

# **Insights Into Potential Users and Messaging for HIV Oral Self-Test Kits in Kenya**

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## **About 3ie**

The International Initiative for Impact Evaluation (3ie) was set up in 2008 to meet growing demand for more and better evidence of what development interventions in low- and middle-income countries work and why. By funding rigorous impact evaluations and systematic reviews and by making evidence accessible and useful to policymakers and practitioners, 3ie is helping to improve the lives of people living in poverty.

## **About the HIV Self-Testing Thematic Window**

Thematic Window 2 on HIV self-testing in Kenya is structured under two phases—phase 1, which funded formative research and phase 2, which will be informed by results from the first phase and will fund pilot interventions and their impact evaluations. 3ie identified key questions related to HIV self-tests by reviewing relevant literature and by meeting with key stakeholders in Kenya. 3ie and Kenya's National AIDS and STI Control Programme selected six of these questions in a request for applications under phase 1. The call was open to organisations implementing HIV and AIDS programmes in Kenya.

## **About this report**

This report has been submitted in partial fulfilment of the requirements of a grant issued under the HIV Oral Self-Testing Thematic Window. 3ie is making this final report available to the public as it was received without any further changes. All content is the sole responsibility of the authors and does not represent the opinions of 3ie, its donors or its board of commissioners. Any errors and omissions are the sole responsibility of the authors. All affiliations of the authors listed in the title page are those that were in effect at the time the report was accepted. Any comments or queries should be directed to the corresponding author, Rhouné Ochako at rochako@pskenya.org.

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## TECHNICAL REPORT

### INSIGHTS INTO POTENTIAL USERS AND MESSAGING FOR HIV ORAL SELF-TEST KITS IN KENYA

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## ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Treatment
FGD	Focus Group Discussion
FSW	Female Sex Workers
HIV	Human Immunodeficiency Virus
HTC	HIV Testing and Counseling
IDI	In depth Interviews
REB	Research Ethics Board
KAIS	Kenya AIDS Indicator Survey
KDHS	Kenya Demographic Health Survey
KNASP	Kenya National HIV/AIDS Strategic Plan
KNBS	Kenya National Bureau of Statistics
MARPs	Most At Risk Populations
MSM	Men who have Sex with Men
NACC	National AIDS Control Council
NASCOP	National AIDS and STI Control Programme
NGO	Non-governmental Organization
PSI	Population Services International
STI	Sexually Transmitted Infection
UNAIDS	Joint United Nations Programme on HIV/AIDS

## EXECUTIVE SUMMARY

### BACKGROUND

HIV continues to be a public health concern in Kenya. As of 2007, the national HIV prevalence among adults aged 15-64 years was 7%, representing an estimated 1.4 million people living with HIV (Republic of Kenya 2009). According to the Kenya Demographic and Health Survey (KDHS), significant differences in HIV prevalence occur throughout the population and geographic locations. Women are at a greater risk (8.4%) than men (5.4%), and there is a greater than 15-fold variation in HIV prevalence among provinces, ranging from 1% in North Eastern province to 15.3% in Nyanza province (KNBS and ICF Macro 2010). Despite wider provision of HIV testing services, and a high level of knowledge about HIV testing (95% of adults and 88% of youth know where to get an HIV test) (KDHS 2008-9), only 72% of adult Kenyans report having ever tested for HIV and received their results (KAIS, 2012).

### STUDY RATIONALE

Oral HIV self-testing presents an opportunity to increase testing coverage by addressing barriers to HIV testing in VCT and facility based testing (i.e. limited access to VCT centers and hours of testing, HIV-related stigma and discrimination). The purpose of this study was to identify willingness to use oral self-test kits, and factors associated with the potential adoption and use of oral HIV self-testing kits to inform future HIV self-testing pilot programs. The objectives are to determine likely users of oral HIV self-test kits, incentives to use a self-test kit, and identify key messages and approaches that could increase demand for the kits. The evidence from this study will inform the design and implementation of oral HIV self-testing pilot projects throughout Kenya, national policy regarding the availability, cost/subsidies, and quality control and procurement.

### METHODOLOGY

This mixed-method study was conducted between November and December 2013 in two provinces/counties of Siaya (rural) and Mombasa (urban). The study population included 782 sexually active men and women aged 18 to 49 years from the general population (GP); 100 men who have sex with men (MSM), and 100 female sex workers (FSW).

### KEY FINDINGS

- Overall a high proportion of the study participants, both general and key populations, reported having ever tested for HIV (87% of general population, and over 90% among MSM and FSWs ever tested for HIV).
- Nearly all of respondents of the general population in both study locations, and among FSWs report a willingness to use the kit and test on their own. However, only 57% of MSM were willing to use the kit and test on their own. It should be noted that the sample of MSM is conveniently

recruited through drop-in-centers in only one urban city and therefore, interpretation and extrapolation of the data from MSM is limited.

- Likely users of self-test kits include those who have ever tested for HIV or tested for HIV within the past 12 months, and those who had abilities to handle or reveal an HIV test result.
- The main incentives for use reported by the three populations included: ease of use, confidentiality/privacy, and convenience.
- Respondents who chose the self-test because it is 'easy to use' were significantly more likely to be residents of Siaya, ever tested for HIV, and tested for HIV in the past 12 months. Privacy and confidentiality were the most important incentives for those who had higher education or urban residents.
- Willingness to pay (WTP) was almost universal among the general population and FSWs, but was much lower among MSM respondents. Past testing experience positively influenced willingness to pay for self-test kits.
- Respondents in the general population and MSM who would pay for the kit, reported a median maximum price of 100 KSH, as what they would be willing to pay for self-test kits. The amount was higher among FSWs who reported a median maximum price of 150 KSH.
- Approximately 70% of the general population reported preference for procuring a kit through government clinics, compared to 61% who preferred private clinics. FSWs reported a preference for private clinics or pharmacies (74%) versus public sector clinics (54%). MSM prefer both public and private sector equally as distribution outlets for self test kits (50% each). Approximately 20% of the general population and 15% of key populations preferred procuring a kit at a supermarket/shop.

## RECOMMENDATIONS

- 1) Self-testing should be introduced and carefully evaluated for the general and key populations in Kenya. The levels of interest and intention to use self-test kits are overwhelmingly high among the general populations and FSWs. The intention to use among MSM was lower, likely due to the convenient sampling of only "out" (more openly gay) MSM at drop-in-centers. Further study with probability sampling might be needed for this group.
- 2) Targeted communications should be part of the self-testing messaging, highlighting the importance of disclosure of HIV test result to sex partner or health care provider as well as maintaining safe sex practices.
- 3) Future HIV self-testing programs should address self-efficacy issues around HIV testing as it has significant impacts on intention to use oral self-test kits. Those who believed in their abilities to handle or reveal an HIV result are likely to use self-test kits. Support from spouse or partner is also important for intention to use the self-test kits. Among MSM, high risk sexual behavior was

associated with lower levels of intention to use. This indicates the need to increase perception of HIV risks within the HIV self-testing programs.

- 4) More efforts might be needed to reach those who have never been tested or those who tested less frequently because this group of participants indicated a lower level of intention in seeking an HIV test.

The three most frequent incentives for being interested in using self-test kits were: ease of use/can self-test, convenience (don't have to go to facility, save time), and privacy. Privacy was expressed highly as an incentive specifically among urban and high SES populations for self-test use. These incentives should be expressed in promotion messages around HIV self-testing.

- 6) Both the general population and key populations preferred HIV self-testing kits to be introduced through public and private health facilities equally. Health care providers and community health outreach workers were also regarded as preferred sources for promoting oral self-testing. This indicates the potential of self-test kit distribution using a community-based approach.
- 7) Both TV and radio demonstrated potential as messaging channels for raising awareness and creating demands for HIV oral self-testing. Kiswahili is the preferred language for radio advertisement. TV appears to be more effective than radio in helping viewers to recall the key messages.

## BACKGROUND AND SIGNIFICANCE

HIV continues to be a public health concern in Kenya. Out of an estimated 40 million people, the national HIV prevalence among adults aged 15-64 years was 7% as of 2007, representing an estimated 1.4 million people living with HIV (Ministry of Health of Republic of Kenya, 2009). Currently, an estimated 166,000 Kenyans become infected with HIV every year (Republic of Kenya 2009; KDHS 2008-9). Furthermore, according to the most recent KAIS findings (2012) and DHS survey (2009), significant differences in HIV prevalence occur throughout the country, gender, and ethnic groups (KNBS and ICF Macro 2010; National AIDS Control Council [NACC] 2009a). Women are at a greater risk of HIV infection (8.4%) than men (5.4%), and young women aged 15 –24 years are four times more likely to be infected (5.6%) than young men of the same age group (1.4%). The HIV infection in Kenya is driven by two types of epidemics: *generalized epidemic*—driven by couple discordance, multiple concurrent partners and low rates of male circumcision; and *concentrated epidemic*—concentrated among key populations such as sex workers, prisoners, truckers, men having sex with men, intravenous drug users and fishermen. In addition, there is significant variability of HIV prevalence throughout the country (KNBS and ICF Macro 2010; National AIDS Control Council [NACC] 2009a; Ministry of Health of Republic of Kenya 2009). There is a greater than 15-fold variation in HIV prevalence among provinces, ranging from 1% in North Eastern province to 15.3% in Nyanza province (KNBS and ICF Macro 2010).

In 2010 the Joint United Nations Programme on HIV/AIDS launched its guiding strategy of “Universal Access to HIV Prevention, Treatment Care and Support”. The strategy called for a more coordinated approach in order to achieve ambitious targets of prevention of new infections and reaching a target of ‘zero HIV-related deaths’. The strategy stated that in order to achieve the overall goals, concerted efforts would be needed to increase the number of people tested, and to reduce the transmission of HIV (UNAIDS 2010). The Government of Kenya (GoK) has adopted the Joint United Nations Programme on HIV/AIDS strategy of Universal Access to HIV Prevention, Treatment Care and Support as a key approach in decreasing the number of new infections and increasing the number of HIV positive individuals who receive care and treatment (Kenya National AIDS Strategic Plan 2009 – 2013 (KNASP III)). As part of this strategy, the GoK aims to increase knowledge of one’s HIV status to 80% of the population (NACC 2009b).

The 2012 KAIS report stated that the percentage of Kenyans (15-64) ever tested for HIV rose from 34% in 2007 to 72% in 2012. However, the increase in the number of individuals tested varies by sex. There is still great variability between the percentage of women (80%) and men (63%) tested. Reaching those who have never tested poses a significant challenge to an 80% target regarding knowledge of one’s HIV status, a challenge NASCOP is trying to address.

NASCOP has introduced new approaches to increase uptake of HTC, including an increased emphasis on couples testing, national HIV testing campaigns and expanded service delivery models. Using multiple approaches that target client, provider and community initiated models; HTC is made available through workplace, mobile outreach, home-based and health facility-based service models. Presently, there are approximately 6,000 existing HTC sites across the country, and knowledge of testing facilities is high, with a majority of adults (95%) and youth (88%) aware of where to get an HIV test (KDHS 2008-9). Despite the high knowledge of testing facilities and increasingly wider provision of HIV testing services, the 80% target has not been attained. In addition, 16% of people infected with HIV had never tested or tested but never received the results (KAIS, 2012). Innovative HIV testing models are still needed to address barriers to testing among individuals who remain unaware of their status.

