participate in the study or when the interview was being conducted. The research assistant coordinated with the off-duty staff person to make sure the client returned to her original place in the queue. Structured interviews were used to collect data. Client HIV status was not obtained.

Survey of providers and supervisors: All supervisors and providers of ANC and PMTCT services at the study facilities were eligible to participate in the structured interview. The same instrument was used to interview both providers and supervisors, although there were some questions reserved specifically for supervisors. Providers and supervisors were asked to participate in an interview during their break or other time when they were not busy with clients.

Focus groups with potential future clients: Female, out-of-school youth aged 18-21 participated in eight focus group discussions and discussed childbearing in the context of HIV/AIDS. This age group was selected because the median age at first birth is 20.1; also, youth ages 18-21 will be faced with childbearing decisions themselves, and their peers will be dealing with these issues as well. Youth did not have to be sexually active or childless to be included in the focus groups since it was assumed that even abstinent youth or youth with children in this age range would be able to address the norms and values of their cohort. Participants lived in the community where the PMTCT sites are located.

Secondary data: The logbooks of the PMTCT programs were used to analyze PMTCT use by age and to obtain HIV status for all clients ages 15-29. Data were abstracted beginning with the last entry and working back until the sample size was obtained (see next section).

Sample size

Study size calculations were performed separately to determine 1) how many ANC clients to interview and 2) how many ANC client records to abstract (Table 2.1). The calculations assumed that clients would be randomly sampled from four facilities, that an equal number of clients would be randomly sampled from each facility, that the ratio of adolescents (15-19) and older clients (20-24 or 20-29) per facility would be 1:3, that the clustering at the facility level results in a design effect (allowed to vary from 1.5 to 3), and that there would be a 10% refusal rate and unusable record rate.

We sought to interview all providers and supervisors of ANC and PMTCT services in the four study sites; this resulted in 35 provider/supervisors interviewed. For the FGDs, we aimed to recruit eight to 12 participants per group and to have two groups per facility catchment area. Eight focus groups were conducted with an average of 9.5 participants per group.

Table 2.1. Targeted and actual sample size by data collection method

Method	Targeted sample	Calculated sample size	Actual sample size
Survey	Youth ANC/PMTCT clients	220/facility (880 total)	637 total
Secondary data	Clinic logbooks		Average of:
	15-19 yr olds	306 records/facility	363/facility
	20-29 yr olds	917 records/facility	1083/facility

Data collection

Research assistants (RAs) who collected the data for this study were typically university-trained social scientists with previous experience in data collection, with FHI research studies and with research ethics training. Eight RAs participated in a training specific to this study including instrument pre-testing over four days in July 2004. Immediately following the training, RAs spent about two weeks in each facility conducting interviews and abstracting logbook data. Focus group discussions were held following the data collection in the facilities.

A total of 637 client interviews were completed, short of our target of 880 (Table 2.2). The interviews were fairly evenly distributed across three of the four facilities. Far fewer interviews than expected were conducted at Thika District Hospital due to a recent decrease in fees at the smaller health facilities in Thika District, resulting in a shift toward the smaller health facilities for ANC services. In addition, four supervisors, one from each facility, and a total of 35 PMTCT providers were interviewed. The provider interviews were disproportionately conducted at Karatina (34%) and Kakamega (37%) reflecting the greater number of providers in these facilities.

Table 2.2. Proportion of eligible clients participating and completing interviews during data collection period

	Karatina District Hospital	Thika District Hospital	Nakuru Provincial General Hospital	Kakamega Hospital	Total
Province	Central	Central	Rift Valley	Western	4
Clients interviewed	160 (25%)	100 (16%)	178 (28%)	199 (31%)	637
Providers and supervisors	12 (34%)	6 (17%)	4 (11%)	13 (37%)	35

Data entry and analysis

Quantitative data were entered using EpiInfo version 6.0 software. Range checks and skip patterns were programmed into the data entry templates to minimize the possibility of data entry errors. Analysis was conducted using SAS version 8.0. Analysis was primarily descriptive. Client data were stratified by age (15-19 and 20-24 for client interviews and 15-19, 20-24, and 25-29 for logbook data) to be able to compare findings by age group.

Because of their age differences, adolescents differ on several characteristics compared with older youth. Therefore, for some client interview variables, we conducted logistic regression analyses to isolate the effect of age group on PMTCT knowledge and various aspects of services received. Analysis was conducted using SAS version 8.0. For each dependent variable, two different models were conducted. The first model controlled for age, number of previous visits, and PMTCT facility. The second model controlled for these and additional variables including socio-demographic characteristics such as marital status, parity, education, and occupation. Conducting two models in this fashion allowed us to have some understanding of how facility-related and health care seeking-related factors relative to the socio-demographic factors modified the effect of age on the dependent variable. Odds ratios and 95% confidence intervals are presented for the age group 15-19 (the 20-24 year old group served as the reference group).

Focus group discussions were transcribed and translated into English from Kiswahili. No names were kept on the FGD transcripts. Transcriptions and translations were randomly checked for accuracy. Qualitative texts were coded and analyzed in Nud*ist version 6.0. Summaries of coded data were prepared in a narrative format, organized according to the topic area of inquiry. Interpretation of results and report writing was an iterative process.

Logbook data were abstracted by a trained research assistant. The information of interest included: age, date of HIV test, date results received, and HIV results. To analyze PMTCT service use, adolescents (15-19) were compared to older youth (20-24) and adults (25-29).

Ethical considerations and informed consent

This study was reviewed and approved by the Protection of Human Subjects Committee (PHSC) at FHI and the Kenyatta National Hospital Ethical Review Committee.

Research assistants informed all study participants of their rights and risks of participating in the study. Written informed consent was obtained from the survey participants and each was given a copy of the consent form. The signed informed consent sheets were detached from the questionnaire and kept in a separate location so that they could not be linked. No names were recorded on the data collection forms.

Focus group participants did not sign the informed consent form since their consent to participate was tape recorded. They were, however, also given a copy of the consent form.

Adolescents between the ages of 15 and 18 attending ANC clinics were considered "mature minors" by the providers since they were pregnant. Therefore, since they did not need parental permission to obtain services, consent for the study was sought directly from them without parental consent. Parental consent for this age group was only sought if the adolescent attended the clinic with her parent or guardian.

Throughout this study, privacy and confidentiality were emphasized. All data were collected in a private setting. Participants were not identified by name and research materials were maintained in locked cabinets with access only by study staff on an as needed basis.

III. Results

We begin with a descriptive overview of PMTCT services in each facility and client and provider and supervisor characteristics. The rest of the results follow the order of the study objectives. First, we present the results associated with the pattern of clients' use of PMTCT services, followed by the results of the reported content of those services. This is followed by youth's and providers' and supervisors' HIV/AIDS and PMTCT knowledge, awareness, and attitudes. Fourth, we present youth's contraceptive experiences and fertility desires. Fifth, providers' and supervisors' fertility and family planning knowledge and attitudes are presented. Finally, we present the factors that influence the use of PMTCT services according to youth and provider perspectives.

Overview of PMTCT services

The reports of the four supervisors interviewed provided an overview of PMTCT services at the four facilities. Differences among the facilities were evident in terms of the numbers of providers trained in and providing PMTCT services. The number of providers trained in PMTCT ranged from six in Thika District Hospital to 63 in Kakamega, although the number actually providing PMTCT services was smaller (from two in Thika to 13 in Kakamega) (Table 3.1). Many providers who were trained did not provide these services. This gap was particularly evident in Kakamega where of the 63 trained, only 13 provided PMTCT services.

Of those trained in PMTCT, the proportion also trained in HIV testing varied among the facilities. Not all PMTCT providers are required to do HIV testing as some facilities rely on the laboratory technician to conduct HIV tests. In two of the four facilities, supervisors reported that the ANC/PMTCT provider does routine HIV testing for ANC/PMTCT clients, and in three facilities the supervisor reported that the laboratory technician also does HIV testing for ANC/PMTCT clients (data not shown).

Table 3.1. Supervisors' estimates of the number of providers trained in PMTCT and HIV testing and providing PMTCT

	Karatina	Thika	Nakuru	Kakamega
Trained in PMTCT in the whole facility	9	6	10	63
Trained in PMTCT and provide PMTCT services	3	2	5	13
Trained in PMTCT and trained in HIV testing	2	0	9	19

With regard to the types of services available, all four facilities offer family planning services. Supervisors in two facilities reported family planning was available in ANC, while a supervisor in one facility reported family planning was available in PMTCT. Family planning was not available in any of the facilities' maternity or child immunization services. One supervisor reported that the facility carried out regular community outreach around PMTCT, and three of the facilities reported youth-friendly reproductive health services (data not shown).

The facilities differed in terms of the estimated proportion of ANC clients who return for delivery in the same facility. Karatina had the greatest proportion at 80% while in Kakamega the supervisor estimated that only 30% of clients return. Thika and Nakuru were in the middle at 50% and 60%, respectively (data not shown).

