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Horizons

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Horizons Program

International Centre for Reproductive Health

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Abbreviations and Acronyms

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral therapy
ARV	Antiretroviral
CHW	Community health workers
CI	Confidence interval
HIV	Human Immunodeficiency Virus
ICRH	International Centre for Reproductive Health
IEC	Information education and communication
IQR	Interquartile range
Ksh	Kenya Shillings
NGO	Nongovernmental organization
OR	Odds ratio
PLHIV	People living with HIV
PMTCT	Prevention of mother-to-child transmission
PTC	Post-test club
STI	Sexually transmitted infection
SD	Standard deviation
USAID	United States Agency for International Development
VCT	Voluntary counseling and testing

Table of Contents

Executive Summary#

Despite widespread prevention efforts, the HIV continues to spread and new infections are being documented globally. Most prevention programs target at-risk populations such as sex workers, injection drug users, men who have sex with men, youth, and HIV-positive persons receiving treatment. There is very little being done for people living with HIV (PLHIV) who neither form a part of the visibly at-risk groups nor receive services from treatment programs. This study was undertaken to better understand the sexual behaviors of HIV-positive persons in the community who are not accessing treatment services, to assess their exposure to prevention message and programs, and to explore ways to reach them in the community.

Methods

Researchers from Population Council and the International Centre for Reproductive Health (ICRH) undertook an exploratory study among PLHIV who were not on ART, in Mombasa, Kenya. Using a cross-sectional study design, researchers interviewed HIV-positive persons who were not accessing antiretroviral therapy (ART). A structured questionnaire was used. Researchers used modified snowball sampling to recruit study participants using two different approaches. In one, community health workers (CHWs) were asked to bring PLHIV from their communities, and in the second, HIV-positive peers were asked to recruit PLHIV from their contacts in the community. A total of 698 study participants were recruited into the study.

The mean age of participants was 34 years (SD 8.03, range 18–60 years). Three-fourths of the respondents were female. Almost two-thirds had a primary education, one-fourth were unemployed, and nearly half were divorced, separated, or widowed (mostly women). The majority of study participants had learned their status after being tested at public sector voluntary testing and counseling (VCT) centers, and less than a quarter were currently attending HIV clinics for regular follow up of their HIV infection.

Key Findings

Important gaps in HIV-related knowledge and negative perceptions related to condom use were observed.

Researchers identified important gaps in knowledge levels among study participants: 17 percent of study participants believed HIV could spread through insect bites; 32 percent believed HIV could not be transmitted from mother to child; and 15 percent believed a cure was available. Lack of belief in condom effectiveness (27 percent), negative attitudes about condoms (such as condoms reduce pleasure (57 percent) or condoms take away the romance from sex (48 percent) , and condom use fatigue (40 percent) were reported.

Sexual activity was high and multiple sexual partners were reported.

Nearly 60 percent of the study participants were sexually active. Both males and females reported multiple life time partners: male respondents reported a median of 15 partners compared to 4 reported by female respondents ($p < 0.001$). Almost half of the male respondents and nearly a fifth of female respondents (46 percent vs. 19 percent; $p = 0.001$) reported two or more partners in the last six months.

Although sex with regular partners was more common, sex with casual partners and sex workers was also reported.

Female respondents were more likely to report sex with regular partners compared to male respondents (80 percent vs. 63 percent; $p < 0.001$) while male respondents reported sex with casual partners (11 percent vs. 8 percent), sex worker partners (7 percent vs. 2 percent) and mixed types of partners (20 percent vs. 10 percent) more often than female respondents ($p < 0.001$).

A significant proportion of sexual partners were untested or HIV-negative.

About three-quarters of sexual partners were of unknown HIV status and 10 percent were HIV-negative. Disclosure of HIV status was made to only 37 percent of sexual partners.

Unprotected sex was prevalent, especially with regular partners of unknown HIV status or HIV-negative regular partners.

Unprotected sex (inconsistent condom use) over the past six months was reported in nearly half of sexual relationships (48 percent) and both male and female respondents reported unprotected sex with regular partners rather than with casual or sex worker partners. Unprotected sex was reported with three-fifths of all regular partners by both male and female respondents. More importantly, 62 percent of male and female respondents reported unprotected sex with regular partners of HIV-negative or unknown HIV status.

Condom use in sexual intercourse during menstrual periods, oral and anal sex was low.

Although a small proportion of participants reported sex during menstrual periods, oral and anal sex, the majority of these respondents did not use condoms or used condoms inconsistently.

Perceived internalized stigma was frequently reported and influenced unprotected sex.

Eighty-four percent of respondents reported moderate to high levels of internalized stigma; there was no significant difference between male and female respondents. Respondents with minimal/low level of internalized stigma reported consistent condom use more often than those with moderate and high levels of stigma (73 percent vs. 45percent vs. 35 percent respectively; $p < 0.001$)

High levels of unmet need for family planning were observed.

Fifty-eight percent of respondents not wanting children were not currently using any family planning methods.

Exposure to prevention messages

Exposure to information on HIV was widespread; nearly 95 percent of study participants had heard or seen some information (68 percent of them within the past 6 months) and most respondents found the information useful. However, the messages were unfocused and varied. Participants expressed a preference for written materials and brochures; only about a third had received any printed materials in the past. Mass media campaigns were particularly successful in reaching participants. Participants cited HIV-positive peers as a source of information infrequently, highlighting the role of stigma and lack of disclosure in the community and among friends that may limit peer network size. Participants expressed a large unmet need for information and Information education and communication (IEC) materials.

Recommendations

- HIV prevention programs need to widen their focus to include prevention interventions targeting healthy positives in the community. It is possible that newly diagnosed clients may not be receptive to prevention related information provided at the time of HIV testing and diagnosis, making it important to design ongoing support for this population with IEC interventions and condoms.

- Programs need to facilitate disclosure of HIV status to regular partners and emphasize the importance of getting partners tested for HIV. Condom use should be emphasized with all partners irrespective of their HIV status and type; a specific mention of regular partners is necessary. Prevention counseling should also include information on the need for protected sex during menstrual periods, sexually transmitted infection (STI) episodes, anal sex, oral sex, etc.

- Integrated HIV prevention and family planning services are needed to address the unmet need for family planning services.

- Prevention programs must address internalized stigma related to being HIV-positive as it is correlated with low condom use. Programs should promote living positively and having healthy relationships in the context of being HIV-positive.