Oral HIV self-testing presents an opportunity to increase testing coverage by addressing two primary barriers to HIV testing uptake, including limited access to HIV-testing and HIV-related stigma and discrimination (Spielberg et al 2004; Kachroo 2007). By allowing individuals to access tests where and when they procure other health commodities, self-testing may make testing more convenient and accessible as individuals would no longer be required to seek testing services from a facility-based or mobile testing service. Once procured, a self-test may also increase an individual's perception of testing privacy by allowing them to choose where and when to administer the test (NAS COP 2010; WHO 2011). This may remove many of the concerns related to HIV testing, including lack of privacy, inconvenience, stigma and discrimination.

## RESEARCH PROBLEM AND JUSTIFICATION

HIV self-testing has been shown to be an acceptable form of testing among health care workers (HCWs) in Kenya. However, there is a dearth of knowledge about what particular aspects of self-testing can motivate potential consumers (non-health workers) to access and use self-test kits (Kalibala et al. 2011; Choko et al 2011; Ng OT et al. 2012). Preliminary studies conducted in Kenya and Malawi on HIV self-testing demonstrate that oral HIV self-testing may be feasible and acceptable in an African setting (Kalibala et al.2011; Choko et al.2011). Musheke reports that potential incentives for self-testing may include convenience, accessibility, ease of use, and confidentiality (Musheke et al 2013). Other individual characteristics that could influence self-testing include educational level, self-efficacy, perceived risk of HIV and willingness to use and/or purchase self-test kits. However, these characteristics have not been fully explored.

There are key questions that remain unanswered from the data currently available, and this information is essential to the introduction of oral HIV self-testing kits in Kenya:

- 1) **Who are the likely users of the oral HIV self-test kit?** There is limited data on Kenyan populations most likely to use an HIV self-test. Evidence from other countries suggest that self-testing may be a promising tool for reaching first-time testers, repeat testers, population with higher socio-economic status, population with higher risk of being HIV infected, especially key populations (Wambale et al. 2008; Obare et al. 2009) but there is no data on the acceptability of oral self-testing on these populations in Kenya.
- 2) **What are the incentives for someone to use an oral HIV self-test kit?** Although privacy and access are reported to be key incentives for HIV self-testing in other countries, there is a lack of evidence about potential incentives for self-testing in a Kenyan context. There is no research in the sub-Saharan African context, or specifically in Kenya, that has proven privacy and access are key incentives. Research in the United States has suggested other psychosocial determinants may also serve as self-test incentives, including anticipated regret and the expectation of peers (Grispen et al. 2011).
- 3) **What are the key messages and approaches to increasing the uptake and demand for oral HIV-self test kits?** Communication messages or other approaches for promoting HIV self-testing have not yet been developed, tested and validated. As evidence builds to understand potential consumers and incentives to use self-test kits, there is a need to address this gap.

## STUDY OBJECTIVES

The purpose of this study is to identify factors associated with the potential adoption and use of oral HIV self-testing kits in Kenya. In order to inform the overall goal of the study, three study objectives were developed:

- 1) Explore who is likely to seek oral HIV self-testing among the general population and key populations at risk in urban and rural settings;
- 2) Identify incentives for using oral HIV self-test kits among the general population and key populations at risk in urban and rural settings;
- 3) Identify and test key messages and approaches to increase demand and use of oral HIV self-test kits.

## METHODOLOGY

### Study design

A cross-sectional study design was used for the study. The study design included a quantitative (closed-ended questionnaire survey) and a qualitative (an open-ended questionnaire survey interview) component. Focus group discussion (FGD) and in depth interviews (IDI) were held with selected survey participants from the general and key populations in both study locations.

### Study locations

The survey was conducted between November and February 2014 in Mombasa (urban setting) and Siaya, a rural district of Nyanza province in the southwest of Kenya. Mombasa has an estimated population of over one million, and is Kenya's second largest city located in the southeast Coast Province. As a coastal city, Mombasa is a popular tourist destination for both Kenyans and foreigners. A number of key populations, with high HIV prevalence, reside in Mombasa including MSM with a HIV prevalence of 43% and female sex workers with a HIV prevalence of 35% (Sanders et al. 2007; Luchters et al. 2010). Nyanza province has the highest regional HIV prevalence (15%) among the general population. Siaya is characterized as a poor, rural community of roughly 40,000 people. Transactional and commercial sex is common in Siaya, especially among fishermen and local female merchants.

The areas selected within Mombasa and Siaya included villages (smallest sampling units) from the following sub-locations:

- Mombasa: Mwembelegeza, Bondeni, Kisauni, Magogoni and Kongowea
- Siaya: Lihanda, Komolo, Ambira, Ligala North and Nyadorera A

### Study population

The study included men and women in the general population aged 18 to 49 years in Mombasa and Siaya, and MSM and FSWs aged 18-49 years at drop-in-centers/ clinics serving these 2 specific populations in Mombasa. Although HTC is accessed by people of all ages in Kenya the sample population was restricted to individuals over 18 for ethical reasons.

Men and women in the general population were eligible to participate in the study if they were: 1) between the ages of 18 and 49 years; 2) could provide informed consent; 3) resident of the study

enumeration areas; 4) self-report negative or unknown HIV status; and 5) were sexually active (sexually active was defined as having sex at least once in the past 12 months).

MSM were eligible to participate in the study if they were: 1) between the ages of 18 and 49 years; 2) could provide informed consent; 3) resident of the study enumeration areas; 4) self-report negative or unknown HIV status; and 5) report having anal intercourse with other men at least once in the past 12 months.

FSWs were eligible to participate in the study if they were: 1) between the ages of 18 and 49 years; 2) could provide informed consent; 3) resident of the study enumeration areas; 4) self-report negative or unknown HIV status; and 5) report selling sex for money or goods at least once in the past three months.

## **DATA COLLECTION**

### **Preparation before data collection**

*Community sensitization:* Meetings were held prior to implementation of data collection with county administrators to inform them about the study and to gain approval to carry out the study in their jurisdiction. These meetings were convened by PSI Kenya staff, who have previously worked in the study areas and had an established rapport with the community leadership. Community leadership included: village chiefs and assistant chiefs, village elders, and district and provincial officials.

*Identification of enumeration areas:* A sample of sub-locations were selected from the 2009 census report by using the probability proportionate to size (PPS) methodology; a sample of ten sub-locations (five in Mombasa and five in Siaya) were randomly selected in the first stage of sampling. In each of the selected sub-locations, village listing and household listing in each village was done to generate smaller sampling units and again PPS was used to select four villages from each sub-location. A total of 20 villages were listed in Siaya and a similar number in Mombasa. From each village, a total of 20 interviews were completed. The sampling interval was calculated based on the total number of households in the village divided by the total number of interviews (20) that had to be completed in each village. A village had an average of 100-150 households.

*Training of data collectors:* Data collectors were recruited locally with a majority having prior field research experience. A three-day training was held in Nairobi and led by the study co-PIs. The training included: ethical conduct of research with study participants, informed consent process, review of the study tools, demonstration on the use of HIV oral self-test, and data quality procedures. After the training, data collectors pilot tested tools and data collection techniques with similar target audiences in Nairobi (not part of the sample population). Data collectors and co-PIs debriefed after the pilot test, and then the teams deployed to their respective study locations.

## **Data Collection**

Data was collected in three ways:

- 1) Household survey with the general population;
- 2) Exit interview with MSM and FSWs<sup>1</sup> at drop-in-centers; and
- 3) Qualitative interviews with the general population (FGDs and IDIs) and key populations (IDIs only).

### ***Household survey***

A household survey was conducted among 782 individuals (353 men and 429 women) in Siaya and Mombasa. The initial proposed sample size was 325 women and 325 men (18-49 years) in both study sites; however, during implementation of the survey the target was exceeded by 132. At the household level, the data collectors prepared a listing of usual residents of the household starting with the household head. Each household member was separately screened to establish their eligibility, including HIV status. If a household had more than one person who qualified to be interviewed, the Kish grid method was used to determine the person to be interviewed. In cases where members of the selected household were ineligible, the interviewers substituted the household with the next household with an eligible member after which the sampling interval was followed.

The data collectors began by first gaining consent to participate from the individual, and then followed with a demonstration of the use of the oral self-test kits to potential interviewers before proceeding with the interviews. Household surveys were conducted face-to-face using paper questionnaires. Data collectors made up to three attempts to locate and survey eligible participants identified in the household listings. Data collectors used a local guide, usually a village elder, who introduced them to the household and explained the purpose of their visit as well as the procedure of the consent and interview process.

### ***Exit interviews***

A total of 200 MSM and FSWs (100 each) aged 18 to 49 years were interviewed by data collectors at drop-in-centers and clinics that serve MSM and FSWs in Mombasa. Before commencing data collection, permission to engage with the study population was sought from drop-in-center or clinic directors. Before MSM and FSWs were asked to participate in the interview, they were pre-screened with a screening questionnaire. The screening questionnaire was used to ensure all MSM and FSW met the inclusion criteria before being included in the study. The sample target of 200 was reached and not exceeded.

After obtaining participant consent, data collectors administered the interviews face-to-face using paper questionnaires in a private location on site. The questionnaires were used to obtain information on a participant's: demographics, sexual risk behavior, HIV testing habits, partner's HIV status; and willingness to use and willingness to pay for self-test kits.

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<sup>1</sup> Exit interviews were quantitative and similar to the household survey but slightly modified for to the context of the key populations.

### ***Qualitative interviews and focus group discussions***

Qualitative interviews and focus group discussions were conducted to generate a deeper understanding of the incentives to use the kit; to elucidate perceived barriers to access and/or abuse; and the types of information, and from whom, individuals would want before they used/purchased a kit. The interview guide was semi structured and based on eliciting insights from the household survey or exit interviews. FGDs were held with community members in order to identify and make clear any socio-cultural influences that might impact the use or non-use of oral HIV self-test kits.

Among the general population in Mombasa and Siaya a total of four FGDs (one male and one female in Mombasa; one female and one male FGD in Siaya) were held in addition to ten IDIs among men, and ten IDIs among women. FGD and IDI participants were recruited during the household surveys. In every fifth household a female or male respondent aged between 18 and 49 years was interviewed, or asked if he/she could participate in an FGD or IDI at a later date. Participants who reported to be available and willing to express their views were referred to the study coordinator for screening<sup>2</sup> and, if eligible were then invited to participate in the FGDs/IDIs. Similarly, 10 FSWs and 10 MSM both negative or with unknown HIV status were purposively approached in Mombasa at the drop-in-centres/clinics and asked if they were interested to participate in an in-depth interview.

## **ANALYSIS**

### ***Quantitative Analysis:***

Descriptive data analysis is used to describe the characteristics of the study population, sexual and HIV testing history, attitude toward oral self-testing, and willingness to use and to pay for the self-test. Bivariate analysis is used to describe the profile of target populations likely to use self-test kits and factors potentially influencing the use of self-test kits.

### ***Qualitative Analysis:***

All FGDs and IDIs were digitally recorded and transcribed. The transcriptions were translated from Kiswahili (Mombasa) and Luo (Siaya) into English. The transcripts of the IDIs and FGDs were imported into N\*vivo 10 for analysis. Thematic coding utilizing relevant key words and phrases was conducted in order to identify common patterns and salient themes.

## **Ethical Consideration**

All participants who took part in various components of the survey (structured survey, exit interviews and qualitative interviews) were taken through the consent procedure before they took part in the study. Approval to conduct the study was also obtained from Population Services International Research Ethics Board and locally from the Kenyatta National Hospital/University of Nairobi Ethics and Research Committee.

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<sup>2</sup> The screening process involved determining respondents availability and willingness to participate including openness to participate in the group discussions.