There were differences among the facilities in terms of their protocol for providing nevirapine to an HIV-positive woman. In three out of the four facilities, the supervisor reported that a woman testing HIV positive had to wait until a certain number of weeks gestation to get nevirapine (rather than getting it at the time she receives her results regardless of the timing) (data not shown).

Client and provider and supervisor characteristics

Client socio-demographic characteristics and ANC visits

Over two-thirds of clients in this study were aged 20-24; 22% were ages 18-19 and few were under age 18, confirming our assumption of ratio of adolescents (15-19) to older youth (20-24). Some differences in socio-demographic characteristics between the two age groups were evident (Table 3.2). While the majority in both groups were in their first pregnancy, as expected, more of the 20-24 year old women already had one or more children. Most youth in both age groups were married (87%), but the 15-19 year olds were more likely to be single (21%) compared with the 20-24 year olds (10%). Most had completed primary school (62%), but because they had more time to complete their studies, older youth were more likely to have completed secondary or post-secondary studies (44%) compared to adolescents (20%). Similarly, while the main occupation of most clients was housewife, the 20-24 year olds were more likely to be traders or do other salaried work whereas more 15-19 year olds were unemployed.

According to the selection criteria, all clients had at least one previous ANC visit during the current pregnancy. Approximately two-thirds of women regardless of age group had made one or two previous visits. Over 90% of all clients reporting previous ANC visits had been to the same facility (results not shown).

Table 3.2. Socio-demographic characteristics of clients

	Age	
	15-19 %	20-24 %
Number of children		
None	92	59
1-2 children	8	38
3-4 children	0	3
Marital status		
Married: live together, live apart, or live as married	80	90
Never been married, divorced, separated, or widowed	21	10
Highest level of school attended		
Did not attend	5	2
Primary	76	55
Secondary & above	20	44
Main occupation		
Housewife	48	47
Trader	17	24
Farmer	13	10
Unemployed	17	8
Salaried worker	2	10
Student	4	1
Previous number of ANC visits		
1 visit	38	30
2 visits	31	33
3 or more visits	32	36
N	200	437

Provider and supervisor socio-demographic and job characteristics

The average ANC/PMTCT provider or supervisor was almost 41 years old, married and living with a partner, and had three children (Table 3.3). Almost all providers and supervisors reported their position in the clinic as nurse (94%). Twenty percent considered themselves counselors and 20% also considered themselves midwives (more than one response was possible).

The average length of time working as a nurse was nearly 18 years with a range of three to 33 years (results not shown). While the years of experience in their profession was relatively long, this was in contrast to the length of time in the ANC/PMTCT center which was only 2.4 years and a range of 0 to 7 years (Table 3.3). However, this time was slightly longer than the time since their initial training in PMTCT (23.6 months average).

Although over one-half of PMTCT providers and supervisors were trained in HIV testing, few were trained in VCT. This is not surprising since ANC/PMTCT and VCT services are usually delivered as separate, vertical services. Less than a quarter reported any training to provide services to youth.

Most providers and supervisors currently worked in more than one department within Maternal and Child Health (MCH) services. Most worked in ANC or PMTCT followed closely by the children's clinic/immunization and family planning. Despite the similar required skill set, very few providers worked in the labor ward/maternity or VCT for the general population. This is probably due to the fact that these services are not traditionally part of the core MCH care services, which include ANC.

Table 3.3. Providers' and supervisors' socio-demographic and job characteristics

	N=35
Mean age	40.7 years (6.7 SD*)
Mean number of children	2.8 children (1.2 SD)
Marital Status	
Married or living as, living together or apart	86%
Single, divorce, separated, or widowed	14%
Position	
Supervisor	9%
Midwife	20%
Nurse	94%
Counselor	20%
Length of experience	
Mean years worked in this ANC/PMTCT center	2.4 years (1.5 SD)
Mean months since initial PMTCT training	23.6 months (17.1 SD)
Proportion	
Trained in VCT	11%
Trained in HIV testing	57%
Trained to provide services to youth and adolescent clients	23%
Proportion who work in departments/clinics	
ANC	89%
PMTCT	83%
Children's clinic/immunization	69%
Family planning	69%
Labor ward/maternity	3%
VCT clinic (general population)	3%

*Standard deviation

Patterns of use of PMTCT services

Clients' reports of HIV testing, results, and ARVs

There was no difference between the two age groups in HIV testing and receiving the results (Table 3.4). Most (86%) of the study respondents reported that they had been tested for HIV. Of those who were tested, nearly all were tested during their current pregnancy at the facility where they were receiving their ANC care. Most of those tested (85%) received the results of their tests.

Just over two-thirds of the 20-24 year olds and three-fourths of the 15-19 year olds were able to see the same counselor for their discussions before and after the HIV test.

Table 3.4. Clients' reports of experiences with HIV testing

	Age	
	15-19 %	20-24 %
Proportion of clients who report they		
Have ever been tested for HIV	87	86
(N)	(200)	(437)
Have ever been tested for HIV at the facility during current pregnancy	97	96
Received the results of HIV test during this pregnancy	87	85
(N)	(174)	(376)
Were able to see the same counselor for the discussion before and after HIV test	76	69
(N)	(151)	(318)

Few study respondents reported that the provider gave them pills (i.e., nevirapine) to take at the time of labor (data not shown). Three of the 15-19 years olds reported that they were given pills though only one of them said that it was very likely that she would take them. Thirteen of the 20-24 year olds said that they were given pills to take, and 10 said they were very likely to take them. These results imply that approximately 1.5% of the 15-19 year olds and 3% of the 20-24 year olds were HIV positive, although asking about "pills to take at the time of labor" is a crude proxy for asking about nevirapine and hence HIV status. Moreover, some HIV-positive clients may not have yet received nevirapine. The national PMTCT guidelines (at the time of this study) recommend giving drugs to take home at 34 weeks, although in practice, providers sometimes give nevirapine after the women tests HIV positive regardless of gestational age.

Logistic regression analyses were conducted to isolate the effect of age group on PMTCT services received (Table 3.5). Similar to the bivariable results, the multivariable analyses revealed few differences by age in terms of reports of getting tested for HIV, receiving the results, or seeing the same counselor for the results. Rather, the facility was strongly associated with the likelihood of receiving the results or seeing the same counselor for the results (results not shown).[2]

[2] Clients in Kakamega were significantly more likely than clients in Nakuru, Karatina, or Thika to get their results and see the same counselor for testing and results (results not shown).

Table 3.5. Multivariable results of the relationship between client age and reports of PMTCT services received

Dependent Variables	Model 1 Age 15-19 vs. 20-24[1]			Model 2 Age 15-19 vs. 20-24[1]		
	OR	95% CI		OR	95% CI	
Ever been tested for HIV	1.14	0.68	1.90	0.78	0.42	1.42
Received results of HIV test during this pregnancy	1.08	0.58	1.99	0.77	0.39	1.53
Able to see the same provider before and after HIV test	1.01	0.61	1.68	0.93	0.53	1.63

[1] Age group 20-24 is the reference group
Model 1: Variables included are age (15-19 vs. 20-24), number of previous visits, and facility
Model 2: Variables included are age, number of previous visits, facility, marital status, education, parity, and occupation

Logbook data of HIV testing and results

The logbook data include many more clients than those who participated in the interviews (Table 3.6). Overall, 3.5% of the 15-19 year olds and 8.7% of the 20-24 year olds tested HIV positive. There was substantial variation among the four sites. With the exception of Karatina, nearly all the clients had an HIV test. While most of those tested in Kakamega and Nakuru PGH received the results of their tests, a large proportion of those tested in Karatina and Thika did not. At the time of this study PMTCT services in Karatina and Thika facilities are located separately from ANC. Access to PMTCT operates through a referral to another part of the facility, so more clients dropped out. Bivariable analyses (Chi^2 tests) suggested no significant differences by age in terms of the level of HIV testing and getting results with the exception of Thika. In Thika, clients under age 20 were significantly less likely to get their HIV test results compared to clients ages 20-29 (p=0.018).

The logbook results are consistent with the multivariable results (see Table 3.5 above) and suggest that the likelihood of receiving PMTCT services depends more on facility related factors than the individual characteristics of the clients.