- Mass media programs offer an acceptable route of disseminating prevention information and can be accessed widely without stigma or confidentiality concerns. HIV prevention programs should develop and widen access to culturally appropriate IEC brochures in Kiswahili with pictorial materials for illiterate clients. One-to-one counseling to address queries and offer tailored information is also recommended.

Introduction and Background

There have been promising developments in recent years in global efforts to address the AIDS epidemic, including increased access to effective treatment and prevention programs. In spite of these efforts the number of people living with HIV continues to grow. UNAIDS estimates 2.5 million new HIV infections occurred globally in 2007, two-thirds of them in sub-Saharan Africa (UNAIDS 2008).

With universal access to antiretroviral therapy (ART), more people living with HIV (PLHIV) are receiving antiretroviral medications in developing countries (UNAIDS 2008). ART is associated with a dramatic decline in morbidity and mortality from HIV disease, with improved well-being, including sexual health and function (Crum et al. 2006). There has been growing concern that beneficial treatment advances may have inadvertent effects on sexual behavior. Since ART became more widely available, studies with men who have sex with men in high income countries documented an increase in unprotected sex and incidence of sexual transmitted infections (STIs) including HIV (Stolte et al. 2001, Chen et al. 2002) that is possibly associated with "HIV treatment optimism," an erroneous belief that ART mitigates the risk of transmission and consequences of HIV infection. An increased risk of acquiring STIs has also been documented among heterosexual HIV-infected individuals receiving ART (Scheer et al. 2001). Although many PLHIV eliminate or reduce behaviors that may expose others to HIV, a considerable percentage do not consistently practice safer sex. Crepaz and Marks (2002) suggest that between 10 and 60 percent of HIV sero-positive individuals, depending on the specific sex act, continue to engage in unprotected sexual behaviors that place others at risk for infection and place themselves at risk for contracting STIs, including other strains of HIV.

While PLHIV receiving ART are in regular contact with health providers and thereby regularly exposed to prevention messages, PLHIV who do not receive ART either because they are ineligible to start ART (due to high CD4 counts) or lack access to treatment services (due to lack of awareness, stigma, or non-availability of ART) have limited or no contact with health providers and prevention and care services.

This study was undertaken to better understand the exposure of HIV-positive persons in the community not accessing ART to prevention messages and their sexual behaviors in Mombasa, Kenya.

Methods

Research Objectives

Researchers from Population Council and the International Centre for Reproductive Health (ICRH) undertook an exploratory study among PLHIV who were not on ART in Mombasa. The specific research objectives were to:

- Explore strategies to reach HIV-positive persons not on ART in the community;
- Understand healthy positives' exposure to prevention messages;
- Assess the level of knowledge and awareness of: HIV infection, routes of transmission, prevention strategies, and the availability of treatment; and
- Examine the sexual behaviors of PLHIV in the community who are not accessing ART.

Study Design

A cross-sectional study design was used. HIV-positive persons not receiving ART were interviewed using a structured questionnaire. Interviews were conducted in Swahili and English, as per patient preference. Each participant received 200 Kenya Shilling (Ksh) (approximately 3 USD) as compensation for their time. Community health workers (CHWs) and peer educators received 100 Ksh (approximately 1.5 USD) per participant recruited. Trained research interviewers conducted the interviews using hand held computers (Dell Axim X51). Interviews were conducted between May to August 2007.

Ethical approval was obtained from the ethical review board of the Population Council and Kenyatta National Hospital Ethics committee. Written informed consent was obtained from all study participants.

Study Population and Recruitment

Study participants were HIV-positive persons who lived in Mombasa district, were 18 years or older, and were not receiving ART. Participants were recruited using a modified snowball sampling in two ways: by CHWs directly from the community or by HIV-positive peers from post-test clubs (PTC). PTCs are centers run by HIV-positive individuals where newly diagnosed PLHIV are referred for support and counseling services. A total of 16 CHWs were selected: four CHWs from each of Mombasa's four divisions: Likoni, Changamwe, Kisauni and Island. Each CHW was asked to refer 20 ART-naïve PLHIV from the community for interview. Similarly 5 peers were selected from 8 PTCs across Mombasa, and each peer referred 12 ART naïve PLHIV to the study. Both CHWs and peers were given strict guidelines for recruiting participants with particular emphasis on maintaining confidentiality. The peer recruiters did not form a part of the study sample and were not included in the analysis.

Definitions

For the purpose of the study regular partners were defined as spouses or long-term live-in sexual partners. Casual partners were defined as persons the respondent had sex with once or rarely, and sex worker partners were defined as persons the respondent had paid with money or gifts in exchange for sex.

Unprotected sex was defined in two ways: inconsistent condom-use with the partner in question over the past six months and unprotected sex at last sex. Sexually transmitted infection was defined as an episode of genital (penile/vaginal) discharge or genital ulcer in the last six months.

Study Limitations

Reaching HIV-positive individuals in the community who are not accessing care or treatment services is challenging. This study used a modified snowball sampling to reach the population of interest through CHWs and HIV-positive peer educators. It is likely that peer recruiters recruited people like themselves, making this a convenience sample and introducing bias. However, by including a wide variety of peer recruiters we felt the effect of the bias would be reduced. Although convenience samples cannot be used to generalize to larger populations, the study provides important insights into sexual risk behavior among HIV-infected populations and their exposure to prevention messages.

The cross-sectional study design has its limitations as causal relationships or change over time cannot be established.

Data collected is based on self-report which may be subject to under-reporting of risk behaviors. In this study, a fair proportion of participants reported multiple partners or unprotected sex. It is important to consider that risk behaviors could actually be in excess of what is reported which in itself is important information for prevention programs.

Results

Sociodemographic Characteristics

A total of 698 PLHIV were interviewed (Table 1). The mean age of participants was 34 years (SD 8.03, range 18–60 years). Three-fourths of the respondents were females. Almost two-thirds had a primary education, a fourth were unemployed, and nearly half were divorced, separated, or widowed.