## Results

### **Presentation and format of results**

The results of the study are organized and presented into two sections; the first section outlines the results from the general population and the second section presents findings from key populations. (MSM and FSW).

Qualitative data are ‘nested’ with quantitative data in order to support and offer insights into the quantitative results. For each target population, the demographic characteristics are outlined, including social economic status (SES), sexual risk, and HIV testing behaviors. These results will be followed by an in-depth analysis and discussion in order to address the first two objectives of the study, identification of potential users of the kit and incentives to use the kit. The results that inform Objective 3, identify and test key messages, are presented in the discussion section at the end of the report. This is because Objective 3 was informed from initial findings from objectives 2 and 3 and was answered by using a message development approach in social marketing.

### **1. Findings from the general population**

Tables 1A and 1B outline descriptive data of the study population (i.e. social economic status (SES), sexual risks, HIV testing behaviors). Table 1C contains data on knowledge and attitudes regarding HIV oral self-testing, willingness to use the kit, preferred places for testing, and preferred channels for promoting the test kits. Tables 1D, 1E, and 1F contain the results of bivariate analyses differentiating potential users of oral self-test kits vs. non-potential self-test kits (Table 1D); incentives to use self-test kits (Table 1E); and characteristics of those who would seek post-test counseling versus those who said would not seek post-test counseling after performing a self test kit (1F).

#### **1.1. Characteristics of the study population**

Table 1A presents the overall characteristics of the general study population. 55% of the respondents were women and 45% were men, with the median age of 27 years, ranging from 18 to 49 years. Approximately 39% of the participants are aged 18-24 years, 36% aged 25-34 years, and 25% aged 35-49 years.

Approximately half of survey respondents completed primary school or had some primary education; 40% completed secondary or had some secondary education; and only 9% had tertiary education. Over half (53.7%) were married or living with a partner; 39.0% reported never married or single and 10% were divorced/separated or widowed.

Nearly 37% were unemployed; 11.0% reported having fulltime jobs; 13% reported part-time work; and nearly 40% were self-employed or had informal jobs.

**Table 1A. Demographic Characteristics of the Study Populations (n=782)**

	Mombasa	Siaya	Total Sample (both sites)	
	N=392	N=390	N=782	
	%	%	%	n
<b>Gender</b>				
Male	48.7	41.5	45.1	353
Female	51.3	58.5	54.9	429
<b>Age [median: 27 years (range 19 to 49)]</b>				
18-24 years	33.7	43.6	38.6	302
25-34 years	39.5	33.1	36.3	284
35-49 years	26.8	23.3	25.1	196
<b>Education</b>				
Primary or less <sup>3</sup>	40.1	59.7	49.8	390
Secondary	46.9	34.6	40.8	319
Tertiary	13.0	5.6	9.3	73
<b>Marital status</b>				
Never married/single	37.2	40.5	38.9	304
Married/Living together	52.8	54.1	53.5	418
Divorced/separated/widowed	10.0	5.4	7.7	60
<b>Employment</b>				
Unemployed/no income	34.4	39.2	36.8	288
Full-time employed	13.2	8.7	11.0	86
Part-time employed/temporary jobs	15.8	11.8	13.8	108
Self-employed/informally employed/	36.5	40.3	38.4	300

**1.2 Sexual and HIV testing behaviors (n=782)**

Table 1B contains data on sexual risk taking and HIV testing behaviors. Approximately 60% of respondents reported having sexual intercourse during the past one month period. Approximately 30% of respondents reported having more than one sexual partner in the past 12 months. A third of respondents (28%) reported that they used condoms during their last sexual act. An average of 6.5% of individuals reported engaging in transactional sex within the past 12 months.

Almost 60% of respondents reported knowing their partner's HIV status. Among the 60% who reported knowing their partners HIV status, 92% reported that their partners were HIV negative and 7% indicated that their partners were HIV positive (data not shown in Table). This estimate closely matches the national HIV prevalence in Kenya.

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<sup>3</sup> Two-percent reported having no education

**Table 1B: Sexual and HIV testing behavior (N=782)<sup>4</sup>**

	Mombasa	Siaya	Total Sample	
	N=392	N=390	N=782	
	%	%	%	n
<b>Engaged in sex in the previous one month</b>	64.2	53.6	58.9	460
<b>Used condom at last sex act</b>	26.5	30.3	28.4	221
<b>Know the HIV status of sex partner at last sex act</b>	59.9	57.2	58.6	458
<b>Had more than one sex partner in previous 12 months</b>	31.4	32.2	31.8	249
<b>Engaged in transactional sex (paid or being paid for sex)</b>	8.7	4.4	6.5	51
<b>Ever tested for HIV</b>	81.4	94.1	87.7	686
<b>Tested for HIV in previous 12 months</b>	65.3	76.7	71.0	555
<b>Venue of last HIV test</b>				
Public clinics or hospitals	54.9	63.2	59.3	407
Private clinics	26.7	15.3	20.6	141
HTC centers	20.4	11.7	15.7	108
Mobile clinics	19.1	35.2	27.7	190
<b>Knowledge of a place to receive an HIV test</b>	96.6	97.8	97.2	692
<b>Attitudes toward HIV testing and abilities to handle a test results</b>				
“I would be treated poorly by health workers at HTC center”: Agreed or strongly agreed	16.8	20.0	18.1	144
“I am confident in coping with test results”: Agreed or strongly agreed	85.5	94.6	90.0	782
“I am confident that I can reveal HIV status to partner”: Agreed or strongly agreed	82.4	92.1	87.2	682

### **HIV Counseling and Testing**

Table 1B above also presents findings on HIV testing behaviors, including testing frequency, places for HIV testing, attitudes toward HIV testing, and abilities to handle an HIV test results.

Almost all respondents reported knowing a venue to get an HIV test (97%). Most respondents (88%) reported testing at least once for HIV with a higher proportion ever tested in Siaya (94%) than Mombasa (84%). Among the 12% who had never tested, the reasons for never testing include: did not think they have HIV (38%); felt ‘healthy’ and had no reason to test (35%); and afraid of learning a positive HIV status (24%). A majority of respondents (71%) said that they had tested within the past 12 months.

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<sup>4</sup> Knowledge of HIV transmission is high, with over 90% correctly identifying modes of transmission and prevention methods. The results are not included in this report.

### **Venue of last HIV test and perceived quality of testing services**

Over half of respondents (60%) reported that their last HIV test was at a public sector hospital/clinic, followed by mobile testing services (28%), private hospital or clinic (21%); and HTC center (16%). Comparing across sites, a significantly larger proportion of Siaya respondents tested in public clinics (63% vs. 54% for Mombasa);  $p < 0.05$ ; or mobile testing (35% vs. 19% for Mombasa;  $P < 0.001$ ). In contrast, more residents of Mombasa tested at private clinics (27% vs. 15% for Siaya;  $P < 0.001$ ); or HTC centers (20% vs. 12% for Siaya;  $p < 0.01$ ). Among those who tested in the past 12 months, 86% were very satisfied with the HIV testing services they received in the HIV testing centers (data not shown in the table).

### **Attitudes towards HIV testing and ability to cope with a positive HIV test result**

A number of statements about attitudes towards HIV testing were read to participants to gauge their levels of agreement or disagreement (using a Likert scale). Participants were asked to indicate whether they 'strongly agree', 'agree', 'disagree', or 'strongly disagree' with a statement read to them. Each indicator was dichotomized at "agree and strongly agree" vs "disagree and strongly disagree" for data analysis. Approximately 20% of respondents agreed or strongly agreed that they would be treated poorly by an HIV counselor; 91% strongly agreed or agreed that they would be able to cope with HIV test results; and 87% strongly agreed or agreed that they would be able to reveal the test result to their sex partners. HIV testing was also seen as a gateway to changing sexual risk behavior with over 90% of participants agreeing with the statement "HIV testing will make it easier to change sexual risk behavior".

### **Profile of people who ever tested for HIV and never tested for HIV (bivariate analysis)**

A series of bi-variate analyses were performed in order to differentiate characteristics between those who have never tested versus those who had ever tested for HIV. There were no significant differences in HIV testing across these following categories: age, education, marital status, job situations, number of sex partners, and engaging in transactional sex. However, residents of Siaya (94% tested vs 81% tested among residents of Mombasa), those who knew their partner's HIV status (94% tested vs. 77% tested who did not know their partner's HIV status), those who said they would cope with test results (91% tested vs 50% tested among those who said would not cope), and those who said they would reveal the test result to their partner (90% tested vs 66% tested among those who would not reveal) were significantly more likely to get tested [all are significant at p-value of less than 0.05]; data not shown in table format.

A similar series of bivariate analyses are presented above was conducted for another HIV testing variable: "HIV testing during the past 12 month period". A similar result pattern as above was also found. Those who were residents of Siaya (76% vs 65%); those who knew their partner HIV status (79% vs. 58%); those who said they would cope with test results (75% vs 29%); and those who said they would reveal the test result to partner (74% vs 48%) were significantly more likely to get tested during the past 12 months. In addition, younger age (74% vs 62%), and those who had only one sex partner in the past 12 months (73% vs 65%) were significantly more likely to get tested [p-value of less than 0.05; data not shown in table format].

### 1.3 HIV Oral Self-Testing

#### Perceptions of oral test kits, willingness to use, and incentives for using oral self-test kits (descriptive analysis)

Table 1C contains descriptive data regarding the experience with, perceptions of, and incentives for using a HIV oral self-test kit. A small percentage of respondents indicated that they had seen or heard of HIV oralself-testing kits, and only one person had previously used an oral HIV self-test kit. After explaining to participants about the key features of an oral self-test kit, nearly all the respondents (96%) reported that they would use the HIV oral self-test kits if they were made available. The main incentives for using the HIV oral self-test kit include: easy to use (61 %); guarantees confidentiality and privacy (50%); and no visit to a health facility is required (32%). Other reasons include convenience to use and saving time, which are facets of not having to visit a health facility. These same incentives were reiterated during interviews with participants.

Nearly all interviewees in the qualitative component stated that the test was easy to use, and individuals emphasized that even people with low education and non-health professionals could use it.

*“It is easy to use even for those who have no education or even the old, once you explain they will be able to use” Mombasa, GP, Male (GPM5)*

*“I think it is good because anybody can do it, it does not require professionals” Mombasa, GP, Female (GPF12)*

*“In fact, it is so easy like any layman without even being explained to. Because we are used to brush out teeth, just the way we use this stuff; it's so easy to do it. So I think it is okay” Mombasa, GP, Female (GPF16)*

There were some participants who were worried that if someone was not there to demonstrate how to use the kit and if the user could not read, that the user may not be able to use it correctly. Additionally, some participants stressed that pictures/graphics with text be included on the instruction sheet.

*“Because it does not have a counselor like for the case of VCT. Instead it requires that you personally read the instructions. Therefore those who do not read the instructions will find it difficult to follow them” Mombasa, GP, Male (GPM2)*

When participants were asked what they liked about the test, nearly all interviewees mentioned confidentiality and privacy as a key incentive. One male participant related his belief that since men do not like to visit hospitals, the oral self-test could be a viable alternative.

*“As men, we really do not like to go to the hospital often. Majority of men would rather not go to the hospital to know their status nor let their partners know their status. That would apply to some women too. With this test, partners could decide to test themselves in the privacy of their own home and thereby know what to do next depending on their test results” Siaya, GP, Male (SGPM10)*

The risk of a confidentiality breach was presented in two ways; passive and active breach. A passive

breach could occur when someone from the community would see the tester at a health facility waiting for a HIV test. An active breach of confidentiality could occur when a health worker or counselor discloses the patient's results either intentionally or unintentionally. Some respondents relayed their belief that a health worker could intentionally or unintentionally tell members of the community of the patient's HIV status<sup>5</sup>.