Table 3.6. Distribution of clients by facility and HIV results by age (PMTCT logbook data)

Facility	Kakamega %	Nakuru PGH %	Karatina %	Thika %
Age				
≤19	29.1	24.8	22.4	24.3
20-24	44.4	48.0	47.6	46.1
25-29	26.5	26.2	29.9	29.7
(N)	(1389)	(1530)	(1426)	(1439)
HIV positive				
≤19	6.5	5.4	1.4	3.5
20-24	7.9	8.1	3.8	5.4
25-29	10.7	9.1	5.0	7.7
(N)	(1370)	(1484)	(1226)	(1115)
Not HIV tested				
≤19	0.5	2.9	10.3	1.2
20-24	0	3.7	13.7	0.9
25-29	0.5	0.5	15	0.5
Did not get HIV results				
≤19	0.5	2.9	39.1	48.4*
20-24	0	3.7	40.5	41.2
25-29	0.5	0.5	37.2	41.3

*Chi^2 test, ≤19 vs. 20-29, p=0.018

Content of PMTCT services

In addition to whether or not particular services were received, we investigated the content of those services. Most respondents in both age groups reported that during previous ANC visits someone discussed with them the importance of HIV testing and specifically discussed with the client getting an HIV test (Table 3.7). However, discussions about other PMTCT program components were less likely. Moreover, more 20-24 year olds were told about the PMTCT program than 15-19 year olds (67% vs. 58%).

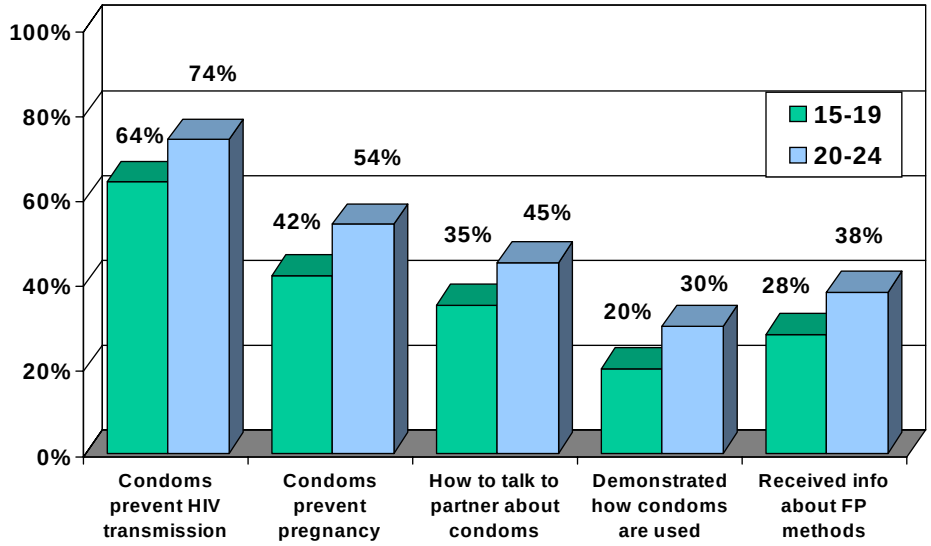
Clients who reported that a provider talked to them about getting an HIV test were asked about specifics that were discussed (Table 3.7). There was little difference between the two age groups. The main topic discussed, reported by 61% of respondents, was the importance of knowing HIV status for planning purposes.

Table 3.7. Clients' reports of discussions in PMTCT services

	Age	
	15-19 %	20-24 %
Client reported that on a previous ANC visit someone		
Discussed importance of HIV testing	89	91
Discussed getting an HIV test	93	94
Discussed details of the PMTCT program	58	67
(N)	(200)	(437)
Client reports of counseling content about getting an HIV test		
Know HIV status for planning	64	60
How to prevent infecting others	23	26
Told the test is voluntary	20	21
How to take care of child, spouse, self if positive	17	20
How to protect self from HIV infection	9	11
HIV test procedures & access to care & support	7	7
Other	1	2
(N)	(185)	(409)

There were, however, some differences between the age groups in their reports of counseling experiences around condoms and family planning methods (Figure 3.1). Providers were more likely to discuss that condoms prevent HIV transmission and other issues related to condoms or family planning methods with 20-24 year olds compared to 15-19 year olds.[3]

Figure 3.1: Clients' reports of condoms and family planning counseling content by age group



[3] One might expect the proportion of clients reporting that they "received information about family planning methods" to be as great as those who reported the provider told them that "condoms prevent pregnancy." This difference may be due to the level of specificity of the question (i.e., asking about condoms is more specific than asking about "information about family planning methods"). It could also be due to whether or not clients perceive that condoms are a family planning method.

Adolescent clients were less likely than older youth to report that they received any information about family planning methods in ANC/PMTCT. Of those who did, injectables and pills were reportedly discussed the most followed by condoms (Table 3.8). Again, somewhat more of the older youth had these discussions than the younger youth. The difference was most striking in discussions about long-term methods such as implants and the IUCD. Similarly, older youth were somewhat more likely than younger youth to be told where to get methods (75% vs. 68%).

Table 3.8. Clients' reports of family planning counseling in ANC/PMTCT services

	Age	
	15-19 %	20-24 %
Received information regarding contraception and family planning during this pregnancy	28	38
(N)	(200)	(437)
Family planning methods discussed		
Injectable	66	71
Pill	68	73
Condoms	36	48
IUCD	20	32
Implants	5	23
Periodic abstinence	4	9
Other	16	19
Told where to get methods	68	75
(N)	(56)	(168)

Logistic regression analyses were conducted to isolate the effect of age group on three dependent variables. The variables are clients' reports of the counseling content: "provider discussed actions to reduce risk of HIV transmission/acquisition," "provider demonstrated condom use," and "provider counseled on pregnancy prevention messages" (Table 3.9).

Adolescents ages 15-19 were significantly less likely than older youth ages 20-24 to report that the counselor demonstrated condom use or discussed family planning methods to prevent the next pregnancy in Model 1 (controlling for number of previous visits and location of PMTCT facility). However, the differences by age were no longer detected in Model 2 (adding marital status, education, parity, and occupation to the model). Thus, differences in the level of discussion of these issues are not related to age per se, they are due to socio-demographic characteristics (specifically education, parity, and occupation) that are also associated with young age (results not shown).

Table 3.9. Multivariable results of the relationship between client age and PMTCT content

Dependent Variables	Model 1 Age 15-19 vs. 20-24[1]			Model 2 Age 15-19 vs. 20-24[1]		
	OR	95% CI		OR	95% CI	
Provider discussed actions to reduce risk of HIV acquisition/transmission	0.66[2]	0.43	1.02	0.74	0.44	1.25
Provider demonstrated how condoms are used	0.62*	0.39	0.97	0.84	0.51	1.40
Provider talked about methods to prevent next pregnancy	0.66*	0.45	0.95	0.87	0.57	1.33

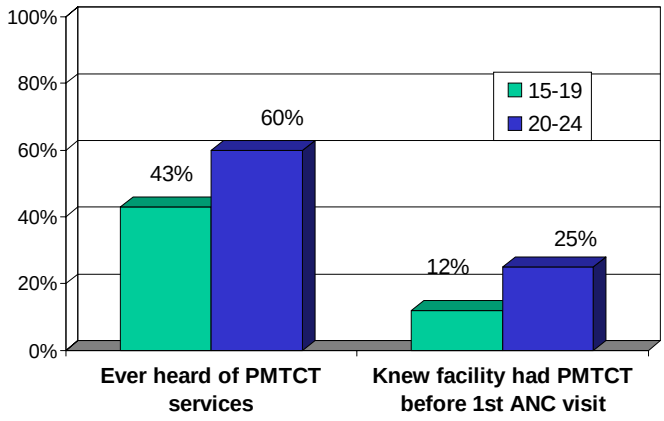
[1] Age group 20-24 is the reference group
Model 1: Variables included in the model are age (15-19 vs. 20-24), number of previous visits, and facility
Model 2: Variables included in the model are age, number of previous visits, facility, marital status, education, parity, and occupation
[2]p=0.06
* $p \leq 0.05$

PMTCT and HIV/AIDS related knowledge, awareness, and attitudes

Clients' awareness of PMTCT services

General awareness of PMTCT services was limited but substantially greater among the 20-24 year old PMTCT clients (Figure 3.2). Few 15-19 year old clients and one-fourth of the 20-24 year olds knew that the facility they were attending for ANC services had PMTCT services before their first ANC visit. Of those youth clients who had heard of services, 72% defined them as preventing maternal-to-child transmission by avoiding breastfeeding and taking drugs. One-third defined them as testing and counseling on HIV (data not shown).

Figure 3.2: Client's awareness of PMTCT services by age group



Multivariable results suggest that adolescents were significantly less likely than older youth to report ever having heard of, or know of, PMTCT even after controlling for potential confounding factors (Table 3.10).

Table 3.10. Multivariable results of the relationship between client age and knowledge of PMTCT

Dependent Variable	Model 1 Age 15-19 vs. 20-24[1]			Model 2 Age 15-19 vs. 20-24[1]		
	OR	95% CI		OR	95% CI	
Ever heard of or know of "PMTCT"	0.49**	0.33	0.73	0.50**	0.32	0.79

[1] Age group 20-24 is the reference group
Model 1: Variables included in the model are age (15-19 vs. 20-24), number of previous visits, and facility
Model 2: Variables included in the model are age, number of previous visits, facility, marital status, education, parity, and occupation
** p≤0.01

Clients' knowledge of HIV prevention

Knowledge of HIV prevention according to clients participating in the survey was reasonably good, although the older youth had somewhat more knowledge than the 15-19 year olds. Most respondents knew of at least one way to prevent HIV transmission (Table 3.11). Less than 5% of all clients did not name any of the three main preventive messages: abstinence, being faithful, and condoms (or "ABC" messages), although the 15-19 year olds were more than twice as likely not to name any of them as the 20-24 year olds. The majority of respondents named one or two of these messages; twice as many 20-24 year olds as 15-19 year olds named all three.