Table 1 Sociodemographic characteristics of study participants

Variable	Total (n = 698)	Males (n = 164)	Females (n = 534)
Age: median (IQR)[a]	33.5 (28,39)	34.5 (29,42)	33 (28,38)
Highest education level: % (n)			
No education	7 (51)	4 (6)	8 (45)
Primary	59 (413)	55 (90)	61 (323)
Secondary	31 (217)	38 (63)	29 (154)
University	2 (17)	3 (5)	2 (12)
Marital status: % (n)			
Married or cohabiting	34 (240)	41 (67)	32 (173)
Never married	21 (147)	33 (54)	17 (93)
Divorced, separated, or widowed	45 (311)	26 (43)	50 (268)
Employment status: % (n)			
Employed	241 (168)	83 (136)	74 (394)
Unemployed	76 (530)	17 (28)	26 (140)
Type of HIV testing facility used: % (n)			
Government health facility	81 (563)	77 (127)	82 (436)
Private medical centre	15 (107)	12 (20)	16 (87)
Other	4 (28)	10 (17)	2 (11)
Time since diagnosis: % (n)[b]			
0–12 months	43 (301)	50 (82)	41 (219)
12–24 months	20 (136)	23 (37)	19 (99)
24+ months	33 (233)	23 (38)	37 (195)
Received previous ART treatment: % (n)[c]			
Yes	1 (6)	0 (0)	1 (6)
No	99 (690)	99 (163)	99 (527)
Do not know	0 (2)	1 (1)	0 (1)
Attends HIV clinic: % (n)[d]			
Yes	23 (163)	17 (27)	26 (136)
No	77 (535)	84 (137)	75 (398)

[a] IQR, interquartile range; ART, antiretroviral therapy
[b] n = 671; 28 respondents did not know their time since diagnosis.
[c] 6 clients had previously tried ART, currently not receiving ART
[d] attend HIV clinic for follow-up of CD4 cell counts

The majority of study participants had been tested at public sector voluntary testing and counseling (VCT) centers and less than a quarter were currently attending HIV clinics for CD4 cell count tests every six months. Only six respondents reported ever taking ART, all of them were female. Forty-three percent of study participants had been diagnosed HIV-positive within the past year, and a third had been diagnosed two or more years earlier.

Strategies to Recruit Participants

Researchers used two different approaches to recruit participants into the study. The first involved CHWs who routinely provide home-based care and other support services for HIV-positive persons in their community. CHWs were asked to recruit PLHIV, who were not receiving ART, from their communities in specific geographic areas of Mombasa. Four CHWs were selected from each of Mombasa's four districts: Changamwe, Kisauni, Likoni, and Island, and each CHW was asked to recruit 20 people. The second approach involved HIV-positive peers who worked in PTCs, set up by positive networks to provide counseling and social support for HIV-positive persons referred from VCT centers, HIV clinics, and hospitals. Anecdotal information suggests that PTCs have a high turnover as HIV-positive people access services for some time and then move on with their lives. Five peer educators from each of the eight PTCs across Mombasa were asked to recruit 12 PLHIV each.

A total of 698 PLHIV (345 by CHWs and 342 by peers) were recruited into the study over three months from May to August 2007. For 11 participants, data about the referral source was lost while transferring data from hand held computers to the main computer. CHWs were able to recruit more than the 320 participants assigned to them and each CHW recruited on an average 21.5 persons (107 percent). Although each peer was asked to recruit 12 participants, as a group they were unable to meet their target of 480 persons. On average, each peer was able to recruit only 8.5 HIV-positive persons (71 percent), suggesting that PLHIV may have small networks, possibly due to non-disclosure of their HIV status to many people due to fear of stigma and discrimination.

There were no significant differences in the sociodemographic profile of participants recruited by peers or CHWs with regard to age, education, sex, or employment (Table 2). CHWs were more likely to recruit married participants and less likely to recruit divorced or widowed participants compared to peers ($p = 0.039$). Most participants in both groups had been tested at public sector VCT facilities. Almost a fourth of participants in both groups were accessing HIV clinic services but not receiving ART, except for six participants recruited by CHWs.

Table 2 Sociodemographic characteristics of study participants by source of recruitment

	PLHIV recruited by peers (n = 342) %	PLHIV recruited by CHWs (n = 345) %
Sex		
Male	27	20
Female	73	80
Education		
No education	9	6
Primary	60	58
Secondary	30	33
University	2	4
Marital status*		
Married	24	33
Cohabiting	7	5
Single	20	22
Divorced/separated	23	18
Widowed	26	22
Unemployed	24	24
HIV test done at		
Government H facility	80	81
Private H facility	17	15
Others (NGOs)	4#	5
Currently attending HIV clinic	23	24
First visit to HIV clinic[a]		
Less than 1 year back	54	64
In the past 1–3 years	36	22
More than 3 years back	10	14
Ever taken ART	0	2

Note: 11 participants with missing information on source of recruitment are excluded
* $p < 0.05$
[a] Of those who attend HIV clinic

Knowledge about HIV Infection and ART

Persons undergoing HIV testing at voluntary testing centers are routinely provided pre- and post-test counseling which includes information on HIV prevention and availability of treatment. Researchers explored participants' knowledge about HIV infection, transmission routes, and the availability of ART.

As Table 3 illustrates, a sizeable proportion of participants were ill-informed about HIV: 15 percent reported that a cure for AIDS was available while 11 percent did not know whether a cure was available or not. Similarly, 17 percent believed HIV could be transmitted through insect bites while nine percent believed it could be transmitted through shared utensils.

Several gaps in information were observed with regard to prevention of mother-to-child transmission (PMTCT): nearly a third (32 percent) believed HIV could not be transmitted from a mother to her unborn

child during pregnancy, and more than a quarter (27 percent) was unaware about being able to prevent MTCT by using antiretroviral (ARV) medications.

Participants were asked about the ways in which a person could avoid contracting HIV. Multiple responses were permitted. The most frequently cited ways were using condoms correctly and consistently (84 percent), abstinence (50 percent), being faithful (30 percent), avoiding sharing of razors/blades (28 percent), limiting the number of partners (17 percent) and avoiding unnecessary injections (15 percent). Other ways such as avoiding blood transfusions (9 percent), not having sex with injecting drug users (4 percent) or with prostitutes (4 percent), and avoiding kissing (2 percent) were cited less frequently.

The vast majority of participants (95 percent) had heard of ART and knew about the availability in their community (Table 3). Public health facilities were the most frequently cited source of ART (83 percent). More than a quarter (29 percent) of the respondents also mentioned private clinics as a source of ART. It is possible that a small number of PLHIV may have used the private health sector for health care in the past. More than a tenth (15 percent) of the study participants was unaware about where they could access ART services.

