Kenya AIDS Indicator Survey 2007

KAIS

KENYA AIDS INDICATOR SURVEY
KAIS - 2007

Final Report

September 2009

KAIS 2007 Collaborating Institutions

Ministry of Medical Services, and Ministry of Public Health and Sanitation:
- National AIDS and STI Control Programme (NASCOP)
- National Public Health Laboratory Services (NPHLS)
- Kenya Medical Research Institute (KEMRI)

Ministry of State for Special Programmes:
- National AIDS Control Council (NACC)

Ministry of State for Planning, National Development and Vision 2030:
- Kenya National Bureau of Statistics (KNBS)
- National Coordinating Agency for Population and Development (NCAPD)

U.S. Centers for Disease Control and Prevention (CDC), Kenya/USA
U.S. Agency for International Development (USAID), Kenya/USA
World Health Organization (WHO)
United Nations Joint Programme on HIV/AIDS (UNAIDS)

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CHAPTER 15 Returning Test Results

APPENDIX A Methods of the 2007 KAIS

Abbreviations

AFASS	Affordable, feasible, acceptable, sustainable and safe
AIDS	Acquired immunodeficiency syndrome
AIS	AIDS Indicator Survey
ANC	Antenatal clinic
ART	Antiretroviral therapy
ARV	Antiretroviral
BCP	Basic care package
BD	Becton Dickinson
CDC	Centers for Disease Control and Prevention
CD4	CD4 T-lymphocyte
CI	Confidence interval
CSPro	Census and Survey Processing System
CPT	Cotrimoxazole prophylaxis therapy
CTX	Cotrimoxazole
DASCO	District AIDS/STI Coordinator
DBS	Dried blood spot
FBO	Faith-based organization
GOK	Government of Kenya
HAART	Highly-active antiretroviral therapy
HIV	Human immunodeficiency virus
HSV-2	Herpes simplex virus-2
IEC	Information, education, and communication
IRB	Institutional Review Board
ITN	Insecticide-treated bed net
IUD	Intrauterine device
KAIS	Kenya AIDS Indicator Survey
KDHS	Kenya Demographic and Health Survey
KEMRI	Kenya Medical Research Institute
KNASP	Kenya National HIV/AIDS Strategic Plan
KNBS	Kenya National Bureau of Statistics
Ksh	Kenya Shilling
LLITN	Long-lasting insecticide treated net
MCH	Maternal and child health
ml	Milliliter
μL	Microliter
MOMS	Ministry of Medical Services
MOPHS	Ministry of Public Health and Sanitation
MTCT	Mother-to-child transmission for HIV
NACC	National AIDS Control Council
NASCOP	National AIDS/STI Control Programme
NASSEP	National Sample Survey and Evaluation Programme
NBTS	National Blood Transfusion Service
NCAPD	National Coordinating Agency for Population and Development
NPHLS	National Public Health Laboratory Service
OVC	Orphans and vulnerable children

PASCO	Provincial AIDS/STI Coordinator
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PLWHA	People living with HIV/AIDS
PMTCT	Prevention of mother to child transmission of HIV
PPS	Probability proportionate to size
RPR	Rapid plasma reagin
SAS	Statistical Analysis Software
STI	Sexually transmitted infection
TB	Tuberculosis or Tubercle Bacillus
TWG	Technical working group
TPPA	Treponema pallidum particle agglutination
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
USAID	U.S. Agency for International Development
VCT	Voluntary counseling and testing
WHO	World Health Organization

Foreword

It is with great pleasure that we launch this report, which presents the major findings of the inaugural 2007 Kenya AIDS Indicator Survey (KAIS). The study was planned, conducted and documented by a team of survey experts, technical advisors and government officials for the people of Kenya. KAIS is the first national, population-based survey anywhere in the world that included testing for CD4 cells among those infected with HIV, a measure that is critical for understanding the HIV epidemic and planning prevention, care and treatment services. Additionally, for the first time in a national sero-prevalence survey in Kenya, KAIS covered both women and men aged 50-64 years, typically considered to be at low risk and to have low burden of HIV.

The objective of this survey was to provide comprehensive information on indicators of HIV/AIDS that build upon and go beyond the 2003 Kenya Demographic Health Survey. In 2003, the prevalence of HIV, coverage of HIV testing and data on discordant couples provided important benchmarks for comparison with future studies. In 2007, we included questions on perceived HIV status, awareness of partner HIV status, and utilization of HIV care and treatment.

With this 2007 KAIS report, policymakers, programme planners and researchers will be able to plan HIV services and monitor and evaluate their efforts more effectively. KAIS has provided the Government with valuable information as it continues to better understand, prevent and manage this disease for the well-being of Kenyans.

We wish to acknowledge the contributions of a number of organizations. The survey and report could not have been accomplished without them. We would like to recognize the National AIDS and STI Control Programme (NASCOP), the National AIDS Control Council (NACC), the Kenya National Bureau of Statistics (KNBS), the National Public Health Laboratory Service (NPHLS), the National Coordinating Agency for Population and Development (NCAPD) and the Kenya Medical Research Institute (KEMRI). We are grateful to the hundreds of survey personnel who devoted many hours to conduct this survey. For their technical assistance and financial support, we wish to thank the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) through the Centers for Disease Control and Prevention (CDC) and the United States Agency for International Development (USAID), and the United Nations through UNAIDS and the World Health Organization (WHO).

We wish to commend the people of Kenya who embraced this project, allowed survey personnel into their homes and generously offered their time, personal information and blood samples to make the 2007 KAIS a success.

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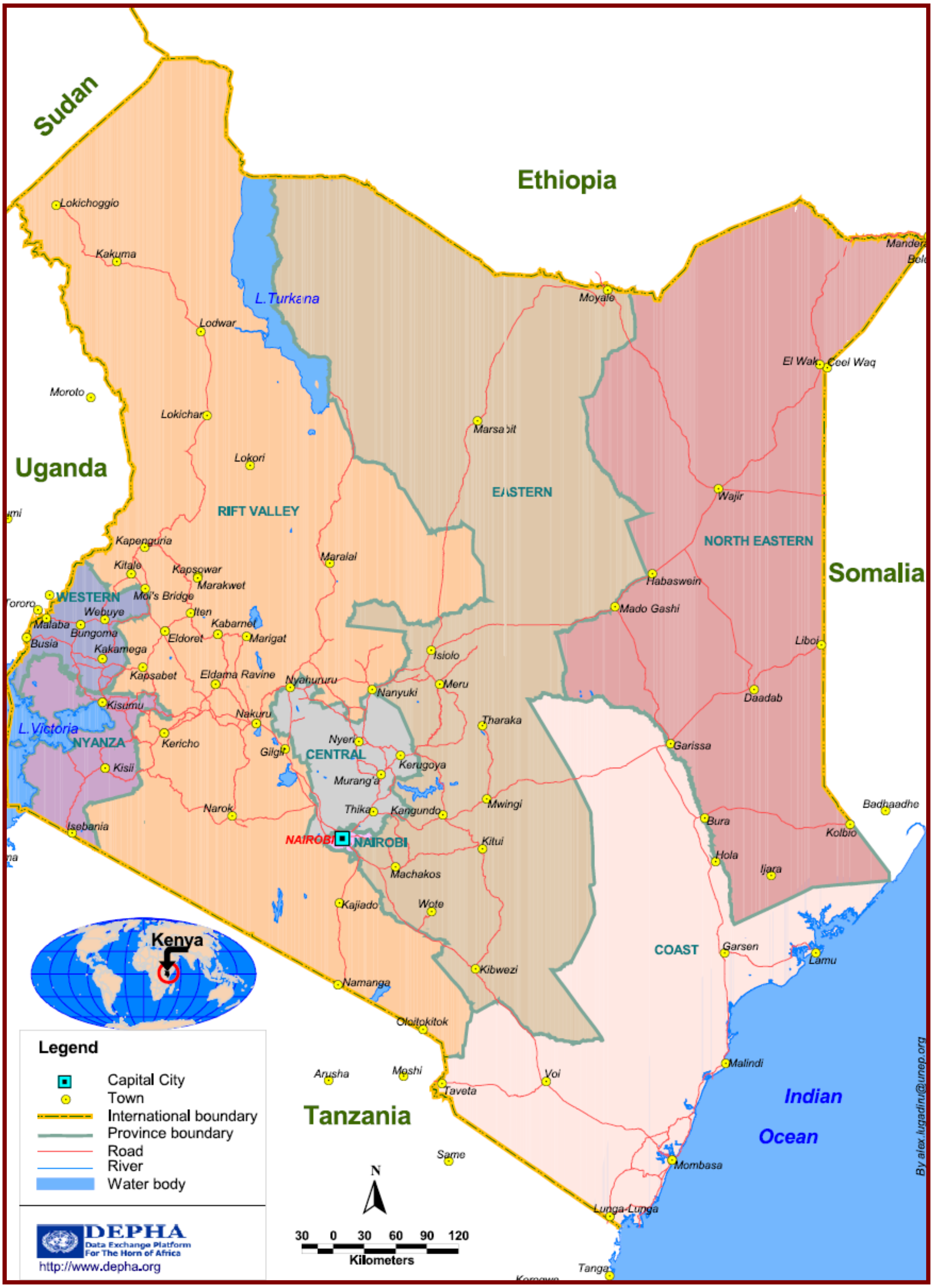
Administrative Map of Kenya



Executive Summary

Obtaining nationally representative estimates on behavioural, clinical, and biologic indicators for HIV/AIDS is critical for evaluating a country's response to the HIV epidemic. National population-based surveys with HIV testing provide national-level prevalence estimates and the opportunity to link HIV status with behavioural, social, demographic and other biological information.

The 2007 Kenya AIDS Indicator Survey (KAIS) is Kenya's first survey of its type and provides comprehensive information on HIV and other sexually transmitted infections (STIs). These data provide the information needed for advocacy and for planning appropriate interventions for HIV prevention, treatment and care. The 2007 KAIS builds upon previous national-level HIV estimates from the first population-based survey with HIV testing, the 2003 Kenya Demographic and Health Survey (KDHS); this allows us to compare prevalence estimates and important behavioural indicators between 2003 and 2007.

Findings from the 2007 KAIS are summarized below and described in detail in this report. The general background characteristics of respondents are provided in Appendix B.1. Estimates presented in the report and their corresponding sample sizes and 95% confidence intervals are presented in Appendices B.2-B.15. Estimates have been weighted appropriately for the two-stage sample design, with a noted exception in Chapter 15, where we present uptake of test results. The report presents the results of univariate and bivariate analyses; analyses are not adjusted for confounding factors. Multivariate analysis of KAIS data, adjusted for possible confounders, will be presented in other dissemination materials, such as peer-reviewed scientific publications. Throughout the report, the term significant indicates a p-value[1] less than 0.05. Marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

Key Features of the 2007 KAIS

- Provides nationally-representative information about the HIV/AIDS epidemic
- 18,000 individuals from nearly 10,000 households participated
- Included both women and men aged 50-64 years for the first time in a national HIV survey in Kenya
- Captured prevalence of HIV, HSV-2 and syphilis, and CD4 cell counts for those with HIV infection
- Covered knowledge of HIV status and uptake of HIV prevention, care, and treatment services
- Yielded greater blood draw participation rates among women and men, in rural and urban areas compared to previous national HIV survey

1 A p-value is the probability of obtaining a result as extreme or more extreme than the one that was actually observed if the null hypothesis was true. If the result is less likely to be observed under the assumptions of the null hypothesis, then p-value will be small and hence the greater the evidence against the null hypothesis.

Key Findings: HIV Prevalence

- Of adults aged 15-64 years, an estimated 7.1%, or 1.42 million people, were living with HIV infection in 2007. Prevalence among adults aged 15-49 years was 7.4%, and was not statistically different from the 2003 KDHS estimate (6.7%).
- Prevalence among youth aged 15-24 years was 3.8%. Among older adults aged 50-64, 5.0% were infected with HIV.
- Women were more likely to be infected (8.4%) than men (5.4%). In particular, young women aged 15-24 years were four times more likely to be infected (5.6%) than young men of the same age group (1.4%).
- There was wide regional variation in HIV prevalence among adults aged 15-64 years, ranging from 14.9% in Nyanza province to 0.8% in North Eastern province. Of all HIV-infected adults aged 15-64 years, over half (51.4%) lived in Nyanza and Rift Valley provinces.
- HIV prevalence among uncircumcised men aged 15-64 years was three times greater than among circumcised men (13.2% vs. 3.9%, respectively).

Prevalence of HIV and trends

National HIV prevalence was estimated to be 7.1% among adults aged 15-64 years. Women were more likely to be infected (8.4%) than men (5.4%), and young women aged 15-24 years were four times more likely to be infected (5.6%) than young men of the same age group (1.4%). The overall HIV prevalence in adults aged 50-64 was 5.0%. Significant differences in HIV prevalence were found across provinces. HIV prevalence among adults aged 15-64 years in urban areas was 8.4% and in rural areas was 6.7%. An estimated 1,027,000 adults living with HIV in Kenya resided in rural areas, and 390,000 lived in urban areas. Over half (51.4%) of all HIV-infected adults lived in Nyanza and Rift Valley provinces.

The 2003 KDHS surveyed women and men aged 15-49 years and estimated that 6.7% of this population was infected with HIV in 2003. In the 2007 KAIS, HIV prevalence among those aged 15-49 years was 7.4% and was not statistically different from the 2003 estimate. HIV prevalence among adults aged 15-49 years in urban areas decreased from 10.0% in the 2003 KDHS to 8.7% in KAIS, while HIV prevalence in rural areas increased from 5.6% to 7.0%; these differences were not statistically significant.

HIV prevention

HIV counselling and testing are key elements in a comprehensive response to the HIV epidemic. The proportion of adults who reported that they had ever been tested for HIV increased from 15.2% in 2003 to 36.6% in 2007 among adults aged 15-49 years. Of respondents aged 15-64 years that had ever been tested for HIV, 49.5% had tested within the 12 months prior to KAIS. Women were significantly more likely to have been tested for HIV (44.6%) than men (25.6%). Among adults who had never been tested, 47.2% did not test for HIV because they perceived themselves to be at low risk for HIV infection. According to the 2007 KAIS, 83.6% of all HIV-infected adults were unaware that they were infected. HIV testing must increase substantially to reach Kenya's goal of 80% testing coverage for all adolescents and adults by 2010.

Key Findings: HIV Prevention

- Among adults aged 15-64 years, 33.9% had ever been tested for HIV and received test results, 44.6% of women and 25.6% of men.
- Knowledge of HIV status was low: only 16.4% of HIV-infected respondents knew their status. Knowledge of partner HIV status was also low. Respondents were aware of their sexual partner's HIV status in only 22.2% of reported partnerships reported
- Among women who reported having a live birth between 2003 and 2007, 10.4% did not visit an antenatal clinic (ANC). Among those who visited an ANC, HIV testing increased from 50.4% in 2003 to 78.6% in 2007.
- Condom use at last sex was low in marital/cohabiting partnerships (4.2% among partnerships reported by women and 5.9% among partnerships reported by men) compared to non-marital/non-cohabiting partnerships (35.7% among partnerships reported by women and 52.6% among partnerships reported by men).
- The national prevalence of HSV-2 and syphilis was 35.1% and 1.8%, respectively. Among those with HIV, HSV-2 infection was common: prevalence was 83.6%. Among those with HIV, syphilis prevalence was 4.2%.
- Among married/cohabiting couples, 9.7% had at least one HIV-infected partner. At the time of the survey, Kenya had an estimated 344,000 HIV-discordant couples.
- Overall, 57.5% of women and 56.4% of men reported having had unprotected sex with at least one partner of unknown or known HIV-discordant status in the 12 months prior to the survey.

Overall, 86.5% of respondents who had ever been tested for HIV and self-reported positive or negative also reported they had disclosed their HIV status to their sexual partners; however, in 77.9% of sexual partnerships, respondents reported they did not know their partners' HIV status, and this percentage was especially high in casual partnerships (92.2%). HIV-infected adults who were aware of their status were significantly more likely to know their partners' HIV status than other infected and uninfected adults. Overall, 5.9% of married or cohabiting couples in Kenya were discordant for HIV, that is, one partner was infected and the other was not. This corresponds to an estimated 344,000 HIV-discordant couples nationwide. HIV testing efforts should be strengthened for individuals and their partners.

Number of sexual partners, inconsistent condom use, young age at first sex, and lack of male circumcision were some of the key factors associated with acquisition and sexual transmission of HIV. The majority of adults aged 15-64 years (52.2% of women and 73.1% of men) have had more than one sexual partner in their lifetime; 1.7% of women and 11.9% of men had more than one sexual partner in the 12 months prior to the survey. Consistent condom use with sexual partners in the year preceding the survey was low, even among women and men who reported more than one sexual partner. The median age at sexual debut was 17.5 years for both young women and men aged 15-24 years. Twenty percent (20.0%) of young women and 22.4% of young men reported having had sex for the first time before 15 years of age.

Overall, 85.0% of men reported being circumcised; the proportion of men who were circumcised was lowest in Nyanza province (48.2%). Uncircumcised men were three times more likely to be infected with HIV (13.2%) than circumcised men (3.9%).

Knowledge about HIV, realistic perceptions of risk, and stigma reduction are considered critical for reducing the risk of HIV acquisition and transmission. Among all respondents, 98.3% had heard about AIDS. Comprehensive knowledge of HIV/AIDS had improved since 2003, and knowledge was highest among persons with more years of education and among urban residents. Excluding respondents who self-reported positive, 70.7% believed themselves to be at low or no risk for acquiring HIV; among these adults, 76.7% reported having only one partner as the reason they were at low risk. Overall, willingness to care for an HIV-infected family member was high (91.5%).

Mother-to-child transmission of HIV

The prevention of mother-to-child transmission (PMTCT) program in Kenya was launched in 2000 and has undergone a substantial scale-up since 2003. A total of 89.6% of women who were pregnant between 2003 and 2007 reported attending an ANC at least once during their pregnancy. HIV testing at ANCs increased steadily since 2003, and in 2007, 78.6% of women who reported attending an ANC also reported receiving an HIV test at the ANC. HIV testing at ANCs accounted for a substantial proportion of HIV testing among women of reproductive age (aged 15-49 years); 63.8% of women who reported ever having been tested at an ANC had never tested elsewhere. Nonetheless, 10.4% of women who reported having a birth between 2003 and 2007 did not visit an ANC indicating a need for sustained efforts to increase ANC attendance and to consider PMTCT services beyond established ANCs.

Reproductive health: pregnancy and contraception

HIV prevalence among women who reported they were currently pregnant was 9.0%. Among HIV-uninfected pregnant women, and currently breastfeeding women who reported unprotected sex in the year before the survey, the HIV status of their partners was unknown in 72.7% and 77.6% of partnerships, respectively.

Among all women of reproductive age (15-49 years), 70.5% reported wanting to delay pregnancy by two or more years; that is, they either did not want a child within the next two years or did not want a child (or more children) ever in the future. Less than half (45.0%) of these women were reportedly using modern contraception. Among HIV-infected women, 66.8% reported wanting to delay pregnancy by two or more years; 40.5% of these women were using modern contraception. Among HIV-uninfected women, 71.2% reported wanting to delay pregnancy by two or more years; 45.6% of these women were using modern contraception.

Blood safety

Nationwide, an estimated 2.3% of adults reported donating blood in the year prior to the survey; among these adults, 48.3% reported they were approached by a blood transfusion service, the majority of which fall within the Kenya National Blood Transfusion Service network. Of the remainder, 40.4% of participants reported that a family or friend asked them to donate, most likely as a family/replacement donor. The majority of adults who reported donating blood in the year prior to the survey were men: among donors that had been requested to donate by a blood transfusion service, 69.2% were men, and among donors requested to donate by friends or family, 81.4% were men. Among donors who were requested to donate by a blood transfusion service, 69.2% were under 25 years of age. By comparison, persons who were requested to donate by family or friends were older, with 60.9% aged 30 years or older.

HIV prevalence among persons who reported donating blood in the year before the survey was 4.7% and differed by source of donation request. Among donors who had received a request to donate to a blood transfusion service, 2.5% were infected with HIV compared to 7.4% among persons who reported donating for a family or friend; this difference was marginally significant.

Key Findings: HIV Care and Treatment

- Only 12.1% of HIV-infected persons in KAIS reported taking daily cotrimoxazole. Low coverage was associated with low awareness of HIV status. Among those infected and aware of their HIV status, uptake of daily cotrimoxazole was high (76.1%).
- Among all HIV-infected persons with a CD4 cell count of ≤250 cells/μL, antiretroviral (ARV) treatment coverage was 40.5%. As with cotrimoxazole, the majority (93.8%) of persons eligible but not on ARV therapy were unaware they were HIV-infected. Among those who were eligible and knew they were infected, 91.6% were taking daily ARVs.

Care and treatment

Nationwide, an estimated 1.42 million people were HIV-infected at the time of the 2007 KAIS and therefore could benefit from accessing HIV care and treatment services. Among all HIV-infected adults, cotrimoxazole coverage was low at 12.1%, primarily because only 16.4% were aware of their HIV infection. Among HIV-infected respondents who were aware of their HIV status, daily cotrimoxazole use was significantly higher at 76.1%. Of all HIV-infected adults who were eligible for ARV therapy (CD4 count of ≤250 cells/μL), 59.5% were not taking daily ARVs. The vast majority (93.8%) of these individuals were unaware of their HIV infection. Of those aware of their status and eligible, 91.6% were taking daily ARVs. As HIV testing services are expanded, Kenya also must be prepared to scale-up HIV care and treatment services to meet the needs of those newly diagnosed with HIV.

HIV-infected adults aged 15-64 years who were aware of their HIV infection were twice as likely to have visited an outpatient medical facility in the four weeks prior to the survey, compared to those unaware (51.2% and 22.9%, respectively). Similarly, those aware of their HIV infection were approximately four times more likely to report an overnight hospitalization than those unaware (14.1% and 3.2%, respectively).

Among all HIV-infected adults, 9.6% reported a previous tuberculosis (TB) diagnosis. More than half of these adults (61.1%) were aware of their HIV status; the majority had reported completing TB treatment (85.3%); and approximately half (51.2%) reported taking daily cotrimoxazole. This means that nearly half (48.8%) were not taking cotrimoxazole, which is recommended for all HIV-infected adults. It was not possible to determine whether HIV infection preceded TB infection or vice versa from the survey data.

Many HIV-infected individuals have chronic health care needs and could benefit from an array of prevention, acute care and long-term care services. In particular, the Ministry of Medical Services recommends safe drinking water, mosquito bednets and daily multi-vitamins for all HIV-infected persons. At the time of the 2007 KAIS, 45.5% of HIV-infected adults in Kenya lived in a household that treated its main source of drinking water; the most commonly reported method of treatment was boiling.

Among all HIV-infected adults, 45.3% slept under a bednet the night before the survey; 20.2% slept under an insecticide-treated net. There were no significant differences in water treatment practices and bednet usage between those aware or unaware of their HIV status. Among HIV-infected adults aware of their HIV status, 36.4% reported taking daily multi-vitamins.

HSV-2, syphilis and co-infection with HIV

The national prevalence of herpes simplex virus type 2 (HSV-2), the virus that causes genital herpes was estimated at 35.1%, indicating that an estimated 7 million adults aged 15-64 years were infected with HSV-2 at the time of the survey. Women were more likely to be infected than men (41.7% and 26.3%, respectively). Men who were uncircumcised (38.3%) were more likely to be infected with HSV-2 compared to men who were circumcised (24.0%). HSV-2 prevalence increased significantly with increasing number of lifetime sexual partners among women and men. Among individuals with HSV-2, 16.4% were also infected with HIV, which was eight times greater than the HIV prevalence among individuals without HSV-2 (2.1%).

The national prevalence of active syphilis infection (defined as having seropositive results on both a Treponema pallidum particle agglutination assay and a rapid plasma reagin test result) was 1.8%. Prevalence was similar between women (1.7%) and men (1.9%) and increased significantly with age, number of lifetime sexual partners and lack of male circumcision. Among those with syphilis, 16.9% were also infected with HIV, 71.5% were also infected with HSV-2, and 15.9% were infected with both HIV and HSV-2.

Prevalence of HIV, HSV-2 and syphilis among women and men aged 15-64 years, Kenya 2007.

	HIV (%)	HSV-2 (%)	Syphilis (%)
Women	8.4	41.7	1.7
Men	5.4	26.3	1.9
Total	7.1	35.1	1.8

Orphanhood and household characteristics

Nationally, 11.1% of children under age 15 years had lost one or both parents, corresponding to an estimated 1.78 million children. In Nyanza province, the prevalence of orphaned children was 20.9%, nearly double the national prevalence.

Of all households in KAIS, 11.0% were affected by HIV, that is, at least one person in the household was HIV-infected. In 75.6% of HIV-affected households, the HIV-infected household member was the head of household, defined as the person with decision making authority and usually economic responsibility for the household and its members. In both rural and urban areas, most households did not treat their drinking water (60.1% and 52.1%, respectively), including both HIV-affected and HIV-unaffected households. More than one in four rural households (27.2%) reported surface water from rivers, dams, ponds, streams, and irrigation channels as their main source of drinking water. Mosquito net ownership increased 2.5 times between the 2003 KDHS and the 2007 KAIS; 56.1% of households in 2007 owned at least one mosquito net compared to 21.8% in 2003.

1

Introduction, Overview of Methods and Response Rates

1.1 Background

The control of HIV/AIDS remains a major challenge in Kenya. High prevalence of HIV with regional variations, low levels of HIV testing, HIV discordance within couple relationships and concurrent epidemics of other sexually transmitted infections (STIs) make the management of the HIV epidemic difficult and complex. To overcome these challenges, policymakers and programme planners need the highest quality data to implement, monitor and evaluate HIV prevention, care and treatment services. This report presents the primary findings of the 2007 Kenya AIDS Indicator Survey (KAIS) – a nationally- and regionally-representative household survey that provides information on HIV and STI prevalence, factors associated with infection, and the scope of Kenya's prevention, care and treatment response.

The first case of HIV in Kenya was diagnosed in 1984. Since then, the epidemic and the government's response to it have expanded. When the epidemic was first recognized, the highest rates of infection were concentrated in marginalised and special-risk groups, including women who were sex workers and their clients, and men in mobile occupations, such as long-distance truck drivers. For more than a decade, however, the country has faced a mixed HIV/AIDS epidemic; new infections are occurring both in the general population and in vulnerable, high-risk groups.

HIV epidemics are intricate and dynamic, and governments must track certain indicators to control their epidemics effectively, including the incidence of new HIV infections; mortality due to HIV-related illness; and access to HIV care, treatment and prevention services. Since 1990, Kenya has conducted annual HIV sentinel surveillance among pregnant women attending antenatal clinics (ANC) and patients attending STI clinics. By 2007, sentinel surveillance included 44 rural and urban sites throughout the country. Other sources of information on HIV/AIDS include program data from voluntary counselling and testing (VCT) sites, prevention of mother-to-child transmission (PMTCT) services, and blood donation screening, and population-based data from the 2003 Kenya Demographic and Health Survey (KDHS), the first survey in Kenya to provide national and provincial estimates of HIV prevalence.

UNAIDS and the World Health Organisation (WHO) recommend that a survey of a representative sample of the general population be included in HIV surveillance systems in countries with generalised and mixed epidemics to provide reliable measures of prevalence for women and men and information to calibrate the data from routine HIV sentinel surveillance.[1]

Since the 2003 KDHS, Kenya has witnessed a considerable increase in funding for its HIV/AIDS national programme from major global initiatives. The resulting growth and diversification in HIV/AIDS services highlights the need for commensurate expansion of HIV and STI surveillance systems. In particular, interpreting HIV prevalence trends in the context of scale-up of antiretroviral (ARV) therapy requires surveillance tools that collect comprehensive information on HIV care, treatment, and prevention indicators. The 2007 KAIS was specifically designed to address these new and evolving issues.

1 Guidelines for Second Generation HIV Surveillance: WHO/CDS/CSR/2000.5, UNAIDS/00.03E (2000).

1.2 National Policy on HIV/AIDS

The Government of Kenya (GOK) established policy guidelines for HIV and AIDS in Sessional Paper No. 4 of 1997. In 1999, the GOK declared the HIV epidemic a national disaster and created the National AIDS Control Council (NACC) under the Office of the President to coordinate a multi-sectoral response to HIV/AIDS.

The GOK developed the first Kenya National HIV/AIDS Strategic Plan (KNASP) for 2000-2005, establishing a response to the epidemic in partnership with all stakeholders, including civil society, private sector and development partners. The second KNASP for 2005/6-2009/10 provides the framework for the country's current response to HIV/AIDS. The goals of the current KNASP are to reduce the spread of HIV, to improve the quality of life of people who are infected and affected by the disease, and to mitigate the social and economic effects of the epidemic. Three priority areas have been identified to achieve current KNASP 2005/6 – 2009/10 goals:

Priority Area 1: Prevent new infections
Objective: Reduce the number of new HIV infections in both vulnerable groups and the general population.

Priority Area 2: Improve the quality of life of people infected with and affected by HIV/AIDS
Objective: Improve treatment and care and protect rights and access to effective services.

Priority Area 3: Mitigate the socio-economic effect of HIV/AIDS
Objective: Adapt existing programmes and develop innovative responses to reduce the effect of the epidemic on communities, social services and economic productivity.

The core of the KNASP 2005/6-2009/10 includes a multi-sectoral approach to encourage advocacy: building partnerships and making HIV programmes mainstream in important areas of the economy; having programmes for groups most vulnerable to HIV infection and its consequences; recognising the special needs of women and youth; engaging people living with HIV and AIDS in implementing the strategy; creating interventions that are evidence-based and culturally-specific; and supporting international and regional initiatives.[2]

Kenya is also committed to the "Three Ones" principles for country-level scale up of the response to HIV/AIDS: one national action framework, one national coordinating body and one national monitoring and evaluation system.[2]

1.3 Purpose and Objectives of the Survey

The 2007 KAIS was a nationally representative population survey conducted to provide the comprehensive data needed to address the HIV/AIDS epidemic. The findings provide programme managers, policy makers and other decision-makers with essential information to plan and implement future HIV interventions effectively and to assist with the monitoring and evaluation of programmes targeting HIV/AIDS, STIs and other infections such as tuberculosis and malaria. The overall objective of the survey was to collect high-quality, representative data on the prevalence of HIV and STIs among adults, knowledge and attitudes towards HIV, and demographic and behavioural risk factors related to infection with HIV and other STIs.

2 Kenya National HIV/AIDS Strategic Plan 2005/06-2009/10

Data in Context: KAIS Objectives

- Determine the prevalence of HIV, herpes simplex virus type 2 (HSV-2) and syphilis in adults aged 15-64 years and the distribution of CD4 counts among HIV-infected adults.
- Determine access to and unmet need for HIV/AIDS services.
- Describe socio-demographic and behavioural risk factors related to HIV and other STIs.
- Assess knowledge and attitudes regarding HIV/AIDS and other STIs.
- Increase awareness of HIV status and care, treatment and eligibility for services by returning test results to participants.

The following sections give an overview of methods used in the 2007 KAIS. More information about survey methods is provided in Appendix A.

1.4 Survey Design and Sample Frame

Geographic coverage and target population

The 2007 KAIS was conducted among a representative sample of households selected from all eight provinces in the country, covering both rural and urban areas. A household was defined as a person or group of people related or unrelated to each other who live together in the same dwelling unit or compound (a group of dwelling units), share similar cooking arrangements, and identify the same person as the head of household. The household questionnaire was administered to consenting heads of sampled, occupied households. All women and men aged 15-64 years in selected households who were either usual residents or visitors present the night before the survey were eligible to participate in the individual interview and blood draw, provided they gave informed consent. For minors aged 15-17 years, parental consent and minor assent were both required for participation. Participants could consent to the interview and blood draw or to the interview alone. The inclusion criteria may have captured non-Kenyans living as usual residents or visitors in a sampled household. Military personnel and the institutionalized population (e.g. imprisoned) are typically not captured in household-based surveys, but may have been included in the 2007 KAIS if at home during the survey.

Sampling frame and design

Administratively, Kenya is divided into eight provinces. Each province is divided into districts, each district into divisions, each division into locations, each location into sub-locations, and each sub-location into villages. For the 1999 Population and Household Census, the Kenya National Bureau of Statistics (KNBS) delineated sub-locations into small units called Enumeration Areas (EAs) that constituted a village, a part of a village, or a combination of villages. The primary sampling unit for Kenya's master sampling frame, and for the 2007 KAIS, is a cluster, which is constituted as one or more EAs, with an average of 100 households per cluster.

The master sampling frame for the 2007 KAIS was the National Sample Survey and Evaluation Programme IV (NASSEP IV) created and maintained by KNBS. The NASSEP IV frame was developed in 2002 based on the 1999 Census. The frame has 1800 clusters, comprised of 1,260 rural and 540 urban clusters. Of these, 294 (23%) rural and 121 (22%) urban clusters were selected for KAIS.

The overall design for the 2007 KAIS was a stratified, two-stage cluster sample for comparability to the 2003 KDHS. The first stage involved selecting 415 clusters from NASSEP IV and the second stage involved the selection of households per cluster with equal probability of selection in the rural-urban strata within each district. The target of the 2007 KAIS sample was to obtain approximately 9,000 completed household interviews. Based on the level of household non-response reported in the 2003 KDHS (13.2% of selected households), 10,375 households in 415 clusters were selected for potential participation in the 2007 KAIS. Table 1.4 shows the provincial distribution of households and clusters originally sampled for the 2007 KAIS.

Table 1.4 Distribution of sampled clusters and households by province, KAIS 2007.

	Clusters			Households		
Province	Rural	Urban	Total	Rural	Urban	Total
Nairobi	0	58	58	0	1,450	1,450
Central	48	7	55	1,200	175	1,375
Coast	24	22	46	600	550	1,150
Eastern	50	5	55	1,250	125	1,375
North Eastern	23	5	28	575	125	700
Nyanza	54	7	61	1,350	175	1,525
Rift Valley	51	12	63	1,275	300	1,575
Western	44	5	49	1,100	125	1,225
Total	**294**	**121**	**415**	**7,350**	**3,025**	**10,375**

Nairobi is exclusively urban; there were no rural clusters in Nairobi

Of the original 415 clusters, 402 were accessed and surveyed. Thirteen clusters were inaccessible due to impassable roads or tenuous security situations. All reported estimates and design weights for households, individual interviews, and blood draws are based on data from the 402 clusters. Details on methods for performing an adjustment for cluster-level non-response in the calculation of weights are provided in Appendix A. The survey was not designed to produce reliable district-level estimates. Estimates are presented by rural/urban residence, and by province.

1.5 Data Collection Tools

Questionnaires

Two questionnaires were used: a household questionnaire and an individual questionnaire. The content of the questionnaires was adapted from standard AIDS Indicator Survey questionnaires developed by ORC Macro, the 2003 KDHS HIV Module and previous surveys conducted in Africa. Various stakeholders in NACC, the National AIDS and STI Control Programme (NASCOP) and other HIV/AIDS organizations working in Kenya met to determine the key HIV program information needs and gaps. The KAIS Technical Working Group (TWG) modified existing questions and designed new questions to reflect current and emerging issues in HIV/AIDS in the country. The final questionnaires were translated from English into Kiswahili and 11 vernacular languages and back-translated into English to ensure accuracy. The questionnaires were further refined after a pilot study prior to distribution of the final versions to field staff.

The household questionnaire gathered basic information from the head of the household on usual members and visitors in the household, including age, sex, education, relationship to the head of household, and orphanhood among children. Information was collected on characteristics of the household's dwelling unit, such as the source of water, type of toilet facilities, materials used for the floor of the house, property ownership, and mosquito nets. Heads of household were also asked whether the household had received specific types of care and support in the 12 months prior to the survey for any chronically ill adults, any household members who died, and any orphans and vulnerable children (OVC). The household questionnaire was also used to record the respondents' consent for blood collection and testing.

The individual questionnaire collected information from eligible women and men aged 15-64 years on basic demographic characteristics, marriage, sexual activity, fertility, and family planning. In addition, the tool included questions regarding HIV and STI knowledge, attitudes and behaviours, HIV testing, HIV care and treatment uptake, and other health issues, such as tuberculosis, blood donation and medical injections.

Household Questionnaire	Individual Questionnaire
▪ Household census	▪ Socio-demographic characteristics
▪ Parental survivorship	▪ HIV/STI knowledge and attitudes
▪ Household characteristics	▪ Marriage and sexual partnerships
▪ Mosquito net use	▪ Fertility and family planning
▪ Support to households for sick and recently deceased adults, and OVCs	▪ Uptake of HIV prevention, care and treatment services

Blood draw

Eligible adults were asked individually for their consent to provide a venous blood sample for HIV, HSV-2, and syphilis testing, as well as CD4 cell quantification. They also were asked to consent to extended storage of their samples for future, unspecified testing.

Experienced laboratory technicians were responsible for the collection of blood from an arm by venipuncture. Blood was collected into two separate tubes, one without anticoagulant, from which serum was obtained for HIV, HSV-2, and syphilis serological testing, and the other designed to stabilise whole blood for CD4 testing up to seven days after collection. For participants who were willing to participate but refused venous blood draw, dried blood spot (DBS) samples were collected via finger prick. DBS samples also were collected in cases where venipuncture was not feasible.

Blood Draw

- Venous blood: HIV, HSV-2, syphilis testing; CD4 count for those with HIV
- Dried blood spot: HIV testing only

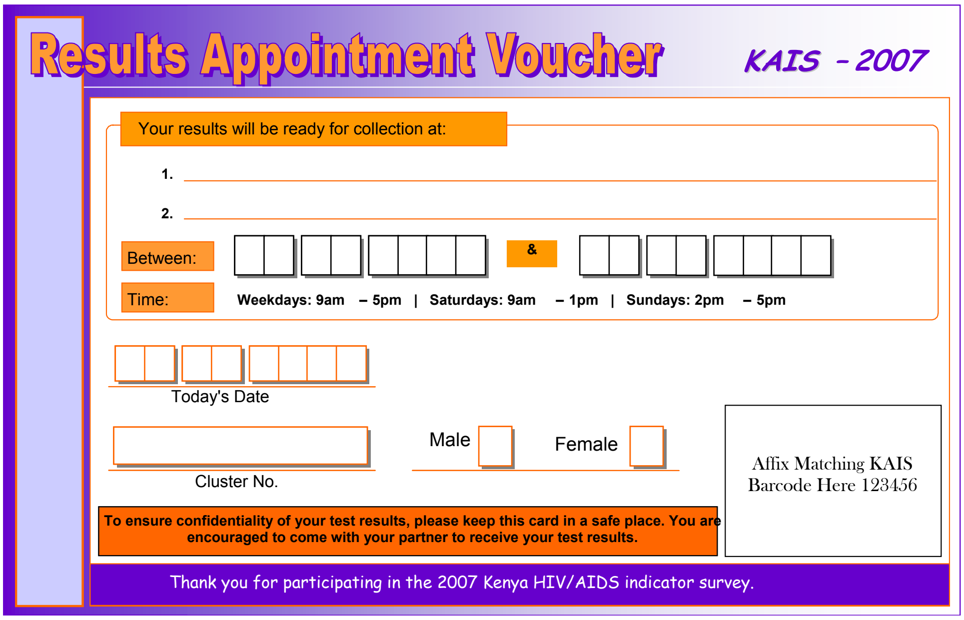
Ethical approvals

The 2007 KAIS protocol was approved by the Scientific Steering Committee and the Ethical Review Committee at the Kenya Medical Research Institute (KEMRI) and by the Institutional Review Board at the U.S. Centers for Disease Control and Prevention (CDC). All participants provided verbal informed consent and had the choice to consent separately to the interview, the blood draw, and the storage of their specimens for future testing.

1.6 Return of Test Results to Participants

The 2007 KAIS participants who consented to the blood draw during the survey were given the opportunity to collect test results and receive appropriate counselling and referrals to prevention, care and treatment services for HIV and other STIs per national guidelines for voluntary testing and counselling for HIV infection. The activity for returning test results to participants involved coordination between the National HIV Reference Laboratory (NHRL) within the National Public Health Laboratory Services (NPHLS), NASCOP, local health facilities and results counsellors. At the time of specimen collection, participants were given a results voucher with a unique barcode identical to the barcode on their blood specimen (see figure 1.6). The voucher listed two facilities (one within the cluster and one outside of the cluster) where they could receive their test results approximately six weeks after the blood draw. Interviewers and laboratory technicians were trained to educate participants on the benefits of knowing one's disease status and encouraged them to return to receive their test results. Returning for results, however, was completely voluntary. Results counsellors explained the test results and referred respondents who required follow up to testing and treatment facilities. A form for returning test results was developed for the counsellor to capture basic information about participants who returned for their test results and post-test counselling as part of the 2007 KAIS.

Figure 1.6 Results voucher, KAIS 2007.



Results Appointment Voucher

KAIS - 2007

Your results will be ready for collection at:

1.

2.

Between: &

Time: Weekdays: 9am – 5pm | Saturdays: 9am – 1pm | Sundays: 2pm – 5pm

Today's Date

Cluster No.

Male Female

Affix Matching KAIS Barcode Here 123456

To ensure confidentiality of your test results, please keep this card in a safe place. You are encouraged to come with your partner to receive your test results.

Thank you for participating in the 2007 Kenya HIV/AIDS indicator survey.

1.7 Survey Implementation

Training

In July 2007, 204 skilled interviewers, laboratory technicians, laboratory scientists and field supervisors were recruited and trained for two weeks in the 2007 KAIS procedures. The training involved didactic presentations, small group discussions and practical sessions, such as mock interviews and blood draws.

Interviewer training

- Informed consent for interview
- Administering questionnaires
- Objective interview techniques
- Explaining KAIS diseases

Interviewers were trained to identify eligible households and individuals, seek informed consent, educate participants about HIV, HSV-2 and syphilis, and administer questionnaires using objective interview techniques. Field laboratory technicians and scientists were trained in preparing respondents for the blood draw and in specimen collection, processing, storage and transportation to the central laboratory in Nairobi. Laboratory training emphasized ways to minimise risks in handling biological specimens. Laboratory technicians were trained to process and analyse specimens in the laboratory and to issue return of results vouchers for participants to retrieve their test results.

Lab technician training

- Informed consent for blood draw
- Universal precautions
- Sample collection
- Sample processing
- Return of results vouchers

In September 2007, NASCOP and the TWG conducted intensive one-week trainings for 202 counsellors and health workers involved in returning test results to participants. Counsellors and health workers, regardless of their health care experience, were required to attend the training to refresh their counselling skills, learn how to return KAIS test results to participants and to refer them and their partners for further testing, care and treatment.

Community mobilization

The 2007 KAIS was officially launched on August 1, 2007. This date marked the start of the national television, radio, and print media campaign to inform, sensitise and mobilise Kenyans about the survey and the importance of broad participation. Mobilisation efforts later shifted to community and village level communications to prepare communities before survey teams arrived. Mobilisation efforts at the community and village level were critically important to this survey.

Fieldwork

A total of 29 field teams, each consisting of six data collectors (four interviewers and two laboratory technicians), one supervisor and one driver, conducted fieldwork from August to December 2007. Teams were provided local language questionnaires in addition to questionnaires in Kiswahili and English to accommodate respondents not conversant in vernacular languages.

After obtaining informed consent from the head of household, interviewers administered the household questionnaire followed by individual interviews and blood draws among eligible and consenting individuals in the household. Participants received brochures on HIV, HSV-2, syphilis, and tuberculosis in Kiswahili and English. Completed questionnaires for each cluster were packed and delivered weekly to KNBS headquarters through secured courier services for data processing.

Supervision

Six teams of supervisors representing different KAIS collaborating institutions routinely visited field teams during data collection. Supervision teams travelled throughout the country to assess mobilisation efforts, perform quality checks on questionnaires and field laboratory procedures, deliver additional survey supplies, troubleshoot challenges and provide psychosocial support to field teams. Supervision reports were disseminated among the KAIS leadership and key issues were addressed immediately.

1.8 Laboratory Logistics

Blood specimens were collected by the field laboratory teams and shipped two to three times per week by secured courier services to the NHRL. Each week, an average of 500 samples from the eight provinces were received at the NHRL, logged into a laboratory information management system and screened for HIV, HSV-2 and syphilis. All reactive samples and 5% of randomly-selected non-reactive samples were retested for quality assurance (QA) at the KEMRI QA laboratory. All HIV seropositive serum samples were referred for immediate CD4 testing at the NHRL. Internal controls with known CD4 quantities were included with each run. Results of HIV, HSV-2, and syphilis testing conducted by the two laboratories were cross-checked and verified by the NHRL laboratory manager to ensure accurate results, and then returned to participants. Detailed information on laboratory testing algorithms and dispatching results are provided in Appendix A.

To ensure that the blood samples collected in remote areas in North Eastern province reached the NHRL in a timely fashion, a local airline was contracted to fly blood samples from North Eastern province to the central laboratory in Nairobi. Overall, 98.9% of whole blood samples and 99.8% of serum samples collected in the 2007 KAIS were of adequate quality for testing.

1.9 Data Processing and Analysis

Data processing included a number of steps to prepare data collected in the field for analysis. The initial steps included editing questionnaires, both in the field and at KNBS, and double-data entry of all questionnaire responses to minimise errors. Data were entered using Census and Survey Processing System (CSPro) version 3.3.[3] Once all survey responses were transferred to electronic format, the next step was to ensure full concordance between the two data entry databases, using paper questionnaires to resolve any discrepancies in transcription. A series of internal consistency and range checks helped to identify any illogical responses and to verify that responses adhered to skip patterns in the questionnaire. Data validation programs for data cleaning were written in Stata version 8.0[4] and corrections were entered directly in CSPro at KNBS.

A concurrent process of cleaning the raw laboratory data was conducted at the NHRL. The final, cleaned questionnaire database at KNBS was merged with the laboratory results database at the NHRL using unique survey identification numbers to ensure accurate matches (>99.9% of identification numbers were matched). After successfully merging the questionnaire and laboratory results databases, cluster and household identification numbers were serialized from 1-402 and from 1-25, respectively. Original cluster and household numbers, barcodes, and individual survey identification numbers were stripped from the database prior to weighting and analysis to ensure anonymity of survey participants.

All results presented in the report are based on weighted data to account for the survey sampling design and participation rates. The weights are used to correct for unequal probability of selection,

3 U.S. Census Bureau, Washington, DC. USA.
4 Stata Corporation, College Station, Texas. USA.

to produce results that are representative of the larger population from which the sample was drawn and to adjust for survey non-response. The final weights were derived from the design weights of the NASSEP IV sampling frame and subsequently adjusted for non-response. Three weights were calculated for analyses: a household weight, an individual interview weight and a blood draw weight.

This report presents the results of univariate and bivariate analyses; analyses are not adjusted for confounding factors. Multivariate analyses of KAIS data will be presented in other dissemination materials, such as peer-reviewed scientific publications. Data analysis was conducted using Statistical Analysis System (SAS) version 9.13[5], which has procedures to account for multi-stage stratified sampling designs and can produce reliable standard errors and confidence intervals. With the exception of Chapter 3 (Comparison of HIV Prevalence in the 2003 KDHS and 2007 KAIS), statistical significance was assessed based on chi-square p-values. In Chapter 3, we assumed the estimates from each time period (the 2003 KDHS and the 2007 KAIS) were independent and used the z-test to compare two weighted estimates and to determine if differences between 2003 and 2007 were statistically significant. Throughout the report, the term **significant** indicates a p-value[6] less than 0.05. **Marginally significant** indicates a p-value between 0.05 and 0.10, inclusive; and **not significant** indicates a p-value greater than 0.10.

1.10 Comparison of the 2003 KDHS and the 2007 KAIS

The period between the 2003 KDHS and the 2007 KAIS was characterized by a rapid scale up of HIV prevention, care and treatment services. The GOK implemented KAIS in part to understand the reach and impact of these scaled-up services on the HIV epidemic. Institutional partners that implemented the 2003 KDHS were also part of the planning and conduct of the 2007 KAIS. To identify changes in the epidemic since 2003, the 2007 KAIS utilized methodology similar to the 2003 KDHS to allow for comparison to 2003 findings. Participation in both surveys was completely voluntary and verbal consent was a requisite for participation in 2003 and 2007. Table 1.10 compares elements of survey design and methodology between the 2003 KDHS and the 2007 KAIS.

5 SAS Institute, Inc. Cary, North Carolina. USA.

6 A p-value is the probability of obtaining a result as extreme or more extreme than the one that was actually observed if the null hypothesis was true. If the result is less likely to be observed under the assumptions of the null hypothesis, then p-value will be small and hence the greater the evidence against the null hypothesis.

Table 1.10 Comparison of survey designs between the 2003 KDHS and the 2007 KAIS.

Characteristic	2003 KDHS	2007 KAIS
Household sampling	Two-stage sample design	Two-stage sample design
Interviews among men and blood draws among women and men	Men in every other household selected for the women's questionnaire were eligible for the men's questionnaire; women and men in every other household selected for the women's questionnaire were eligible for blood draw	Same sampling for women and men; same sampling for interview and blood draw
Weighting of sample by sex	Yes (due to differences in sampling by women and men); non-response adjustment applied	No (due to same sampling for women and men); non-response adjustment applied
Age of participants	Women 15-49 years old Men 15-54 years old	Women and men 15-64 years old
Questionnaire	Focus on demographic, gender, fertility and reproductive health questions; administered in Kiswahili, English and 11 local languages	Focus on HIV/AIDS indicators including knowledge of self and partner HIV status and utilization of HIV care and treatment services; administered in Kiswahili, English and 11 local languages
HIV serologic testing	Antibody only	Antibody plus antigen
Type of blood draw	DBS from finger prick only	Primarily venipuncture (0.92% provided only DBS from finger prick)
Laboratory tests conducted	HIV serology	HIV, HSV-2 and syphilis serology and CD4 cell counts for HIV-infected persons (only HIV for persons providing DBS)
Access to HIV status and other STI testing results	Free VCT vouchers provided to access HIV testing and referrals at mobile or stationary VCT sites	Results vouchers provided to respondents to access HIV, HSV-2 and syphilis results and CD4 cell counts and referrals at nearby facilities

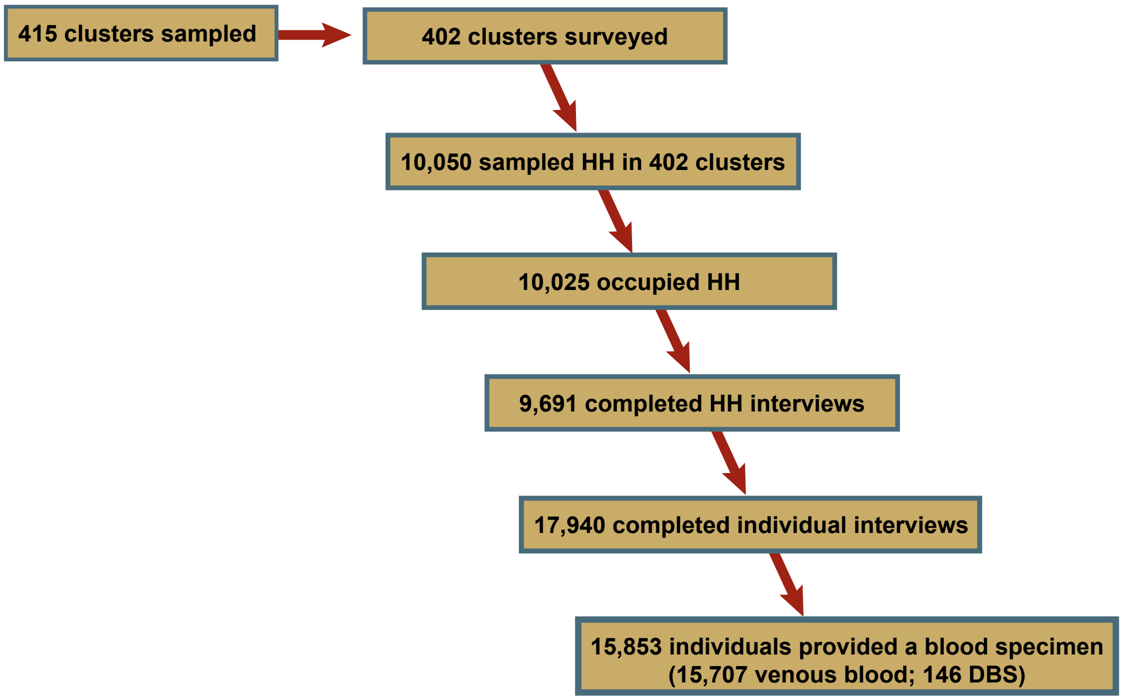
The household sampling strategy was similar between surveys though sampling strategies for individuals differed. In the 2003 KDHS, every other household selected was eligible for the men's individual interview and for a blood draw from eligible adults; this difference in sampling does not compromise comparability between the 2003 KDHS and the 2007 KAIS as the selection of households in both surveys was random. While the 2003 KDHS covered a broader range of demographic and reproduction health measures, the 2007 KAIS focused mostly on HIV/AIDS indicators; thus there were notable differences in the types of questions asked. Where possible, the same or similar wording was used for questions repeated from the 2003 KDHS to enhance comparability. Training of the 2007 KAIS field teams was also similar to the training of the 2003 KDHS field teams, and both questionnaires were administered in 11 different vernacular languages in addition to English and Kiswahili.

Similar techniques for weighting were applied to datasets in the 2003 KDHS and in the 2007 KAIS; however, separate weights for women and men were calculated in 2003, given that sampling systematically varied by sex in 2003. In the 2007 KAIS, women and men were sampled using the same techniques; therefore the 2007 dataset did not require separate weights for women and men. HIV testing was performed using antibody/antigen assays in the 2007 KAIS, compared to antibody-only assays in the 2003 KDHS. The antibody/antigen approach is more sensitive for capturing recent infections. Differences in results produced by these two assays are usually small in populations with relatively low incidence, such as Kenya, which had an incidence of HIV between 0.80% and 0.85% in 2007 according to GOK estimates using UNAIDS Estimation and Projection Package (EPP)/Spectrum software. Point estimates calculated from results of the two testing approaches may differ but are likely to fall within similar 95% confidence intervals. Additional laboratory tests were performed in 2007 compared to 2003 and therefore, the vast majority of KAIS participants gave venous blood rather than DBS samples; in 2003, only DBS samples were collected since only HIV serology was performed. Although the methods for returning test results to participants were different in the 2003 KDHS and 2007 KAIS, both surveys offered participants a chance to learn their HIV status. Finally, the 2007 KAIS included adults up to 64 years of age, but throughout the report, when comparisons are made to the 2003 KDHS results, analyses are limited to participants aged 15-49 years.

1.11 Response Rates

Figure 1.11 illustrates a diagram of sampled clusters, eligible households, and individual participation in the 2007 KAIS. Overall, participation rates in the 2007 KAIS were high. We calculated household response rate as the number of households consenting to the household interview divided by the total number of sampled households that were located and occupied. The individual interview response rate was calculated as the number of individuals who completed interviews divided by the number of individuals eligible for the individual interview based on the household census. Only those participating in the individual interview were eligible to participate in the blood draw. We calculated blood draw coverage as the number of blood draws divided by the number of all individuals eligible for the individual interview; the blood draw response rate reflects the number of successful blood draws divided by the number of individuals who completed individual interviews.

Figure 1.11 Clusters, households (HH) and individuals in the 2007 KAIS.



Overall, blood draw coverage was seven percentage points greater in 2007 than in 2003 (Table 1.11a). Differences in blood draw coverage by rural/urban residence and by sex are presented in the following tables. The household and individual interview response rates in KAIS were very similar to those in the 2003 KDHS.

Table 1.11a Survey response rates, 2003 KDHS and 2007 KAIS.

	2003 KDHS	2007 KAIS
Eligible, occupied households (households for 2003 male subsample)	8,889 (4,396)	10,025
Eligible individuals interview	12,900	19,840
Eligible individuals for blood draw	8,486	19,840
Household interview response rate	96%	97%
Individual interview response rate	91%	90%
Blood draw coverage (out of eligible individuals)	73%	80%
Blood draw response rate (out of interviewees)	81%	88%

In the 2003 KDHS, a subsample of all households (4,396 of the 8,889) was selected for the men's survey. Only men in these households were eligible for the individual interview and HIV testing, and only women from these households were eligible for HIV testing. Participation rates for the 2003 KDHS presented here were extracted from Chapter 13 and Appendix A of the 2003 KDHS Final Report and not calculated independently, except where noted.

Blood draw response rates were presented only for the female and male subsamples in Appendix tables A.3 and A.4 of the 2003 KDHS report. Corresponding estimates for the total sample and for rural and urban subsamples were calculated by authors of the KAIS report. Interview response rates among females and males eligible for HIV testing were assumed to be the same as individual response rates among all females and males, which are reported in section 1.14 of the 2003 KDHS report.

Table 1.11b Survey response rates by residence, 2003 KDHS and 2007 KAIS.

	2003 KDHS		2007 KAIS	
	Urban	Rural	Urban	Rural
Eligible, occupied households (households for 2003 male subsample)	3,068 (1,505)	5,821 (2,891)	2,918	7,107
Eligible individuals for interview	4,485	8,415	5,357	14,483
Eligible individuals for blood draw	2,954	5,532	5,357	14,483
Household interview response rate	94%	97%	95%	97%
Individual interview response rate	87%	94%	85%	92%
Blood draw coverage (out of eligible individuals)	62%	79%	73%	82%
Blood draw response rate (out of interviewees)	73%	85%	86%	89%

Blood draw response rates were presented only for the female and male subsamples in Appendix tables A.3 and A.4 of the 2003 KDHS report. Corresponding estimates for the total sample and for rural and urban subsamples were calculated by authors of the KAIS report. Interview response rates among females and males eligible for HIV testing were assumed to be the same as individual response rates among all females and males, which are reported in section 1.14 of the 2003 KDHS report.

In the 2007 KAIS, participation in rural areas was higher than in urban areas for the household interview, the individual interview and the blood draw. This was in part due to a greater proportion of urban residents being absent during the 2007 KAIS, a pattern also observed in the 2003 KDHS. Blood draw coverage was greater in 2007 than in 2003 for rural and urban residents by three percentage points and 11 percentage points, respectively.

Table 1.11c Survey response rates by sex in the 2007 KAIS.

	2003 KDHS		2007 KAIS	
	Women	Men	Women	Men
Eligible individuals for interview	8,717	4,183	10,957	8,883
Eligible individuals for blood draw	4,303	4,183	10,957	8,883
Individual interview response rate	94%	86%	93%	87%
Blood draw coverage (out of eligible individuals)	76%	70%	83%	77%
Blood draw response rate (out of interviewees)	81%	82%	88%	88%

Blood draw response rates were presented only for the female and male subsamples in Appendix tables A.3 and A.4 of the 2003 KDHS report. Corresponding estimates for the total sample and for rural and urban subsamples were calculated by authors of the KAIS report. Interview response rates among females and males eligible for HIV testing were assumed to be the same as individual response rates among all females and males, which are reported in section 1.14 of the 2003 KDHS report.

Participation in the 2007 KAIS was higher among women than among men by six to seven percentage points for the interview and the blood draw. This was in part due to a greater proportion of men being absent during the survey, a pattern also observed in the 2003 KDHS. Blood draw coverage was higher by seven percentage points among both women and men in 2007 (76% and 70%, respectively) compared to 2003 (83% and 77%, respectively).

1.12 Chapter Summary

- **The 2007 KAIS was a representative, population-based survey of households and women and men aged 15-64 years.**
- **The survey design and methods were comparable to the 2003 KDHS.**
- **Laboratory data included HIV, HSV-2, and syphilis serologic testing and CD4 cell counts for those infected with HIV.**
- **The survey also captured HIV knowledge and attitudes, sexual risk factors, and health care seeking behaviours.**
- **Participation rates were 97% for the household survey, 91% for individual interviews and 80% for blood draw.**

2

Prevalence of HIV

2.1 Key Findings

- Overall, 7.1% of adults (aged 15-64 years) were infected with HIV, representing an estimated 1,417,000 people.
- Women were more likely to be infected (8.4%) than men (5.4%). In particular, young women aged 15-24 years were four times more likely to be infected than young men in the same age group (5.6% vs. 1.4%, respectively).
- HIV prevalence among older adults aged 50-64 years was 5.0%. KAIS was the first national HIV survey to capture both women and men in this age group.
- There was wide regional variation in adult HIV prevalence, ranging from 14.9% in Nyanza province to 0.81% in North Eastern province.
- An estimated 1,027,000 adults in rural areas (6.7%) were infected with HIV compared with an estimated 390,000 adults in urban areas (8.4%).
- Uncircumcised men were three times more likely to be infected with HIV than circumcised men (13.2% vs. 3.9%, respectively).
- Women who reported secondary education or more had significantly lower HIV prevalence (6.2%) than women who reported less education (7.7% - 9.8%).

2.2 Introduction

The 2007 KAIS was the second national, population-based HIV prevalence survey conducted in Kenya. This chapter presents patterns of HIV infection in the country at the time of the survey. Comparisons between the 2007 KAIS estimates and the 2003 KDHS estimates are provided in Chapter 3 of this report.

Appendix B.2 provides sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

Population estimates reported in this chapter were calculated based on the 2007 projected population reported in the *Revised Population Projections for Kenya 2000-2020* (Kenya National Bureau of Statistics, August 2006). Weighted estimates for selected indicators from the 2007 KAIS were used in these calculations. Methods for calculating population estimates are described in Appendix A.

2.3 HIV Prevalence by Age Group and Sex

According to the 2007 KAIS, 7.1% of Kenyan adults aged 15-64 years were infected with HIV at the time of the survey (Table 2.3). A significantly greater proportion of women (8.4%) than men (5.4%) were infected with HIV. There were an estimated 863,000 women and 519,000 men aged 15-64 years living with HIV at the time of the survey. Prevalence in all age groups surveyed was 1.0% or higher.

Table 2.3 HIV prevalence among women and men by five-year age group, Kenya 2007.

	Women		Men		Total	
	HIV- infected (%)	Total number tested	HIV- infected (%)	Total number tested	HIV- infected (%)	Total number tested
Age group (years)						
15-19	3.5	1,328	1.0	1,175	2.3	2,503
20-24	7.4	1,598	1.9	1,034	5.2	2,632
25-29	10.2	1,345	7.3	874	9.1	2,219
30-34	13.3	1,154	8.9	772	11.6	1,926
35-39	11.2	950	9.3	678	10.5	1,628
40-44	9.4	742	10.2	576	9.7	1,318
45-49	8.8	732	5.6	549	7.5	1,281
50-54	7.5	519	8.3	425	7.8	944
55-59	4.7	425	2.3	380	3.6	805
60-64	1.7	256	3.4	341	2.7	597
15-24	5.6	2,926	1.4	2,209	3.8	5,135
15-49	8.8	7,849	5.5	5,658	7.4	13,507
50-64	5.2	1200	4.7	1146	5.0	2346
15-64	8.4	9,049	5.4	6,804	7.1	15,853

Figure 2.3 HIV prevalence among women and men by five-year age group, Kenya 2007.

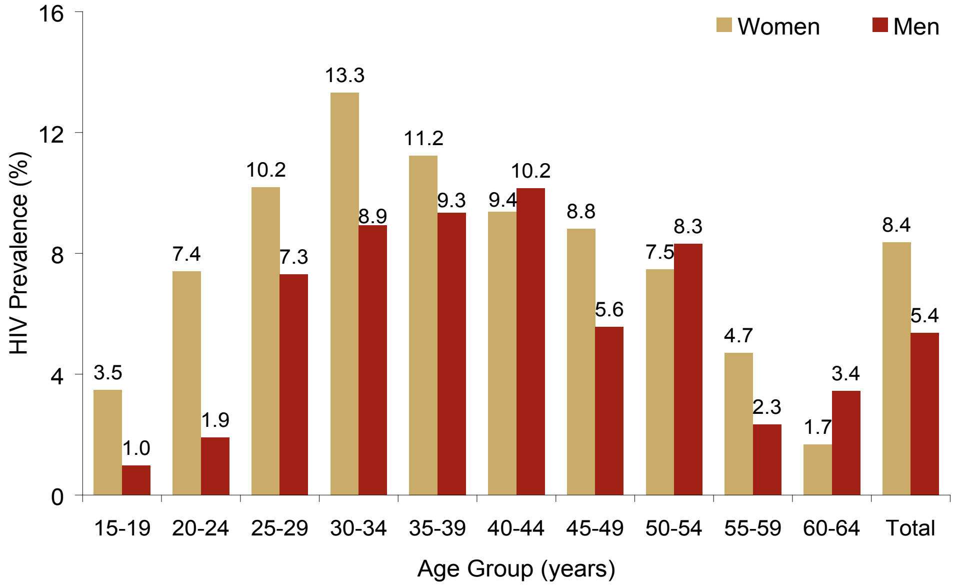


Figure 2.3 HIV prevalence peaked in women aged 30-34 years and in men aged 40-44 years.

HIV prevalence was significantly greater among women than men in the 15-19 and 20-24 year age groups. The highest prevalence among women was among those 30-34 years of age, compared to 40-44 years of age among men. In the 40-44 and 50-54 age groups, women and men had similar HIV prevalence rates. Starting with the 40-44 age group, prevalence estimates declined monotonically among women, though this pattern was not observed among men.

2.4 HIV Prevalence among Youth

Figure 2.4 HIV prevalence among young women and men aged 15-24 years, Kenya 2007.

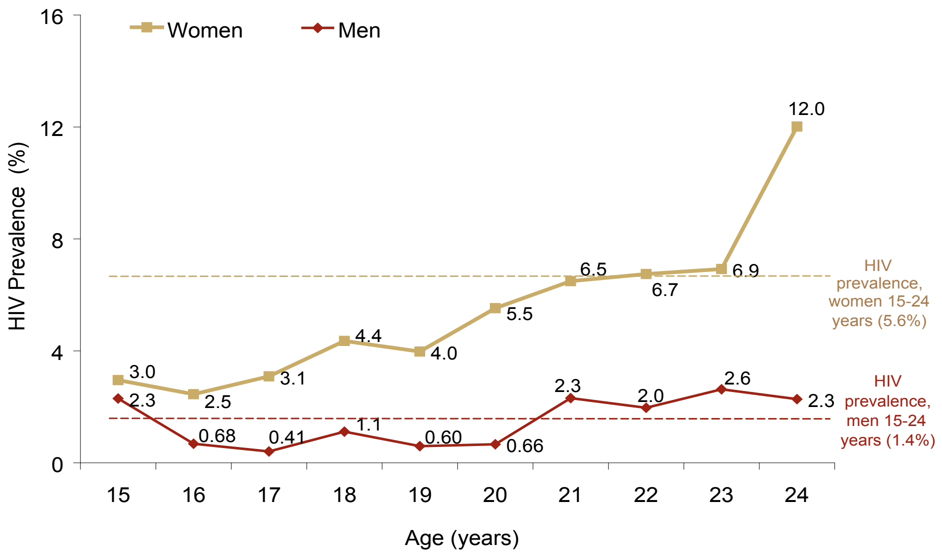


Figure 2.4 Between ages 15 and 24 years, prevalence was significantly higher among women than men.

The overall prevalence of HIV among youth aged 15-24 years was 3.8%. Young women had a higher HIV prevalence than young men, ranging from 3.0% in women 15 years old to 12.0% in women 24 years old. Prevalence among men aged 15-24 years ranged from 0.4% to 2.6%. Among young women, prevalence rose with increasing age and by 24 years of age, women were 5.2 times more likely to be infected than men of the same age (12.0% and 2.3%, respectively).

2.5 HIV Prevalence among Older Adults (50-64 years old)

Previous population-based HIV surveys have targeted respondents of reproductive age, aged 15-49 years. The 2007 KAIS included women and men aged 50-64 years to assess the need for HIV prevention, care and treatment in older adults. The overall HIV prevalence in this age group was 5.0% and did not differ significantly between women and men (5.2% and 4.7%, respectively).

2.6 HIV Prevalence by Rural/Urban Residence

Figure 2.6a HIV prevalence among women and men aged 15-64 years by residence, Kenya 2007.

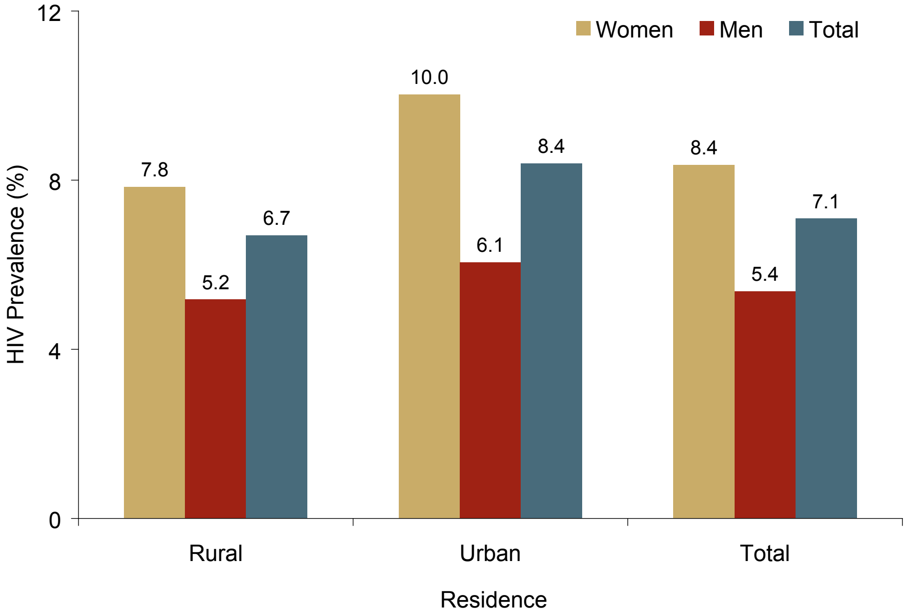


Figure 2.6a HIV prevalence was marginally greater among women in urban areas compared with women in rural areas.

Overall, 6.7% of rural residents were infected with HIV compared to 8.4% of urban residents. In both rural and urban areas, women had a significantly higher prevalence of HIV than men. The difference in HIV prevalence in rural and urban areas was marginally significant among women (10.0% compared to 7.8%, respectively), but not significant among men (6.1% compared to 5.2%, respectively).

Figure 2.6b HIV prevalence among rural and urban residents by five-year age group, Kenya 2007.

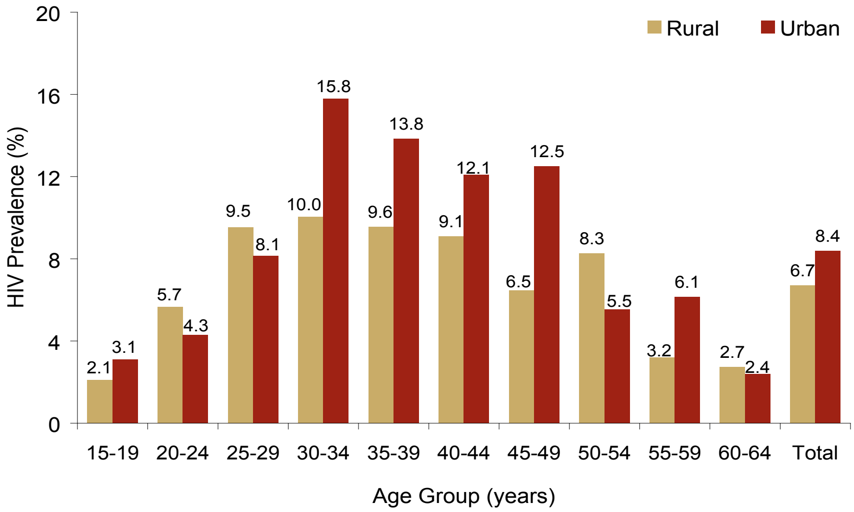


Figure 2.6b The distribution of HIV prevalence across age groups followed a similar pattern in rural and urban areas.

HIV prevalence differed significantly across age groups in both rural and urban areas. For both rural and urban areas, peak prevalence occurred among adults aged 30-34 years (10.0% and 15.8%, respectively). For both rural and urban areas, the lowest prevalence occurred among youth aged 15-19 years and older adults aged 60-64 years.

Figure 2.6c Estimated number of HIV-infected adults aged 15-64 years by rural/urban residence, Kenya 2007.

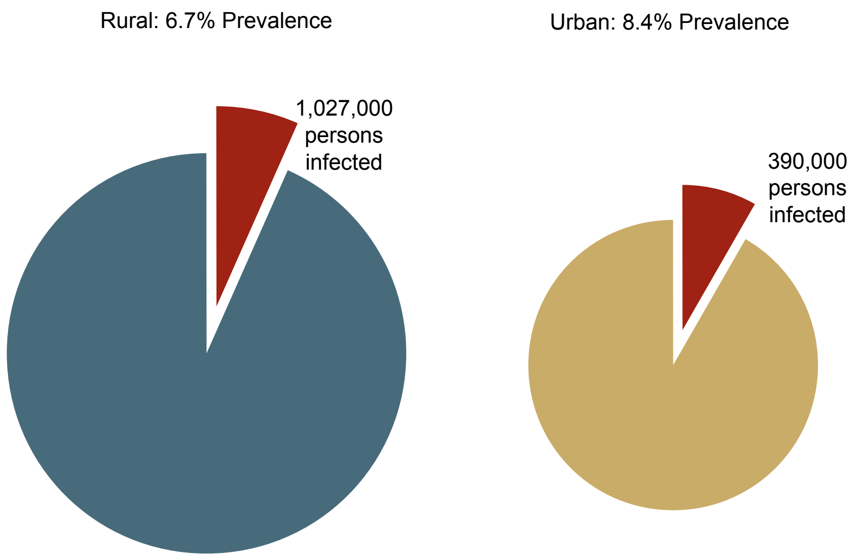
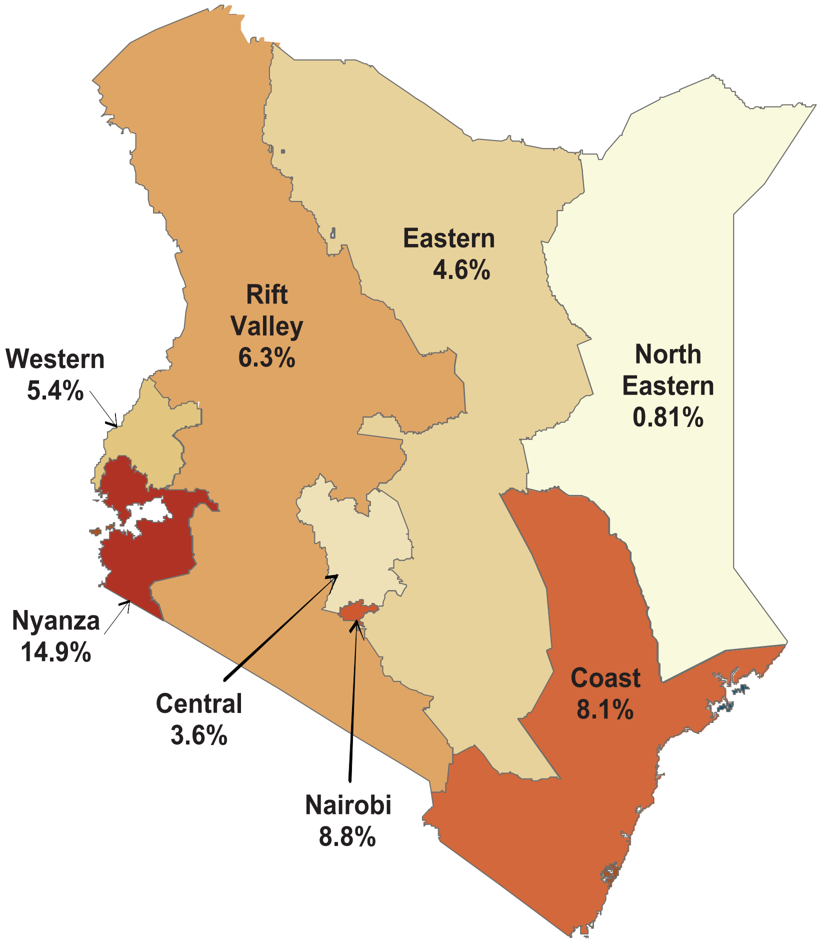


Figure 2.6c The majority of HIV-infected adults aged 15-64 years lived in rural areas.