*"When an individual goes for VCT they are afraid to be recognized by someone who knows them, or even the counselor lives in the neighborhood and so people will have issues related to confidentiality. But with the kit confidentiality is between an individual and the kit, no one else and so there won't be people talking." Mombasa, GP, Male (MGPM2)*

*"It can be better than the previous ones [blood test] because you can use it in the house by yourself. Most people fear going for the test because there can be people around who will see you going to be tested and will assume that you are positive even without asking you about your results." Siaya, GP, Female (SGPF8)*

*"The main advantage is that of privacy. I can do it myself self or with my partner. If done at a hospital, one [health worker] may meet their neighbors or villagers who may begin to question them. When done at home, then the results are known only by me." Siaya, GP, Male (SGPM10)*

The oral self-test was perceived as a means to avoid both passive and active breaches of confidentiality. However, many of the same respondents who said confidentiality was important to maintain were also the same people to say it could be a negative outcome. When the aspect of confidentiality pertained to their own confidentiality, it was a positive feature of the test. However, when confidentiality was discussed in the context of everyone having it, a notable change in rhetoric and sentiment emerged. Some participants, when referring to other individual's confidentiality, used the word 'secretive' in lieu of confidential. Some respondents related their worried belief that there would be people who keep the results to themselves for malevolent purposes (potential social harms). Other respondents were concerned that individuals would be 'too secret' and not get the help they need in seeking care and treatment, and perhaps even die alone.

*"Also sometimes, it can results in an individual being over-secretive in the sense that they know they are positive and start spreading the disease without knowledge of others. We will not know because s/he did the test from the house and so will take advantage to spread the disease." Mombasa, GP, Female (MGPF11)*

*"First, if people self-test they will not disclose their status if positive, it will be a secret known to themselves and if s/he does not want to die alone, they will spread the virus by having sex with different people." Mombasa, GP, Female (MGPF15)*

*"The main challenge is that it will be difficult to know who is a victim or not since it is a self-test, it is an individual's secret and we cannot know what kind of decision s/he can make. Because after the self-test whether at home or where, and results show I am positive, you will not know what decision I will take, I can decide to die with others such that if they allow me go to the fires of hell with them...Therefore it is dangerous on one side, because it is a secret between you and*

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<sup>5</sup> It was not possible for the study team to confirm that breaches of confidentiality actually occur or are perceived to occur.

*your soul, and someone's soul is like a forest, you cannot know what their plans are inside."*  
Mombasa, GP, Male (MGPM6)

The convenience to test when and where was a prominent positive feature of the oral HIV self-test shared by men and women in both study locations. Interviewees liked that they would not have to travel to a VCT or health facility to take a test saving both time and money (transportation and days off work)

*"It gives me time, any time any time...I mean it does not limit me in terms of time to test. If you have it you can test anytime unlike the institutions which close"* Mombasa, GP, Female (MGPF2)

*"I like because I will test myself, I do not have to go to hospital. Because it does not take much time, you can also test yourself and do other chores as you wait for results. Also, it is not like hospital where you have to queue and if people are many you have to wait. When you self-test, the kit is with you already and you can test to know status"* Mombasa, GP, Female (MGPF15)

During the demonstration of the kit, participants were informed that the HIV oral self-test should only be used as a preliminary test and a confirmatory blood test would be needed within three months. Respondents were then asked if they would still go to a clinic for a confirmatory test if they had completed an HIV oral test on their own. Sixty-one percent indicated that they would go for a confirmatory test.

Participants were asked if they would prefer to perform the test on their own, and a majority stated that they would (93%). The main reasons respondents reported they would test on their own were that the test is simple to perform and ensures privacy. A small portion of participants (7%; n=53) stated they would not want to perform the test on their own for the following reasons: afraid of a positive result, afraid of misinterpreting the results, and believed health workers should perform the test.

The fear of receiving a positive result in the absence of professional support was related by nearly a quarter of those interviewed in the qualitative component. Individuals related their belief that they (or others) may panic, commit suicide, or retaliate.

*"The self-test kit is not good because if I test from home to get positive results, who will give me counseling? It is better to be tested at the hospital because I will receive counseling, 'do not panic, do this do that'. When I self-test at home, then I will not be counseled, I will go inside to sleep--(voice trails off)." Mombasa, Male, Focus Group*

*"But if one can access this kit, with our different mentalities (R speaks English), then self-tests to get positive results, s/he can even commit suicide, which still happens even after counseling. But with this kit where there is no counseling, an individual will buy and if the results are positive they can commit suicide."* Mombasa, GP, Male (MGPM2)

*"Someone might self-test and get positive results and since they have not undergone counseling, s/he might decide to spread the virus instead of seeking medical advice. You know at times, a person needs to be guided but when s/he suspects and decides to self-test to get positive results instead of going for ARVs, they spread [HIV]." Mombasa, GP, Female (MGPF12)*

On closer analysis of individual’s fear of receiving a positive HIV test, the researchers discovered that people who were fearful also believed that self harm or harm to others was unwarranted. All of the interviewees who raised the issue of fear contextualized the emotion as unnecessary as HIV treatment is available and HIV is no longer an automatic death sentence.

A significant percentage of respondents stated that they would recommend the kit to their partner (93%). Approximately one third of the sample thought the self-test would be open to abuse in a Kenyan setting. The main fears of abuse would be the testing of children without parental consent, children testing themselves, coerced or forced testing of sex workers, and secretly testing another individual. The report entitled: “Understanding and preventing potential social harms and abuses of oral HIV self-testing in Kenya” produced by the African Population and Health Research Centre for this project outlines ethical issues in more detail.

### **Preferred communication channels of the introduction and promotion of oral HIV self-test kits (descriptive analysis)**

Participants were asked how they would prefer HIV oral self-test kits promoted in Kenya. Approximately 75% of respondents preferred learning about the kit through the mass media, 35% preferred learning through health workers, and 31 % preferred outreach workers. Respondents were asked about what they would want to know before using the HIV oral self-test kit. A majority of respondents (63%) stated they would want to read instructions on how to use the kit, 35% wanted information on the retail price, 27% wanted information on the benefits of using the kit, 18% on the advantages of using the kit, and 12% wanted to know about locations providing/selling the test.

**Table 1C: Perceptions of oral self-testing, willingness to use, incentives for using, and preferred distribution outlets (descriptive analysis)**

	<b>Mombasa</b>	<b>Siaya</b>	<b>Average</b>	<b>Total</b>
	%	%	%	n
Ever seen/heard of oral HIV self-test kit before?	4.9	5.6	5.2	41
Ever used an oral HIV self-test kit	0.0	4.8	2.5	1
Would use HIV oral self-test if made available	94.6	97.4	96.0	750
Reasons for using an HIV oral self-test kit				
<i>Easy to use</i>	64.2	57.1	60.6	455
<i>Convenient to use</i>	25.9	29.2	27.6	207
<i>Guarantees confidentiality and privacy</i>	52.8	46.3	49.5	372
<i>Do not have to visit a health facility</i>	25.9	37.4	31.7	238
<i>Results are known quickly</i>	17.3	15.3	16.2	122
<i>Saves time</i>	22.9	9.7	16.2	122
<i>Looks cool</i>	2.7	0.3	1.5	11
<i>Other</i>	4.6	18.9	11.9	89
Comfortable testing on their own	91.6	94.9	93.2	782
Reasons for testing on their own				
<i>Test is simple to use</i>	63.1	65.8	64.5	466

<i>Test is accurate</i>	1.1	4.4	2.8	20
<i>Privacy</i>	35.8	29.9	32.8	237
Reasons not to use the kit on their own				
<i>Afraid of finding out positive result while alone</i>	46.9	41.2	44.9	22
<i>Health workers are more knowledgeable</i>	18.8	17.6	18.4	9
<i>Afraid of misinterpreting results</i>	12.5	35.3	20.4	10
<i>Other</i>	21.9	5.9	16.3	8
Would seek confirmatory test after self-test	41.8	79.8	60.7	473
Would recommend the kit to partner	90.3	94.8	92.5	717
How can the use of HIV Oral self-test kits be promoted in Kenya?				
<i>Mass media (TV, radio, internet, posters)</i>	83.7	65.9	74.8	585
<i>Brochure</i>	6.1	9.2	7.7	60
<i>Health workers</i>	31.9	37.4	34.7	271
<i>Community Health Outreach workers</i>	40.1	22.6	31.3	245
<i>Other</i>	4.1	36.7	20.3	159
HIV self-testing could be open to abuse	17.9	36.4	27.1	212
What would you do if the test kit was sold and the price was too high?				
<i>Find free HTC services</i>	80.1	78.2	79.2	619
<i>Find cheaper HTC services</i>	13.2	14.9	14.2	111
<i>Not going to test</i>	6.4	6.9	6.7	52
If the price was the same between HTC and oral self-test, what would you choose?				
<i>Oral self testing</i>	96.2	88.2	92.2	721
<i>Traditional HTC</i>	3.1	10.3	6.7	52
<i>Mobile HTC</i>	0.7	1.5	1.1	9

### Profile of potential users of HIV oral self-test kits compared to non-users

A series of bi-variate analyses were conducted to elucidate differences in characteristics between those who reported 'willing to use the oral self-test kit' and those 'unwilling to use the oral self-test kit'. These analyses describe the profile of the potential users and potential facilitators or barriers for using the oral self-test kits. The findings are outlined below in Table 1D. Chi-square analysis and p values are presented to indicate statistical significance of the comparison.

There was no difference in intention/willingness to use the self-test kits across the following variables: gender, age, marital status, and employment status. Participants were more likely to indicate willingness to use oral test kits if they: ever tested for HIV, had support from a spouse to go tested for HIV, or were residents of Mombasa.

The participants who believed that they would likely be treated poorly by a HTC counselor, and those who had multiple sex partners in the previous one-year period were more likely to state their intention

to use the oral-self test kit. However, this result is only borderline significant. The stated ability to cope with a positive test result and the ability to reveal the test results to a spouse or sex partners were not significantly associated with intention to use the self-test kits.

The small number of respondents (n=31 or 4%) stating they would not use the kit, possibly created limitations in statistical power that would result in insignificant findings. Therefore the interpretation of this table should be made with caution.

**Table 1D. Profile of and factors influencing intention/willingness to use oral self-test kits (bivariate analysis)**

	<b>Would use the self-test kit (%)</b>	<b>Chi-square (p-value)</b>
<b>Location</b>		<b>4.0 (0.046)</b>
Mombasa	94.6	
Siaya	97.4	
<b>Gender</b>		0.14 (0.7)
Male	95.7	
Female	96.3	
<b>Age</b>		0.3 (0.9)
18-24 years	96.4	
25-34 years	96.1	
35-49 years	95.4	
<b>Education</b>		<b>7.1 (0.03)</b>
Primary or less	96.2	
Secondary	97.2	
Tertiary	90.4	
<b>Marital status</b>		2.7 (0.26)
Never married/single	95.7	
Married/Living together	95.7	
Divorced/separated/widowed	100.0	
<b>Employment status</b>		1.6 (0.65)
Unemployed/no income	95.1	
Full-time employed	97.7	
Part-time employed	97.2	
Self-employed	96.0	
<b>Condom use at last sex</b>		1.3 (0.25)
No	95.5	
Yes	97.3	
<b>Having two sex partners or more within the previous one year</b>		3.64 (0.057)

No	95.1	
Yes	98.0	
<b>Ever been tested for HIV</b>		<b>5.5 (0.02)</b>
No	91.7	
Yes	96.6	
<b>Belief would be treated poorly by HTC counselor</b>		3.04 (0.08)
No	95.4	
Yes	98.6	
<b>Would be able to cope with a positive HIV test result</b>		1.36 (0.24)
No	93.6	
Yes	96.3	
<b>Would be able to reveal their test result to partner</b>		1.2 (0.26)
No	94.0	
Yes	96.3	
<b>My spouse/sex partner would support me to be tested for HIV</b>		<b>7.4 (0.006)</b>
No	93.1	
Yes	97.2	

**Note:** The second column on “would not be willing to use” is omitted from the table because it is equal to 100% minus the % in the “would be willing to use” column. This format is used for all bivariate analyses throughout this report.