Participants were asked about the eligibility criteria for initiating ART among HIV infected persons. Multiple responses were permitted. Nearly three-fourths (73 percent) were of the view that anyone with HIV was immediately eligible to initiate ART. Over a fourth (29 percent) of the participants correctly reported immunosuppression (CD4 cell counts less than 250 cells/mm^3) as the criterion for starting treatment, and 8 percent thought that all persons experiencing opportunistic infections were eligible to initiate ART. About 5 percent were completely uninformed of ART.

Table 3 Knowledge of HIV transmission and awareness about ART

	Yes %	No %	Don't know %
Knowledge of HIV transmission			
Do you think there is a cure for AIDS?	15	73	11
Can people get HIV from mosquito/insect bites?	17	73	10
Can people get HIV from sharing utensils?	9	85	7
Can HIV be transmitted from a mother to her child?	92	4	5
During pregnancy	59	33	9
During delivery	85	7	8
During breastfeeding	92	3	5
Can a mother reduce the risk of MTCT with medications?	61	12	27
Can a HIV-positive person be re-infected with a different strain of HIV virus?	69	13	19
Can a person do something to avoid contracting HIV?	97	1	2
Awareness about ART			
Is treatment available in your neighborhood?	38	52	11
Have you ever heard of ART?	95	4	1

Perceptions and Attitudes Related to HIV Infection and Condom Use

Study participants were asked to express their views on HIV infection and condom use through agreement or disagreement with statements related to HIV infection and condom use. Treatment optimism and perceptions related to pleasure and the effectiveness of condoms have been shown to influence condom use and sexual risk behaviors (Van de Ven et al. 2000). A sizeable proportion of participants in this study, up to a fifth, were unable to provide clear views on some of the statements and chose to respond as "don't know." Participants were almost equally divided with regard to perceptions related to pleasure and romance associated with using condoms and a large proportion expressed negative attitudes (items 2 and 3 in Table 4) and condom use fatigue (item 1 in Table 4).

On items related to the effectiveness of condoms in preventing transmission or condom use for dual protection, participants were mostly in agreement that condoms can prevent transmission of STIs and HIV (71 percent). At the same time, however, over a fourth of respondents did not believe condoms were effective in preventing transmission (27 percent). The majority of participants agreed that condom use should not be limited to family planning (88 percent).

Participants were less clear about the lowered risk of HIV transmission while on ART (and the resultant reduction in viral loads). Despite this, about two-thirds of the participants agreed that treatment with ARVs did not remove the need for using condoms.

Table 4 Attitudes related to HIV infection and condom use (N = 698)

	Agree (%)	Disagree (%)	Don't know (%)
1. I am tired of always having to make sure that I use a condom every time I have sex	40	48	12
2. Using a condom takes away the romance from sex	49	41	10
3. Using a condom reduces physical sexual pleasure	58	32	10
4. Condoms should only be used for preventing pregnancy	10	88	2
5. If a cure were discovered I would stop using condoms	47	47	5
6. Condoms are not as effective in preventing one from getting HIV or STDs	27	71	2
7. Treatment with ARVs can reduce the risk of HIV transmission	44	40	16
8. Treatment with ARVs medications makes using condoms less important	20	63	17

Sexual Behavior

Sexual activity

Respondents were considered to be currently sexually active if they reported having had sex with a male or female partner within the 6 months preceding the survey. Of the 698 persons surveyed, over half (91/164) of the male respondents and close to two-thirds (322/534) of the female respondents were

currently sexually active. The median age at first sex was 17 years (IQR 15, 19); this number was similar for male and female respondents.

Sexual partners

Study participants were asked about the total number of sexual partners they had had in their lifetime. Male respondents reported nearly four times the median number of sexual partners than female respondents (15 vs. 4; $p < 0.001$) (Table 5). However, when looking at lifetime number of sexual partners by gender of the partner, male respondents reported a median number of opposite-sex partners that was 2.5 times higher than the median number of opposite-sex partners for female respondents (10 vs. 4; $p < 0.001$).

A small number of male (n = 18) and female (n = 16) respondents reported same sex partners in their lifetime. For the male respondents, the mean number of male partners was nearly 7 (mean: 6.9; SD 43), suggesting that the men who do engage in same sex intercourse usually have many partners over their lifetime. Among females the average number of same sex partners was low (mean: 0.2; SD 2.4). [1]

Sexually active respondents (n = 413) were asked to report the number of sexual partners they had had sex with in the last six months. Female respondents were significantly more likely to report current monogamous sexual relationships in the past 6 months compared to male respondents (81 percent vs. 54 percent; $p < 0.001$). However, among respondents who reported multiple partners in the past six months, female respondents were more likely to report a significantly higher number of sexual partners than men (5 vs. 4; $p < 0.001$).

Distribution of partner type

Of the 413 sexually active respondents, 410 went on to answer further questions regarding up to 6 of their sexual partners in the past 6 months. These partners were reported by sex as either male or female, and by partner type as a regular partner, casual partner, or sex worker. The key findings are as follows:

Partner sex
The majority of respondents reported sexual partners of the opposite sex (males: 84 percent; females: 99 percent; Table 5). A significantly higher percentage of male respondents reported same-sex partners compared to female respondents (12.2 percent vs. 0.3 percent; $p < 0.001$; Table 5). Mixed partners (both male and female) were also reported by a small number of sexually active study participants (male: 3.3 percent vs. female: 0.9 percent). Four female respondents reported same sex partners.

Partner type
The majority of respondents (76 percent; 313/410) reported sex with regular partners. Female respondents were more likely to report sex with regular partners compared to male respondents (80 percent vs. 62 percent; $p < 0.001$). Less than a tenth of the participants (9 percent; 35/410) reported sex with casual partners and a relatively small proportion reported sex with sex workers (3 percent; 13/410). Male

[1]All calculations were taken from the responses of the study participants after excluding missing data and any outlier responses of over 500 partners (n = 671).

respondents were more likely to report sex with casual partners (11 percent vs. 8 percent) and sex workers (7 percent vs. 2 percent) than female respondents ($p < 0.001$; Table 5). Interestingly, more than a tenth (49/410) of the sexually active participants reported mixed partners in the past six months. Significantly more male respondents reported sexual partners from more than one partner type than female respondents (20 percent vs. 10 percent; $p < 0.001$).