Among adults aged 15-64 years residing in rural areas, 6.7% were infected with HIV compared to 8.4% of adults in urban areas. Though the prevalence among rural residents was lower than among urban residents, the absolute number of HIV infections was greater in rural than urban areas, given that the vast majority of Kenyans reside in rural areas (approximately three out of four persons in the country). An estimated 1,027,000 adults in rural areas were infected with HIV, compared to 390,000 adults in urban areas.

2.7 HIV Prevalence by Province

Figure 2.7a HIV prevalence among adults aged 15-64 years by province, Kenya 2007.



There were significant regional differences in HIV prevalence, ranging from 0.81% in North Eastern province to 14.9% in Nyanza province. The following graphs and tables present provincial HIV prevalence estimates by rural/urban residence and sex. Population estimates for the numbers of women and men infected per province are also provided.

Figure 2.7b HIV prevalence among rural and urban residents aged 15-64 years by province, Kenya 2007.

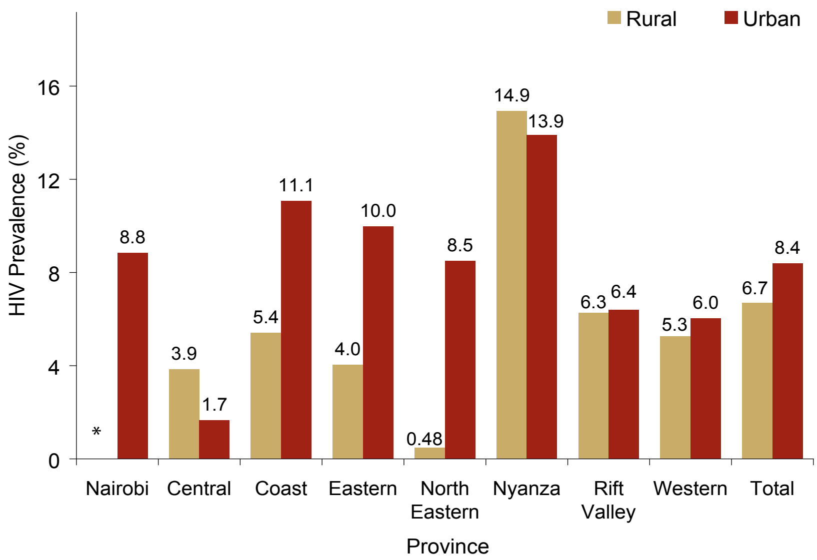


Figure 2.7b In most provinces, urban HIV prevalence was greater than rural HIV prevalence.

* All provinces consist of both rural and urban areas, with the exception of Nairobi province, which is entirely urban.

The prevalence of HIV differed significantly across rural areas of provinces, ranging from 0.5% in North Eastern province to 14.9% in Nyanza province. Although HIV prevalence ranged from 1.7% to 13.9% across urban areas, no significant differences were observed. Nyanza province had the highest prevalence among both rural (14.9%) and urban residents (13.9%) compared to other provinces. Estimates for North Eastern province should be interpreted with caution given its small urban resident population.

Figure 2.7c Estimated number of HIV-infected adults aged 15-64 years by province, Kenya 2007.

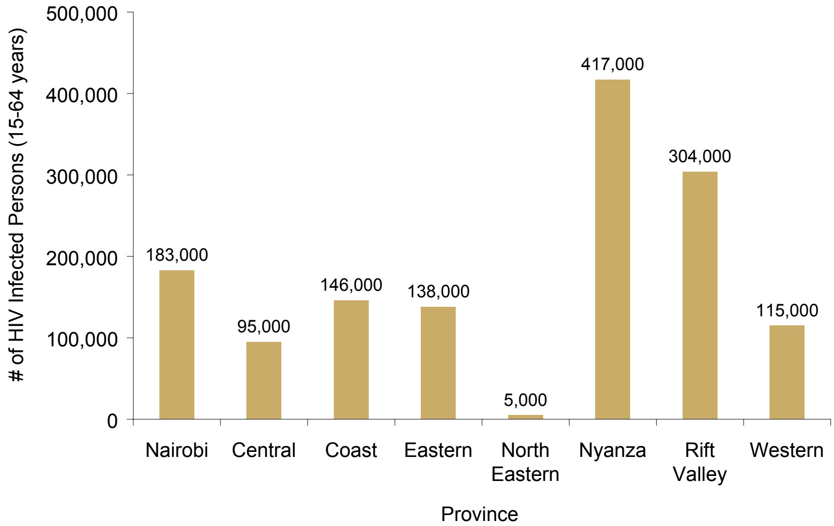


Figure 2.7c The estimated numbers of HIV-infected persons in Nyanza and Rift Valley provinces represent approximately half of all HIV-infected people in Kenya.

There were large differences across provinces in the estimated number of HIV-infected adults. Nyanza province had the largest estimated number of HIV-infected adults (417,000), followed by Rift Valley (304,000), and Nairobi (183,000). Combined, Nyanza and Rift Valley provinces were home to approximately half (51.4%) of Kenya's HIV-infected adults

2.8 HIV Prevalence by Marital Status

Figure 2.8 HIV prevalence among women and men aged 15-64 years by current marital status, Kenya 2007.

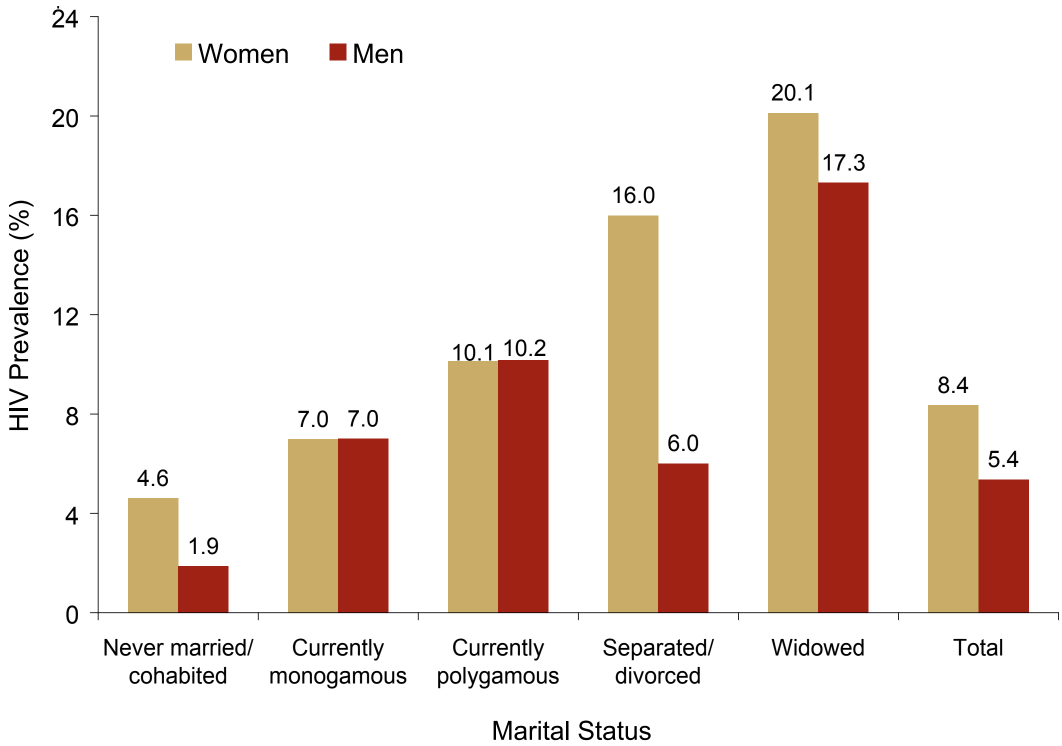


Figure 2.8 HIV prevalence was significantly greater among widowed women and men and separated/divorced women compared to other adults.

The term "currently monogamous" refers to respondents that are married or cohabiting in a union with only one wife or one female partner.

HIV prevalence varied significantly by marital status. Prevalence was highest among currently widowed women (20.1%) and men (17.3%).[1] Women and men who had never married or cohabited had the lowest prevalence rates, at 4.6% and 1.9%, respectively. Prevalence was similar between women and men who were currently monogamous or currently polygamous.

1 1,315 women and 376 men reported separated, divorced or widowed as their marital status at the time of the survey. The survey did not capture formerly widowed status for men who reported being in monogamous or polygamous unions at the time of the survey.

2.9 HIV Prevalence by Education Level

Figure 2.9 HIV prevalence among women and men aged 15-64 years by level of education, Kenya 2007.

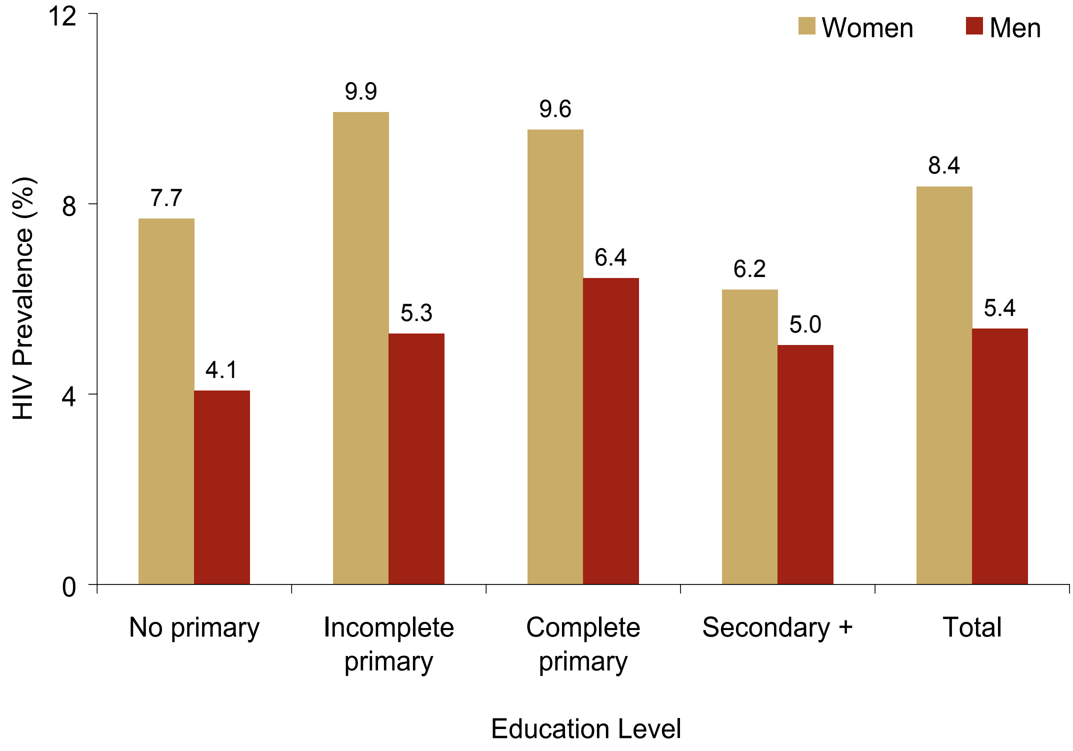


Figure 2.9 Among women, HIV prevalence differed significantly by level of education.

"Secondary+" includes any years of secondary schooling whether completed or not.

HIV prevalence among women with secondary education or higher (6.2%) was significantly lower than the prevalence observed among women with less education (7.7%-9.6%). Among men, there were no differences in HIV prevalence by education level, with rates ranging from 4.1% to 5.0%. Prevalence among women was significantly higher than men at every level of education with the exception of the highest level.

2.10 HIV Prevalence by Wealth Index[2] and Employment Status

Figure 2.10a HIV prevalence among women and men aged 15-64 years by wealth index, Kenya 2007.

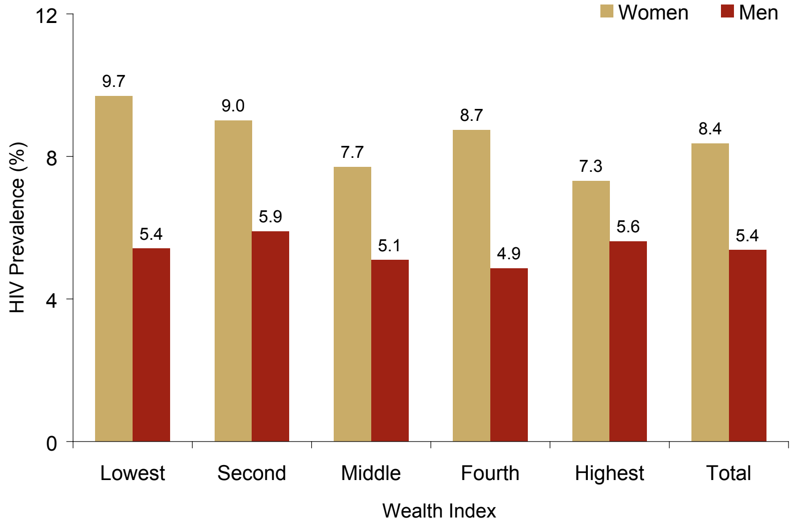


Figure 2.10a HIV prevalence did not vary significantly by wealth index for either women or men.

There was no association between household wealth index and HIV prevalence among women or men. Within each wealth quintiles, HIV prevalence appeared to be higher among women than men.

Figure 2.10b HIV prevalence among rural and urban residents aged 15-64 years by wealth index, Kenya 2007.

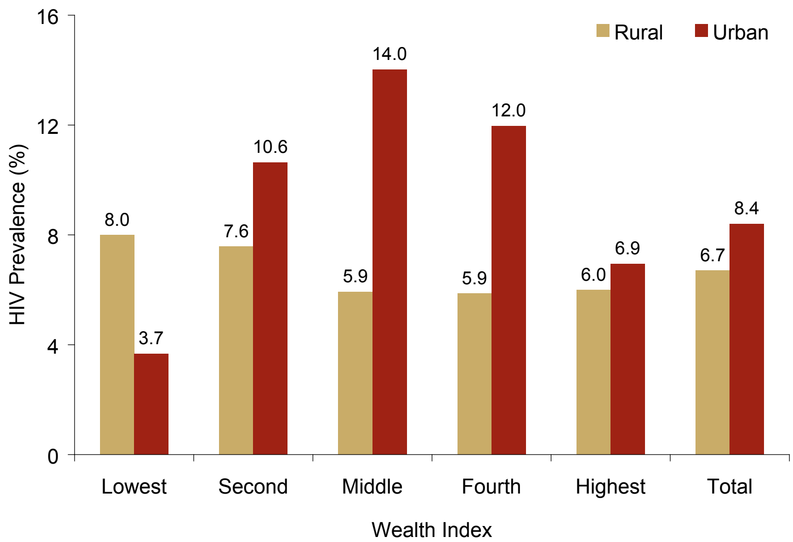


Figure 2.10b HIV prevalence varied significantly across wealth quintiles among urban but not rural residents.

2 The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, water access and sanitation facilities. The wealth index placed households on a continuous scale of relative wealth using principal components analysis. Individuals were ranked according to the score of the household in which they resided and the sample was divided into five groups, each with an equal number of individuals (quintiles), ranging from the lowest to highest level of wealth.

In urban areas, HIV prevalence varied significantly by wealth index, although this was not the case in rural areas. In urban populations, HIV prevalence peaked among those in the middle wealth quintile. Those in the lowest wealth quintile had the lowest HIV prevalence (3.7%); however, there were relatively few participants in this category (n=101), so these results should be interpreted cautiously.

Figure 2.10c HIV prevalence among women and men aged 15-64 years by current employment status, Kenya 2007.

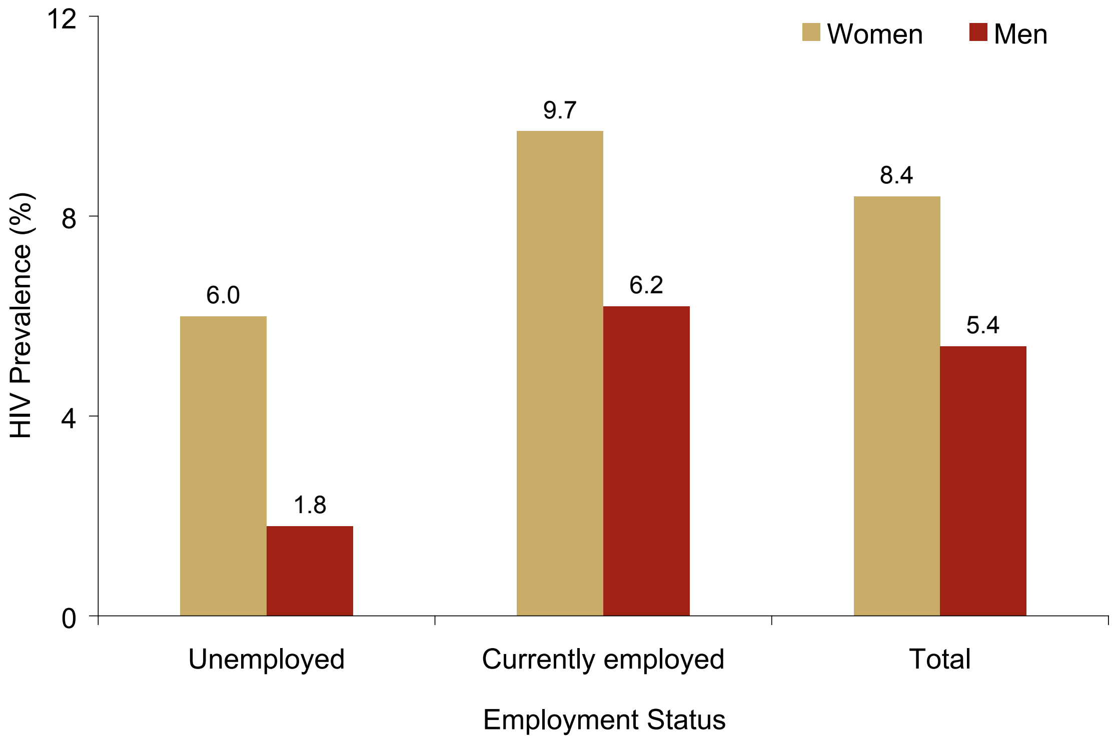


Figure 2.10c HIV prevalence among persons who were currently employed was significantly higher than HIV prevalence among persons not currently employed.

Current employment was defined as having worked in the week prior to the survey. Women and men who were currently employed had significantly higher HIV prevalence rates (9.7% and 6.2%, respectively), compared to unemployed women and men (6.0% and 1.8%, respectively). Notably, HIV prevalence among employed men (6.2%) compared with unemployed men (1.8%) was three times greater.

2.11 HIV Prevalence by Time Away from Home

Figure 2.11 HIV prevalence among women and men aged 15-64 years who travelled away from home in the 12 months preceding the survey by length of time away from home, Kenya 2007.

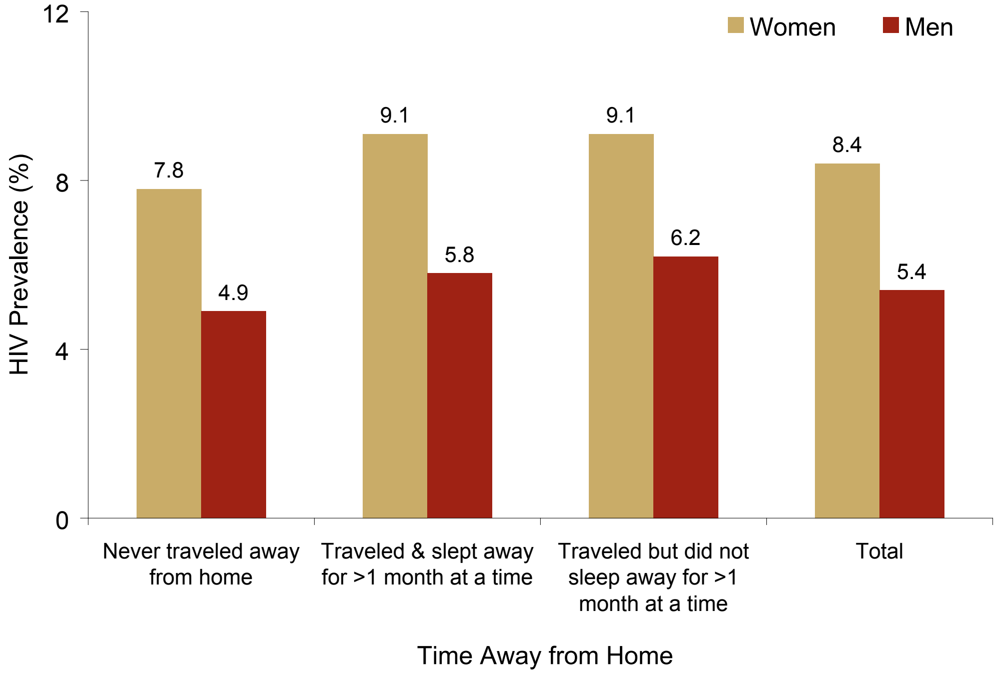


Figure 2.11 HIV prevalence did not vary significantly by travel among men or women.

HIV prevalence among women and men who never travelled away from home in the 12 months before the survey was 7.8% and 4.9%, respectively. There was no significant difference in prevalence between those respondents who never travelled and those who did travel, regardless of the duration of their stay away from home.

2.12 HIV Prevalence by Religious Affiliation

Figure 2.12 HIV prevalence among women and men aged 15-64 years by religion, Kenya 2007.

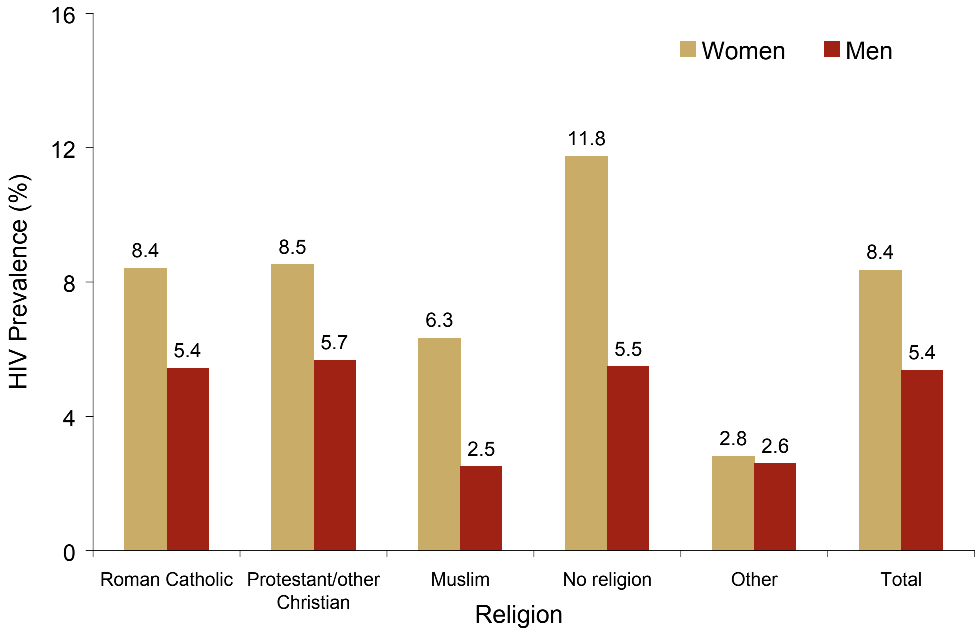


Figure 2.12 HIV prevalence was not associated with religious affiliation among women and marginally associated with religious affiliation among men.

HIV prevalence did not vary significantly among women across religious affiliations. Among men, respondents identifying themselves as Roman Catholic, Protestant or other Christian, or as having no religious affiliation had similar levels of HIV (5.4%, 5.7% and 5.5%, respectively). HIV prevalence estimates among Muslim men (2.5%) and men reporting other, unspecified religions (2.6%) were marginally lower than among men who reported being Roman Catholic, Protestant or having no religious affiliation.

2.13 Male Circumcision and Association with HIV Infection

Figure 2.13a Circumcision among men aged 15-64 years by province, Kenya 2007.

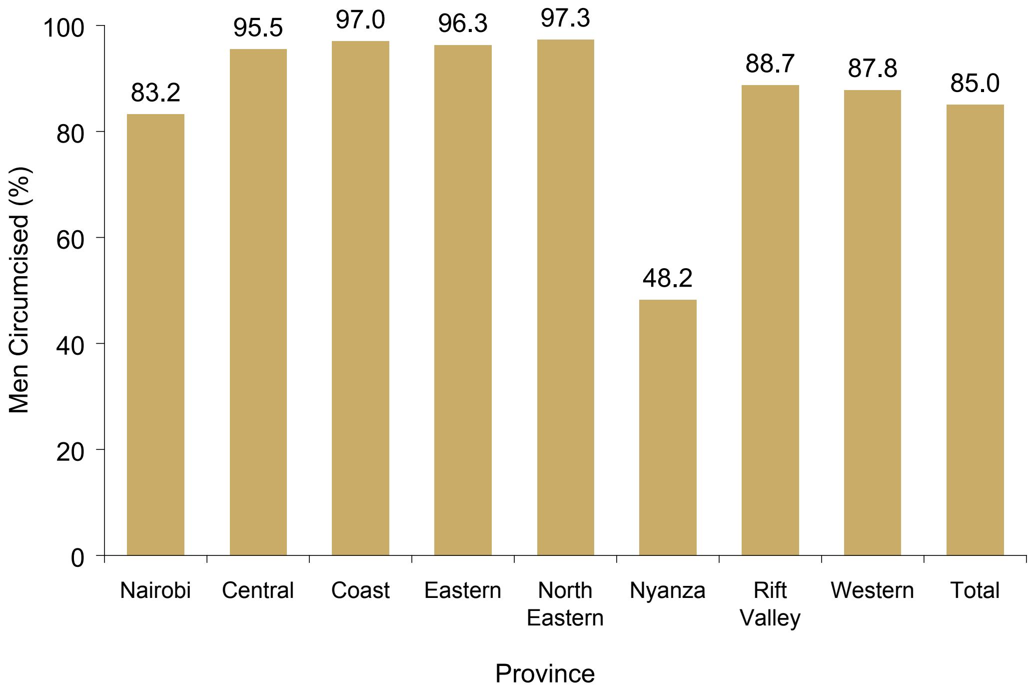


Figure 2.13a Reported rates of circumcision were high except for in Nyanza province.

Overall, 85.0% of men aged 15-64 years reported being circumcised at the time of the 2007 KAIS. Coast (97.0%) and North Eastern (97.3%) provinces had the highest rates of male circumcision, while Nyanza province had the lowest rate of circumcision (48.2%).

Data in Context: Male Circumcision

Male circumcision is practiced in many communities in Kenya and often serves as a right of passage to adulthood. Some ethnic groups with ancestral homes in Nyanza, Rift Valley and Western provinces, however, are traditionally non-circumcising communities. Recently, the efficacy of medical male circumcision in preventing HIV has been established in several randomised controlled trials in sub-Saharan Africa. To investigate this relationship, men interviewed in the 2007 KAIS were asked if they were circumcised and their responses were linked to biological outcomes. Findings on intention to circumcise sons and the HIV status of female partners among circumcised and uncircumcised men are reported in Chapter 6.

Figure 2.13b HIV prevalence among circumcised and uncircumcised men aged 15-64 years by province, Kenya 2007.

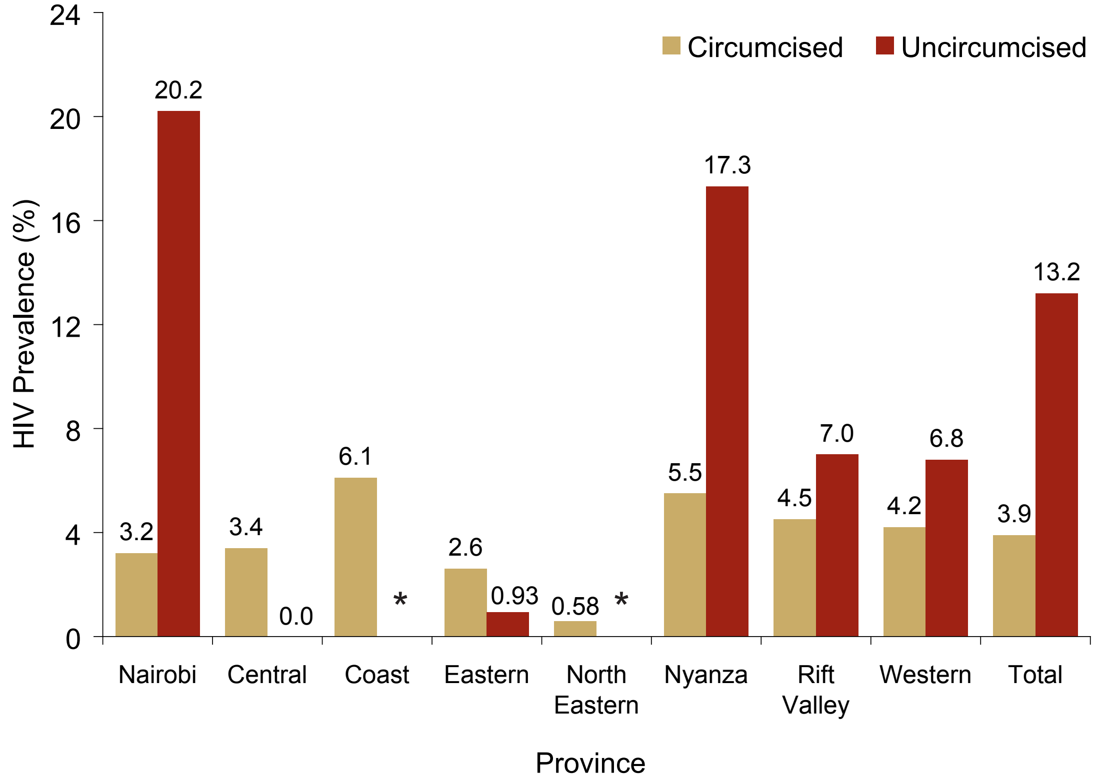


Figure 2.13b Nationally, HIV prevalence among uncircumcised men was more than three times greater than among circumcised men; in some provinces this difference was not observed.

* Estimates not presented due to small denominators of less than 25 observations in this category.

At the national level, prevalence was significantly higher among uncircumcised men (13.2%) than among circumcised men (3.9%). A similar pattern was observed at the provincial level in Nairobi, Nyanza, Rift Valley and Western provinces. Due to the small number of uncircumcised participants in Coast (n=24) and North Eastern (n=9) provinces, conclusions cannot be drawn about the association between HIV prevalence and male circumcision in these provinces from these data.

Figure 2.13c HIV prevalence among circumcised and uncircumcised men by age group, Kenya 2007.

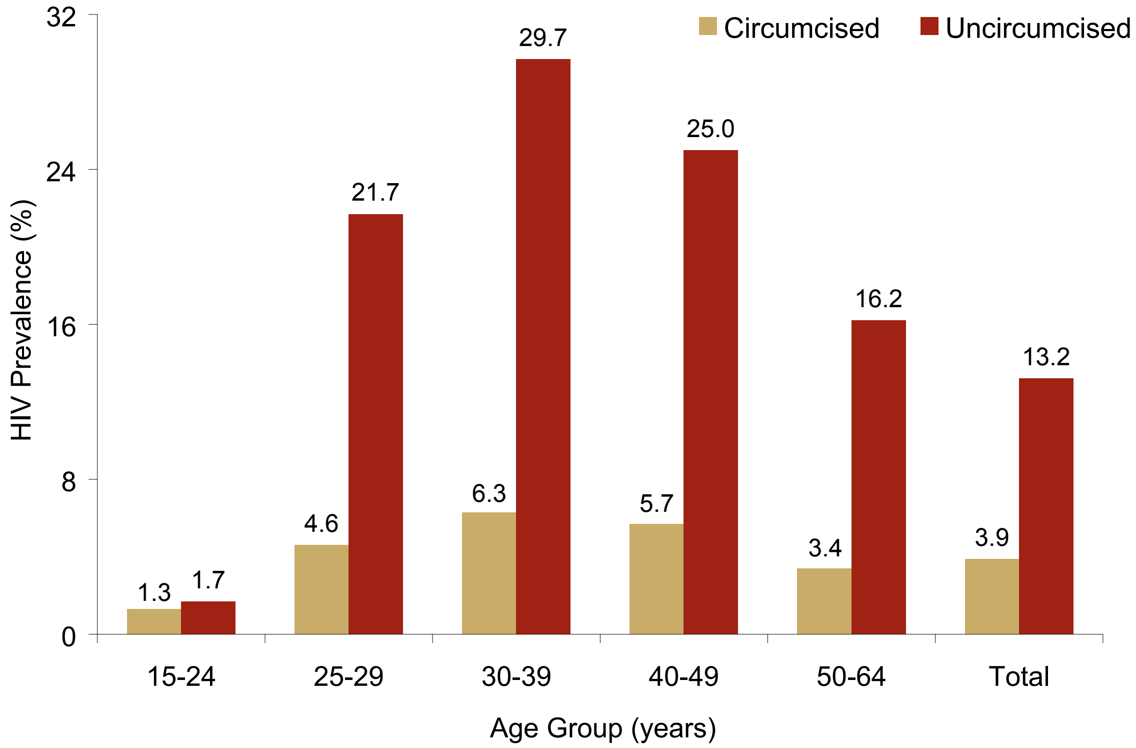


Figure 2.13c HIV prevalence was significantly higher in uncircumcised men compared to circumcised men in all age groups except for the 15-24 year olds.

HIV prevalence differed significantly by age group between circumcised and uncircumcised men. Prevalence among uncircumcised men was approximately five times greater than among circumcised men in all age groups except for the youngest (15-24 years of age) where prevalence was similar for circumcised (1.3%) and uncircumcised (1.7%) men. Peak HIV prevalence among uncircumcised men was observed among men aged 30-39 years (29.7%).

2.14 Gaps and Unmet Needs

- **The epidemiology of HIV in Kenya cannot be fully described without information on populations that are at particular risk for infection, including men who have sex with men, persons who inject drugs and persons that pay or receive money or gifts in exchange for sex. These behaviours were not captured in the 2007 KAIS.**
- **The burden of HIV infection among children under the age of 15 years is unknown and was not captured in the 2007 KAIS, presenting a challenge for planning for HIV care and treatment programs for children.**
- **Future surveys should consider expanding data collection efforts to include these groups to ensure a comprehensive understanding of the HIV epidemic.**

3

Comparison of HIV Prevalence In the 2003 KDHS and 2007 KAIS

3.1 Key Findings

- The national HIV prevalence estimate in 2007 was 7.4% among adults aged 15-49 years, compared with 6.7% in 2003. This difference was not statistically significant.
- HIV prevalence significantly increased among men living in rural populations between 2003 and 2007.
- HIV prevalence tended to increase in five of the eight provinces; these increases were marginally significant or significant.
- Significant changes in HIV prevalence by wealth index and education level were observed between 2003 and 2007. Individuals of lower socioeconomic status had significantly higher prevalence in 2007 than in 2003.

3.2 Introduction

Previous demographic and health surveys were conducted in Kenya in 1989, 1993, 1998 and 2003. The 2003 KDHS was the first to include HIV testing in a nationally representative sample of women aged 15-49 years and men aged 15-54 years. The 2007 KAIS included HIV testing for women and men aged 15-64 years. Thus, to understand changes in HIV prevalence between 2003 and 2007, we compared HIV prevalence between women and men in the age groups covered in both surveys. Most of the comparisons presented in this chapter are among women and men aged 15-49 years.

Appendix B.3 provides sample sizes and 95% confidence intervals for estimates presented in this chapter. The z-test statistic was used to compare the two weighted estimates from the 2003 KDHS and the 2007 KAIS and to determine if differences were statistically significant. Methods used for calculating the z-test statistic are described in Appendix A. Throughout the chapter, the term significant indicates a p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

Data in Context: Understanding Statistical Significance

Whenever a population is sampled for a survey, there is some degree of uncertainty associated with the results obtained; results from samples of human populations are always estimates. Standard errors represent the degree of uncertainty around an estimate, including each estimate in 2003 KDHS and 2007 KAIS. The formula for calculating standard errors is described in Appendix C. Because of the uncertainty of survey estimates, statistical tests using standard errors can provide a range of potential values of the true estimate; this range is referred to as the confidence interval (CI). A 95% CI, for example, means that if a survey was repeated 100 times in the same population, the CI would be expected to contain the true estimate 95 times out of 100. The 95% CIs presented in this chapter are shown as lines at the top and bottom of each bar in the figures.

When comparing an estimate between two surveys in the same population, there are formal statistical methods to test the probability that the differences seen between the two surveys are real and not due to chance. When comparing estimates from 2003 KDHS to estimates from the 2007 KAIS, we used the z-test, which computes the probability that the difference was due to chance alone. We used a conservatively low probability, less than 5%, to determine whether these differences were likely to be real and not due to chance. If the probability that chance caused the differences was less than 5%, we said the results were statistically significant. If the probability was between 5% and 10%, we considered the results to me marginally significant. Visually, one way to approximate whether point estimates from the 2003 KDHS and the 2007 KAIS are different is to visually assess whether the 95% CIs for the two estimates overlap; that is, the CI of one survey overlaps with the CI of the other. If 95% CIs do *not* overlap, a statistically significant difference at the $p<0.05$ level is highly likely. However, the converse is not true - you may or may not have statistical significance when the 95% CIs *do* overlap.

Inference by eye: reading the overlap of independent confidence intervals. G. Cumming
Statistics in medicine, Vol. 28, No. 2. (30 January 2009).

3.3 Sex

Figure 3.3a HIV prevalence among women and men aged 15-49 years, 2003 KDHS and 2007 KAIS.

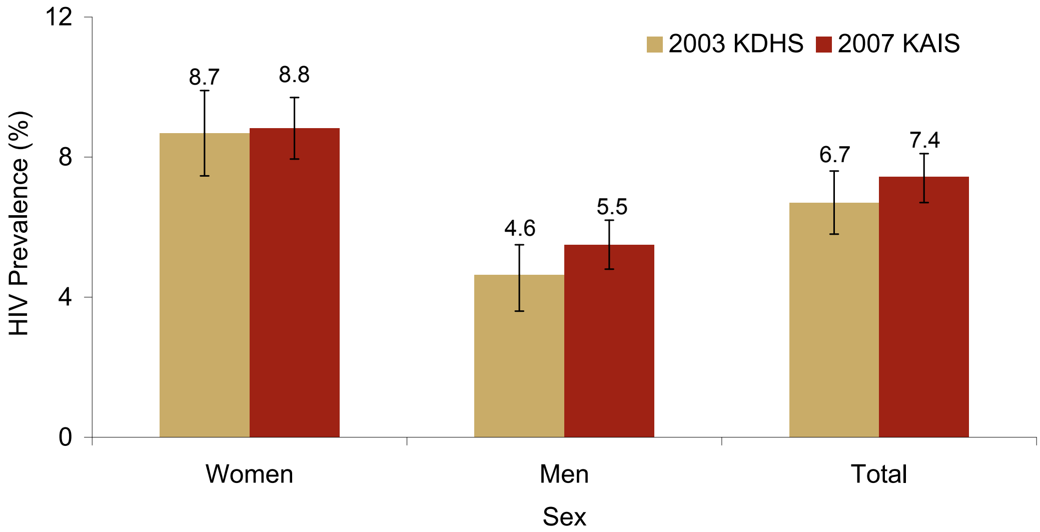


Figure 3.3a HIV prevalence was not significantly different in 2003 and 2007.

The 2007 KAIS estimate of national HIV prevalence for adults aged 15-49 years was 7.4% (95% CI: 6.7% - 8.1%). The 2003 KDHS estimated that 6.7% (95% CI: 5.8% - 7.6%) of adults in this age group were infected with HIV. The 2007 KAIS national prevalence was not significantly higher than the 2003 KDHS national prevalence. The overlapping confidence intervals indicate that HIV prevalence remained more or less stable between 2003 and 2007. In the 2003 KDHS, 8.7% of women and 4.6% of men were infected compared to 8.8% of women and 5.5% of men in the 2007 KAIS.

Data in Context: HIV Serologic Testing in 2003 KDHS and 2007 KAIS

In the 2007 KAIS, HIV testing was performed using antibody/antigen assays, compared to antibody-only assays in the 2003 KDHS. The antibody/antigen approach is more sensitive for capturing recent infections and was utilized in KAIS for consistency with Government of Kenya HIV testing programs at the time of the survey. Differences between these assays are small in populations with relatively low incidence such as Kenya, which had an estimated HIV incidence of 0.83% (95% CI: 0.80% and 0.85%) in 2007, according to GOK estimates using UNAIDS Estimation and Projection Package (EPP)/Spectrum software. Point estimates calculated from results of the two testing approaches may differ but are likely to fall within similar 95% confidence intervals.

3.4 Age Group and Sex

When comparing HIV prevalence by five-year age groups in the 2007 KAIS to the 2003 KDHS, it is important to consider that a majority of the people aged 15-24 years in the 2003 KDHS joined the 25-29 year old age group in the 2007 KAIS due to the four-year time period between the two surveys. Thus, to determine if prevalence in the cohort of 15-19 year olds in the 2003 KDHS had changed in 2007 KAIS, one would need to compare the prevalence for this age group in 2003 to that of the 20-24 age group in 2007. Changes in prevalence for a particular age group between the two surveys were influenced by the number of newly infected persons, number of deaths, and access to antiretroviral therapy (ART), among other factors.

Figure 3.4a HIV prevalence among women by five-year age group, 2003 KDHS and 2007 KAIS.

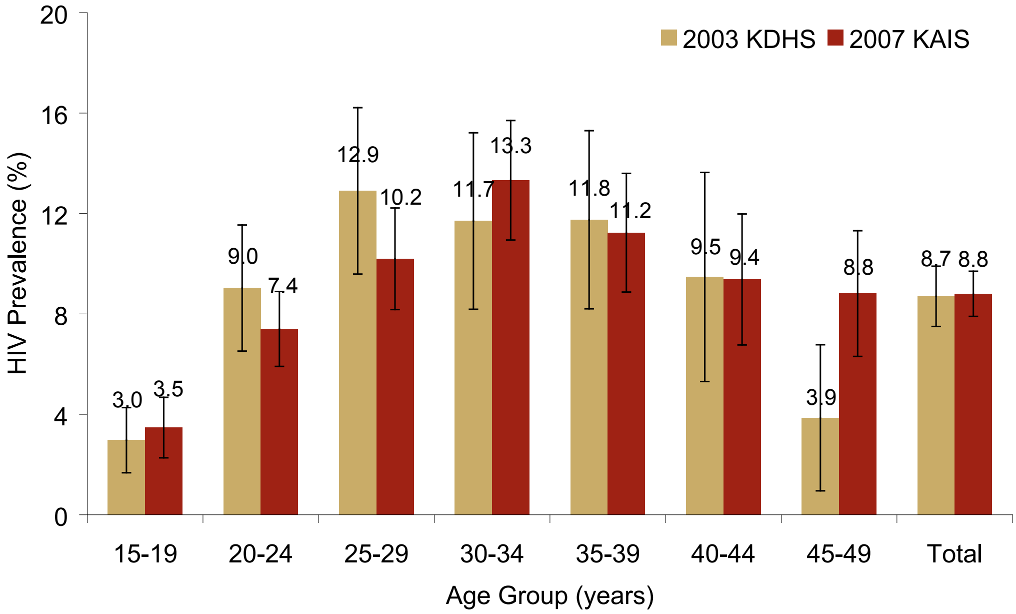


Figure 3.4a Comparing 2003 and 2007, there were no significant differences in HIV prevalence across all age groups of women.

In the 2003 KDHS, the HIV prevalence peaked among women aged 25-29 years (12.9%), while in the 2007 KAIS prevalence peaked in women aged 30-34 years (13.3%). This was probably because most of the women in 2003 who were 25-29 years old and HIV-infected moved into the 30-34 year age group in 2007. There was a significant increase in HIV prevalence among women who were 15-19 years old in the 2003 KDHS and 20-24 years old in the 2007 KAIS from 3.0% to 7.4%, which indicates that some women in this cohort may have become newly infected between 2003 and 2007.

Other changes in five-year age cohorts, such as apparent increases in HIV prevalence from the 20-24 year age group in the 2003 KDHS to the 25-29 year age group in the 2007 KAIS and decreases in HIV prevalence from the 35-39 year age group in the 2003 KDHS to the 40-44 year age group in the 2007 KAIS were not significant.

Figure 3.4b. HIV prevalence among men by five-year age group, 2003 KDHS and 2007 KAIS.

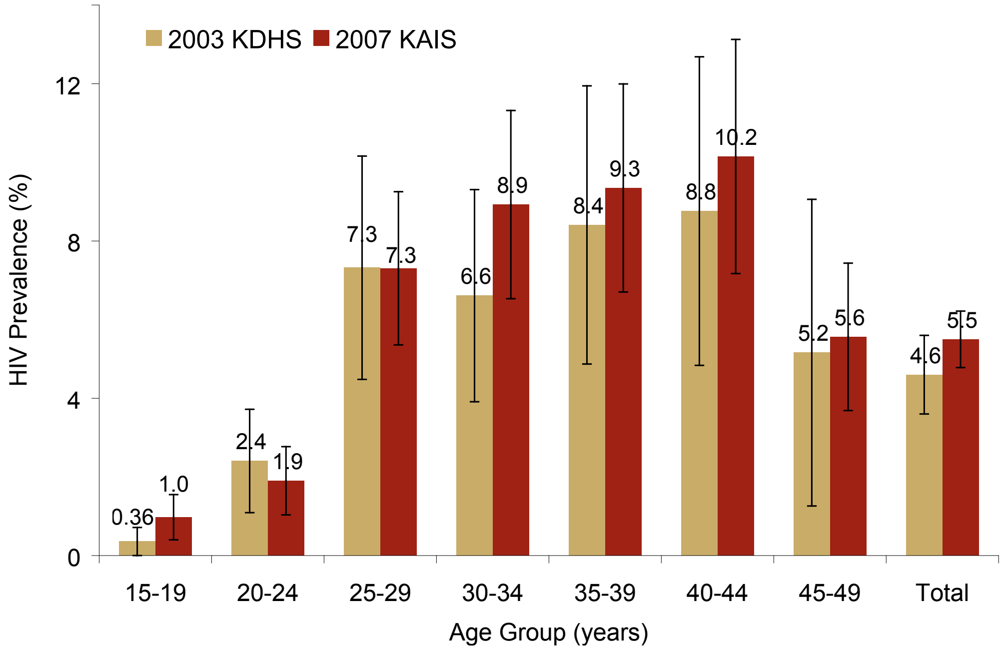


Figure 3.4b HIV prevalence peaked among men age 40-44 years in both 2003 and 2007.

Among men aged 15-49 years, HIV prevalence was 4.6% in 2003 and 5.5% in 2007. There were no significant differences in prevalence for men within all age groups between 2003 and 2007; however, for those aged 15-19 years, there was a marginally significant difference. A significant increase in prevalence occurred as the 15-19 year age group in the 2003 KDHS (0.4%) moved into the 20-24 year age group in the 2007 KAIS (1.9%). Prevalence also increased rapidly and significantly among men aged 20-24 years in the 2003 KDHS to men aged 25-29 years in 2007 KAIS. HIV prevalence peaked in the 40-44 year age group in 2003 (8.8%) and 2007 (10.2%).

3.5 Youth

HIV prevalence in youth aged 15-24 years was 3.6% in 2003 and 3.8% in 2007, with no significant difference between these two estimates. Young women aged 15-24 years had significantly higher prevalence than young men aged 15-24 years in both 2003 and 2007. HIV prevalence in young men aged 15-19 years rose from 0.4% in 2003 to 1.0% in 2007, while in the 20-24 year age group prevalence was similar (2.4% in 2003 and 1.9% in 2007).

3.6 Residence

Figure 3.6a HIV prevalence by residence among women and men aged 15-49 years, 2003 KDHS and 2007 KAIS.

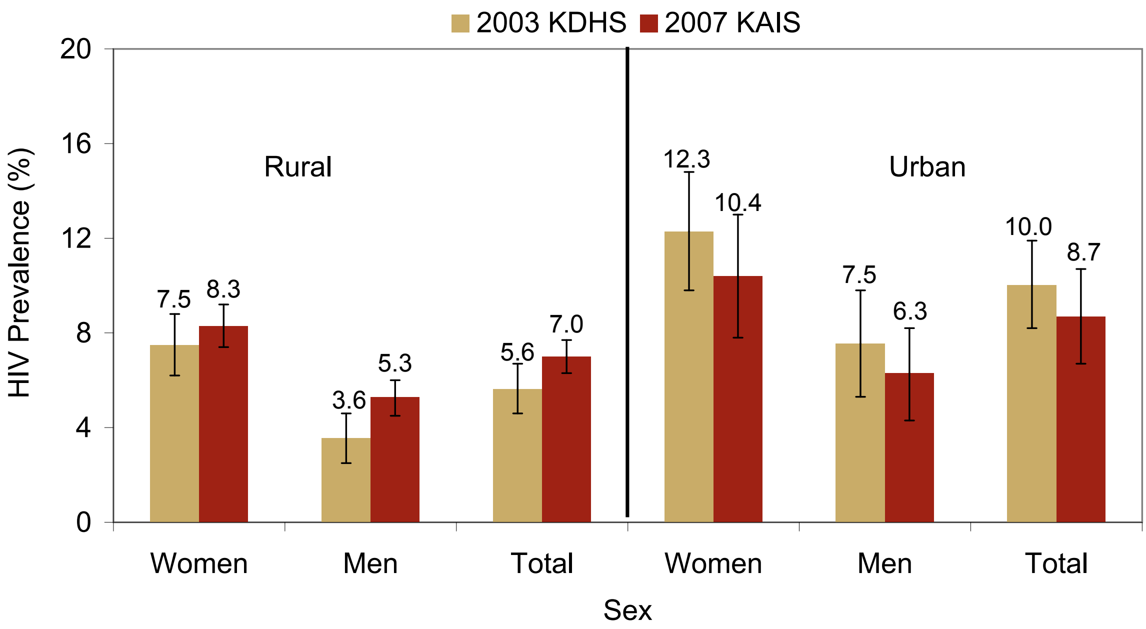


Figure 3.6a HIV prevalence varied significantly from 2003 to 2007 among rural men but not rural women or among urban residents of either sex.

HIV prevalence among rural residents was higher for both women and men in the 2007 KAIS compared to the 2003 KDHS, although the increase was significant only among men.[1] In contrast, urban HIV prevalence appeared lower, though not significant, among both women and men.

In 2003, HIV prevalence was significantly greater among urban residents compared to rural residents for both women and men. In 2007, HIV prevalence was marginally greater among urban compared to rural residents overall; however among women and men separately, there were no significant differences observed between HIV prevalence in urban compared to rural areas. This result indicates that prevalence levels in rural populations may be approaching that of urban populations, reflecting an expansion of the HIV epidemic toward rural areas. Because an estimated three in four adults aged 15-49 years live in rural areas[2], this increase has a larger impact on the total estimated number of HIV-infected persons in Kenya, more so than any apparent declines observed in urban areas.

1 While 95% confidence intervals for HIV prevalence among rural men in the 2003 KDHS (2.5, 4.6) and the 2007 KAIS (4.5, 6.0) overlap, the z-score and p-value indicate a statistically significant difference.

2 The Kenya National Bureau of Statistics approximates that 75% of individuals in Kenya are living in rural areas. Because exact proportions are not available, this number should be cited with caution. Although all estimates in this chapter are described in more detail (with 95% confidence intervals and sample sizes) in Appendix B.3, this estimate is not included in the appendix.

3.7 Province

Figure 3.7a HIV prevalence by province among adults aged 15-49 years, 2003 KDHS and 2007 KAIS.

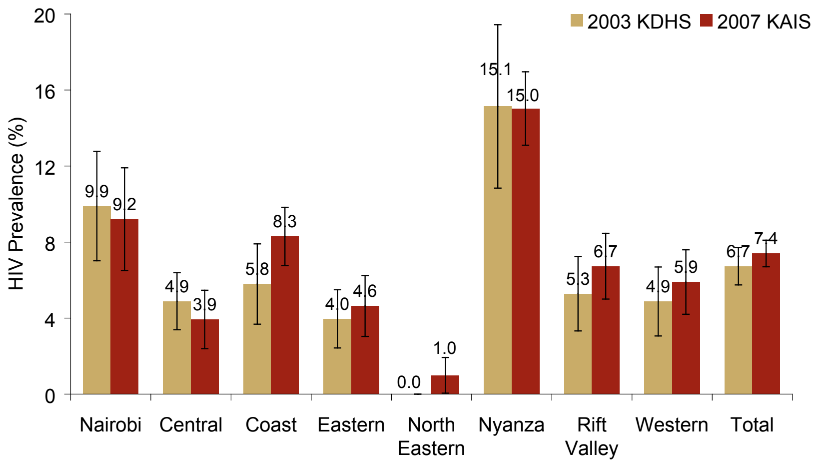


Figure 3.7a No significant change in HIV prevalence was observed for provinces except for North Eastern province where HIV prevalence increased significantly from 2003 to 2007, and in Coast province where the increase was marginally significant.

Standard survey procedures do not provide 95% confidence intervals for estimates of 0%. Therefore, 95% confidence intervals were not calculated for North Eastern province in the 2003 KDHS.

Between 2003 and 2007, there were no significant changes in HIV prevalence at the provincial level except in two provinces: Coast, where the difference was marginally significant, and North Eastern, where the difference was significant. In both 2003 and 2007, Nyanza province, followed by Nairobi, had the two highest levels of HIV prevalence, whereas North Eastern province had the lowest prevalence.

3.8 Marital Status

Figure 3.8a HIV prevalence by current marital status among adults aged 15-49 years, 2003 KDHS and 2007 KAIS.

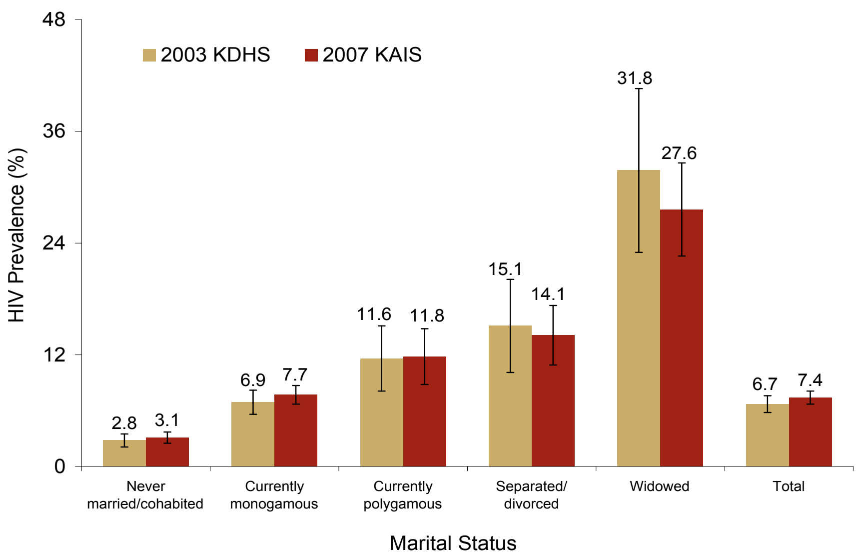


Figure 3.8a HIV prevalence rates by marital status remained similar from 2003 to 2007.

The term “currently monogamous” refers to respondents that were married or cohabiting in a union with only one spouse or one sexual partner.

HIV prevalence did not differ significantly by marital status from 2003 to 2007. Persons who were widowed had the highest HIV prevalence in both 2003 and 2007, with levels approximately three times higher than currently polygamous persons, four times higher than currently monogamous persons and six times higher than persons who were never married/cohabited in both surveys.
The distribution of marital status in the population at the time of the 2003 KDHS and 2007 KAIS are compared in Table 3.8a

Table 3.8a Marital status among women and men aged 15-49 years, 2003 KDHS and 2007 KAIS.

	2003 KDHS		2007 KAIS	
Marital status	Women (Weighted %)	Men (Weighted %)	Women (Weighted %)	Men (Weighted %)
Never married/cohabited	29.8	45.0	23.1	37.1
Currently monogamous	48.7	45.8	54.4	52.7
Currently polygamous	9.9	5.0	8.3	4.6
Separated/divorced	4.2	0.7	6.8	4.2
Widowed	5.9	3.5	7.4	1.4
Total	100.0	100.0	100.0	100.0

2003 KDHS estimates taken from Table 3.5 in the 2003 KDHS Final Report.
Weighted estimates and 95% confidence intervals for the 2007 KAIS data and the 2003 KDHS data are presented in Appendix B.2.
The term “currently monogamous” refers to respondents that were married or cohabiting in a union with only one spouse or one sexual partner.

No significant changes in marital status was observed from 2003 to 2007 for women and men, with the exception of currently monogamous women, where the percent of women increased significantly from 44.8% in 2003 to 55.1% in 2007.

3.9 Education Level

Figure 3.9a HIV prevalence by education level among adults aged 15-49 years, 2003 KDHS and 2007 KAIS.

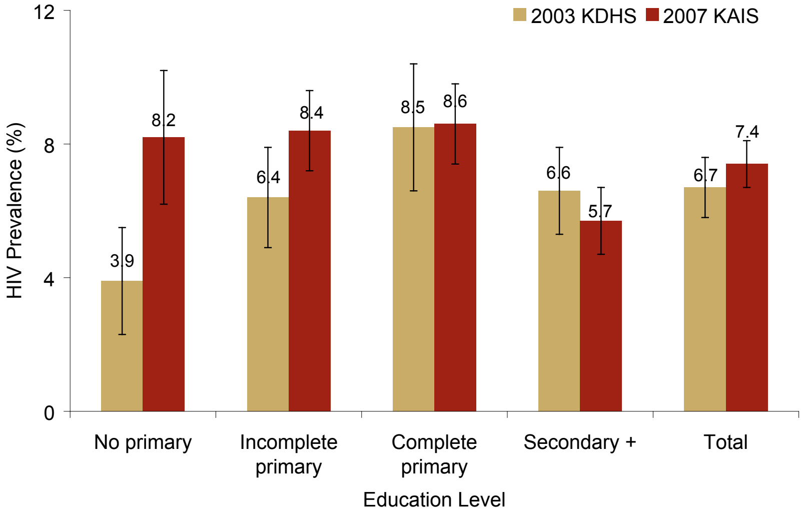


Figure 3.9a Among persons who reported no education or incomplete primary education, HIV prevalence increased significantly from 2003 to 2007.

In both 2003 and 2007, HIV prevalence varied significantly by education level. From 2003 to 2007, HIV prevalence increased significantly among persons reporting no education (3.9% in 2003 versus. 8.2% in 2007) and incomplete primary education (6.4% in 2003 versus 8.4% in 2007, respectively).

3.10 Wealth Index

Figure 3.10a HIV prevalence by wealth index among adults aged 15-49 years, 2003 KDHS and 2007 KAIS.

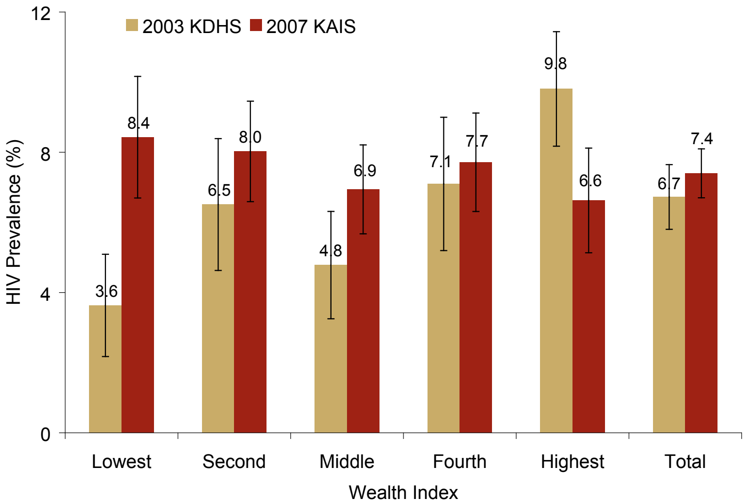


Figure 3.10a From 2003 to 2007, HIV prevalence significantly increased among persons in the lowest wealth quintile and significantly decreased among persons in the highest wealth quintile.

The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, and water access and sanitation facilities. The wealth index placed households on a continuous scale of relative wealth using principal components analysis. Individuals were ranked according to the score of the household in which they resided and the sample was divided into five groups, each with an equal number of individuals (quintiles), ranging from the lowest to highest level of wealth.

HIV prevalence varied significantly by wealth index in the 2003 KDHS but not in the 2007 KAIS. Persons in the lowest quintiles of wealth had the lowest HIV prevalence in 2003 but the highest HIV prevalence in 2007. The differences in HIV prevalence between 2003 and 2007 were significant among all wealth quintiles except the second and fourth quintiles. Most persons aged 15-49 years (97.5%) in the lowest quintile lived in rural areas, supporting the apparent trend toward increased prevalence in rural areas, particularly among men, from 2003 to 2007 (see figure 3.6).

3.11 Age of Sexual Debut

Figure 3.11a HIV prevalence by age of sexual debut among adults aged 15-49 years, 2003 KDHS and 2007 KAIS.

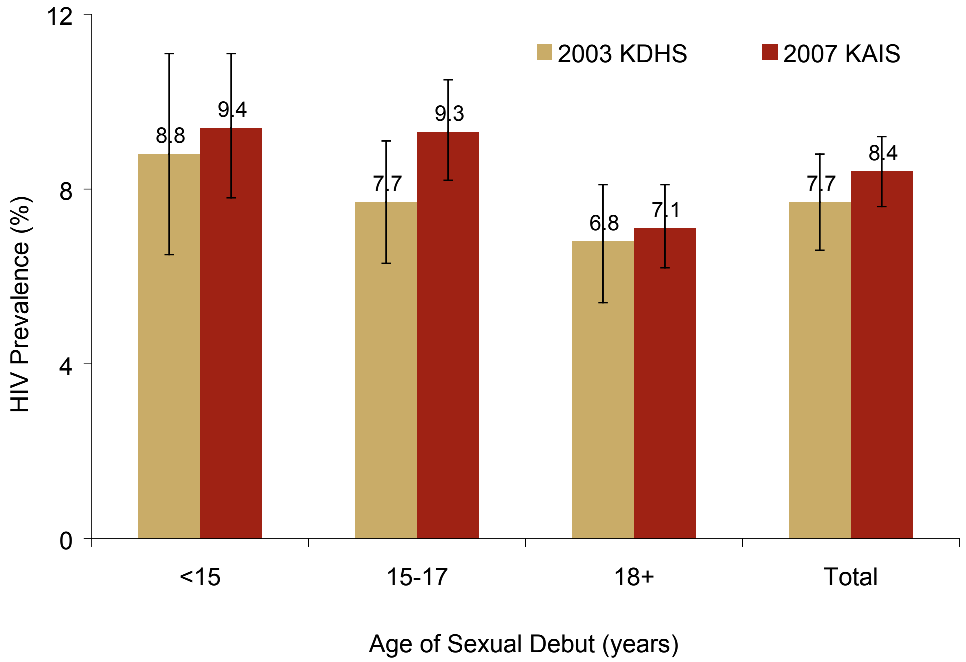


Figure 3.11a HIV prevalence did not vary significantly by age of sexual debut from 2003 to 2007.

There were no significant changes in HIV prevalence by reported age of sexual debut between 2003 and 2007. In both 2003 KDHS and 2007 KAIS, respondents reporting younger age at sexual debut (<15 years of age) had higher HIV prevalence compared to those reporting later age of sexual debut (≥15 years of age), but this difference was not statistically significant.

Data in Context: Approaches to HIV Surveillance

The prevalence of HIV in Kenya is estimated using several approaches: 1) national population-based surveys with HIV testing and 2) sentinel surveillance among pregnant women attending antenatal clinics (ANCs). Due to high costs, national population-based surveys with HIV testing are conducted, on average, every five years in a country. Therefore, ANC surveillance which is conducted more regularly (every one to two years) remains an important, cost-effective source of information to monitor HIV prevalence trends in pregnant women, a group considered to be a proxy for the general population. Using population projections from national census data and HIV prevalence data from ANC surveillance and national population-based surveys, the estimated number of persons infected with HIV and trends of HIV prevalence can be projected for the general population, nationally and by urban and rural populations.

ANC surveillance has been conducted since 1990 in Kenya and has shown declines in HIV prevalence among pregnant women in recent years, from 13.4% in 2000 to 6.9% in 2006. In contrast, Kenya's two national population-based surveys with HIV testing suggest that HIV prevalence has remained relatively stable. Among adults aged 15-49 years in the 2003 KDHS, HIV prevalence was 6.7% and not significantly different from the HIV prevalence estimate of 7.4% in the 2007 KAIS. There are a number of factors that explain why trends in ANC surveillance are different from population-based survey estimates. First, population-based surveys are based on large, nationally representative samples of adult women and men, while ANC surveillance is based on a sample of pregnant women attending ANCs. Thus, ANC surveillance, by design, provides information on the direction of the epidemic only among pregnant women, while repeat national population-based surveys are able to monitor trends among both women and men. It is worth noting the HIV prevalence among 15-49 year old women was very similar in 2003 KDHS (8.7%) and 2007 KAIS (8.8%), while there was a large, although not statistically significant difference among men (4.6% in KDHS 2003 versus 5.5% in 2007 KAIS). In addition, selected sites for ANC sentinel surveillance may not be representative of the general population. For example, ANC surveillance has a disproportionately large number of urban ANC sites compared to rural ANC sites; however, the majority of adults live in rural areas. Declining ANC prevalence may therefore be more reflective of declining urban prevalence among pregnant women than of trends in rural areas. It is also possible that trends in HIV prevalence among pregnant women attending ANCs differ in some ways from those in the general population.

Estimates from ANC surveillance are pooled averages across all participating sentinel surveillance sites in a given year.
NASCOP, Sentinel Surveillance of HIV and STDs in Kenya Report, 2006

3.12 Gaps and Unmet Needs

- **Young women aged 15-24 years remain especially vulnerable to HIV infection. Further research is needed to assess the factors that contribute to risk of infection in the younger population so that effective interventions targeting youth may be developed and implemented.**
- **Prevalence among rural populations, particularly rural men, increased between 2003 and 2007. This shift in the HIV epidemic highlights the need for increased services and programs to these regions.**
- **People with no primary level education and those in the lowest wealth index quintile had significantly higher HIV prevalence in 2007 than in 2003 highlighting the vulnerability of this group. HIV programs should plan to adapt education and behaviour change strategies to reach these groups.**

4

HIV Testing

4.1 Key Findings

- Overall, 33.9% Of adults aged 15-64 years reported that they had been tested for HIV at least once in their lifetime.
- Women were more likely to have ever been tested than men (40.7% versus 24.9%, Respectively).
- Of respondents who had never been tested for HIV, 47.2% Reported that they had not sought testing because of their self-perceived low risk for HIV.

4.2 Introduction

HIV testing and counselling are critical measures in a comprehensive response to the HIV epidemic. HIV testing is only way to learn one's HIV status and can provide appropriate linkages for HIV-infected persons to access life-saving HIV care and treatment interventions. In addition, the post-test counselling session offers focused counselling for HIV prevention to help reduce behaviours which may lead to acquisition or transmission of HIV.

The Government of Kenya has set a national goal to provide HIV testing to at least 80% of all adolescents and adults by 2010. To reach this goal, a thorough understanding of access to and use of HIV testing is needed to scale up national HIV testing and counselling efforts.

Since 2004, "opt-out" HIV testing has been offered as part of the routine package for all pregnant women attending antenatal clinics (ANC). In this approach, women receive pre-test counselling for HIV testing and can choose to "opt-out" of testing should they not wish to get tested. This policy change, in line with the national Prevention of Mother-to-Child Transmission (PMTCT) guidelines, has led to substantial increases in HIV testing among women. Further discussion of "opt-out" HIV testing in the context of PMTCT services is provided in Chapter 8 of this report.

In this chapter, we present coverage of HIV testing and counselling at the time of the survey and identify disparities and barriers to testing. **Appendix B.4** provides sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

Population estimates reported in this chapter were calculated based on the 2007 projected population reported in the *Revised Population Projections for Kenya 2000-2020* (Kenya National Bureau of Statistics, August 2006). Weighted estimates for selected indicators from the 2007 KAIS were used in these calculations. Methods for calculating population estimates are described in Appendix A. For any analysis that compared the 2003 KDHS and the 2007 KAIS data in this chapter, the z-test statistic was used compare the two weighted estimates from 2003 and 2007 and determine if differences were statistically significant. Methods used for calculating the z-test statistic are described further in Appendix A.

4.3 HIV Testing Behaviour

Figure 4.3a Ever been tested for HIV among women and men aged 15-64 years, Kenya 2007.

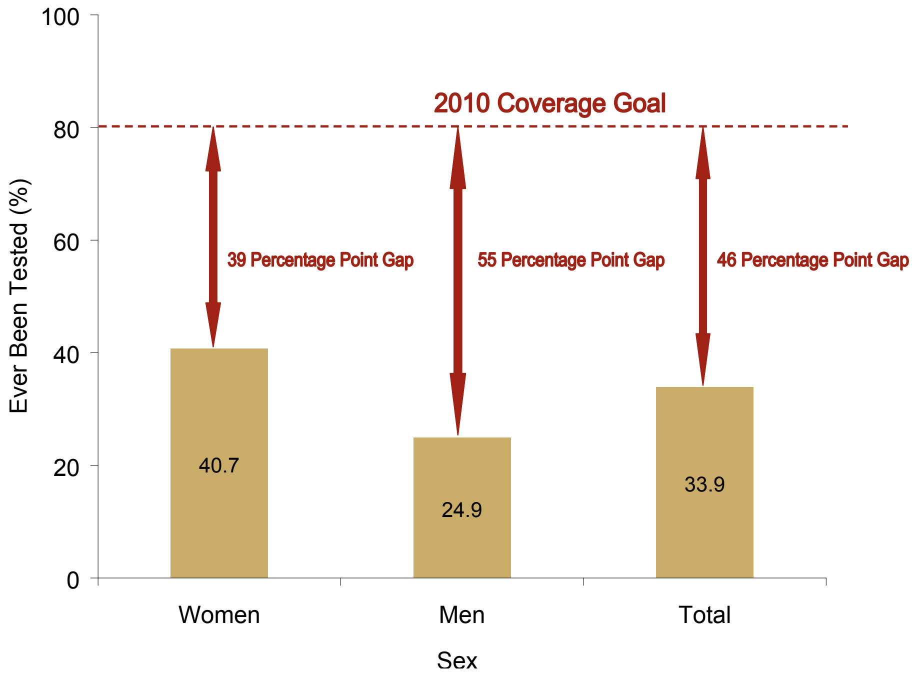


Figure 4.3a More women have had an HIV test than men; more testing will be needed for both sexes to reach Kenya's 2010 goal of testing 80% of all adolescents and adults in the country at least once.

By the end of 2007, 33.9% of women and men aged 15-64 years had been tested for HIV and had received results at least once in their lifetimes. Significantly more women (40.7%) reported having ever been tested compared to men (24.9%).

Among all respondents, the percent that had ever been tested for HIV but did not receive their test results was 1.8%. In total, 75.1% of men and 59.3% of women had never been tested for HIV or had been tested but never received their test results, translating into a gap of 46 percentage points in achieving the national HIV testing goal of 80%. To reach the goal, an estimated 9.2 million additional adolescents and adults will need to be tested for HIV between 2007 and 2010.

Figure 4.3b Ever been tested for HIV among women and men aged 15-49 years, 2003 KDHS and 2007 KAIS.

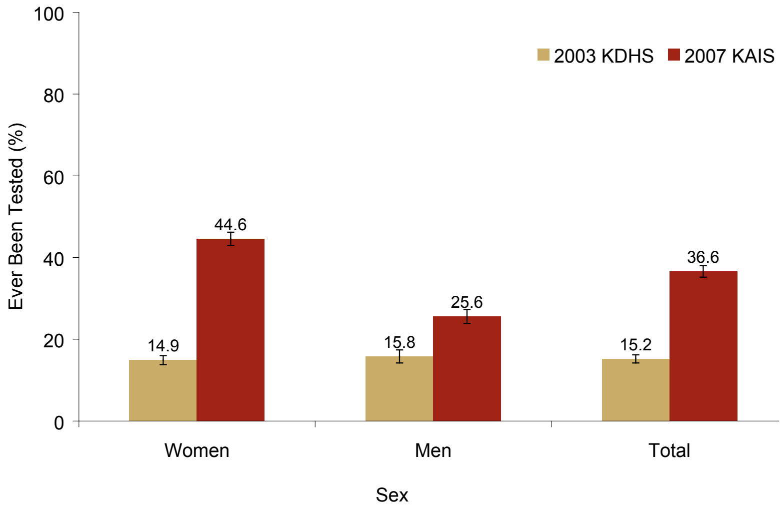


Figure 4.3b The percent of women aged 15-49 years who have ever been tested for HIV has more than tripled since 2003, and the proportion of men has nearly doubled.

For consistency with the 2003 KDHS, this analysis included only adults aged 15-49 years. The percent of all adults aged 15-49 years who have ever been tested for HIV increased significantly from 15.2% in 2003 to 36.6% in 2007. Although the differences between 2003 and 2007 are significant for both women and men, the increase was much more pronounced in women (14.9% to 44.6%, respectively) than in men (15.8% to 25.6%, respectively).

Figure 4.3c Ever been tested for HIV among women and men aged 15-64 years, by residence, Kenya 2007.

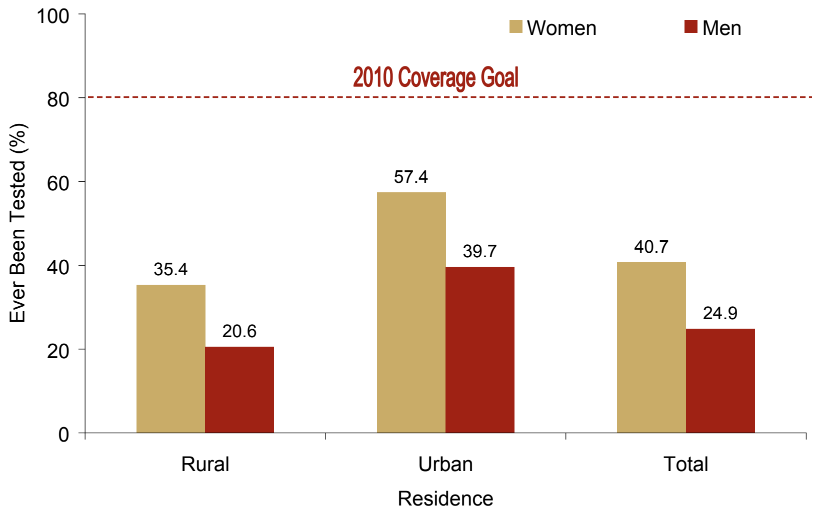


Figure 4.3c Women and men living in urban areas were more likely to have ever been tested for HIV than those in rural areas.