### Factors associated with incentives to use HIV oral self-test kits

Table 1E illustrates characteristics of respondents who stated preference to use the oral self-test because the test is easy to use or confidential. These two incentives were the top reasons to use the kit and were therefore chosen for the bivariate analysis.

Respondents who chose the self-test because it is ‘easy to use’ were significantly more likely to be residents of Siaya, ever tested for HIV, and tested for HIV in the previous 12 months (p values <0.05). No significant difference was found between those who stated their choice for ease of use versus those who stated otherwise, in regards to gender, age, marital status, and employment status.

Respondents who chose ‘confidentiality’ as the main incentive to use the kit were significantly more likely to have higher education or residents of Mombasa (urban area). Confidentiality and privacy were less important incentives among those who reported being tested for HIV in the previous year, or those who ever tested for HIV. Respondents who stated they did not think they would reveal the test results to their partner were significantly more likely to state their choice of self-test kit for its confidentiality (Table 1E).

**Table 1E: Factors associated with incentives for using HIV oral self-test kits (bivariate analysis)**

	Test is easy to use		Test is confidential	
	%	Chi-2 (p-value)	%	Chi-2 (p-value)
<b>Location</b>		<b>3.9 (0.048)</b>		<b>3.2 (0.07)</b>
Mombasa	<b>64.1</b>		<b>52.8</b>	
Siaya	<b>57.1</b>		<b>46.3</b>	
<b>Gender</b>		0.3 (0.57)		0.7 (0.4)
Male	59.5		51.2	
Female	61.5		48.2	
<b>Age</b>		2.1 (0.34)		2.3 (0.3)
18-24 years	61.2		46.4	
25-34 years	57.5		52.8	
35-49 years	64.2		49.7	
<b>Education</b>		2.0 (0.36)		<b>4.6 (0.03)</b>
Primary or less	61.6		<b>45.6</b>	
Secondary	58.1		<b>53.5<sup>6</sup></b>	
Tertiary	66.7			
<b>Marital status</b>		3.1 (0.2)		3.9 (0.14)
Never married/single	56.7		45.0	
Married/Living together	62.7		52.5	
Divorced/separated/ widowed	65.0		51.7	
<b>Employment status</b>		2.6 (0.45)		n/a
Unemployed/no income	58.0			
Full-time employed	67.9			
Part-time employed	61.0			
Self-employed	61.0			
<b>Tested for HIV within the past 12 months</b>		<b>9.7 (0.002)</b>		<b>5.1 (0.02)</b>
No	<b>51.9</b>		<b>56.0</b>	
Yes	<b>64.1</b>		<b>46.9</b>	
<b>Ever been tested for HIV</b>		<b>3.8 (0.05)</b>		1.0 (0.3)
No	<b>51.1</b>		54.6	
Yes	<b>61.8</b>		48.9	
<b>Would reveal HIV status to partner</b>				<b>7.5 (0.006)</b>
Disagreed	<b>n/a</b>		<b>62.8</b>	
Agreed			<b>47.6</b>	

Note: For each incentive, the second column on those who said otherwise is omitted from the table because it is equal to 100% minus the % in the current column for each incentive type.

<sup>6</sup> Secondary and tertiary were collapsed to compare with “primary education”.

## Factors associated with intention to seek post-test counseling

Post-test counseling after the initial self-test kits is important, especially in case of a positive test result. 61% of participants indicated they would go to a clinic for a confirmatory test after testing on their own using an oral self-test kit. . A series of bivariate analyses was performed comparing those who stated that they would seek post-test versus those who would not seek the post-test. The findings are presented in Table 1F below.

Participants were significantly more likely to indicate their intention to seek post-test counseling if they were residents of Siaya, respondents aged 18-24 (youngest age group), those with lower level of education, those who ever tested for HIV, and those who said their spouse would support them to test for HIV. Participants with full-time jobs indicated a significantly lower level of intention in seeking post-test counseling.

**Table 1F: Factors associated with intention to seek post-test counseling (bivariate analysis)**

	Would seek post-test counseling (%)	Chi-square (p-value)
Location		<b>117 (&lt;0.001)</b>
Mombasa	<b>41.8</b>	
Siaya	<b>79.8</b>	
Gender		0.9 (0.34)
Male	58.8	
Female	62.2	
Age		<b>14.4 (0.001)</b>
18-24 years	<b>69.1</b>	
25-34 years	<b>55.1</b>	
35-49 years	<b>55.9</b>	
Education		<b>6.7 (0.035)</b>
Primary or less	<b>64.8</b>	
Secondary	<b>58.0</b>	
Tertiary	<b>50.7</b>	
Marital status		4.1 (0.13)
Never married/single	65.0	
Married/Living together	58.4	
Divorced/separated/widowed	55.0	
Employment Status		<b>13.9 (0.003)</b>
Unemployed/no income	<b>60.3</b>	
Full-time employed	<b>47.7</b>	
Part-time employed	<b>73.8</b>	
Self-employed	<b>60.2</b>	
Ever been tested for HIV		<b>9.4 (0.002)</b>
No	<b>46.3</b>	

Yes	<b>62.7</b>	
Belief they would be treated poorly by HTC counselor		0.23 (0.63)
No	60.3	
Yes	62.5	
Would be able to cope with a positive HIV test result		<b>8.3 (0.004)</b>
No	<b>45.5</b>	
Yes	<b>62.4</b>	
My spouse/sex partner would support me to be tested for HIV		3.3 (0.07)
No	55.8	
Yes	62.8	

*Note: The second column on “would not seek post-test counseling and confirmation” is omitted from the table because it is equal to 100% minus the % in the “would seek post-test” column.*

### **Willingness to pay for HIV oral self-test kits**

Although HIV oral self-test kits were not widely available in Kenya at the time of the study, the research team did undertake willingness to pay for oral test kits. In order to develop a better understanding of participants’ familiarity with the concepts of willingness to pay for a health product, participants were asked whether they had recently sought and paid for health care services. Over half of the participants (63%) reported that they had sought health consultation in the past six months, and of those respondents 70% indicated that they paid for the services. Furthermore, nearly half of those who had paid for health services reported that the payment fee was reasonable. Participants were then asked if they had paid for specific health products such as condoms, contraceptive devices, or contraceptive pills in the past six months. Approximately a quarter of the respondents reported that they had paid for those types of health products. The prices of those commodities in Kenya vary, from 50 KSH and higher. In addition, many socially marketed or subsidized health commodities are sold at prices close to or at 50KSH.

After describing the key features of an HIV oral self-test kit (second explanation), participants were asked if they would be willing to pay for the kit for their own use. Ninety-three percent of participants responded in the affirmative. The main incentives reported for buying an HIV self-test kit include: able

to test myself (77%); privacy (46%); do not have to visit a testing center (34%); and do not have to wait (11%)<sup>7</sup>.

Those who responded in the affirmative that they would be willing to pay were then asked a series of questions on price points. Those who responded “No” to willingness to pay skipped this series of questions. Price ranges are presented in Table 1G below.

**Table 1G: Price points for an HIV oral self-test kit (N=725)**

Price point	Would be willing to pay % (N)
50 KSH	94 (682)
100 KSH	65 (471)
150 KSH	42 (302)
200 KSH	30 (217)
250 KSH	20 (148)
300 KSH	17 (124)
350 KSH	15 (105)
400 KSH	13 (93)

The median maximum price point was 100 KSH and the mean maximum price point was 186 KSH. The 25<sup>th</sup> percentile price point was 50KSH and 75<sup>th</sup> percentile price point was 200 KSH. If the price of the self-test kits were too high for purchase, almost all participants stated that they would choose traditional HIV testing. If the price was the same between traditional HTC and oral self-testing, almost all participants stated they would chose oral self-testing.

**Factors associated with willingness to pay for oral self-test kits (Bivariate analysis)**

The affirmative response of “willingness to use” the oral self-test kit and “willingness to pay” for the oral self-test kit were both similar in regards to being nearly universal (93%). However, achieving statistical power was a problem, due to a small number of respondents answering ‘no’ for the bivariate analysis on “willingness to use” and the same for “willingness to pay”. A series of bivariate analyses with willingness to pay as an outcome were conducted and only two significant correlates emerged: those who said they would be able to reveal the test results to their partner, and those who could cope with a positive test result were significantly more likely to indicate that they would buy the kit [data not shown in the table].

**Factors associated with incentives to buy the self-test kit**

One of the key incentives for buying the self-test kit reported by participants was “privacy”. An additional analysis was performed examining factors associated with those who stated that privacy is a key incentive for purchasing the kit versus those who did not chose privacy as a reason for buying a self-test kit. Similar results to the bivariate analysis on “willingness to use” were also found for “willingness to pay” (Table 1F). Significant correlates include: location, gender, education, and ability to cope with

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<sup>7</sup> Note: the question asking about willingness to pay is different from the question asking about willingness to use the kits presented in Table 1C.

positive result, or ability to reveal an HIV test result. In particular, respondents who lived in Mombasa, who had tertiary education, and males were significantly more likely to indicate privacy as their main incentive for buying a self-test kit. In contrast, those who stated that they would cope with a positive test result or would reveal the test results to a spouse were significantly less likely to indicate privacy as an important incentive [data not shown in the table].

## **2. RESULTS FROM MSM AND FSW SURVEYS**

A total of 200 MSM and FSWs (100 persons in each group) were conveniently sampled at clinics and drop-in centers serving these two target populations in Mombasa. The study timeline and budget did not allow for the inclusion of MSM and FSWs in the study using a probability-type sampling such as time-location sampling (TLS) or respondent driven sampling (RDS). However, the study team hypothesized that these high-risk populations would have different interests in HIV oral self-testing as well as different incentives for using the self test kit due to their different risk profiles and being stigmatized/criminalized in Kenya. Regardless of the sample size limitations, the insights from these two groups are critical for the future implementation of HIV self-testing pilots in Kenya or similar settings.

Table 2A presents descriptive data of MSM and FSWs respondents. Table 2B examines potential users of oral self-test kits vs. non-potential self-test kits. Table 2D examines factors associated with incentives to use the oral test kits, and Table 1E presents willingness to pay and preferred price points for oral self-test kits. Each table has two columns, one column presents data on MSM and one column presents data on FSWs.

### **2.1 Descriptive characteristics of MSM and FSW samples**

#### **Descriptive characteristics of MSM**

The reported median age was 24, with a range from 19-49 years old. The levels of education are lower than the general population with 69% completing primary or had some primary education; 24% had completed secondary or had some secondary education; and only 7% had tertiary education. Approximately 20% of MSM were married or living with a female partner. Twenty-one percent of MSM reported having a full time or part time job, 7% reported unemployment, and the rest reported self-employment or temporary job.