Table 5 Sexual behavior

	Male	Female
All participants (n = 698)	**(n = 164)**	**(n = 534)**
Life time total partners (median, IQR)[a]	15 (7,27)	4 (3,8)
Life time male partners (median, IQR)[a]	0	4 (3,8)
Life time female partners (median, IQR)[a]	10 (5, 20)	0
Sexually active participants in the last six months (n = 413)	**Male 56% (n = 91)**	**Female 60% (n = 322)**
Number of partners		
One partner in past 6 months (%)	54 (49/90)	81 (259/320)
Two or more partners in last 6 months (%)	46 (41/90)	19 (61/320)
Mean number of partners in last 6 months if > 1 (mean, SD)	4 (4.4)	5 (6.3)
Partner by sex (%) (n = 410)		
Male	12 (11/90)	99 (257/320)
Female	84 (76/90)	0 (1/320)
Both male and female	3 (3/90)	1 (3/320)
Partner by type of partner (%) (n = 410)		
Regular partners	63 (56/90)	80 (257/320)
Casual partners	11 (10/90)	8 (25/320)
Sex worker partners	7 (6/90)	2 (7/90)
Mixed partners	20 (18/90)	10 (31/320)

[a]Excludes outlier responses of more than 500 partners.

Partner level analysis: Description of sexual partners

Study participants were asked questions about their most recent sexual partners over the past six months, up to a maximum of six partners. A total of 616 sexual partners (male partners: 481; female partners: 135) were described by 410 sexually active over the reference period. Sexually active male respondents (n = 90) reported 179 sexual partners (male: 48; female: 131) and female respondents (n = 320) reported 437 sexual partners (male: 433; female: 4) in the past 6 months.

Among male respondents, the majority (73 percent) of sexual partners was female, and over a fourth (27 percent) of the sexual partners were same sex partners. Among female respondents nearly all sexual partners were of the opposite sex (Table 6).

There were significant differences in the type of sexual partners reported by male and female respondents. Sex partners of female respondents were more likely to be regular partners compared to sex partners of male respondents (72 percent vs. 51 percent; $p < 0.001$). Sex partners of male respondents were more likely to be casual partners (23 percent vs. 20 percent) and sex workers (26 percent vs. 8 percent; Table

6). Anecdotal information about women in Mombasa hiring male sex workers had been available for some time but was not substantiated with evidence prior to this study.

Table 6 Description of sex partners of respondents who had sex in the last 6 months (n = 616)

	Sex partners of male respondents (n = 179)	Sex partners of female respondents (n = 437)
Partner gender % (n)		
Male	27 (48)	100 (433)
Female	73 (131)	1 (4)
Partner type % (n)*		
Regular	51 (91)	72 (315)
Casual	23 (42)	20 (86)
Sex worker	26 (46)	8 (36)
Respondent's HIV status disclosed % (n)**	30 (54)	40 (174)
Partner's HIV status % (n)		
Positive	17 (31)	14 (63)
Negative	10 (17)	11 (46)
Unknown	73 (131)	75 (328)

Note: 410/413 sexually active participants responded to partner questions.
*p < 0.001; **p < 0.05

Although about a third of male and female respondents had disclosed their HIV-positive status to their sexual partners, there were significant differences in disclosure rates between the partnerships of male respondents and female respondents. In approximately 40 percent of partnerships involving female respondents, the respondent had disclosed her HIV status to her partner, while in only 30 percent of partnerships involving male respondents was his HIV status disclosed to his partner ($p = 0.02$). The HIV status of about three-fourths of the sexual partners was unknown by the respondents and about a tenth were HIV-negative**;** there were no significant differences between male and female respondents with regard to partner's HIV-status (Table 6).

Prevalence of unprotected sex

Safe-sex practices were assessed in two ways: consistent condom use over the last six months and condom use at last sex (most recent sexual act) with each of the sexual partners described (partner level analysis).

Unprotected sex or inconsistent condom use in the last six months was reported in nearly half of the sexual relationships (293/616). Unprotected sex was more common in relationships among female respondents than among male respondents (55 percent vs. 44 percent; $p = 0.01$; see Table 7). In the relationships of male respondents, inconsistent condom use was more common with female partners than with male (same sex) partners (52 percent vs. 23 percent; $p = 0.001$; Table 7). In relationships of female respondents, over one-half reported inconsistent condom use with their male partners (56 percent).

In partnerships of both male and female respondents, inconsistent condom use was more common with regular partners than with casual or sex worker partners ($p < 0.001$) (Table 7. Unprotected sex was reported with three-fifths of all regular partners by both male (59 percent) and female respondents (62 percent). More importantly, in about half of all partnerships, unprotected sex occurred with HIV-negative or unknown status partners; this is despite the fact that reported concern about transmission of HIV infection was considerably high. In partnerships with regular partners who were HIV-negative or of unknown HIV status, approximately two-thirds (in relationships reported by both male and female respondents) reported unprotected sex. This means that more than half of the regular partners who were at risk of contracting HIV infection had sexual contact with HIV-positive persons without condoms being used consistently over a period of 6 months, putting these regular partners at high risk of HIV infection.

Table 7 Unprotected sex over the past 6 months and at last sex reported on partner level analysis (n = 616 sexual partners)

	Male respondents (n = 179 partners)	Female respondents (n = 437 partners)
Unprotected sex (inconsistent condom use) over past 6 months		
All partners	44 (79/179)	55 (214/437)
Partner gender		
Male	23 (11/48)**	56 (241/433)*#
Female	52 (68/131)#	0 (0/4)#
Partner type		
Regular	59 (54/91)***	62 (194/315)***
Casual	26 (11/42)	38 (33/86)
Sex worker	30 (14/46)	39 (14/36)
Partner status		
HIV-positive	45 (14/31)	62 (39/63)
HIV-negative/Unknown	44 (65/148)#	54 (202/374)#
Unprotected sex at last sex		
All partners	40 (72/179)	47 (203/437)
Partner gender		
Male	21 (10/48)**	47 (203/433)
Female	47 (62/131)#	0 (0/4)#
Partner type		
Regular	53 (48/91)**	51 (159/315)*
Casual	26 (11/42)	37 (32/86)
Sex worker	28 (13/46)#	33 (12/36)#
Partner status		
HIV-positive	39 (12/31)	38 (24/63)
HIV-negative/Unknown	41 (60/148)#	48 (179/374)#
Transmission concerns		
HIV negative partner	100 (17/17)***	94 (43/46)***
Unknown status partner	70 (91/131)	62 (204/328)
Overall	70 (126/179)	61 (268/437)

*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$; #Fishers exact test
All tests conducted for differences within variables (male respondents and female respondents separately).