Significantly higher HIV testing rates were observed among urban residents (57.4% for women and 39.7% for men) compared to rural residents (35.4% for women and 20.6% for men). Testing rates were significantly higher among women compared to men in both urban and rural areas.

Figure 4.3d Ever been tested for HIV among adults aged 15-64 years, by province, Kenya 2007.

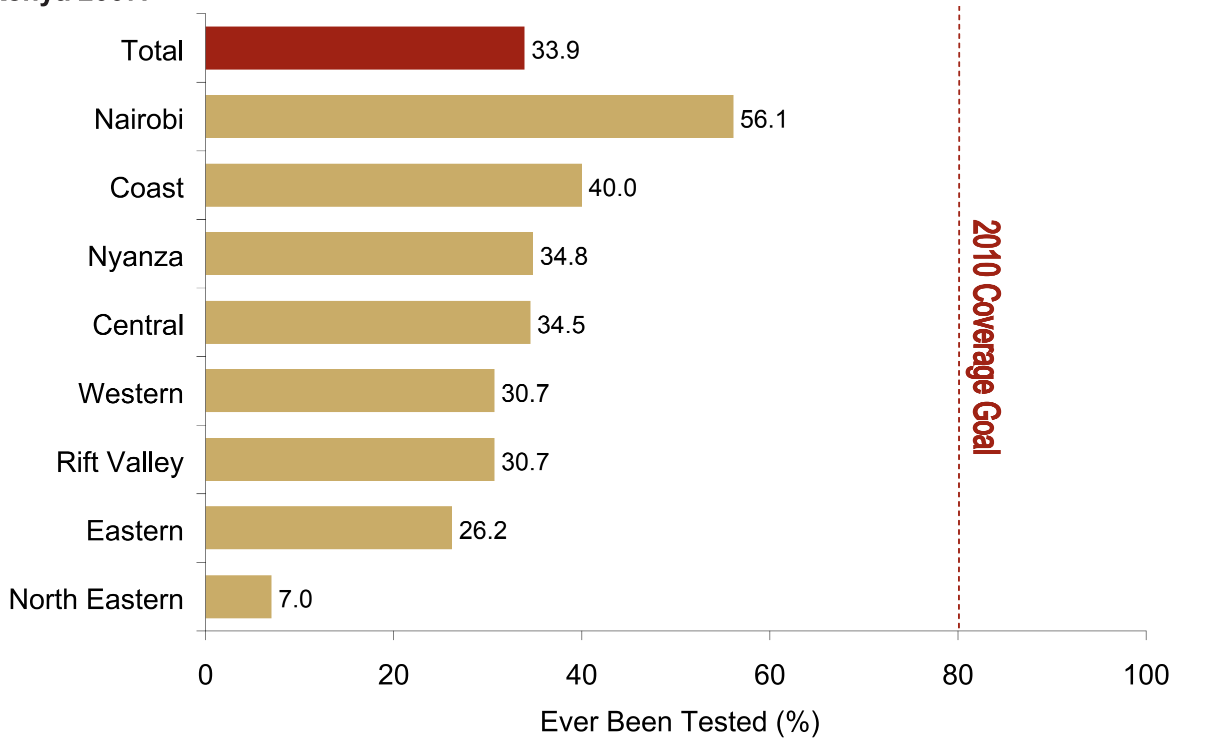


Figure 4.3d HIV testing was highest in Nairobi province and lowest in North Eastern province.

The percent of adults that have ever been tested for HIV varied significantly across provinces, with the highest percent in Nairobi (56.1%) and the lowest in North Eastern province (7.0%). In Nyanza, the province with the highest overall HIV prevalence (14.9%) in the country, 34.8% of residents had been tested previously, which was similar to the national average of 33.9%. A significantly higher percent of women than men had ever been tested for HIV across all provinces except for North Eastern province, where the estimates were not significantly different between women (8.1%) and men (5.6%).

Figure 4.3e Ever been tested for HIV among women and men aged 15-64 years, by wealth index, Kenya 2007.

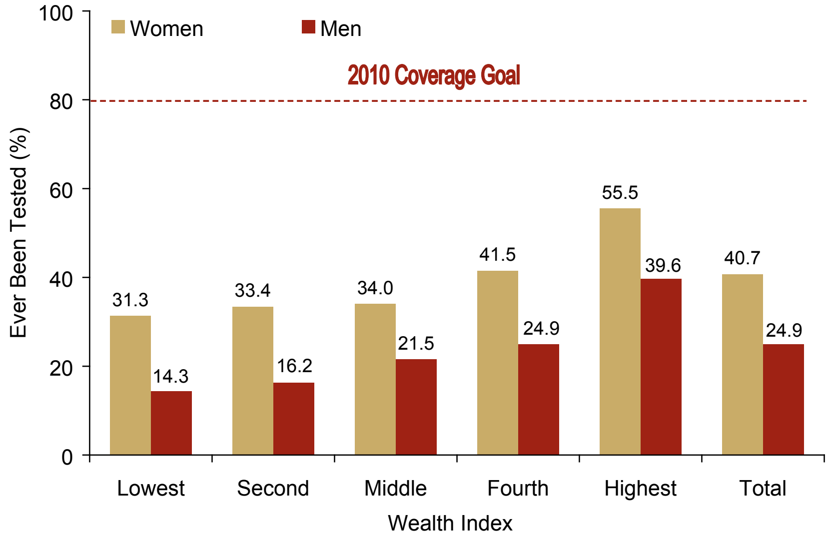


Figure 4.3e Wealthier women and men were more likely to have been tested for HIV than poorer women and men.

The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, water access and sanitation facilities. The wealth index placed households on a continuous scale of relative wealth using principal components analysis. Individuals were ranked according to the score of the household in which they resided and the sample was divided into five groups, each with an equal number of individuals (quintiles), ranging from the lowest to highest level of wealth.

Women and men in the highest wealth quintile were significantly more likely to have ever been tested for HIV (55.5% and 39.6%, respectively) than those in the lowest wealth quintile (31.3% and 14.3%, respectively). Testing rates were significantly higher among women compared to men for all income levels.

In the following section (Figures 4.3f-h) we focus on testing behaviour by age and marital status. Because potential exposure to HIV is most commonly associated with sexual experience, we limited analyses only to those who reported ever having sex. Overall, among adults aged 15-64 years, 88.7% of women and 86.0% of men reported they ever had sex. The percentage of women and men who had ever been tested for HIV was significantly higher among those who had ever had sex (44.7% and 27.6%, respectively) compared to those who had not had sex (9.8 and 8.1%, respectively).

Figure 4.3f Ever been tested for HIV among women and men aged 15-64 years who ever had sex by five-year age group, Kenya 2007.

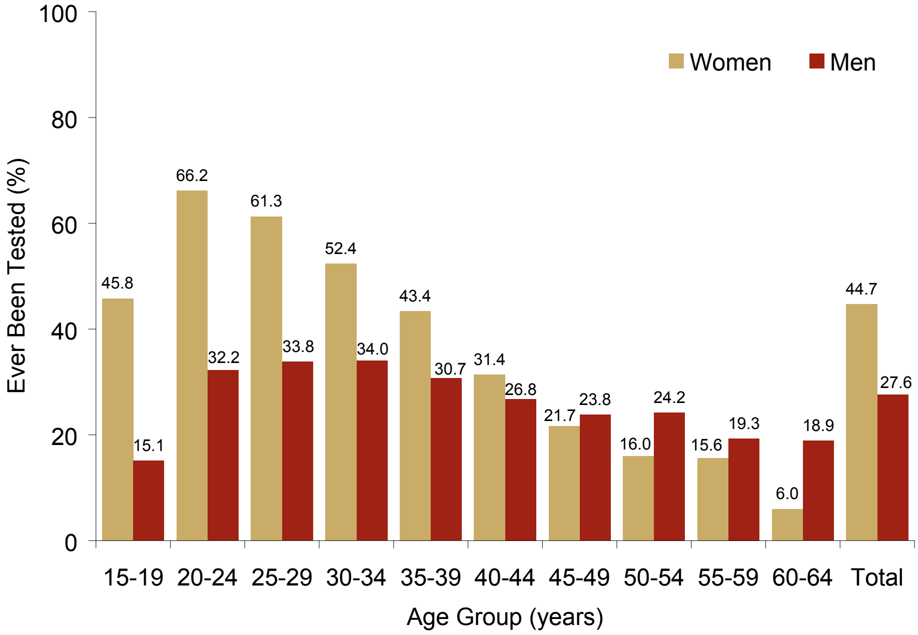


Figure 4.3f HIV testing rates were highest among younger women aged 20-24 years.

Among women who ever had sex, peak HIV testing rates were observed among those aged 20-24 years (66.2%). Testing rates decreased steadily thereafter with increasing age. Among men, the highest rate of testing was among men aged 30-34 years (34.0%), and similar to women, test rates decreased thereafter with increasing age, with the exception of men aged 50-54 years where HIV testing rates were similar to men aged 45-49 years. HIV testing rates were significantly higher among women of reproductive age (15-49 years) compared to men in the same age group. Among older adults (aged 50-64 years), however, HIV testing was significantly higher in men compared to women.

Figure 4.3g Women aged 15-49 years who reported ever having sex, by testing behaviour and location of last HIV test, Kenya 2007.

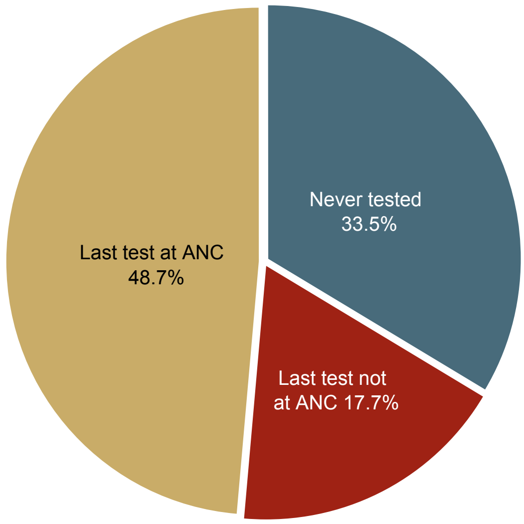


Figure 4.3g The majority of women aged 15-49 years that had ever been tested for HIV reported that their last test was at an antenatal clinic (ANC).

Analysis for Figure 4.3g focused on women of reproductive age (15-49 years). Among women aged 15-49 years who reported ever having sex, 33.5% had never been tested for HIV, 48.7% had their last HIV test during antenatal care, and an additional 17.7% had their last HIV test elsewhere. Among those who had ever been tested for HIV, 66.1% reported that their last HIV test was conducted as part of routine antenatal care at an ANC highlighting the impact of "opt-out" testing in these settings. Further information on ANC testing and PMTCT can be found in Chapter 8.

Figure 4.3h Ever been tested for HIV among women and men aged 15-64 years who ever had sex, by marital status, Kenya 2007.

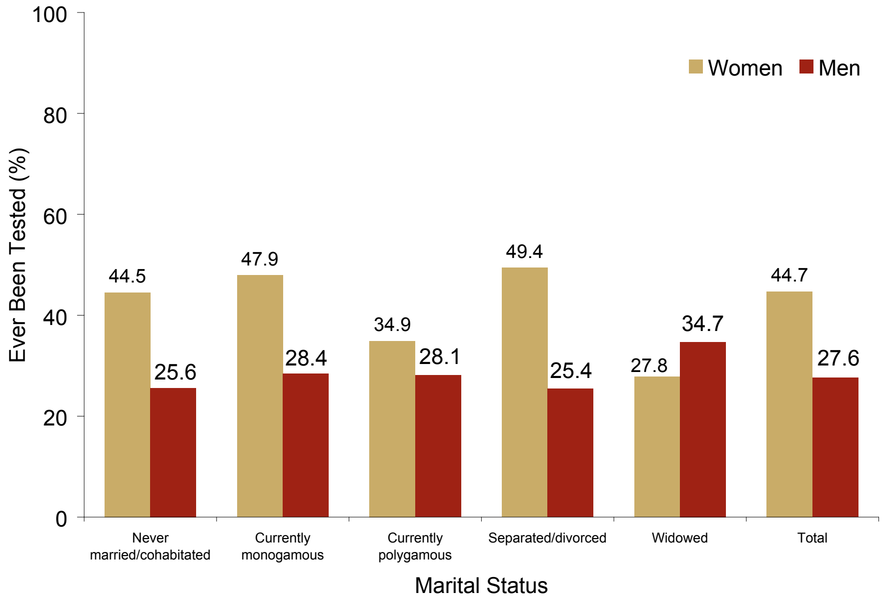


Figure 4.3h Widowed and women in polygamous relationships were less likely than other women to have ever had an HIV test.

The term "currently monogamous" refers to respondents that were married or cohabiting in a union with only one spouse or one sexual partner.

Among women who had ever had sex, HIV testing rates were significantly lower among those who were widowed (27.8%) or currently in a polygamous relationship (34.9%) compared to women who were never married or cohabiting (44.5%), currently monogamous (47.9%), or separated or divorced (49.4%). No significant differences in HIV testing rates were observed among men by marital status, with rates ranging from 25.4% to 34.7% across marital status categories.

4.4 Testing Experiences among Persons Who Had Ever Been Tested for HIV

In this section, we assess the timing of the most recent HIV test and the reasons people provided for having tested on a subset (33.9%) of 2007 KAIS respondents that had been tested and received results at least once in their lifetimes.

Figure 4.4a Time since last HIV test among women and men aged 15-64 years who had ever been tested for HIV, Kenya 2007.

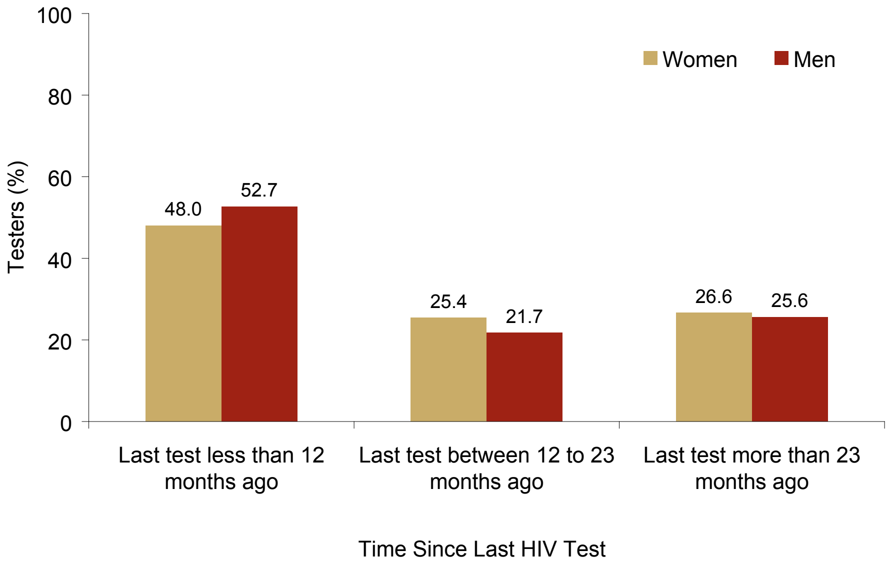


Figure 4.4a Approximately half of all women and men who reported ever having been tested for HIV had tested in the 12 months prior to the 2007 KAIS.

Among women and men who had ever tested for HIV, approximately half (49.5%) had their last HIV test less than 12 months prior to the survey; 24.2% were tested between 12-23 months prior, and 26.3% were tested more than 23 months prior. Women and men differed significantly in reported time since last HIV test, with men tending to have tested more recently (within the last 12 months) than women.)

Figure 4.4b Ever been tested among women and men aged 15-64 years, by location of last HIV test, Kenya 2007.

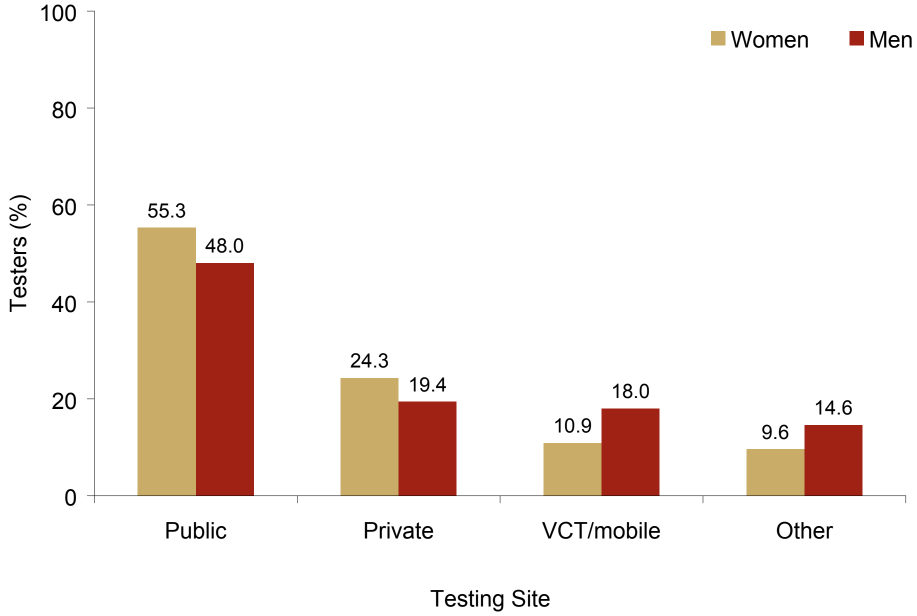


Figure 4.4b Most HIV testing occurred in public sites, especially among women.

More women and men (55.3% and 48.0%, respectively) reported that their last HIV test was conducted in a public facility[1] compared to other testing sites including private health facilities, voluntary counselling and testing (VCT) stand-alone and mobile clinics, and other locations (9.6%-24.3%). Men (18.0%) were significantly more likely than women (10.9%) to have gone to VCT stand-alone sites and mobile clinic sites for their last HIV test.

1 Public facilities include government hospital, government health centre/clinic, government dispensary, or other public facilities. Private facilities includes missions, church hospitals and clinics, private hospitals and clinics, voluntary counselling and testing clinics, and other private medical facilities. Other locations were not specified.

4.5 Reasons For Not Testing

Understanding the different barriers to HIV testing is helpful for improving HIV testing coverage in the general population. Analyses in this section were restricted to the 66.1% of adults that had never been tested for HIV.

Figure 4.5a Reasons for not testing for HIV among adults aged 15-64 years who had never been tested for HIV, Kenya 2007.

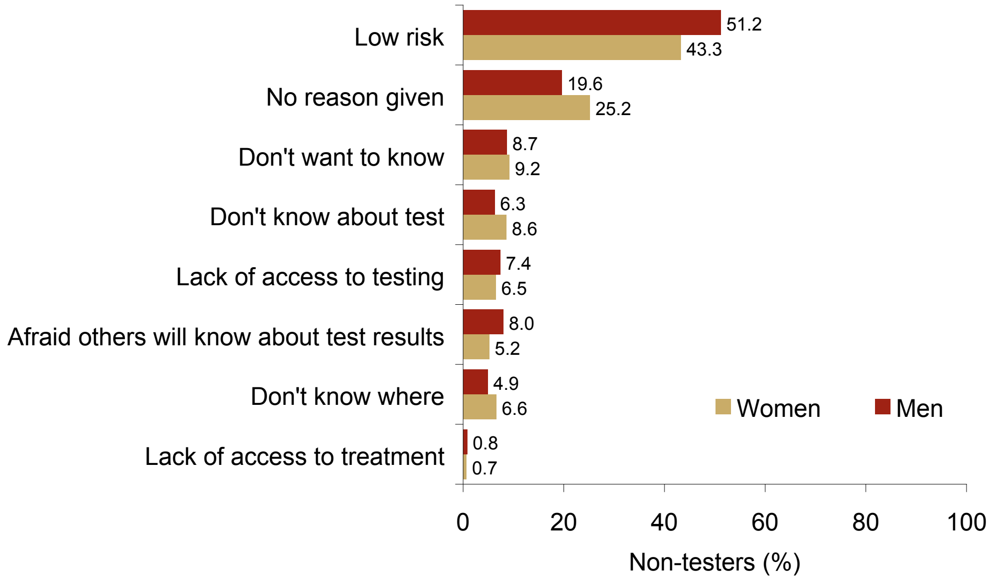


Figure 4.5a Perception of low risk was the most common reason among women and men for not having been tested for HIV.

Respondents could provide more than one reason for not testing; reasons for not testing were not mutually exclusive.

Among all adults aged 15-64 years who had never been tested for HIV, 43.3% of women and 51.2% of men reported they had not been tested because they perceived themselves to be at low risk for HIV infection; 25.2% of women and 19.6% of men provided no reason for not testing. Less than 10% of respondents reported lack of access to testing, fear of others knowing about the test result, not knowing where to go to get tested and lack of access to treatment as the reasons for not getting tested. Men were significantly more likely than women to report low risk for HIV (51.2% and 43.3%, respectively) and fear that others would find out about the test results (8.0% and 5.2%, respectively) as reasons for not testing. Women were significantly more likely than men to report not knowing about the test (8.6% and 6.3%, respectively), lack of knowledge about where to get tested (6.6% and 4.9%, respectively) or no reason (25.2% and 19.6%, respectively) as their barriers to getting tested.

Figure 4.5b HIV prevalence among women and men aged 15-64 years who had never been tested for HIV by reason for not testing, Kenya 2007.

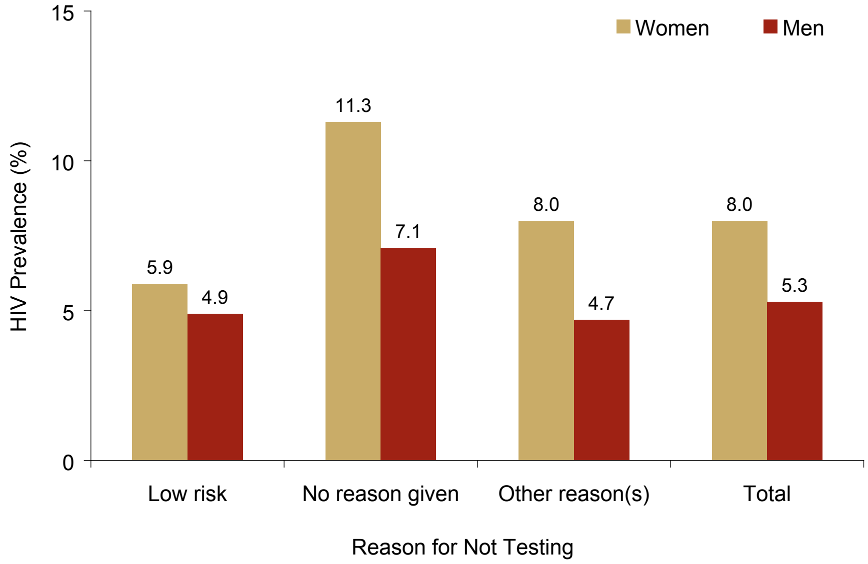


Figure 4.5b Among women who had never been tested but had ever had sex, those who reported no reason for not being tested were significantly more likely to be infected with HIV than those that provided other reasons.

Significant differences in HIV prevalence were observed among both women and men who had never been tested for HIV by different reported reasons for not being tested. Among both women and men, those who provided no reason for not testing for HIV had higher prevalence (11.3% and 7.1%, respectively) than those who said they were at low risk for HIV (5.9% and 4.9%, respectively) and those who gave other reasons for not testing (8.0% and 4.7%, respectively).

4.6 Attitudes Toward Home Testing

Increasing access to HIV testing will be necessary to help meet the country's 2010 objective of achieving 80% testing coverage nationally. "Opt-out" testing appears to have made an impact in increasing testing rates among women.[2] Another approach to improving access to HIV testing is home-based HIV testing, which may be particularly useful for populations that have limited access to regular testing and counselling services. In addition, the privacy associated with home-based testing might increase testing, particularly testing of couples who reside in the same household.

2 Bolu O, Allread V, Creek T, et al. Approaches for scaling up human immunodeficiency virus testing and counselling in prevention of mother-to-child human immunodeficiency virus transmission settings in resource-limited countries. Am J Obstet Gynecol 2007; 197:S83-9.

Figure 4.6 Willingness to be tested for HIV at home among adults aged 15-64 years, Kenya 2007.

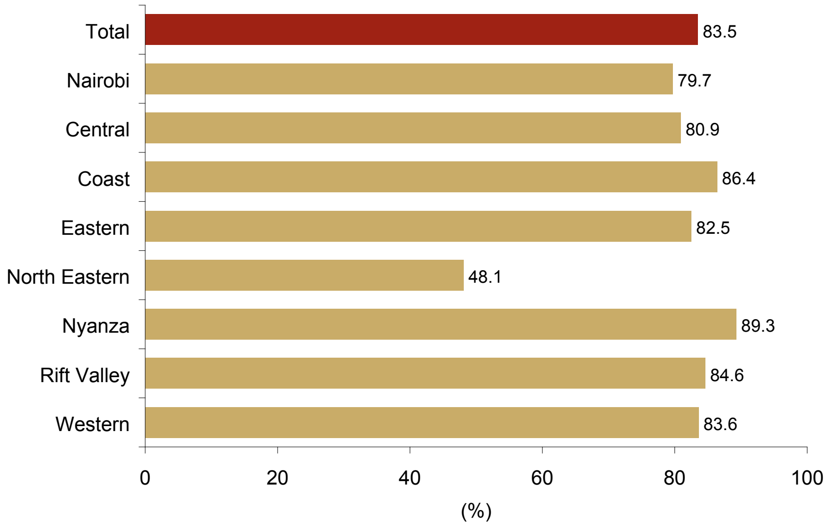


Figure 4.6 Rate of willingness to be tested at home was high throughout Kenya, except for North Eastern province.

Respondents who self-reported HIV-infected (approximately 1%) would not be eligible for re-testing for HIV and were therefore excluded from this analysis. The analysis was limited to those who had never been tested for HIV or those who had been tested and self-reported uninfected with HIV.

A total of 83.5% nationally agreed that they would be willing to be tested for HIV at home, which was similar across sex, age, wealth and rural/urban residence. There was little variation in response across provinces except for North Eastern province, where only 48.1% of people stated that they would be willing to be tested at home. Willingness to test at home was high among those who had ever been tested for HIV (86.0%) and those who had never been tested (82.4%), suggesting that home-based testing could be a promising option for improving HIV testing coverage in the general population.

4.7 Gaps and Unmet Needs

- **Two-thirds of adults aged 15-64 years have not been tested for HIV; testing coverage needs to increase substantially to reach the national goal of testing 80% of all adolescents and adults.**
- **Special efforts are needed to bring HIV testing to men, in whom coverage is particularly low. Routine provider initiated opt-out testing in outpatient and inpatient settings should be considered.**
- **The major reason for not testing was low perception of risk, which should be addressed in HIV testing campaigns.**
- **Home testing was acceptable to 83.5% of persons aged 15-64 years and may help achieve the national testing goal.**

5

Knowledge and Disclosure of HIV Status

5.1 Key Findings

- Nearly all (98.2%) respondents who had ever been tested for HIV were willing to share the results of their last HIV test.
- Overall, 83.6% of respondents found to be HIV-infected in the 2007 KAIS were not aware of their HIV infection.
- Respondents disclosed their HIV status to their partners in 35.1% of the partnerships that were reported in the year prior to the survey.
- Respondents reported a partner of unknown HIV status in 77.9% of their partnerships in the year prior to the survey.
- Among married and cohabiting couples, 5.9% of couples were HIV-discordant, that is, one partner was HIV-infected and the other was not.
- Among HIV-infected adults who were married or cohabiting, 43.4% of women and 44.4% of men had an HIV-uninfected primary partner.

5.2 Introduction

Knowledge of one's HIV status is essential for accessing HIV care, treatment and prevention services. HIV-infected persons who know their status can benefit from life-saving care and treatment services, including daily cotrimoxazole (an antibiotic that prevents many common opportunistic infections that affect people with advanced HIV), antiretroviral (ARV) medications for treating HIV and HIV-related primary care services. In addition, HIV-infected persons who know they are infected and are appropriately counselled on risk reduction behaviour may be less likely to engage in unprotected sex with their sex partners. Moreover, couples in HIV discordant relationships, in which one person is HIV-infected and the other person is HIV-uninfected, may have a reduced chance of transmitting HIV if the couple knows their HIV status and is counselled appropriately on how to reduce the risk of transmitting HIV to the uninfected partner. This chapter presents findings from the 2007 KAIS on knowledge of HIV infection, disclosure of HIV status to sexual partners and HIV concordance and discordance among couples.

Appendix B.5 provides sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

Population estimates reported in this chapter were calculated based on the 2007 projected population reported in the *Revised Population Projections for Kenya 2000-2020* (Kenya National Bureau of Statistics, August 2006). Weighted estimates for selected indicators from the 2007 KAIS were used in these calculations. Methods for calculating population estimates are described in Appendix A.

5.3 Knowledge of HIV Infection

In this section we focus on respondents who were found to be HIV-infected in the 2007 KAIS based on laboratory test results from the survey. We present information on those who knew and those who did not know they were infected with HIV.

Self-reported HIV status based on most recent HIV test and 2007 KAIS HIV test results

98.1% of respondents were willing to share the results of their last HIV test.

Self-reported HIV status allows us to compare what people believed their HIV status to be based on their last HIV test to actual HIV status based on laboratory testing results in the 2007 KAIS. The following categories are used in this report:

- **Self-reported positive**: respondent reported that he/she had ever had an HIV test and that the most recent test result was positive.
- **Self-reported negative**: respondent reported that he/she had ever had an HIV test and that the most recent test result was negative.
- **HIV-infected**: respondent consented to testing in KAIS and result was positive.
- **HIV-uninfected**: respondent consented to testing in KAIS and result was negative.

Figure 5.3a Self-reported HIV status among HIV-infected persons aged 15-64 years, Kenya 2007.

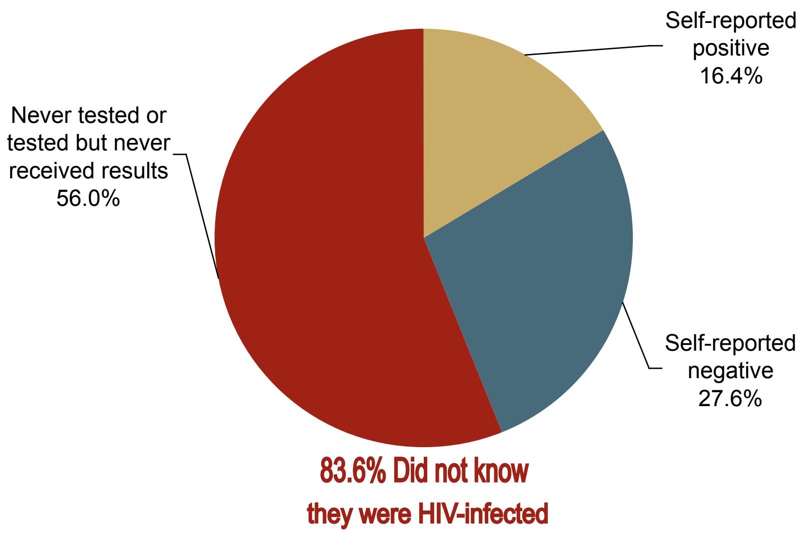


Figure 5.3a The vast majority of HIV-infected persons did not know they were HIV-infected.

Among all HIV-infected persons in the 2007 KAIS, only 16.4% self-reported positive based on their last HIV test. Overall, 27.6% of HIV-infected persons self-reported negative, that is, these participants believed themselves to be HIV-uninfected based on the results of their last HIV test. The remaining 56.0% reported that they had either never been tested or had been tested but never received a test result. HIV-infected women (31.4%) were significantly more likely than men (19.5%) to self-report negative based on their last test result. In total, 83.6% of HIV-infected adults aged 15-64 years were unaware of their HIV infection because they had never been tested, had been tested but never received a test result, or believed themselves to be uninfected based on their last test. Based on these findings, in 2007, an estimated 1.1 million HIV-infected adults nationwide were unaware of their HIV status, including an estimated 700,000 women and 400,000 men.

Although 45.0% of HIV-infected persons reported having had a previous HIV test before the 2007 KAIS, the majority (62.8%) of these persons self-reported negative based on their last test result. Many of these people may have become HIV-infected since their previous test. Most respondents (56.4%), for example, reported that their last HIV test was performed over 12 months prior to the 2007 KAIS. These persons may have been exposed and infected since their last negative test. In addition, the median CD4 cell count was higher in this group (595.0 cells/μL) suggesting possible recent infection, as compared to HIV-infected respondents who self-reported positive (412.0 cells/μL), 51.4% of whom were currently on antiretroviral therapy. It is also possible that some of these individuals knew they were HIV-infected but did not answer the question about their HIV status accurately, although they were given a special opportunity to opt-out of answering this question and only 1.9% declined to answer.

Figure 5.3b Self-reported HIV status among HIV-infected women aged 15-64 years by marital status, Kenya 2007.

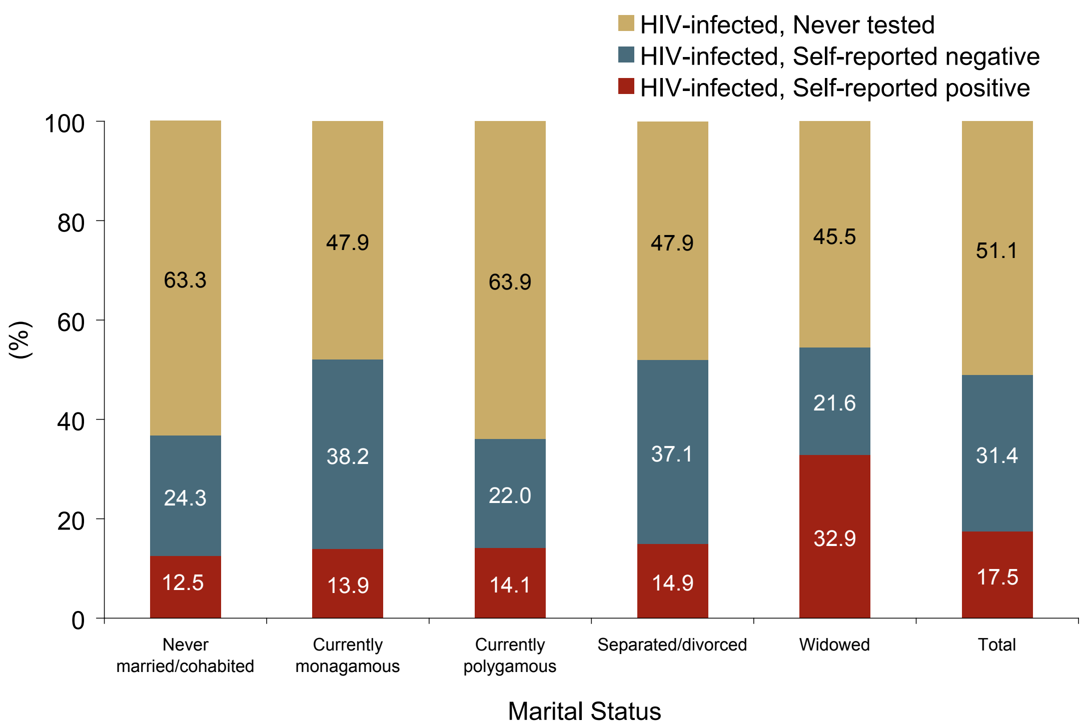


Figure 5.3b Significantly more HIV-infected widowed women were aware of their HIV infection compared to HIV-infected women who were currently married (monogamous or polygamous), separated, or divorced.

The term "currently monogamous" refers to respondents that were married or cohabiting in a union with only one spouse or one sexual partner.

Among HIV-infected women, 12.6% had never been married or cohabited, 45.2% were currently monogamous, 10.3% were currently polygamous, 13.0% were separated or divorced and 18.8% were widowed (data not shown). In comparison to HIV-infected men, HIV-infected women were significantly less likely to be in a married or cohabiting relationship (55.5% in women versus 77.7% in men) and significantly more likely to be separated, divorced or widowed (31.8% in women versus. 9.4% in men) (data not shown).

A significantly higher percentage of HIV-infected widowed women (32.9%) were aware of their HIV-infection compared to HIV-infected women who were never married or cohabiting (12.5%), currently monogamous (13.9%), currently polygamous (14.1%), or separated or divorced (14.9%).

Figure 5.3c Self-reported HIV status among HIV-infected men aged 15-64 years by marital status, Kenya 2007.

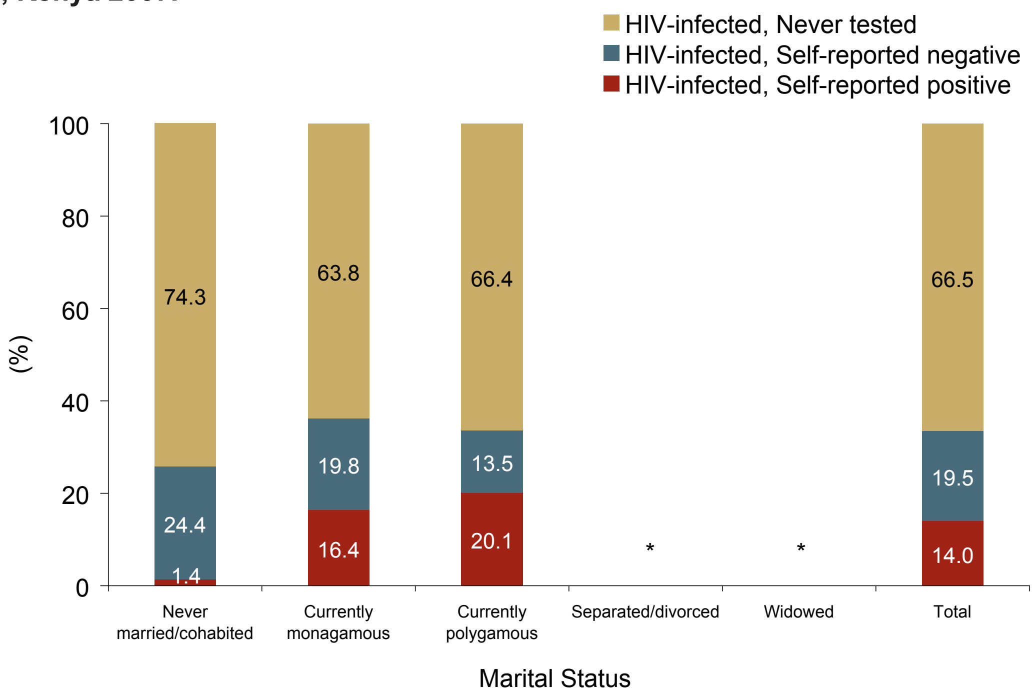


Figure 5.3c A higher percent of monogamous and polygamous HIV-infected men were aware they were HIV-infected compared to never married/cohabited men; however, this difference was not statistically significant.

The term "currently monogamous" refers to respondents that were married or cohabiting in a union with only one spouse or one sexual partner.
*Estimates not presented due to small denominators of less than 25 observations in these categories.

Among HIV-infected men, 12.9% had never been married or cohabited, 77.7% were currently married or cohabiting (68.4% had one marital partner and 9.2% were in polygamous relationships), 4.7% were separated or divorced and 4.7% were widowed (data not shown).

Although not statistically significant, a higher percentage of currently monogamous (16.4%) and currently polygamous HIV-infected men (20.1%) were aware of their HIV infection compared to never married or never cohabited HIV-infected men (1.4%).

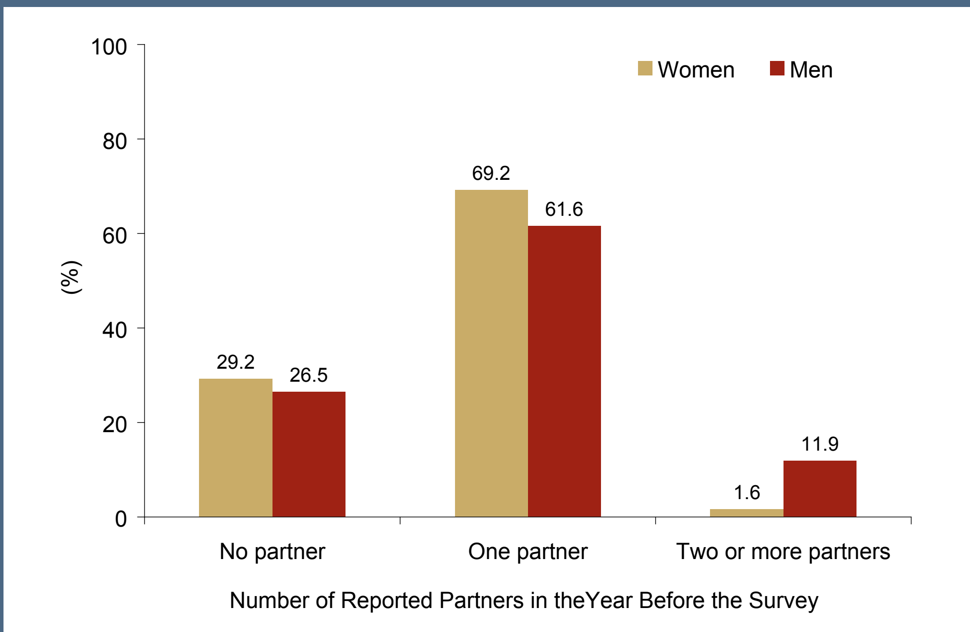
5.4 Disclosure of HIV Status to Sexual Partners

This section examines participants who disclosed their HIV status to the sexual partners they had in the year prior to the survey. Analyses in this section are limited to a subset of KAIS respondents who reported one or more sexual partners in the year prior to the survey.

Data in Context: Sexual Partnership Data in the 2007 KAIS

Respondents were asked to provide behavioural information for up to three sexual partners during the 12 months prior to their KAIS interview. This subset of data was used to create a separate sexual partnership database with each partnership contributing one unit of observation.

The majority of respondents (69.2% of all women and 61.6% of all men) reported only one partner in the 12 months before the survey. In contrast, 29.2% of women and 26.5% of men reported no partners, and 1.6% of women and 11.9% of men reported two or more partners in the 12 months before the survey.



Because individuals could report more than one sexual partner during the year before the survey, estimates in sections 5.4 and 5.5 of this report should be interpreted as percentages of all partnerships rather than percentage of all individuals. That is, if a person had three partners, each of these partnerships would be counted separately as one unit of observation in the analyses.

Figure 5.4a Sexual partnerships in which adults aged 15-64 years disclosed their HIV status to partners. by partnership type, Kenya 2007.

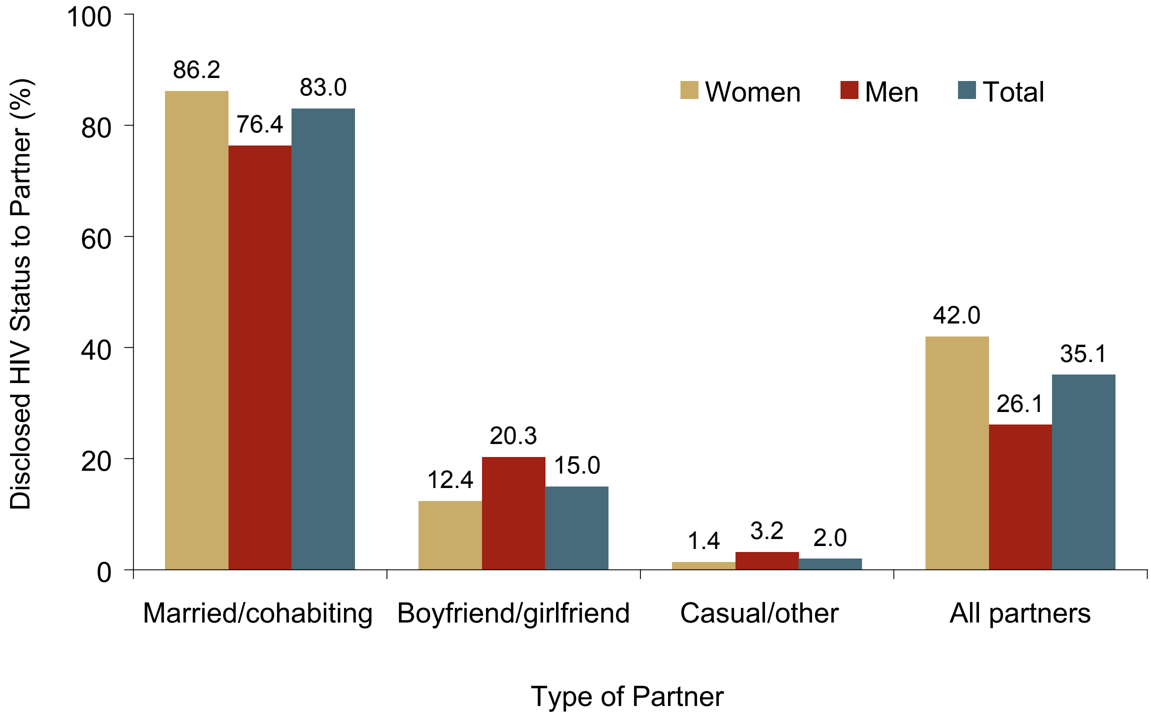


Figure 5.4a Respondents reported disclosing their HIV status to partners more frequently in married/cohabiting partnerships compared to boyfriend/girlfriend or casual partnerships.

Among respondents who had ever tested for HIV and reported at least one sexual partner in the year before to the survey, respondents disclosed their last HIV test result in 35.1% of all partnerships. Respondent disclosure rates to their partners were significantly higher among women compared to men. Additionally, respondent disclosure rates to partners differed significantly by partnership type. The percent of respondents who disclosed their HIV status to their partners was highest in married or cohabiting partnerships (83.0%) and lower in boyfriend/girlfriend partnerships (15.0%) and casual partnerships (2.0%).

5.5 Knowledge of HIV Infection in Partnerships

In this section, analyses focus on respondents' knowledge of the HIV status of their partners in the year before the survey. Analyses are limited to adults who reported at least one partner in the year prior to the survey. In this section a "partner of unknown status" refers to a partner who had never been tested for HIV, whose testing history was unknown to the respondent, or whose HIV test result was unknown to the respondent.

Figure 5.5a Knowledge of partners' HIV status among adults aged 15-64 years, Kenya 2007.

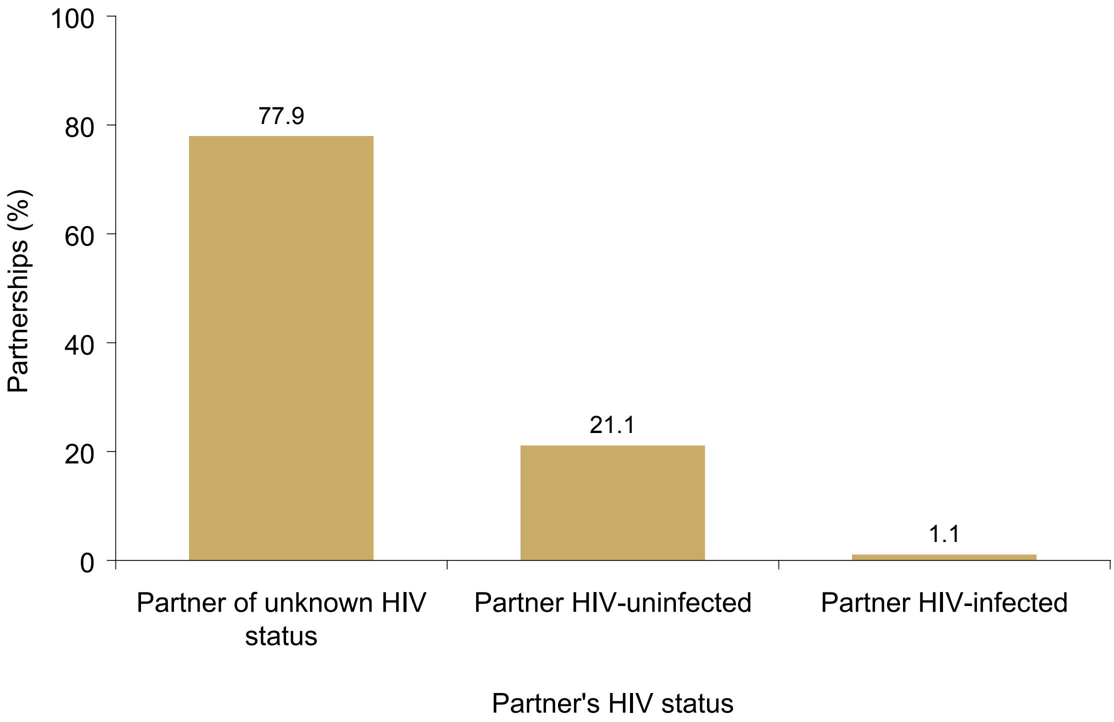


Figure 5.5a In most partnerships (77.9%), the respondent reported having a partner of unknown HIV status.

A "partner of unknown status" refers to a partner who had never been tested for HIV, whose testing history was unknown to the respondent, or whose HIV test result was unknown to the respondent.

In general, very few people were aware of their partner's HIV status. Overall, in 77.9% of partnerships, the respondent reported a partner of unknown HIV status. This was similar between women (80.2%) and men (74.8%).

A subset of respondents provided information on knowledge of their HIV status (that is, whether they believed themselves to be HIV positive or HIV negative). Based on this self-reported information, of all partnerships reported by this subset, 1.5% were thought to be HIV-discordant.

Figure 5.5b Partnerships with a partner of unknown HIV status by partnership type, Kenya 2007.

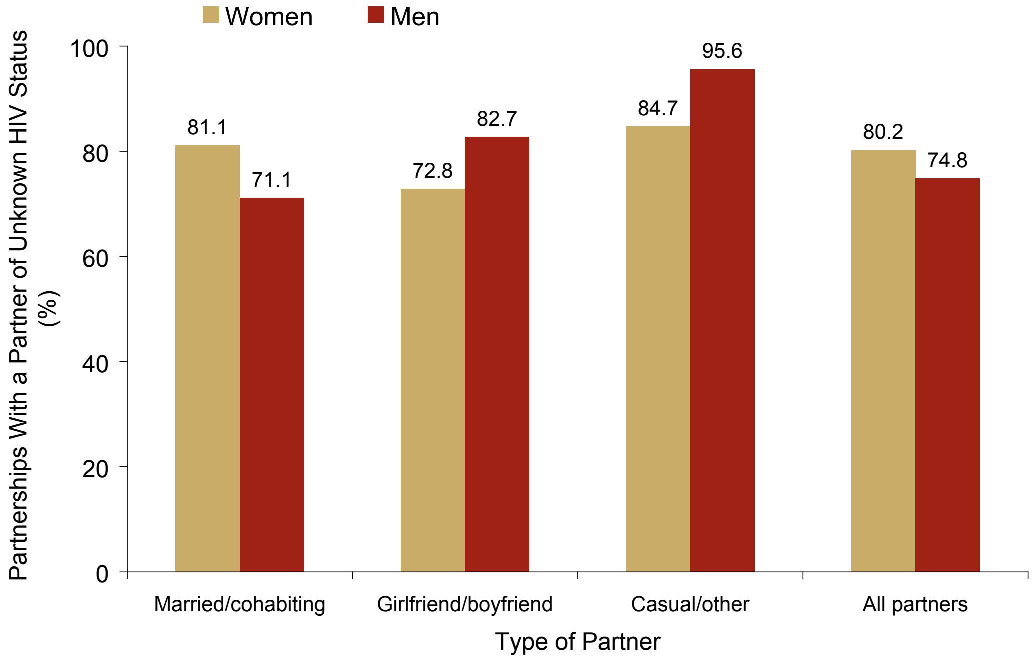


Figure 5.5b Women and men in casual partnerships were more likely to report a partner of unknown HIV status compared to women and men who reported other types of partnerships.

A "partner of unknown status" refers to a partner who had never been tested for HIV, whose testing history was unknown to the respondent, or whose HIV test result was unknown to the respondent.

Women in married or cohabiting partnerships (81.1%) were more likely to report a partner of unknown HIV status compared to men in married or cohabiting partnerships (71.1%). In contrast, men with girlfriends (82.7%) or in casual partnerships (95.6%) were more likely than women with boyfriends (72.8%) or in casual partnerships (84.7%) to report a partner of unknown HIV status. These differences by sex were significant for all partnership types.

Figure 5.5c Partnerships in which respondent was unaware of partner's HIV status, by respondent's actual HIV status and knowledge of HIV infection, Kenya 2007.

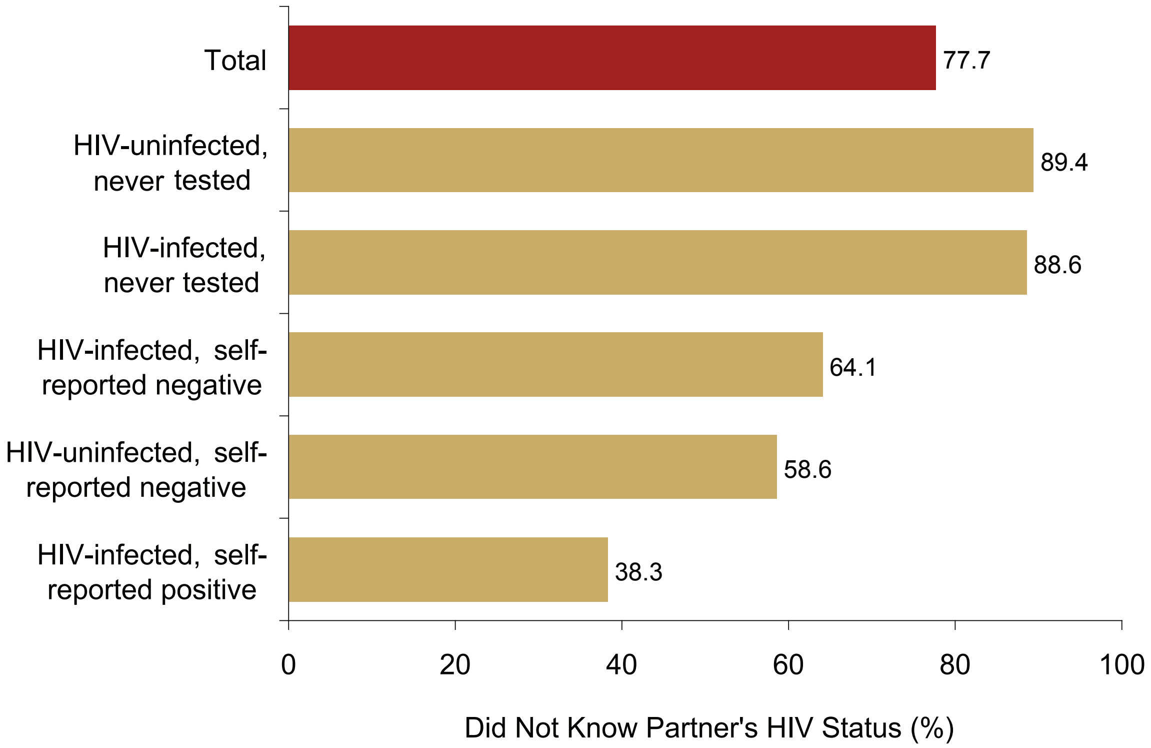


Figure 5.5c HIV-uninfected and HIV-infected respondents who had never been tested for HIV reported the highest rates of partners of unknown HIV status.

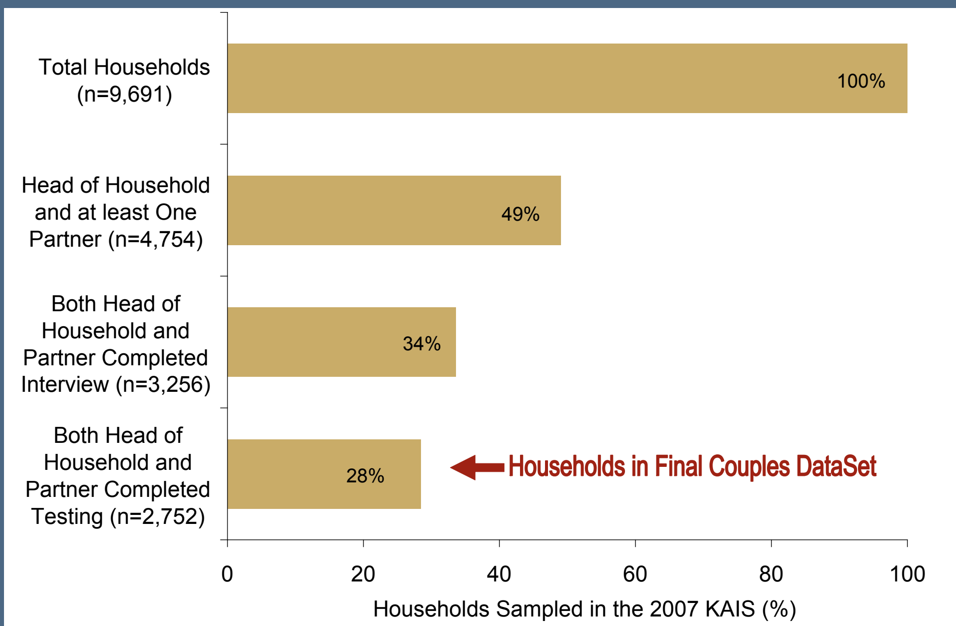
The percent of partnerships in which the respondent reported a partner of unknown HIV status varied significantly by the respondent's actual HIV status and knowledge of HIV infection. HIV-infected respondents that self-reported positive had the lowest percentage of partners of unknown HIV status (38.3%). In contrast, respondents who had never been tested, regardless of actual HIV status, had the highest percentage of partners of unknown HIV status (89.4% for respondents who were HIV-uninfected and 88.6% for respondents who were HIV-infected). Compared to those who had never been tested for HIV, HIV-infected and HIV-uninfected persons who self-reported negative had lower rates of partners of unknown HIV status (64.1% for HIV-infected and 58.6% for HIV-uninfected respondents).

5.6 HIV-concordance and HIV-discordance among Married and Cohabiting Couples

In this section we examine married or cohabiting couples living in the same household who both consented to HIV testing. Households with two partners who both were tested for HIV in KAIS accounted for 28% of all households surveyed.

Data in Context: Married and Cohabiting Couples in KAIS: The Couples Dataset

The "couples" dataset in the 2007 KAIS was constructed by matching respondents with their primary sexual partners who resided in the same household. Because only 0.1% of male heads of household reported a second wife, only primary couples were included in the couples' dataset. Additionally, since HIV status of couples was the main focus of these analyses, only households for which there were complete HIV test results available for both partners were included in the couples' dataset. Of the 9,691 eligible households, 2,752 (28% of all households, or 58% of households with at least one sexual partner) met these criteria and were included in the final analyses.



HIV-discordant couples in married or cohabiting partnerships are a target group for HIV prevention because they may have more frequent sexual contact and report lower condom use compared to partners in other types of relationships. Understanding key characteristics of HIV-discordant couples has important policy and programmatic implications for HIV prevention. In the 2007 KAIS, a couple was considered HIV-discordant if one partner was HIV-infected and the other partner was HIV-uninfected. A couple was considered to be concordant HIV-uninfected if both partners were HIV-uninfected, and concordant HIV-infected if both partners were HIV-infected.

Figure 5.6a HIV-concordance and discordance among couples aged 15-64 years, Kenya 2007.

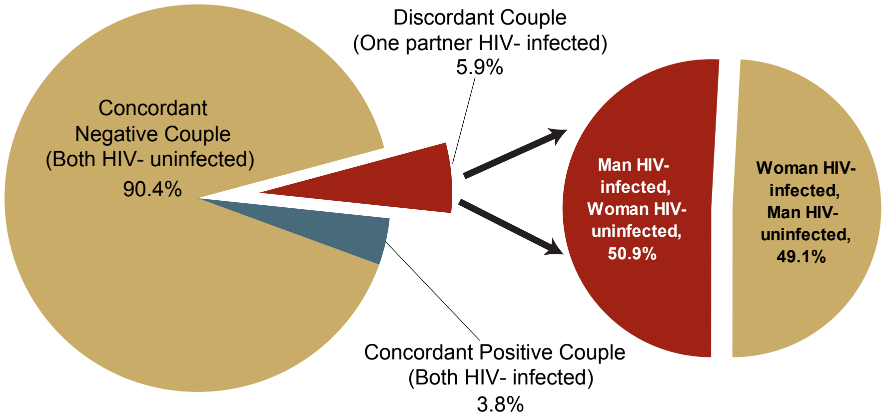


Figure 5.6a Among couples, 9.7% had at least one HIV-infected partner, and 5.9% were HIV-discordant.

The large majority (90.4%) of married or cohabiting couples were concordant HIV-uninfected. In 3.8% of married or cohabiting couples, partners were concordant HIV-infected. In 5.9% of couples, partners were HIV-discordant; that is, either only the male partner (3.0%) or the female partner (2.9%) was HIV-infected. In 50.9% of HIV-discordant couples, the man was HIV-infected and the woman was HIV-uninfected.

Figure 5.6b HIV status of primary partners among HIV-infected women and men aged 15-64 years in a couples relationship, Kenya 2007.

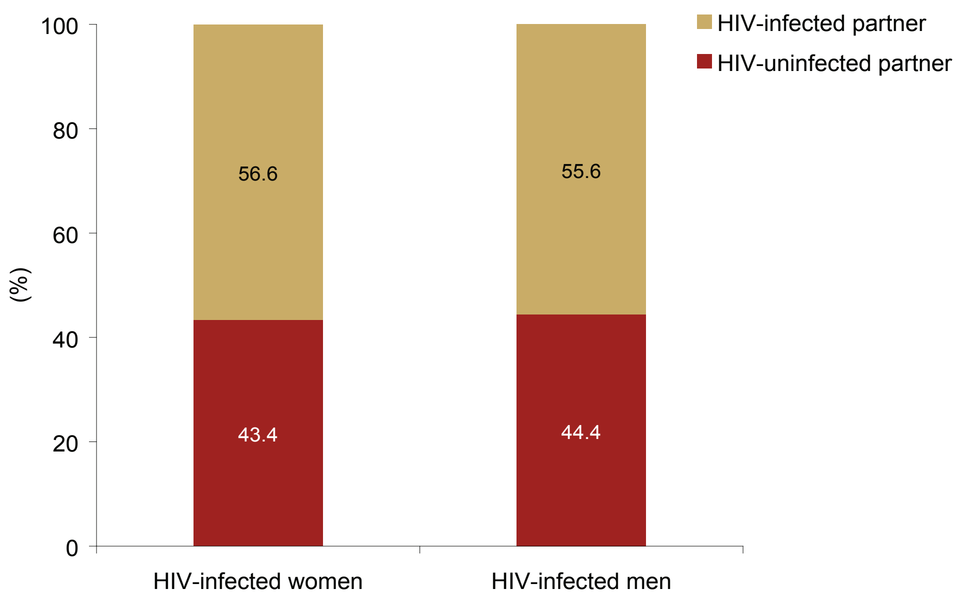


Figure 5.6b Almost half of all HIV-infected married or cohabiting women (43.4%) and men (44.4%) were in an HIV-discordant relationship.

The term "couples relationship" is defined as married or cohabiting respondents residing in the same household and included in the couple's dataset.

Among HIV-infected women in a couples relationship, 43.4% had an HIV-uninfected primary partner. Similarly, among HIV-infected men in couples relationships, 44.4% had an HIV-uninfected primary partner.

Figure 5.6c Women and men aged 15-64 years in a couples relationship that had ever been tested for HIV by HIV status of couple, Kenya 2007.

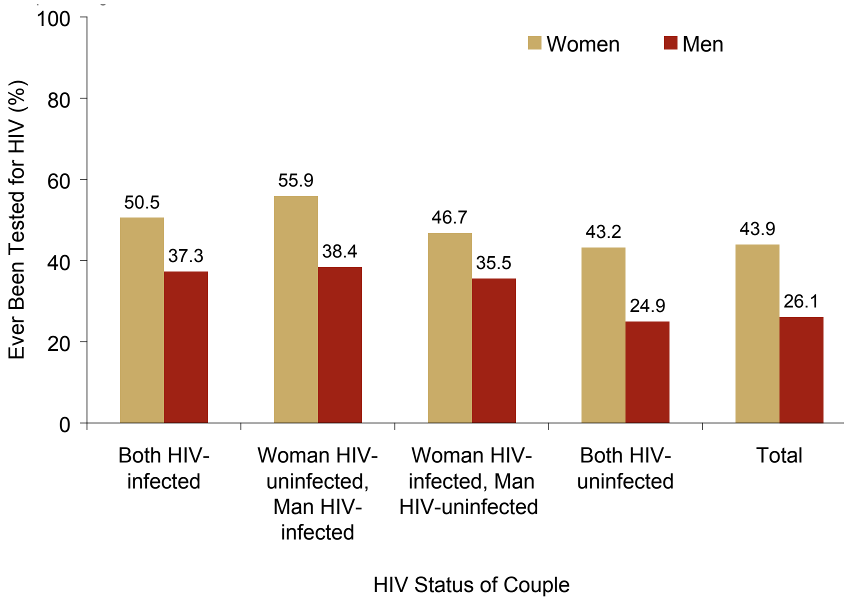


Figure 5.6c HIV testing rates were significantly lower among men who were in relationships where both partners were HIV-uninfected compared to men in other relationships. Among women, HIV testing rates differed only marginally by the couple's actual HIV status.

The term "couples relationship" is defined as married or cohabiting respondents residing in the same household and included in the couple's dataset.

Within a couples relationship, HIV testing rates were significantly higher among women compared to men. Among HIV-discordant couples, HIV testing rates were higher in women compared to men, regardless of whether the man was HIV-infected (55.9% for women compared to 38.4% for men) or the woman was HIV-infected (46.7% for women compared to 35.5% for men). Among women, HIV testing rates differed marginally by the couple's HIV-infection status; however among men, HIV testing rates differed significantly by the couple's HIV-infection status, with lowest testing rates among men in relationships where both partners were HIV-uninfected (24.9%). Overall, the vast majority (73.5%) of these men and women in HIV-discordant couple relationships were unaware of their HIV-discordant couple status.

5.7 Gaps and Unmet Needs

- **Lack of knowledge of one's own and one's partner's HIV status remains an important obstacle to prevention.**
- **HIV testing should be expanded to increase the number of HIV-infected adults who know their HIV status.**
- **Special efforts are needed to scale-up HIV testing in married and cohabiting relationships to identify HIV-discordant couples and target prevention within these relationships**
- **Retesting and counselling of persons with continued risk for HIV infection should be encouraged**
- **Support for disclosure of HIV status and partner testing in married or cohabiting partnerships should be expanded, especially for HIV-infected individuals**

6

Sexual Partners, Sexual Debut and Circumcision

6.1 Key Findings

- Most women (52.2%) and men (73.1%) reported more than one sexual partner in their lifetimes; 1.7% of women and 11.9% of men reported two or more sexual partners in the last year.
- Prevalence of HIV among both women and men varied significantly by number of lifetime sexual partners. Among those reporting 10 or more lifetime sexual partners, prevalence was 16.6% in women and 9.1% in men.
- Women and men reported consistent condom use in 25.7% and 42.5%, respectively, of sexual partnerships with non-marital and non-cohabiting partners in the year prior to the survey.
- An estimated 20.0% of women and 22.4% of men reported having had sex at least once by the age of 15 years.
- Overall, 85.0% of men reported being circumcised; however, less than half (48.2%) of men reported being circumcised in Nyanza province. Nationally 13.2% of uncircumcised men were HIV-infected compared to 3.9% of circumcised men.

6.2 Introduction

This chapter describes the prevalence of factors that can be associated with sexual transmission and acquisition of HIV. These factors include the number of sexual partners, condom use, age of sexual debut and male circumcision.

Appendix B.6 provides sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

For any analysis that compared the 2003 KDHS and the 2007 KAIS data in this chapter, the z-test statistic was used compare the two weighted estimates from 2003 and 2007 and determine if differences were statistically significant. Methods used for calculating the z-test statistic are described further in Appendix A.

6.3 Number of Lifetime Sexual Partners

Figure 6.3a Women and men aged 15-64 years by number of lifetime sexual partners, Kenya 2007.

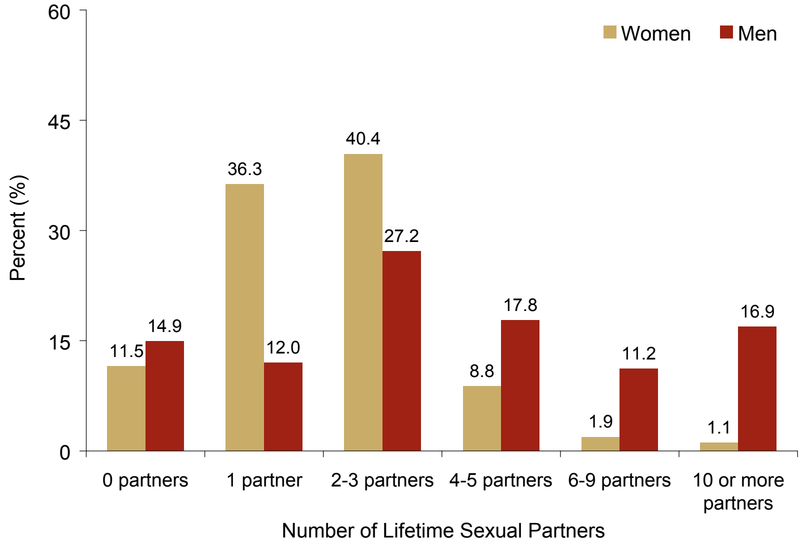


Figure 6.3a Women and men reported significantly different numbers of sexual partners over their lifetimes.

The number of lifetime sexual partners varied significantly by sex. Nearly half (45.9%) of men reported four or more lifetime sexual partners compared to 11.8% of women. Conversely, more women (36.3%) than men (12.0%) reported having only one lifetime sexual partner.

Figure 6.3b HIV prevalence among women and men aged 15-64 years by number of lifetime sexual partners, Kenya 2007.

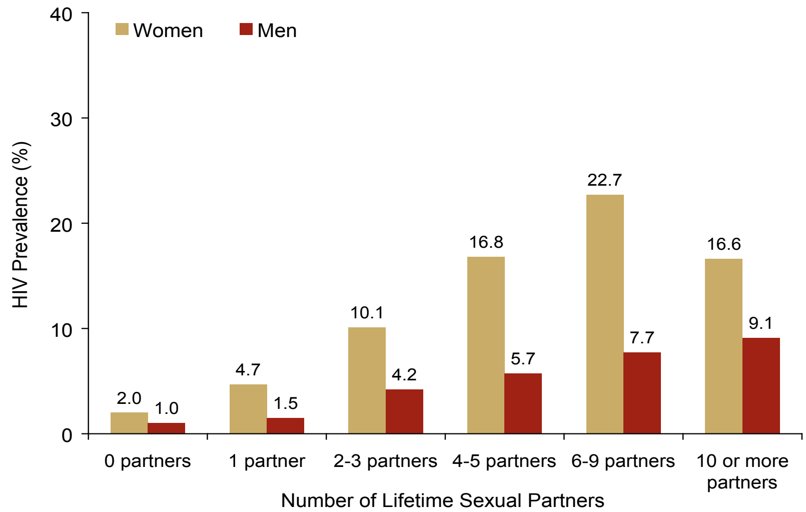


Figure 6.3b HIV prevalence varied significantly by number of lifetime partners among both women and men.

Among both women and men, HIV prevalence increased steadily with increasing number of lifetime sexual partners. HIV prevalence peaked among women who reported having six to nine lifetime sexual partners (22.7%). Among men, prevalence increased monotonically with increasing lifetime partners, with the highest HIV prevalence among men who reported 10 or more lifetime sexual partners (9.1%).

Figure 6.3c Women and men aged 15-64 years by number of sexual partners in the year before the survey, Kenya 2007.

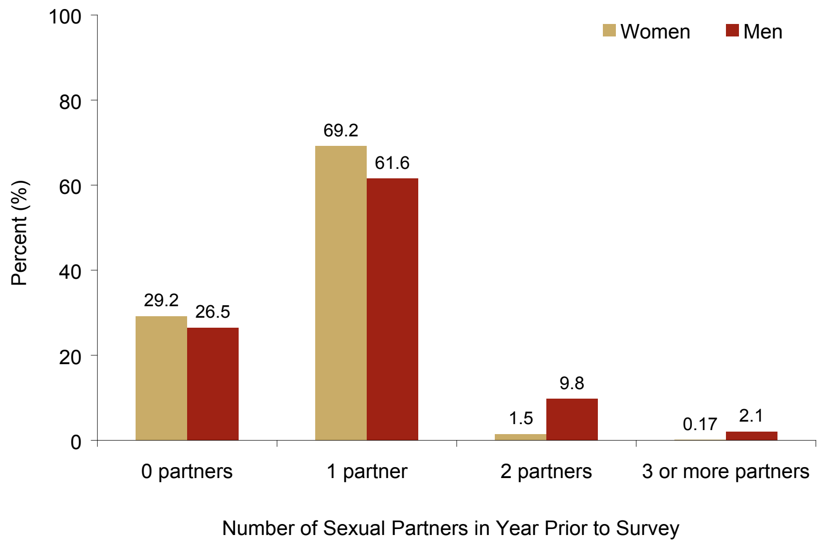


Figure 6.3c Most women and men reported having one or no sexual partner in the year prior to the survey.

Women and men varied significantly by number of sexual partners in the year prior to the survey. Most respondents reported having one sexual partner in this time frame (69.2% for women and 61.6% for men). Significantly less women (1.7%) than men (11.9%) reported two of more partners in during this time.

Data in Context: Concurrent Partnerships

Concurrent partnerships are characterized by having multiple sexual partnerships that overlap in time, in contrast to engaging in partnerships that are sequential. Unprotected sex within concurrent partnerships allows HIV to spread rapidly through sexual networks, especially during the short time following new infection (a few weeks to one month) when viral load is high and people are likely to transmit HIV. Concurrent sexual partnerships with low condom use may expalin some of the spread of HIV in sub-Saharan Africa.

Measuring concurrent partnerships can be difficult in population-based surveys as it requires detailed information on the timing of sexual activity with each partner. Having two or more partners in the last year, while necessary for concurrency to occur, is not a perfect marker for this behaviour because the partnerships may not have overlapped in time. The 2007 KAIS was unable to accurately assess sexual concurrency due to limitations in the survey questionnaire.

Concurrent sexual partnerships help to explain Africa's high HIV prevalence: implications for prevention. Halperin DT, Epstein H. Lancet 2004; 364:4-6.

Morris M, Kretzschmar M. Concurrent partnerships and the spread of HIV. AIDS 1997; 11:641-648.