The MSM in this study reported higher levels of HIV-related risk including: sex with both men and women, multiple sex partners (89% had two or more sex partners within the previous one month period); and unprotected sex (40% did not use condom at last sex). HIV testing among MSM was nearly universal with 92% reporting HIV testing within the previous 12 months. Approximately 86% reported testing within the previous six-month period.

#### **Descriptive characteristics of FSWs**

The reported median age of FSWs was 26, with 39% between 18-24 years old and 61% between 25 to 49 years old. FSWs in the study reported a lower level of education compared to the general population. Seventy-four percent reported completing or have some primary education, 24% reported having

secondary education, and only 2% had tertiary education. Most of the participants (76%) were single/never been married; while 5% reported being married or living with a partner, and 18% reported being divorced/separated.

Almost all FSWs stated they have between two to three paying clients per day and a majority (83%) reported using a condom at last sex. Nearly 80% of respondents reported using condoms with all paying clients; and 65% used a condom with their non-paying partners within the past one month. Nearly all of the respondents (96%) had ever tested for HIV, 88% report testing within the previous 12 months, and 78% tested within the past six months.

**Table 2A Demographic and sexual-risk characteristics of MSM and FSWs**

	<b>MSM (n=100)</b>	<b>FSWs (n=100)</b>
	<b>%</b>	<b>%</b>
<b>Age</b>	Median: 24 yrs (18-49)	Median: 26 yrs (18-49)
18-24 years	53	39
25-34 years	47	61
<b>Education</b>		
Primary or less	69	74
Secondary	24	24
Tertiary	7	2
<b>Marital status</b>		
Single/never married	81	73
Married to a woman	19	5
Divorced/separated	---	18
<b>Employment status</b>		<i>Not recorded for FSW</i>
Unemployed/ no income	7	
Full-time employed	5	
Part-time employed	16	
Self-employed/informally employed/	72	
<b>Used condom at last sex</b>	60	83
<b>≥2 male sex partner past 1 month</b>	89	N/A
<b>Tested for HIV within the past 12 month</b>	92	88
<b>Tested for HIV within the past 6 months</b>	86	78

*Note: due to the sample of 100 for each group, count for each cell is similar to percentage of that cell.*

## **2.2 Knowledge and perceptions of HIV oral self-testing, willingness to use, and preference of retail outlets**

Perceptions of HIV oral self-testing among MSM and FSWs are presented in table 2B.

**Among MSM** approximately one half reported that they have seen or heard about the HIV oral self-testing kits (47%). However, no one reported previous use of the kit. Respondents were asked if they would be willing to use an oral self-test kit to test themselves and 57% of participants indicated they would use the test kit. Among those who responded they would use the kit, the top incentives for use included: easy to use (70%); confidentiality and privacy (68%); don't need to visit a clinic (28%).

**Among FSWs** only 8% had seen or heard about HIV oral self-test kits. None of those respondents reported ever having used any oral self-testing kit. After learning about the features of the kit and watching the data collector demonstrate the kit, nearly all the respondents stated that they would use the oral self-testing kit if it was available. Reported incentives for using the oral self-test kits included: easy to use (52%); convenient: (32%), guarantees privacy (70%); and do not have to visit health facility (22%).

**Table 2B. Perceptions of oral self-test kits, willingness to use, and incentives to use**

	MSM (%)	FSW (%)
Ever seen/heard of an oral HIV self-testing kit before	47	8
Ever used an oral HIV self-testing kit	0	0
Would use HIV oral self-test if made available	57	98
Incentives to use the HIV oral self-test kit		
<i>Easy to use</i>	70	52
<i>Convenient to use</i>	12	32
<i>Guarantees confidentiality and privacy</i>	68	70
<i>Do not have to visit a health facility</i>	28	23
<i>Saves time</i>	21	9
<i>Looks cool</i>	5	2
<i>Other<sup>8</sup></i>	21	21
Would be able to buy the kit and test on my own	56	95
Reasons to self-test alone		
<i>It is simple</i>	56	50
<i>Test is accurate</i>	2	0
<i>I want privacy</i>	42	50
Reasons not to self-test alone		
<i>Afraid of positive result</i>	100	60
<i>Health workers are knowledgeable</i>	0	20
<i>Afraid of misinterpreting results</i>	0	20
Would go for confirmatory test after self-test	40	75
Would recommend the kit to partner	56	100
How the oral test kits would be promoted?		

<sup>8</sup> Those who chose “other option” mostly stated the reason as no need to use blood, which would be translated as similar to “easy to use”.

<i>Mass media (TV, radio, internet, poster)</i>	43	58
<i>Brochure</i>	5	14
<i>Health workers</i>	55	30
<i>Outreach workers</i>	55	37
<i>Other</i>	23 <sup>9</sup>	31 <sup>10</sup>
HIV oral self-testing could open to abuse	14	23

### Preferred retail outlets

**Among MSM** just over half (56%) of respondents reported they would procure and perform the test on their own; and 40% stated they would go to a health facility/VCT for confirmation. Of the 57% who said they would use the test, about half stated that they would prefer to obtain the test kits in either private chemists/pharmacies (49%) or government clinics (47%). Fifty percent of respondents stated they would seek post-test counseling and confirmation of results, while slightly over half the respondents (56%) would recommend the kit to their partner. Respondents reported that HIV oral self-test kits should be promoted in Kenya through health providers (56%), community health outreach workers (55%), and mass media (43%). Study participants stated that the information they would like to have before using an oral self-test-kit included: information on how to use the kits (34%), the safety features (34%), benefits (21%), and referral services (14%) [data not shown in the table].

**Among FSWs** nearly all respondents (95%) indicated that they would prefer to get the kit and perform the test on their own; and 75% stated that they would go to a health facility/VCT for confirmation. A majority (75%) of respondents preferred to obtain the kits from private chemists/pharmacies, followed by government facilities (53%) and supermarkets/shops (13%). The type of information respondents stated they would like to have before using the self-test included: how to use the kits (66%), advantages of self-test kits over traditional HIV testing methods (33%), the benefits of the oral test kits (29%); and safety features (14%).

### Factors associated with willingness to use the self-test kits among MSM (bivariate analysis)

Table 2C outlines factors associated with willingness to use the HIV oral self-test kit among MSM versus those who stated they would not want to use self-test kits. There are no statistically significant differences in regards to willingness to use oral self-test kits across the variables of age, education, and marital status.

MSM who reported receiving an HIV test within the past six months were significantly less likely to indicate their willingness to use oral test kits. The same result was found for the variable “tested within the past 12 months”. MSM with high risk sexual behaviors including not using a condom at last sex, or having multiple male sex partners within the past one month were less likely to indicate their willingness to use oral test kits. Due to restriction of survey length for an exit interview, questions regarding attitudes toward HIV testing and the ability to handle HIV test results were not included.

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<sup>9</sup> Most of the other options were also mass media or mid-media including public education sessions, road shows, billboards, etc.

<sup>10</sup> Same as for MSM (above), most other options were actually mass media or community events.

**Table 2C: Factors associated with willingness to use HIV oral self-test kits among MSM (Bivariate analysis)**

	Would be willing to use the test kit if made available	
	%	Chi-2 (p-value)
<b>Age</b>		<i>0.24 (0.62)</i>
18-24 years	54.7	
35-49 years	59.6	
<b>Education</b>		<i>0.64 (0.67)</i>
Primary or less	59.4	
Secondary	50.0	
Tertiary	57.1	
<b>Marital status</b>		<i>0.36 (0.55)</i>
Never married/single	55.7	
Married to a woman	63.2	
<b>Tested for HIV within the past six months</b>		<b>15.4 (&lt;0.001)</b>
No	100	
Yes	48	
<b>Used condom at last sex</b>		<b>27.9 (&lt;0.001)</b>
No	25	
Yes	78	
<b>Had multiple sex partner within the past one month</b>		<b>9.3 (0.02)</b>
No	100	
Yes	52	

*Note: The second column “would not be willing to use” is omitted from the table because it is equal to 100% minus the % in the “would be willing to use” column.*

### **Factors associated with willingness to use the self-test kits among FSWs (bivariate analysis)**

Due to the small sample size of FSWs (N=100) and the fact that nearly all the FSWs indicated they would use the self-test kit, no bivariate analysis was conducted to differentiate potential users vs. non-users.

### **2.3. Willingness to pay for HIV oral self-testing**

**Among MSM**, 57% reported that they would be willing to pay for the test kit; similar to the percentage who said they would use the oral self-test if made available. The key incentives for buying the self-test kit included: the ability to test themselves (81%), privacy (67%), do not have to wait at a testing center (32%).

**Among FSWs**, most respondents (94%) indicated that they were willing to pay for the kit, similar to the general population, and was notably higher than MSM. Incentives for buying the kit included: the ability to test themselves (77%), privacy (42%), do not have to visit a health facility (36%); and do not have to wait at a testing center (21%).

Table 2D below presents the price points that MSM and FSWs reported they would be willing to pay for an HIV oral self-test kit. FSWs reported significant higher levels of willing to pay for all 8 price points than MSM. Among MSM, the median maximum price they reported as willing to pay for an oral self-test kit was 100 KSH, the mean maximum price was 308 KSH. The 25<sup>th</sup> percentile point was 50 KSH, and the 75<sup>th</sup> percentile point was 200 KSH. Among FSWs the median maximum price was 150 KSH, whereas the mean maximum price was 283 KSH. The 25<sup>th</sup> percentile point was 100 KSH, and the 75<sup>th</sup> percentile point was 250 KSH. The maximum price point that MSM would be willing to pay for an HIV oral test kit was significantly lower than the price that FSWs and the general population would be willing to pay. This finding is consistent with the overall levels of willingness to use the kit if made available (57%), and willingness to pay for the kit (57%) compared to the general population and FSWs.

**Table 2D: Price points among respondents willing to pay for an HIV oral test kit**

Price points	Amount willing to pay	
	MSM (n=57) % (n)	FSWs (n=94) % (n)
50 KSH	88 (50)	99 (93)
100 KSH	61 (35)	82 (77)
150 KSH	32 (18)	56 (53)
200 KSH	32 (18)	46 (43)
250 KSH	51 (12)	32 (30)
300 KSH	18 (10)	25 (23)
350 KSH	18 (10)	23 (22)
400 KSH	16 (9)	22 (21)

## DISCUSSION AND RECOMMENDATIONS

This first study aims to describe the profile of potential users, key incentives for using HIV oral self test kits, and preferences of promotion messages and distribution channels to inform future self-testing pilots and policies in Kenya.

### HIV testing prevalence

Overall, a high proportion of the study participants, both general and key populations, reported having ever tested for HIV (87% of general population, and over 90% among MSM and FSWs ever tested for HIV). These numbers are higher than the finding from the national AIDS Indicator Survey (2012) in Kenya, which shows a testing rate of 72%. The difference could be because we sampled only sexually active people, who reported having sex at least once in the past 12 months. In addition, our sample is much smaller and does not necessarily represent the entire country. When asking about HIV testing within a 12 month period, the testing rate was slightly reduced but still high with 70% among the general population, and approximately 90% among MSM and FSWs who had tested for HIV within the past 12 month period. Almost all participants indicated knowing a place to get tested for HIV, and for those who tested in the past 12 months, majority tested at public health facilities (60%). Study participants also showed a positive attitude towards HIV testing and satisfaction with the HTC services

they received. A higher proportion indicated that they would cope with an HIV test result or reveal it to their spouse or sex partners. Abilities to handle or reveal HIV test results were significantly associated with HTC uptake.