We also conducted bivariate analyses with unprotected sex at last sex, and results were consistent with unprotected sex over the past six months but among a marginally smaller proportion of relationships (Table 7). There were no significant differences between male and female respondents with regard to reporting unprotected sex at last sex (40 percent vs. 47 percent; $p = 0.16$). Both male and female respondents were more likely to report unprotected sex at last sex with regular partners compared to casual or sex worker partners. Male respondents reported a higher proportion of unprotected sexual acts with female partners as compared to male partners (47 percent vs. 21 percent; $p = 0.001$).

Condom use in oral and anal sex

Consistent condom use includes the use of condoms in all sex acts. Study participants (n = 698) were asked about condom use during oral and anal sex acts and sex during menstrual periods. The majority of the participants (71 percent) reported no sexual intercourse during menstrual periods. Of those who did have sex during menstrual periods (n = 197), 63 percent never used condoms, 18 percent reported always using condoms, and the remaining (18 percent) sometimes used condoms. Of the 18 percent of respondents who practiced anal sex, 73 percent never used condoms, 14 percent sometimes used them, and only 13 percent reported using them each time. Similarly, of the 26 percent who reported practicing oral sex (n = 183), only 10 percent reported using condoms each time.

Sexually transmitted infections

STIs are often used as surrogate markers for unprotected sex in research. Study participants were asked if they had ever had a STI by using local names and symptoms of known infections such as syphilis, gonorrhea (discharge and dysuria), herpes (ulcers), and genital warts.

Over a third of the study participants (44 percent) reported ever having experienced a STI. Males were significantly more likely to report ever having a STI compared to female respondents (56 percent vs. 41 percent; OR: 1.82; 95 percent CI: 1.27–2.61; $p < 0.001$). Almost all respondents who reported ever having a STI also reported seeking treatment for it (94 percent); males were more likely to seek treatment than females (100 percent vs. 92 percent; $p = 0.005$). Of those who ever reported STI, 51 percent of respondents reported having an STI in the past 6 months.

Of those who reported having a STI in the last 6 months, 47 percent of the respondents informed their regular partners about the infection. About one-half (46 percent) of the respondents reported that their partners sought testing and treatment for the infection. Respondents who reported a STI were also asked whether they informed other sexual partners about their STI. Of those who had another sexual partner (n = 93) only 14 percent informed their other partners.

About two-thirds (66 percent) of the respondents reporting STIs in the last 6 months indicated that they took precautions to avoid infecting their sexual partners (multiple responses were allowed). The majority reported they stopped having sex for a while (53 percent) or took curative treatment (68 percent). Others reported using condoms (20 percent), taking prophylactic treatment (6 percent), using herbs (1 percent) and separating from their partner (1 percent).

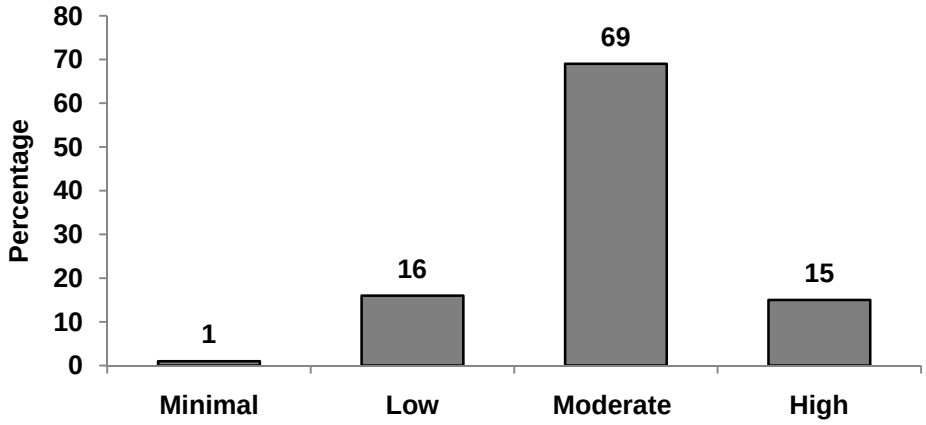
Perceived Internalized Stigma

Stigma was assessed using an adapted Berger's Stigma Scale (Berger, Ferrans, and Lashley 2001). The adapted 16-item scale (Cronbach's alpha of adapted scale: 0.81) was derived from the 40-item scale Berger's Stigma Scale (Cronbach's alpha: 0.96) and was field tested before use. The scale covered three domains: disclosure concerns (6 items), negative self-image (5 items), and concerns with public attitudes (5 items). Patients responded on a four-item Likert scale ranging from '*strongly agree'* to '*strongly disagree'*. Total scores (possible range 16–64) were categorized as minimal or low stigma (16–40), moderate stigma (41–52), or high stigma (53–64).

The vast majority of study participants reported moderate to high levels of internalized stigma: two-thirds (69 percent) reported moderate levels, and a further 15 percent reported high levels of internalized stigma (see Figure 1). Only three participants reported minimal stigma levels.

Respondents with minimal/low levels of internalized stigma reported consistent condom use more often than those with moderate and high levels of stigma (73 percent vs. 45 percent vs. 35 percent respectively; $p < 0.001$). There was no association between stigma and disclosure to sexual partners.