Figure 6.3d HIV prevalence among women and men aged 15-64 years by number of sexual partners in the year before the survey, Kenya 2007.*

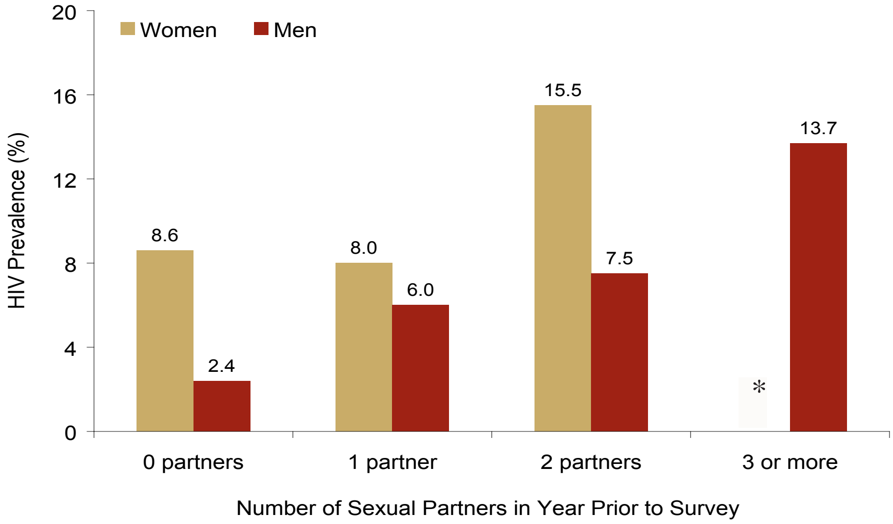


Figure 6.3d HIV prevalence was highest among women and men reporting multiple partners (two or more sexual partners) in the past 12 months.

* Estimate not presented due to less than 25 observations in this category

HIV prevalence varied significantly by number of partners in the year prior to the survey for both women and men. Among men, HIV prevalence increased monotonically from 2.4% for those reporting no partners to 13.7% for men reporting three or more sexual partners in the year prior to the survey. Among women, HIV prevalence was highest among those reporting two sexual partners in the year prior to the survey (15.5%).

Figure 6.3e Women aged 15-64 years reporting non-marital or non-cohabiting sexual partnerships in the year before the survey by marital status, Kenya 2007.

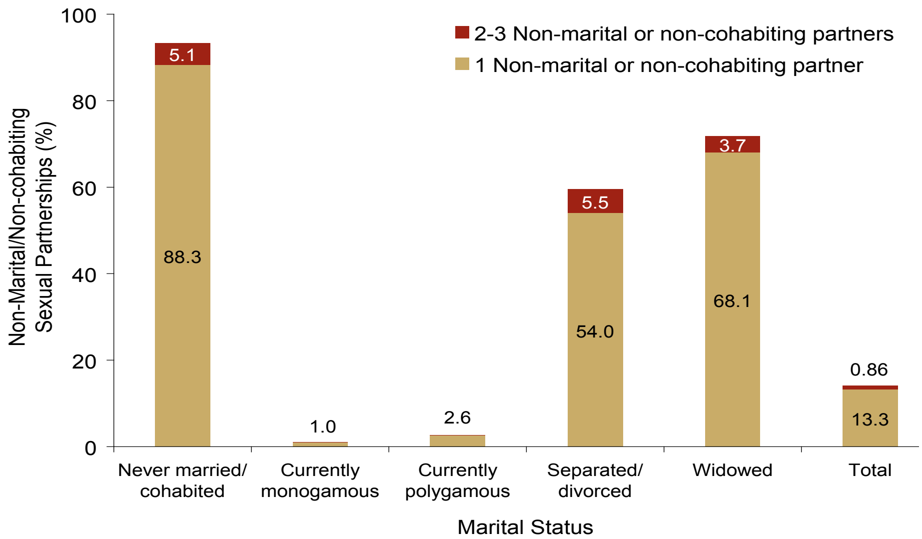


Figure 6.3e Women who were currently married (either monogamous or polygamous) reported very low levels of partnerships outside of the marriage.

The term "currently monogamous" refers to respondents that were married or cohabiting in a union with only one spouse or one sexual partner. No women who were currently married (monogamous or polygamous) reported having 2-3 non-marital or non-cohabiting partners.

The percent of women reporting non-marital or non-cohabiting partners in the year before the survey varied significantly by marital status. Among women who had never married or cohabited, 93.4% reported at least one non-marital or non-cohabiting partner during this time frame, while among women who were separated or divorced, 59.5% reported at least one non-marital or non-cohabiting partner. Extramarital relationships were not common among women, with only 1.0% of currently monogamous women and 2.6% of currently polygamous women reporting at least one non-marital or non-cohabiting partner.

Figure 6.3f Men aged 15-64 years reporting non-marital or non-cohabiting sexual partnerships in the year before the survey by marital status, Kenya 2007.

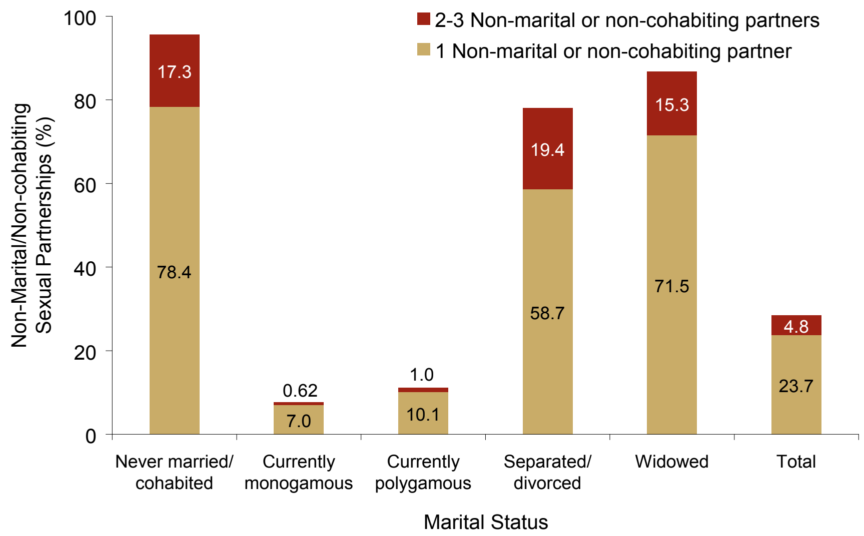


Figure 6.3f Overall, 28.5% of men reported at least one non-marital or non-cohabiting partner in the year before the survey. Similar to women, currently married men reported the lowest level of non-marital or non-cohabiting partnerships.

The term "currently monogamous" refers to respondents that were married or cohabiting in a union with only one spouse or one sexual partner.

The percent of men reporting non-marital or non-cohabiting partners in the year before the survey varied significantly by marital status. Among men who had never married or cohabited, 95.7% reported at least one non-married or non-cohabiting partner; among men who were separated or divorced at the time of the survey, 78.1% reported at least one non-married or non-cohabiting partner. Of currently monogamous men, 7.6% reported having at least one non-marital or non-cohabiting partner, while among polygamous men, 11.1% reported this behaviour.

Figure 6.3g Women and men aged 15-64 years who reported one or more non-married or non-cohabiting sexual partnerships in the year before the survey by five-year age group, Kenya 2007.

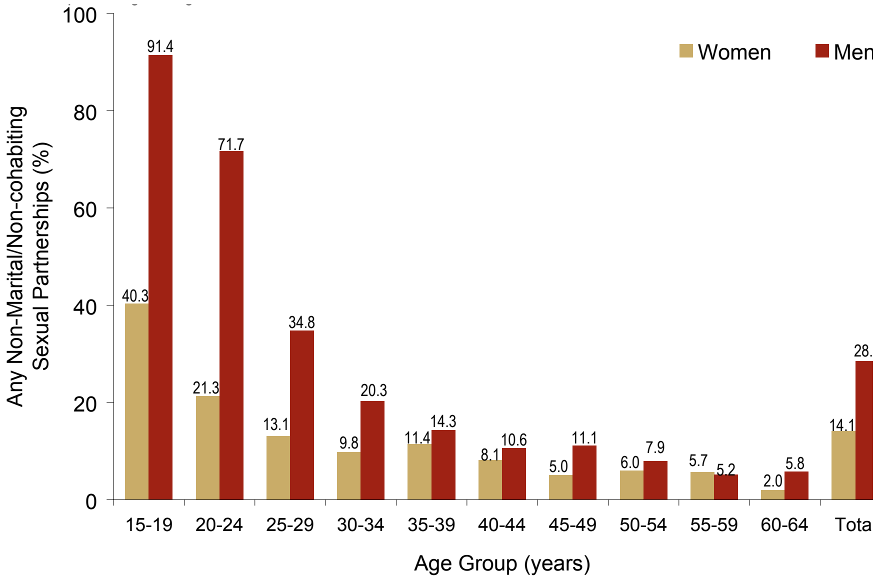


Figure 6.3g Young women and men aged 15-19 years had the highest level of non-marital or non-cohabiting partnerships compared to other age groups. The level of non-marital or non-cohabiting partnerships decreased significantly with increasing age.

The percent of women and men reporting non-marital or non-cohabiting partners significantly decreased with increasing age, with women and men aged 15-19 years reporting the highest levels of non-marital and non-cohabiting partnerships (40.3% compared to 91.4%, respectively). After 50 years of age, less than 10% of respondents reported having one or more non-marital or non-cohabiting partner. Note, this association was not adjusted for possible confounders which may have biased the findings, such as marital status.

6.4 Condom Use

This section reports on condom use with sexual partners, among the 70.9% of women and 73.5% of men who reported having sex in the year before the survey. Since respondents could report more than one partner in the year before the survey, estimates should be interpreted as percentages of all partnerships rather than percentages of all individuals. That is, if a respondent had three partners, each partnership was counted separately in the analysis.

In this section, "consistent condom use" is defined as condom use every time the respondent had sexual intercourse with a partner in the 12 months prior to the survey. A "partner of unknown status" refers to a partner who had never been tested for HIV, whose testing history was unknown to the respondent, or whose HIV test result was unknown to the respondent.

Figure 6.4a Partnerships in which respondents aged 15-64 years reported consistent condom use in the year before the survey, by partnerships type, Kenya 2007

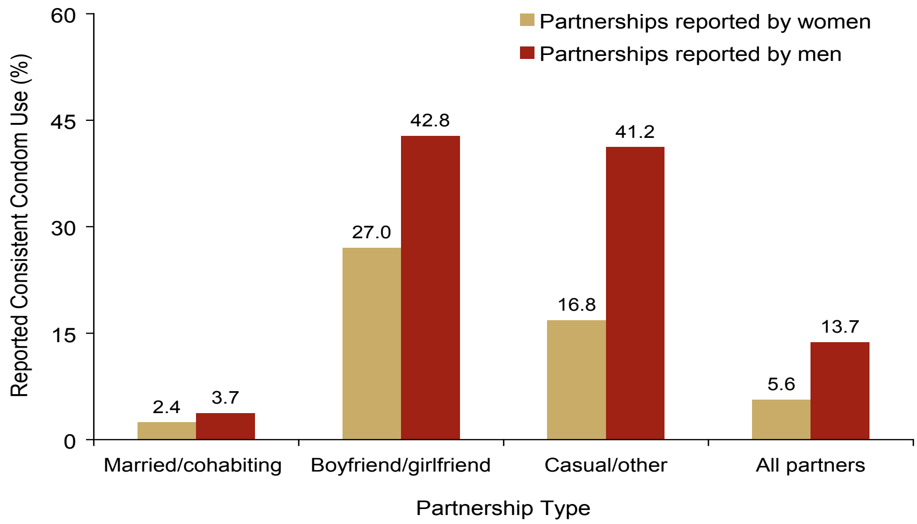


Figure 6.4a Consistent condom use in the year before the survey was significantly lower among married or cohabiting partnerships compared to other partnership types.

Overall, consistent condom use was significantly higher among partnerships reported by men compared to those reported by women. Within partnerships, consistent condom use was lowest in married or cohabiting partnerships, with only 2.4% of women and 3.7% of men reporting this behaviour in the year before the survey. Consistent condom use was higher, but still relatively low, with boyfriends (27.0%), girlfriends (42.8%), and casual partnerships reported by women (16.8%) and men (41.2%).

Figure 6.4b Partnerships in which respondents aged 15-64 years reported consistent condom use with a partner of unknown HIV status in the year before the survey, by partnership type, Kenya 2007.

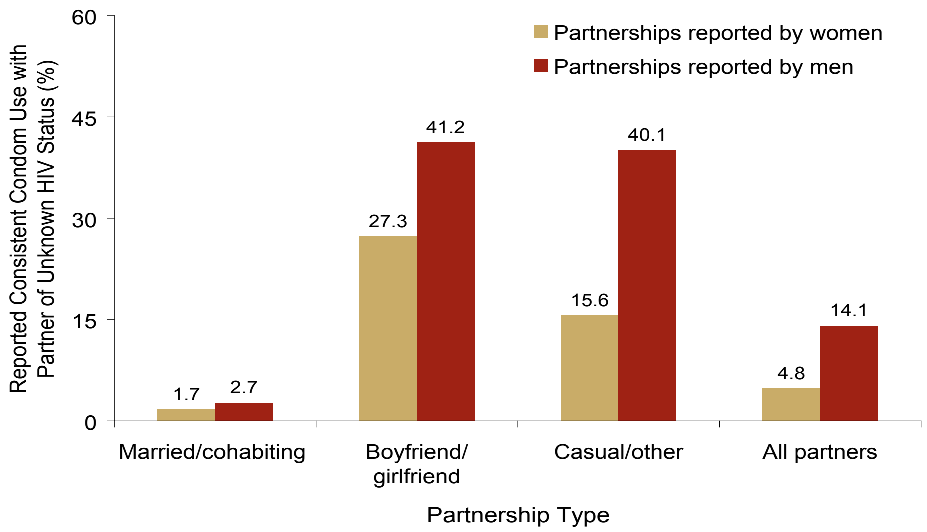


Figure 6.4b Consistent condom use with partners of unknown HIV status was significantly higher in non-marital or non-cohabiting partnerships such as boyfriends, girlfriends, or casual partners. Still, condom use levels were low in these groups.

As described in Chapter 5, most sexual partnerships in the year before the survey (77.9%) were with partners of unknown HIV status. Consistent condom use with partners of unknown HIV status varied significantly by sex and partnership type. Men were three times more likely than women to use condoms consistently in their partnerships with partners of unknown HIV status. Consistent condom use with partners of unknown HIV status was lowest among women and men who reported being in married or cohabiting partnerships (1.2% for women and 2.7% for men) and higher among boyfriends (27.3%), girlfriends (41.2%), and casual partners (15.6% for women and 40.1% for men).

Figure 6.4c Marital or cohabiting partnerships in which respondents aged 15-64 years reported consistent condom use in the year before the survey, by self-reported HIV status, Kenya 2007.

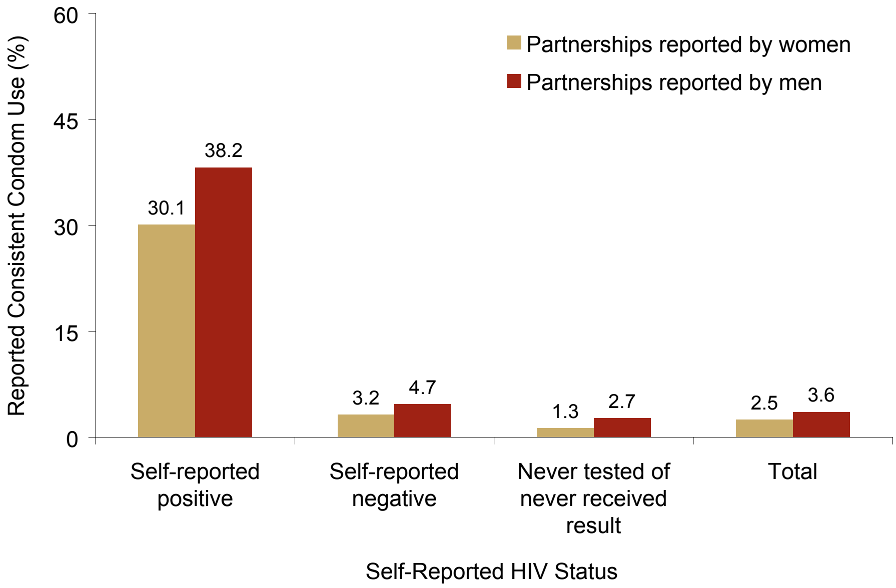


Figure 6.4c Persons who were aware of their HIV infection had significantly higher levels of consistent condom use in their marital or cohabiting partnerships compared to persons who were unaware of their status. Still, rates of consistent condom use in this group were relatively low.

In marital or cohabiting partnerships, consistent condom use was highest in partnerships reported by women and men who self-reported positive (30.1% and 38.2%, respectively) compared to those who self-reported negative (3.2% and 4.7%, respectively) or had never been tested for HIV (1.7% and 2.7%, respectively). Very few participants (less than 25) who self-reported positive reported any non-marital or non-cohabiting partnerships in the year before the survey; thus, this analysis was not conducted.

6.5 Age at First Sex among Youth Aged 15-24 Years

Figure 6.5a Young women and men aged 15-24 years who reported having sex at least once by age in years, Kenya 2007.

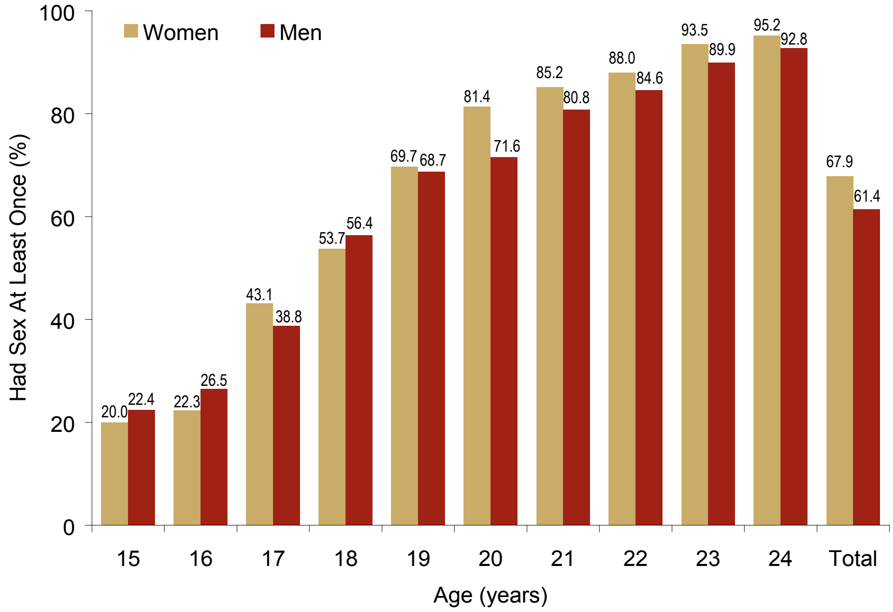


Figure 6.5a By 15 years of age, 20.0% of young women and 22.4% of young men reported that they had already had sex at least once in their lifetime.

At the time of the survey, 20.0% and 22.4%, respectively, of young women and men 15 years of age had had sex at least once. By contrast, 53.7% of women and 56.4% of men aged 18 years reported having had sex. By 24 years of age, nearly all women (95.2%) and men (92.8%) have had sex at least once.

Figure 6.5b Young women and men aged 15-24 years who reported sexual debut before 15 years of age, 2003 KDHS and 2007 KAIS.

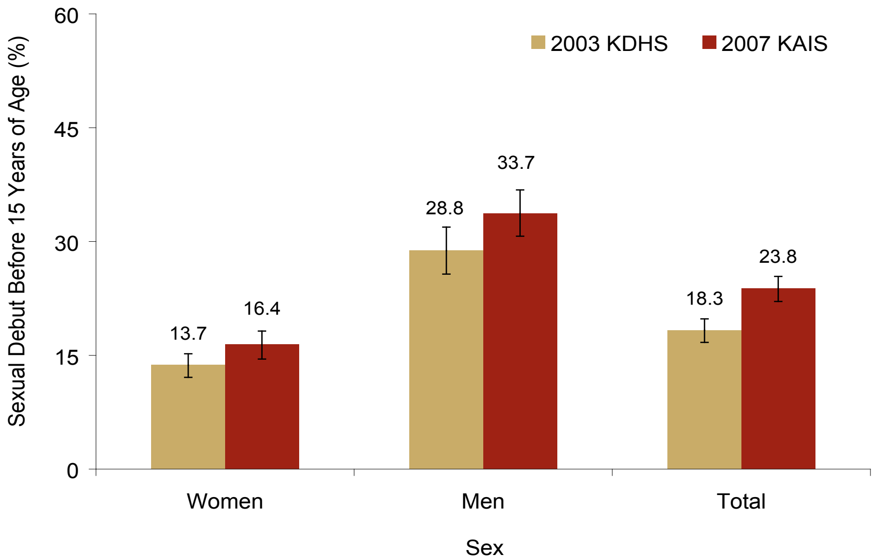


Figure 6.5b In the 2007 KAIS, a significantly higher percent of youth aged 15-24 years reported having had their sexual debut before 15 years of age compared to the 2003 KDHS.

Between 2003 and 2007, the percent of all youth (women and men combined) reporting sexual debut before 15 years of age was significantly different in 2003 (18.3%) compared to 2007 (23.8%). This difference was not observed for young women and men separately.

Figure 6.5c Young women and men aged 15-24 years who reported using condoms at first sex by age of sexual debut, Kenya 2007.

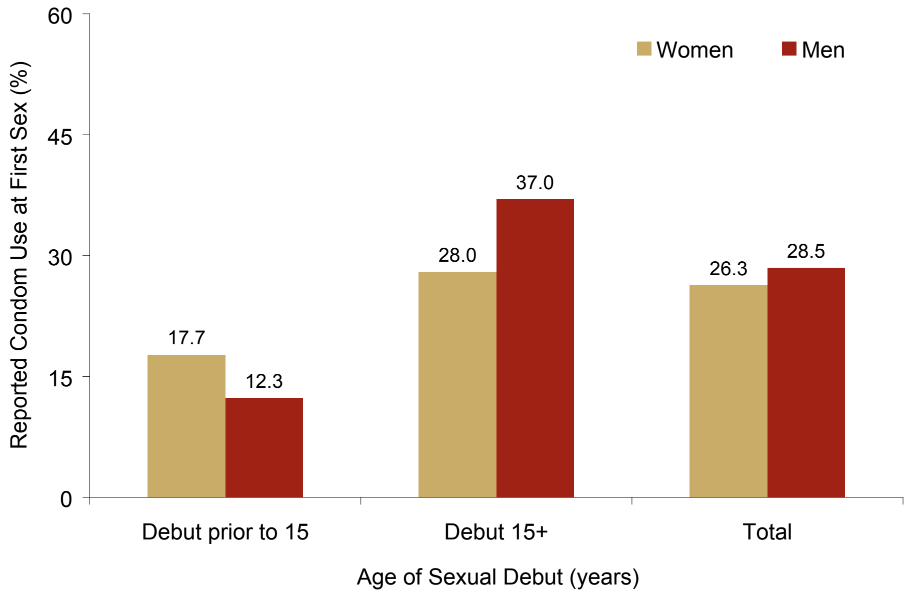


Figure 6.5c Youth who reported that they first had sex before the age of 15 years were significantly less likely to use condoms at first sex than youth who reported sexual debut at an older age.

Among youth aged 15-24 years, condom use at first sex was significantly lower for women and men who had their sexual debut before age 15 years (17.7% and 12.3%, respectively) compared to those who had sexual debut after age 15 years (28.0% and 37.0%, respectively). Overall, condom use at first sex was low for young women (26.3%) and men (28.5%) aged 15-24 years.

Figure 6.5d Young women and men aged 15-24 years who used a condom at first sex, Kenya 2003 and 2007.

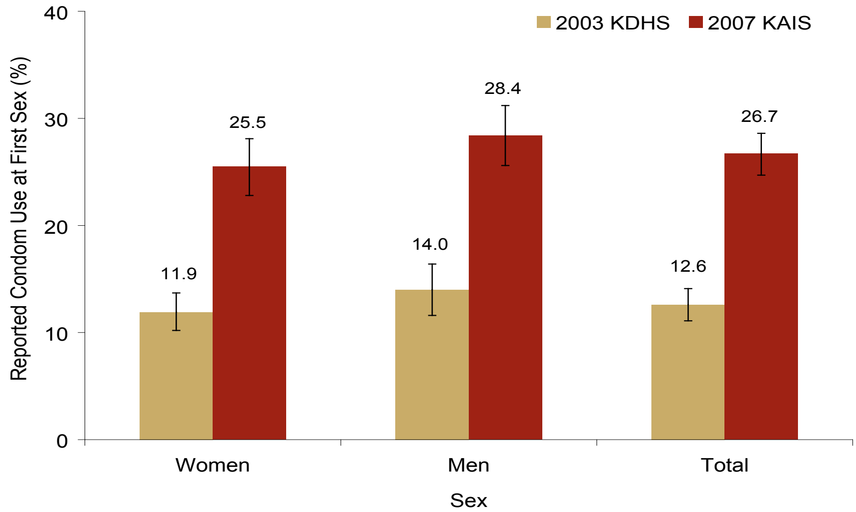


Figure 6.5d Condom use at first sex by young women and men significantly increased from 2003 to 2007.

The percent of young women and men aged 15—24 years who reported using a condom the first time they had sex significantly increased from the 2003 KDHS to the 2007 KAIS. In the 2003 KDHS, 11.9% of young women and 14.0% of young men reported using a condom at first sex. In 2007 the rate of condom use at first sex doubled to 25.5% of young women and 28.4% of young men.

Figure 6.5e HIV prevalence among young women and men aged 15-24 years by age of sexual debut, KAIS 2007.

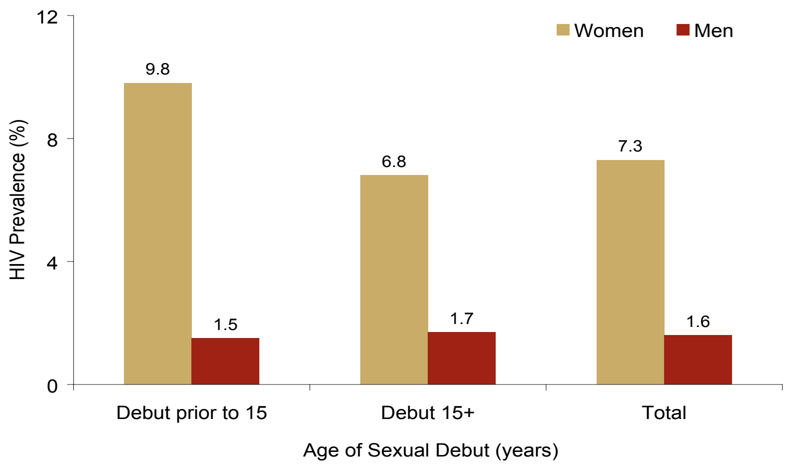


Figure 6.5e HIV prevalence did not significantly differ by age of sexual debut for young women or young men.

Among youth aged 15-24 years who had ever had sex, HIV prevalence did not differ significantly by age of sexual debut. Among those who reported first sex before 15 years of age, HIV prevalence was 9.8% among young women and 1.5% among young men. Among those who reported they first had sex at 15 years old or older, HIV prevalence was 6.8% among women and 1.7% among men.

6.6 Male Circumcision

Figure 6.6a Male circumcision among men aged 15-64 years by province, Kenya 2007.

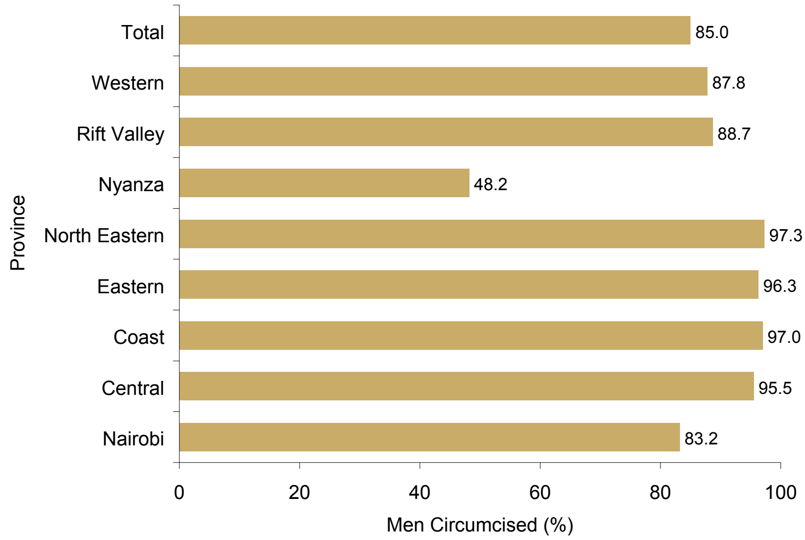


Figure 6.6a Rates of male circumcision were high in all provinces except for Nyanza province.

Overall, 85.0% of all men in the 2007 KAIS had been circumcised. In North Eastern, Coast, Eastern and Central provinces 95.5% to 97.3% of men had been circumcised, while in Nyanza province, 48.2% of men had been circumcised.

Figure 6.6b HIV prevalence among men aged 15-64 years by circumcision status, Kenya 2007.

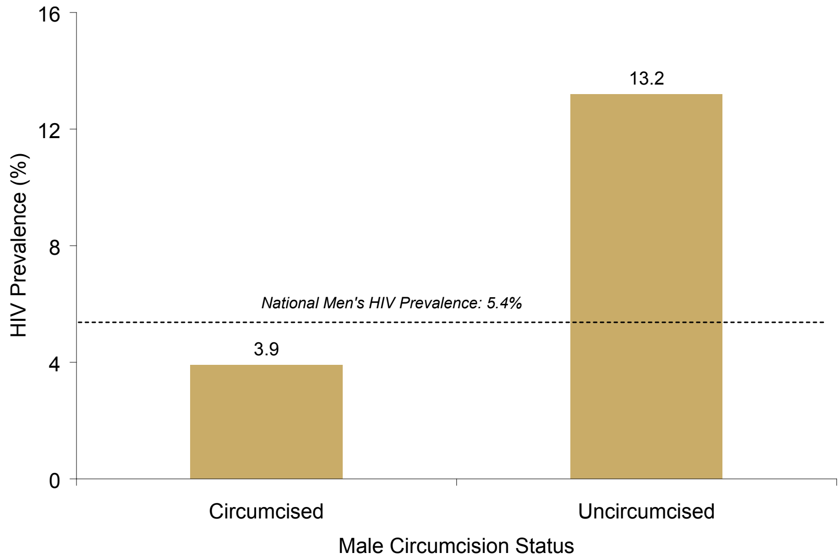


Figure 6.6b HIV prevalence was significantly higher among uncircumcised men compared to circumcised men.

HIV status was significantly associated with circumcision status among men. Men aged 15-64 years who had not been circumcised had an HIV prevalence of 13.2%, a level over two times higher than the national male HIV prevalence of 5.3%. In contrast, among men who had been circumcised, 3.9% were infected with HIV.

Figure 6.6c HIV prevalence among men aged 15-64 years who had ever had sex by circumcision status and five-year age group, Kenya 2007.

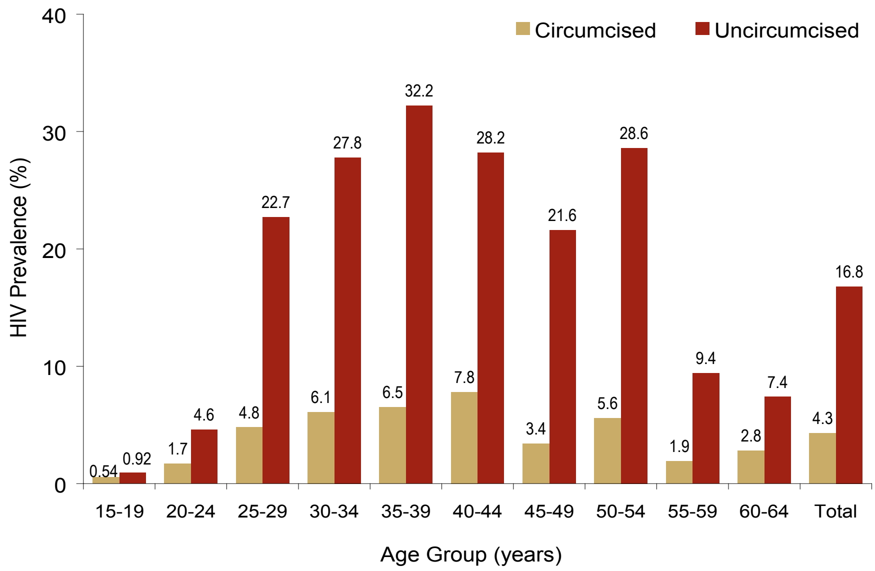


Figure 6.6c Among uncircumcised men, HIV prevalence peaked among men aged 35-39 years at 32.2%.

HIV prevalence among circumcised and uncircumcised men varied significantly by age group, with the lowest prevalence for both groups observed in men aged 15-19 years. HIV prevalence rapidly rose thereafter to peak at 32.2% among uncircumcised men aged 35-39 years. In contrast, the peak in HIV prevalence among circumcised men was significantly lower than that of uncircumcised men at 7.8% among men aged 40-44 years. With the exception of the youngest age group (15-19 years) where HIV prevalence was similar between circumcised (0.5%) and uncircumcised men (0.9%), prevalence among circumcised men in each age group was approximately three to seven times lower than among uncircumcised men of the same age group.

Figure 6.6d HIV prevalence among married or cohabiting men by circumcision status and HIV status of female sexual partner, Kenya 2007.

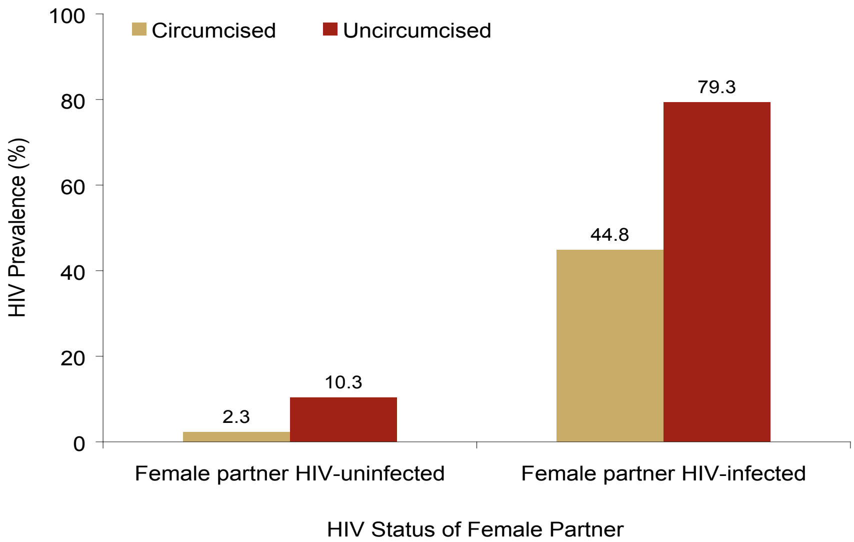


Figure 6.6d Men who had an HIV-infected primary female partner were significantly more likely to be HIV-infected compared to men whose primary female partner was HIV-uninfected. The prevalence of HIV among uncircumcised men with an HIV-infected primary female partner was substantial at 79.3%.

HIV status of the primary female partner was based on 2007 KAIS blood test results.

HIV prevalence among married and cohabiting men varied significantly by their circumcision status and by the HIV status of their female primary sexual partner. Among uncircumcised men whose primary partner was HIV-infected, 79.3% were also HIV-infected. In comparison, 44.8% of circumcised men with an infected primary partner were also HIV-infected. Men whose primary female partners were HIV-uninfected had much lower rates of HIV infection, though HIV prevalence was still high at 10.3% among uncircumcised men.

Respondents with children were asked whether their youngest child had been or will be circumcised. Nationally, nearly all (94.1%) circumcised fathers and slightly fewer mothers (83.2%) reported having their youngest son circumcised or wanted him to be circumcised. Desire to have the youngest son circumcised was much lower among uncircumcised fathers (15.5%). Because circumcision rates were lowest in Nyanza province, we compared whether this trend was similar or different in Nyanza. Although circumcised fathers in Nyanza were similar to circumcised men throughout the country in their desire to have their youngest son circumcised (91.4%), mothers (39.3%) and uncircumcised fathers in Nyanza (7.9%) were significantly less likely to report wanting to have their youngest son circumcised (data shown in Appendix B.6).

6.7 Gaps and Unmet Needs

- **Few multiple partnerships were reported, and the extent of their concurrency is not well known. A better understanding of the role of concurrency in the HIV epidemic is necessary to determine whether interventions targeting multiple concurrent partnerships may be important for prevention.**
- **The relationship between age of sexual debut and HIV infection appears complex; more information is needed on this topic.**
- **Encouraging partner testing and condom use among persons with multiple partners and partners of unknown HIV status remains a challenge and a priority.**
- **Areas with low levels of male circumcision may need culturally sensitive ways to increase acceptability and uptake of this prevention method along with other safer sex behaviours.**

7

Knowledge, Attitudes and Beliefs about HIV/AIDS

7.1 Key Findings

- Overall, 98.3% of adults aged 15-64 years had heard about AIDS.
- Knowledge about HIV/AIDS increased since 2003; knowledge was highest among respondents who reported higher education and among urban residents
- Overall, 76.9% of women and men agreed that people with the AIDS virus should not be ashamed of themselves and 91.5% were willing to care for an HIV-infected family member in their home.
- Of persons who did not self-report HIV positive, 70.7% believed they had small or no risk of acquiring HIV; of these, 6.2% were HIV-infected and 76.7% cited having only one sexual partner as the reason for having small or no risk.

7.2 Introduction

Knowledge of HIV and perceptions of risk for HIV infection are essential for making behavioural choices that reduce risk of acquiring and transmitting HIV. For more than 10 years, educational campaigns in Kenya have aimed to disseminate information about the disease, how it is acquired, and how to prevent new infections. This chapter summarises data on knowledge, attitudes and beliefs about HIV/AIDS and examines factors associated with knowledge of HIV transmission, stigma related to HIV, perceptions of risk for HIV.

Appendix B.7 provides sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

For any analysis that compares weighted estimates from the 2003 KDHS and the 2007 KAIS in this chapter, a z-test was used to determine if differences between the two estimates were statistically significant. Methods used for calculating the z-test statistic are described further in Appendix A.

7.3 Knowledge of HIV/AIDS

Nearly all respondents aged 15-64 years reported having heard of AIDS (98.3%). No significant differences were observed by sex, age group, wealth index or education level.

Figure 7.3a Most common source of HIV/AIDS information among women and men aged 15-64 years who had heard of AIDS, Kenya 2007.

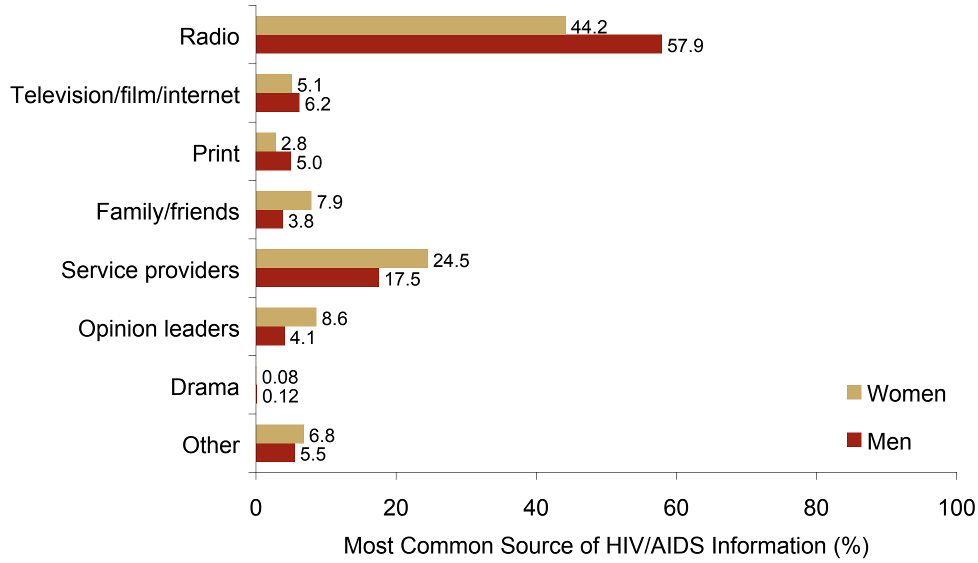


Figure 7.3a The most common source of information on HIV/AIDS was the radio for both women (44.2%) and men (57.9%).

Among those who had heard of AIDS, 44.2% of women and 57.9% of men reported the radio was their most common source of information on HIV/AIDS. An additional 24.5% of women and 17.5% of men reported they most often gathered information from service providers (e.g. health workers and teachers). Opinion leaders (e.g. traditional, religious and political), family, and friends were less common sources of information as were television, film, Internet, dramas and print media (e.g. newspapers, magazines, brochures, billboards, community notices).

Figure 7.3b. Most common source of HIV/AIDS information among rural and urban residents aged 15-64 years who had heard of AIDS, Kenya 2007.

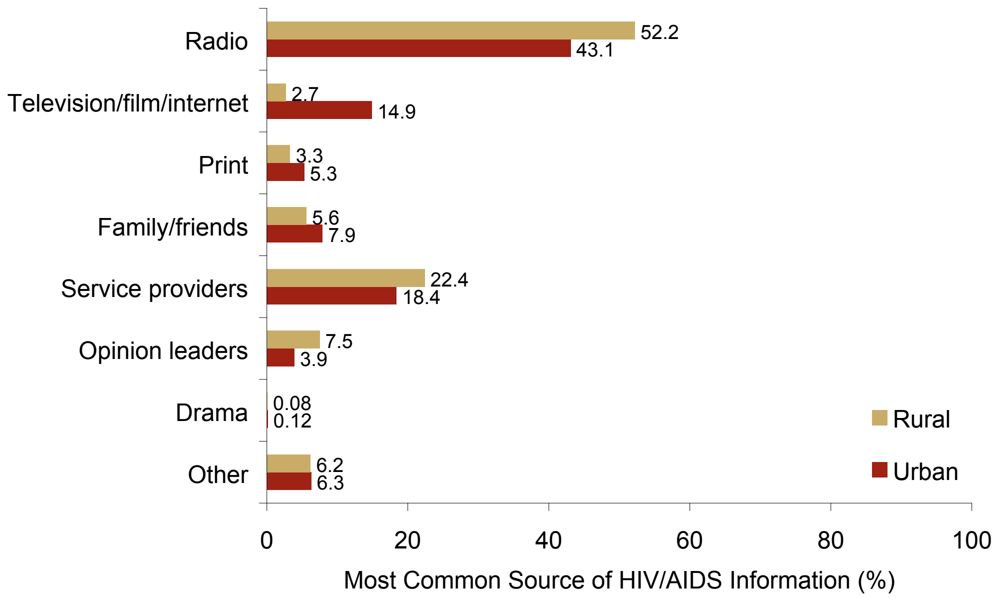


Figure 7.3b Sources of information on HIV/AIDS differed marginally between rural and urban residents.

Rural and urban residents reported receiving information about HIV/AIDS from different sources. More rural than urban residents rely on radio (52.2% and 43.1%, respectively), service providers (22.4% and 18.4%, respectively) and opinion leaders (7.5% and 3.9%, respectively) for information on HIV/AIDS. By contrast, more urban than rural residents gathered HIV/AIDS information from television, film and Internet (14.9% and 2.7%, respectively) and from print media (5.3% and 3.3%, respectively). These differences in sources of information were marginally significant.

Data in Context: HIV Transmission Knowledge

Assessment of HIV/AIDS transmission knowledge was based on correct responses to the following 12 questions regarding HIV/AIDS transmission:

Question	Correct response	Newly added question since the 2003 KDHS
Can people reduce their chance of getting the AIDS virus by having just one uninfected sex partner who has sexual intercourse with no other partners?	Yes	
Can people get the AIDS virus from mosquito or other insect bites?	No	
Can people reduce their chance of getting the AIDS virus by using a condom every time they have sex?	Yes	
Can people get the AIDS virus by sharing utensils with a person who has AIDS?	No	
Can people reduce their chance of getting the AIDS virus by not having sexual intercourse at all?	Yes	
Can people get the AIDS virus because of witchcraft or other supernatural means?	No	
If a man has the virus that causes AIDS, does his sexual partner always have the AIDS virus, almost always, or only sometimes?	Sometimes	X
If a woman has the virus that causes AIDS, does her sexual partner always have the AIDS virus, almost always, or only sometimes?	Sometimes	X
Is it possible for a healthy-looking person to have the AIDS virus?	Yes	
Can the virus that causes AIDS be transmitted from a mother to her baby: ○ By breastfeeding? ○ During delivery? ○ During pregnancy?	 Yes Yes Yes	 X X X

Figure 7.3c Women and men aged 15-64 years who had heard of AIDS and correctly answered questions on HIV transmission, Kenya 2007.

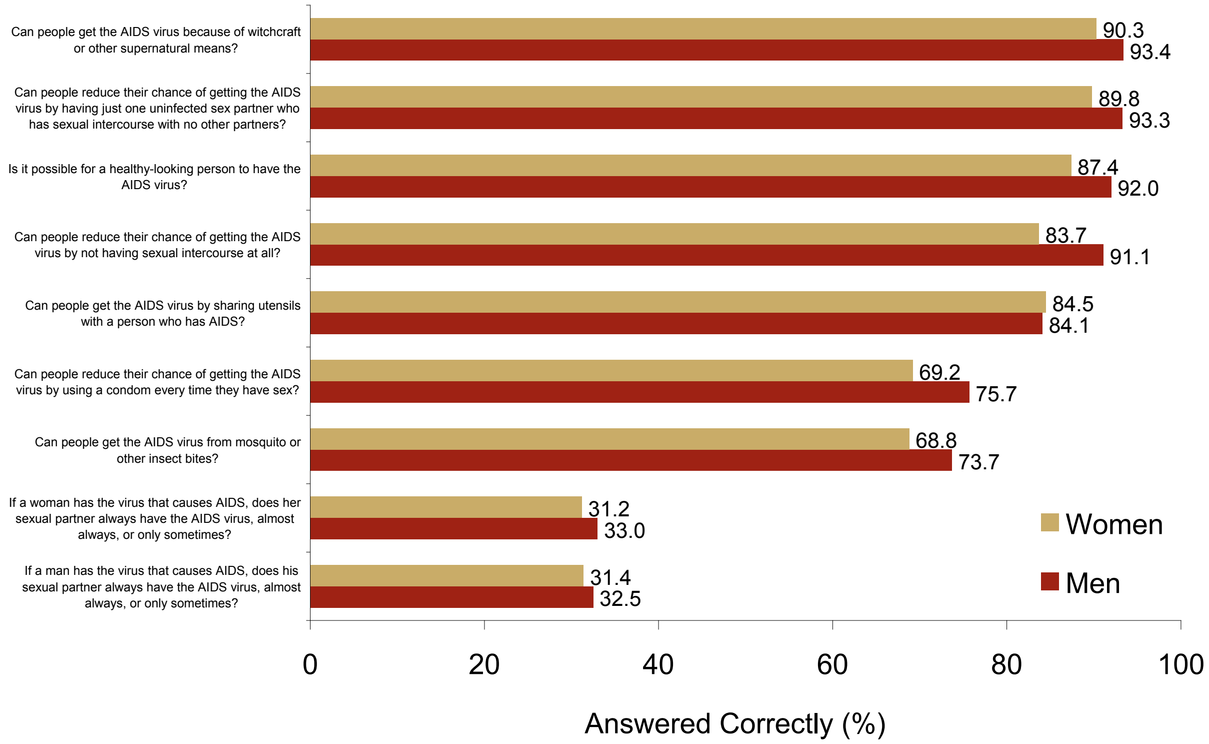


Figure 7.3c Knowledge about HIV/AIDS transmission varied significantly by the specific knowledge question asked. Almost all adults correctly answered that not having sex can reduce the chances of acquiring HIV and some adults knew that a sexual partner of a HIV-infected woman or man does not always have the virus.

Of all respondents, 89.8% of women and 93.3% of men correctly reported that one could reduce the risk of acquiring HIV by having one uninfected partner who does not have sex with others. Most women and men understood that a healthy-looking person could have HIV infection (87.4% and 92.0%, respectively) and that abstaining from sex was one way to reduce chances of acquiring HIV (83.7% and 91.1%, respectively). A lower percentage of women and men were aware that consistent condom use was a way to reduce the risk of HIV infection (69.2% and 75.7%, respectively).

Several questions were asked for the first time in the 2007 KAIS that were not asked in the 2003 KDHS. For the two new questions that asked about the possibility of HIV discordance between sexual partners[1], the percent responding correctly was low. Among women and men, the percent responding correctly that a sexual partner of an HIV-infected person is only sometimes HIV-infected ranged from 31.2% to 33.0%; most women and men believed that a sexual partner of an HIV-infected person is always or almost always infected.

The percent of women providing correct answers was significantly less than men for six of the nice questions, with the greatest differences evident for reducing HIV infections through consistent condom use (69.2% for women and 75.7% for men) and reducing HIV by abstaining from sex (83.7% and 91.1%, respectively).

1 Two new questions were: 1) "If a man has the virus that causes AIDS, does his sexual partner always have the AIDS virus, almost always, or only sometimes?"; 2) If a woman has the virus that causes AIDS, does her sexual partner always have the AIDS virus, almost always, or only sometimes?"

Figure 7.3d Women and men aged 15-64 years who had heard of AIDS and correctly answered questions on mother-to-child transmission, Kenya 2007.

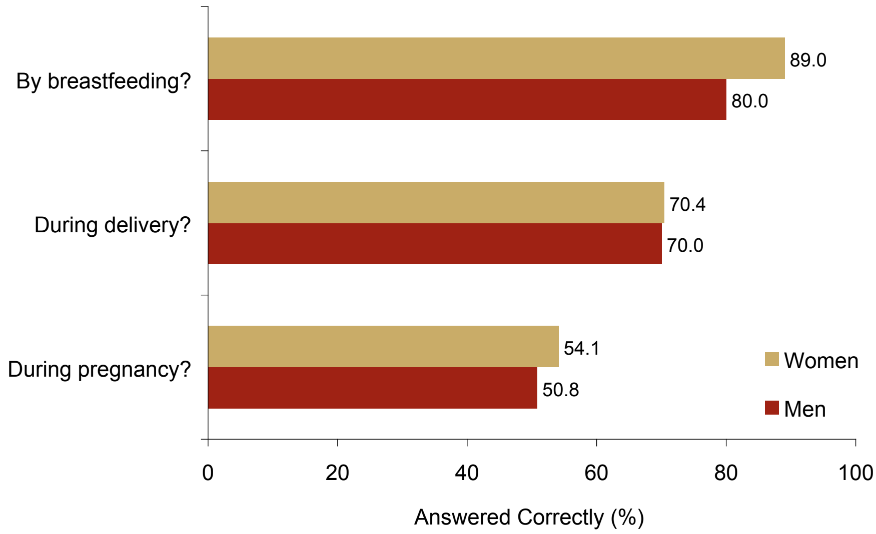


Figure 7.3d More than half of women and men knew that HIV could be transmitted from mother to child through breastfeeding, delivery and pregnancy.

The three questions presented in Figure 7.3d on mother-to-child transmission were asked for the first time in the 2007 KAIS. Most respondents were aware that HIV could be transmitted from mother to child during breastfeeding (85.1% overall, data not shown), and women were significantly more likely than men to provide a correct response to this question (89.0% and 80.0%, respectively). Similar percentages of women (70.4%) and men (70.0%) were aware that transmission could occur during delivery. Only about half of participants were aware that transmission could occur during pregnancy, and women were significantly more likely than men to provide a correct response to this question (54.1% and 50.8%, respectively).

Figure 7.3e Overall scores for 12 questions on HIV transmission among women and men aged 15-64 years who had heard of AIDS, Kenya 2007.

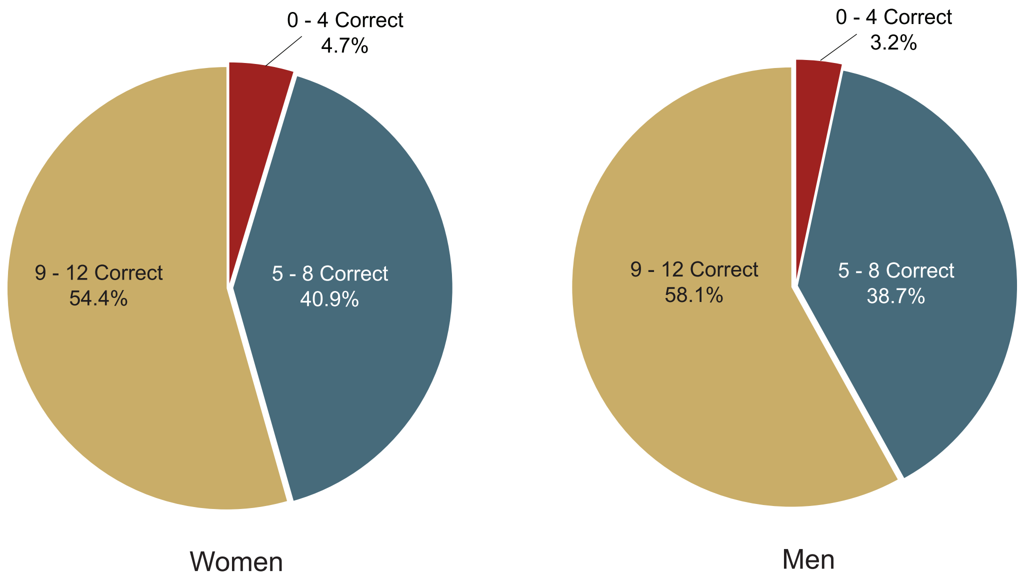


Figure 7.3e More than half of respondents correctly answered at least nine of 12 knowledge questions on HIV.

All 12 questions on HIV transmission were combined to get an overall score for each respondent. Total scores were divided into three categories: 0-4 questions (up to one-third) correct, 5-8 questions (up to two-thirds) correct and 9-12 questions (over two-thirds) correct. More than half of adults (56.0%, data shown in Appendix B.6) correctly answered nine or more questions. Significantly more men (58.1%) than women (54.4%) answered nice or more questions correctly. Urban residents scored significantly higher than rural residents, with 64.0% of urban residents answering nine or more questions correctly compared to 53.5% of rural residents (data shown in Appendix B.6).

Figure 7.3f Women and men aged 15-64 years who had heard of AIDS and correctly answered at least nine of 12 questions on HIV transmission, by education level, Kenya 2007.

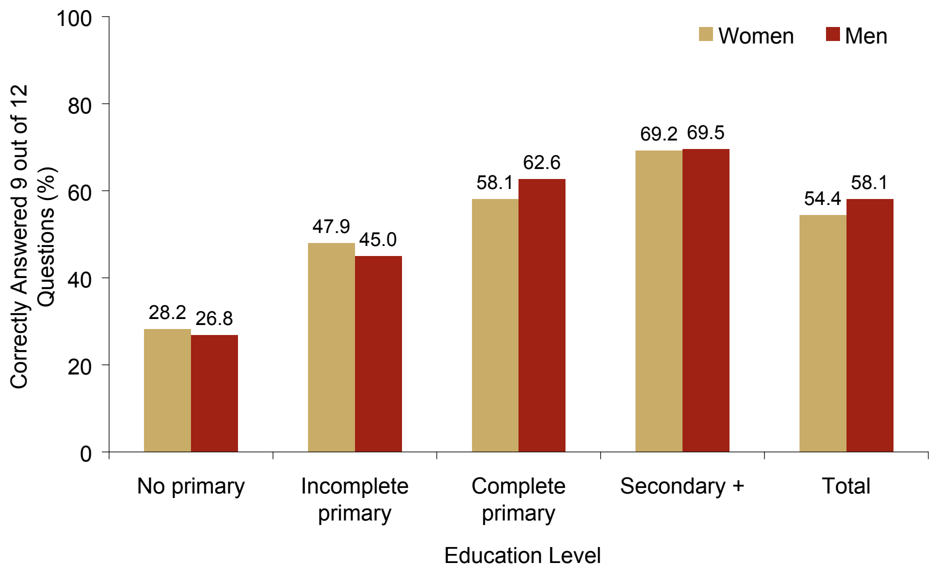


Figure 7.3f The percent of people answering nine or more questions correctly increased significantly with level of education.

Knowledge of HIV, defined as correctly answering at least nine of the 12 questions on HIV transmission, increased significantly with education level: 28.2% of women and 26.8% of men with no primary education answered nine or more items correctly compared to 69.2% of women and 69.5% of men with secondary education or above.

Figure 7.3g Women and men aged 15-64 years who had heard of AIDS and correctly answered at least nine of 12 questions on HIV transmission, by self-reported HIV status, Kenya 2007.

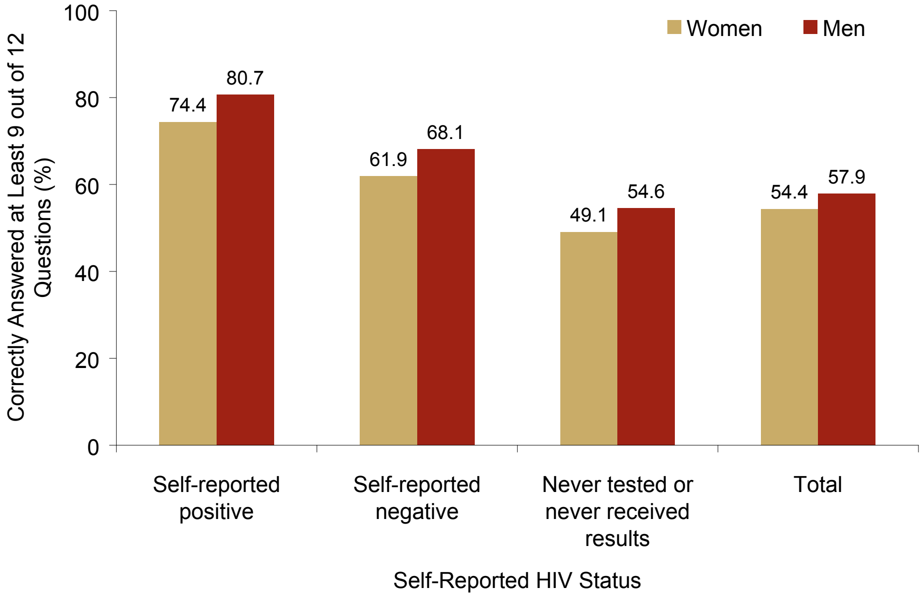


Figure 7.3g The percent answering nine or more questions correctly was significantly lower among those who had never tested for HIV or never received their test results compared to those that reported they were positive or negative based on their last HIV test.

The percent of adults answering nine or more knowledge questions correctly differed significantly by self-reported HIV status for both women and men. Among those who self-reported positive, 74.4% of women and 80.7% of men answered nine or more questions correctly. Among those who self-reported negative, 61.9% of women and 68.1% of men answered nine or more questions correctly. By contrast, among those who never tested or never received their test results, 49.1% of women and 54.6% of men answered nine or more questions correctly.

Figure 7.3h Correct responses to selected questions on HIV transmission among women aged 15-49 years who had heard of AIDS, 2003 KDHS and 2007 KAIS.

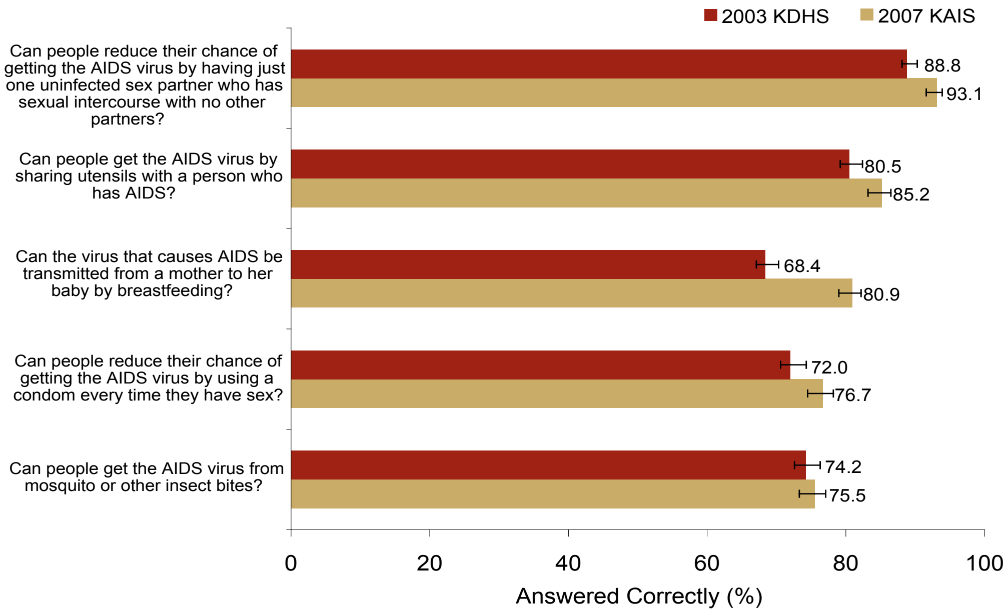


Figure 7.3h Correct knowledge of HIV transmission risks significantly increased among women from 2003 to 2007.

For consistency with the 2003 KDHS, this analysis focuses only on adults aged 15-49 years.

Responses to five questions that appeared in the 2003 KDHS and the 2007 KAIS were compared to assess whether correct knowledge of HIV transmission changed between the two surveys. Among women, the percent of women with correct knowledge increased significantly since 2003 for each question with the exception of the question regarding insects as a means of transmission, for which there was no change. The magnitude of the increase was approximately five percentage points for each question. The greatest increase was in the percent of women who correctly answered that HIV could be transmitted from an infected mother to her child during breastfeeding (68.4% to 80.9%).

Figure 7.3i Correct responses to selected questions on HIV transmission among men aged 15-49 years who had heard of AIDS, 2003 KDHS and 2007 KAIS.

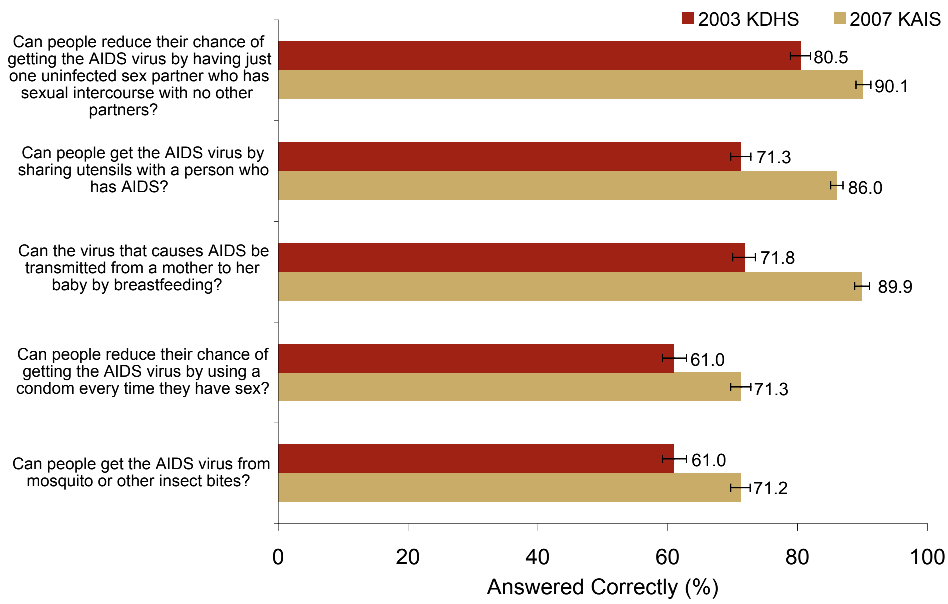


Figure 7.3i Correct knowledge of HIV transmission risks significantly increased among men from 2003 to 2007.

For consistency with the 2003 KDHS, this analysis focuses only on adults aged 15-49 years.

Among men, the percent with correct knowledge of HIV transmission significantly increased for each question from 2003 to 2007. In particular, the percent correctly answering that an infected mother could transmit HIV to her baby during breastfeeding significantly increased from 71.8% in 2003 to 89.9% in 2007.

As described earlier in this section, KAIS included 12 HIV knowledge questions; of these, five questions were grouped and analysed to measure comprehensive HIV knowledge among youth aged 15-24 years (UNGASS Core Indicator 13). Comprehensive knowledge is defined as correct knowledge about prevention of sexual transmission of HIV including rejection of major misconceptions about HIV transmission. The five correct knowledge statements were (in abbreviated form): Risk of HIV can be reduced (1) by having one uninfected sex partner who has no other partners and (2) using condoms consistently; HIV transmission cannot occur (3) through insect bites or (2) by sharing utensils with infected person; and (5) healthy-looking persons can have HIV. In 2007, 44.4% of youth aged 15-24 years correctly answered all five questions. Estimates were similar for young women and young men (42.0% and 47.5%, respectively).

7.4. Stigma and Accepting Attitudes Toward HIV-infected Persons

Figure 7.4a Women and men aged 15-64 years with accepting attitudes towards persons with HIV/AIDS by stigma question, Kenya 2007.

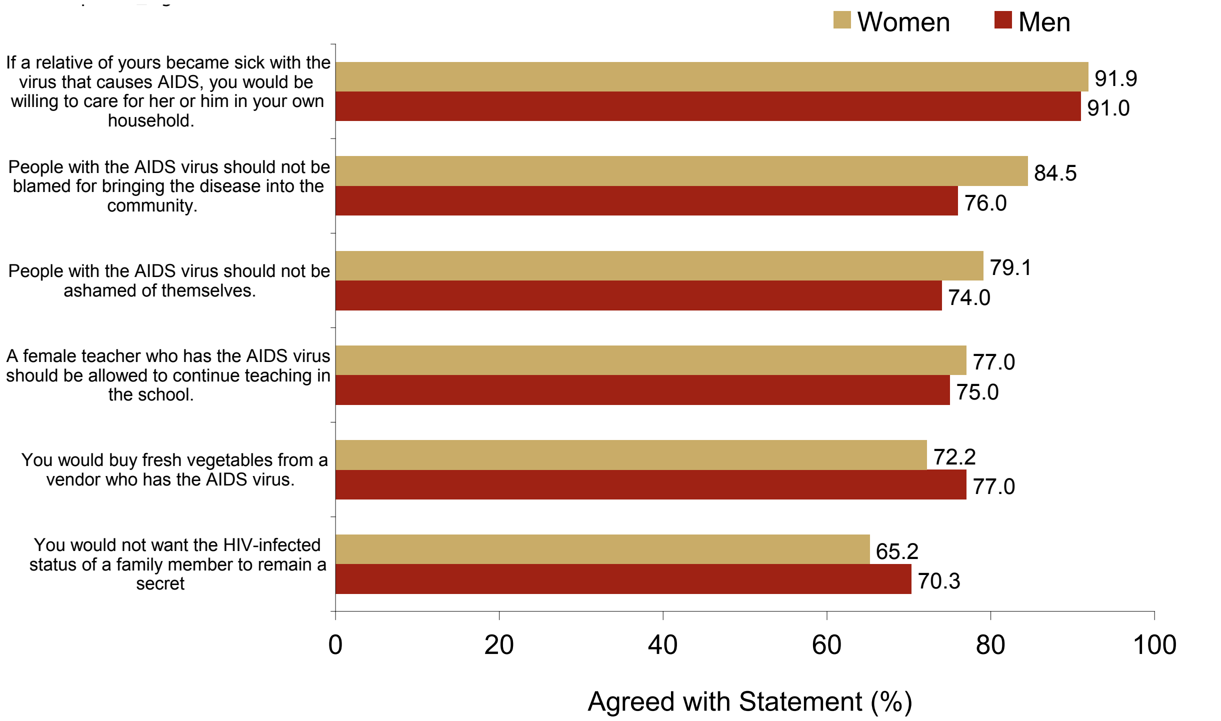


Figure 7.4a Nine out of 10 respondents would be willing to care for an HIV-infected relative at home.

Most respondents reported they would be willing to care for a HIV-infected relative at home; estimates were similar for women and men (91.9% and 91.0%, respectively). A significantly greater percent of women (84.5%) than men (76.0%) agreed that people with AIDS should not be blamed for bringing disease into the community. By contrast, a significantly greater percent of men (77.0%) than women (72.27%) reported they would buy produce from an HIV-infected vendor. There was somewhat less support for being open about a family member's HIV status although the percent with accepting attitudes was still moderately high; if a family member became infected with HIV, 65.2% of women and 70.3% of men would not want it to remain a secret.

In the following two figures, we compare the percent of respondents with accepting attitudes towards persons with HIV/AIDS between the 2003 KDHS and the 2007 KAIS. The following four questions asked in both the 2003 and 2007 questionnaires were used in this comparison:

- If a relative of yours became sick with the virus that causes AIDS, would you be willing to care for her or him in your own household?
- Would you buy fresh vegetables from a vendor who has the AIDS virus?
- If a member of your family got infected with the virus that causes AIDS, would you want it to remain a secret or not?
- If a female teacher has the AIDS virus, should she be allowed to continue teaching in the school?

Figure 7.4b Accepting attitudes toward persons with HIV/AIDS among women aged 15-49 years by stigma question, 2003 KDHS and 2007 KAIS.

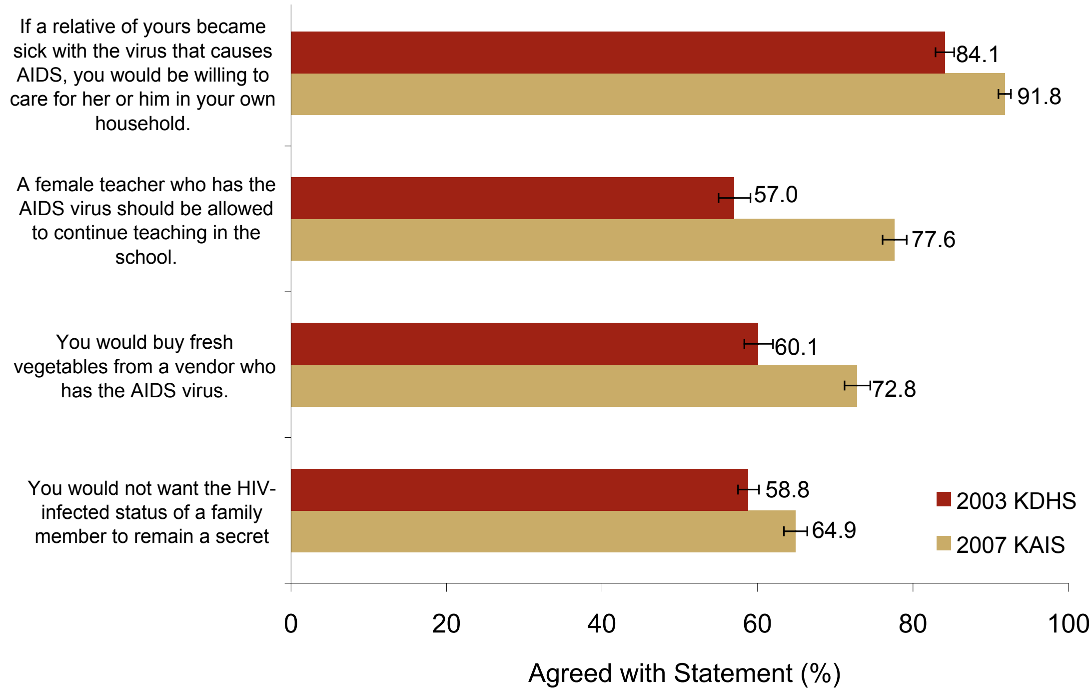


Figure 7.4b Among women, accepting attitudes towards people with HIV/AIDS significantly increased between 2003 and 2007 across all indicators.

For consistency with the 2003 KDHS, this analysis focuses only on adults aged 15-49 years.

In 2007, significantly more women reported accepting attitudes towards persons with HIV/AIDS than in 2003. A greater percent of women in 2007 (77.6%) compared to 2003 (57.0%) believed an HIV-infected female teacher should be allowed to continue teaching. Accepting attitudes about purchasing vegetables from an HIV-infected vendor also significantly improved from 60.1% to 72.8%. The percent willing to care for a relative with HIV at home increased significantly from 84.1% to 91.8%; openness about a relative's HIV infected status also significantly increased from 58.8% (2003) to 64.9% (2007).

Figure 7.4c Accepting attitudes toward persons with HIV/AIDS among men aged 15-49 years by stigma question, 2003 KDHS and 2007 KAIS.

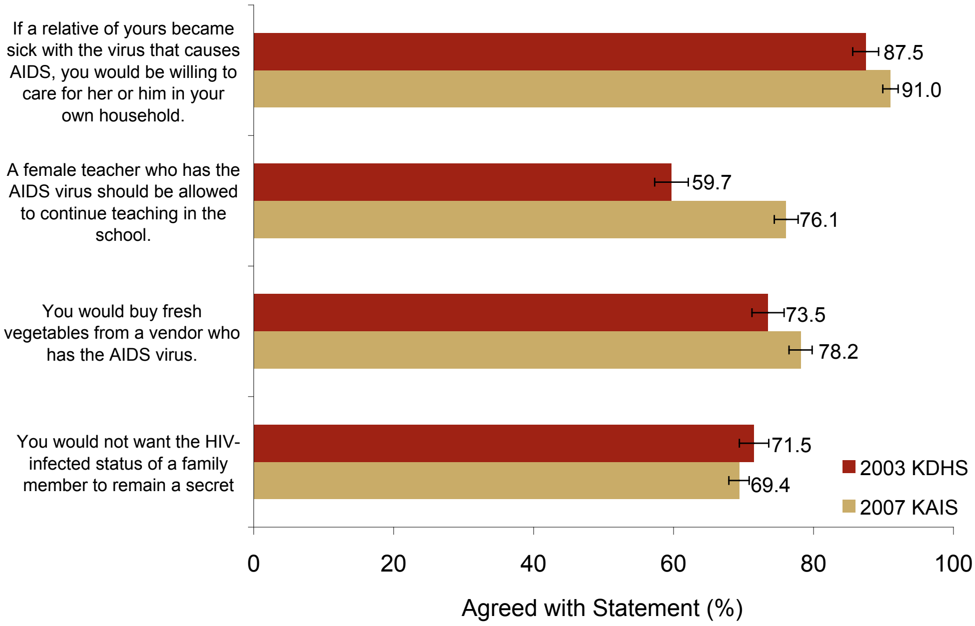


Figure 7.4c Among men, three of the four markers for accepting attitudes towards people with HIV/AIDS significantly increased between 2003 and 2007.

For consistency with the 2003 KDHS, this analysis focuses only on adults aged 15-49 years.

Among men, there was a significant increase between 2003 and 2007 in the percent with accepting attitudes towards persons with HIV/AIDS. The largest improvement observed was in the percent of men accepting HIV-infected female teachers, which increased from 59.7% in 2003 to 76.1% in 2007. Willingness to buy vegetables from a vendor with HIV increased an estimated five percentage points from 73.5% to 78.2%. The percent willing to care for a relative with HIV infection in their homes remained high from 2003 (87.5%) to 2007 (91.0%); this increase was also statistically significantly. The percent that would not want the HIV-infected status of a family member to remain a secret did not differ significantly between 2003 and 2007.