The findings indicate that the efforts to increase HIV testing uptake in Kenya have made impacts: HIV testing prevalence was significantly higher than it was projected or when it was measured in the previous national surveys. Among MSM and FSWs, findings can be biased toward over reporting of HTC rate because the samples of MSM and FSWs were small and participants were conveniently recruited at HTC drop-in-centers/clinics serving MSM and FSWs. These MSM and FSWs would have had a higher knowledge of HIV and HTC, more likely to be exposed to HIV prevention efforts, and thus be more likely to get tested for HIV. The overall characteristics related to HIV testing and counseling would affect the intention to use or the willingness to buy HIV oral self-test, which will be discussed in more detail in the next sections.

### **Objective 1: Explore who is likely to seek oral HIV self-testing among the general population and key populations at risk in urban and rural settings**

After demonstrating and describing the key features of an HIV oral test kit, study participants overwhelmingly indicated their willingness to use the oral self-test kits if they were made available. Willingness to use was almost universal among the general population (96%) and FSWs (98%), though very few participants in the general population and FSWs have ever heard of an HIV oral self-test kit. In contrast, half of the MSM participants had ever heard of HIV oral self-testing, which is much higher than the general population and FSWs, but only 57% indicated their willingness to use the oral self-test. The lower levels of willingness to use among MSM might be attributed to the small sample size and sampling bias for this population given that convenient sampling approach was utilized. In addition, from our qualitative interview with MSM, we also observed that drop-in-centers served a secondary purpose as a social gathering venue. MSM were observed ‘hanging out’ with friends, charging phones, and even watching television. In effect, these drop-in-centers offer more than services but also provide a venue for MSM to gather and thus may affect MSM’s choices for testing venue. In addition, MSM sampled at friendly service venues are likely not representative of the MSM population in Mombasa, especially those who have higher social economic status, as they do not often seek services at these free-of-charge venues (Sanders EJ et al, 2007). The research team observed the same phenomenon among FSWs and their drop-in-centers; however, FSWs report high levels of willingness to use and pay for the test.

Bivariate analysis suggests that those who have ever tested for HIV or tested for HIV within the past 12 months are more likely to be users of the self-test kits. Abilities to handle or reveal an HIV test result also appear to be an important factor for willingness to use self-test kits, for all 3 different study populations. These findings add to previous research literature suggesting that counseling and testing for HIV may influence other HIV-related behaviors (Fonner AV et al, 2012). However, among MSM, additional factors also influence willingness to use the self-test kits, including sexual risk behaviors. MSM who did not use a condom at last sex or had multiple sex partners were less likely to be potential users. These findings emphasize the importance of HIV education to increase an individual’s ability and self-efficacy to handle an HIV test result, or to reduce fear of an HIV test result. Intention for using self-test kits was lower among people who never tested for HIV or had not tested within the past 12 months, suggesting that more efforts might be needed when introducing oral test kits to this group.

The levels and correlates of “willingness to pay” are somewhat similar to the levels and correlates of “willingness to use”, for each study population. Willingness to pay was almost universal among the

general population and FSWs, which was much lower among MSM. Major incentives for buying the kit among all 3 populations include that they can test themselves and the privacy that the test would bring about. Past testing experience positively influenced willingness to pay for self-test kits. Interestingly, FSWs would be willing to pay for an HIV oral self-test kit with a much higher price, compared to the general population or MSM, (the median maximum price was 100 KSH for general population and MSM compared to 150 KSH for FSWs). On the other hand, MSM were much less willing to pay for the self-test kits, similar to their lower level of willingness to use the kits. We offer a few explanations for this. First, the levels and frequencies of testing were already much higher among MSM compared to the general populations. Most MSM in this study have tested twice in the previous 12 months, and most of their tests were free of charge. The research team also observed that many of the MSM participants were young and of lower social economic status although there were no significant association between these factors perhaps due to the selection bias of this population as a result of the convenient sampling approach utilized. The study team hypothesizes that their younger age and lower income would reduce their willingness to pay for the kits. MSM of higher social economic status may not socially engage with MSM at a drop in center or seek free services at HTC centers that serve MSM. Therefore this population of richer and more educated MSM might have been missed in the study. These same men are likely 'hidden' in society in order to preserve their marriages, jobs, and 'social standing' within the community. Therefore, interpretation of the lower levels of willingness to pay among MSM should be made with caution.

## **Objective 2: Identify incentives for using oral HIV self-test kits among the general population and key populations at risk in urban and rural settings**

Participants identified key incentives for using oral self-test kits, including: the simplicity/ease of use; privacy and confidentiality; and convenience. Current research supports this study's findings, where privacy and ease of use are important factors in acceptability of self-test kits among MSM and FSW populations (Marley G, 2014). Moreover, given that MSM and FSWs are highly stigmatized in Kenya, these findings are not surprising. Another key incentive for using oral self-test kits was that a visit to a health facility or VCT is not required. This aspect was particularly important for working individuals and individuals with low or no income. In our in-depth interviews, respondents with full-time employment (in or out of the home) reiterated that the open hours/hours of testing offered by health facilities and VCTs are often not convenient with their working schedules. In addition, many employed respondents stated that they do not have the time to wait at the facility for a test. Respondents who have little to no income stressed that while an HIV test may be free, the cost of transport to a testing site can be prohibitive. The oral self-test was considered an acceptable alternative to address the issues outlined above.

Bivariate analyses of the two most important incentives indicated that a set of factors affect participants' incentive choices. For those who tested for HIV in the past 12 months, or ever tested for HIV, or those who lived in rural areas, the 'ease of use' emerged as an essential feature in the decision to use the self-test kits. In contrast, privacy and confidentiality were more important for those who had higher education or urban residents. For those who had the abilities to handle or reveal an HIV test result, privacy and confidentiality were deemed less important. These findings suggest that, strategies to promote HIV oral self-testing would need to be tailored for each target population.

Though we did not directly measure the impact of subsidized self-test kits on willingness to pay in the survey, prices of test kits were important in participant's willingness to pay. Willingness to pay reduces significantly when the hypothetical prices increase. Almost all participants stated if the price was too high for them to buy the test kits, they would go back to traditional HIV testing and counseling services (92%).

### **Objective 3: Potential channels and messages to raise awareness and create demand for oral HIV self-test kits (to be conducted in Phase II).**

#### **3.1 Preferences of distribution and promotion channels**

Approximately 70% of the general population preferred self-test kits to be distributed through government clinics compared to 61% among private clinics. In light of the fact that most HIV testing occurs in the public sector, and health workers were reported to be a trusted source of knowledge, this finding was not surprising given it is a sector familiar to many Kenyans. Seventy-four percent of FSWs reported a preference for private clinics or pharmacies versus only 54% for public sector clinics. The finding is also similar to the general population in regards to the fact that FSWs are accustomed to interfacing with this sector of the health system. MSM prefer both public and private sector equally as distribution outlets for self-test kits (50% each). About 20% of the general population and 15% of key populations also preferred the self-test kits to be distributed or sold at supermarket/shop. Qualitative findings indicate that the lower levels of preference for supermarkets/shops was related to a fear of price gouging, unqualified counseling, and expired kits.

HIV testing prevalence is high in Kenya and most testing is performed at government or public clinics. Qualitative interviews revealed that these places are highly preferred by the study population (those who have ever tested). Respondents stated that they trust and prefer government or public clinics because they are staffed with knowledgeable health workers who provide counseling on a range of health issues, answer questions, provide advice, and provide access to a referral network. In addition, government clinics were also rated as more trust worthy. Respondents felt they were less likely to price gouge or sell expired and counterfeit drugs compared to private pharmacies. These findings may influence the participants' choice in distribution outlets of oral self-test kits.

Preferred promotion channels of the self-testkit were highly varied. Eighty-four percent of the general population preferred for the self-test kit to be promoted through mass media (i.e. television, radio, internet, billboards). During some probing through in-depth interviews respondents additionally stated that they would also prefer an official promotion of oral self-testing from the Ministry of Health via the mass media.

#### **3.2 Testing of channels and messages**

##### *Objective*

Based on the identified promotion channels described above, an additional step was taken to evaluate the comprehension of HIV oral self-testing messaging among the general population in Kenya. Two

channels were tested: TV and radio in both English and Kiswahili languages. The survey also sought to check on the believability of the message being conveyed by the communications channels.

### *Methods*

Participants were separated into “test” and “control” groups. The test group (n=150) was exposed to the radio and TV messaging about the key features of the oral self-test kits (The Oral self-test kit “Aware” was used). The control group (n=150) did not view any TV or radio ads, and were only given the manufacturer instructions that come with the test. In addition, differences in attitudes towards oral HIV self-testing between the two groups “test” and “control” were also assessed. Respondents were invited to a convenient location (i.e. public hall, market testing facility) for message and channel testing.

### *Key findings*

After the messages about the key features of HIV oral self-test kits were presented through TV or radio advertisements, participants were asked to recall the key points of the messages developed for HIV oral self-testing in Kenya. Findings indicate that recall was high and accurate in both channels: 73% of those exposed to the concept believed that practically everyone will notice and remember how to use the oral self-test. There was no clear language preference with regards to the television advertisement. However, the respondents seemed to prefer the Kiswahili version of the radio advertisement (61% stated that they would like to hear this version more compared to English).

The television message shows the ability to generally shape attitudes towards Oral HIV self-testing more than radio message, especially with regards to knowledge of purchase locations (+62%), confidence that they can perform the test (+62%), ease of following instructions (+52%), and belief in the test accuracy (+14) as being advertised.

The radio advertisement leaves the respondent speculating over whether the product would have the instructions as would be carried in other products such as condoms. In addition, the radio advertisement creates doubt as the ‘how to use’ is not covered. This is in line with the intended purpose of the radio advertisement as it manages to create awareness and intention to use. However, this will mean that the ‘how to use’ might need to be done at another point, possibly at point of purchase.

The following questions were frequently asked by participants after being exposed to the TV and radio advertisement.

- What factor may influence the accuracy of test results of the Oral HIV self-test kit? For instance, would alcohol and other substances such as tooth paste, interfere with the accuracy of the results?
- Why someone cannot get HIV from saliva but the test can be performed on saliva?
- How many times can a single kit be used? There needs to be an emphasis that the product should be used only once as some users are likely to reuse some of the products such as the swab
- How should the kit be disposed? Because the advertisement did not include information on how to dispose the kits after use, participants have often raised this question.
- Does it have an expiry date? While this would not be included in the communication advertisement, participants have asked this question. This consolidates the importance of having expiration date in the instruction and how this may influence the accuracy of the test results.

### **Limitations**

The study has a number of limitations. First, regardless of the use of the two stage-cluster sampling among the general population, this study was limited to only two provinces and thus is not necessarily representative of the entire Kenyan population. Among key populations (MSM and FSWs), the samples were likely biased toward lower SES and those who have healthier health-seeking behaviours due to convenient sampling at drop-in-centers serving MSM and FSWs. Therefore, interpretations of findings among MSM and FSWs should be made with caution.

Second, the extremely high levels of ever or recent testing for HIV, intention to use the self-test kits, and intention to buy the self-test kits made the effort to distinct likely users from non-likely users difficult. Some findings might be statistically insignificant due to limited statistical power. This was partially addressed by utilizing qualitative research findings. This phenomenon also prevents us from performing sophisticated analysis.