Figure 1 Perceived internalized stigma levels among study participants



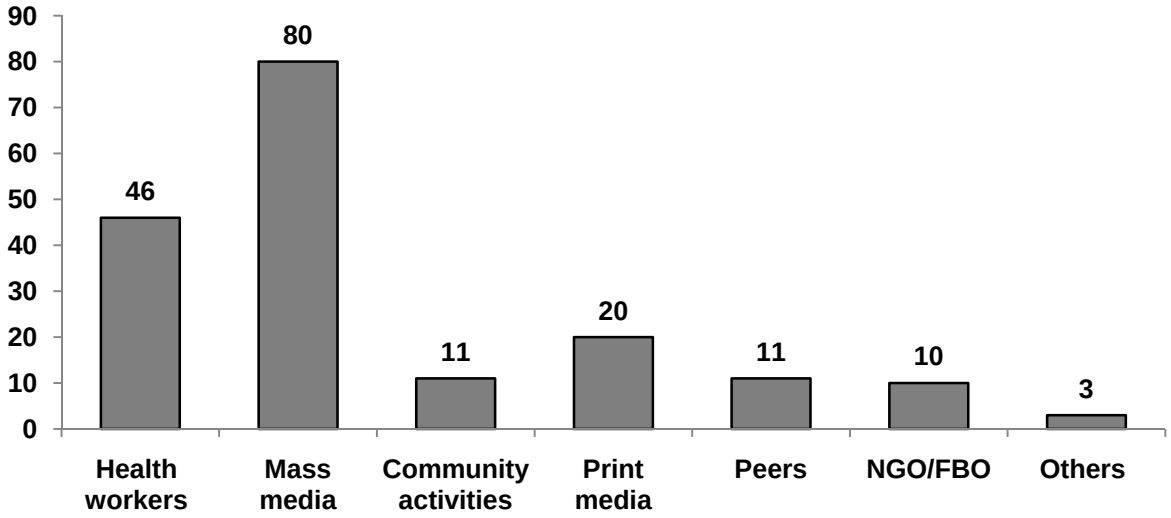
Exposure to Prevention Messages

In order to assess the exposure of HIV-positive persons in the community to prevention and care messages, study participants were asked about key prevention messages that they had seen or heard over the past year.

The vast majority of respondents (94 percent) reported that they had seen or heard messages about HIV prevention (specifically with regard to protecting their sex partners): 69 percent within the past month, 16 percent between 1–6 months earlier, 8 percent more than six months earlier, and one percent could not recall when. The sources of these messages were mostly mass media such as television and radio (80

percent), health workers at health facilities (46 percent), and print media including brochures and magazines (Figure 2). Peers and friends were cited by only a tenth of the respondents.

Figure 2 Distribution of source of prevention messages



Multiple responses permitted

An analysis of the messages received by participants on protecting a sexual partner revealed that a variety of messages are disseminated in the field. Multiple responses were allowed and participants also provided open ended responses. The most common messages the 698 participants in the study reported receiving include: use condoms (65 percent), be faithful and have one partner (40 percent), abstain from sex (23 percent), and reduce the number of partners (18 percent). Relatively few participants reported being told of condom use with all partners (19 percent), testing partners and knowing one's status (6 percent), transmission through blood and sharing of instruments (4 percent), and partner communication and disclosure of own HIV status (1 percent). Fewer than 5 participants reported receiving information on re-infection with new strains (n = 4), risk of transmission through kissing (n = 2), risk of transmission through use of sexual objects such as dildos (n = 1), and non-sexual ways of protection such as thigh sex (n = 1).

The majority of the respondents found the messages they received useful (92 percent) while another 6 percent found it only somewhat useful. Only 37 percent of the participants reported having received any printed materials to read or take home.

Ninety-seven percent of respondents expressed a need for more information on HIV prevention and ways to protect their sexual partners. Eighty-seven percent expressed a need for more information on STI prevention, and 85 percent expressed a need for information on PMTCT.

Participants were asked about their preferred way to receive information on HIV infection and prevention of its transmission to partners. Multiple responses were allowed. The majority of participants preferred to

receive information through brochures with printed materials (77 percent), radio messages (75 percent), video/television (63 percent), and folk-media (60 percent). Only half expressed a desire for condom use demonstrations (51 percent). Other commonly cited ways to receive information included: one-on-one counseling (6 percent) and workshops/meetings (7 percent). Less than one percent mentioned bill boards and posters, and religious leaders. Participants were also asked about the preferred language for IEC materials. Over half expressed a preference for materials to be provided in Kiswahili (51 percent) while over a quarter were comfortable with reading materials in either English or Kiswahili (25 percent). Over a tenth (12 percent) of the participants was illiterate and could not read, and only 10 percent expressed a preference for materials in English only.

When asked specifically about their preference for various categories of providers to provide information, 85 percent expressed a preference for health providers such as doctors, nurses etc; 76 percent mentioned community health workers; 72 percent mentioned HIV-positive peers; and about half mentioned community based organizations and faith based organizations. Less than 3 percent mentioned workplace interventions, schools education programs, etc. Multiple responses were allowed and participants provided open ended responses.

About two-thirds of the participants expressed the view that prevention information should be provided during HIV clinic visits (69 percent) and a similar proportion (67 percent) said that prevention information should be provided routinely in the community.

Family Planning and Dual Protection

HIV prevention and family planning are interlinked as they both relate to reproductive health, unprotected sex, and condom use. Participants were asked about their fertility choices. Eighty-two percent of respondents reported that they already had biological children from past or current relationships.

Nearly a quarter of respondents reported that they planned to have children/more children (if they had children) and 75 percent (n = 522) reported that they did not want any more children. Only 33 percent of respondents (n = 228) were using family planning methods at the time of the study (Table 8). Interestingly, 55 percent (286/522) of those who reported not wanting any/more children were not using any family planning methods.

Among those using family planning methods the most commonly cited method in use was the male condom (52 percent) followed by injectable contraceptives (33 percent) (Table 8).

Table 8 Family planning methods currently being used by study participants

	Male respondents % (n = 51)	Female respondents % (n = 177)	Total % (n = 228)
Oral contraceptives	16	11	12
Intra-uterine device	2	2	2
Injectable contraceptives	22	36	33
Diaphragm/foam/jelly	0	0	0
Male condom	57	50	52
Female condom	0	1	0
Male sterilization	6	0	1
Female sterilization	0	8	6
Natural methods	8	3	4
Withdrawal method	2	1	1

Note: Multiple responses allowed

Among those using other family planning methods (n = 110), 46 percent (n = 51) reported using dual protection, that is they used condoms with another family planning method to prevent transmission of HIV infection. Of the remaining, 54 percent (32/59) were willing to consider dual protection in the future.

The vast majority (87percent, 143/164) of the male respondents were circumcised. About half (10/21) of those not circumcised were willing to consider circumcision in the future.