7.5 Perceived Risk of HIV Infection

In Chapter 4, we established that the primary reason for never having been tested for HIV was that respondents perceived their risk of HIV infection to be low. This section examines perceptions of risk for HIV in the subset of 97.4% of participants who provided information on testing history and who did not self-report HIV positive, regardless of their actual HIV status; those who self-reported positive would not be expected to perceive themselves at risk for HIV infection.

On a national level it is important to have an understanding of people's perceptions of risk and the accuracy of these perceptions to better guide prevention efforts for the general population. At an individual level, perceptions of risk can have an important effect on HIV test-seeking behaviour and sexual behaviours.

Figure 7.5a Perceived risk of HIV infection among women and men aged 15-64 years, Kenya 2007.

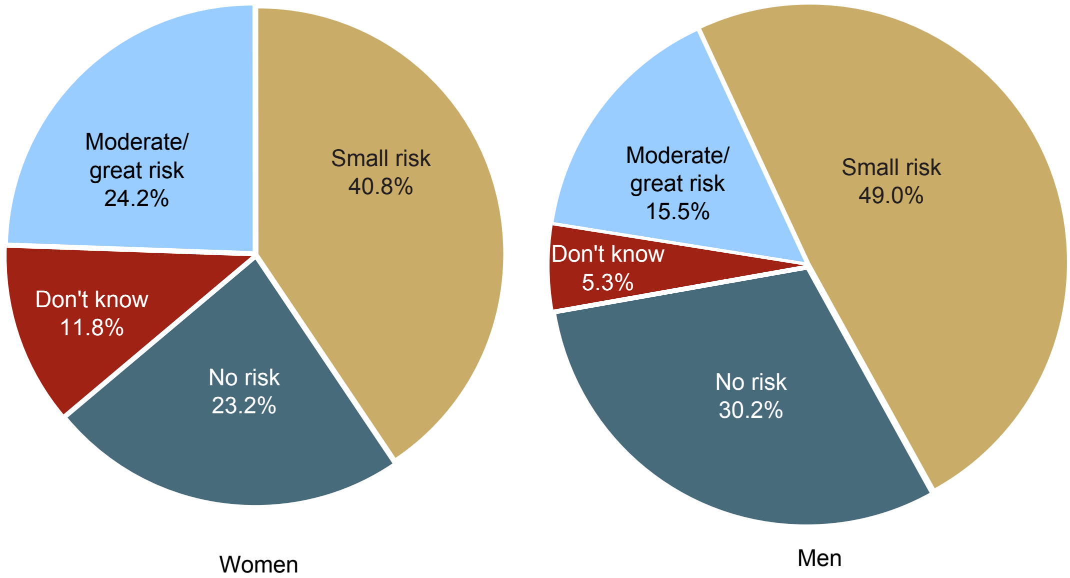


Figure 7.5a More men than women perceived themselves to have small or no risk for HIV.

Respondents who had previously tested for HIV and self-reported positive based on the results of the last HIV test (approximately 1%) were excluded from this analysis.

KAIS respondents were asked "Do you think that your chance of getting AIDS is small, moderate or great or is there no risk at all?" Of all respondents aged 15-64 years who had been tested for HIV but did not self-report positive based on their last HIV test, 70.7% of respondents believed they had small or no risk of acquiring HIV, 20.4% of respondents reported themselves to be at moderate or great risk and 9.0% did not know (data not shown). Perceived risk differed significantly by sex: 79.2% of men believed themselves to be at small or no risk of HIV compared to 64.0% of women.

Figure 7.5b HIV prevalence among women and men aged 15-64 years by perceived risk of HIV infection, Kenya 2007.

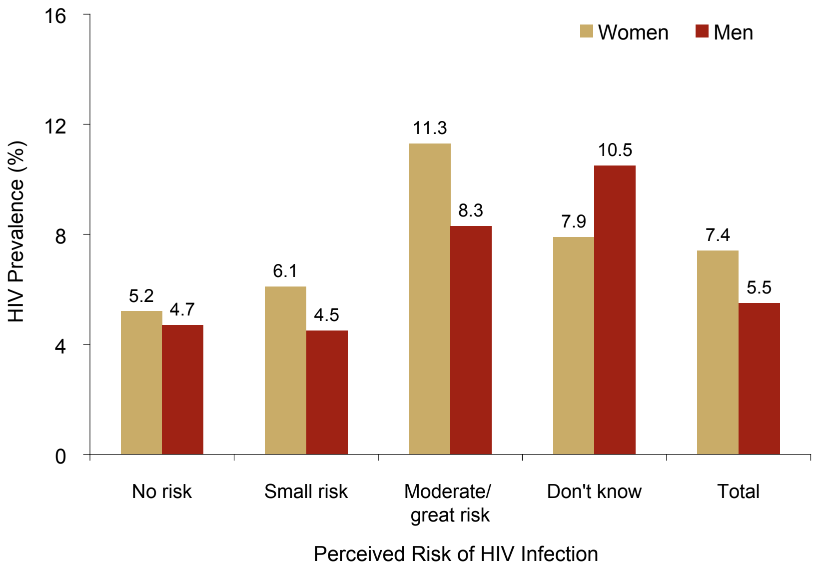


Figure 7.5b Women and men who perceived themselves to have moderate or great risk for HIV and those who did not know their risk level had the highest HIV prevalence.

Respondents who self-reported positive based on the results of the last HIV test (approximately 1%) were excluded from this analysis.

HIV prevalence and perceived risk of HIV infection were significantly associated. Women who reported moderate or great risk or who did not know their HIV risk had higher HIV prevalence rates (11.3% and 7.9%, respectively) compared to women who reported no risk or small risk (5.2% and 6.1%, respectively). HIV prevalence among men who reported moderate or great risk of HIV infection or did not know their risk was 8.3% and 10.5%, respectively. HIV prevalence was 4.7% among men who perceived themselves to be at no risk, and 4.5% among men who perceived themselves to be at small risk. Overall, HIV prevalence was substantial among respondents who believed themselves to be at no risk (4.9%) or small risk (5.3%) for acquiring HIV (data not shown).

Figure 7.5c examines the subset of respondents who reported no risk or small risk for HIV infection. This constitutes 70.7% of all KAIS respondents who had been tested for HIV and did not self-report positive based on their last HIV test.

Figure 7.5c Reasons given for having no or small risk of HIV infection among women and men aged 15-64 years, Kenya 2007.

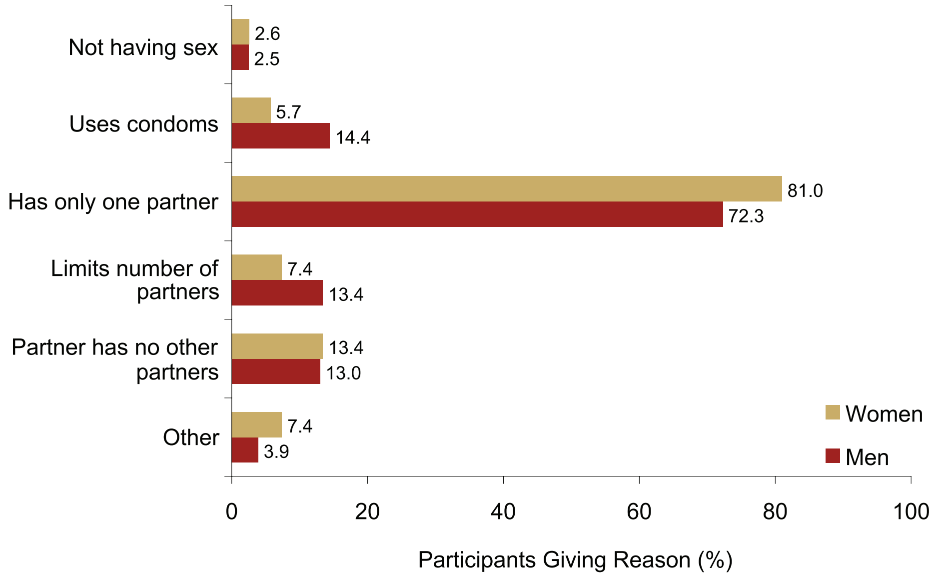


Figure 7.5c. Most women and men attributed their self perception of no or small risk for HIV to having only one sexual partner.

Having only one partner was the most common reason given for perceiving no or small risk of HIV infection, with a significantly lower percent of men (72.3%) citing this behaviour as a reason compared to women (81.0%). Some women (7.4%) and men (13.4%) believed that limiting their number of partners or using condoms (5.7% of women and 14.4% of men) resulted in no or small risk for HIV; these differences by sex were statistically significant.

Figure 7.5d Reasons given for having moderate or great risk of HIV infection among women and men aged 15-64 years, Kenya 2007.

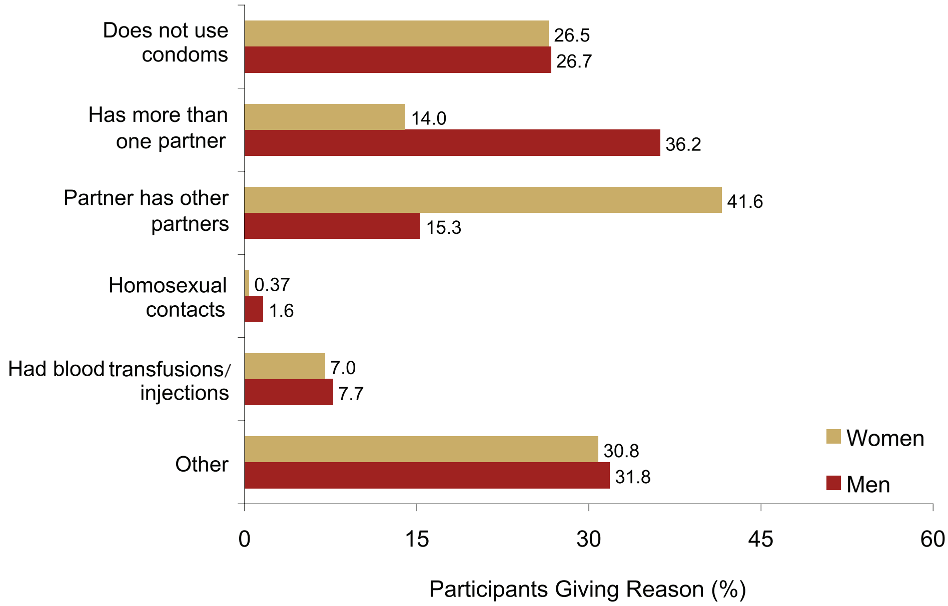


Figure 7.5d Having multiple partners or having a partner with multiple sexual partners was commonly cited as the reason for having moderate or great risk for HIV.

Among participants who did not self-report positive, 20.4% reported that they perceived themselves to be at moderate or great risk for HIV infection. The three most commonly cited reasons were that their sexual partner had other partners; that they did not use condoms with their sexual partner; or that they had more than one sexual partner. The percent of women and men citing non-use of condoms was similar (26.5% and 26.7%, respectively). Significantly more women (41.6%) than men (15.3%) cited their partner having other partners as a reason for perceiving themselves to have moderate or great risk for HIV. Significantly more men (36.2%) than women (14.0%) cited having more than one partner as the reason for being at moderate or great risk for HIV. It is worth noting that 1.6% of men stated they perceived themselves to be at moderate or great risk for HIV because they had had sex with other men.

7.6 Attitudes Toward Women's Roles In Sexual Decision Making

In the 2007 KAIS, women had a significantly greater HIV infection rate than men (8.4% versus 5.4%, respectively). An important component of a comprehensive HIV prevention strategy is to ensure that women are empowered within their sexual relationships to help reduce the risk of HIV acquisition and transmission. This section explores women's and men's attitudes toward the power women have to make decisions about their sexual relationships. These analyses included all respondents, regardless of testing history or reported HIV status.

Responses to the following four specific statements were used to assess attitudes toward women's roles in sexual decision making:

- A wife is justified in refusing to have sex with her husband if she knows he has a sexually transmitted disease;

- A wife is justified in asking her husband to use a condom when she knows he has a sexually transmitted disease;
- A wife is justified in refusing to have sex with her husband if she knows he has sex with other women; and
- A wife is justified in refusing to have sex with her husband if she is tired or not in the mood.

Figure 7.6a Attitudes toward negotiating safer sex among women and men aged 15-64 years, Kenya 2007.

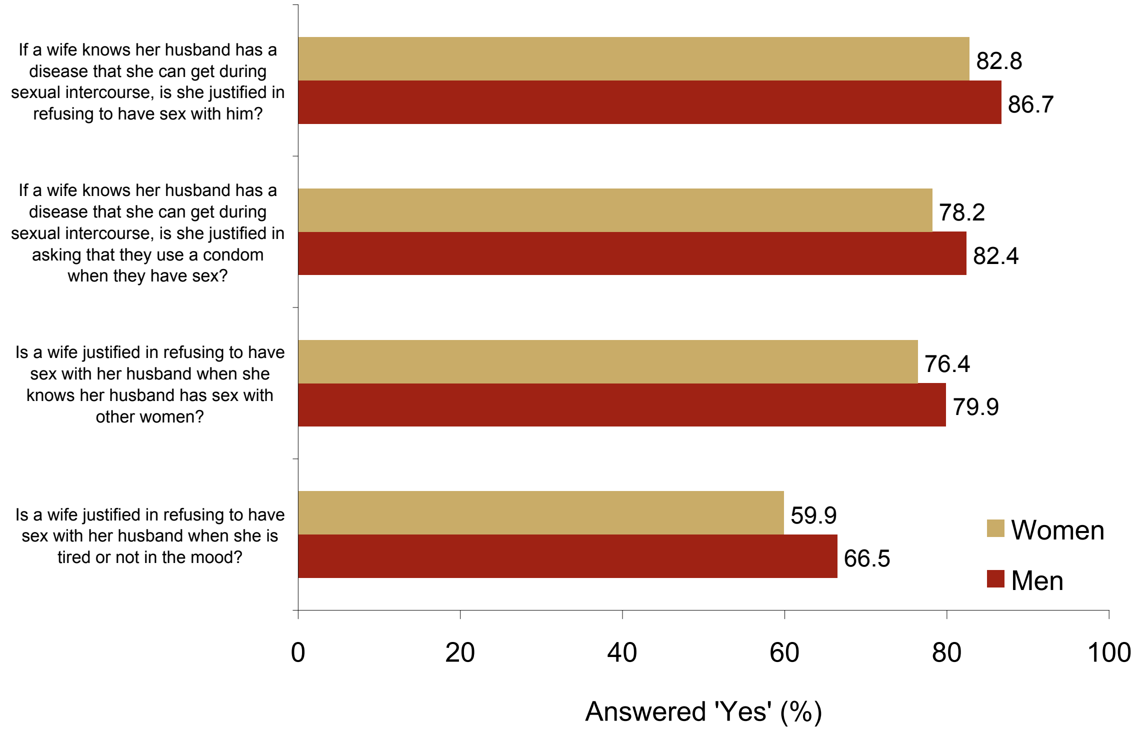


Figure 7.6a The majority of women and men believed that a wife is justified in refusing sex under specific circumstances.

The majority of men agreed that if a husband has a STI, his wife is justified in refusing sex (86.7%) or insisting on using a condom (82.4%) and that if a husband was having sex with other women, his wife was justified in refusing sex with him (79.9%). Most women also agreed with these statements though at a significantly lower level than men (82.8%, 78.2% and 76.4%, respectively). For both women and men, there was significantly less agreement that being tired or not in the mood was justification for a wife refusing to have sex with her husband (59.9% and 66.5%, respectively).

Figure 7.6b Agreement with three empowerment statements among women and men aged 15-64 years by self-reported HIV status, Kenya 2007.

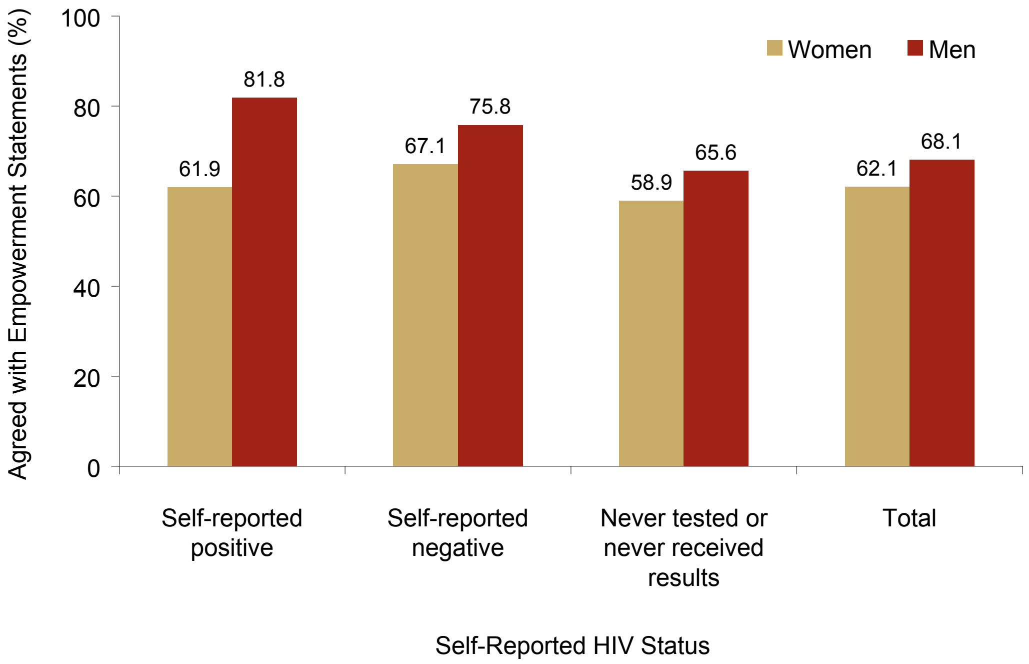


Figure 7.6b Women and men who had previously tested for HIV (regardless of their self-reported status) were more likely than those who had never tested or never received results to believe a wife was justified in refusing sex or insisting on condom use in specific circumstances.

The three referenced empowerment statements were: (1) Is a wife justified in refusing to have sex with her husband when she knows her husband has sex with other women? (2) If a wife knows her husband has a disease that she can get during sexual intercourse, is she justified in asking that they use a condom when they have sex? (3) If a wife knows her husband has a disease that she can get during sexual intercourse, is she justified in refusing to have sex with him?

In all, 62.1% of women agreed with all three empowerment statements, which was significantly lower than the 68.1% among men. A significantly higher percent of women (61.9%-67.1%) and men (75.8%-81.8%) who had been tested for HIV and self-reported positive or negative agreed with the three statements compared to women and men who had never been tested for HIV or never received the test result (58.9% and 65.6%, respectively). In general, significantly more men reported being supportive of women's empowerment, as measured by the three statements, than women themselves.

7.7 Gaps and Unmet Needs

- **Knowledge about the potential for HIV discordance in sexual partnerships was low, as was knowledge of mother-to-child transmission during pregnancy, and knowledge about the efficacy of condoms. These are specific gaps in educational campaigns that need to be addressed.**
- **HIV/AIDS knowledge was lowest among people who reported lower education levels, residents of rural areas, and those who had not been tested for HIV. There is a need for more targeted, creative educational materials and campaigns to reach these populations.**
- **Despite reductions in HIV stigma since 2003, efforts to encourage acceptance of persons with HIV/AIDS should continue, especially in terms of embracing an attitude of openness and disclosure about a relative's HIV status.**
- **Among participants who perceived themselves to have no or small risk for HIV infection, 6.2% were confirmed to have HIV. Improving people's ability to self-assess their risks for HIV and promoting routine HIV testing and counselling would help address this gap.**
- **An estimated one in five adults perceived themselves to have moderate or great risk of infection; of these, most attributed their risk for HIV infection to not using condoms, having multiple sexual partners, or to their partners having multiple partners. Behavioural interventions need to be intensified.**
- **An estimated one in three adults did not indicate comprehensive support for a wife's rights to refuse sex or request a condom if her husband had another sexual partner or an STI. The promotion of women's rights to protect their sexual health could help fill this gap.**

8

Prevention of Mother-to-Child Transmission and Family Planning

8.1 Key Findings

- Of women whose last birth was between 2003-2007, 89.6% attended an antenatal clinic (ANC) at least once during pregnancy.
- HIV testing at ANCs increased from 50.4% of all ANC attendees in 2003 to 78.6% in 2007.
- ANC testing accounted for a substantial proportion of HIV testing among women: 61.5% of women aged 15-49 years were tested for HIV at an ANC between 2003-2007, and of these women, 63.8% had only ever tested at an ANC.
- HIV prevalence was 9.0% among women who reported being pregnant at the time of KAIS.
- Among HIV-uninfected pregnant or breastfeeding women who reported having unprotected sex in the 12 months before the survey, 72.7% and 77.6% of their sexual relationships, respectively, were with partners of unknown HIV status.*
- Of women aged 15-49 years, 50.9% did not want a child ever in the future and 19.6% did not want a child in the next two years; when these two groups of women were combined for analysis, results showed that only 45.0% were using modern contraception.
- Of women self-reporting a positive HIV test, 76.3% did not want a child ever in the future and 10.5% did not want a child in the next two years; when these two groups of women were combined for analysis, results showed that only 52.0% were using modern contraception.

* A "partner of unknown status" refers to a partner who had never been tested for HIV, whose testing history was unknown to the respondent, or whose HIV test result was unknown to the respondent.

8.2 Introduction

In the absence of intervention, an estimated 20%-45% of babies born to HIV-infected mothers will acquire HIV infection from their mothers. Mother-to-child transmission (MTCT) of HIV may occur at any stage during pregnancy (5%-10%), labour and delivery (10-15%), or breastfeeding (5%-20%).[1] Interventions, including use of antiretroviral drugs, optimal appropriate infant feeding practices, and safer obstetrical practices, can reduce the risk of MTCT to less than 5%.

1 WHO and CDC. Prevention of mother-to-child transmission of HIV Generic Training Package, Draft. January 2008. Available at: http://www.womenchildrenhiv.org/wchiv?page=pi-60-00.

There are four approaches for prevention of MTCT (PMTCT):

1. Primary prevention among women and girls to keep them uninfected
2. Family planning for prevention of unwanted pregnancies among HIV-infected women
3. Antiretroviral prophylaxis and treatment (ART) for PMTCT
4. Care and treatment for HIV-infected pregnant women and their families.

Kenya's target for PMTCT services, as set out in the 2005/6 – 2009/10 Kenya National AIDS Strategic Plan[2] (KNASP II), is to increase coverage of PMTCT services to reach 80% of pregnant women by the end of 2008 and reduce paediatric HIV infections by 50%. This is in line with the goal set out at the United Nations General Assembly Special Session on HIV/AIDS[3] (UNGASS) in 2001 to reduce the proportion of infants infected with HIV by 20% by the year 2005 and 50% by 2010.

This chapter describes the findings from the 2007 KAIS related to antenatal clinics (ANCs), PMTCT and family planning services. The questions in the 2007 KAIS focused on previous deliveries, ANC attendance, HIV testing in ANCs and family planning services. The chapter describes two types of HIV results: self-reported prior test results and test results from HIV testing done for KAIS.

- Only women aged 15-54 years who had given birth to their lastborn child between 2003 and 2007 were asked about ANC services and breastfeeding practices with respect to their lastborn child. This group comprised 43.3% of all women participating in KAIS.

- All women aged 15-49 years were asked about current pregnancy (that is, pregnancy at the time of the interview), ANC attendance during the current pregnancy and use of contraception. Women aged 15-49 years and currently pregnant at the time of the survey comprised 6.1% of all women participating in KAIS.

- Only women who were married or cohabiting with a man and had not been sterilized (tubal ligation or hysterectomy) were asked about their desires for a child[4] in the future. For analysis purposes, the following decisions were made:
    - Analysis of fertility desires was limited to women of reproductive age (15-49 years)
    - Women who were sterilized were assumed to not want a child ever in the future
    - Women who could not have a child for reasons other than female sterilization were excluded from analysis.

  Overall, women included in the fertility desires analysis comprised 53.6% of all women participating in KAIS.

- To quantify unmet need for contraception, current contraceptive use was calculated for women who met all of the following criteria: not pregnant at the time of the interview, did not want a child in the next two years or ever in the future, and married or cohabiting with a man. In all, 33.6% of women who participated in KAIS met these criteria.

Appendix B.8 sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

Population estimates reported in this chapter were calculated based on the 2007 projected population reported in the *Revised Population Projections for Kenya 2000-2020* (Kenya National Bureau of Statistics, August 2006). Weighted estimates for selected indicators from the 2007 KAIS were used in these calculations. Methods for calculating population estimates are described in Appendix A.

2 National AIDS Control Council, Office of the President, Kenya. Kenya National AIDS Strategic Plan 2005/6-2009/10. NACC, Nairobi.
3 United Nations General Assembly Special Session on HIV and AIDS, 25-27 June 2001. Declaration of Commitment on HIV and AIDS.
4 Throughout the chapter, "a child" refers to both a first-born child for women who have never had a child before and a subsequent child for women who have had one or more children before.

8.3 Antenatal Clinic Attendance, 2003-2007

This section examines ANC attendance and utilization of PMTCT services among women aged 15-54 years whose last live birth was between 2003 and 2007. Although the PMTCT program was launched in 2000, scale-up accelerated from 2003 onwards.

Figure 8.3a. ANC attendance among women aged 15-54 years with last live birth between 2003 to 2007, by province, Kenya 2007.

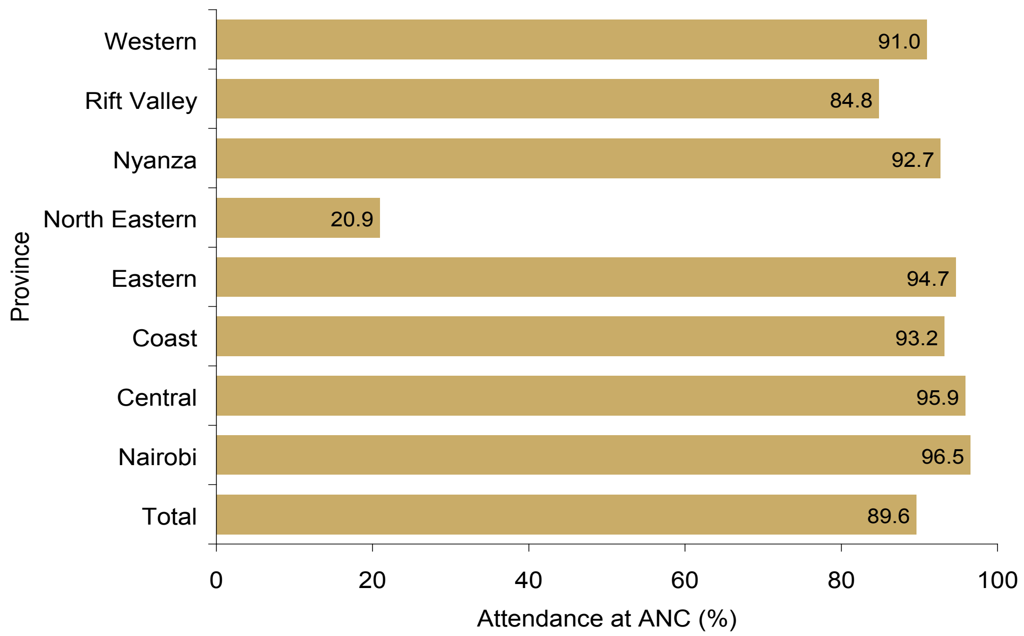


Figure 8.3a Seven of the eight provinces reported ANC attendance rates between 84.8% and 96.5%.

Among women aged 15-54 years who had their last live birth between 2003 and 2007, 89.6% reported attending an ANC at least once during pregnancy. ANC attendance rates during this time period were similar across year of birth. ANC attendance rates (at least one visit) were greater than 84% in seven of the eight provinces, with substantially lower attendance in North Eastern province at 20.9%.

ANC attendance rates were high among all age groups, ranging from 85.4% among women aged 40-49 years to 90.8% among women aged 25-29 years. ANC attendance rates were significantly lower among women with no primary education (61.3%), when compared to women with at least some primary education or higher (90.8%-96.2%). ANC attendance progressively increased with increasing wealth quintile, from 76.7% in the lowest quintile to 96.3% in the highest quintile; this association was also significant (data not shown).

Figure 8.3b Place of ANC attendance for last live birth between 2003 to 2007 among women aged 15-54 years with at least one ANC visit, Kenya 2007.

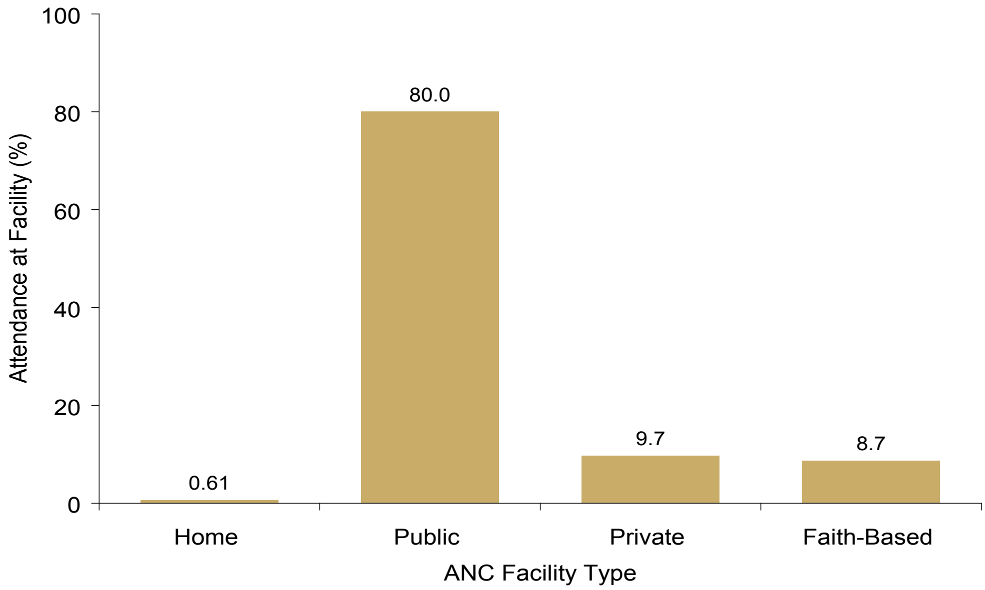


Figure 8.3b The majority of pregnant women attended public facilities for ANC.

Categories are not mutually exclusive. Some women attended more than one type of ANC facility during their last pregnancy and are included more than once in the analysis.

Of women whose last live birth was between 2003 and 2007 and who attended ANC for that pregnancy, 80.0% attended public facilities, 8.7% accessed ANC services provided by a faith-based organization (FBO), and 9.7% attended non-FBO private facilities. Only 0.61% of women reported receiving home-based antenatal care.

8.4 Knowledge of Mother-to-Child Transmission and Antiretroviral Therapy for PMTCT

This section examines knowledge of MTCT and ART for PMTCT among women aged 15-54 years whose last live birth was between 2003 and 2007. For this analysis, knowledge of MTCT and ART among women who attended an ANC is compared to that of women who did not attend an ANC.

Figure 8.4a Knowledge of modes of MTCT among women aged 15-54 years with last live birth between 2003 to 2007, by ANC attendance, Kenya 2007.

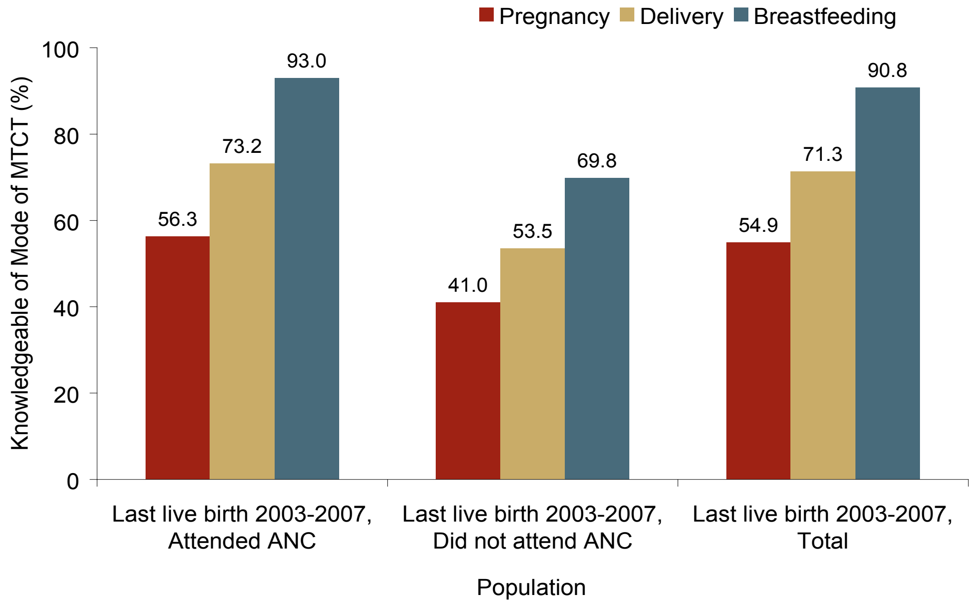


Figure 8.4a Knowledge of modes of MTCT was higher among women who had attended an ANC compared to women who had not.

Among women whose last live birth was between 2003 and 2007, knowledge of each mode of MTCT was significantly higher among women who attended ANC compared to those who had not, suggesting that counselling at an ANC on PMTCT is effective. Among all respondents, knowledge of MTCT during breastfeeding was greater than knowledge of MTCT during either pregnancy or delivery.

Figure 8.4b Knowledge of ART for PMTCT among women aged 15-54 years with last live birth from 2003 to 2007, by ANC attendance, Kenya 2007.

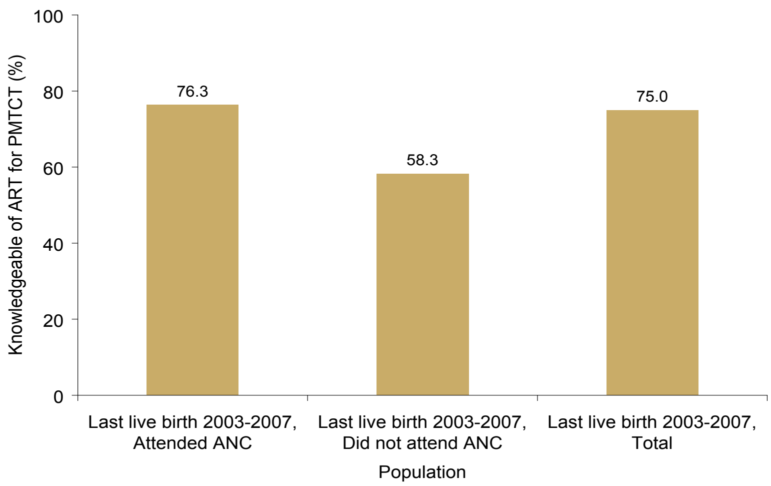


Figure 8.4b. Knowledge of ART for PMTCT was greater among women who attended an ANC as compared to women who did not.

Analysis restricted to women who correctly identified at least one mode of MTCT.

Women whose last live birth was between 2003 and 2007 and who had correctly identified at least one mode of MTCT were asked about their knowledge of ART for PMTCT. Knowledge of antiretroviral preventive therapy for PMTCT was significantly greater among women who attended an ANC (76.3%) compared to women who had not (58.3%).

8.5 HIV Counselling and Testing at ANC Clinics, 2003-2007

"Opt-out" HIV testing is offered as part of the standard package of care for all pregnant women attending maternal-child health services, in line with the Kenya's national PMTCT guidelines, following a policy change in 2004.

The approach consists of:

- Group pre-test counselling of all women attending an ANC
- After counselling, women can choose to "opt-out" and not take an HIV test
- HIV testing using a rapid-testing method with same day results for those who opt to take the test
- Individual post-test counselling for all those who have taken the test.

The analysis in this section considers women aged 15-54 years whose last live birth was between 2003 and 2007 and who attended ANC at least once during that pregnancy.

Figure 8.5a Women aged 15-54 years attending an ANC from 2003 to 2007 by year of last live birth and whether the woman was offered, tested, or not offered or tested at the ANC, Kenya 2007.

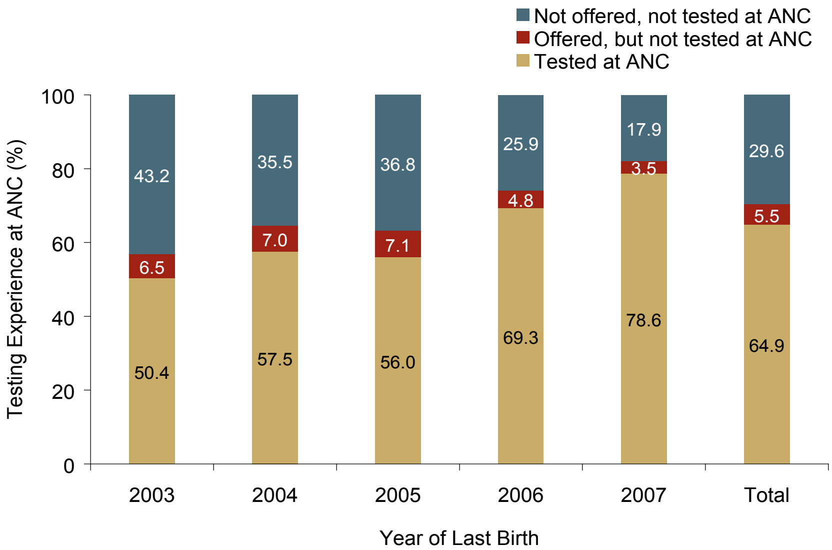


Figure 8.5a A significantly higher percent of ANC attendees received an HIV test if their last live birth was in 2007 than if their last live birth was in 2003.

The percent of ANC attendees offered an HIV test increased from 56.9% in 2003 to 82.1% in 2007, resulting in a significantly greater percent of ANC attendees being tested in 2007 (78.6%) compared to 2003 (50.4%). The proportion of women offered a test but not tested was small (3.5% in 2007), and may be attributable to test kit stock-outs, absence or unavailability of testing staff, or refusal ("opt-out") when offered an HIV test.

Of women attending public ANCs between 2003 and 2007, 69.8% were offered HIV testing and 64.4% received a test (data not shown). Similar rates were seen at other types of ANC facilities and among women receiving antenatal care at home. These estimates are provided in table 8.5 in Appendix B.8.

Data in Context: ANC Sentinel Surveillance

HIV sentinel surveillance is carried out at sites throughout Kenya using unlinked anonymous HIV testing of leftover blood samples routinely collected for other purposes. Sentinel surveillance data are used to track trends in HIV prevalence in specific populations over time and to identify disparities in infection. One of the populations surveyed is women aged 15-49 years attending ANC for the first time during their current pregnancy. ANC clinic attendees are believed to represent healthy, sexually active women of reproductive age and represent a proxy for the general population. In 2006, approximately 12,800 women were sampled from 43 sentinel sites over a three-month period for ANC surveillance.

National ANC sentinel surveillance reports show that HIV prevalence among pregnant women aged 15-49 years decreased from 9.4% in 2003 to 6.9% in 2006. ANC sentinel surveillance is one of several sources of national HIV data. Because it uses anonymous testing, it is free from participation and self-reporting biases. As the proportion of women who are tested in ANC rises and gets closer to 100%, however, the need for anonymous testing decreases because the population being tested routinely for clinical purposes approximates the population that would have been tested anonymously.

In Thailand, anonymous testing has been dropped from ANC sentinel surveillance, and data from routine clinical testing are being used. In Kenya, where more than 90% of young pregnant women (aged 25-29 years) came to ANC for care in 2007 and 80% were offered testing, ANC sentinel surveillance will soon be able to transition from anonymous surveys to reportable, routine testing to gather HIV surveillance data among pregnant women.

Please refer to the “Data in Context” section in Chapter 3 for more on ANC sentinel surveillance and alternate approaches to national HIV surveillance.

NASCOP, Sentinel Surveillance of HIV and STDs in Kenya Report, 2006.

Figure 8.5b Women aged 15-49 years who ever received an HIV test by whether they were tested at an ANC for their last live birth between 2003 and 2007, Kenya 2007.

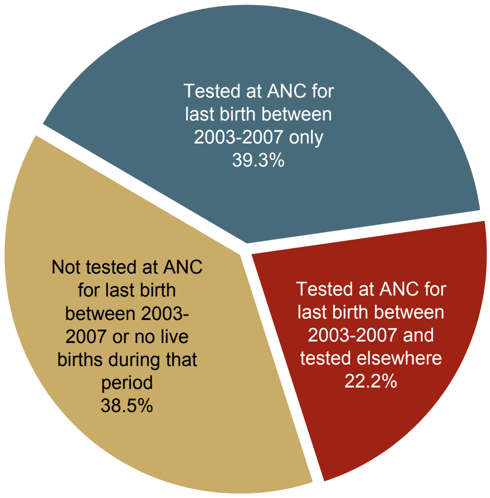


Figure 8.5b Most women (61.5%) that had ever received an HIV test had done so at an ANC between 2003 and 2007.

Of all women aged 15-49 years who ever received an HIV test, 61.5% had received an HIV test at an ANC between 2003 and 2007; of these, 63.8% had only ever been tested at an ANC (data not shown). This result reflects the substantial contribution that ANCs have made towards expanding HIV testing among women.

The next figure focuses on HIV-infected women who had their last live birth between 2003 and 2007 and attended ANC.

Figure 8.5c HIV-infected women aged 15-54 years with last live birth between 2003 and 2007 by whether they received an HIV test at an ANC, Kenya 2007.

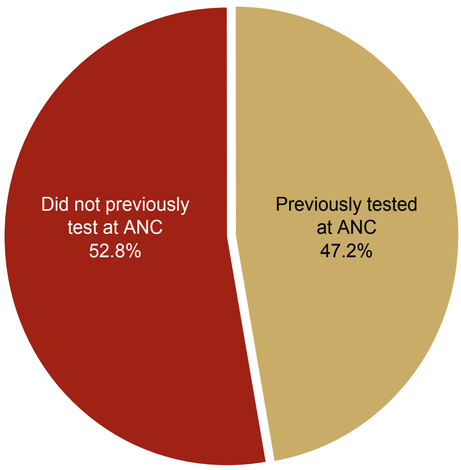


Figure 8.5c More than half of HIV-infected women who attended ANC for their last live birth between 2003 and 2007 had not previously tested at an ANC.

Analysis limited to those who attended an ANC at least once for their last live birth between 2003 and 2007; HIV infection is based on laboratory confirmed test results from the 2007 KAIS.

Overall, of women aged 15-54 years who were found to be HIV-infected in KAIS, whose last live birth was between 2003 and 2007 and who attended ANC at least once, 47.2% had previously had an HIV test at an ANC and 52.8% had not. Of those who had received a previous HIV test at an ANC, 13.1% self-reported their previous ANC test result as positive and 86.9% as self-reported as negative, that is, these participants believed themselves to be HIV-uninfected based on the results of their previous ANC test (data not shown). Significantly more women receiving an HIV test at ANC in 2007 self-reported a positive ANC HIV test result when compared to women tested in earlier years at an ANC; however, the sample size was too small to allow conclusions to be drawn about reported ANC test results.

Possible explanations for this difference between the KAIS HIV test result and a self-reported test result from the ANC testing include:

- Seroconversion or HIV infection since the previous test
- Unreliability of self-reporting of the test results
- Quality assurance/quality control issues related to HIV testing and counselling in the ANC testing program which resulted in an incorrect result
- Incorrect communication or understanding of test results.

Data in Context: National PMTCT Services and PMTCT Program Data

PMTCT services in Kenya are free and integrated into Maternal and Child Health (MCH) services. PMTCT interventions include:

- HIV testing and counselling
- Preventive treatment with antiretrovirals (maternal and infant)
- Counselling and support for appropriate infant feeding
- Access to safe obstetric care
- Family planning services

The national PMTCT program has undergone a substantial and successful scale-up over the last five years. At the end of 2003, PMTCT services were offered in 463 health facilities. By the time KAIS was completed in December 2007, this number had increased to more than 2,000 (40%) of all health facilities in the country. By the end of 2008, more than 3,000 health facilities were offering PMTCT services (60% of all health facilities).

During the period between October 2007 and September 2008, an estimated 900,000 pregnant women accessed HIV testing and counselling in MCH facilities and approximately 50,000 HIV-infected women received ART prophylaxis.

Ministry of Public Health and Sanitation, Division of Reproductive Health, Kenya.

8.6 Breastfeeding Practices

Kenya has adopted the 2006 WHO recommendation on infant and young child feeding in resource-constrained settings: HIV-infected mothers should practice exclusive breastfeeding until the infant is at least six months of age unless replacement feeding is affordable, feasible, acceptable, sustainable and safe (AFASS) for the mother and her infant before that time. At six months, if replacement feeding is still not AFASS, continuation of breastfeeding with additional complementary foods is recommended, while mother and baby continue to be regularly assessed. All breastfeeding should stop once a nutritionally adequate and safe diet without breast milk can be provided.

Knowledge of HIV status may affect a woman's breastfeeding practices. In the 2007 KAIS, women whose last live birth was between 2003 and 2007 were asked about breastfeeding practices after their last live birth. Given the small number of breastfeeding women who self-reported positive based on their last HIV test, however, it was not possible to examine breastfeeding practices by knowledge of status.

8.7 Currently Pregnant Women: ANC Attendance

The next three sections (sections 8.7 – 8.9) consider the 7.0% of women aged 15-49 years who were pregnant at the time of KAIS. These findings provide the most current data on behaviours, HIV serology and CD4 counts among pregnant women.

Figure 8.7 ANC attendance among currently pregnant women aged 15-49 years, by gestational age, KAIS 2007.

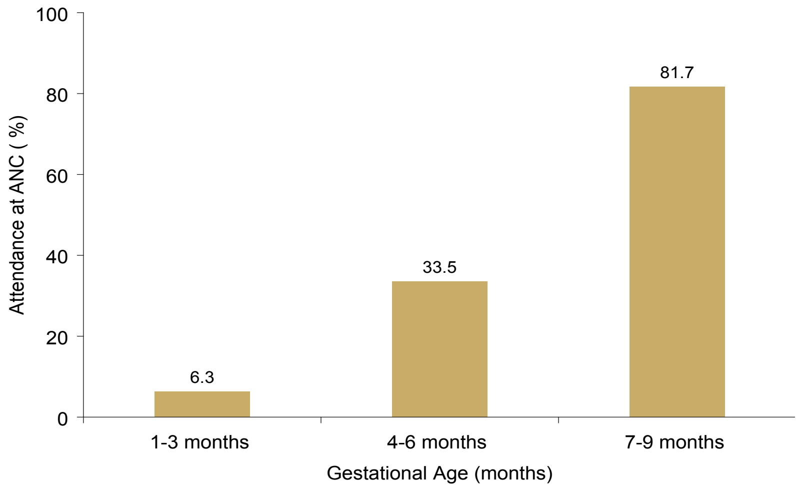


Figure 8.7 Among women in their third trimester of pregnancy, 81.7% had attended an ANC at least once.

ANC attendance rates among currently pregnant women increased with gestational age from 6.3% of women in the first trimester to 81.7% in the third.

8.8 Currently Pregnant Women: HIV Testing, HIV Status and CD4 Cell Counts

Among currently pregnant women, 66.1% reported to have ever been tested for HIV, while 33.9% had never been tested. Of the currently pregnant women who were tested in the 2007 KAIS, 9.0% were HIV infected, corresponding to an estimated 58,000 HIV-infected pregnant women nationally. Of those who were HIV-infected, 8.2% self-reported being HIV positive, 38.7% self-reported being HIV negative and 53.1% had never been tested for HIV.

Figure 8.8 HIV-infected pregnant women aged 15-49 years by CD4 count (cells/µL), Kenya 2007.

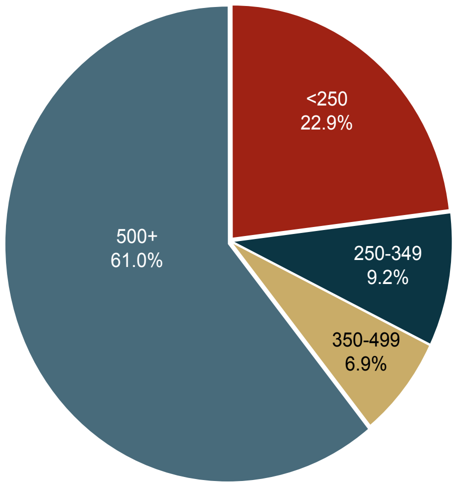


Figure 8.8 About a third of currently pregnant and HIV-infected women had a CD4 count of <350 cells/µl and were thus eligible for ART.

Among pregnant, HIV-infected women, 32.1% had a CD4 count of less than 350 cells/µl and were thus eligible for ART; 61.0% had CD4 counts greater than 500 cells/µl.

8.9 Currently Pregnant Women: HIV, HSV-2 and Syphilis

HSV-2 and syphilis infection are known to increase the risk of acquisition and transmission of HIV. Additionally, maternal genital HSV-2 infection can result in neonatal herpes encephalitis with an infant mortality rate in excess of 50% despite treatment. Babies born to mothers subclinically shedding virus, after acquiring genital herpes in the their third trimester, have a 30-50% risk of developing neonatal herpes.[5,6,7]

5 Boucher FD, Yasukawa LL, Bronzan RN, Hensleigh PA, Arvin AM, Prober CG. A prospective evaluation of primary genital herpes simplex virus type 2 infections acquired during pregnancy. Pediatr Infect Dis J 1990;9:499–504.

6 Brown ZA, Benedetti J, Ashley R, Burchett S, Selke S, Berry S, et al. Neonatal herpes simplex virus infection in relation to asymptomatic maternal infection at the time of labor. N Engl J Med 1991;324:1247–52.

7 Brown ZA, Wald A, Morrow RA, Selke S, Zeh J, Corey L. Effect of serologic status and cesarean delivery on transmission rates of herpes simplex virus from mother to infant. JAMA 2003;289:203–9.

Figure 8.9a HIV and HSV-2 co-infection among currently pregnant women aged 15-49 years, Kenya 2007.

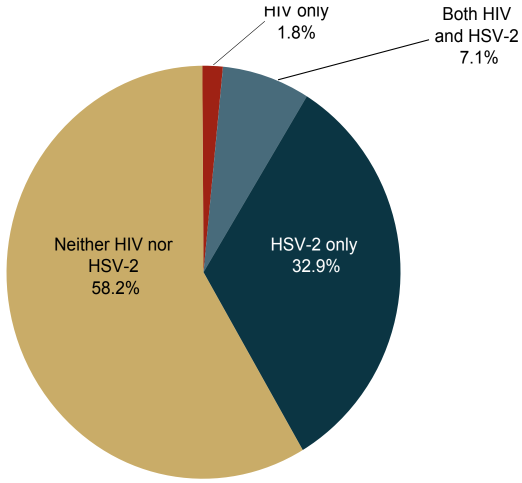


Figure 8.9a Forty percent of currently pregnant women were infected with HSV-2.

Among currently pregnant women, 7.1% were co-infected with HIV and HSV-2, 1.8% were infected with HIV only, 32.9% were infected with HSV-2 only and 58.2% were not infected with either HSV-2 or HIV.

HSV-2 prevalence was significantly higher (2.2 times) among HIV-infected pregnant women compared to pregnant women with no HIV infection (80.1% versus 36.1%, respectively). These estimates were similar to the 2007 KAIS findings for HSV-2 in the general population, which are discussed in Chapter 12. Among all women aged 15-49 years, HSV-2 prevalence was 39.8% and HSV-2 prevalence was 2.4 times higher among HIV-infected women compared to HIV-infected women (84.1% versus 35.5%, respectively) (data not shown).

Figure 8.9b HIV and syphilis among currently pregnant women aged 15-49 years, Kenya 2007.

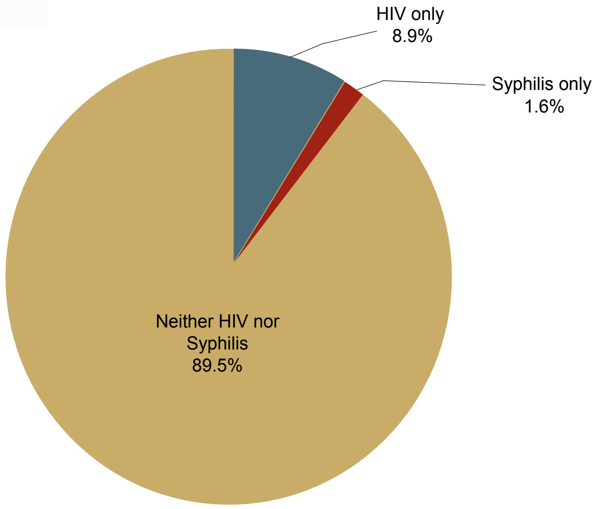


Figure 8.9b Among currently pregnant women, 1.6% were seropositive for syphilis; none of these women were co-infected with HIV.

Syphilis is most transmissible in the primary and secondary stages, but pregnant women can transmit the infection to fetuses at any point in the course of their disease, causing congenital syphilis.

Among women currently pregnant at the time of KAIS, 1.6% were seropositive for syphilis. This estimate matches the overall prevalence of syphilis seropositivity found in the 2007 KAIS for the general population (1.8%) and among all women aged 15-49 years (1.6%). The 2007 KAIS findings for syphilis infection in the general population, which are presented in Chapter 13, suggest a strong correlation between HIV and syphilis seropositivity; however, no pregnant women were found to be seropositive for both HIV and syphilis in the 2007 KAIS. This may be due to the small number of pregnant respondents infected with syphilis.

8.10 HIV Status and Sexual Partnerships

In the absence of treatment, women who become infected with HIV during pregnancy or breastfeeding have a very high risk of transmitting the virus to their infants (73% and 36%, respectively).[8] This section examines the role that sexual partners may play in increasing risk for HIV infection among HIV-uninfected women in these groups.

Respondents were asked to provide information for up to three partners with whom they had sexual intercourse in the 12 months prior to the survey (see Data in Context, Chapter 5.4). Most women (69.2%) reported having only one partner in the year before the survey. Because individuals could have had more than one partner during this time, partnership results should be interpreted as a percent of all partnerships rather than the percent of all individual KAIS participants.

Figure 8.10a Knowledge of partners' HIV status among HIV-uninfected currently pregnant or breastfeeding women aged 15-49 years who reported having unprotected sex in the 12 months preceding the survey, Kenya 2007.

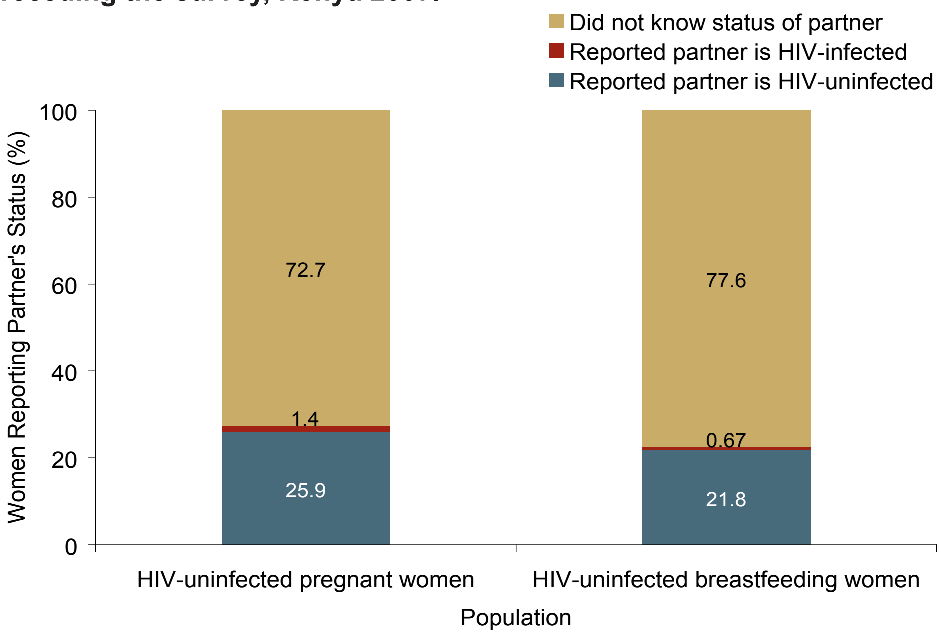


Figure 8.10a An estimated three fourths of sexual partnerships among HIV-uninfected pregnant and breastfeeding women were with men whose HIV status was unknown.*

A "partner of unknown status" refers to a partner who had never been tested for HIV, whose testing history was unknown to the respondent, or whose HIV test result was unknown to the respondent.

8 Humphrey, JH, et al: Mother to child transmission of HIV among Zimbabwean women who had their primary HIV infection during pregnancy or while breastfeeding. XVI International AIDS conference, Toronto, Canada, August 14, 2006.

Among pregnant, HIV-uninfected women who reported unprotected sex with their sexual partner(s) in the year before the survey, 72.7% of their partnerships were with partners of unknown status, and 1.4% were with men whom they reported to be HIV-infected.

Knowledge of partner's HIV status among HIV-uninfected breastfeeding women was similarly low; 77.6% of their sexual partnerships were with men of unknown HIV status and 0.7% were with men whom they reported to be HIV-infected.

Figure 8.10b considers a partnership dataset of married or cohabiting partners in the 2007 KAIS (described in Data in Context, Chapter 5.6) and determines the proportion of HIV-uninfected pregnant or breastfeeding women with cohabiting partners who were HIV-infected based on the 2007 KAIS laboratory results, as opposed to the self-reported HIV status recorded by KAIS interviewers.

Figure 8.10b HIV-uninfected women aged 15-49 years who were pregnant or breastfeeding and had an HIV-infected primary partner, Kenya 2007.

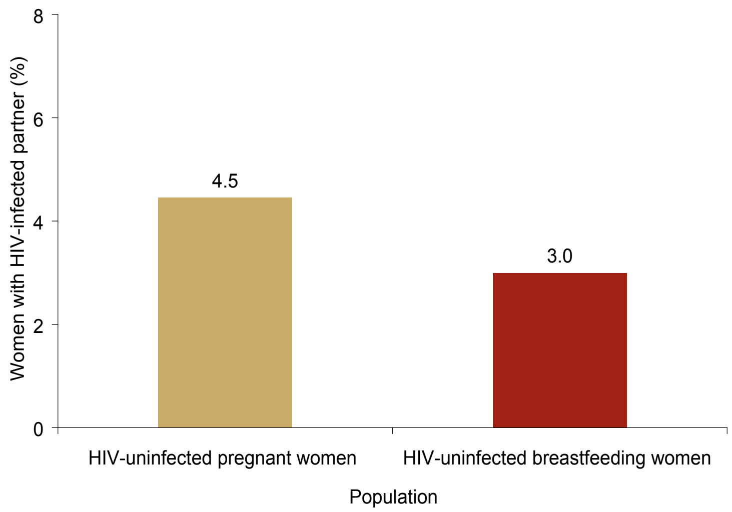


Figure 8.10b Overall, 4.5% of HIV-uninfected pregnant women and 3.0% of HIV-uninfected breastfeeding women were in HIV-discordant relationships

HIV status of primary partner is based on the 2007 KAIS laboratory test result.

Among currently pregnant HIV-uninfected women, 4.5% had a cohabiting sexual partner who was HIV-infected. Among currently breastfeeding HIV-uninfected women, 3.0% had an HIV-infected cohabiting sexual partner.

8.11 Fertility Desires

Only women who were married or cohabiting with a man and had not been sterilized by tubal ligation or hysterectomy were asked about their desires for children in the future. For analysis purposes, this group was then limited to women of reproductive age (15-49 years). Although sterilized women were not asked about desire for children in the 2007 KAIS, for purposes of analysis they were assumed to not want a child ever in the future. Women who could not have a child for reasons other than female sterilization (i.e. infertility, partner infertility, or partner sterilization) were excluded from analysis.

Figure 8.11a Desire for a child in the future among married or cohabiting women aged 15-49 years, Kenya 2007.

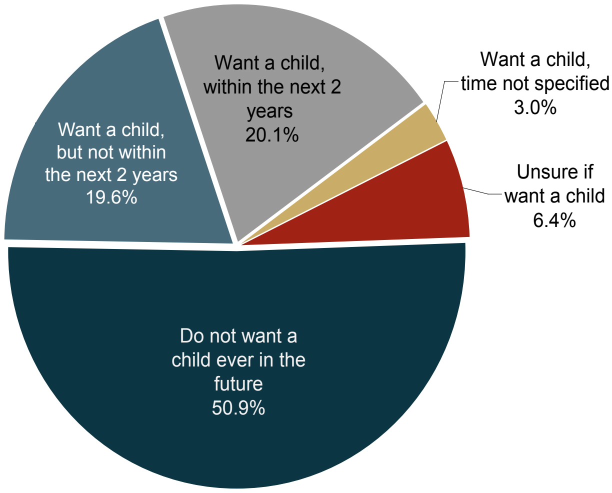


Figure 8.11a About half (50.9%) of all women aged 15-49 years did not want a child ever in the future.

Among women aged 15-49 years who were married or cohabiting with a man, 50.9% did not want a child ever in the future and 19.6% wanted a child but not within the next two years.

Figure 8.11b Desire for a child in the future among married or cohabiting women aged 15-49 years, by self-reported HIV status, Kenya 2007.

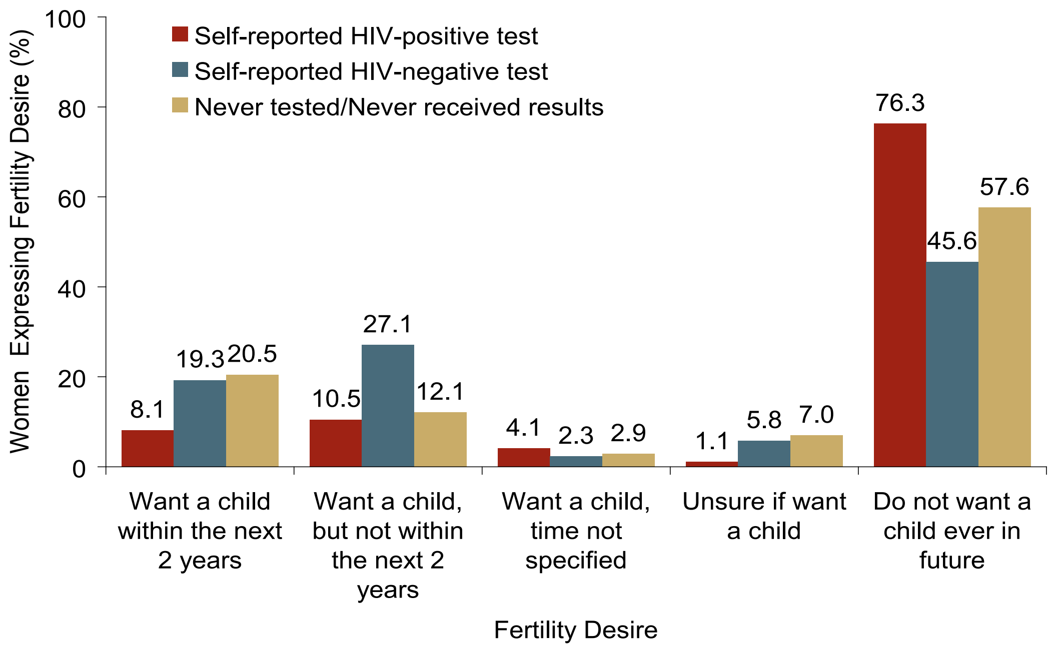


Figure 8.11b Significantly more women who self-reported positive did not want a child ever in the future compared with women who self-reported negative.

Fertility desires were significantly associated with self-reported HIV status. Among women who self-reported positive, 8.1% wanted a child within the next two years; 10.5% wanted a child, but not within the next two years; and 76.3% did not want a child ever in the future. Among women who self-reported negative, that is, believed themselves to be HIV-uninfected based on the results of their last HIV test, 19.3% wanted a child within the next two years; 27.1% wanted a child, but not within the next two years; and 45.6% did not want a child ever in the future. Fewer women who self-reported positive wanted a child either in the next two years or in more than two years time when compared to women who self-reported negative. More women who self-reported positive did not want another child ever in the future when compared to women who self-reported negative.

Only 44.6% of women aged 15-49 years had ever been tested for HIV (see Chapter 4), suggesting that many women make fertility decisions independent of knowing their HIV status. Therefore, to quantify the need for PMTCT program services, we also examined fertility desires among women by their actual HIV infection status (based on laboratory confirmed 2007 KAIS test results).

Figure 8.11c Desire for a child in the future among women aged 15-49 years by actual HIV status, Kenya 2007.

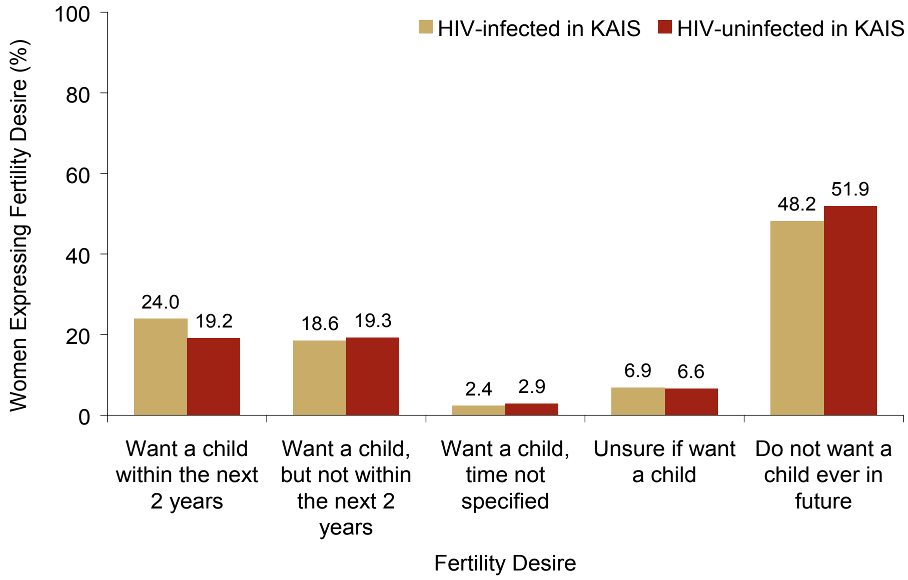


Figure 8.11c Fertility desires were not significantly different between HIV-infected women and HIV-uninfected women.

HIV status is based on the 2007 KAIS laboratory test result.

Among women who were HIV-infected based on the 2007 KAIS test results, 24.0% wanted a child in the next two years; 18.6% wanted a child but not within the next two years and 48.2% did not want a child ever in the future. Fertility desires did not differ significantly by actual HIV infection status.

8.12 Contraceptive Use

The next figure displays the unmet need for contraception among women aged 15-49 years in marital or cohabiting relationships who either did not want a child ever in the future or wanted a child but not in the next two years. This group comprised 33.6% of all women participating in the 2007 KAIS. The 6.1% of all women who were currently pregnant at the time of the survey were excluded from the analysis.

Figure 8.12a Contraceptive use among women in marital or cohabiting relationships aged 15-49 years not wanting a child ever in the future or wanting a child but not in the next two years, Kenya 2007.

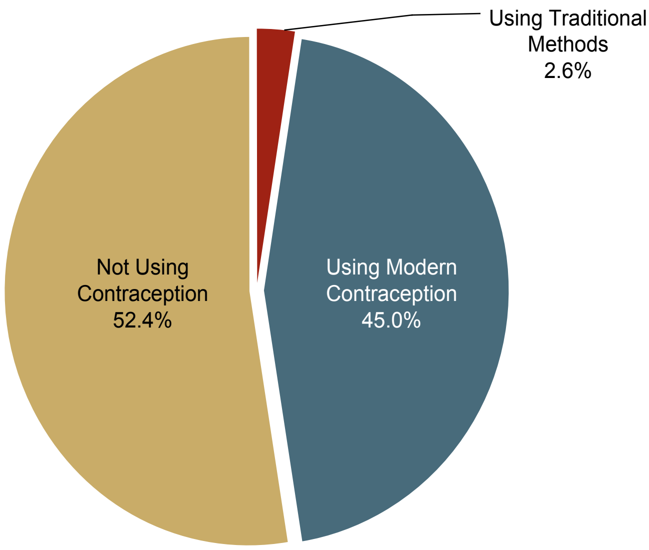


Figure 8.12a Almost half (45.0%) of women in marital or cohabiting relationships who did not want a child in the next two years or ever in the future were using modern contraception.

Modern contraception includes male or female sterilization, oral pill, intrauterine device, injections, implant, condom, and female condom. Traditional methods include withdrawal and rhythm/natural methods.

Of all women aged 15-49 years who either did not want a child ever in the future or who wanted a child but not in the next two years, 45.0% were using modern contraceptive methods, and 52.4% were not using any contraception at all. These findings indicate a large unmet need for contraception.

Figure 8.12b Contraceptive use among women in married or cohabiting relationships aged 15-49 years not wanting a child ever in the future or wanting a child but not in the next two years, by self-reported knowledge of HIV status, Kenya 2007.

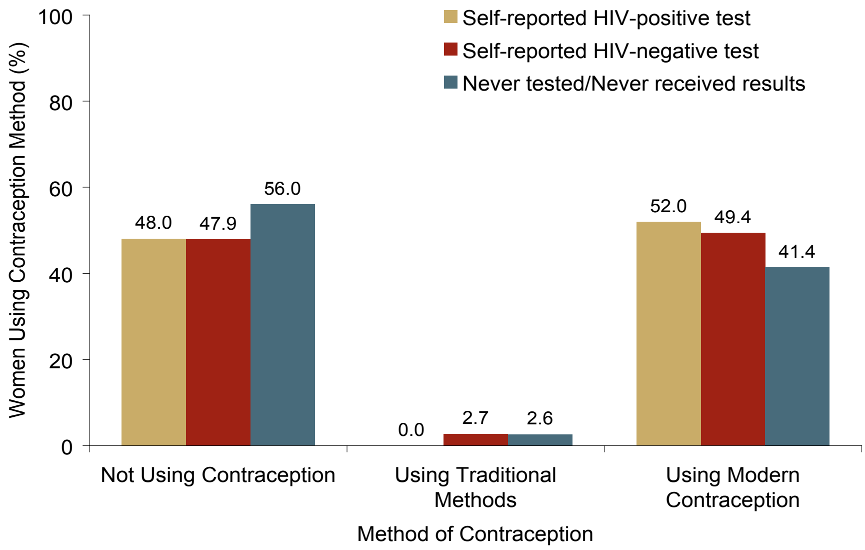


Figure 8.12b Contraceptive use was similar between women who self-reported positive and those who self-reported negative based on the result of their last HIV test.

Modern contraception includes male or female sterilization, oral pill, intrauterine device, injections, implant, condom, and female condom. Traditional methods include withdrawal and rhythm/natural methods.

Contraceptive use was not significantly associated with self-reported HIV status. Similar proportions of women who self-reported positive and women who self-reported negative were using either modern contraception, traditional methods, or no contraception at all.

Given that less than half of women aged 15-49 years reported ever having been tested for HIV, we repeated the analysis, stratified by the actual HIV infection status of the women based on the 2007 KAIS HIV test result, to quantify the unmet need for contraception.

Figure 8.12c Contraceptive use among married or cohabiting women aged 15-49 years who do not want a child ever in the future or in the next two years, by actual HIV status, Kenya 2007.

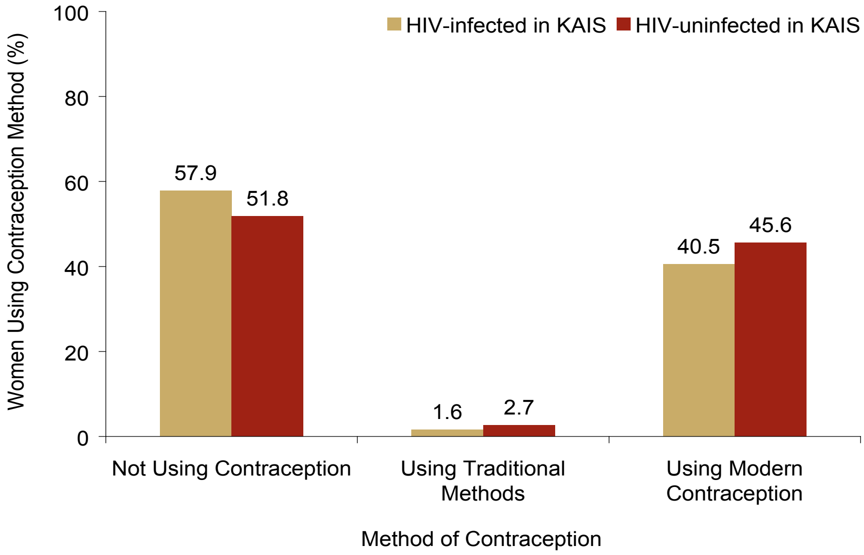


Figure 8.12c More than half (57.9%) of HIV-infected women in married or cohabiting relationships who had a need for contraception were not using any contraception.

Modern contraception includes male or female sterilization, oral pill, intrauterine device, injections, implant, condom, and female condom. Traditional methods include withdrawal and rhythm/natural methods.

Of all married or cohabiting women aged 15-49 years, 70.5% did not want a child ever in the future or wanted a child but not in the next two years. Of these women for whom we also had an HIV test result, it appears that more HIV-infected women were not using any contraception (57.9%) compared to HIV-uninfected women (51.8%), though this difference was not significant. Fewer HIV-infected women were using modern contraception (40.5%) when compared to HIV-uninfected women (45.6%) but this difference was also not significant. More than 50% of women were not using any contraception at all, irrespective of actual HIV infection status.

8.12 Gaps and Unmet Needs

- **Although ANC attendance rates were high, one in 10 women did not attend an ANC and could not access PMTCT services. Efforts should be directed to reaching those women not attending an ANC.**
- **ANC testing increased over the years, but gaps still remain: some women attending ANC in 2007 were not offered HIV testing. Additional efforts are required to ensure "opt-out" HIV testing is offered to all ANC attendees as well as testing options for sexual partners.**
- **Most ANC attendees received testing and counselling for HIV; consideration should be given to the future use of PMTCT program data to replace ANC sentinel surveillance.**
- **ANC attendance was low among women in their first and second trimesters of pregnancy. A greater number of women may have exposure to HIV testing and PMTCT services if ANC begins earlier in pregnancy. Early prenatal care should be a priority.**
- **Prevention of HIV infections in pregnant and breastfeeding women must be addressed; among HIV-uninfected pregnant or breastfeeding women who reported having unprotected sex, the majority of their sexual relationships were with men whose HIV status was unknown to them.**
- **There is a large unmet need for family planning among all women; this need should be addressed most urgently among HIV-infected women. Fertility desires among women were significantly associated with knowledge of HIV status, but contraceptive use was not. Fertility desires should be considered in conjunction with contraceptive options.**

9

Blood and Injection Safety

9.1 Key Findings

- Among all respondents aged 15-64 years, 2.3% reported donating blood in the year before the survey; almost half of donors (48.3%) reported donating in response to a request from a blood transfusion service.
- Among adults who reported ever receiving a blood transfusion, 7.0% were HIV-infected. This figure was not significantly different from persons who did not receive a blood transfusion (7.1%).
- An estimated 33.1% of adults reported that they received at least one medical injection in the year before the survey. Though HIV prevalence was significantly higher among both women and men who reported medical injections in the past year compared to women and men who did not, causality cannot be determined and further adjustments are needed to control for possible confounders.
- The use of clean needle packets for medical injections appeared to be widely adopted in clinical settings.