Table 3.11. Clients' HIV prevention knowledge

	Age	
	15-19 %	20-24 %
Clients' reports of how to prevent HIV transmission		
Use condoms	71	74
Faithful to partner/ partner is faithful	54	67
Abstain from sexual intercourse	23	29
Avoid sex with certain types of people[1]	18	8
Avoid certain behaviors[2]	21	31
Limit the number of partners	6	12
Other	10	11
Number of "ABC" messages[3] named		
None	8	3
One	44	38
Two	42	45
Three	7	15
N	200	437

[1] For example: prostitutes, people with many partners, injecting drug users, people with blood transfusions, HIV+
[2] For example, non-ABC behaviors, injections, kissing, mosquitoes, razors, fluids
[3] "ABC messages" is a composite variable made up of "abstain from sex," "be faithful to partner," and "use condoms."

Clients' and focus group participants' knowledge of vertical transmission of HIV

In both age groups most clients knew that HIV can be transmitted from a mother to an *unborn* baby. However, study participants were less knowledgeable about specific ways to prevent MTCT to an unborn baby, and this was more likely among 15-19 year olds than 20-24 year olds (Table 3.12). The preventive measure most named was to take drugs before delivery/during labor. However, 41% of 15-19 year olds and 22% of 20-24 year olds did not correctly name any preventive measure (data not shown). Nearly all the survey respondents in both age groups knew that an HIV-positive mother could transmit the virus to her *newborn* baby (Table 3.12).

Few clients could correctly estimate the number of HIV-positive babies that would be born to 10 HIV-positive women in absence of intervention, regardless of the timing of transmission. Only 7% of 15-19 year olds and 13% of 20-24 year olds knew that approximately 2-4 babies would be born HIV positive. The majority believed that all the babies would be born HIV positive.

Table 3.12. Clients' knowledge of vertical transmission of HIV

	Age	
	15-19 %	20-24 %
Know that HIV+ mother can transmit HIV to unborn baby	84	84
(N)	(200)	(437)
Actions mother can do to prevent transmission to unborn baby		
Take drugs before delivery/during labor	56	74
Give baby drugs (antiretrovirals)	4	4
Have c-section at delivery	4	5
Other	16	14
Nothing	5	2
Don't know	21	11
(N)	(167)	(366)
Know that HIV+ mother can transmit HIV to her newborn	91	97
Estimated of number of babies born HIV+ to 10 HIV+ women		
0-1	9	8
2-4	7	13
5-9	14	13
All	64	61
Don't know	6	5
(N)	(195)	(424)

Focus group participants who were young women aged 18-21 living in the community offered additional insights into youth's knowledge of MTCT of HIV. Like PMTCT clients, focus group participants also tended to overstate the risk of MTCT. Lack of specific knowledge was demonstrated by absolutes such as "*if a woman is HIV positive her child is also HIV positive*" (Karatina) or "*if the mother has the virus, then they just say even the child has it*" (Thika).

Focus group participants also demonstrated that misinformation exists about MTCT in the community. For example, in Thika a rumor holds that "*if the mother is infected in her late*

months of pregnancy, the child won't be infected." A woman from Kakamega said, "*She can infect her child through sex with multiple partners and also drinking*." One from Nakuru stated, "*HIV cannot be cured because the baby eats the same food as the mother*."

Moreover, focus group participants mentioned that there were doubts as to the reality of services that could prevent MTCT. According to a woman from Nakuru, "*They say it does not work and can't help anybody. That if it has helped one, she should come with proof."* Another woman from Nakuru pointed out that "*AIDS has no cure. So when you take those drugs, how come it prevents the child from being infected? It's a story."*

Providers' and supervisors' MTCT knowledge and attitudes

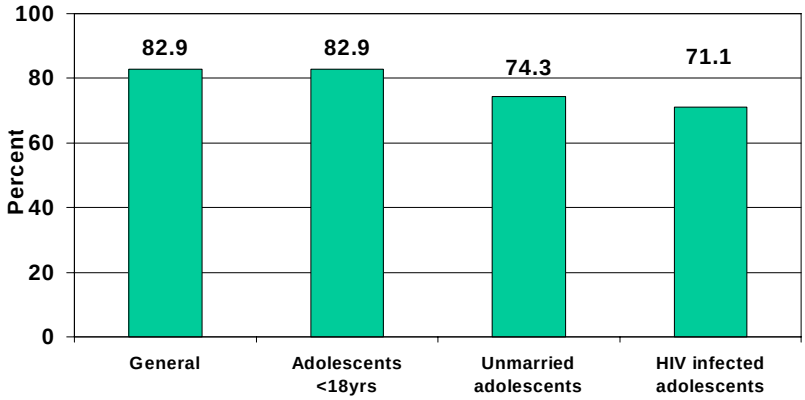
Providers and supervisors were fairly knowledgeable about HIV transmission routes from mother to child (Table 3.13). All providers and supervisors knew HIV can be transmitted during delivery and almost all of them knew it could be transmitted during breastfeeding. About three-fourths also knew it could be transmitted during the pregnancy.

Table 3.13. Providers' and supervisors' knowledge of MTCT

	%
Reports of when HIV can be passed from mother to child	
During pregnancy	74
During delivery	100
Through breastfeeding	97

Providers and supervisors are generally comfortable providing PMTCT services (Figure 3.3). Over 80% reported they are either very or somewhat comfortable providing PMTCT services in general and specifically providing these services to adolescents under age 18. Relative to their comfort level providing general PMTCT services, slightly fewer, but still close to three-fourths said they are very or somewhat comfortable providing PMTCT services to unmarried adolescents or HIV-infected adolescents.

Figure 3.3: Providers and supervisors who feel very/somewhat comfortable providing PMTCT services by category of client



Clients' and focus group participants' perspectives on infant feeding

Many ANC/PMTCT clients did not know what a woman infected with HIV should feed her child in the first three months of life (Table 3.14). International infant feeding recommendations for HIV-positive women recommend exclusive breastfeeding when replacement feeding is not "acceptable, feasible, affordable, sustainable, and safe." If HIV-positive women breastfeed then it is recommended that breastfeeding be discontinued as soon as feasible.(10) Combinations of breastfeeding and replacement feeding (i.e., "formula feeding") or breastfeeding with other liquids, in other words "mixed feeding," are not recommended. Just over one-fourth in both age groups gave a correct answer while the majority thought that other liquids should be used.

Table 3.14. Clients' knowledge of infant feeding practices

	Age	
	15-19 %	20-24 %
Know how an HIV+ mother should feed her baby in first three months of life		
Other liquids[1] only or with formula	68	65
Formula only	16	19
Breast milk only	13	10
Breast milk with formula or other liquids	7	6
Other	5	3
Don't know	3	4
N	200	437

[1] The type of "other liquids" vary, but the most common are water and cow's milk

Despite recommendations about breastfeeding, focus group participants were divided on this issue if a woman was HIV positive. The most common reason given for breastfeeding was societal pressure or expectations. A woman from Karatina explained, "*She will be thinking that it is bad not to breastfeed her baby because other people breastfeed their children so what will people be thinking about her not breastfeeding*." Another added that "*it is unheard of*" not to breastfeed a baby. More specifically, some women were concerned that people would know her HIV status if she does not breastfeed her baby, as described by a woman from Karatina: "*She might be thinking of breastfeeding the baby so that people don't know that she has the disease because that is the only reason why people don't breastfeed their children*."

Another reason for breastfeeding mentioned by several participants was the mother-child bonding that occurs during breastfeeding. A participant from Nakuru stated, *"There is that link between mother and the child and it is there during breast feeding."* Another woman from Nakuru added that she would breastfeed so she could *"feel like a mother."*

Other reasons given for breastfeeding were: "*she cannot afford to buy… milk*," "*she has no alternative*," and "*her baby is being punished by not breastfeeding*." One woman from Karatina said the woman might "*be thinking that maybe the doctors were not truthful with her and maybe the baby already has the virus in the stomach so why deny it breast milk if it is already HIV positive.*"

The only reason given for not breastfeeding the baby was to "*save the baby*" and to "*protect it from HIV*." One woman from Thika explained, "*Every mother would like to save the baby*."