Third, because HIV oral self-testing was not available for the general population in Kenya at the time of the study and only one person in the study had ever used self-testing, assessing willingness to use or willingness to pay become difficult. The hypothetical price ranges among those who were willing to buy the kits could be subjected to the prices for other health services and products that participants have often or recently paid.

Fourth, the views of participants were only hypothetical - while the participants were informed about the key features of the test kits, it is possible their views may have differed if tests become available for use.

In addition, HIV-related assessment including HIV testing can be sensitive, introducing in social desirability bias. Some participants may report what they think interviewers would like to hear or may be unwilling to speak their thoughts in the focus group discussion.

### **Recommendations**

This first explanatory study provides critical insights into the designs of future HIV self-testing pilots. HIV self-testing is highly endorsed by the Kenyan study population as it ensures privacy and convenience.

This innovative approach would broaden the access to HIV testing, leading to the potential success of treatment as prevention. Based on the findings of this study, the study team makes the following recommendations:

1. Self-testing should be introduced and carefully evaluated for the general and key populations in Kenya. The levels of interest and intention to use self-test kits are overwhelmingly high among the general populations and FSWs. The intention to use among MSM was lower and likely due to the convenient sampling of only “out” (more openly gay) MSM at clinics. Further study with probability sampling (for example time location sampling or respondent-driven sampling) with adequate amount of recruitment time might be needed for this group. However, we took advantages of our on-going programming at the drop-in-centers to recruit MSM and FSWs aiming to bring some additional insights to the study.
2. Targeted communications should be part of the self-testing messaging regarding the importance of disclosure of HIV test results to sex partner or health care provider as well as maintaining safe sex practices.
3. Future HIV self-testing programs or promotion need to address the self-efficacy issues round HIV testing, as it has significant impacts on intention to use oral self-test kits. Those who believed in their abilities to handle or reveal an HIV result were more likely to use self-test kits. Support from spouse or partner is also important for intention to use the self-test kits. Among MSM, high risk sexual behavior was associated with lower levels of intention to use. This indicates the needs for increasing perceived risks of HIV infection within the HIV self-testing programs.
4. More efforts might be needed to reach never testers or those who tested less frequently because this group of participants indicated a lower level of intention in seeking HIV test.
5. The three most frequent incentives for being interested in using self-test kits were: ease of use/can self-test, convenience (don't have to go to facility, save time), and privacy. These incentives should be expressed in promotion messages around HIV self-testing. For urban and high SES populations, self-test kits deem even more attractive because privacy was highly expressed as the incentive for choosing self-testing.
6. Both general population and key populations prefer HIV self-testing kits to be introduced through health facilities, roughly equal between public and private health facilities. Health care providers and community health outreach workers are also regarded as preferred sources for promoting oral self-testing. This indicates the potential of self-test kit distribution using a community-based approach.
7. Both TV and radio demonstrated potentials as messaging channels for raising awareness and creating demands for HIV oral self-testing. Kiswahili is the preferred language for radio

advertisement. TV appears to be more effective than radio in helping viewers to recall the key message.

## REFERENCES:

1. Kenya National AIDS Strategic Plan 2009/10-2012/13 (KNASP III). Accessed 26 February 2013 at: [http://www.nacc.or.ke/index.php?option=com\\_content&view=article&id=112&Itemid=87](http://www.nacc.or.ke/index.php?option=com_content&view=article&id=112&Itemid=87).
2. Denison JA, O'Reilly KR, Schmidt GP, Kennedy CE, Sweat MD. (2008). HIV voluntary counseling and testing and behavioral risk reduction in developing countries: a meta-analysis, 1990--2005. *AIDS Behav*, 12(3), 363-373.
3. Ministry of Public Health & Sanitation, Approved HIV Testing Algorithm.
4. Kenya Demographic Health Survey (DHS). (2009). Accessed online 28 February 2013 at: <http://www.measuredhs.com/publications/publication-FR229-DHS-Final-Reports.cfm>
5. UNAIDS. The Kenya AIDS Epidemic Update 2011. (2012). Accessed 29 September 2012 at: [http://www.unaids.org/en/dataanalysis/knowyourresponse/countryprogressreports/2012countries/ce\\_KE\\_Narrative\\_Report.pdf](http://www.unaids.org/en/dataanalysis/knowyourresponse/countryprogressreports/2012countries/ce_KE_Narrative_Report.pdf).
6. Kenya AIDS Indicator Survey (KAIS). (2007). Preliminary Report. Available online at: [http://www.who.int/hiv/pub/progress\\_report2011/en/index.html](http://www.who.int/hiv/pub/progress_report2011/en/index.html)rt, National AIDS and STI
7. Spielberg F, Levine R, Weaver M. (2004). Self-testing for HIV: a new option for HIV prevention? *The Lancet Infectious Diseases*, 4, 640-646.
8. Kachroo S. (2007). Promoting self-testing for HIV in developing countries: potential benefits and pitfalls. *Bulletin of the World Health Organization*. 84(12): 999-1000.
9. National AIDS and STI Control Programme (NASCOP)/Ministry of Public Health and Sanitation [Kenya]. (2010). National Guidelines for HIV Testing and Counselling and Kenya. Nairobi: NASCOP
10. WHO. (2011). HIV self-testing among health workers: a review of the literature. Accessed February 23, 2013 at: <http://www.who.int/hiv/pub/vct/9789241501033/en/index.html>.
11. Kalibala S, Waimar T, Muraah W, Cherutich P, Oweya E and Oluoch P (2011). Knowing Myself First: Feasibility of self-testing amongst health workers in Kenya. Population Council.
12. Choko AT, Desmond N, Webb EL, Chavula K, Napierala-Mavedzenge S, et al. (2011) The Uptake and Accuracy of Oral Kits for HIV Self-Testing in High HIV Prevalence Setting: A Cross-Sectional Feasibility Study in Blantyre, Malawi. *PLoS Med*, 8(10): e1001102. doi:10.1371/journal.pmed.1001102.
13. Obare F, Fleming P, Anglewicz P, Thornton R, Martinson F, et al. (2009). Acceptance of repeat population-based voluntary counseling and testing for HIV in rural Malawi. *Sex Transm Infect*, 85: 139-144.
14. Wambale FM, Ssali SN, Byaruhanga S, Kalyango JN, Karamagi CA. (2008). Voluntary HIV counseling and testing among men in rural western Uganda: implications for HIV prevention. *BMC Public Health*, 8:263.
15. Grispen J, Ronda G, Dinant G, Vries N, van der Weijden T. (2011). To test or not to test: A cross-sectional survey of the psychosocial determinants of self-testing for cholesterol, glucose and HIV. *BMC Public Health*, 11(1), 112.
16. Kenya: HIV Prevention Response and Modes of Transmission Analysis. Available online at: <http://siteresources.worldbank.org/INTHIVAIDS/Resources/375798-1103037153392/KenyaMOT22March09Final.pdf>
17. UNAIDS. (2012). The Kenya AIDS Epidemic: 2011 Country Progress Report. Accessed February 23, 2013 online at: [http://www.unaids.org/en/dataanalysis/knowyourresponse/countryprogressreports/2012countries/ce\\_KE\\_Narrative\\_Report.pdf](http://www.unaids.org/en/dataanalysis/knowyourresponse/countryprogressreports/2012countries/ce_KE_Narrative_Report.pdf) lth. 11: 112-122.

18. Choko, A. T., Desmond, N., Webb, E. L., Chavula, K., Napierala-Mavedzenge, S., Gaydos, C. A., ... & Corbett, E. L. (2011). The uptake and accuracy of oral kits for HIV self-testing in high HIV prevalence setting: a cross-sectional feasibility study in Blantyre, Malawi. *PLoS Medicine*, *8*(10), e1001102.
19. Ng OT, Chow AL, Lee VJ, Chen MI, Win MK, et al. (2012). Accuracy and user acceptability of HIV self-testing using an oral fluid-based rapid test. *PLoS One*, *7*(9):e45168. doi: 10.1371
20. Musheke, M., Ntalasha, H., Gari, S., Mckenzie, O., Bond, V., Martin-Hilber, A., & Merten, S. (2013). A systematic review of qualitative findings on factors enabling and deterring uptake of HIV testing in Sub-Saharan Africa. *BMC public health*, *13*(1), 220.
21. CIA World Factbook. Available online at: <https://www.cia.gov/library/publications/the-world-factbook/geos/ke.html>.
22. Sanders EJ, Graham SM, Okuku HS, van der Elst EM, Muhaari A, et al. (2007). HIV-1 infection in high risk men who have sex with men in Mombasa, Kenya. *AIDS*, *21*(18):2513-2520.
23. Fonner, V. A., Denison, J., Kennedy, C. E., O'Reilly, K., & Sweat, M. 2012. Voluntary counseling and testing (VCT) for changing HIV-related risk behavior in developing countries. *Cochrane Database Syst Rev*, *9*.
24. Marley, G., Kang, D., Wilson, E. C., Huang, T., Qian, Y., Li, X., ... & Ma, W. (2014). Introducing rapid oral-fluid HIV testing among high risk populations in Shandong, China: feasibility and challenges. *BMC Public Health*, *14*(1), 422.
25. Luchters SM, Vanden Broeck D, Chersich MF, Nel A, Delva W, et al. (2010). Association of HIV infection with distribution and viral load of HPV types in Kenya: a survey with 820 sex workers. *BMC Infect Dis*, *10*:18. doi: 10.1186/1471-2334-10-18.
26. Kenya National Bureau of Statistics (KNBS) and ICF Macro. (2010). *Kenya Demographic and Health Survey 2008-09*. Calverton, Maryland: KNBS and ICF Macro.
27. Kish, L. (1949). A procedure for objective respondent selection within the household. *Journal of the American Statistical Association*, *44*(247), 380-387.
28. Mannava P, Giebel S, King'ola N, Temmerman M, Luchers S. (2013). Male Sex Workers Who Sell Sex to Men Also Engage in Anal Intercourse with Women: Evidence from Mombasa, Kenya. *PLoS One*, *8*(1): e52547. doi:10.1371/journal.pone.0052547.
29. UNAIDS. (2010). Joint United Nations Programme on AIDS: *Getting to zero-2011-2015 Strategy*. Geneva: UNAIDS 2010. Available at: [www.unaids.org/unaids/unaidspublication/2010/jc2034/en/](http://www.unaids.org/unaids/unaidspublication/2010/jc2034/en/). Accessed 24 March 2011
30. National AIDS Control Council [NACC]. (2009). Analysis of HIV prevention response and modes of HIV transmission analysis. Nairobi: NACC.
31. National AIDS Control Council [NACC]. (2009). Kenya National HIV and AIDS Strategic Plan 2009/10 – 2012/13. Nairobi: NACC.
32. Republic of Kenya. (2009). Kenya AIDS Indicator Survey, KAIS 2007: Final Report. Nairobi: Republic of Kenya.
33. UNAIDS. (2012). The Kenya AIDS Epidemic Update 2011. Accessed 29 September 2012 at: [http://www.unaids.org/en/dataanalysis/knowyourresponse/countryprogressreports/2012countries/ce\\_KE\\_Narrative\\_Report.pdf](http://www.unaids.org/en/dataanalysis/knowyourresponse/countryprogressreports/2012countries/ce_KE_Narrative_Report.pdf).
34. World Health Organization [WHO]. (2012). Service delivery approaches to HIV testing and counseling (HTC): A strategic HTC programme framework. Geneva: WHO.
35. World Health Organization [WHO]. (2011). HIV self-testing among health workers: A review of the literature and discussion of current practices, issues and options for increasing access to HIV testing in sub-Saharan Africa. Geneva: WHO.