9.2 Introduction

Assuring a safe and adequate the blood supply is the priority of the Kenya National Blood Transfusion Service (KNBTS), which has evolved from individual hospital-based blood programs to a national network of regional blood collection, processing and distribution to transfusing facilities that provides coverage for much of the nation. However, coverage is not 100%. There are still some family/replacement donors (that is, persons who donate at the request of family or friends) in the KNBTS system and some hospitals continue to operate independently, such as Aga Khan, a private teaching hospital in Nairobi which has large labour and delivery services. Donations from volunteers and family/replacement donors are all subject to the same testing by the KNBTS and the quality of hospital programs ranges from basic to international standards with external quality assurance systems.

In November 2001 Kenya introduced its first blood safety policy and in January 2007 established National Standards for Blood Banks and Transfusion Services. KNBTS is structured to collect, screen and distribute blood from regular, voluntary, non-remunerated (that is, non-paid) donors based on international standards of quality management, testing algorithms and standardised procedures.

Regular, voluntary, non-remunerated blood donors are preferred over family/replacement donors or donors who are paid because the latter groups have been shown to have higher HIV prevalence worldwide.[1] All donated blood units are screened for HIV, hepatitis B and C, and syphilis. Blood units found to be positive for any of these infectious agents are discarded.

1 WHO Global Database on Blood Safety: Report 2001 – 2002. Accessible at : http://www.who.int/bloodsafety\GDBS_Report_2001-2002.pdf.

In this chapter, we report on the proportion and demographics of adults aged 15-64 years in the 2007 KAIS who reported donating blood in the past year, the source of their blood donation request and explore blood safety issues. We also report on the frequency of injections by medical personnel and traditional healers, and the use of safe injection equipment in clinical settings.

Appendix B.9 provides sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

Population estimates reported in this chapter were calculated based on the 2007 projected population reported in the *Revised Population Projections for Kenya 2000-2020* (Kenya National Bureau of Statistics, August 2006). Weighted estimates for selected indicators from the 2007 KAIS were used in these calculations. Methods for calculating population estimates are described in Appendix A.

It is important to remind readers that as with other chapters in this report, the findings presented in this chapter are based on univariate and bivariate analyses only. Findings should be interpreted cautiously as potential confounders which may have biased associations were not controlled for in the analysis. In addition, the 2007 KAIS was based on cross-sectional data and therefore causality cannot be inferred.

Data in Context: National Blood Transfusion Services

The Kenya National Blood Transfusion Service (KNBTS), established in 2001, ensures safe and adequate blood supplies for the country. It collects, tests, processes, and distributes blood and promotes its appropriate use. Previously, blood was collected from family and replacement donors at hospital-based transfusion units that lacked standard procedures. The 2001 policy guidelines on blood transfusion recommended a centralized system which would later be independent. In January 2007, Kenya established National Standards for Blood Banks and Transfusion Services. This system ensures standardization of procedures, improved quality of blood supplies and thus, reduced transmission of HIV and other infections. The KNBTS has raised the total number of blood units collected per year from 41,869 in 2003 to 123,787 in 2007.2

9.3 Blood Donations

The section related to blood donation in the 2007 KAIS interview asked the following three questions:

- Have you been asked to donate blood in the last year?
- Who asked you to donate blood the last time? (blood transfusion service, family/friend, or other/unknown)
- Have you donated blood in the last year?

Among participants who reported that a family or friend asked them to donate blood in the last year, we assumed that the vast majority of these were family/ replacement donors outside of the

KNBTS system. However, it is possible that some in this group may have been asked by family or friends to donate to a blood transfusion service as a voluntary non-remunerated blood donor. In addition, though the KNBTS is moving towards 100% voluntary, non-remunerated donations, it is possible that some of the participants that reported donating at the request of a blood transfusion centre included family/ replacement donors.

Overall, 2.3% of participants reported donating blood in the year before the survey. This projects to an estimated 460,000 blood donors nationwide. A significantly higher percent of men (4.0%) compared to women (1.1%) surveyed in the 2007 KAIS reported that they donated blood in 2007.

Figure 9.3a Source of blood donation request among adults aged 15-64 years who reported donating blood in the year before the survey, Kenya 2007.

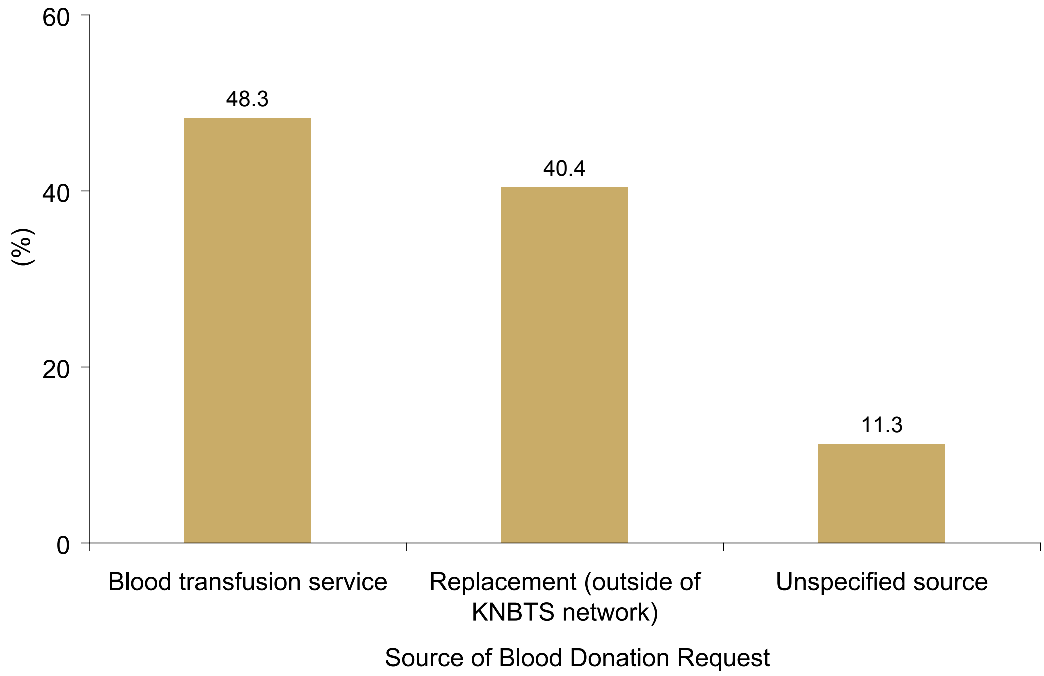


Figure 9.3a Of respondents who reported donating blood in the year before the survey, about half (48.3%) were requested to donate to a blood transfusion service.

Of all participants who reported donating blood in the past year, almost half (48.3%) reported that they donated based on a request from a blood transfusion service, and 40.4% reported that they donated at the request of a family or friend as a family/replacement donor outside of the KNBTS network. The remaining 11.3% did not report the specific source of their blood donation requests. Nationally, this represents an estimated 198,000 adults who donated in response to request from a blood transfusion and another 166,000 adults who reported donating at the request of a friend or family member. The remaining 46,000 donors came from unspecified sources.[2]

2 National population estimates of blood donors stratified by blood donation request do not sum to the national, unstratified population estimate presented in this section (460,000). This is most likely due to small differences between the distribution of individuals in the projected population for 2007 (KNBS, August 2006) and distribution of the KAIS sample.

Data in Context: Differences in the 2007 KNBTS and KAIS National Estimates for Blood Donation

Based on KNBTS statistics, approximately 124,000 blood units were collected by the KNBTS centres in 2007; this is roughly 62.6% of the 2007 KAIS national estimate of 198,000 [95% CI 160,000, 240,000] persons who reported donating to a blood transfusion service.

The reasons for the discrepancy in the two estimates need further evaluation, but may include the following possible explanations. The question in the 2007 KAIS that specifies source of blood donation request among donors in the year before the survey was limited to three possible sources: blood transfusion service, family/friend, or other/unknown. Though most persons who donate blood do so through the KNBTS network, it is still possible to voluntarily donate blood to a private hospital blood bank outside of this network. Therefore, the denominators for the KNBTS and KAIS estimate are not necessarily the same. Further, the 2007 KAIS data are based on participant self-report and are therefore subject to participant recall bias. In the 2007 KAIS, participants were asked if they had donated in the past year, though it is possible that the participant reported donations beyond the one year time frame. Finally, in contrast to the KNBTS estimate, the 2007 KAIS estimate is an extrapolated estimate based on the 2007 projected population aged 15-64 years in the 1999 Analytical Report on Population projections, Volume II, Kenya National Bureau of Statistics (KNBS). Because there are strict eligibility criteria for age, weight, and clinical ranges to donate blood in Kenya, not all persons aged 15-64 years are equally eligible to donate blood. Population projections used to calculate the national estimate for blood donation were based on age, sex and provincial distributions in the total general population of persons aged 15-64 years and not the eligible donor population. In addition, there is a possibility that KNBTS data were incomplete due to reporting lapses or inconsistencies across the country. These in combination would have likely contributed to an overestimation of the 2007 KAIS national estimate of reported blood donations in the year before the survey.

Though the discrepancy between the KNBTS and KAIS estimates is considerable, the 2007 KAIS estimate nonetheless gives some indication of the pool of potential blood donors that the KNBTS network may not reaching.

Figure 9.3b Source of blood donation request among adults aged 15-64 years who reported that they donated blood in the year before the survey by province, Kenya 2007.

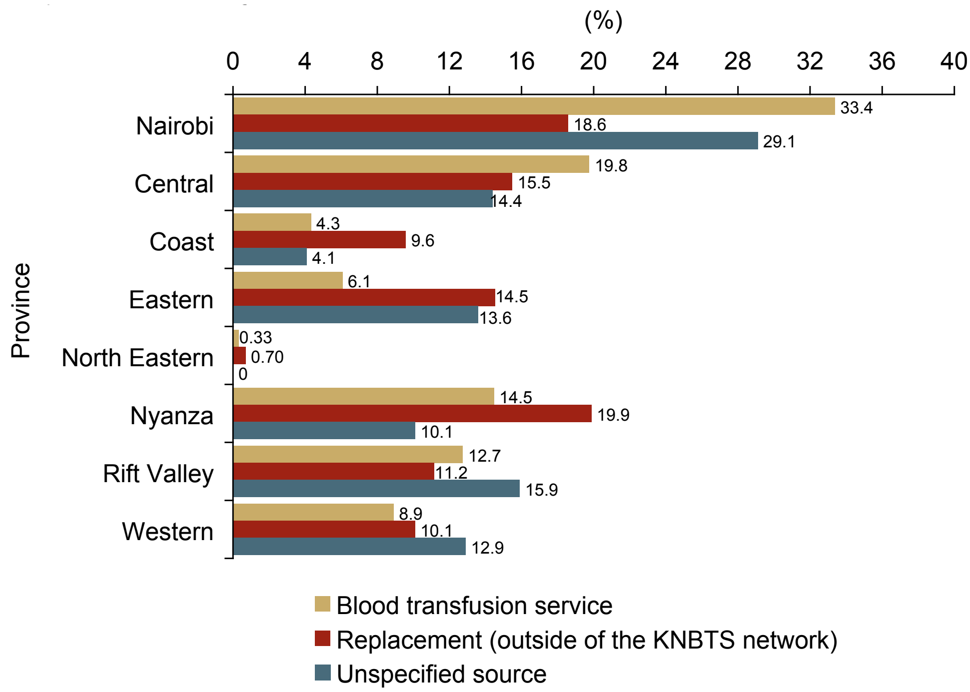


Figure 9.3b Among all persons that reported donating blood at the request of a blood transfusion service, the majority were from Nairobi and Central province. Among those that reported donating at the request of family or friends (that is, as a replacement/family donor), most were from Nyanza and Nairobi provinces.

The weighted percent indicated for each category of source of donation request totals to 100% across provinces.

Among reported donors in the year before the survey, the source of donation request varied significantly by province. Donation requests from blood transfusion services were highest in Nairobi province (33.4%) followed by Central province (19.8%). Family/replacement donor requests were highest in Nyanza (19.9%) and Nairobi (18.6%) provinces. Donation requests from unspecified sources were highest in Nairobi province (29.1%).

Figure 9.3c Source of blood donation request among women and men aged 15-64 years among those who reported donating blood in the year before the survey, Kenya 2007.

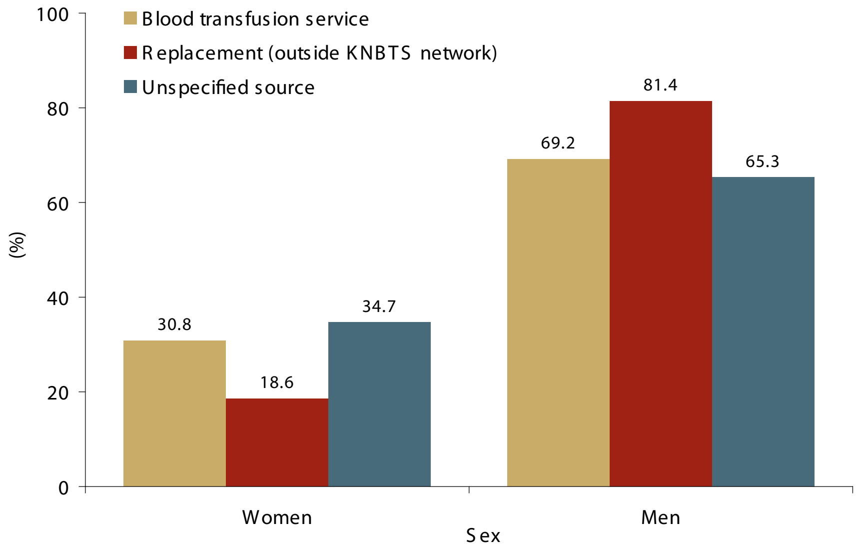


Figure 9.3c Most blood donors, regardless of the source of donation request, were men.

The weighted percent indicated for each category of source of donation request totals to 100% between the two sex categories.

More men compared to women donated in response to donation requests from a blood transfusion service (69.2% compared to 30.8%, respectively), family or friends as a family/replacement donor (81.4% versus 18.6%, respectively), or unspecified sources (65.3% versus 34.7%, respectively).

Figure 9.3d Source of blood donation request among adults aged 15-64 years among those that reported donating blood in the past year by 5-year age group of donor, Kenya 2007.

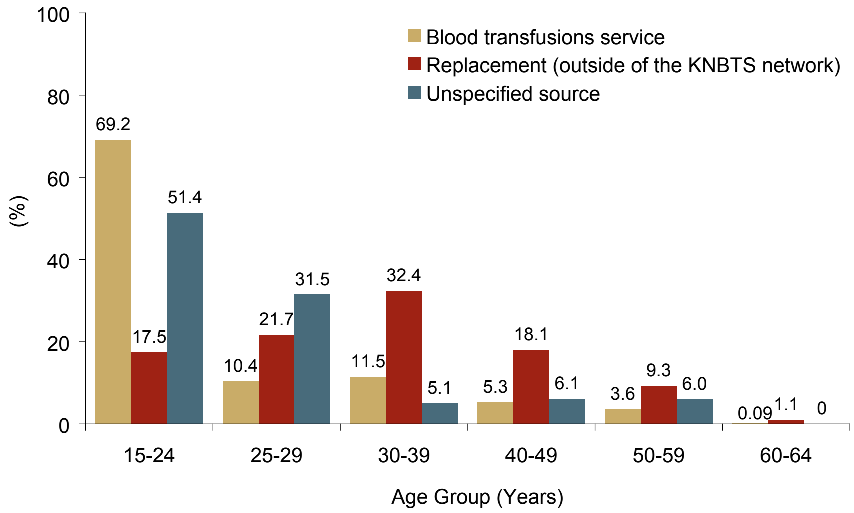


Figure 9.3d The majority of donors who donated at the request of a blood transfusion service and unspecified places tended to be under the age of 25 years. In contrast, the majority of donors who donated on behalf of family or friends were older, with a peak among persons aged 30-39 years.

The weighted percent indicated for each category of source of donation request totals to 100% across age groups.

Persons who reported donating blood based on a request from a blood transfusion service were young; 69.2% of these donors were under 25 years of age, as were 51.4% of persons who donated in response to requests from unspecified places. By comparison, 60.9% of those who reported donating on behalf of family and friends as a family/replacement donor were 30 years or older.

Figure 9.3e HIV prevalence among adults aged 15-64 years among those who reported donating blood in the past year by source of blood donation request, Kenya 2007.

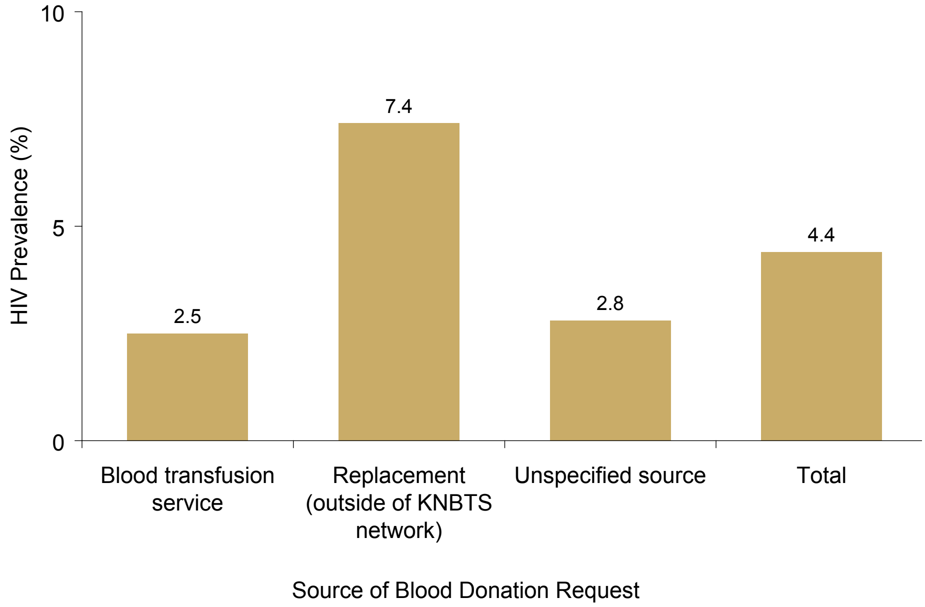


Figure 9.3e HIV prevalence among donors who reported that they donated based on a request from a blood transfusion service in the year before the survey was significantly lower than donors who reported that they donated based on a request from family or friends as a replacement donor.

HIV prevalence was 7.4% among donors who reported donating based on a request from family or friends in the year prior to the survey. This was marginally higher than HIV prevalence among persons who reported that they had donated on behalf of a request from a blood transfusion service (2.5%) and persons who had donated based on a request from an unspecified source (2.8%) in the year before the survey.

Although the difference in HIV prevalence by source of donation request was marginally significant, lower HIV prevalence among persons who donated on behalf of a request from a blood transfusion service may suggest that a volunteer-based blood supply is safer. It is important to note that these data were not adjusted for possible confounding factors such as age, which may have biased this finding. For example, persons who reported donating to a blood transfusion service were younger (median age: 21.5 years) than persons who reported donating as a family/replacement donor (median age: 33 years). Further, as described in Chapter 2 of this report, younger persons in the 20-24 year age group had lower HIV prevalence rates than older persons in the 30-34 year age group (5.2% versus 11.6%, respectively).

According to 2007 KNBTS statistics, 1.2% of all units donated to the KNTBS network tested positive for HIV. This figure is made up of mostly volunteers and some family/replacement donors. This figure was not statistically different from the 2007 KAIS estimate of HIV prevalence among persons donating to blood transfusion services (2.5%).

9.4 Blood Transfusions

Although the risk is very small, blood transfusions have the potential of transmitting infections caused by viruses, such as HIV, to the recipient. With improved testing, the rate of transfusion-transmitted HIV infection has reduced substantially. This section focuses on transfusion history among KAIS respondents and HIV prevalence among those who had ever received a blood transfusion.

Figure 9.4a Time since last blood transfusion among adults aged 15-64 years who reported ever receiving a blood transfusion, Kenya 2007.

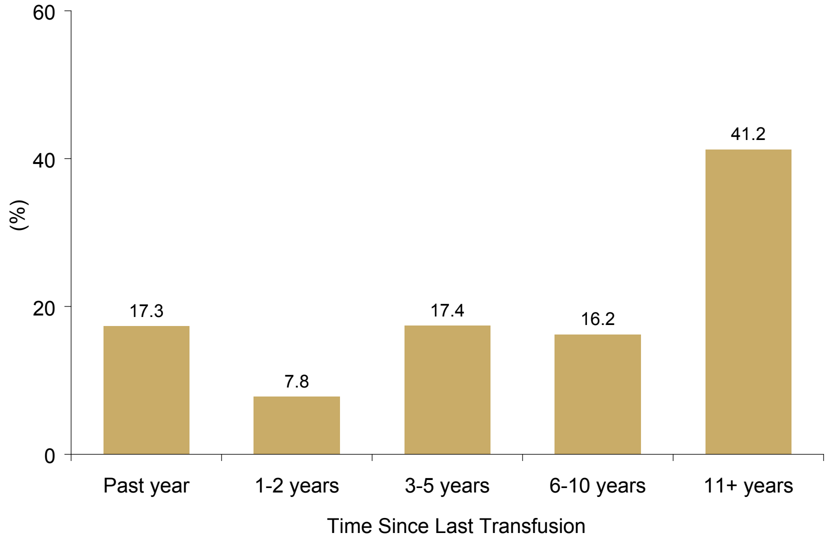


Figure 9.4a Most of the reported blood transfusions among participants occurred more than 10 years ago.

Overall, a total of 6.7% adults aged 15-64 years reported ever receiving a blood transfusion. Among this group, 41.2% received their last transfusion more than 10 years prior to the survey; 17.3% of adults with a transfusion history reported that their last transfusion occurred during the year before the survey. Nationally, an estimated 222,000 adults received a blood transfusion the year before the survey. As previously described, this national estimate is based on extrapolations from projected population sizes reported in the *Revised Population Projections for Kenya 2000-2020* (Kenya National Bureau of Statistics, August 2006) and therefore may not be representative of the population eligible for blood transfusion in the country.

Figure 9.4b HIV prevalence among adults aged 15-64 years who reported receiving a blood transfusion by time since last transfusion, Kenya 2007.

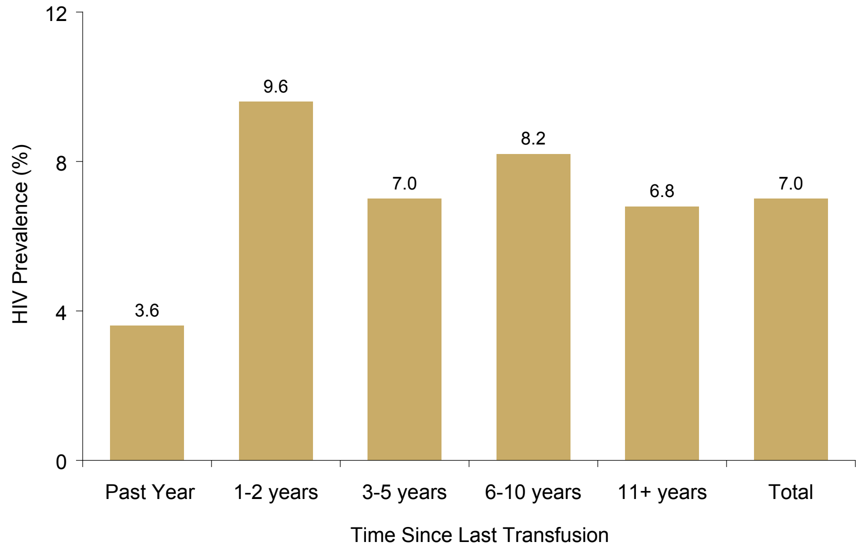


Figure 9.4b HIV prevalence appeared higher among those who reported receiving a blood transfusion one to two years ago, but this difference was not statistically significant.

HIV prevalence was similar among persons who reported ever receiving a blood transfusion and persons who did not (7.0% and 7.1%, respectively). Among those who reported receiving a transfusion in the year before the survey, HIV prevalence was 3.6%. For those reporting a transfusion more than a year before the survey, HIV prevalence ranged from 6.8% to 9.6%. The differences in these estimates were not statistically significant.

9.5 Medical Injections

The 2007 KAIS collected data on the frequency of medical and traditional injections among adults. The risk of acquiring HIV from a medical injection is based on reuse or a needle stick due to improper disposal. Standard universal precautions, such as using single-use clean injection packages, remain critical in preventing medical transmission of HIV in all clinical settings.

Overall, 33.1% of adults aged 15-64 years reported receiving at least one medical injection from a doctor, nurse, pharmacist or dentist in the year before the survey. Significantly more women than men reported at least one medical injection (38.3% versus 26.1%, respectively). Extrapolated to the national adult population aged 15-64 years, an estimated 6.6 million people received at least one injection in the year before the survey.

Figure 9.5a Preferred form of medication among women and men aged 15-64 years, Kenya 2007.

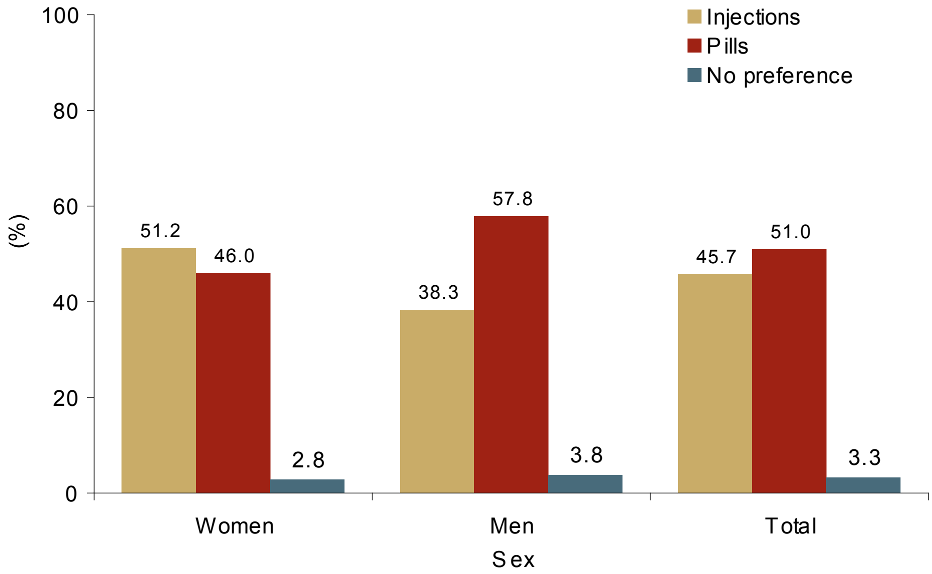


Figure 9.5a Men were significantly more likely to prefer pills and significantly less likely to prefer injections compared to women.

Overall, 51.0% of respondents reported that they preferred pills as a form of medication, 45.7% preferred injections, and 3.3% had no preference. Differences by sex were observed: men were significantly more likely to prefer pills than women (57.8% versus 46.0%, respectively).

Figure 9.5b Number of reported medical injections in the year before the survey among adults aged 15-64 years, Kenya 2007.

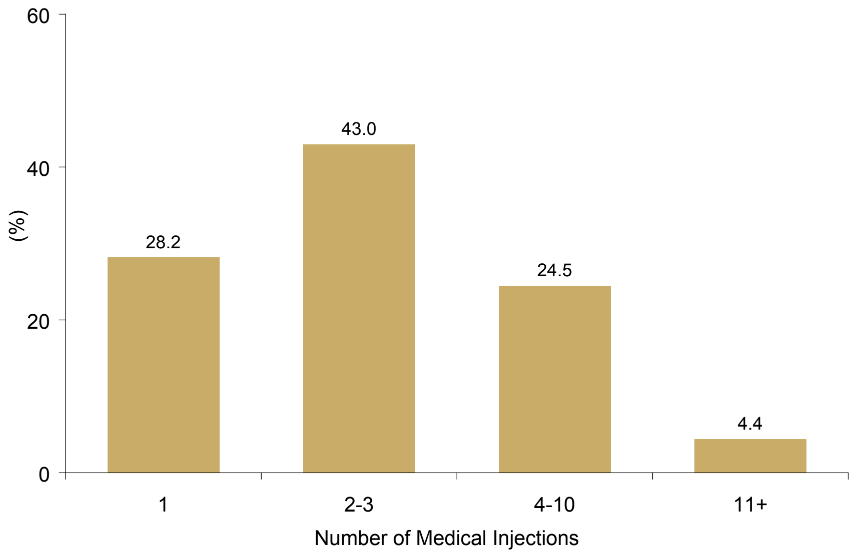


Figure 9.5b Most respondents who had reported medial injections in the past year had received two to three injections.

Of respondents who reported a medical injection in the year prior to the survey, 28.2% reported receiving only a single injection, 43.0% reported receiving two to three injections, 24.5% reported receiving four to 10 injections, and 4.4% reported receiving 11 or more injections. The number reporting one injection in the year prior to the survey varied significantly by sex (25.3% for women and 33.7% for men).

In total, 0.46% of all participants reported receiving at least one injection from a traditional practitioner or healer in the past year; 33.1% of all participants reported injections from doctors, nurses, pharmacists, dentists or other health workers. Among persons who reported medical injections from doctors, nurses, pharmacists, dentists or other health workers in the year before the survey, 95.3% reported that they observed the health worker take the needle and syringe for the injection from an unopened packet.

Figure 9.5c HIV prevalence among women and men aged 15-64 years by reported history of medical injection in the year before the survey, Kenya 2007.

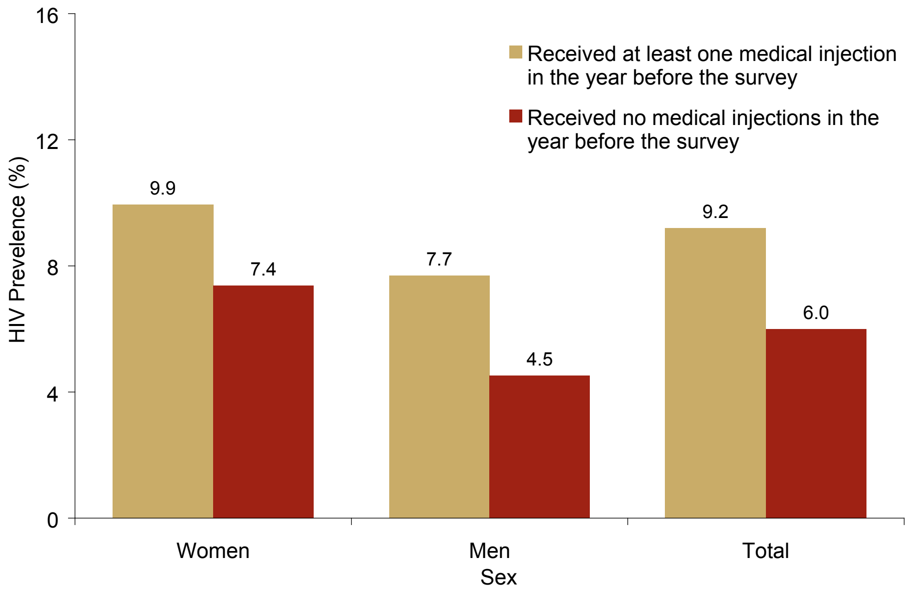


Figure 9.5c Among women and men who reported a medical injection in the year before the survey, the prevalence of HIV was significantly higher than those who reported no medical injection.

HIV prevalence among adults who reported medical injections in the year before the survey (9.2%) was significantly higher than among adults who did not (6.0%). This significant difference also was observed for both women and men separately (9.9% versus 7.4% for women and 7.7% versus 4.5% for men, respectively).

Caution should be used in interpreting these findings. The 2007 KAIS data are based on cross-sectional data for which causality cannot be inferred. Further, possible confounders, such as self-reported knowledge of HIV infection, may have biased this association and were not adjusted for in this analysis. Notably, HIV-infected persons tend to have more illness than HIV-uninfected persons and therefore may be more likely to receive injections as part of their medical care for HIV. In the 2007 KAIS, respondents who knew they were HIV-infected based on their last test result were significantly more likely to receive four or more injections in the year prior to the survey compared to persons who believed themselves to be HIV-uninfected based on their last HIV test (49.6% versus 29.1%, respectively).

Figure 9.5d HIV prevalence among adults aged 15-64 years by reported number of medical injections in the year before the survey, Kenya 2007.

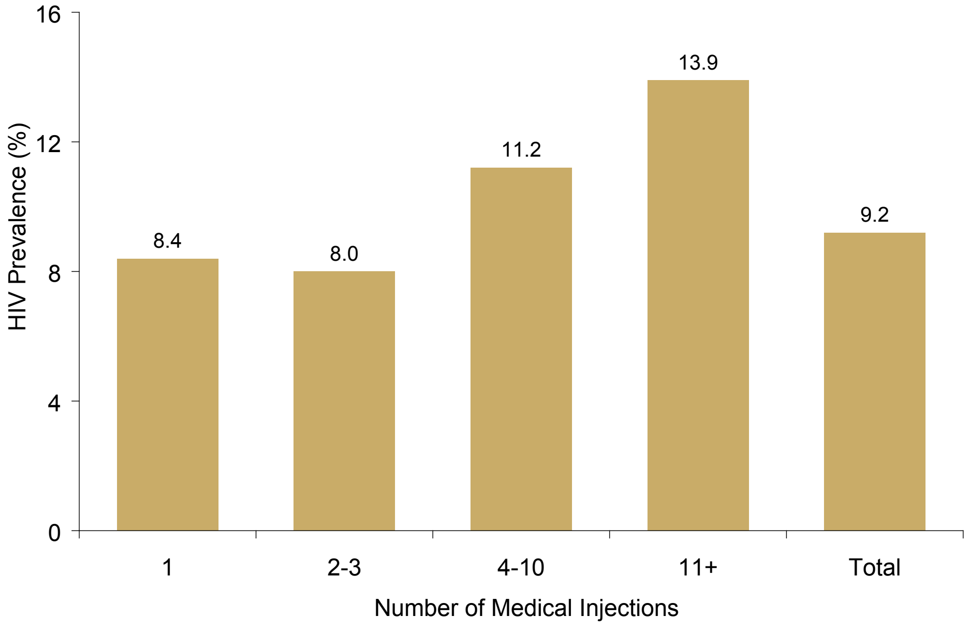


Figure 9.5d HIV prevalence significantly increased as the number of injections reported in the past year increased.

The prevalence of HIV among adults who reported a medical injection in the past year was 9.2%, with increasing number of reported injections in the past year, HIV prevalence increased significantly from 8.4% among individuals receiving a single injection to 13.9% among individuals receiving 11 or more injections in the past year.

As described earlier, these findings should be carefully interpreted as causality cannot be determined from these cross-sectional data. In addition, possible confounders which could have substantially biased the observed association were not adjusted for in the analysis. As described in figure 9.5c, knowledge of HIV infection is a possible confounder as HIV-infected persons are more likely to experience illness and may be more likely to receive injections than HIV-uninfected persons. An additional confounder for this association may be sex, as women in the 2007 KAIS had significantly higher prevalence of HIV compared to men. Additionally, as stated earlier in this section, significantly more women reported receiving at least one medical injection in the year before the survey compared to men.

9.6 Gaps and Unmet Needs

- **HIV prevalence appeared to be lower among donors who reported donating in response to requests from the blood transfusion service compared to other donors. The pool of regular, repeat volunteer, non-remunerated blood donors to the KNBTS network should be increased to minimise the need for replacement donations requested by family and friends.**
- **Programmes designed to promote voluntary, non-remunerated donation to the KNBTS network should be expanded, especially in areas of the country still reliant on replacement donations.**
- **The potential for medical transmission of HIV requires continual support for the maintenance of safe injection practices and a quality blood transfusion system.**

10

Care and Treatment of Adults Infected with HIV

10.1 Key Findings

- Nationwide, 12.1% of HIV-infected adults were taking cotrimoxazole or Septrin daily to prevent infections; an estimated 1.25 million HIV-infected people were in need of cotrimoxazole.
- Overall, 40.5% of ARV-eligible adults were taking ARVs. At the time of the survey, an estimated 214,000 people were eligible for daily ARVs but not taking any.
- Among those who knew they were infected with HIV, access to care and treatment was high: 76.1% were taking cotrimoxazole daily, and 91.6% of ARV-eligible adults were taking ARVs.

10.2 Introduction

Daily cotrimoxazole and treatment with antiretroviral (ARV) medication, along with other HIV-specific care (see Chapter 11 of this report), prevent illness and disease and dramatically prolong the lives of people with HIV. In one prospective study, cotrimoxazole and ARV therapy combined were associated with a 92.0% reduction in mortality among HIV-infected participants after 16 weeks of follow-up compared to when these participants were not taking either therapy.[1] The Ministry of Medical Services recommends daily cotrimoxazole or a similar antibiotic, for everyone with HIV, regardless of CD4 count or disease stage. This recommendation is in line with World Health Organization (WHO) guidelines and is supported by currently available evidence.[2]

ARVs target HIV at different sites to reduce or stop replication of the virus. They are the most effective intervention for prolonging survival and improving quality of life for people with HIV. Although the optimal time to begin ARVs remains unresolved, beginning treatment in patients with severe immunosuppression and/or symptoms indicative of immune damage is beneficial. The Ministry of Medical Services recommends that adults with advanced HIV disease—defined as WHO stage I or II disease (see Data in Context: WHO Clinical Staging) with a CD4 count of 250 cells/µL or less—should initiate ARV therapy.[3] These guidelines also state that anyone with WHO stage III disease with a CD4 cell count of less than 350 cells/µL or WHO stage IV disease regardless of CD4 count should begin treatment with ARVs. In some areas of Kenya, CD4 testing is not available; in these settings all patients with WHO stages III and IV are eligible to begin ARVs.

This chapter examines use of cotrimoxazole and ARVs among HIV-infected adults. In this report, coverage of care and treatment is defined as the proportion of all HIV-infected adults who may or may not have known their status and who reported receiving treatment or a service. Coverage was greatly influenced by the fact that only 16.4% of HIV-infected adults knew that they were infected (see chapter 4 on HIV testing).

1 Mermin J, Were W, Ekwaru JP, Moore D, Downing R, Behumbiize P, Lule JR, Coutinho A, Tappero J, Bunnell R. Mortality in HIV-infected Ugandan adults receiving antiretroviral treatment and survival of their HIV-un-infected children: a prospective study. Lancet 2008; 371: 352-59.
2 Guidelines on co-trimoxazole prophylaxis for HIV-related infections among children, adolescents and adults. Geneva, World Health Organization, 2006 (http://www.who.int/hiv/pub/guidelines/ctxguidelines.pdf, accessed 15 Sep 2009).
3 NASCOP, Kenya National Clinical Manual for ART Providers, 2nd Edition, 2007.

Access to care and treatment services is defined as the proportion of HIV-infected adults who knew their status and who reported receiving treatment or a service. Access reflects links to health care facilities and uptake of services.

There are a number of reasons why HIV-infected adults may not take daily cotrimoxazole or why eligible HIV-infected adults may not take daily ARVs; some may relate to the health care system, while others relate to individual behaviours. Many HIV-infected persons have never been tested for HIV and are therefore not aware of their HIV status, which is a significant barrier. Among those aware, some adults may not take cotrimoxazole or ARVs because they lack knowledge on appropriate use or may be unwilling to take medications because they feel healthy or because they suffered from adverse side effects from medications. Additionally, while these medications should be available those who need them, wait times at health centres and transport cost to facilities may prevent enrollment of HIV-infected adults in care and treatment. Stigma against HIV could also be barrier for some indivduals. The 2007 KAIS did not capture reasons for not taking daily cotrimoxazole or ARVs (if eligible) among those aware of their HIV status.

Appendix B.10 provides sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

Population estimates reported in this chapter were calculated based on the 2007 projected population reported in the *Revised Population Projections for Kenya 2000-2020* (Kenya National Bureau of Statistics, August 2006). Weighted estimates for selected indicators from the 2007 KAIS were used in these calculations. Methods for calculating population estimates are described in Appendix A.

10.3 Cotrimoxazole Prophylaxis for HIV-infected Adults

Daily use of cotrimoxazole (trimethoprim-sulfamethoxazole) or Septrin® prevents certain bacterial and parasitic infections that cause pneumonia, diarrhoea and malaria and prolongs the lives of adults and children who have HIV (see Data in Context: Why Take Cotrimoxazole?). The Ministry of Medical Services recommends that all people infected with HIV, regardless of CD4 count, take cotrimoxazole, or a similar antibiotic, daily to reduce the risk of illnesses associated with HIV/AIDS.

Figure 10.3a Cotrimoxazole coverage and access among HIV-infected adults aged 15-64 years, Kenya 2007.

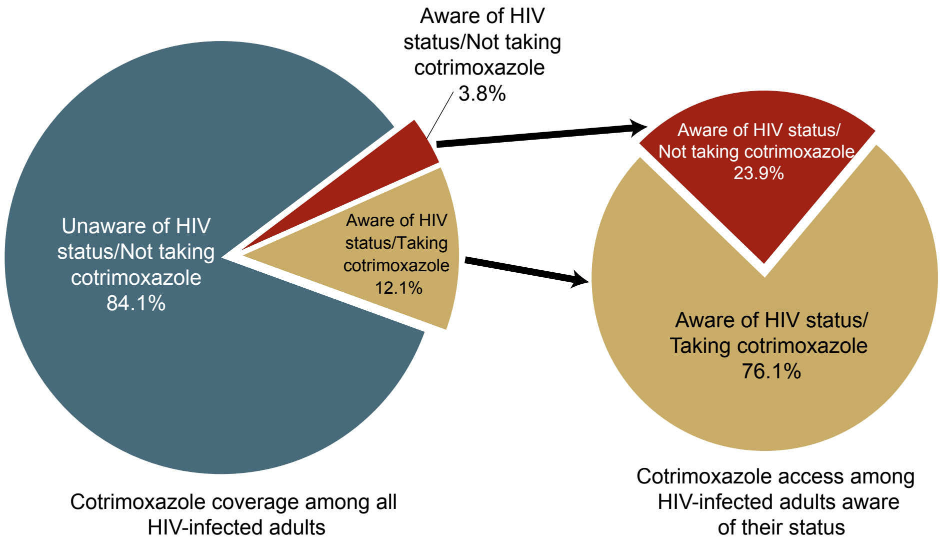


Figure 10.3a Coverage of cotrimoxazole among all HIV-infected adults was approximately one - tenth. Most people who did not take cotrimoxazole were unaware they were infected. Of those who knew their HIV status, about three fourths were taking cotrimoxazole.

KAIS estimates indicate that 12.1% of HIV-infected adults were taking daily cotrimoxazole at the time of the survey. This low coverage can be explained by the small proportion (16.4%) of HIV-infected adults in the survey who knew they were infected. With most adults reporting they never had been tested for HIV, this likely reflects the lack of access to or uptake of HIV testing. Among the 16.4% of HIV-infected adults who correctly reported knowing their HIV status, however, access to cotrimoxazole was significantly higher, with 76.1% reporting daily cotrimoxazole use. For a small percentage of HIV-infected persons, cotrimoxazole may cause severe adverse effects such as skin rash, bone marrow toxicity, and liver damage. However, for the vast majority of HIV-infected persons, cotrimoxazole is well tolerated. Not taking cotrimoxazole represents a missed opportunity to reduce the rates of morbidity and mortality among HIV-infected persons. No adjustment has been made to coverage and access (uptake) estimates to account for not taking cotrimoxazole because of potential contraindications to cotrimoxazole or Septrin.

Data in Context: Why Take Cotrimoxazole?

People with HIV who take cotrimoxazole every day have decreased risk of malaria, pneumonia, diarrhoea and death and results in fewer hospitalisations. Cotrimoxazole is inexpensive (less than 500 Ksh per year) and relatively safe—only 3% of patients stop therapy due to toxic reactions, and for many of these patients, an alternate daily antibiotic can be prescribed. Because cotrimoxazole is recommended for all people with HIV infection, it does not require testing for CD4 cell count or WHO disease staging.

Figure 10.3b Cotrimoxazole coverage among HIV-infected adults aged 15-64 years by province, Kenya 2007.

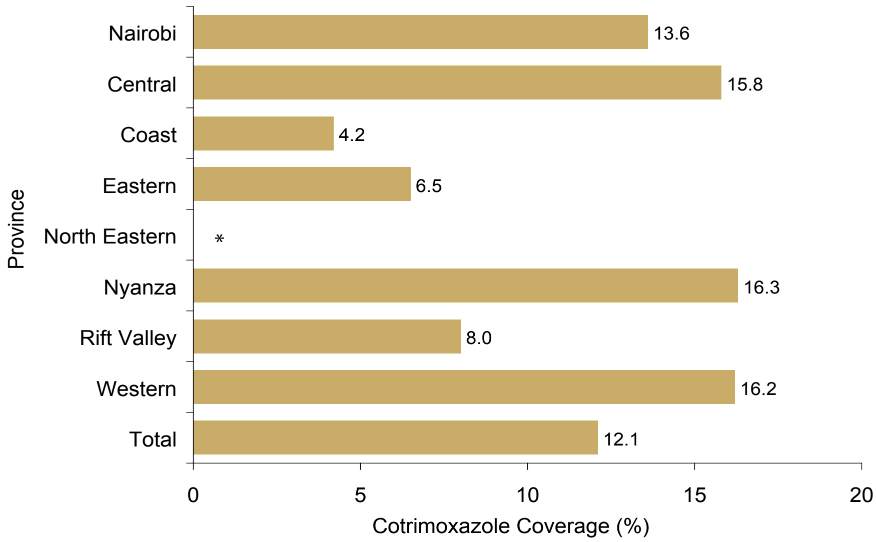


Figure 10.3b Cotrimoxazole coverage varied significantly by province and was highest in Nyanza province and lowest in Coast province.

* Estimates not presented due to small denominators of less than 25 observations in this category.

Coverage of cotrimoxazole varied significantly by province: from a high of 16.3% in Nyanza province to a low of 4.2% in Coast province. Cotrimoxazole coverage was greater among women than men (13.3% versus 9.7%, respectively) and this association was marginally significant. Coverage also varied significantly by age group, education level, and marital status. These estimates are provided in Appendix B.10.

Figure 10.3c Estimated number of HIV-infected adults aged 15-64 years taking and not taking cotrimoxazole by province, Kenya 2007.

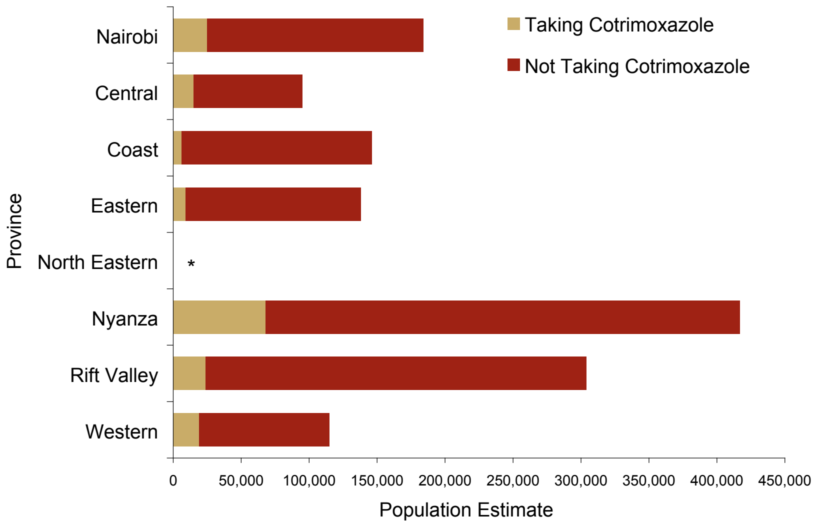


Figure 10.3c The estimated number of HIV-infected people taking cotrimoxazole varied by province. Nyanza had the greatest number of adults taking and not taking cotrimoxazole. Central had the lowest number of adults not taking cotrimoxazole, and Coast had the lowest numbers of adults taking cotrimoxazole.

*Estimates not presented due to small denominators of less than 25 observations in this category.

Nationwide, there were an estimated 172,000 HIV-infected adults taking daily cotrimoxazole (or Septrin) compared with over 1.25 million not taking cotrimoxazole.

Nyanza province had the greatest number of HIV-infected adults taking cotrimoxazole, estimated at 68,000 persons, followed by Nairobi with 25,000 and Rift Valley with an estimated 24,000 persons taking cotrimoxazole. Coast province had the fewest estimated number of HIV-infected adults taking cotrimoxazole, estimated at 6,000 persons, followed by Eastern province with an estimated 9,000 persons taking cotrimoxazole.

Nyanza and Rift Valley provinces combined are home to over half (52.3%) of adults with HIV and had the greatest number of HIV-infected persons not on cotrimoxazole. In Nyanza province, an estimated 349,000 HIV-infected adults were not taking cotrimoxazole, and in Rift Valley province, an estimated 280,000 were not on cotrimoxazole.

Figure 10.3d Source of cotrimoxazole for HIV-infected adults aged 15-64 years, Kenya 2007.

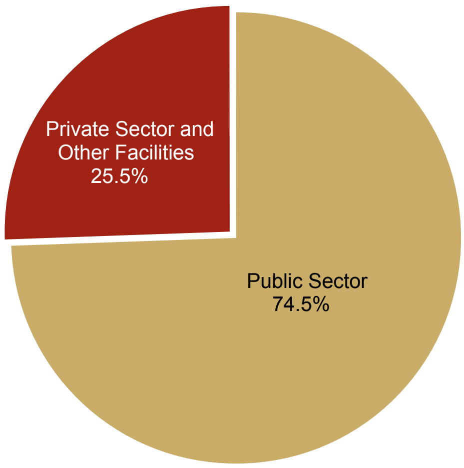


Figure 10.3d The majority of HIV-infected people who reported taking cotrimoxazole obtained it at public facilities such as government hospitals and clinics and the remainder from the private sector and other facilities.

Private sector and other facilities includes missions, church hospitals and clinics, private hospitals and clinics, other private medical facilities, and other facilities. Public sector includes government hospital, government health centre/clinic, government dispensary, other public facilities.

Cotrimoxazole is widely available in Kenya and can be accessed at private and public facilities free of charge by HIV-infected persons. Of all HIV-infected people taking cotrimoxazole, 74.5% obtained it at public facilities such as government hospitals, health centres and public dispensaries, and 25.5% from private hospitals and clinics, mission or church facilities or other facilities.

10.4 ARV Eligibility, Coverage and Access

Once HIV infection is diagnosed, providing ARVs effectively requires that eligibility be established and patients be provided with a reliable supply of drugs, guidance on proper adherence to therapy and monitoring for adverse effects and drug resistance.

In the 2007 KAIS, 9.7% or 138,000 individuals of the estimated 1.42 million HIV-infected adults were taking ARVs nationwide. The remaining 1.28 million HIV-infected adults were not taking ARVs; however, not all were eligible.

For the purposes of this report, eligibility was determined solely by CD4 cell counts. Because physical examinations and medical histories were not conducted in the 2007 KAIS, it was not possible to determine WHO clinical stage.

Table 10.4 summarizes CD4 cell counts among HIV-infected adults not taking ARV medications.

Table 10.4 CD4 cell count distribution among HIV-infected adults aged 15-64 years not on ARV therapy, Kenya 2007.

CD4 Cell Count Category (cells/µL)	Persons Not Taking ARVs	
	Percent (%)	Estimated Number
≤250	18.1	214,000
251-349	12.1	144,000
350+	69.8	825,000
Total	100.0	1,183,000

HIV-infected individuals who were not taking ARVs and for whom CD4 count data were not available were excluded from this analysis. For this reason, the total number of persons not taking ARVs in Table 10.4 (1,183,000) does not match the number not taking ARVs mentioned in the text above the table (1,280,000).

Population estimates are based on 2007 projected population reported in the Revised Population Projections for Kenya 2000-2020 (Kenya National Bureau of Statistics, August 2006). Weighted, national prevalence estimates for HIV infection, ARV therapy use and CD4 count from the 2007 KAIS were used in Table 10.4 calculations.

The Ministry of Medical Services recommends that people with HIV who have a CD4 count of 250 cells/µL or less should initiate ARVs.[4] An estimated 214,000 HIV-infected adults had CD4 counts of 250 cells/µL or less but were not taking ARVs and were thus eligible to initiate treatment. This figure likely underestimates ARV eligibility because the survey did not collect WHO clinical staging information. That is, some infected but untreated individuals with CD4 counts greater than 250 cells/µL with WHO stage III or IV disease may have been eligible to begin ARV therapy but are not counted here.

An additional 144,000 infected adults who did not report that there were taking ARVs had CD4 cell counts of 250-349 cells/µL, indicating possible ARV eligibility depending on clinical status.

4 NASCOP, Kenya National Clinical Manual for ART Providers, 2nd Edition, 2007.

Moreover, the Ministry of Medical Services could change ARV eligibility guidelines in the future to a criterion of less than 350 cells/μL, regardless of WHO stage, given that this cut off is used widely in other countries. Currently, Ministry of Medical Services guidelines recommend that asymptomatic patients in this group be observed and monitored regularly.

The remaining 69.8% of untreated HIV-infected adults, an estimated 825,000 persons nationwide, had CD4 counts of 350 cells/μL or greater, which will decline over time and necessitate ARV medications in the future.

Data in Context: What is a CD4 Count?

CD4+ lymphocytes (also called CD4 cells or T4-cells) are an important part of the immune system that lead the attack against infections. As HIV infection progresses, the number of CD4 cells is depleted. A laboratory test can measure the concentration of CD4 cells in a person's body. A normal CD4 cell count usually is >500 cells/μL. Lower CD4 counts are associated with increased risk of complicating infections, cancers and death. The Ministry of Medical Services currently recommends that all HIV-infected adults with a CD4 count of ≤250 cells/μL take ARVs. Once on ARVs, measurement of CD4 cell counts is recommended to monitor the amount of improvement in the immune system and the response to treatment. Availability of CD4 cell counting machines has increased markedly in the past several years. Equipment for testing CD4 cell counts is available at all the provincial hospitals, many district hospitals and other health facilities. For most patients, CD4 cell count testing requires travel or provision of a blood sample that is transported to one of these facilities.

ARV coverage was estimated by taking the number of persons on ARV divided by the sum of the number on ARV and the number eligible but not taking ARV medications. We estimated coverage using current CD4 eligibility guidelines of 250 cells/μL or less and, in anticipation of future potential changes to ARV guidelines, a criterion of less than 350 cells/μL (Figure 10.4a).

Figure 10.4a ARV coverage and access among HIV-infected adults aged 15-64 years eligible to take ARV by CD4 eligibility criteria, Kenya 2007.

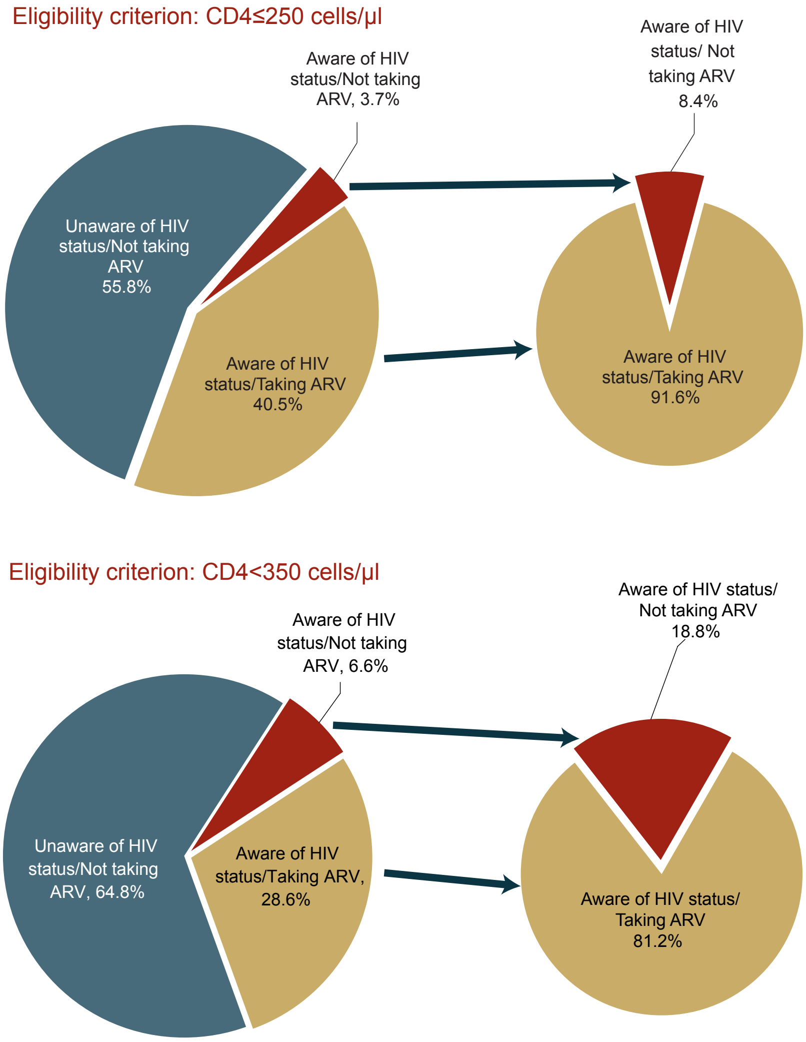


Figure 10.4a Using an eligibility criterion of CD4 <350 cells/µl, ARV coverage was approximately 10% lower than when using a criterion of ≤250 cells/µL. Access to ARV among people who were aware of their infection was relatively high (>80%), regardless of CD4 eligibility criterion.

Overall, national ARV coverage was estimated to be 40.5%. That is, of all adults eligible to take ARV based on a CD4 eligibility criterion of 250 cells/µL or less, only 40.5% were doing so. Coverage of ARV based on a criterion of less than 350 cells/µL was estimated at 28.6%.

ARV coverage (based on a CD4 count of 250 cells/µL or less) did not differ by sex, education level or residential setting, but was marginally different when stratified by age group, and significantly different by marital status. ARV coverage estimates for these groups are presented in Appendix B.10.

Among adults who were aware of their HIV infection and eligible for ARVs (based on a CD4 count of 250 cells/μL or less), ARV access was high with 91.6% reporting they were taking daily ARVs. Among persons with CD4 cell counts less than 350 cells/μL who were aware of their HIV-infected status, access to ARV was still relatively high and not significantly different at 81.2%. The vast majority (93.8%) of adults not on treatment but eligible (CD4 of 250 cells/μL or less) were not aware of their infection because either they had never been tested for HIV or they incorrectly believed they were HIV-uninfected based on their last HIV test. ARV initiation requires that people infected with HIV know their status and receive medical evaluation to determine if they are eligible to initiate ARV. Therefore, to improve care and ARV coverage, HIV testing must be scaled up and encouraged. Once diagnosed, HIV-infected adults should be referred to medical services for clinical evaluation and CD4 testing.

Only a small percent of eligible (CD4 of 250 cells/ μL or less), infected adults (3.7%) were aware of their infection but were not taking ARV. Although the 2007 KAIS did not collect explicit reasons for not taking ARV, all untreated respondents who knew they were infected, regardless of their CD4 count, had heard of "special drugs" for people with AIDS, and 57.7% specifically stated they knew of antiretroviral drugs. It is possible that some adults eligible for but not taking ARV had recent declines in CD4 count since their last clinical assessment and did not know that they were now eligible. This highlights the need for close patient monitoring.

Figure 10.4b ARV coverage among HIV-infected adults aged 15-64 years who were eligible to take ARVs by province, Kenya 2007.

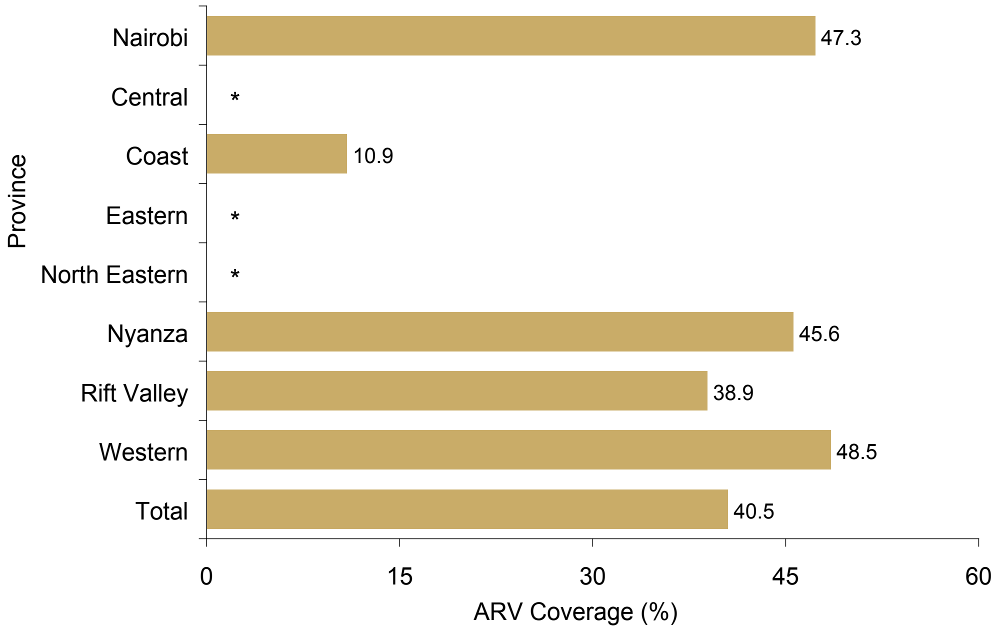


Figure 10.4b ARV coverage (based on CD4 ≤250 cells/μL) varied significantly by province. High coverage was seen in Western, Nyanza and Nairobi provinces. In Coast province, ARV coverage was far below the national estimate.

* Estimates not presented due to small denominators of less than 25 observations in this category.

The percent coverage of ARVs differed significantly across provinces. Western, Nyanza and Nairobi provinces had ARV coverage estimates above the national estimate of 40.5%. Relatively low ARV coverage was seen in Coast province, where only 10.9% of eligible adults were taking ARV medications.

Figure 10.4c Estimated number of HIV-infected adults aged 15-64 years taking ARV and not taking ARV but eligible, by province, Kenya 2007.

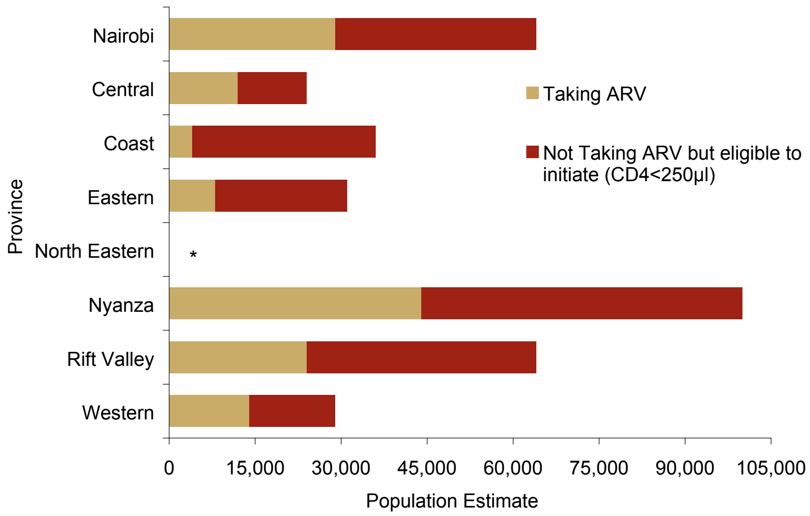


Figure 10.4c Nyanza province had the highest number of people taking ARVs (44,000) and eligible to initiate ARVs (56,000). Coast province had the lowest number of people taking ARVs (4,000), and Central had the lowest number of adults eligible but not taking ARVs (12,000).

* Estimates not presented due to small denominators of less than 25 observations in this category.

Because the size of the HIV-infected population varied by province, reporting ARV coverage by the number taking and eligible for ARV can show where ARV need is greatest. Nyanza province had the greatest need overall; 44,000 persons were estimated to be taking ARVs and 56,000 persons were eligible but not taking ARVs. Rift Valley and Nairobi provinces both had substantial numbers of adults in need of ARV therapy, with each having over 60,000 adults who either needed to maintain or initiate therapy. Coast province had relatively low ARV coverage; of the 36,000 adults eligible to take ARV medications, only 4,000 persons were doing so.

Data in Context: Estimates of HIV-infected Adults Taking ARVs

KAIS estimates that in 2007, 138,000 HIV-infected adults were taking ARV nationwide. Given the uncertainty involved in estimating this number, it is useful to compare estimates from KAIS to service statistics for the country and other existing estimates. Below are estimates for the number of HIV-infected adults taking ARVs in 2007. Data were abstracted from a nationwide facility-based reporting system and from UNAIDS estimates obtained using EPP/Spectrum. Both estimates fall within the 95% confidence interval around the 2007 KAIS-based estimate of 98,000 to 178,000 persons on ARVs.

Kenya Service Statistics: Estimates from the NASCOP database state that in 2007, 172,000 HIV-infected adults were taking ARV.

UNAIDS Estimates: UNAIDS figures provide a range of the number of HIV-infected individuals on ART. The estimates for 2007 ranged from a low estimate of 150,910 adults on ART to a high estimate of 172,910.

National AIDS Control Council, Office of the President, Kenya. 2008. UNGASS 2008 Country Report for Kenya. NACC, Nairobi.
UNAIDS/WHO Epidemiological Fact Sheets on HIV and AIDS, 2008 Update.

For HIV-infected persons, immunological monitoring is a valuable tool. The Ministry of Medical Services recommends that upon diagnosis, all HIV-infected individuals have a medical evaluation, including CD4 testing, to assess their disease status and determine eligibility for ARVs. Ministry guidelines also indicate that HIV-infected adults should have their CD4 level measured every six months to assess immune function and/or monitor immune restoration while taking ARVs.

In low to middle income counties such as Kenya, not all medical facilities are capable of conducting CD4 tests. In the 2007 KAIS, HIV-infected persons who knew their status were asked if they have ever been offered a CD4 test. This information can give some indication as to the proportion of sites where CD4 testing may not have been available at the time of the survey.

Figure 10.4d HIV-infected adults aged 15-64 years who are aware of their infection status who have ever or never been offered a CD4 test, Kenya 2007.

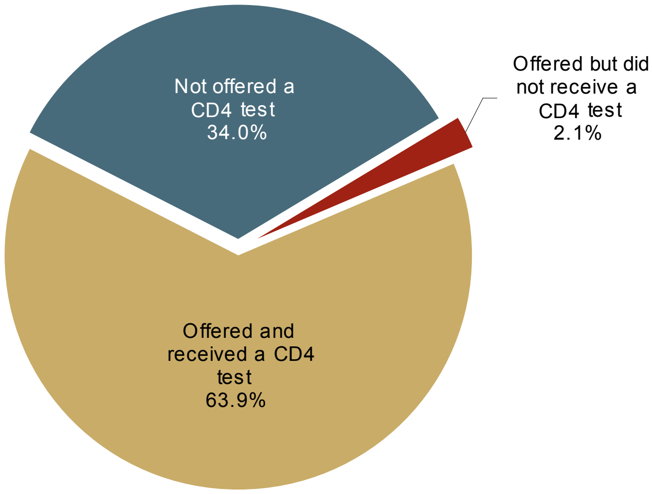


Figure 10.4d Among HIV-infected persons aware of their infection status, two-thirds reported they were offered a CD4 test.

CD4 count testing was common among HIV-infected adults aware of their infection. Among HIV-infected participants aware of their status, 34.0% reported not having been offered a CD4 testing, whereas 63.9% reported receiving CD4 testing at least once since their HIV diagnosis. A small number (2.1%) were offered but did not receive a CD4 test. Among those offered a CD4 test, the vast majority (96.8%) reported having a CD4 test performed.

10.5 Gaps and Unmet Needs

- **An estimated 1.25 million HIV-infected adults were in need of cotrimoxazole at the time of KAIS.**
- **The 214,000 people eligible to take ARVs but not taking them represent another large unmet need.**
- **Low coverage for both cotrimoxazole and ARVs were largely due to low awareness of HIV status among adults with HIV. Testing persons at risk tested for HIV remains a major priority.**
- **High access to both cotrimoxazole and ARV therapy suggests that once diagnosis is made, care and treatment services are available and accessible for HIV-infected individuals aware of their status.**

11

Health Care Utilization, Tuberculosis and Preventive Services among HIV-infected Adults

11.1 Key Findings

Health care utilization

- HIV-infected adults aware of their status were significantly more likely to access outpatient care in the four weeks before the survey compared to HIV-infected adults unaware of their status (51.2%% and 22.9%, respectively).
- HIV-infected adults aware of their status were significantly more likely to be hospitalised in the six months prior to the survey compared to HIV-infected adults unaware of their status (14.1% and 3.2%, respectively).

Tuberculosis (TB)

- HIV-infected adults were significantly more likely to have ever been diagnosed with TB compared to HIV-uninfected adults (9.6% and 1.8%, respectively).
- The majority of adults who had ever been diagnosed with TB had completed TB treatment (84.1% and 55.8%, respectively). These estimates did not differ significantly between HIV-infected and HIV-uninfected adults.
- Among HIV-infected adults who had ever been diagnosed with TB, 61.1% were aware of their HIV infection, compared to only 11.1% of HIV-infected adults who had not been diagnosed with TB. Four in 10 people (38.9%) co-infected with HIV and TB did not know about their HIV infection.

Preventive services

- Almost half (45.5%) of HIV-infected adults lived in a household that treated its main source of drinking water, most commonly by boiling. There were no differences between those aware or unaware of their HIV infection.
- Among all HIV-infected adults, 45.3% slept under a mosquito net the night before the survey and 20.2% slept under a treated net. There were no differences between those aware or unaware of their HIV infection.
- Among HIV-infected adults aware of their HIV infection, 36.4% were taking multi-vitamins.

11.2 Introduction

Without appropriate care and treatment, the vast majority of adults with HIV will suffer debilitating illness leading to hospitalisation, loss of income, disruptions to their family life and eventually death. Today, HIV/AIDS does not need to be an acute, debilitating disease. It is possible to delay or prevent disease and improve the quality of life for persons with HIV through a comprehensive approach to health care that emphasizes a continuum of support, extending beyond just antiretroviral therapy (see Chapter 10 in this report for findings on cotrimoxazole and ARV usage). HIV-infected adults need access to health care facilities and an array of preventive services. In this chapter, we report on aspects of HIV care for infected adults, including use of outpatient and inpatient services; co-infection with tuberculosis (TB); and uptake of prevention practices, including treatment of drinking water, mosquito nets and nutritional supplements.

Appendix B.11 provides sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

Population estimates reported in this chapter were calculated based on the 2007 projected population reported in the *Revised Population Projections for Kenya 2000-2020* (Kenya National Bureau of Statistics, August 2006). Weighted estimates for selected indicators from the 2007 KAIS were used in these calculations. Methods for calculating population estimates are described in Appendix A.

11.3 Health Care Utilization

In the following analyses, we report on estimated outpatient service use and inpatient admissions for HIV-infected adults. These data are useful in understanding patterns in utilization, especially differences in use between HIV-infected persons who are aware and those who are unaware of their HIV status. Health facility encounters among HIV-infected persons unaware of their HIV infection serve as opportunities for diagnosis of HIV; data on utilization among those aware of their HIV infection can help plan for growing burden on the system as increasing numbers of people become aware of their HIV status. Data on uptake of outpatient services and hospitalisations were collected at the household level; that is, the head of the household who answered the household questionnaire reported on health care visits for all members of the household listed.

Outpatient Services

Figure 11.3a Adults aged 15-64 years who accessed outpatient facilities one or more times in the four weeks before the survey, Kenya 2007.

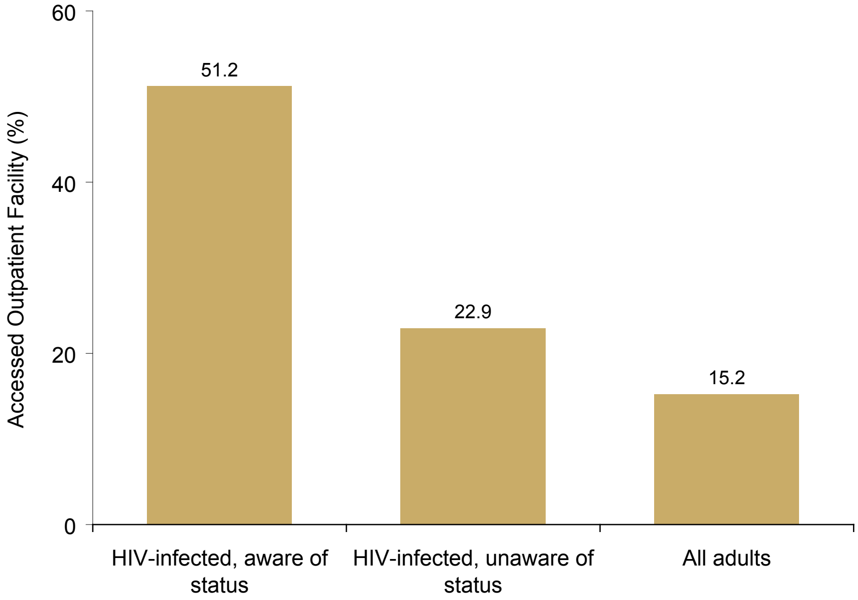


Figure 11.3a Adults with HIV were significantly more likely to visit an outpatient facility in the four weeks before the survey compared to all adults regardless of knowledge of their HIV status.

Overall, 15.2% of all adults reported visiting an outpatient clinic or health facility during the four weeks before the survey. Among HIV-infected adults, access to outpatient services differed significantly by knowledge of HIV status: 22.9% of those unaware of their HIV status visited an outpatient facility, compared to 51.2% of adults aware of their infection. The purpose of the outpatient visit was not captured in the 2009 KAIS. The percent of HIV-infected adults with a recent outpatient visit did not vary by most socio-demographic characteristics or CD4 cell count, although age and provincial distribution was marginally significantly different across categories.

Among HIV-infected adults (83.6% of whom were not aware of their HIV status), 72.9% had no visit to an outpatient facility in the four weeks before the survey. Among those with at least one visit, 56.4% made a single visit, 26.9% made two visits and the remaining 16.7% made three or more visits. Among those unaware of their HIV status who reported any outpatient visit, 60.3% used a public facility[1] at the time of their last visit, 14.3% visited a private facility, 10.8% visited a chemist or pharmacy and 8.1% visited a faith-based clinic. The remaining 6.5% visited other types of facilities, such as a non-governmental clinic, a traditional healer or medical shop. These outpatient visits among HIV-infected persons unaware of their HIV status could be considered missed opportunities to learn their HIV status.

1 Public facilities include government hospital, government health centre/clinic, government dispensary, or other public facilities. Private facilities includes missions, church hospitals and clinics, private hospitals and clinics, voluntary counselling and testing clinics, and other private medical facilities. Other locations were not specified.

Hospitalisation

Figure 11.3b Adults aged 15-64 years who were hospitalised one or more times in the six months before the survey, Kenya 2007.