Contraceptive experiences and fertility desires

Clients' family planning use and childbearing intentions

Few clients had ever used a method of contraception prior to the index pregnancy (Table 3.15). This was most pronounced among clients ages 15-19, over 93% of whom had never used a method. Of those who had used a method, injectables and pills are the methods most used. Few youth in either group reported ever using condoms as a family planning method, though it's possible that some have used them for protection against sexually transmitted diseases including HIV and were just not reporting them as contraceptive methods.

Table 3.15. Clients' reported ever use of family planning

	Age	
	15-19 %	20-24 %
Prior to pregnancy, FP methods ever used		
Never used	94	62
Injectable	3	22
Pill	4	16
Condoms	1	1
Periodic abstinence	0	2
Other	0	3
N	200	437

Most of the youth in both age groups plan to use family planning within two years after they deliver their baby (Table 3.16). Of those who intend to use, 77% of adolescents and 74% of older youth plan to begin family planning use either right after delivery or within the first 2-3 months (results not shown).

By far, the method most preferred by clients is the injectable; nearly half of the clients said that is the method they intend to use (Table 3.16). A substantial proportion (31%) of 15-19 year olds did not indicate which method they intend to use because they did not know any methods. This is nearly twice the percent of 20-24 year olds who indicated that they did not know any family planning methods.

Most of the respondents planned to have more children; not surprisingly, 15-19 year olds were less likely than 20-24 year olds to report that they do not want any more children (Table 3.16). Similarly, adolescents were more likely to report wanting three to four more whereas 20-24 year olds were more likely to report wanting one to two more. Despite the desire for more children, youth plan to wait several years before their next pregnancy, with little difference between the age groups. These results suggest a great need for postpartum family planning for birth spacing.

Table 3.16. Clients' family planning and childbearing intentions

		Age	
		15-19	20-24
		%	%
Intend to use FP in the next two years		84	90
	(N)	(200)	(437)
Method client intends to use			
Injectable		49	46
Pill		14	19
Implants		3	12
Periodic abstinence		1	2
IUCD		1	2
Condoms		3	1
Other		4	9
Don't know methods		31	16
	(N)	(167)	(393)
Number of desired children after index pregnancy			
No more		9	18
1-2 children		59	65
3-4 or more children		25	10
Depends on partner/not sure		7	6
	(N)	(200)	(437)
Number of years client wants to wait before next pregnancy			
Less than one year		2	1
1-2 years		11	9
2-3 years		28	29
4 or more years		52	57
Depends on partner/not sure/no response		7	6
	(N)	(182)	(357)

Clients' and focus group participants' perspectives on fertility desires and childbearing in the context of HIV

Because a diagnosis of HIV may affect fertility desires, we asked clients about their perception of how women's fertility desires change in the face of HIV. If a woman finds out she is HIV positive, then 47% believed she will stop childbearing while another 42% believed that the number of children she wants will decrease (data not shown). Very few thought that the number she would want would increase (0.8%) and 10% thought that there would not be any change in her fertility desires.

Focus group participants echoed clients' perceptions of desired family size in the community. Faced with HIV infection, however, at least one participant in each of five focus groups, including the majority in two groups (Karatina and Nakuru) believed that an HIV-infected woman would decide to have only one child. These participants gave three reasons: "*To show she's not barren*"; to carry on her name; and because the child can be protected. However, some participants did think that an infant death may increase the likelihood of having another one: "*She will decide to have another child if the first one dies because the second one might have a chance to survive*" (Karatina).

In deciding to have more children, focus group participants said that for the HIV-infected woman the status of the first child was very important. If the child is negative she may feel optimistic about having another negative child, especially if she attributes the negative status to antiretrovirals: *"I think it depends on whether her first child survived or not. If it survived then she may think of having another one*" (Karatina).

The perceived effectiveness of PMTCT services is encouraging when deciding to have more children. A woman from Nakuru explained, "*If the baby is born and is negative, then she will see the drug works and so she might decide to have another baby*."

Providers' and supervisors' fertility and family planning knowledge and attitudes

Some providers and supervisors lack knowledge about how HIV affects fertility and contraceptive method eligibility. Just over one-fourth of providers and supervisors correctly believed that HIV infection affects a woman's ability to get pregnant (Table 3.17). About half of the providers and supervisors think there are methods that are not "healthy" for an HIV infected woman to use; the IUCD was the one most often mentioned and the only one that may be contraindicated in certain cases.[4] About two-thirds of providers and supervisors correctly know what dual protection is and a similar percent report they have discussed dual protection with an adolescent.

Table 3.17. Providers' and supervisors' knowledge of HIV, fertility, and contraceptive method eligibility

	%
Knows HIV infection affects a woman's ability to get pregnant	29
Believes certain contraceptive methods are unhealthy for HIV-positive woman to use	49
(N)	(35)
Reports of methods that are unhealthy for HIV-positive women to use	
IUCD	88
Pill	18
Injectable	18
Implants	6
Breastfeeding	6
(N)	(17)
Providers and supervisors who….	
Know two goals of dual protection	66
Ever discussed dual protection with an adolescent	69
(N)	(35)

[4] The World Health Organization's Medical Eligibility Criteria classify the IUD as category 3 only in the case of a woman with clinical AIDS, not on antiretrovirals (or not improving on ARVs), and who wants to start using an IUD. (11) (Category 3 is defined as "In general, use not advised. Use is possible if the provider possesses clinical competencies and the woman has access to clinical services"). For all other HIV-positive women, the IUD is classified as category 2, use is possible but follow-up may be needed in certain cases.

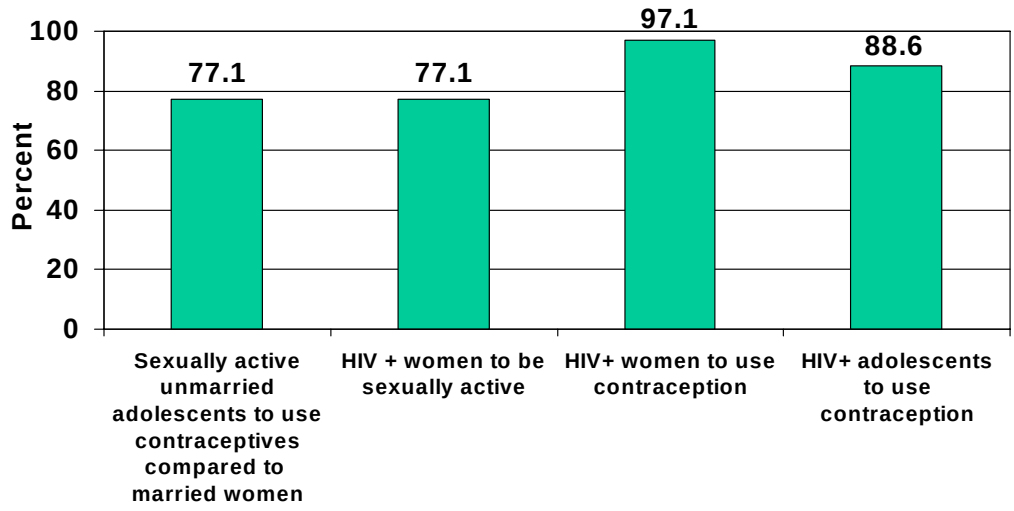
Providers and supervisors were asked about the family planning methods they felt were most appropriate for unmarried adolescents who have been pregnant (Table 3.18). More than half said condoms followed by pills, IUCD, and injectables. When the scenario changed to the most appropriate method for HIV-positive adolescents who have ever been pregnant, even more providers felt that condoms were the most appropriate method followed by the injectable.

Table 3.18. Providers' and supervisors' reports of 'appropriate' methods for unmarried and HIV-positive adolescents

	%
Most appropriate method for unmarried adolescents who have been pregnant	
Condoms	54
Pill	31
IUCD	29
Injectable	11
Implants	9
Breastfeeding/Lactation Amenorrhea	3
Abstinence	3
Most appropriate method for HIV-positive adolescents who have been pregnant	
Condoms	69
Injectable	14
IUCD	6
Pill	3
Tubal ligation	6
Implants	3
N	35

Provider and supervisor attitudes toward contraceptive use and adolescents and contraceptive use and HIV-positive status are largely positive (Figure 3.4). For example, more than three-fourths believe it is very appropriate or appropriate for sexually active unmarried adolescents to use contraceptives compared to a married woman and for HIV-positive women to be sexually active. Nearly all the providers and supervisors believe it is very appropriate or appropriate for HIV-positive women to use contraceptives and 89% believe it is very appropriate or appropriate for HIV-positive adolescents to use contraception.