Conclusions and Recommendations

This study provides insight into the sexual risk behaviors of PLHIV in the community, who are not accessing care and treatment services and therefore remain elusive for targeted prevention programs. The study used two different approaches to reaching HIV-positive persons in the community. CHWs were more successful than HIV positive peer educators at recruiting PLHIV. This is likely because CHWs are better integrated and accepted in the community, and HIV-positive peers may not be well networked with other HIV positive persons, possibly due to the high levels of stigma associated with HIV. The HIV-positive network in Mombasa is still small and evolving.

Important gaps in knowledge and awareness about HIV infection and its transmission were identified: 17 percent of study participants believed HIV could be spread through insect bites, 32 percent believed HIV could not be transmitted from mother-to-child and 15 percent believed a cure was available. Lack of belief in condom effectiveness (27 percent), negative perceptions about condoms, and condom use fatigue were also evident. The majority of study participants had been tested at public sector VCT clinics where pre- and post-test counseling is routinely provided, raising concerns about the quality of counseling provided and the need for follow-up counseling sessions. Study participants also exhibited high levels of internalized stigma that may influence the way in which they access information on prevention and care and access treatment services.

The majority (59 percent) of study participants were sexually active at the time of the interview. This is similar to findings from the Council's previous work with PLHIV receiving ART in Mombasa (Sarna et al. 2008, Luchters et al. 2008). Sexual risk behaviors are prevalent in the population studied. Multiple partners were widely reported. Nearly half (46 percent) of male respondents and a fifth (19 percent) of female respondents reported multiple partners. Same sex behaviors were also reported by more than a tenth of the sexually active male respondents. This study also documents evidence about female respondents hiring services of male sex workers.

It is of concern that three-fourths of study participants, males and females, reported having partners of unknown HIV-status and that they disclosed their HIV-status to only about a third of sexual partners. Even more concerning is the fact that inconsistent condom use was reported in nearly half of the sexual partnerships (293/616), with nearly 60 percent of regular partners and more importantly with nearly 60 percent of HIV-negative/unknown status regular partners. Repeated unprotected sexual contacts with vulnerable partners, over a period of time, substantially raises the risk of HIV transmission. The study also documented unprotected sexual intercourse during menstrual periods and unprotected anal sex, albeit in a small proportion of respondents. STIs were reported by a sizeable number of participants. More importantly, less than half informed their regular partners and just about a tenth informed other sexual partners of their STI.

HIV prevention programs need to widen their focus to include prevention interventions targeting healthy positives in the community. It is possible newly diagnosed clients may not be receptive to prevention-related information provided at the time of HIV testing and diagnosis, making it important to design ongoing support with IEC interventions and condoms. Condom use should be emphasized with all partners irrespective of their HIV status with specific mention of regular partners. Prevention programs must also promote HIV testing of partners and facilitate disclosure to regular partners. Prevention counseling should also include information on the need for protected sex during menstrual periods, STI

episodes, anal sex, and oral sex. The study also identified important unmet need for family planning services that underscores the need to integrate HIV and FP services.

It is encouraging to note that exposure to information on HIV and AIDS is widespread: nearly 95 percent of study participants had heard or seen some information, and 68 percent of them within the past 6 months; and 92 percent participants reported finding the information useful. Participants expressed a preference for written materials and brochures; only about a third had received any printed materials in the past. Mass media campaigns were particularly successful. A large proportion expressed interest in receiving prevention messages from health care providers, community health workers, as well as other HIV positive peers. However, it is important to note that HIV-positive peers were not often cited as a source of HIV prevention information and hence may limit the potential of transmitting information through HIV positive peer networks. Participants expressed a large unmet need for information and IEC materials. HIV prevention programs need to develop and widen access to culturally appropriate IEC brochures in Kiswahili with pictorial materials for illiterate clients and use mass media programs that can be accessed widely without stigma or confidentiality concerns.

Council researchers are presently developing a positive prevention intervention study in Mombasa. The study will use a combination of culturally appropriate IEC materials and CHWs and peer educators to deliver the intervention in the community.

References

Berger, Barbara E., Carol E. Ferrans, and Felisssa R. Lashley. 2001. "Measuring stigma in people with HIV: Psychometric assessment of the HIV stigma scale," *Research in Nursing and Health* 24(6): 518–529.

Chen, Sanny Y. et al. 2002. "Continuing increases in sexual risk behaviour and sexually transmitted diseases among MSM," *American Journal of Public Health* 92(9): 1387–1388.

Crepaz, Nicole and Gary Marks. 2002. "Towards an understanding of sexual risk behaviour in people living with HIV: a review of social, psychological, and medical findings [editorial review]," *AIDS* 16(2): 135–149.

Crum, Nancy et al. 2006. "Comparisons of causes of death and mortality rates among HIV-infected persons: analysis of the pre-, early, and late HAART eras," *Journal of Acquired Immune Deficiciency Syndrome* 41(2): 194–200.

Luchters, Stanley et al. 2008. "Safer sexual behaviours after 12 months of antiretroviral treatment in Mombasa Kenya: a prospective cohort," *AIDS Patient Care and STDs* 22(7): 587–594.

Sarna, Avina et al. 2008. "Sexual risk behaviour and HAART: A comparative study of HIV infected persons on HAART and on preventive therapy in Kenya," *International Journal of STD & AIDS* 19(2): 85–89.

Scheer, Susan et al. 2001. "Effect of highly-active antiretroviral therapy on diagnoses of sexually transmitted diseases in people with AIDS," *Lancet* 357: 432–435.

Stolte, Ineke G. et al. 2001. "Increase in sexually transmitted infections among homosexual men in Amsterdam in relation to HAART," *Sexually Transmitted Infections* 77(3): 184–186.

UNAIDS. 2008. *Report on the Global AIDS Epidemic 2008.* Geneva: UNAIDS.

Van de Ven, Paul et al. 2000. "A scale of optimism-scepticism in the context of HIV treatments," *AIDS Care* 12(2): 171–176.

Horizons

Horizons was a global operations research program designed to:

- Identify and test potential strategies to improve HIV/AIDS prevention, care, and support programs and service delivery.
- Disseminate best practices and utilize findings with a view toward scaling up successful interventions.

Population Council

Horizons was implemented by the Population Council in collaboration with

- International Center for Research on Women (ICRW)
- International HIV/AIDS Alliance
- PATH
- Tulane University
- Family Health International (FHI)
- Johns Hopkins University

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