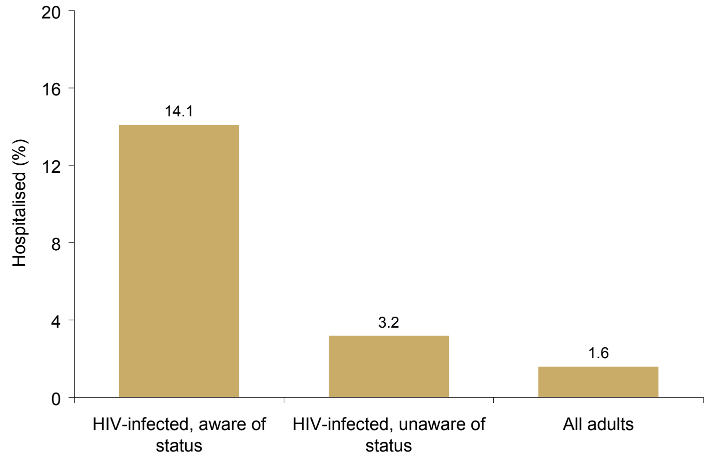


Figure 11.3b HIV-infected adults who knew their status were more likely to have been hospitalised in the six months before the survey compared to infected adults who were not aware of their HIV status.

Overall, 1.6% of all adults reported being hospitalised, which is defined as an overnight stay at a medical facility during the six months before their interview. Hospitalisation among HIV-infected adults varied significantly by awareness of status: 3.2% of those unaware of their status had been hospitalised compared to 14.1% of those aware of their status. There were no significant differences in hospitalisation of infected persons by sex, rural/urban residence, wealth index, or education, but hospitalisation rates did significantly increase with older age. Appendix B.11 provides hospitalisation rates stratified by socio-demographic characteristics.

As with outpatient services, the purpose of hospitalisation was not captured in the 2007 KAIS. Unlike outpatient services, however, which can include well-person visits for medication refills or minor health check-ups, hospitalisation typically indicates some level of severity of a person's condition.

Figure 11.3c HIV-infected adults aged 15-64 years hospitalised one or more times in the six months before the interview, by CD4 cell count, Kenya 2007.

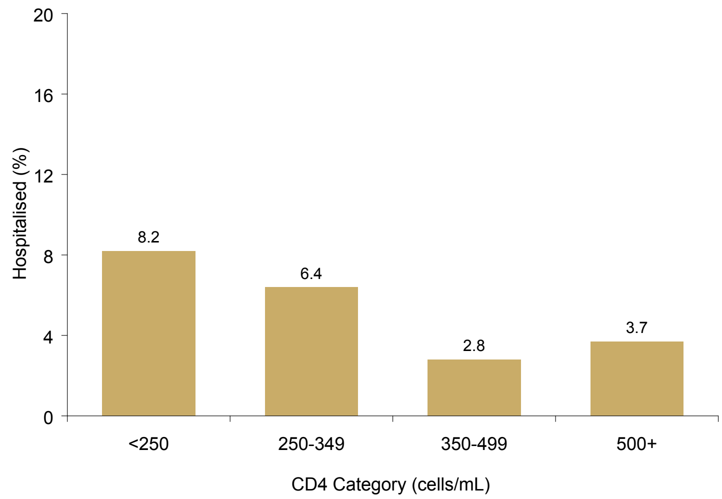


Figure 11.3c Among all HIV-infected adults, rates of hospitalisation tended to decrease with increasing CD4 cell counts, although the association was not significant.

A greater proportion of adults with CD4 counts less than 350 cells/μL were hospitalised during the six months before the survey compared to those who had 350 cells/μL or greater. Though this association was not statistically significant, the finding is consistent with current knowledge that adults with lower CD4 cell counts tend to be sicker than those with higher CD4 cell counts.

Figure 11.3d HIV-infected adults aged 15-64 years hospitalised one or more times in the six months before the interview, by knowledge of status and CD4 cell counts, Kenya 2007.

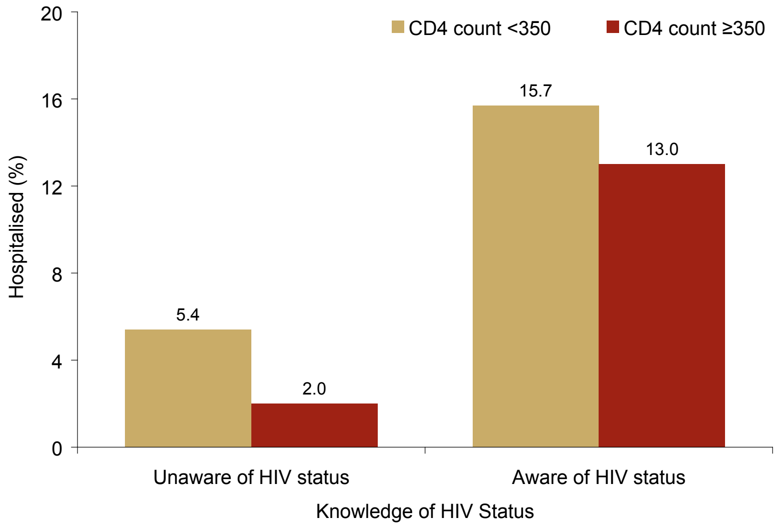


Figure 11.3d Adults who were aware of their HIV status were significantly more likely to have been hospitalised than those unaware of their HIV status.

Hospitalisation during the preceding six months was significantly associated with knowledge of HIV infection, regardless of immunological status. People who knew they were infected were significantly more likely to report an overnight stay in a hospital than those unaware of their infection, regardless of CD4 cell count.

Overall, of the 5.0% of HIV-infected persons with at least one hospitalisation in the six months before the 2007 KAIS, the great majority (79.5%) reported having one hospitalisation, 11.5% were hospitalised two times and 9.0% were held overnight at a hospital three times in six months. Among those with any hospital stays, 63.2% were last hospitalised at a public facility.[1] Approximately one fifth (21.6%) of these HIV-infected patients were last hospitalised at a private facility, and the remaining 15.3% had their stay at a faith-based health care facility.

11.4 Co-Infection with Tuberculosis and HIV

The tuberculosis (TB) epidemic in Kenya has been fuelled by the concurrent HIV epidemic. TB is one of the leading causes of mortality among people with HIV, and, conversely, HIV infection is a risk factor for active TB.

According to the 2007 KAIS, awareness of TB was high among adults aged 15-64 years; 97.9% reported having heard of TB. When asked about modes of transmission, 69.9% correctly answered that TB spreads through the air through coughing or sneezing and 87.7% correctly answered the TB can be cured. When asked if respondents would want to keep their family member's TB infection a secret, 11.4% said yes. Responses to these TB knowledge and stigma questions did not vary by HIV status.

1 Public facilities include government hospital, government health centre/clinic, government dispensary, or other public facilities. Private facilities includes missions, church hospitals and clinics, private hospitals and clinics, voluntary counselling and testing clinics, and other private medical facilities. Other locations were not specified.

Figure 11.4a Adults aged 15-64 years that received a tuberculosis diagnosis from a health care professional, by HIV status, Kenya 2007.

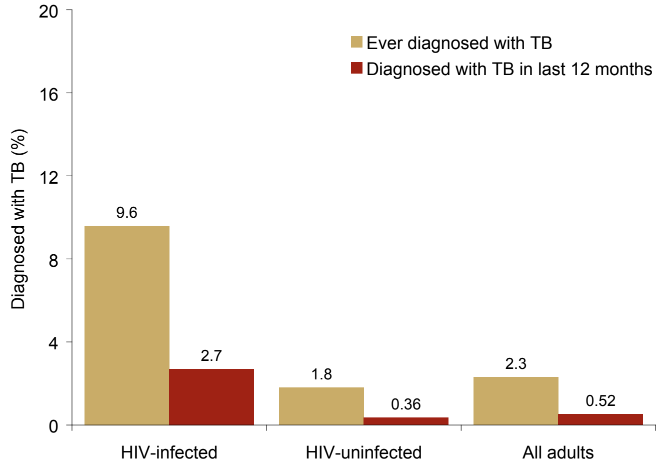


Figure 11.4a A significantly greater proportion of HIV-infected adults than HIV-uninfected adults had received a TB diagnosis ever and in the year before the survey.

History of TB diagnosis was captured by self-report only in the 2007 KAIS, with no laboratory or clinical confirmation. Of all respondents, 2.3% reported ever receiving a prior TB diagnosis from a health care professional, corresponding to an estimated 454,000 adults nationwide. One half of a percent (0.5%) reported a recent TB diagnosis; that is, they were diagnosed in the 12 months prior to the survey. Among HIV-infected adults, 9.6% had a history of TB diagnosis, with 2.7% reporting diagnosis in the year before the survey.

Figure 11.4b HIV-infected adults aged 15-64 years ever diagnosed with TB who completed TB treatment, by knowledge of HIV status, Kenya 2007.

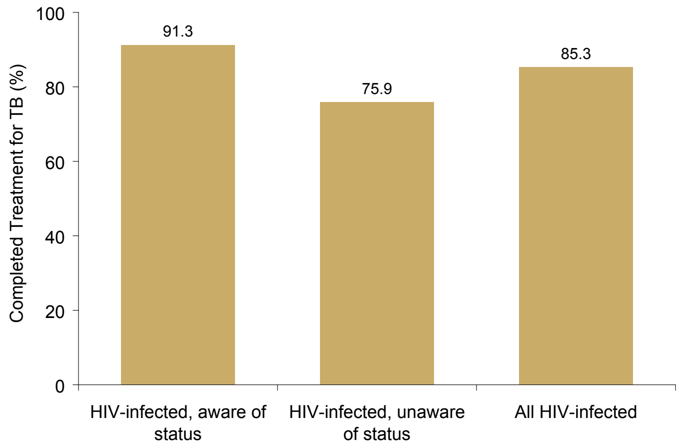


Figure 11.4b The majority of HIV-infected persons diagnosed with TB received and completed treatment for TB.

Among all HIV-infected adults who have ever received a TB diagnosis from a health care professional, 85.3% received and completed TB treatment. Knowledge of HIV status was significantly associated with completing TB treatment; a higher percent of HIV-infected adults who knew their HIV status completed treatment compared to HIV-infected adults who were unaware of their HIV status (91.3% and 75.9%, respectively).

Figure 11.4c HIV prevalence among adults aged 15-64 years by history of TB diagnosis, Kenya 2007.

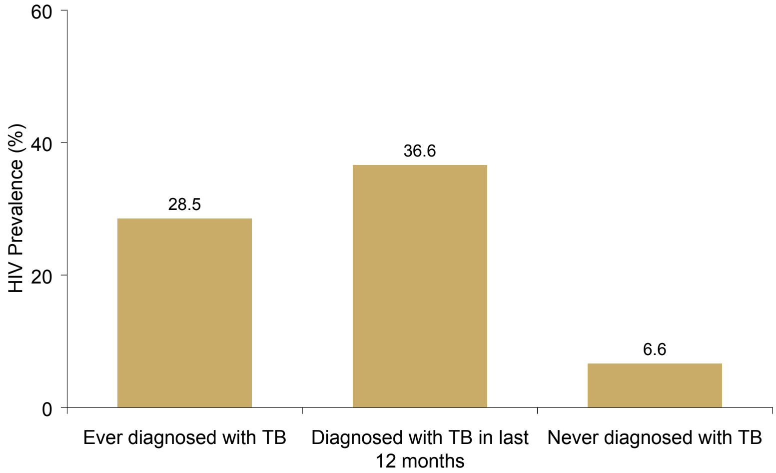


Figure 11.4c The prevalence of HIV was significantly higher among adults who had ever received or recently received a TB diagnosis compared to those who had never been diagnosed with TB.

In the 2007 KAIS, HIV prevalence was high among adults with a history of TB diagnosis. Among those ever diagnosed with TB infection, 28.5% were HIV-infected. Among adults with a recent TB diagnosis, 36.6% were HIV-infected, which was not significantly different from the prevalence among those with any TB diagnosis. HIV prevalence among those never diagnosed with TB was 6.6%, which was lower than the national HIV prevalence of 7.1% and significantly lower than HIV prevalence among those with any TB diagnosis.

Figure 11.4d HIV-infected adults aged 15-64 years who were aware of their HIV status, by history of TB diagnosis, Kenya 2007.

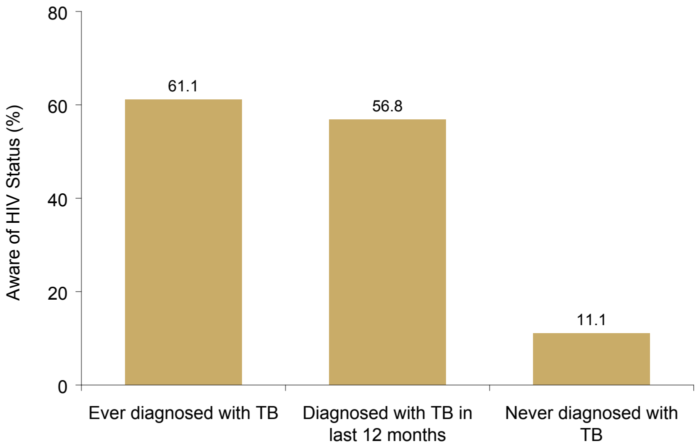


Figure 11.4d HIV-infected adults with a prior TB diagnosis were significantly more likely to be aware of their HIV status than those with no history of TB diagnosis.

Among HIV-infected persons with a prior TB diagnosis, the majority (61.1% with any TB diagnosis and 56.8% with a recent TB diagnosis) were aware of their HIV infection compared with only 11.1% who had never had a diagnosis of TB. Both differences were statistically significant. Nonetheless, approximately four in 10 people (38.9%) co-infected with HIV and TB did not know about their HIV infection.

Figure 11.4e Cotrimoxazole coverage and access among HIV/TB co-infected adults aged 15-64 years, Kenya 2007.

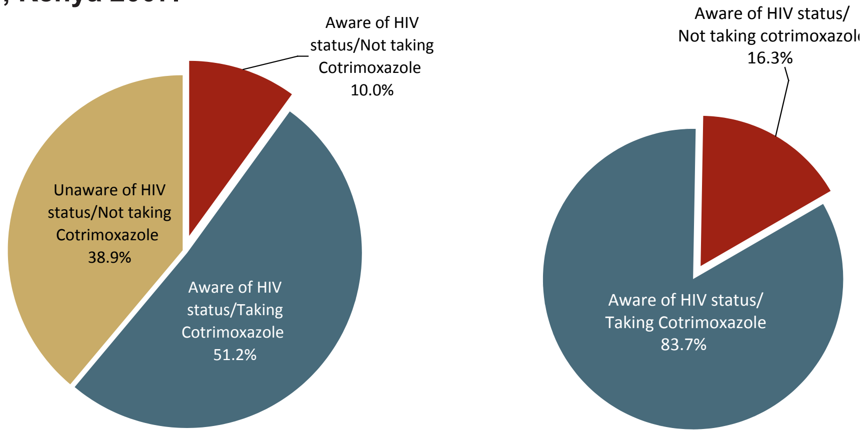


Figure 11.4e One-half (51.2%) of all adults co-infected with TB and HIV were taking cotrimoxazole. Among those who were co-infected and knew their HIV status, cotrimoxazole access was 83.7%.

Daily cotrimoxazole is recommended for all HIV-infected persons. Cotrimoxazole coverage among HIV-infected people reporting a prior TB diagnosis was 51.2%. Access to cotrimoxazole among persons who were aware of their HIV infection and co-infected with TB and HIV was 83.7%. These findings among persons with HIV and TB are consistent with conclusions from Chapter 10, which indicate that overall coverage of cotrimoxazole among all HIV-infected adults was low compared to access among those who have been diagnosed with HIV and were aware of their status.

11.5 Preventive Services For People With HIV: Clean Water

Chronic diarrhoea is a leading killer of people infected with HIV. Contaminated water is often the source of microbes that cause diarrhoea. Treating water to make it safe for drinking dramatically improves the health of all people, particularly those with HIV infection who may have a weaker immune response to fight against simple waterborne infections. The Ministry of Medical Services recommends safe water systems for all households affected by HIV. Although boiling water, if done properly, can effectively kill most diarrhoea-causing organisms, consistent application of this practice may not be feasible because of limited sources of wood or fuel. In these areas, inexpensive and readily available chemical disinfectants may be more suitable.

Data in Context: HIV Basic Care Package

A number of low-cost and practical interventions have been shown to reduce HIV-related morbidity and mortality. Cotrimoxazole preventive therapy (CPT), long-lasting insecticide treated bednets (LLITNs), and safe water systems are inexpensive and can benefit people living with HIV/AIDS in sub-Saharan Africa by reducing the incidence of opportunistic infections (e.g., malaria and diarrhoea). The GOK recommends that all HIV-infected adults and children, regardless of immunological status, have access to these interventions and refers to them as the Basic Care Package (BCP). In addition to CPT, LLITNs, and a safe water system, the BCP in Kenya includes condoms and educational materials for HIV-infected persons and their families. Various combinations of these interventions have been packaged and distributed in countries such as Uganda and southern Sudan. A pilot program to scale-up access to BCP contents in Coast, Nyanza and Western provinces has been under development since early 2009. Experience gained during the pilot will guide the expansion of the BCP at the national level.

Mermin J, Lule J, Ekwaru JP, et al. Effect of co-trimoxazole prophylaxis on morbidity, mortality, CD4-cell count, CD4-cell count, and viral load in HIV infection in rural Uganda. Lancet. 2004; 364 (9443): 1428-34.

Kamya MR, Gasasira AF, Achan J, et al. Effects of trimethoprim-sulfamethoxazole and insecticide-treated bednets on malaria among HIV-infected Ugandan children. AIDS 2007; 21 (15): 2059-66.

In this section, we examine water treatment practices of households with HIV-infected members. The GOK recommends that in households affected by HIV, water from all sources, including piped systems, a public tap, dug wells, rainwater or surface water should be treated before drinking, with an exception only for bottled water. Drinking water treatment practices were collected at the household level, not at the individual level.

Figure 11.5a HIV-infected adults aged 15-64 years by water treatment practice of their household, Kenya 2007.

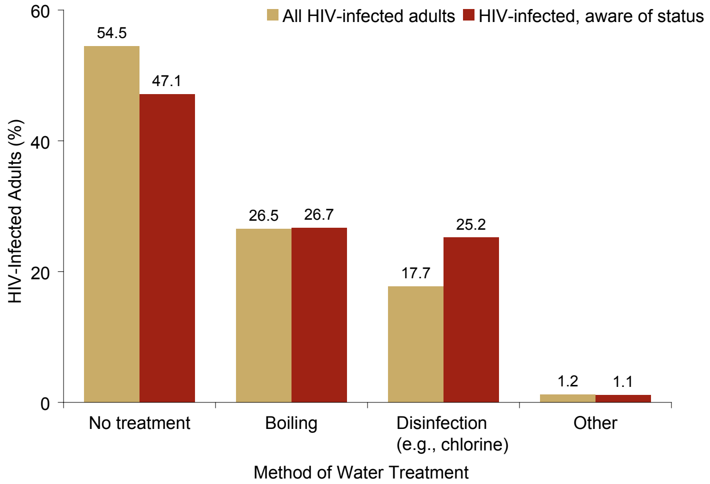


Figure 11.5a More than half of HIV-infected adults lived in a household with untreated drinking water.

Overall, 54.5% of HIV-infected persons lived in a household that did not treat its main source of drinking water. Among the remaining 45.5% that did treat their drinking water, boiling was the most common practice, followed by chemical disinfection. Other methods such as filtration, sedimentation or the exclusive use of bottled water were infrequent methods of treating water in these households (1.2%). Water treatment practices in households with HIV-infected members who were aware of HIV their status were similar with no significant differences observed.

Figure 11.5b HIV-infected adults aged 15-64 years who live in a household that treats its main source of drinking water, by province, Kenya 2007.

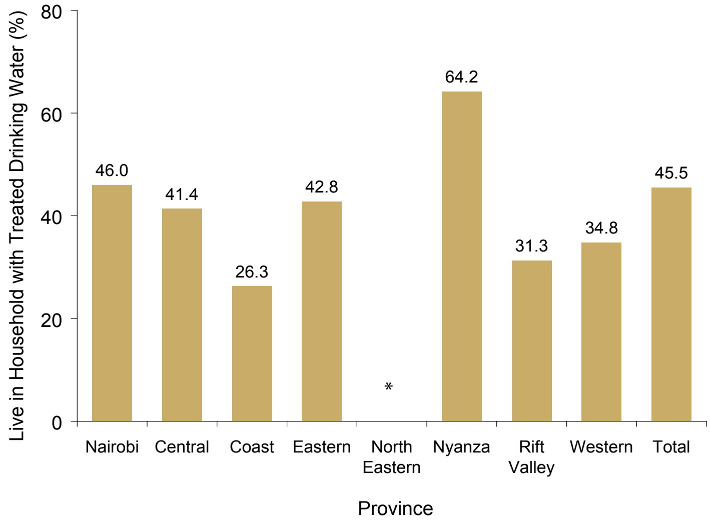


Figure 11.5b The proportion of HIV-infected adults living in a household with treated drinking water varied significantly by province.

* Estimates not presented due to small denominators of less than 25 observations in this category.

At the national level, 45.5% of HIV-infected adults lived in households with treated drinking water. These rates varied significantly by province, with Nyanza province having the highest percent of HIV-infected adults (64.2%) with treated drinking water at home and Coast province having the lowest (26.3%). HIV-infected adults living in rural households were as likely to have access to treated water as those living in urban households (47.3% and 40.9%, respectively) with no significant difference. Also, household access to treated water was similar for both HIV-infected women and men (44.8% and 47.0%, respectively). Among HIV-infected women who reported they were pregnant at time of survey, 53.8% had access to treated drinking water at home.

11.6 Preventive Services For People With HIV: Bednets

The GOK recommends that HIV-infected persons protect themselves against malaria by sleeping every night under an insecticide-treated net (ITN). This practice is especially important for HIV-infected pregnant women because malaria parasitaemia can increase the risk of maternal anaemia, low-birth weight babies and infant mortality. The 2007 KAIS captured individual bednet usage during the household interview; the household respondent reported whether each member slept under a bednet the night before the survey. General mosquito net use was defined as sleeping under any mosquito net, treated or untreated. We define use of an ITN as sleeping under a mosquito net that was manufactured with insecticide or treated with an insecticide in the past six months within the home. Since Nairobi is largely urban and located at an elevation considered malaria-free, analyses included only participants living outside of Nairobi. This is consistent with methods used in other national surveys, including the 2007 Kenya Malaria Indicator Survey. KAIS findings on household-level ownership of bednets and ITNs are presented in Chapter 14.

Figure 11.6a ITN usage among adults aged 15-64 years by HIV status and knowledge of HIV status, Kenya 2007.

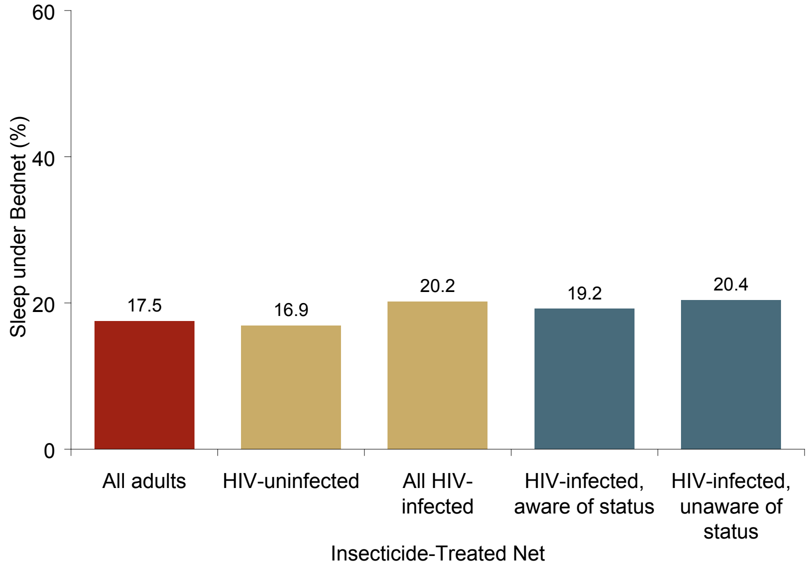


Figure 11.6a HIV-infected adults were significantly more likely to sleep under an ITN than HIV-uninfected adults.

Analysis of bednet/ITN use was restricted to individuals living in households outside of Nairobi.

Overall, 17.5% of of participants aged 15-64 years adults slept under an ITN the night before the 2007 KAIS interview. Use of ITN was marginally greater among HIV-infected adults (20.2%) compared to HIV-uninfected adults (16.9%). ITN use did not differ significantly between HIV-infected persons aware of their HIV status (19.2%) compared with HIV-infected persons unaware of their HIV status

(20.4%). In terms of any bednet usage, 38.0% of adults slept under a bednet the night before the 2007 KAIS interview (data shown in Appendix B.11). General bednet use was significantly greater among HIV-infected adults (45.3%) compared to uninfected adults (37.5%), and marginally greater among those aware of their HIV status (54.2%) compared to those who were unaware of their HIV-infected status (43.6%).

Figure 11.6b HIV-infected adults aged 15-64 years who slept under a bednet, by province and type of bednet, Kenya 2007.

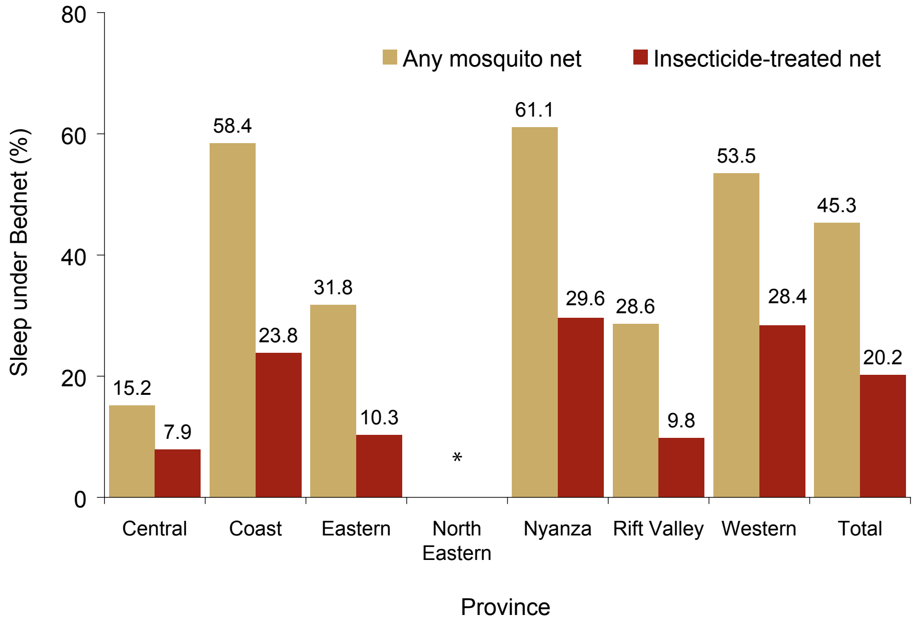


Figure 11.6b General bednet usage and use of ITN was highest in Nyanza, Coast and Western provinces, where malaria is highly endemic.

* Estimates not presented due to small denominators of less than 25 observations in this category.
Analyses of bed net use were restricted to individuals outside of Nairobi.

Bednet use by HIV-infected adults varied significantly by province, with the highest net use found in Nyanza (61.1%), Coast (58.4%) and Western provinces (53.5%). All three provinces are located in the zones with the greatest malaria density, with endemic malaria year-round. Bednet use for HIV-infected adults in Eastern and Rift Valley provinces was moderate at 31.8% and 28.6%, respectively. Central province had the lowest bednet use at 15.2%. Central and Eastern provinces are located in seasonal malaria zones, and the highlands of the Rift Valley are prone to periodic malaria epidemics.

Use of ITNs among HIV-infected persons also differed significantly by province and followed a similar distribution observed for general bednet use. Nyanza (29.6%), Western (28.4%) and Coast (23.8%) provinces again the highest use of ITNs among HIV-infected adults. Use of ITNs was substantially lower in Eastern, Rift Valley and Central provinces. Nairobi is considered malaria free, although bednets are available. Among HIV-infected adults in Nairobi, general mosquito net use was 35.5% and ITN use was 12.1%.

Bednet use among HIV-infected adults was similar in rural (45.0%) and urban areas (46.6%), excluding Nairobi. Though ITN use was greater among HIV-infected adults in urban areas compared to rural areas (27.3% and 18.7%, respectively), this difference was marginally significant.

11.7 Preventive Services For People With HIV: Nutritional Supplements

Nutritional supplements and multi-vitamins have been proposed as a method of providing caloric and micronutrient support for HIV-infected people in resource-limited countries. Studies suggest that people with HIV benefit from receiving nutritional and multivitamin supplements, as these may reduce morbidity and delay progression to advanced stages of disease. The Ministry of Medical Services recommends daily multivitamins for all HIV-infected adults and children. In this section, we present the 2007 KAIS findings on the uptake of daily caloric supplements, immune boosters and multivitamins among HIV-infected adults who were aware of their status.

Figure 11.7a HIV-infected adults aware of their infection who take nutritional supplements, Kenya 2007.

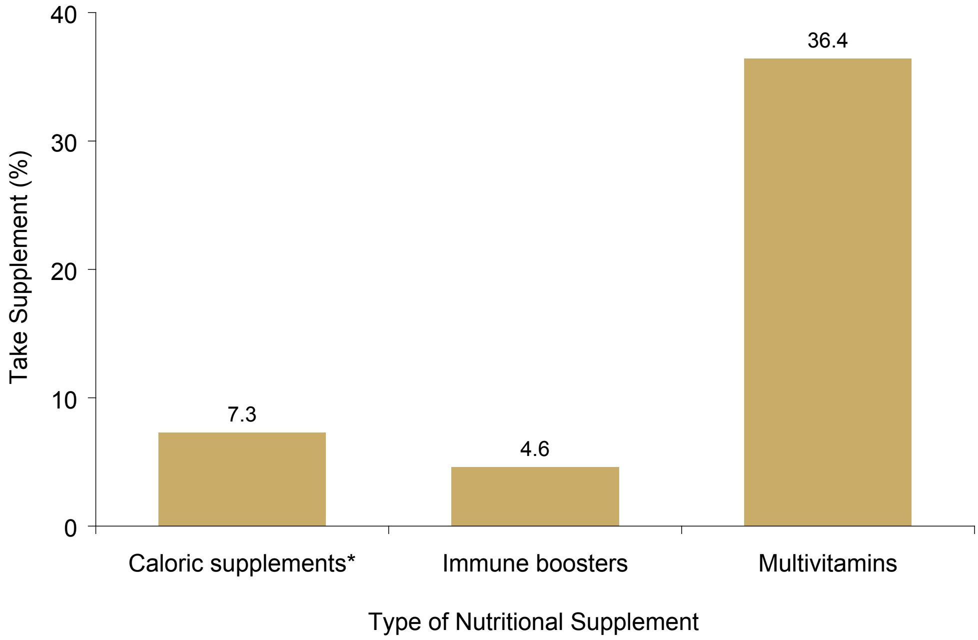


Figure 11.7a Among HIV-infected adults aware of their HIV infection, approximately one-third (36.4%) were taking daily multivitamins.

*Caloric supplements include Plumpy Nut, Nutrimix, First Food, Foundation Plus+ and Foundation Advantage
Categories of nutritional supplement use are not mutually exclusive.

Among HIV-infected adults who knew they were infected with HIV, 7.3% reported taking one or more daily caloric supplements and 4.6% reported taking immune boosters. The most common supplement taken was a daily multivitamin; 36.4% of HIV-infected persons who knew they were infected reported taking multivitamins on a daily basis. There were no significant differences in the use of multivitamins by age group, sex, rural/urban residence, educational level, wealth index or marital status.

11.8 Gaps and Unmet Needs

- Counselling and testing for HIV should be emphasized as routine standard of care for everyone visiting a health care facility. For those infected with HIV and unaware of their status, each outpatient or inpatient visit is an opportunity for diagnosis and enrollment in care and treatment.
- Better education about TB transmission and available treatments may reduce new cases and stigma around accessing testing and treatment.
- Treatment of drinking water to prevent diarrheal diseases among people with HIV infection is low and needs to be improved to comply with the current policy. Education about why and how to best to treat water before drinking it should be enhanced among HIV-infected individuals and their family members.
- Eight out of 10 HIV-infected adults were not sleeping under treated bednets and therefore vulnerable to potentially malaria infection though mosquito bites. Access to treated bednets and bednet counseling, including home visits to hang bednets, should be improved.
- The Ministry of Medical Services recommends that all HIV-infected adults take daily multi-vitamins to help meet micronutrient requirements and prevent nutrition-related disease. Most HIV-infected adults are not taking multi-vitamins and could benefit from access to nutritional counseling and daily vitamin supplements.

12

Prevalence of Herpes Simplex Virus-2 (HSV-2) and Co-infection with HIV and HSV-2

12.1 Key Findings

- Overall, 35.1% of adults were infected with HSV-2, the virus that causes genital herpes; HSV-2 prevalence among women was significantly higher than among men (41.7% and 26.3%, respectively).
- The prevalence of HSV-2 infection varied significantly by number of lifetime sexual partners, number of partners in the past 12 months, and male circumcision status.
- Among HSV2-infected adults, 16.4% were infected with HIV. Among HSV-2-uninfected people, 2.1%% were infected with HIV.
- STIs or symptoms of STI were reported by 4.6% of HSV2-infected adults.
- Among HIV-discordant couples, one partner was infected with HSV-2 in 29.3% of couples and both partners were infected with HSV-2 in 49.8% of couples.

12.2 Introduction

The 2007 KAIS was the first national seroprevalence survey of herpes simplex virus-2 (HSV-2) in Kenya. HSV-2 is a STI and is the leading cause of genital ulcer disease around the world. Pregnant women with active HSV-2 lesions (blisters) can transmit the infection to their babies during birth, and newly HSV-2-infected women are at high risk for perinatal transmission.[1] HSV2-infected individuals are often asymptomatic, and most do not know they are infected. Those with symptoms suffer from genital irritation, ulcers and/or excoriation. Infection is life-long but rarely life-threatening; once someone has been infected, he or she will remain infected and HSV-2 seropositive for life. Therefore, reported HSV-2 prevalence reflects a lifetime HSV-2 infection. There is no cure, but symptoms can be controlled with drugs such as acyclovir, valcyclovir and famciclovir. Both asymptomatic and symptomatic persons can transmit HSV-2 to sexual partners.

Scientific evidence indicates that symptomatic HSV2-infected individuals have an increased risk of acquiring HIV because HSV-2 lesions can serve as a portal of entry for HIV. In addition, the presence of HSV-2 in the genital mucosa is associated with an increased concentration of host immune response cells, which serve as targets for HIV entry and increased production of genital HIV. Individuals with HSV-2 and HIV co-infection have a greater risk of transmitting HIV to their sexual partners because co-infected individuals can shed HIV from more severe HSV-2 lesions for longer periods. Treatment of HSV-2 with antiviral drugs has not been shown to reduce risk of HIV acquisition.[2]

1 Boucher FD, Yasukawa LL, Bronzan RN, Hensleigh PA, Arvin AM, Prober CG. A prospective evaluation of primary genital herpes simplex virus type 2 infections acquired during pregnancy. Pediatr Infect Dis J 1990;9:499–504.
2 Celum C, Wald A, Hughes J, et al. Effect of aciclovir on HIV-1 acquisition in herpes simplex virus 2 seropositive women and men who have sex with men: a randomised, double-blind, placebo-controlled trial. Lancet 2008; 371:2109-2119.

Appendix B.12 provides sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

Population estimates reported in this chapter were calculated based on the 2007 projected population reported in the *Revised Population Projections for Kenya 2000-2020* (Kenya National Bureau of Statistics, August 2006). Weighted estimates for selected indicators from the 2007 KAIS were used in these calculations. Methods for calculating population estimates are described in Appendix A.

12.3 HSV-2 Prevalence

Figure 12.3a HSV-2 prevalence among women and men aged 15-64 years by age group, Kenya 2007.

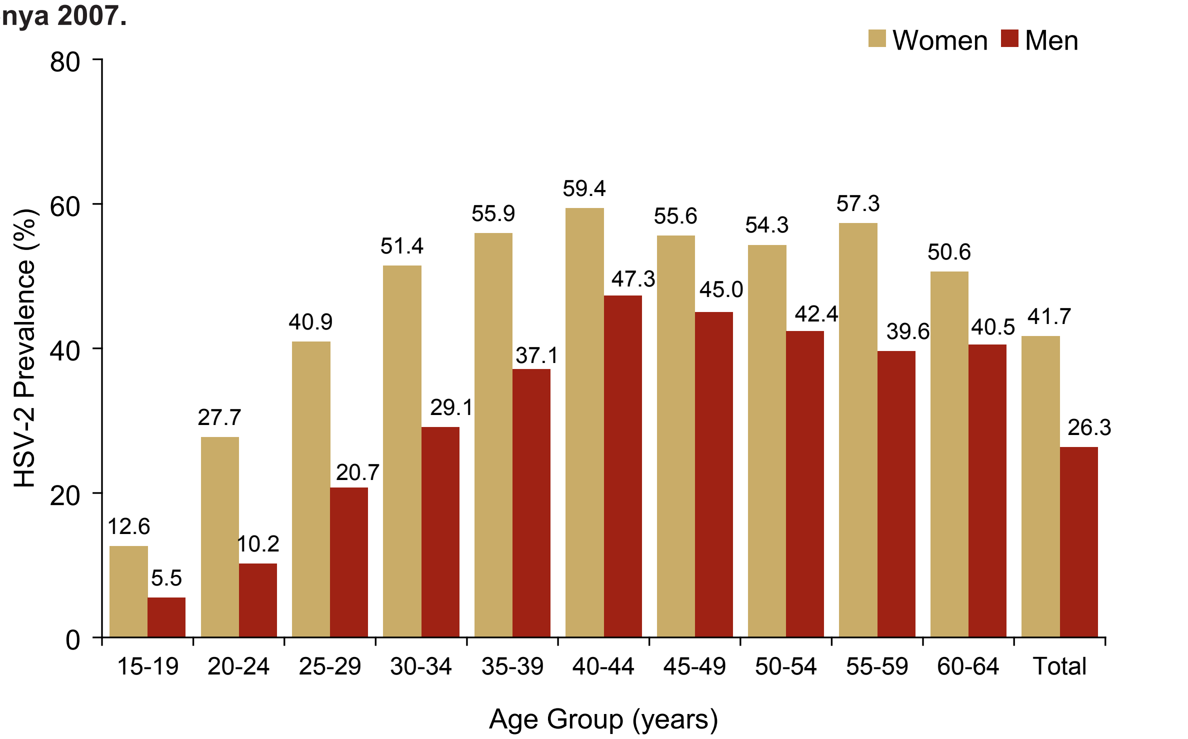


Figure 12.3a HSV-2 prevalence increased across adolescence and early adulthood and peaked in the fourth decade of life for both women and men.

HSV-2 prevalence among adults aged 15-64 years was 35.1%; nationwide, an estimated 7,012,000 women and men were infected with HSV-2. Women were significantly more likely to be infected than men (41.7% compared to 26.3, respectively).

HSV-2 prevalence was lowest among women aged 15-19 years (12.6%) and men aged 15-19 years (5.5%). Prevalence peaked in women and men in the 40-44 year age group (59.4% and 47.3%, respectively). Because infection is life-long, the pattern of increasing HSV-2 prevalence with age is expected. HSV-2 prevalence in older age groups reflects both cumulative lifetime infections and new infections occurring in older cohorts.

Data in Context: HSV-2 and HIV in the Literature

Multiple studies from sub-Saharan Africa indicate that HSV-2 infection can increase a person's risk of acquiring and transmitting HIV

- HSV-2 is the most common cause of genital ulcer disease.
- In sub-Saharan Africa, it is estimated that up to 60% of new HIV cases in women and 49% of new HIV cases in men may potentially be attributable to prevalent HSV-2 infection .[4]
- Among HIV-uninfected heterosexual women and men, symptomatic HSV-2 infection is associated with an estimated three-fold increased risk of acquiring HIV.[4]
- Among HIV-infected women and men, symptomatic HSV-2 infection is associated with an estimated five-fold increased risk of transmitting HIV per sexual contact and has also been linked to more rapid HIV/AIDS disease progression.[5,6]
- Suppressing HSV-2 with antiviral drugs among HIV-infected persons reduces HIV viral load in the blood and genital secretions.[7,8]
- HSV-2 suppression is thought to reduce sexual transmission of HSV-2 by up to 50%.[9] To date, however, there is no evidence for reduced HIV acquisition at the population level by suppressing HSV-2.[10,11]

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3 Freeman EE, Weiss HA, Glynn JR, et al. Herpes simplex virus 2 infection increases HIV acquisition in men and women: Systematic review and meta-analysis of longitudinal studies. AIDS 2006; 20:73-83.

4 Freeman EE, Orroth KK, White RG, et al. Proportion of new HIV infections attributable to herpes simplex 2 increases over time: simulations of the changing role of sexually transmitted infections in sub-Saharan African HIV epidemics. Sex Transm Infect 2007; 83 (suppl 1):i17-24.

5 Gray RH, Wawer MJ, Brookmeyer R, et al. Probability of HIV-1 transmission per coital act in monogamous, heterosexual, HIV-1-discordant couples in Rakai, Uganda. Lancet 2001; 357:1149-1153.

6 Corey L. Synergistic copathogens: HIV-1 and HSV-2. N Engl J Med 2007; 356:854-856.

7 Baeten JM, Strick LB, Lucchetti A, et al. Herpes simplex virus suppressive treatment decreases plasma HIV-1 viral load in HSV-2/HIV-1 co-infected women: a randomized, placebo-controlled, crossover trial. J Infect Dis 2008; 198:1804-1808.

8 Nagot N, Ouedraogo A, Foulongne V, et al. Reduction of HIV-1 RNA levels with therapy to suppress herpes simplex virus. N Engl J Med 2007; 356:790–799.

9 Corey L, Ashley R, Valaciclovir HSV Transmission Study Group. Prevention of herpes simplex virus type 2 transmission with antiviral therapy. Herpes 2004; (suppl 3):170a-174a.

10 Celum C, Wald A, Hughes J, et al. 2008.

11 Watson-Jones D, Weiss HA, Ruizoka M, et al. Effect of herpes simplex suppression on incidence of HIV among women in Tanzania. N Engl J Med 2008; 358:1560-1571.

Figure 12.3b HSV-2 prevalence among women and men aged 15-64 years by marital status, Kenya 2007.

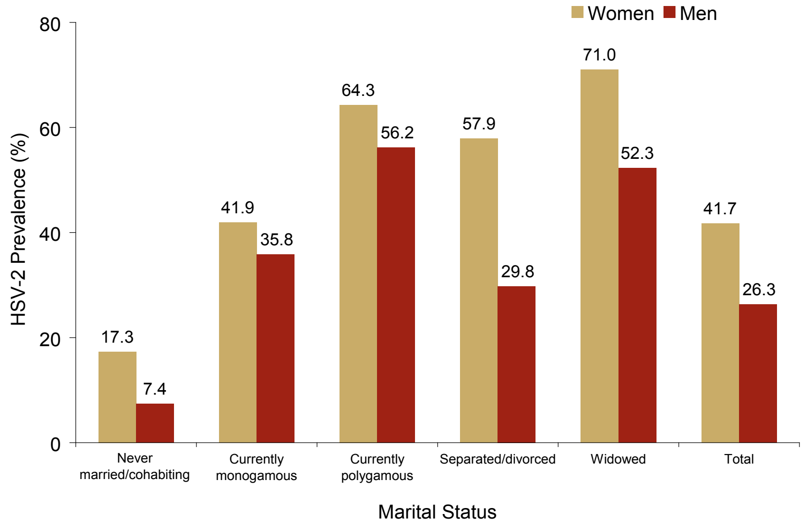


Figure 12.3b HSV-2 prevalence was lowest among women and men who had never married or cohabited.

The term "currently monogamous" refers to respondents that were married or cohabiting in a union with only one spouse or one sexual partner.

HSV-2 prevalence varied significantly by marital status among women and men. Among women who were currently married or cohabiting or had ever married or cohabited, HSV-2 prevalence ranged from 41.9% to 71.0%. Among men who were currently married or cohabiting or had ever married or cohabited, HSV-2 prevalence ranged from 29.8% to 56.2%. HSV-2 prevalence among women and men who had never married or cohabited was 17.3% and 7.4%, respectively.

Figure 12.3c HSV-2 prevalence among women and men aged 15-64 years by province and residence, Kenya 2007.

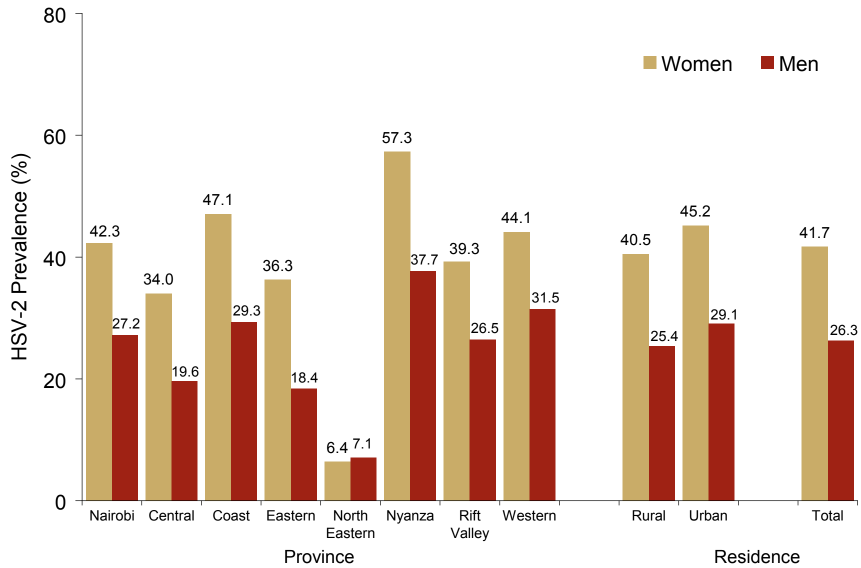


Figure 12.3c Prevalence of HSV-2 infection varied significantly by province and residence.

With the exception of North Eastern province, where HSV-2 prevalence was 6.7% overall, the prevalence of HSV-2 infection was high in all provinces and ranged from 27.9% in Central province to 49.1% in Nyanza province. HSV-2 prevalence was significantly higher in urban than rural areas. The difference in HSV-2 prevalence between rural and urban areas was significant among women (40.5% and 45.2%, respectively) and marginally significant among men (25.4% and 29.1%, respectively).

Figure 12.3d HSV-2 prevalence among women and men aged 15-64 years by education level, Kenya 2007.

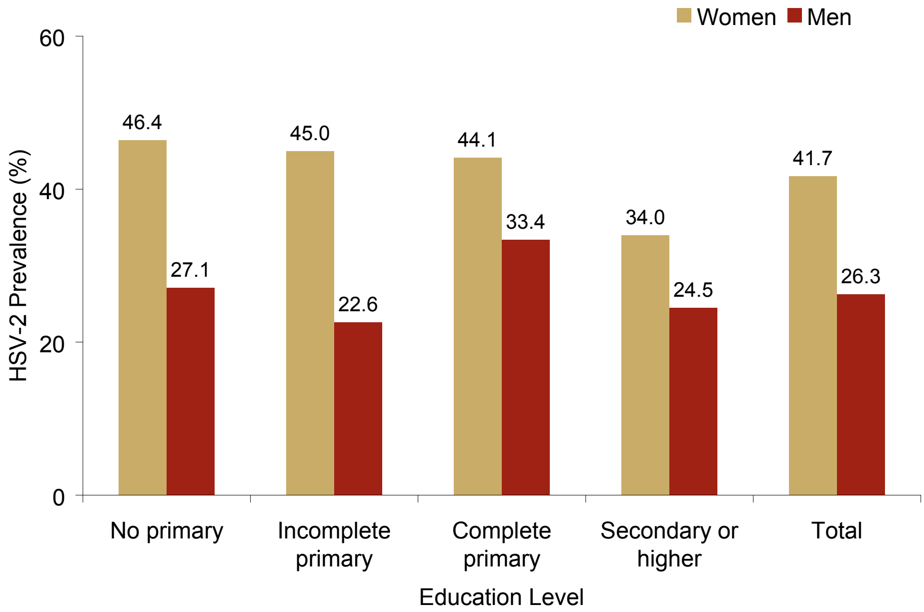


Figure 12.3d Among women with no primary education, nearly half were HSV-2-infected; and approximately one third of women with secondary education or higher were HSV-2-infected.

HSV-2 prevalence varied significantly by level of education among women and men. Among women and men with no primary education, 46.4% and 27.1%, respectively, were HSV-2-infected. HSV-2 prevalence did not vary across wealth quintiles (data not shown).

Data in Context: Low HSV-2 Awareness

In Kenya, HSV-2 is a silent epidemic. Awareness of HSV-2 is very low, even among health care providers, despite the high prevalence of HSV-2 and the potential role of HSV-2 in driving the HIV epidemic. Researchers estimate that in settings with high HSV-2 prevalence, such as Nyanza province, symptomatic HSV-2 infection could contribute to the risk of HIV-infection in more than one in four new cases of HIV.[12]

Although HSV-2 treatment is becoming more widely accessible, many cases of HSV-2 go undiagnosed and are not treated due to asymptomatic infections and lack of awareness and training of health care providers. In 2006, the Ministry of Health's Reproductive Health Department and NASCOP updated STI guidelines[13] to include genital herpes in syndromic management charts.

12 Freeman EE, Orroth KK, White RG, et al. 2007.

13 Ministry of Health: National Guidelines for Reproductive Tract Infection Services, Kenya 2006.

12.4 Acquiring and Transmitting HSV-2

Figure 12.4a HSV-2 prevalence among women and men aged 15-64 years by number of lifetime sexual partners, Kenya 2007.

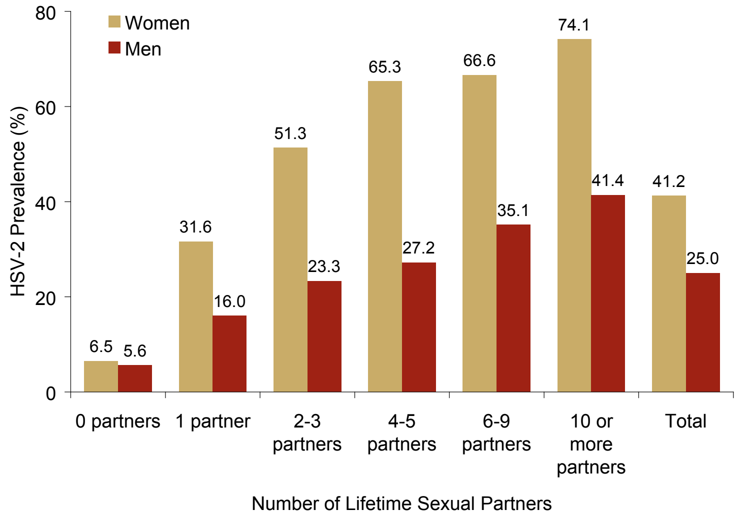


Figure 12.4a Among adults with two or more lifetime partners, more than half of women and over a fifth of men were HSV2-infected.

HSV-2 prevalence increased significantly and monotonically with number of lifetime sex partners for women and men. Estimates among women ranged from 6.5% among those who reported no lifetime sexual partners to 74.1% of those who reported 10 or more partners. Among men, HSV-2 prevalence ranged from 5.6% among men who reported no lifetime partners to 41.4% among men who reported 10 or more partners.

Figure 12.4b HSV-2 prevalence among women and men aged 15-64 years by number of sexual partners in the last 12 months, Kenya 2007.

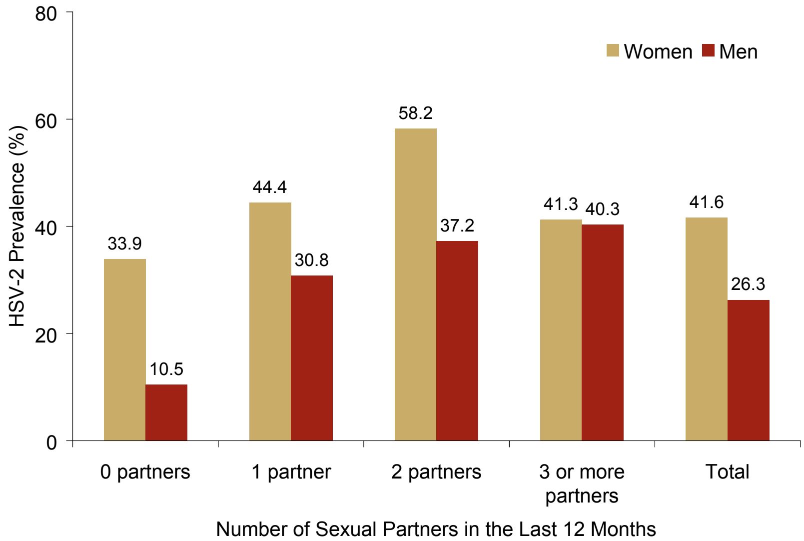


Figure 12.4b HSV-2 prevalence varied significantly by number of sexual partners in the last 12 months among women and men.

Among those reporting sexual activity in the year before the survey, overall HSV-2 prevalence was 41.6% for women and 26.3% for men. HSV-2 prevalence peaked among women who reported two partners in the year prior to the survey at 58.2% and among men who reported three or more partners in the year prior (40.3%).

Figure 12.4c HSV-2 prevalence among men aged 15-64 years by male circumcision status, Kenya 2007.

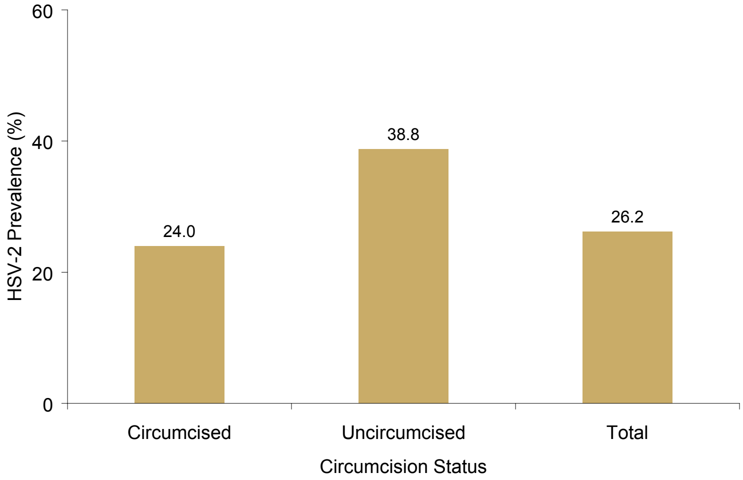


Figure 12.4c Prevalence of HSV-2 among uncircumcised men was one and a half times higher than that of circumcised men.

HSV-2 prevalence among men who reported being circumcised (24.0%) was significantly lower than HSV-2 prevalence among uncircumcised men (38.8%).

12.5 Co-Infection with HIV and HSV-2

Table 12.5 describes the distribution of HIV, HSV-2, and co-infection with HIV and HSV-2 among adult women and men in the 2007 KAIS.

Table 12.5 Co-infection with HIV and HSV-2 among women and men aged 15-64 years, Kenya 2007.

	Women		Men		Total	
	n	%	n	%	N	%
HIV only	119	1.3	97	1.4	216	1.4
HSV-2 only	3019	34.6	1450	22.3	4469	29.3
Both HIV and HSV-2	612	7.1	272	4.0	884	5.8
Neither HIV nor HSV-2	5203	57.0	4935	72.3	10138	63.5
Total	8953	100.0	6754	100.0	15707	100.0

Percents are weighted; frequencies are unweighted.

Among adults aged 15-64 years, 5.8% were co-infected with HIV and HSV-2. In the absence of HSV-2 infection, HIV prevalence was low for both women and men (1.3% and 1.4%, respectively). Of all 2007 KAIS participants, 29.3% were infected with HSV-2 only and not with HIV. This was significantly different by sex with more women (34.6%) infected with HSV-2 only than men (22.3%).

Of all HIV-infected adults in the 2007 KAIS, 80.7% were also infected with HSV-2. By comparison, among adults not infected with HIV, HSV-2 prevalence was 31.6%. KAIS data did not distinguish whether a person was first infected with HIV or first infected with HSV-2, or if they were infected with both during the same encounter.

Figure 12.5a HIV prevalence by HSV-2 status among adults aged 15-64 years, Kenya 2007.

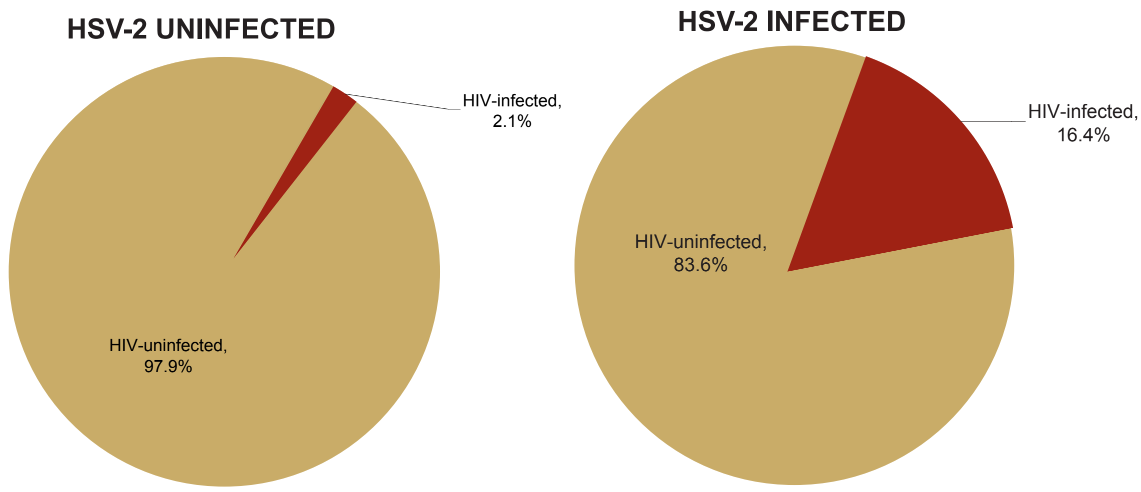


Figure 12.5a HIV infection is nearly eight times more likely among those infected with HSV-2 than those uninfected.

Among HSV2-infected adults, 16.4% were HIV-infected. Among HSV2-uninfected adults, 2.1% were HIV-infected. The difference in HIV prevalence by HSV-2 status was statistically significant.

Figure 12.5b HSV-2 prevalence among couples by HIV status of couple, Kenya 2007.

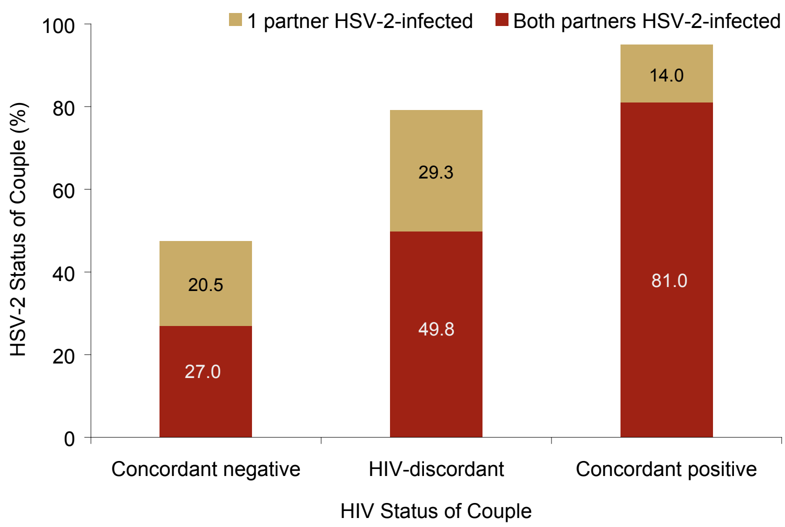


Figure 12.5b In nearly half of all HIV-discordant couples, both partners were infected with HSV-2.

HIV or HSV-2 concordant couples are defined by both partners having the same infection status (i.e. both are infected or both are uninfected with HIV or HSV-2). In the majority of concordant HIV-infected couples in Kenya, both partners also were infected with HSV-2 (81.0%). Among concordant HIV-uninfected couples, 27.0% were concordant HSV2-infected and 20.5% were HSV2-discordant. In 79.1% of all HIV-discordant couples, one or both partners were infected with HSV-2: 29.3% were HSV-2 discordant and 49.8% were concordant HSV2-infected.

12.6 HSV-2 prevalence and Perceived Risk of HIV, STI Symptoms, STI Treatment-seeking Behaviour, and Condom Use

Worldwide, the vast majority of those infected with HSV-2 do not know they are infected and therefore may not be aware of their increased vulnerability to HIV. In the 2007 KAIS, approximately two-thirds (63.8%) of adults infected with HSV-2 believed they had little or no risk for HIV infection. Participants who self-reported that they were HIV positive were not included in this sample.

Of all 2007 KAIS participants, 90.5% had heard of STIs other than HIV. Among those aware of STIs who had ever had sex, 96.7% reported having no STI and no STI symptoms (e.g. genital discharge, sore or ulcer) in the year prior to the survey. The percent of HSV-2-infected adults who reported STI symptoms in the year before the survey was not significantly different from the percent of HSV-2-uninfected adults who reported STI symptoms (4.6% and 3.1%, respectively).

Figure 12.6a Treatment-seeking behaviour among women and men aged 15-64 years reporting an STI or symptoms of STI by HSV-2 status, Kenya 2007.

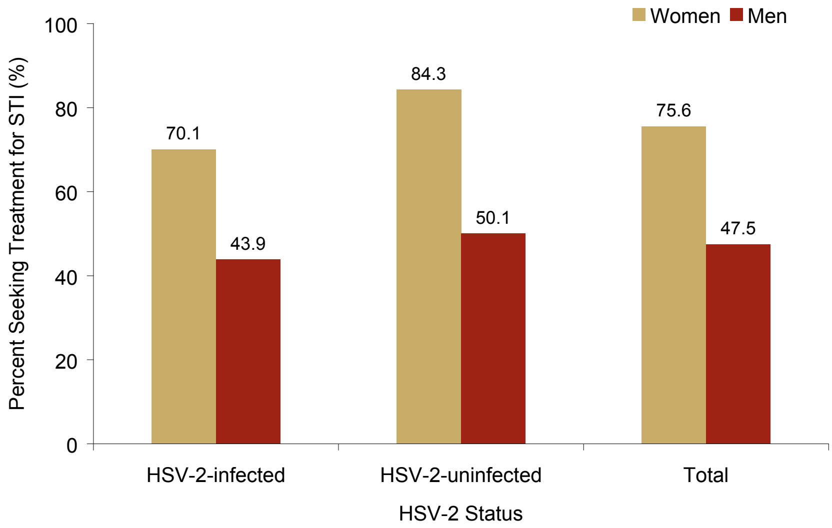


Figure 12.6a STI treatment-seeking behaviour varied by sex but was not significantly different by HSV-2 status.

Among the 3.3% of 2007 KAIS participants who self-reported having had an STI or symptoms of STI (regardless of HSV-2 infection status), 59.3% sought advice or treatment. A significantly higher proportion of women than men sought advice or treatment for their STI (75.6% versus 47.5%, respectively). STI treatment-seeking behaviour was not significantly different between those infected and uninfected with HSV-2 (57.4% and 61.2%, respectively).

Figure 12.6b Condom use during last sexual activity among women and men aged 15-64 years by HSV-2 status, Kenya 2007.

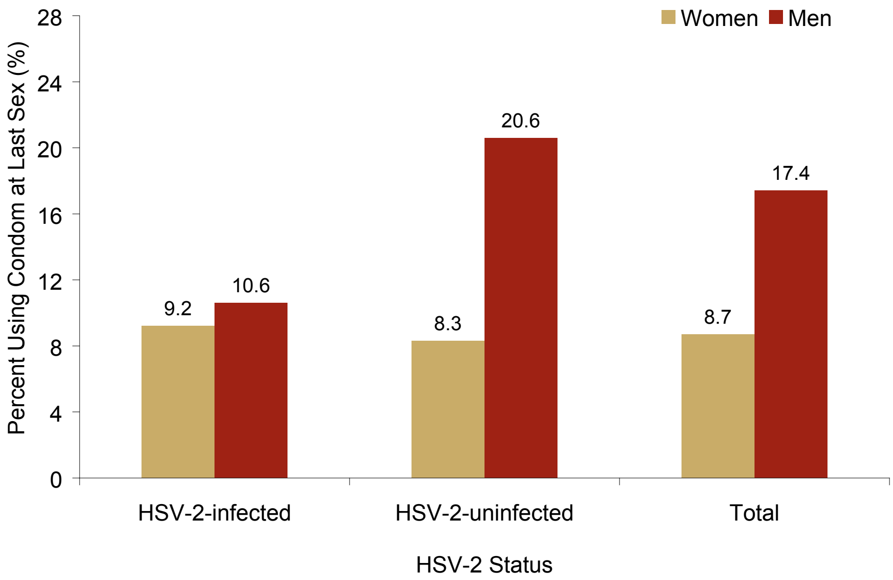


Figure 12.6b Condom use during last sexual activity varied significantly by HSV-2 status among men.

Overall, condom use during last sexual activity was low and did not vary significantly by HSV-2 infection status for women. However, condom use during last sexual activity was significantly higher among HSV-2-uninfected men compared to HSV-2-infected men (20.6% and 10.6%, respectively).

Figure 12.6c Consistent condom use by partnership type and HSV-2 infection status, Kenya 2007.

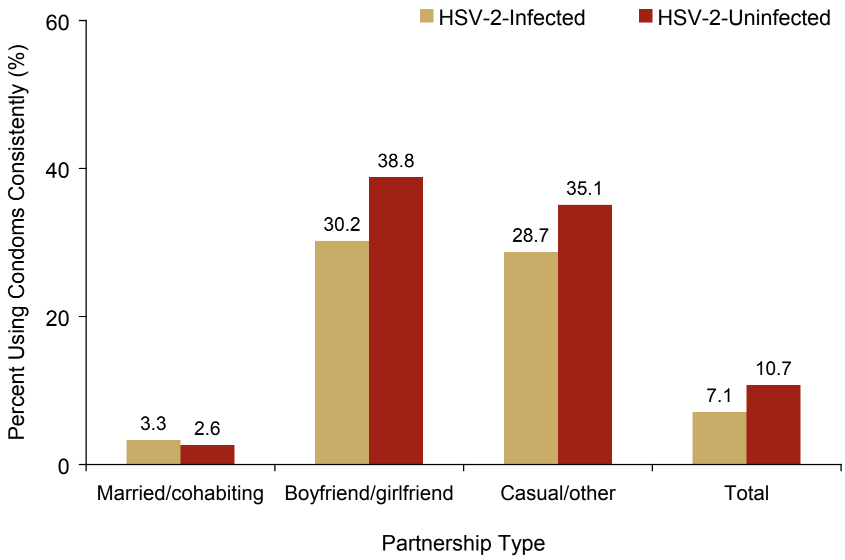


Figure 12.6c Consistent condom use varied significantly by partnership type for both HSV-2-infected and HSV-2-uninfected persons

In this section, "consistent condom use" was defined as condom use every time the respondent had sexual intercourse with a partner in year prior to the survey. Overall, consistent condom use was low among 2007 KAIS participants and differed significantly by partnership type regardless of HSV-2 infection status of the respondent. HSV-2-uninfected persons used condoms consistently in 10.7% of sexual partnerships and HSV-2-infected persons used condoms consistently in 7.1% of partnerships. In partnerships with boyfriends and girlfriends, condoms were used consistently in 30.2% of partnerships reported by HSV-2-infected persons and 38.8% of partnerships reported by HSV-2-uninfected persons. Similar rates of consistent condom use were observed for casual partnerships by HSV-2-infected (28.7%) and HSV-2-uninfected (35.1%) respondents. Among married and cohabiting partnerships, consistent condom use was reported in only 2.6% and 3.3% of partnerships reported by HSV2-uninfected and HSV2-infected adults, respectively.

Though using condoms consistently and correctly is effective for protecting against many STIs including HIV, condoms may be less protective against HSV-2 transmission than for other STIs. If ulcers occur in places of contact other than those covered by condoms, condom use may be less effective in reducing the risk of HSV-2 transmission or acquisition.

12.7 Gaps and Unmet Needs

- **Increased awareness of HSV-2 and its role in transmitting and acquiring HIV for the general population is needed.**
- **According to the 2007 KAIS, HIV-infected adults are likely to be co-infected with HSV-2. HSV-2 diagnostic and treatment services should be expanded to HIV care clinics. Healthcare workers should be trained to recognize symptoms of HSV-2 and provide treatment for symptomatic HSV-2.**
- **HSV-2 infection is high in HIV-discordant relationships. Encouraging condom use is critical for protecting uninfected adults from acquiring HIV and HSV-2.**
- **HIV prevention programs that promote condom use, male circumcision, and fewer sexual partners should be considered potential avenues for also educating the public about HSV-2.**
- **Most HSV2-infected individuals did not recognize they had an STI, but treatment-seeking behaviour among those who recognized symptoms was relatively high, especially among women. Campaigns to improve STI recognition are necessary to facilitate access to treatment services.**

13

Prevalence of Syphilis and Co-infection with HIV and Syphilis

13.1 Key Findings

- The prevalence of syphilis seropositivity in Kenya was 1.8%.
- Prevalence was similar between women (1.7%) and men (1.9%), except among adults aged 50-64 years, among whom the higher prevalence for men compared to women was marginally significant (4.4% versus 2.5%).
- Syphilis seropositivity significantly increased with numbers of lifetime sexual partners and was significantly higher in uncircumcised than circumcised men.
- Among participants who were seropositive for syphilis, 16.9% also had HIV, 71.5% had HSV-2 and 15.9% had both HIV and HSV-2.
- Syphilis seropositivity was significantly higher among HIV-infected than HIV-uninfected adults.

13.2 Introduction

The 2007 KAIS is the first national seroprevalence survey of syphilis in Kenya. Syphilis is a sexually transmitted infection (STI) caused by the bacterium Treponema pallidum and is a common cause of genital ulcer disease in many countries. Syphilis causes three stages of symptomatic disease: primary syphilis, characterised by an ulcer at the site of infection; secondary syphilis, characterised by a generalised rash and fever; and tertiary syphilis characterised by neurological, cardiovascular and other potentially life-threatening and severely disabling systemic signs and symptoms, including joint degeneration. Time between secondary syphilis and the appearance of tertiary syphilis can be two or more decades, and is referred to as latent syphilis. Syphilis is most transmissible in the primary and secondary stages, but pregnant women can transmit the infection to the fetus at any point, causing congenital syphilis. Syphilis is easily curable with penicillin, although not all damage is reversible, especially in congenital and tertiary syphilis.[1,2]

Like HSV-2, syphilis has been associated with an increased risk of acquiring and transmitting HIV, most likely through genital ulcers. HIV-infected individuals co-infected with syphilis are also at substantially elevated risk of tertiary syphilis, notably neurosyphilis, which can lead to psychosis and motor problems.

Appendix B.13 provides sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05;

1 Telzak E, Chiasson M, Bevie P, et al. HIV-1 seroconversion in patients with and without genital ulcer disease: a prospective study. Ann Intern Med 1992; 119:1181-1185.

2 Zellan J, Augenbraun M. Syphilis in the HIV-infected patient: an update on epidemiology, diagnosis, and management. Curr HIV/AIDS Rep 2004; 1:142-147.

marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

Population estimates reported in this chapter were calculated based on the 2007 projected population reported in the *Revised Population Projections for Kenya 2000-2020* (Kenya National Bureau of Statistics, August 2006). Weighted estimates for selected indicators from the 2007 KAIS were used in these calculations. Methods for calculating population estimates are described in Appendix A.

13.3 Syphilis Prevalence

Overall, 1.8% of Kenyans aged 15-64 years were infected with syphilis. This corresponded to an estimated 356,000 people nationwide.

Data in Context: Laboratory Testing for Syphilis in the 2007 KAIS

Syphilis testing was conducted using two types of laboratory tests. All serum specimens were first screened using a Treponema pallidum particle agglutination assay (TPPA) test. TPPA remains reactive indefinitely, even after treatment, and was thus used to screen for antibodies in order to identify participants previously exposed to syphilis. All TPPA-positive specimens were then tested using a rapid plasma reagin (RPR) test on undiluted (i.e. neat) serum specimen. This algorithm better identifies current infection, though sometimes, a reactive RPR may also reflect late syphilis that has been successfully treated. In this chapter, we refer to participants with both a positive TPPA and positive RPR test as "infected." For quality control purposes, all TPPA reactive specimens and 5% of nonreactive specimens were re-tested at the quality assurance laboratory using the same TPPA/RPR algorithm. It is worth noting that the standard algorithm for serological diagnosis of syphilis is an RPR test followed, if reactive, by a TPHA, a test similar but not identical to TPPA. In the 2007 KAIS, the laboratory used TPPA instead of TPHA because TPPA produces fewer false positive results and is faster to conduct. Participants classified as seropositive on both TPPA and RPR who returned to receive their results were referred for treatment for active infection.

Figure 13.3a Prevalence of syphilis among women and men aged 15-64 years by five-year age group, Kenya 2007.

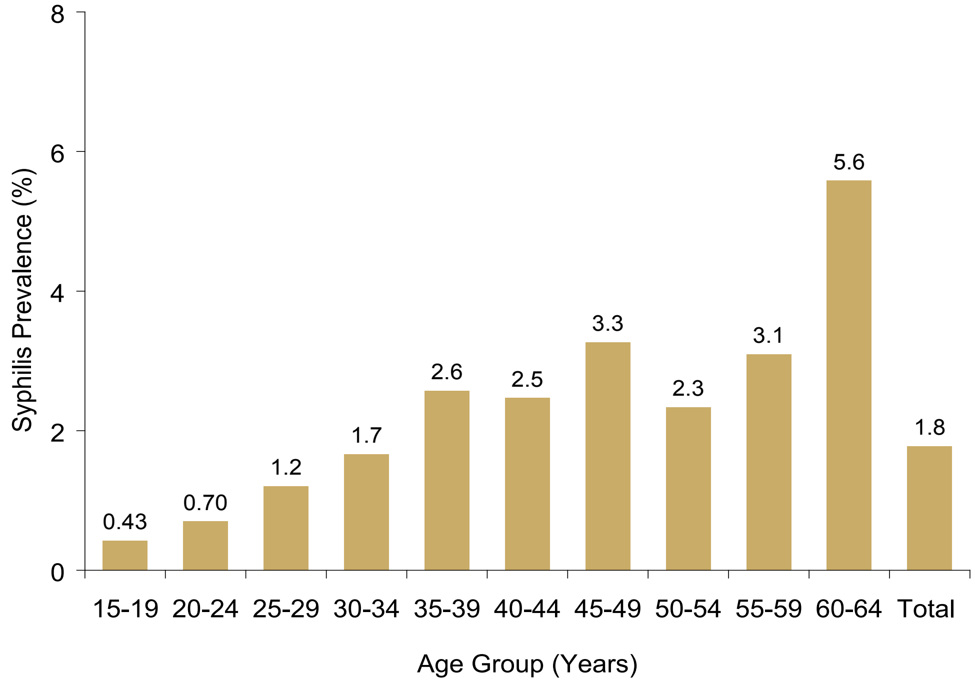


Figure 13.3a The prevalence of syphilis increased from adolescence to adulthood.