Figure 3.4: Providers and supervisors who believe it is very appropriate/appropriate for various groups of clients to use contraception or be sexually active



Factors influencing use of PMTCT services and service delivery preferences

Barriers to ANC use

During client interviews, respondents cited several reasons why women in the community might not attend ANC services regardless of the availability of PMTCT (Table 3.19). There was some variation by age group. Younger youth thought that women would not come because of financial constraints, health worker attitudes, distance, and transportation issues. More of the older youth felt that financial issues were a constraint followed by transport, provider attitudes, and distance. Despite the stated barriers, ANC use in Kenya is relatively high; 88% of women 19 and younger and 92% of women ages 20-34 had at least one ANC visit during pregnancy.(4)

The availability of PMTCT services appeared to motivate clients to seek ANC. Most respondents (76%) and more adolescents than older youth (82% vs. 73%) thought that women in the community would be more likely to come to ANC if they knew they could find out their HIV status and get drugs to help the baby if needed (results not shown).

Table 3.19. Clients' perspectives of barriers to use of ANC services

	Age	
	15-19 %	20-24 %
Most likely reason to keep women in community from attending ANC services		
Financial constraints	23	33
Health worker attitudes	22	17
Transport	16	18
Distance	22	15
Spouse disapproval	11	9
Family/community attitude	5	7
No response	2	2
N	200	437

Among other reasons, focus group participants gave two reasons why young mothers might not use ANC services independent of the availability of PMTCT. The most common answer, given in seven of the eight groups, was fear of recognition and fear of people, particularly their parents, finding out they are pregnant. A respondent from Karatina explained, "*If you do not want your parents or other people to know that you are pregnant you can fear to go for ANC because people will know.*" Even if the parents know, another participant from Karatina said, "*Many parents don't even want to acknowledge that their daughters are pregnant so they don't send them to the clinic where they can access the service*."

Another ANC problem described by FGD participants was harsh or rude healthcare providers, especially nurses. This is a problem encountered more often by young women. One woman from Kakamega described how this treatment might lead a young woman not to receive ANC services: "*If it's the first pregnancy, the nurses will laugh at you and say you rushed into the matter. So you will be abused and they won't attend to you. In fact they will tell you not to go back and whatever happens to you will be all up to you*." Lack of confidentiality and anonymity was mentioned by several participants.

Barriers to PMTCT service use

FGD participants were also asked about possible barriers to the use of PMTCT services, and because PMTCT services are closely linked to ANC, the answers were similar to those expressed for ANC services. Other barriers that were specific to PMTCT services but not necessarily ANC included the clients' partners. Several participants in four groups said that a husband might not agree to his wife's going for PMTCT or her having received counseling, testing, or treatment might lead to a disagreement with the husband. This is sometimes due to cost of services or need for transportation to visit health centers. It can also be due to ignorance: "*Many men because they are unaware of the importance of PMTCT forbid their wives from using the services*."

Another problem with seeking PMTCT services was community reaction or stigma, mentioned in six of the eight groups. A participant from Nakuru described the possible extent of the stigmatization, "*The community will think that you are too young for such and take you as a prostitute.*" Regardless of age or HIV status, participants in four groups commented that women who receive PMTCT services might become the fodder for gossip in the community.

An issue raised by several participants in two groups was that women would have difficulties with PMTCT because of their own ignorance or lack of knowledge. A woman from Kakamega said, "*Some are ignorant and can't follow instructions properly due to lack of knowledge*." Several women expressed concern that women would forget to take the PMTCT drug when the time came. One said a woman "*might even give [the drug] to the child*" (Kakamega). A few participants at Nakuru and Thika expressed concerns about possible side effects from PMTCT drugs. Other participants at Thika said a woman might have trouble with the "*PMTCT injection*."

Barriers to HIV testing in PMTCT

When asked what was the most important reason that might keep women from getting HIV tested during pregnancy, two-thirds of clients pointed out that women may not get an HIV test because of fear (Table 3.20).

Table 3.20. Clients' perspectives of barriers to HIV testing

	Age	
	15-19 %	20-24 %
Most important reason that might keep women from getting HIV tested during pregnancy		
Fear of testing HIV+	65	68
Partner disapproval	13	10
Lack of confidentiality	9	7
Not at risk	6	4
Health worker attitudes	3	3
High cost of service	3	3
Difficult to get to facility	2	3
Family/community disapproval	2	3
N	200	437

Focus group participants in six of the eight groups also confirmed fear of an HIV-positive outcome as an important reason why women may choose not to get an HIV test. Other women cited possible stigma after testing HIV-positive, as well as stress and panic.

Husbands' reactions are also an important consideration in FGD participants' responses, and failure to include partners in the decision to get HIV tested could also be a barrier. When asked how a husband would act when he found out his wife had been tested for HIV without his knowledge, in six of the eight groups, anger was mentioned as the primary response. For most participants, the anger would be because of a perceived lack of trust, as explained by one woman in Karatina: "*He will be very angry with her because this is something that should be done after a lot of consultation with your spouse*." Other women thought the husband would be unhappy, hurt, or betrayed when he found out his wife had an HIV test without telling him. Four of these women were in one of the Karatina groups. One explained, "*He would think that she does not love him*." Others felt the husband would be suspicious that she had something to hide, particularly infidelity, if she did not consult him before being tested.

Only a few thought the husband's reaction would be positive. Three women in one of the Karatina group said that he would be calm and understanding about his wife's being tested for HIV. One said that he would be calm "*because he knows that pregnant women are subjected to several tests. So he will see it as normal*." Two women in a Nakuru group said his reaction would be to get tested himself.

After general fear and concerns about the husband's reaction, concern for her baby would be her main thought about getting HIV tested, according to seven participants in five of the groups. Participants linked fear to her pregnancy and the health of her baby: "*She will panic. Even if she is tested she will be wondering how she will survive, and about her baby. She will feel that maybe she should not be tested because she is already pregnant so the damage is done*" (Karatina). Two women said she would be "*worried about her baby's health*." One said she would worry that "*maybe the child will die*." Two others said she would be concerned that she

would "*leave her baby alone in the world to suffer*" after she dies of AIDS. Moreover, her concern for her baby might be a strong motivation for having the test: "*Though she will have many questions in her mind about testing, she will just be forced to go for testing to know if the baby is okay in the womb*" (Kakamega). Other participants felt the woman's concern would extend to the baby's future: "*who will care for her baby*" after she dies of AIDS (Thika).

On the other hand, for seven participants in three FGDs the HIV test would not be a surprise if they understand that the HIV test is standard for pregnant women and they were expecting it. "*Maybe she will just take the test without worrying because she expected to be asked to be tested because she has heard that all pregnant women are normally tested. So she will just be calm about it even as she is being tested*" (Karatina). One woman from Nakuru said the woman should "*feel good that this nurse cares*" and another said it "*feels good to know your status if positive or negative*."

Some women were more suspicious. Two women said they would wonder why the nurse had suggested the test. The nurse's suggestion might make the woman in the scenario assume she is positive or feel shame that she thinks the nurse suspects she is infected. A woman from Nakuru described a potentially more sinister situation: "*First of all this nurse doesn't know me. She is the one who suggested that I go for the HIV test and now she is testing me, using a kit, I am not sure whether it is clean enough. So I will be like, this nurse is up to something else*."

Barriers to taking nevirapine

Focus group participants offered some explanations as to why a woman would or would not take the pills (i.e., nevirapine) at delivery to prevent transmission of the virus to her baby. In terms of the scenario presented to them in which a woman tested HIV positive, opinions were divided on whether or not the woman would take the drug. In all eight of the groups, at least one participant said she would take the drug. However, in seven of the eight groups, at least one participant said she would not take the drug.

The main reason for taking the drug would be to "*save the baby*" or "*to protect her baby against HIV*." The baby would then carry on her name and her husband's name after she dies. The mother would trust her family or her community to take care of the baby if she dies.

Others countered that the baby "*will be a burden to the society*" and that there are many orphans already for the community to take care of. Many women expressed concern about the baby suffering if the mother was to die and the baby was to be left alone. These women felt the mother might decide not to take the drug so "*they can both die together*."

Some women expressed concern about the safety of the drug: "*it will kill her baby*" or "*those people want to kill her*" by giving her the drug. Several participants were not convinced the drug would even work. Others did not see the need for the drug: "*She will think that the baby is not infected while in the womb, so there is no need of taking the drug*." Traditional medicine was offered as a possible alternative to taking the drug.

Provider and supervisor perspectives on barriers to PMTCT services

Providers and supervisors gave another perspective on the factors hindering women from getting various PMTCT services. Their responses were similar to clients' and focus group participants'

reports (Table 3.21). According to providers and supervisors the biggest barrier to getting an HIV test or the results is fear of testing HIV positive. Other important reasons included fear of partner reaction and fear of stigmatization.

According to providers and supervisors, the main barriers that prevent women from taking ARVs at the time of delivery to prevent MTCT include forgetfulness or misplacing of nevirapine pills and misconceptions about nevirapine. Other reasons include denial and ignorance, fear of disclosing results and fear of stigmatization. Finally, providers and supervisors gave their perspective on the barriers that prevent young women (15-24 years old) from seeking PMTCT services compared to older women. The reason reported most often was shyness, followed by self-denial and a lack of knowledge on PMTCT.

Table 3.21. Providers' and supervisors' perspectives on barriers to HIV service use

	%
Barriers that prevent women from accepting HIV testing	
Fear of testing HIV positive and lack coping mechanism	91
Fear partner reaction	60
Fear stigmatization	46
Confidentiality	9
Waiting time too long	9
Don't need to know HIV status	6
Other	9
Barriers that prevent women from receiving HIV results	
Fear of being HIV positive	74
Fear spouse reaction/stigma	49
Long waiting hours	17
Peer influence	14
Other	20
Barriers that prevent women from taking ARTs at time of delivery to prevent MTCT	
Forgetfulness/misplacing NVP	57
Misconception about NVP	57
Denial and ignorance	37
Fear disclosing results	23
Fear stigmatization	14
Fear partner reaction	3
Other	20
Differences that prevent youth (15-24 years) from seeking PMTCT services compared to older women	
Shyness	40
Self denial	29
Lack knowledge on PMTCT	20
Too young to make decision/fear mixing with older women	17
Harassment/long waiting hours	14
Other	34
N	35

Satisfaction with and preferences for PMTCT services

Despite FGD participants' reaction that negative treatment by providers served as a barrier to seeking care, over 90% of clients surveyed regardless of age were either "very satisfied" or "somewhat satisfied" with the counseling they received prior to the HIV test (Table 3.22). Similarly, 85% of clients said it was "very likely" or "somewhat likely" that the information they discussed with the provider about HIV will be kept secret. The differences in responses between study participant groups (youth clients compared to 18-21 year olds in the community) may be attributed to the fact that FGD participants had little personal experience with seeking ANC/PMTCT services. On the other hand, clients were interviewed while they were waiting for services, so social desirability may be inflating perceptions.

Table 3.22. Clients' satisfaction with PMTCT services and confidence in confidentiality

	Age	
	15-19 %	20-24 %
Clients satisfaction with provider counseling (pre-HIV test)		
Very satisfied	80	85
Somewhat satisfied	12	8
Somewhat dissatisfied	4	3
Very dissatisfied	2	<1
Likelihood that information discussed with provider about HIV will be kept secret		
Very likely	71	77
Somewhat likely	16	9
Somewhat unlikely	5	5
Very unlikely	3	2
N	200	437

NB: Columns do not add to 100% because 'no response' percent excluded from table

Clients were asked about the aspects of ANC/PMTCT services they liked and what they thought should be changed (Table 3.23). The answers were similar for each age group. The three aspects that clients liked most about the ANC/PMTCT services were good quality services, friendly providers, and good counseling on PMTCT and HIV. Almost one-half of clients didn't think there was any aspect that needed to be changed. The one that was mentioned the most was that the number of providers should be increased and they should start work early. The three characteristics of providers that make both age groups most comfortable were being friendly, polite and understanding; an older female above 30; and female (with no age specified).

Table 3.23. Clients' perspectives of ANC/PMTCT services

	Age	
	15-19 %	20-24 %
Clients' reports of aspects they liked about ANC/PMTCT		
Services of good quality	39	44
Friendly providers	37	44
Good counseling on PMTCT and HIV	40	41
Good HIV testing services	12	12
Fast services	10	10
Affordable services	6	3
Health information on variety of issues	6	4
Other	2	5
Aspects about ANC/PMTCT that clients want changed		
No change required	49	45
Add providers and start work early	20	24
Reduce or supervise student nurses	10	9
Have more rooms and time for clients	9	6
Ensure privacy of clients	8	6
Provide subsidized/free services	3	6
Increase number of providers	3	3
Provider should be polite	3	3
Other	6	5
Clients' reports of providers characteristics that makes them comfortable to discuss issues related to sex and HIV		
Friendly, polite and understanding providers	40	38
Older female provider above 30 yrs	40	38
Female provider	38	29
Qualified provider	14	16
Male provider	10	14
Knowledgeable provider	7	8
Young (30 yrs and below)	5	4
Provider who maintains confidentiality	1	5
Other	5	5
N	200	437

Suggestions to improve PMTCT for youth

The two main suggestions by clients in both age groups to improve ANC/PMTCT services for young people included making them youth-friendly (specifically friendly, confidential, and timely) and providing them separately and in private (Table 3.24). Clients from both age groups had similar suggestions for improving HIV counseling services for pregnant young people. These suggestions included: providing more information on STI/HIV infection prevention; friendly, patient providers; and providing individual, not group, counseling.

The two main suggestions to improve PMTCT services for youth were to teach young mothers adequately on PMTCT and family planning methods and to provide youth-friendly services. Other suggestions included increasing the number of qualified staff and providing quality PMTCT services in all facilities.

Table 3.24. Clients' perspectives on improving ANC/PMTCT services for youth

	Age	
	15-19 %	20-24 %
Suggestions to improve ANC/PMTCT services for young people		
Youth-friendly services	35	36
Separate ANC/PMTCT services for youth	36	34
More qualified and youth friendly providers	12	9
Spend more time on health information talk	4	4
Sensitize community on ANC/PMTCT	3	3
Other	2	3
No response/ Don't know	19	17
Suggestions to improve HIV counseling services for pregnant young people		
More info on STI/HIV infection prevention	22	25
Friendly, patient providers who respect confidentiality	17	17
Provide individual counseling not group	15	17
Separate youth from others during sessions	15	14
Broader health information or channels	10	9
Other	6	6
No response	20	16
Suggestions to improve PMTCT for youth		
Teach young mothers on PMTCT and FP	33	29
Provide youth-friendly services	25	26
Add qualified staff and extend program reach	13	14
No improvement needed	10	8
Provide quality PMTCT in all facilities	7	7
Other	5	5
Don't know	15	16
N	200	437

Focus group participants (potential youth PMTCT clients in the community) offered their perspectives on how to make ANC and PMTCT services more appealing to youth. Several participants had ideas for making the health center environment more youth-friendly and welcoming. These suggestions included music, food, and films. Other suggestions included making the facility comfortable, clean, and attractive. Most participants stated that current health facility hours were not a hindrance to youth. Those who said different hours might make HIV testing more acceptable to youth identified weekends as the best times. Other ideas included offering a reward to youth who get tested, home visits, services for youth only, and youth counselors.

FGD participants' preferences for counselors were largely similar to what survey respondents reported. They too wanted a counselor who was understanding, encouraging, or kind. Understanding means being "*open*" and "*understanding of your problems, e.g. that maybe you don't even have money*" (Karatina). An encouraging counselor "*can give you hope to live again*" (Kakamega) or will tell a woman, "*even though you are sick, you are still beautiful*" (Thika). A kind counselor "*does not talk ill about you*" (Kakamega) and "*will not abuse you or ask you rude questions*" (Karatina). He or she would also be gentle, polite, and not harsh.

Participants were also split on age: many wanted an older counselor, while another large group said they would want a counselor who was their age or only slightly older. For those who want an older counselor, the emphasis was on experience and knowledge. A woman from Karatina explained, "*She should be 30 years and above because they have more experience in their profession and so they know what they are doing*." For participants who wanted a counselor of their age or slightly older, the important issue was being able to relate to the young woman seeking services. Another reason for wanting a younger counselor was to be sure their information was up-to-date.

FGD participants were more open to the idea of having a male counselor and were fairly evenly split on whether a man or a woman would be a more ideal counselor for a young pregnant woman. Those who preferred a male counselor stated that women tended to be harsh or gossips, while "*men are very gentle*" (Karatina). Also, "*it should be a male because he won't ask you many questions like a female one…. I will be free with a male*" (Nakuru). Those who preferred a female counselor emphasized the importance of common experience: "*A woman because she has probably had similar experiences to what you are going through and can advise you well*" (Karatina).

Provider and supervisor perspectives of youth's special needs in PMTCT

There was general agreement among providers and supervisors that adolescents do have special needs in service provision. A high proportion believe they need special guidance on HIV and family planning counseling (Table 3.25). Other special needs that were noted include education on family planning and HIV; they should be handled separately and assured of confidentiality; and nutrition counseling and child care.

Many providers and supervisors noted that their facilities have taken steps to address these special needs. Nearly half reported that their facilities provide adequate counseling and follow-up to adolescents (Table 3.25). Others reported that they provide adequate health information, or have set up youth-friendly centers or mobile clinics.

Table 3.25. Providers' and supervisors' perspectives on special needs of adolescent in PMTCT

	%
Perspectives on the special needs of adolescents	
Special guidance on HIV/FP counseling since they are young	86
Handled separately /Patience assure confidentiality	31
Need education on FP and HIV	31
Nutrition counseling and child care	17
Steps facility has taken to meet special needs of adolescents	
Provide adequate counseling and follow-up to youths and all	46
Provide adequate health information	31
Set up youth-friendly center/mobile clinics to provide services	29
No steps taken	14
Other	3
N	35

Service delivery preferences for family planning in ANC/PMTCT

Over 40% of clients interviewed wanted more information on family planning methods and some also requested additional information specifically on side effects (Table 3.26). However, nearly half said there was no additional family planning information they would have wanted during their clinic visits.

The majority of clients, regardless of age group, felt that it is appropriate to discuss family planning methods during ANC or PMTCT visits, during delivery or just after the baby was delivered, or within the first 2-3 months after having a baby. However, when pressed to identify the best time to discuss family planning methods with a provider, just under half said during ANC/PMTCT services with the runner-up being during postpartum visits. About 60% of both age groups thought the best time to actually provide family planning methods is during postpartum visits. About one-fourth felt it was appropriate during delivery.

Table 3.26. Clients' perspectives on family planning services in ANC/PMTCT

	Age	
	15-19 %	20-24 %
FP services client would have liked to receive but did not during previous visits[*]		
More information on FP methods	48	42
Know more about side effects	11	16
None	45	49
Proportion of clients who feel it is 'ok' to discuss family planning methods…		
During ANC/PMTCT visits	91	90
During or just after delivery	70	73
Within first 2 or 3 months after having a baby	89	86
Best time to discuss FP methods with a provider[*]		
During ANC/PMTCT services	45	42
At the time of delivery	21	20
During postpartum visits	32	35
All three	2	3
Best time to provide FP methods[*]		
During ANC/PMTCT services	15	11
At the time of delivery	23	29
During postpartum visits	60	58
All three	2	1
N	200	437

[*] "Other" or "never" categories dropped from table because percent was 1% or less

The main suggestion by clients to improve family planning counseling was to provide more health counseling sessions on family planning methods (Table 3.27). Other suggestions mentioned less frequently were to improve community outreach and access to family planning methods and to add qualified providers and assure privacy. In order to help clients use family planning, the main suggestion mentioned by over one-half of respondents was to provide additional information, counseling and support on family planning. Approximately one-fourth also suggested seeking partner involvement.

Table 3.27. Clients' perspectives on how to improve use of FP services

	Age	
	15-19 %	20-24 %
Suggestions to improve FP counseling		
More health counseling sessions on FP methods	43	41
Improve outreach & access to methods	10	17
Add qualified providers and assure privacy	9	9
Don't know/None	35	28
Other	3	4
Suggestions to help clients use FP		
Adequate information/counseling and support	56	57
Seek partner involvement	23	24
Sensitize community on FP	11	11
Refer clients to FP points	11	9
Don't know	4	5
Other	12	10
N	200	437

Most FGD participants echoed clients' responses and believed that providers should counsel pregnant women on family planning either during ANC or postpartum visits, or both. During ANC visits was the most popular response, given by over 20 participants in six of the eight groups. Many felt it would be easier for the woman to come to the clinic before she has the baby, so the counselors should speak with her about FP when they can. Another reason is the ability to repeat the information at several visits: "*The more she comes, the more she gets to know as you also get to advise her more*" (Nakuru).

Postpartum counseling was mentioned in seven of the eight groups and by more than fifteen people. Convenience was part of the reason for this, since most women return with their babies six weeks after giving birth. A woman from Thika explained, "*Maybe when the mothers bring their babies to the clinic because that is the time they can meet and talk."*

IV. Discussion and Recommendations

This assessment provides important information about the knowledge adolescents and young women have about PMTCT, their experiences using these services, and providers' ability to meet the needs of young people. In general, the results are encouraging. There does not appear to be a disparity between adolescent and older youth PMTCT clients in services received. The results, however, do illustrate program areas that need to be strengthened or expanded.

Most of the clients in the assessment were tested for HIV and received their results. The way that PMTCT services are organized was more likely to influence whether clients got tested or got their results rather than any socio-demographic factors. Services can be structured in a way that ensures almost all PMTCT clients get tested and get their results.

Fear of testing HIV positive was reported as a major barrier to PMTCT services, yet this was a barrier that can be overcome. Fear associated with HIV testing or testing HIV positive should not be ignored as it may impede use of ARVs or disclosure of HIV status. Education regarding the value of HIV testing and receiving test results is needed to counteract the fear of finding out that one is positive.

There were indications from all study participants that there may be barriers for HIV-positive women to take nevirapine at the time of delivery, but more information is needed to understand these barriers and whether age is a factor. Focus group discussions provided some explanations as to why women might not take drugs including the possibility of the drug harming the baby or the baby suffering if the mother died. There may be many HIV-positive young women who do not plan to take nevirapine and that more education is needed both within the PMTCT programs and the community to address this issue.

There were differences in the content of services received by adolescents compared to older youth. Adolescents were less likely to receive messages around condom use and they were less knowledgeable about the availability of PMTCT services in general. Older youth were more likely to be told about family planning methods and where to get them, despite adolescents' lack of experience with family planning and desire to delay pregnancies. Because adolescents have less health knowledge and experience with health services, PMTCT providers may need to provide more information to adolescents than older youth or to tailor their messages for them.

Youth clients were satisfied with the ANC/PMTCT services they received, although young women in the community were less positive about how they are treated by providers. Nonetheless, both groups of youth would like the services to be more "youth-friendly." For participants this meant friendly, confidential, and timely services that are separate and exclusively for young people; characteristics of services that have been found in other studies of voluntary counseling and testing (VCT) for youth.(12) One interesting difference noted is that participants in this study seemed to prefer older providers, while previous studies have found that youth VCT clients prefer younger providers. This difference may be due in part to the type of youth making up the ANC clientele; marital and pregnancy status are social indicators of adulthood regardless of chronologic age.

There were major gaps in PMTCT knowledge, although most youth were knowledgeable of the "ABCs" to prevent horizontal HIV transmission. Adolescents in particular lacked an understanding of how to prevent MTCT of HIV, and most youth lacked knowledge of the probability of MTCT of HIV. In a country where the median age at first birth is 20, information about the probability of MTCT and the ways to prevent MTCT should complement socially marketed ABC messages for youth. However, to effectively communicate the risks of vertical transmission, more information is needed about how to explain the risk of MTCT in absence of any prophylaxis and how to explain the nuances of risk given the different ARV regimens.

Knowledge of how a woman infected with HIV should feed her child in the first three months of life was low. Advice that HIV-positive women should not breastfeed is in conflict with the fact that "acceptable, feasible, affordable, sustainable and safe" replacement feeding options are not widely available. Women want to protect their babies, so mixed feeding is probably viewed as a compromise solution since they cannot stop breastfeeding altogether. Providers should change their infant feeding messages when safe and effective replacement feeding options are not widely available. They should counsel on exclusive breastfeeding and early cessation as the first line of defense, then tailor replacement feeding messages.

There is a clear demand for postpartum family planning methods. Although most youth intended to use a contraceptive method, few youth had ever used a method. Thus, youth have less experience choosing an appropriate method, with obtaining a method, and with managing side effects. The 15-19 year olds in particular were more likely to say that they did not know any contraceptive methods, and they were less likely to report receiving information on different family planning methods or where to obtain methods. Efforts are needed during the postnatal period to ensure clients are linked with postpartum family planning services. Fortunately, clients' desired time to start methods coincides with the first and second polio and DPT (diphtheria, whooping cough, tetanus) immunizations for infants.(13) Immunizations are the main reasons mothers return to the health facility in the postnatal period. More should be done to link new mothers attending immunization services with family planning services.

Providers were supportive of efforts to strengthen family planning services, although some gaps were evident. It was encouraging that provider attitudes toward adolescents and HIV-positive women were largely positive and that they felt comfortable providing services to these groups. On the other hand, the large majority of providers were biased against use of the IUCD by HIV infected women, which displays a lack of understanding of the latest Medical Eligibility Criteria.(11) Although the majority of providers knew the goals of dual protection and said they had discussed dual protection with an adolescent, this important HIV and pregnancy prevention strategy should be consistently delivered as less than half the clients reported that they were counseled on condoms for pregnancy prevention.

Client interviews and FGD results provided a mixed picture of fertility desires in the face of HIV infection. Clients overwhelmingly said that women who found out they were HIV infected would limit or stop childbearing. Participants in focus groups confirmed this but also acknowledged that some women, especially with the promise of PMTCT, may decide to continue childbearing. More information is needed to understand how use of ARV prophylaxis or therapy may influence fertility desires. Providers need help to support their clients' fertility decisions while

also delivering balanced and comprehensible messages on the risks of pregnancy and childbearing to HIV-positive women and to women on ARV prophylaxis or therapy.

This is the first known study to assess youth in PMTCT services and from several perspectives, the youth clients themselves, providers, and potential youth clients in the community. While it is reassuring to find that adolescents are as likely to receive services as older youth, this may not hold true in countries where it has been documented that adolescents are less likely to use ANC services such as Southeast Asia.(14) Although the level of use of services is adequate, the content of services should be strengthened to address issues related to condoms, knowledge of vertical transmission, and feeding practices. Finally, efforts are needed to meet the demand for postpartum contraception regardless of HIV status.

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