Older age groups experienced a significantly higher burden of syphilis compared to younger age groups. Among adults aged 15-24 years, 0.6% were infected with syphilis while 2.1% of adults aged 25-49 years were infected, as were 3.4% of those aged 50-64 years.

Figure 13.3b Prevalence of syphilis among women and men aged 15-64 years by five-year age group, Kenya 2007.

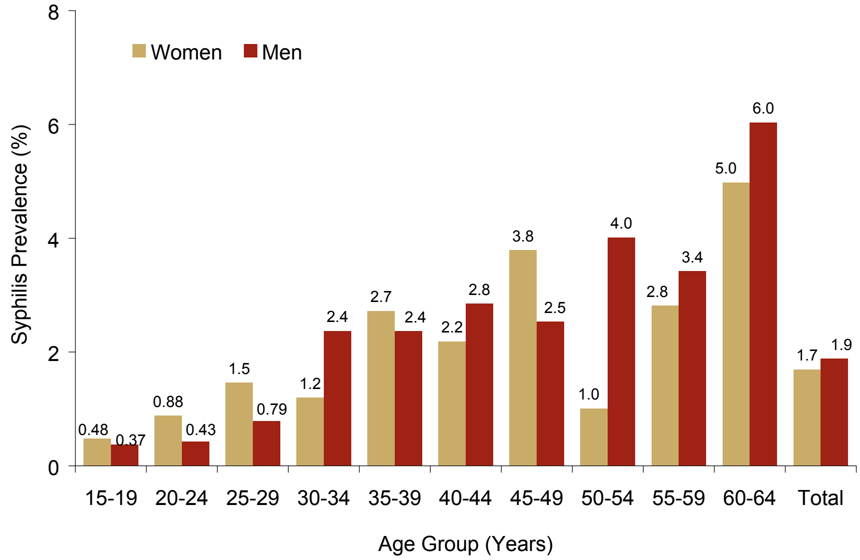


Figure 13.3b The prevalence of syphilis was highest among older men (aged 50-64 years) and lowest among youth (aged 15-24 years).

The national prevalence estimate for syphilis seropositivity was 1.7% among women and 1.9% among men, corresponding to an estimated 175,000 women and 182,000 men across Kenya. Differences in the prevalence of syphilis between women and men were not statistically significant among younger and middle-aged adults from 15-49 years of age. Among those aged 50-64 years, the higher rates of syphilis among men compared to women were marginally significant.

The distribution for syphilis in the 2007 KAIS by sex was different from patterns of HIV and HSV-2; as shown in Chapters 2 and 12, women had a significantly greater burden of both HIV and HSV-2.

Table 13.3a HIV and HSV-2 prevalence among women and men aged 15-64 years, Kenya 2007.

	Women	Men	Total
HIV	8.4	5.4	7.1
HSV-2	41.7	26.3	35.1

The distribution of syphilis by age was also different compared to HIV and HSV-2. For HIV, prevalence was highest in the middle-aged groups and lowest among both the youngest and oldest age groups. For HSV-2, prevalence rates appeared to peak in middle-aged groups and leveled off thereafter. Given that syphilis is treatable while infection with HIV or HSV-2 is chronic, these different patterns of distribution are expected. The prevalence of syphilis was similar in rural and urban areas at 1.4% and 1.9%, respectively. This pattern was similar for both women (1.2% urban; 1.9% rural) and men (1.7% urban; 1.9% rural).

Figure 13.3c Prevalence of syphilis among women and men aged 15-64 years by province, Kenya 2007.

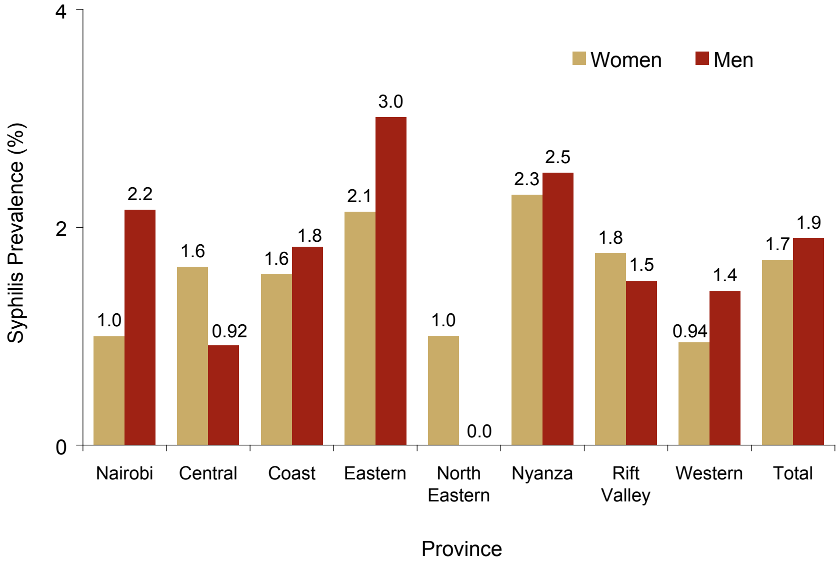


Figure 13.3c The prevalence of syphilis varied significantly by province and was lowest in North Eastern province.

The prevalence of syphilis among women did not vary significantly by province (range: 0.94%-2.3%), while among men, differences by province were marginally significant (range: 0.0%-3.0%). In North Eastern province, no cases of active syphilis were detected among men. The prevalence of syphilis in North Eastern province among women and men combined was the lowest, compared to the rest of the country, at 0.60%, and this difference was marginally significant. Prevalence estimates for HIV and HSV-2 were also lowest in North Eastern province (0.8% and 6.7%, respectively).

The 2007 KAIS sample size was not powered to provide provincial estimates for syphilis. Given the small number of syphilis cases detected in KAIS (n=262), apparent provincial differences and gender differences by province in syphilis prevalence should be interpreted cautiously.

Figure 13.3d Prevalence of syphilis among women and men aged 15-64 years by marital status, Kenya 2007.

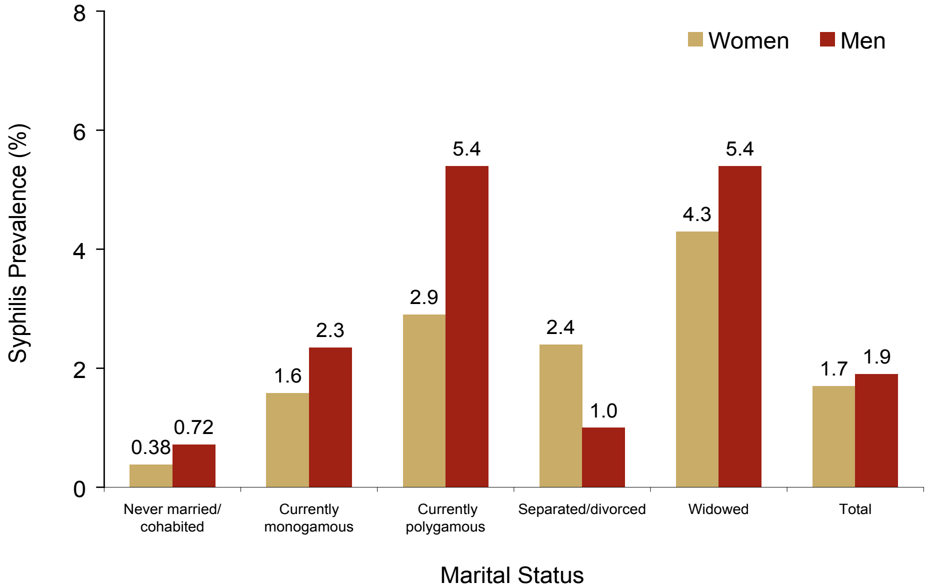


Figure 13.3d Women and men who had never married or cohabited had the lowest syphilis prevalence.

The term "currently monogamous" refers to respondents that were married or cohabiting in a union with only one spouse or one sexual partner.

The prevalence of syphilis varied significantly by marital status among all 2007 KAIS participants, but for women and men separately, this association was not significant. The 2007 KAIS found that 53.7% of the adult population aged 15-64 years was in a monogamous union at the time of the survey and 6.7% was in a polygamous union (see Appendix B.1). Of those in monogamous unions, 1.6% of women and 2.3% of men had syphilis infection, while of those in polygamous unions, 2.9% of women and 5.4% of men were infected with syphilis. Women and men who had never married or cohabited had lower prevalence of syphilis (0.38% for women and 0.72% for men) compared to other women and men.

Figure 13.3e Prevalence of syphilis among women and men aged 15-64 years by education level, Kenya 2007.

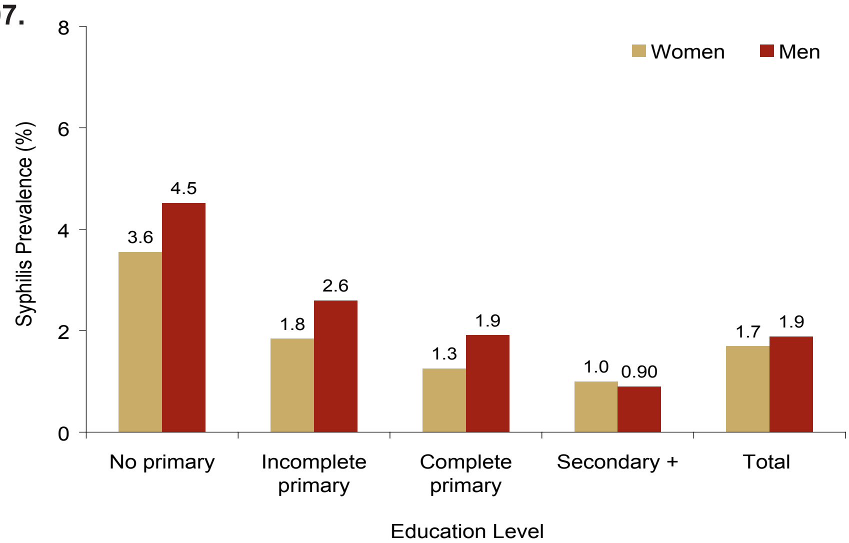


Figure 13.3e Syphilis prevalence varied significantly with education level; those who reported secondary school or higher education had lowest rates of syphilis.

According to the 2007 KAIS, participants who reported less years of education had significantly higher syphilis prevalence than participants who reported more years of education. Syphilis prevalence decreased significantly and monotonically for both women and men, with highest syphilis prevalence observed in participants who reported no primary education (3.6% for women and 4.5% for men) and lowest syphilis prevalence among participants who reported secondary or higher education (1.0% in women and 0.9% in men).

Figure 13.3f Prevalence of syphilis among women and men aged 15-64 years by wealth index, Kenya 2007.

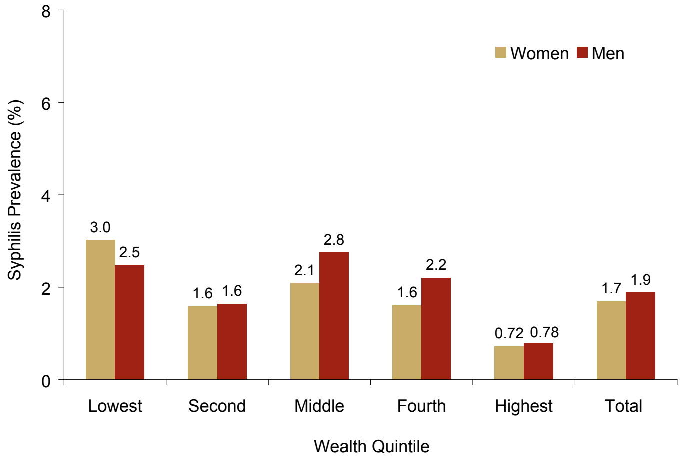


Figure 13.3f Individuals in the highest compared with the lower wealth quintiles had significantly lower syphilis prevalence.

The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, water access and sanitation facilities. The wealth index placed households on a continuous scale of relative wealth using principal components analysis. Individuals were ranked according to the score of the household in which they resided and the sample was divided into five groups, each with an equal number of individuals (quintiles), ranging from the lowest to highest level of wealth.

The prevalence of syphilis varied significantly by wealth index. The prevalence of syphilis was significantly lower among adults in the highest quintile (0.72% among women and 0.78% among men), compared with all other groups (1.6%-3.0%).

13.4 Acquiring and Transmitting Syphilis

Figure 13.4a Prevalence of syphilis among women and men aged 15-64 years by number of lifetime sexual partners, Kenya 2007.

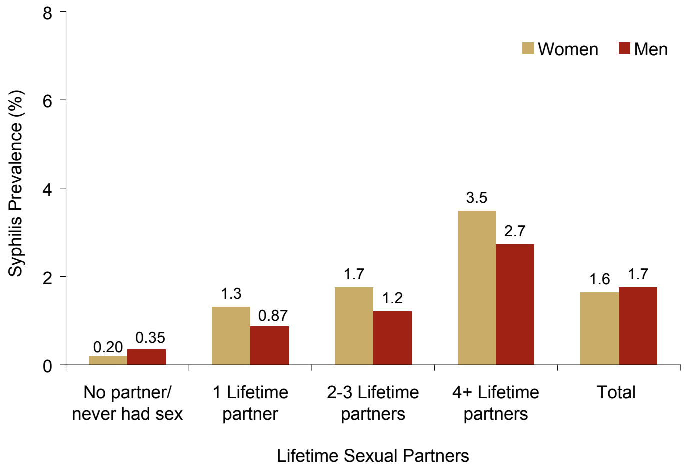


Figure 13.4a The prevalence of syphilis significantly increased with increasing number of lifetime sexual partners.

"Total" category includes only those women and men for whom sexual partner data were available.

Overall, number of lifetime partners was significantly associated with prevalence of syphilis. The number of lifetime sexual partners a person has had may give some indication of their exposure to syphilis and other STIs. Among women, the prevalence of syphilis rose from 0.20% among those with no sexual partners to 3.6% among those with four or more partners. Among men, prevalence rose from 0.35% among those with no partners to 2.7% among those with four or more partners. The non-zero prevalence among those with no lifetime sexual partners may be explained by misreported sexual activity or false positive test results. Please note that consistent with other chapters, the information presented here is not adjusted for other factors, including age.

Figure 13.4b Prevalence of syphilis in men aged 15-64 years by circumcision status, Kenya 2007.

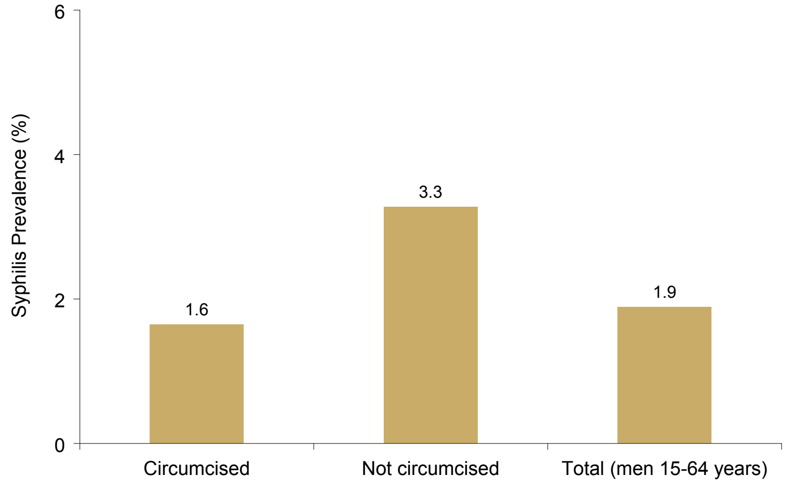


Figure 13.4b The prevalence of syphilis among uncircumcised men was two times greater than prevalence among circumcised men.

The efficacy of medical male circumcision in preventing HIV has been established in high-quality randomised controlled trials in sub-Saharan Africa. The 2007 KAIS found that lack of male circumcision was significantly associated with increased levels of both HIV and HSV-2 infection among men. Similarly, the prevalence of syphilis among uncircumcised men (3.3%) was approximately two times higher than the prevalence among circumcised men (1.6%) and this difference was significant.

13.5 HIV and HSV-2 Prevalence by Syphilis Status

Figure 13.5a Prevalence of HIV, HSV-2 and both infections by syphilis status among adults aged 15-64 years, Kenya 2007.

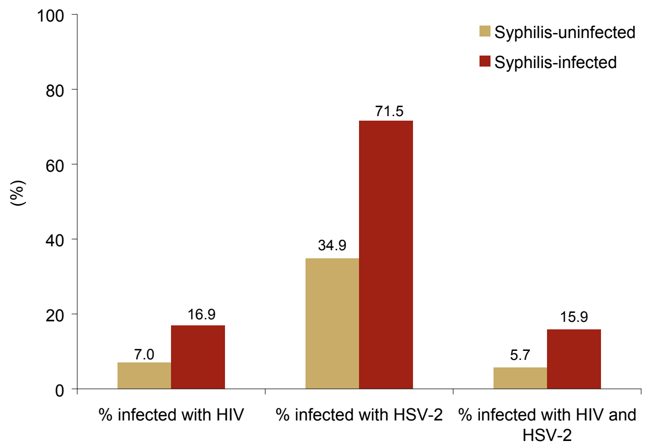


Figure 13.5a Infection with HIV, HSV-2 or both was significantly greater among people infected with syphilis than among those not infected with syphilis.

Persons with syphilis were significantly more likely to be infected with HIV, HSV-2 or both compared to persons who were uninfected with syphilis. Among persons with syphilis, 16.9% were infected with HIV, compared to only 7.0% of those not infected with syphilis. The great majority of those with syphilis were also infected with HSV-2 (71.5%) compared to 34.9% of those without syphilis. The prevalence of co-infection with both HIV and HSV-2 was 15.9% among those with syphilis and 5.7% among those without.

Of the 7.1% of adults aged 15-64 years infected with HIV, a significantly higher percentage had syphilis compared to HIV-uninfected adults (4.2% versus 1.6%, respectively). In particular, syphilis infection was four times more prevalent among HIV-infected men (6.4%) compared to HIV-uninfected men (1.6%). This association was also significant.

Among the 35.1% of adults aged 15-64 years infected with HSV-2, a significantly higher percentage had syphilis compared to HSV2-uninfected adults (3.6% versus 0.79%, respectively). In this survey we were unable to determine whether a person was first infected with HIV, HSV-2 or syphilis.

13.6 Gaps and Unmet Needs

- **Patients tested for syphilis, and particularly those with found to be seropositive, should also be screened for HIV infection.**
- **Initial clinical evaluation for HIV offers an opportunity to screen patients for syphilis. Screening and treating HIV-infected adults for syphilis is one way to prevent progression to neurosyphilis and to reduce risk of transmitting syphilis or HIV to sexual partners or unborn babies.**

14

Household Characteristics and Impact of HIV on Households

14.1 Key Findings

- Nationally, 11.0% of households were affected by HIV, that is, at least one person in the household was infected with HIV.
- Most households did not treat their drinking water (60.1% of rural households and 52.1% of urban households), including both HIV-affected and HIV-unaffected households.
- Mosquito net coverage increased 2.5 times between the 2003 KDHS and the 2007 KAIS; 56.1% of households in 2007 owned at least one mosquito net compared to 21.8% in 2003.
- Overall, 11.1% of children under aged 18 years have lost one or both of their parents. In Nyanza, the percent of orphaned children was 20.9%.

14.2 Introduction

This chapter presents findings from the 2007 KAIS on basic characteristics of households and the relationship between HIV and households. In the 2007 KAIS, a household was defined as a person or group of people related or unrelated to each other who live together in the same dwelling unit or compound (group of dwelling units), share similar cooking arrangements, and identify the same person as head of household. The household questionnaire was administered to consenting heads of sampled, occupied households and its main purpose was to identify women and men eligible for the individual interview. A head of household was defined by KNBS as the key decision maker in the household whose authority was recognized by other members of the household. While this authority often comes with economic responsibility for the household, this is not always the case and therefore was not required to meet the definition for the 2007 KAIS.

The household questionnaire was used to collect information on all usual residents and visitors who spent the night preceding the interview in the dwelling. Many questions were asked at the household level rather than the individual level, such as source of drinking water and type of toilet facilities; these indicators were treated as characteristics of the dwelling unit or the household as a whole, not as a characteristic of any particular individual. Other questions were asked about individual members of the household, such as the age of each member and whether each member slept under a mosquito bednet. This information was also collected from the household questionnaire respondent. Additionally, the 2007 KAIS household questionnaire collected information on parental survivorship and living arrangements for children under the age of 18 years, as well as social and material support for ill adult members.

Appendix B.14 provides sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10. For any analysis that compared results from the 2003 KDHS and the 2007 KAIS data, the z-test statistic was used to compare the two weighted estimates from 2003 and 2007 and to determine if differences were statistically significant. Methods used for calculating the z-test statistic are described further in Appendix A.

Population estimates reported in this chapter were calculated based on the 2007 projected population reported in the *Revised Population Projections for Kenya 2000-2020* (Kenya National Bureau of Statistics, August 2006). Weighted estimates for selected indicators from the 2007 KAIS were used in these calculations. Methods for calculating population estimates are described in Appendix A.

14.3 Household Composition

This section presents information on the composition of households, including the sex of the head of household, the size of the household and the age distribution of household members. These characteristics are important because they may be associated with the welfare of the household. Female-headed households, for example, typically have fewer resources than male-headed households. In larger households, economic resources are often more limited as they have to be shared across more people. Additionally, where the household size is large, crowding can lead to health problems.

Figure 14.3a Sex of head of household (HH) in rural and urban areas, Kenya 2007.

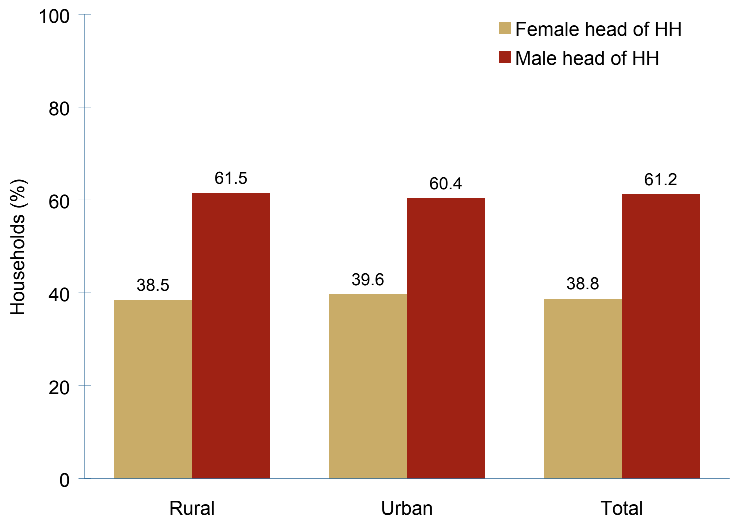


Figure 14.3a Most households in both rural and urban areas were headed by men.

Among all households, 61.2% were headed by men and 38.8% by women. These estimates were similar in all provinces, except in North Eastern province where a higher proportion of households were headed by women than by men (58.5% versus 41.6%, respectively). A significantly greater percentage of households were headed by women in the 2007 KAIS (38.8%) compared to the 2003 KDHS (31.7%), especially in urban areas where the percent of households with a female head significantly increased from 25.6% to 39.6%.

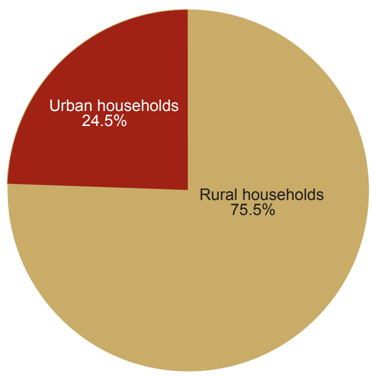


Figure 14.3b Percent distribution of households by residence, Kenya 2007.

While the urbanization of Kenya is ongoing, overall, the country remains largely rural. Of all households in the 2007 KAIS, 75.5% were classified as being located in rural areas, with 24.5% located in urban areas.

Figure 14.3c Mean size of household in rural and urban areas, Kenya 2007.

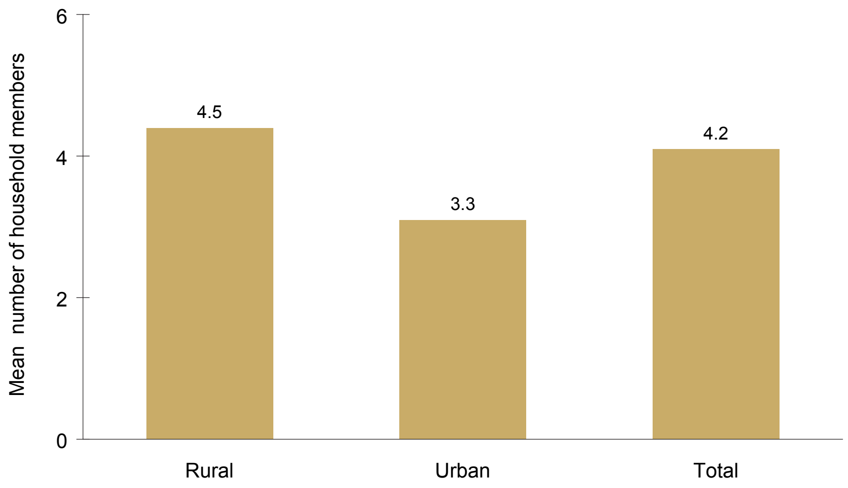


Figure 14.3c The mean household size was 4.2 persons per household with a significantly higher mean household size in rural areas compared to urban areas.

This analysis was limited to usual members of household only. Visitors the night prior to the survey, representing 2.3% of all households surveyed, were excluded.

The mean household size in 2007 was 4.2 persons per household, with a significantly higher mean size among rural households compared to urban households (4.5 persons versus 3.3 persons, respectively). The mean household size varied significantly by province, with Nairobi province having the lowest mean household size at 3.1 persons and North Eastern province having the greatest size at 5.4 persons per household. In the 2003 KDHS, the national mean was 4.4 persons per household, and 4.3 and 3.5 in rural and urban areas, respectively.

Figure 14.3d Household population, by age, sex and residence, Kenya 2007.

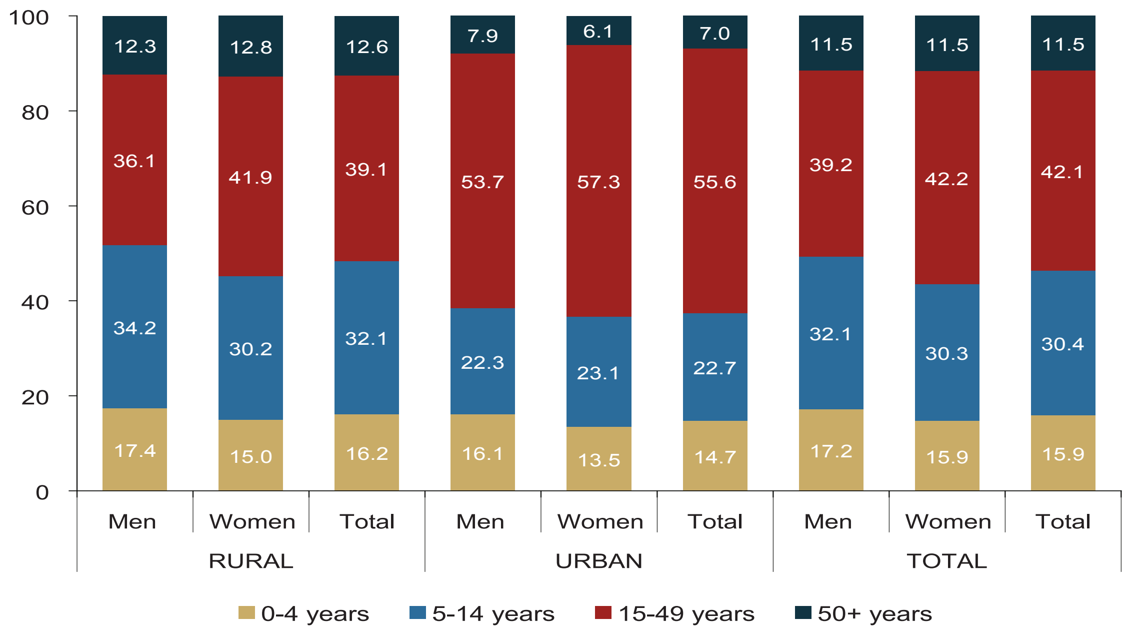


Figure 14.3d Households in rural areas had more children and more older adults compared to households in urban areas.

This analysis includes both usual members and household visitors who slept at the house the night before the survey.

Figure 14.3d presents the distribution of the 2007 KAIS household population, by age group, sex and rural/urban residence. The total population of surveyed households consisted of 40,443 individuals, of whom 52.5% were females and 47.5% were males (data not shown). The median age of the household population was 17.0 years, similar to previous observed population samples (17.5 in the 2003 KDHS and 16.9 in the 1998 KDHS). In the 2007 KAIS, individuals under the age of 15 years constituted 46.3% of the population, which was marginally higher than the 44.6% reported in 2003. Adults aged 15-49 years made up 42.1% of the population and those aged 50 years and older represented 11.5% of the household population. This was a statistically significant increase from 9.0% in 2003.

In 2007, the age distribution within households differed by residence, with significantly more children (aged 0-14 years) and older adults (aged 50 years or older) in rural areas compared to urban areas; urban areas consisted mainly of adolescents adults aged 15-49 years. In both rural and urban areas, the percent of males under five years was statistically greater than the percent of females.

14.4 Birth Registration

The GOK issues birth certificates and registers births in order to track growth and decline in the population. Birth certificates are more common at some types of health facilities, such as hospitals, than other facilities, such as health centres. Not all births registered with the civil authorities are also issued a birth certificate. When a large proportion of births is not officially recorded, planning for public services, such as education and health care, becomes a substantial challenge.

Figure 14.4a Children under five years of age who were issued a birth certificate or registered with the civil authority, by province, Kenya 2007.

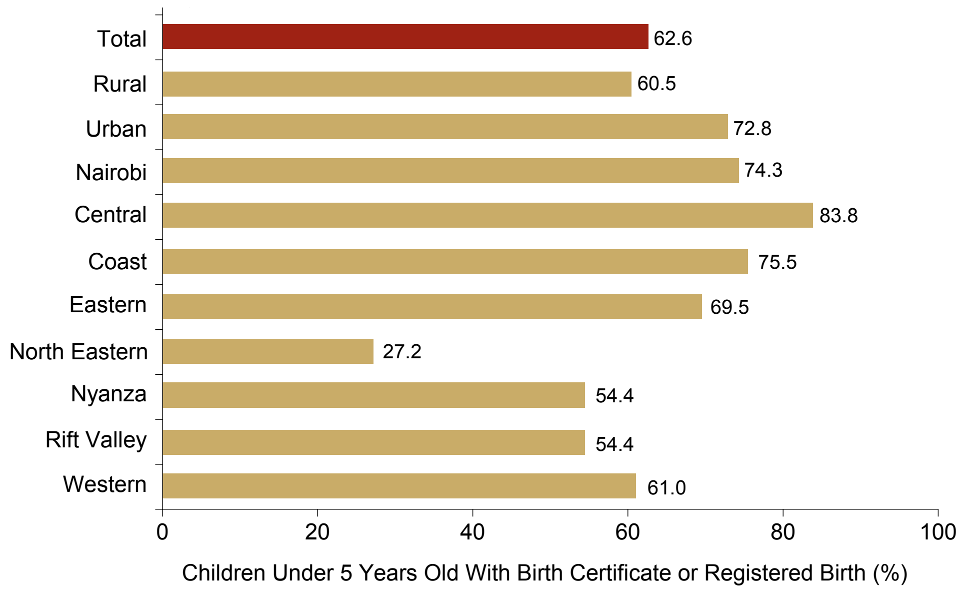


Figure 14.4a A significantly greater percent of children under five years of age in urban areas had a birth certificate or birth registration compared to children in rural areas.

The 2007 KAIS asked household heads to report whether household members aged 0-4 years had a birth certificate or had their birth registered with the civil authorities. In rural areas, 60.5% of children under the age of five years had a recorded birth while the percent was significantly higher in urban areas at 72.8%. Central province had the highest percent of recorded births (83.8%), while in North Eastern province, only 27.2% of births were recorded. Nyanza, Rift Valley and Western provinces also had rates of recording births that were lower than the national estimate (54.4%-61.0%).

14.5 Prevalence of HIV-Affected Households

In the 2007 KAIS, any household with at least one HIV-infected member was considered HIV-affected, regardless of that person's role in the household, CD4 cell count or knowledge of his or her status. Using this definition, the 2007 KAIS showed that 11.0% of households in Kenya were affected by HIV.

As stated in the introduction, 9,691 households completed the household questionnaire in the 2007 KAIS. Of these, 93.8% (9,094 households) had at least one member consent to both the individual interview and the blood draw. Analysis in this section is limited to only these households, for which HIV status was available for at least one household member. This is the first time this type of analysis has been conducted on national data for Kenya, and thus comparisons to 2003 are not readily available.

Figure 14.5a Households with at least one HIV-infected adult aged 15-64 years, Kenya 2007.

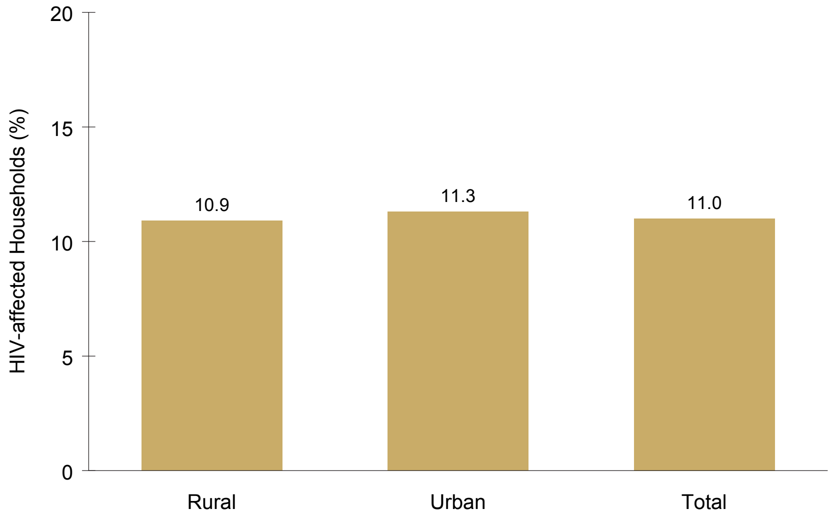


Figure 14.5a Similar percentages of households in rural and urban areas were affected by HIV, with at least one HIV-infected member.

Overall, 11.0% of households had at least one member infected with HIV. The estimates for rural and urban households were similar (10.9% and 11.3%, respectively). Nationally, this translates to approximately 930,000 HIV-affected households. According to the Ministry of Medical Services guidelines, as described in Chapter 11, all of these households are eligible for special services such as safe water systems (including safe water vessels and regular supplies of drinking water disinfectant), ITNs, and partner and family HIV counselling.

Figure 14.5b HIV-affected households by number of HIV-infected members, Kenya 2007.

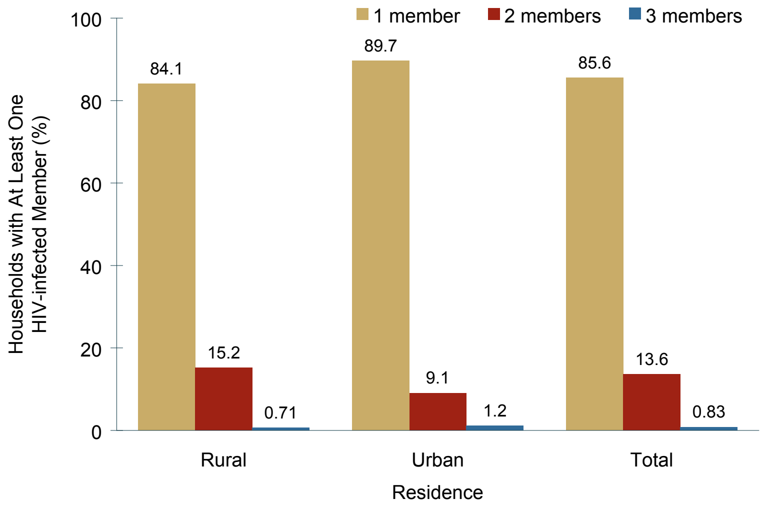


Figure 14.5b HIV-affected households in rural areas were more likely to have two HIV-infected members than households in urban areas.

The majority of HIV-affected households in rural and urban areas had one household member infected with HIV. A higher percentage of HIV-affected households in rural areas (15.2%) had two infected members compared to urban areas (9.1%). This difference was marginally significant. Nationally, less than one percent (0.83%) of affected households had three household members infected with HIV.

Figure 14.5c HIV-affected households with HIV-infected head of household, Kenya 2007.

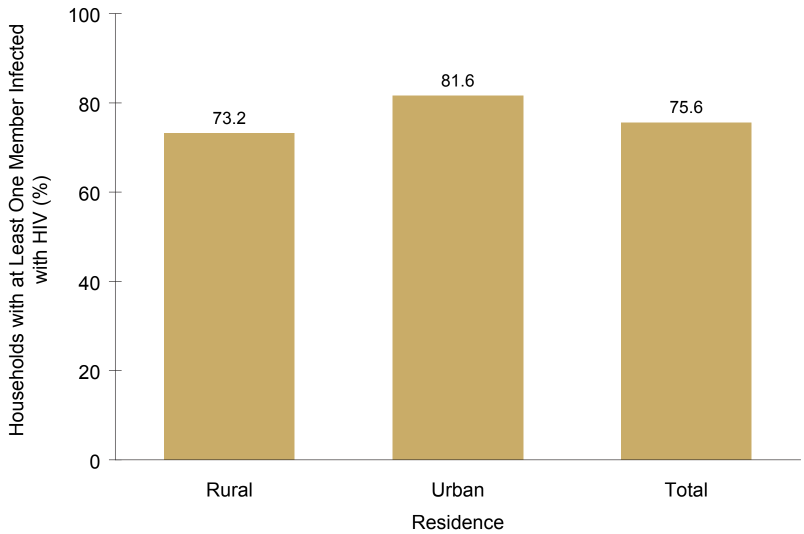


Figure 14.5c In most HIV-affected households, the household member infected with HIV was the head of household.

Among all households affected by HIV, that is, with at least one HIV-infected member, 75.6% had an HIV-infected head of household. There was no significant difference in this estimate for HIV-affected households in rural areas compared to urban areas. As stated before, head of household is defined by KNBS as the key decision maker in the household whose authority is recognized by other members of the household. While not always the case, this authority often comes with economic responsibility for the household.

Figure 14.5d CD4 cell category and ARV status of the HIV-infected member in HIV-affected households by rural/urban residence, Kenya 2007.

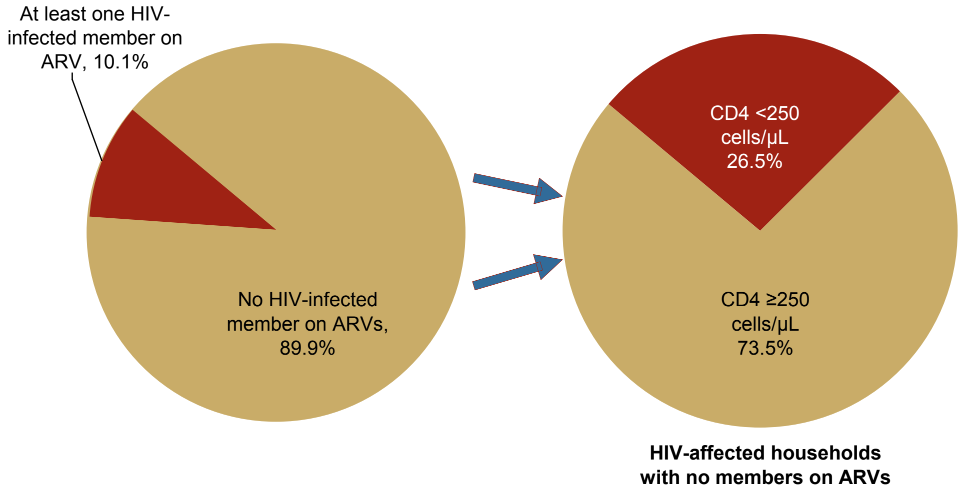


Figure 14.5d Nationally, nearly one in four HIV-affected households have at least one HIV-infected household member with CD4 <250 cells/µL who is not on ARVs.

Households with more than one HIV-infected adult were categorized first by ARV usage among any of its members; households with no ARV users were categorized by the lowest CD4 cell count among its infected members.

Of the 11.0% of households in KAIS affected by HIV, one in ten (10.1%) had at least one HIV-infected member on ARVs, while 89.9% had no members on ARVs. Of these 89.9%, 26.5% had at least one HIV-infected member with a CD4 cell count less than 250 cells/µL not taking ARVs. The estimates for rural and urban households were not statistically different (21.9% and 29.2%, respectively).

Similar to survey results presented in Chapter 5 of this report, the great majority (83.4%, data not shown) of HIV-affected households are not aware of their affected status since the HIV-infected member in the household was not aware that she or he was HIV-infected. Even among the 16.6% of HIV-affected households with at least one adult aware of his or her HIV-infected status, it is possible that these infected adults had not disclosed his or her HIV status to other members of the household. Knowledge of HIV status in households has critical implications for prevention of transmission to sexual partners in the household and for improving risk-reduction practices against other diseases in the household to ensure a healthier environment for the HIV-infected member.

14.6 Drinking Water and Toilet Facilities

Given the generally strong relationship between household economic conditions and exposure to diseases, information on housing characteristics is critical to explaining the associations between social and economic conditions of households. Household members were asked a number of questions about the source of drinking water, sanitation facilities, access to electricity and type of roofing and flooring materials of their dwellings. In this section, we focus on drinking water and sanitation facilities.

Source of drinking water is important because unsafe sources can contain waterborne pathogens. Sources of water expected to have minimal risk are piped water and public tap water, though even these are recommended for treatment prior to drinking. Wells, springs, surface water and rainwater are likely to carry pathogens that can cause disease, especially among immune-compromised individuals, such as those infected with HIV.

In Figures 14.6a-b, estimates are presented for the total household sample (9,961 households). Figures comparing HIV-affected households and HIV-unaffected households (Figure 14.6c) are limited to households that participated in the individual-level components of the survey (9,904 households).

Figure 14.6a Source of drinking water by rural and urban residence, Kenya 2007.

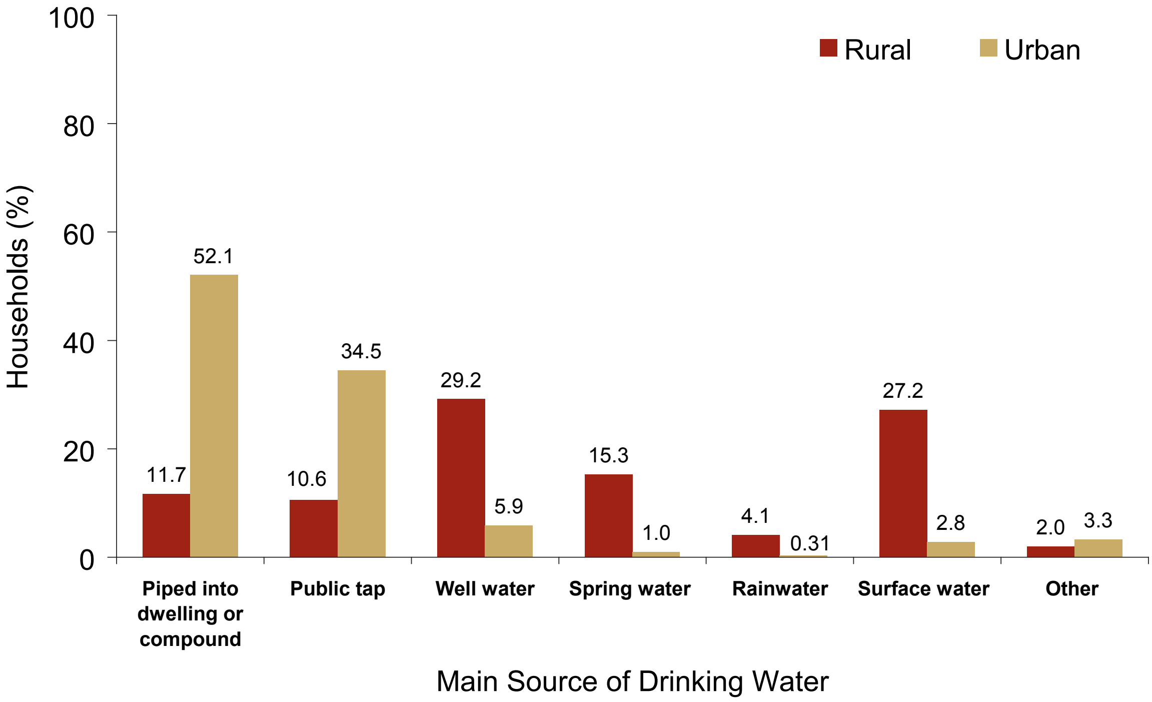


Figure 14.6a In urban areas, the majority of households use piped water or public tap as their main source of drinking water; in rural areas, the majority of households rely on well water or surface water.

Well water includes open well in compound (tube well), protected dug well, and unprotected dug well. Surface water Includes water from rivers, dam, lakes, ponds and streams, canals and irrigation channels

In the 2007 KAIS, household source of drinking water differed significantly by rural and urban residence. In rural areas, 27.2% of households collected their drinking water from surface water. Well water was also a common source of drinking water in rural areas, with 29.2% of households reporting wells as their main source. Reported sources of drinking water were different in urban areas, with only 2.8% and 5.9% of household heads identifying surface water and well water, respectively, as their main source of drinking water. The majority of urban households reported drawing their drinking water from piped water (52.1%) or public tap (34.5%). Differences by province were statistically significant; notably, 64.9% of households in North Eastern province used open wells on their compounds or plots as their main source of drinking water (data shown in Appendix B.14).

Compared to the 2003 KDHS, significantly more urban households accessed drinking water through public tap in 2007 (34.5% in 2007 versus 21.8% in 2003). In contrast, well water[1] was marginally less likely to be cited as a main source of drinking water in 2007 than in 2003 (5.9% in 2007 versus 11.8% in 2003). The percent of rural households citing surface water as their main source of drinking water decreased significantly by 10 percentage points from 37.4% in 2003 to 27.2%. The percent of these household citing public tap and well water as their main source of drinking water marginally increased from 2003 KDHS (6.8% and 21.1%, respectively) to 2007 KAIS, (10.8% and 29.2%, respectively).

1 In the 2003 KDHS, well water included water from an open or covered public well, or covered well in compound or plot.

Figure 14.6b Method of treating drinking water by rural and urban residence, Kenya 2007.

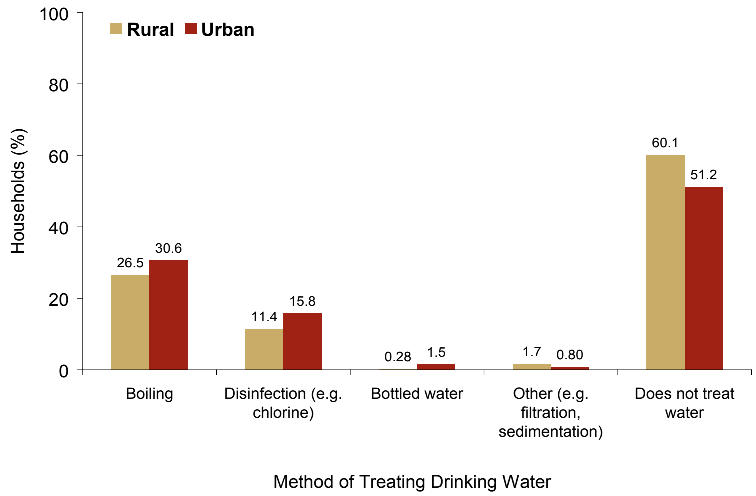


Figure 14.6b The majority of households in rural and urban areas did not treat water from their main drinking water source.

The majority of households in rural and urban areas did not treat their main source of drinking water (60.1% and 51.2%, respectively), with significantly more rural households lacking a treatment method compared to urban households. Among households in rural areas, 26.5% boiled their drinking water compared to 30.6% of households in urban areas. A further 11.4% of rural households used chemical disinfectants, such as chlorine or Waterguard®[2], compared to 15.8% of urban households. These differences were marginally significant.

Across provinces, water treatment practices differed significantly, with four out of 10 households in Nairobi (42.7%) and Nyanza provinces (41.9%) reporting that they did not treat their drinking water compared to nine out of 10 households (91.1%) in North Eastern province. These data are presented in Appendix B.14.

Figure 14.6c Method of treating drinking water among HIV-affected and HIV-unaffected households, Kenya 2007

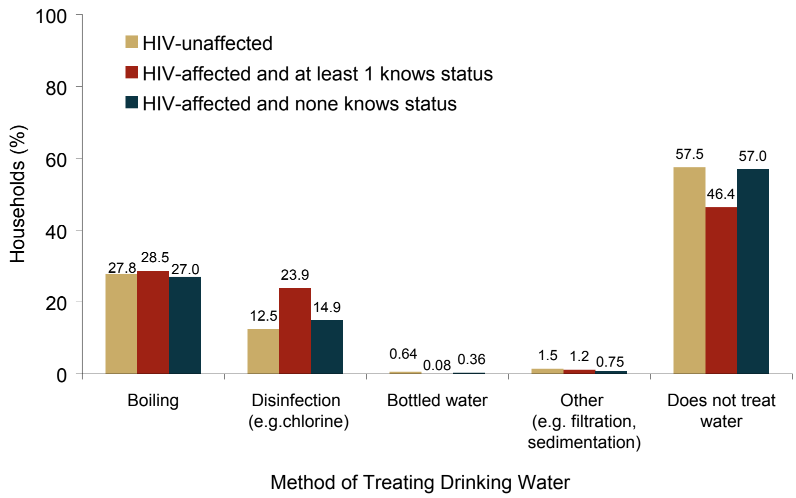


Figure 14.6c HIV-affected households with at least one member aware of his or her HIV status were significantly more likely to treat their drinking water with disinfection agents than other households.

2 Waterguard® is a chlorine-based water treatment product commonly distributed by the government and non-governmental organizations in Kenya. Participants answering Waterguard® for their household's drinking water treatment method were included in the disinfectant category.

All HIV-infected adults enrolled in care services should be provided counselling about the importance of safe drinking water for the prevention of common infections.

Households with at least one HIV-infected member who was aware of his or her HIV status were significantly less likely (46.4%) to have untreated drinking water than other households (57.0%-57.5%). These households were also marginally more likely (23.9%) to treat their drinking water with disinfectants, such as chlorine or Waterguard® compared to other households (12.5%-14.9%). Other water treatment practices, such as boiling water, did not differ between HIV-affected and HIV-unaffected households.

Figure 14.6d Type of household toilet facility by residence, Kenya 2007.

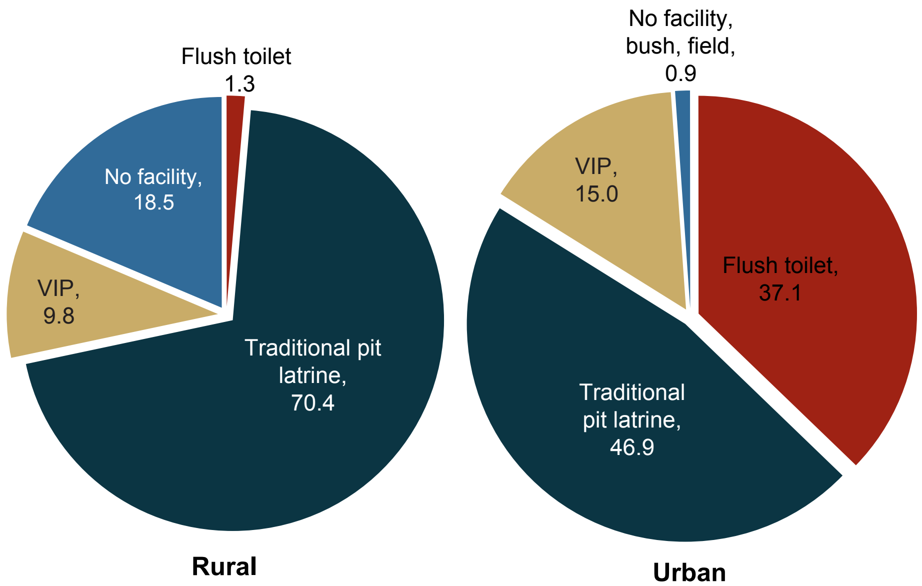


Figure 14.6d A traditional pit latrine was the most common type of toilet facility in both rural and urban households. Flush toilets were significantly more common in urban households than rural households.

A VIP is a ventilated, improved pit latrine.

Household toilet facilities differed widely between rural and urban areas. In rural areas, 18.5% of households had no toilet facility; therefore household members used the bush or fields for personal sanitation. This estimate was significantly higher than the 0.9% of urban households that reported no toilet facilities. Additionally, a significantly higher percentage of rural households (70.4%) compared to urban households (46.9%) used traditional pit latrines. Conversely, significantly more urban households used flush toilets (37.1%) and marginally more used ventilated, improved pit latrines (15.0%) compared to rural households (1.3% and 9.8%, respectively). There have been no significant changes in household sanitation facilities in rural or urban areas since the 2003 KDHS.

Among households with toilet facilities, nearly half shared these facilities with other households (48.3%). Sharing toilet facilities was significantly more common in the urban areas (74.0%) compared to rural areas (38.1%). In Nairobi and North Eastern province, approximately three out of 4 households had shared toilet facilities (71.2% and 77.2%, respectively). The percentage of households sharing toilet facilities was not statistically different from the 2003 KDHS where 68.3% of urban households and 32.1% of rural households reported sharing.

The type of toilet used by a household and the percentage sharing toilets did not significantly differ between HIV-affected and HIV-unaffected households.

14.7 Household Ownership of Mosquito Bednets

Malaria-related illness is a common cause of death among children in Kenya. Infection among pregnant women may lead to severe anaemia, which is associated with delivery of low birth weight infants. Malaria-related illness can also be fatal for immune-compromised individuals; the GOK has adopted malaria prevention as a key aspect of basic care for HIV-infected children, adolescents and adults. A cornerstone of preventing malaria transmission is the use of mosquito bednets while sleeping, especially ones that have been treated with insecticide. Widespread use of insecticide-treated nets (ITNs) reduces malaria at the population level by both decreasing human-vector contact as well as decreasing the length of adult mosquito life spans. The distribution of malaria in Kenya is not uniform due to geographical differences in altitude, rainfall and humidity, thus net distribution is also not expected to be uniform. This section provides information on household ownership of nets and examines patterns of ownership by HIV-affected status of the household. While this chapter includes information on both general bednet and ITN ownership for the purpose of comparing with previous survey results, it is important to note that surveillance indicators refer to ownership and usage of ITNs, not general bednets. For this report, an ITN was defined as a pre-treated bednet or a bednet that had been treated within the household during the six months prior to the survey.

Data in Context: Kenya National Malaria Strategy

The public health importance of malaria globally cannot be disputed with 300-500 million cases each year causing 1-2 million deaths. Greater than 90% of these deaths occur in sub-Saharan Africa in children under five years of age. The initial Kenyan National Malaria Strategy (KNMS) was launched in April 2001. Its four strategic approaches were 1) Access to prompt and effective treatment, 2) management and prevention of malaria during pregnancy, 3) use of insecticide- treated nets and other vector control methods and 4) improvements to epidemic preparedness and response. A revision to the KNMS was underway at the time of this report. The level of endemicity of malaria in Kenya varies from region to region and there is great diversity in risk mostly driven by elevation, climate and temperature. Based on malaria risk, districts in Kenya can be broadly categorized into one of 5 classes of malaria ecology: lakeside endemic, coastal endemic, highland, arid/seasonal, and low risk. All provinces are identified as hot zones except Central and Nairobi. A campaign was launched in July 2006 with a target of equipping 80% of households with at least one ITN. Three and a half million nets were distributed by GOK, with Nyanza and Western provinces receiving 1.5 million nets in July 2006, while Coast, Rift Valley, Central and Eastern provinces received 2 million nets in September 2006.

In the 2007 KAIS, 56.1% of households owned at least one mosquito bednet and 32.8% owned more than one net. Coverage was significantly greater in 2007 than in 2003 when the KDHS reported 21.8% of households owned at least one net. These findings corroborate the results of the 2007 Kenya Malaria Indicator Survey, which concluded that 62.5% of households owned at least one bednet.

General bednet ownership varied significantly by province. Given that the need for mosquito nets is not uniform across the country, coverage of nets is also not expected to be uniform. In the 2007 KAIS, Nyanza, Western and Coast provinces had the highest coverage, ranging from 71.2% to 78.6% of households; malaria is endemic in these provinces and risk is year-round. Coverage in Central province appeared to be low at 34.1%; most parts of this province, along with Nairobi province, are not considered malaria zones. In 2007, the gap between rural and urban household net ownership had narrowed to five percentage points (54.8% and 59.8%, respectively) from 21 percentage points in 2003 (16.6% in rural households compared to 37.6% in urban households).

In rural areas, a significantly greater percent of HIV-affected households (65.0%) than HIV-unaffected households (55.6%) owned a bednet, though this pattern was not observed in urban areas (57.3% compared to 60.2%, respectively).

Among the 56.1% of households with at least one mosquito bednet, 74.6% owned at least one ITN. There was no difference between HIV-affected households and HIV-unaffected households (74.4% and 74.6%, respectively). Overall, this meant that 41.8% of households owned at least one ITN.

Figure 14.7a Households that owned at least ITN by province, Kenya 2007.

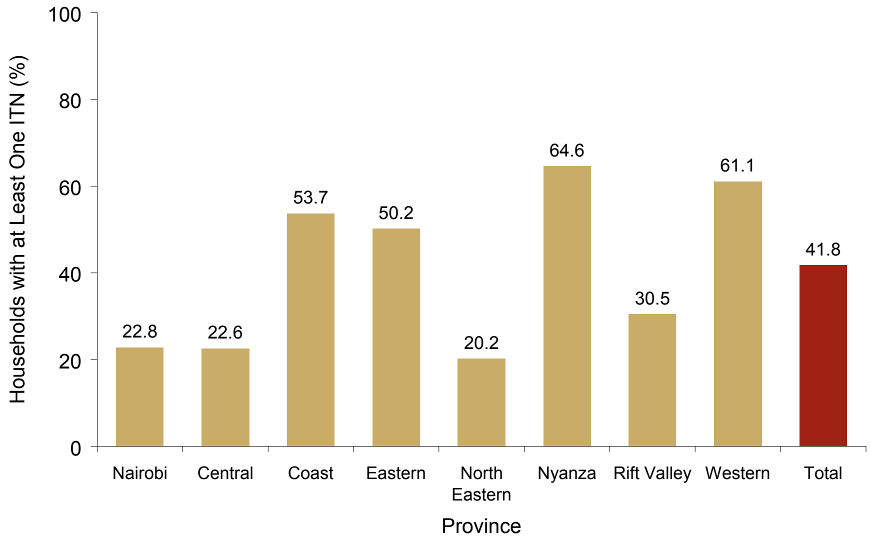


Figure 14.7a In Coast, Eastern, Nyanza and Western provinces, more than one-half of households owned at least one ITN (range 50.2%-64.6%).

Household ITN ownership varied significantly across provinces, with Nyanza and Western provinces having the highest coverage (64.6% and 61.1%, respectively). North Eastern province had the lowest coverage of all provinces at 20.2%. The low coverage in Central and Nairobi provinces are not surprising, give they are not considered malaria risk areas.

Figure 14.7b Household ownership of at least one ITN by residence, Kenya 2007.

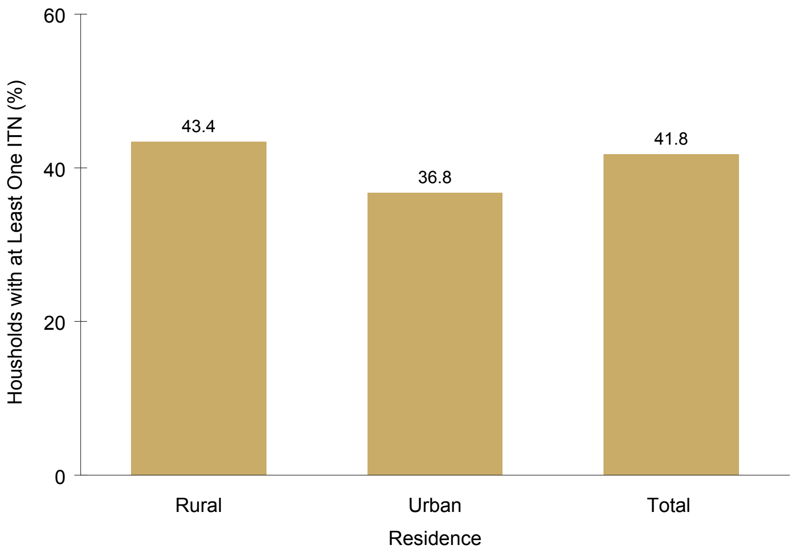


Figure 14.7b Household ownership of one or more ITNs was significantly greater in rural households compared to urban households.

Despite the greater burden of malaria in rural areas compared to urban areas, in the 2003 KDHS, household ITN coverage was higher in urban areas (18.8%) than in rural areas (7.2%). In contrast, in the 2007 KAIS, ITN coverage was significantly greater in rural areas than in urban areas, with 43.4% of rural households owning at least one ITN, compared to 36.8% of urban households, as shown in Figure 14.7b. KAIS results also indicate that 53.0% of households with a child under the age of five years owned at least one ITN (data provided in Appendix B.14).

Figure 14.7c HIV-affected and HIV-unaffected households that owned at least one ITN by residence, Kenya 2007.

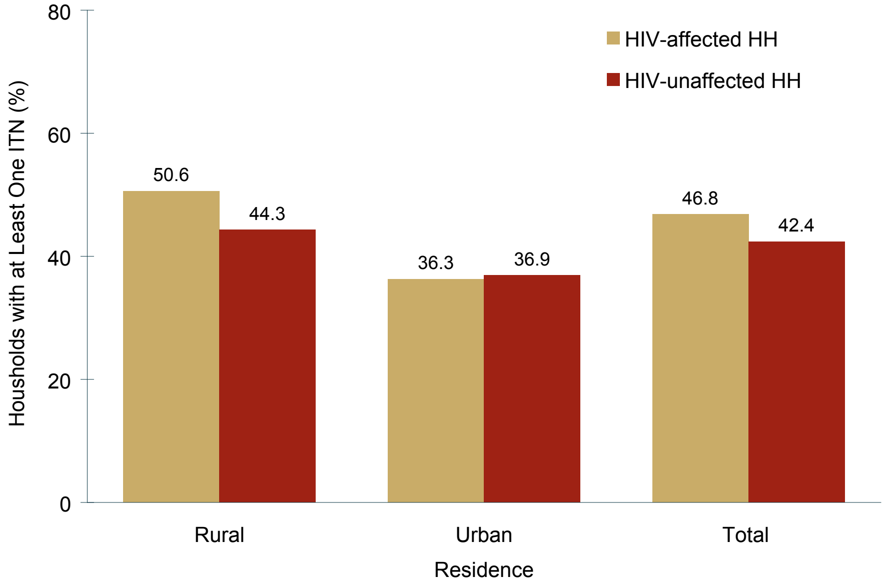


Figure 14.7b In rural areas, a significantly greater percent of HIV-affected households owned at least one mosquito bednet compared to HIV-unaffected households.

Overall, 46.8% of HIV-affected households and 42.4% of HIV-unaffected households owned at least one ITN; this difference was marginally significant. The pattern was different in rural areas compared to urban areas. Among rural households with at least one HIV-infected household member, a significantly greater percent of households owned at least one ITN (50.6%) compared to households with no HIV-infected members (44.3%). This pattern was not observed in urban areas, where the percent of households owning at least one ITN was similar in HIV-affected and HIV-unaffected households (36.3% and 36.9%, respectively).

Table 14.7a. Mean number of bednets among HIV-affected and HIV-unaffected households by rural/urban residence, Kenya 2007.

	HIV-affected households	HIV-unaffected households	Total households
Residence			
Rural	1.91	1.98	1.95
Urban	1.81	1.71	1.71
Total	1.89	1.92	1.90

In Figure 14.7b, we demonstrated that a greater percent of rural households owned at least one ITN. Similarly, among households with at least one ITN, the mean number of ITNs per household in rural areas (1.95) was significantly greater than the mean number of ITNs per household in urban areas (1.71). Differences in mean number of ITNs owned by HIV-affected and HIV-unaffected households were not statistically significant in rural or urban areas.

Table 14.7b Source of ITN among HIV-affected and HIV-unaffected households by residence, Kenya 2007.

	Purchased (%)	Free from NGO (%)	Free from government (%)	Free from other source (%)
Rural				
HIV-affected	58.5	14.2	42.4	4.1
HIV-unaffected	60.1	11.8	40.6	2.8
Total	59.3	12.0	40.8	3.3
Urban				
HIV-affected	75.0	7.9	25.6	7.5
HIV-unaffected	73.0	7.5	24.1	4.2
Total	73.6	7.5	23.9	4.6
Total				
HIV-affected	61.9	12.9	39.0	4.8
HIV-unaffected	63.0	10.9	37.0	3.2
Total	62.4	11.0	37.1	3.6

Categories for source of ITN are not mutually exclusive. Households with more than one ITN could be represented in more than one category. However, a household is not represented more than once per category; that is, if a household with two ITNs reported purchasing both ITNs, the household is counted only once in the category of purchased ITN.

NGO refers to non-governmental organizations.

The availability of mosquito bednets in Kenya ranges from untreated bednets sold in open air markets to subsidized ITNs in health facilities. In 2006, there was mass distribution campaign of ITNs implemented by GOK and partner NGOs. Most free ITNs owned by households at the time of the survey were likely acquired during this campaign. Several years before the 2007 KAIS survey, the GOK began distributing ITNs to pregnant women and children under five years of age at a subsidized price of 50 Kenya shillings (Ksh) per ITN at ANCs and Child Weighing Clinics within government and faith-based facilities. In 2007, there were also social marketed bednets and ITNs available at a subsidized price of 100 Ksh at designated local kiosks, largely for the benefit of individuals other than pregnant women or children under five years of age. There are also treated and untreated bednets routinely sold in supermarkets ranging from 500-1200 Ksh. While there were no free bednets distributed in facilities at that time of the survey, in 2008, with support from the donor community, the GOK implemented a free, health facility-based ITN distribution program.

According to the 2007 KAIS, 62.4% of households owned at least one ITN that they purchased. The specific location of the purchase (facility, market, etc.) was not captured in the survey. Significantly more urban households purchased one or more ITNs compared to rural households (73.6% and 59.3%, respectively). In contrast, significantly more rural households acquired at least ITN from a non-governmental organization (12.0%) or from the government (40.8%) than urban households (7.5% and 23.9%, respectively). Differences in the sources of household-owned ITNs between HIV-affected and HIV-unaffected households were small, and in most cases not statistically significant. Nonetheless, in urban areas, a higher percent of HIV-affected households (7.5%) received at least one ITN from an unspecified source compared to HIV-unaffected households (4.2%).

Across provinces, only North Eastern province deviated significantly from the overall pattern of sources of ITNs: in this province, 50.0% of households identified NGOs as the source of one or more ITNs. In other provinces, this estimate ranged from 3.4% to 15.1%.

In the 2007 KAIS, heads of household were also asked to report the duration of ownership for each of the bednets in their household. Among households with at least one bednet (treated or untreated), 65.9% owned at least one bednet that had been acquired during the year prior to the survey; some of these bednets could be attributed to the mass campaign from July-September of 2006 (data provided in Appendix B.14). Additionally, 2007 guidelines from the Kenya Division of Malaria Control recommended that bednets be replaced every three years. We also examined the percent of households with bednets that were no more than three years old. Eight-five percent (85.0%) of all households owned at least one bednet that was not more than three years old.

The revised KNMS for 2009-2017 (Ministry of Public Health and Sanitation, Kenya 2009) is nearly complete. Indicators in the new strategy document will likely focus on usage rather than ownership, with an expected target of 80% of people living in malaria risk areas using appropriate malaria preventive interventions. Universal coverage, interpreted as two people per one ITN, is one objective of the new strategy.

14.8 Children's Living Arrangements and Orphanhood

This section describes findings from the 2007 KAIS on living arrangements of children under the age of 18 years including those who lived with both, neither, or either biological parent. Table 14.8 also provides information on whether either or both biological parents of children under 18 years of age were alive or had died. For the purpose of this survey, an orphan is defined as any child under the age of 18 years whose mother, father, or both parents had died.

Table 14.8a Living arrangements and survival status of parents for children under 18 years of age, Kenya 2007.

		Living with mother only		Living with father only		Not living with either parent				Number of children aged 0-17 years
Background characteristics	Living with both parents (%)	Father alive (%)	Father dead (%)	Mother alive (%)	Mother dead (%)	Both alive (%)	Mother dead (%)	Father dead (%)	Both dead (%)	
Age group (years)										
0-4	57.5	31.3	2.6	1.8	0.5	5.3	0.6	0.4	0.15	6203
5-9	52.5	24.6	5.1	2.8	1.2	8.3	0.9	1.1	1.3	6100
10-14	47.2	21.7	8.2	3.1	1.5	9.9	1.9	1.5	2.7	5761
>15	45.3	14.2	9.8	3.2	2.4	12.6	2.2	1.8	4.1	1684
<15	52.3	25.6	5.2	2.5	1.0	7.7	1.1	1.0	1.4	18064
Sex										
Male	52.1	24.5	5.7	2.7	1.2	7.6	1.1	1.1	1.6	9988
Female	51.2	24.5	5.6	2.4	1.1	8.8	1.3	1.1	1.6	9760
Residence										
Rural	52.2	23.4	5.8	2.5	1.1	8.4	1.2	1.2	1.6	16493
Urban	48.4	30.9	4.5	3.1	1.3	6.8	0.9	0.5	1.5	3255
Province										
Nairobi	51.3	27.6	6.1	1.9	0.8	6.8	1.7	0.9	1.3	1076
Central	51.0	29.8	3.8	0.7	0.7	6.3	0.7	0.9	0.5	1878
Coast	45.0	33.6	4.3	4.1	1.4	7.0	1.7	0.9	0.5	2076
Eastern	49.6	24.3	5.9	2.5	1.4	8.5	1.4	0.9	1.1	3447
North Eastern	59.7	21.3	3.5	4.3	1.0	7.8	0.8	1.1	0.3	1523
Nyanza	47.0	21.4	10.0	2.0	1.2	7.4	1.6	2.4	5.2	3261
Rift Valley	55.0	25.3	4.5	2.8	1.1	8.0	0.9	0.3	0.4	3336
Western	56.1	18.7	4.2	3.4	1.1	11.4	1.0	1.4	1.8	3151
Total	**52.3**	**25.5**	**5.8**	**2.7**	**1.1**	**8.5**	**1.2**	**1.1**	**1.7**	**19748**

Column categories are mutually exclusive; that is, a child was only counted in one column category within each stratum of background characteristic.

Data were missing on survival status and/or place of residence of mother, father or both for 2.5% of children; these children were excluded from analysis.

Due to the large number of estimates presented in this table, Appendix B.14 does not include usual parameters. Instead, row totals (N) are provided.

Overall, 52.3% percent of children aged 0-17 years were living with both parents. Older children aged 15-17 years were marginally less likely to live with both parents (45.3%) than children in other age categories (47.2%-57.5%) as were children in Coast province (45.0%) and Nyanza province (47.0%) compared to children in other provinces (49.6%-59.7%). The estimate was similar in rural and urban areas and for children of both sexes.

While 31.3% of children lived with their mothers only, 3.8% lived with their fathers only. Among all children aged 0-17 years, 12.1% were lived without either parent; 8.5% were living without either parent, though both parents were alive. At the time of the survey, 8.6% of children had lost their fathers, 4.0% had lost their mothers and 1.7% had lost both of their parents. The proportions were similar for children under 15 years of age.

Table 14.8b Children aged 0-17 years who were orphaned or vulnerable, Kenya 2007.

		Chronically ill parent[1] (%)	Adult death in household[2] (%)	Chronically ill adult in household [1,2,3] (%)	Vulnerable[4] children (%)	One or both parents dead (%)	Orphans and vulnerable[4] children (%)	Number of children aged 0-17 years
Sex of household head	Male	4.8	1.2	6.0	7.4	5.1	11.4	12471
	Female	4.0	2.9	5.3	8.5	19.9	25.0	7982
Sex of child	Male	3.8	1.8	5.2	5.6	11.1	16.2	10340
	Female	4.2	1.9	5.8	5.9	11.2	16.8	10113
Province	Nairobi	2.7	1.5	3.4	4.1	10.8	13.9	1133
	Central	1.9	1.0	3.2	2.9	7.4	10.6	2015
	Coast	2.0	2.2	2.8	4.1	9.1	13.0	2162
	Eastern	2.7	1.4	4.8	3.9	11.7	15.8	3601
	North Eastern	0.8	0.5	0.9	1.3	6.6	8.7	1532
	Nyanza	6.2	3.4	9.0	9.3	20.9	29.3	3374
	Rift Valley	5.2	1.8	5.8	7.0	7.4	13.0	3415
	Western	4.4	1.3	6.3	5.7	9.5	16.4	3221
Residence	Rural	3.9	1.9	5.5	5.7	11.5	16.9	17043
	Urban	4.5	1.6	5.5	6.1	8.6	14.5	3410
Age group (years)	0-4	3.7	1.5	5.0	5.1	7.8	9.7	**6407**
	5-9	3.7	1.6	4.9	5.2	10.0	15.0	**6265**
	10-14	4.4	2.2	5.8	6.4	16.3	21.6	**5955**
	15-17	4.8	2.5	8.1	7.3	21.5	28.4	**1826**
Total		**4.0**	**1.8**	**5.5**	**5.7**	**11.1**	**15.8**	**20453**

1 Chronically ill defined as too sick to work or do normal activities for at least 3 of the 12 months preceding the KAIS interview
2 Adult aged 18-64 years
3 Chronically ill adult in household could be a parent or any non-parent adult aged 18-64 years
4 Vulnerable child defined as a child aged 0-17 years living in a household in which 1) an adult aged 18-64 years had been chronically ill; 2) an adult had died in the 12 months preceding the survey; or 3) a child whose mother or father was not living in the same household but had been chronically ill.
Due to the large number of estimates presented in this table, Appendix B.14 does not include usual parameters. Instead, row totals (N) are provided.

Table 14.8b presents findings on orphanhood among children aged 0-17 years. Overall, 11.1% of children 0-17 years of age were orphans, translating to an estimated 1.78 million children orphaned nationwide. There were no significant differences by sex of the child, but the percent of children orphaned varied significantly with age, residence, and province. The percentage orphaned increased with age from 7.8% among 0-4 year olds to 21.5% among 15-17 year olds. In rural areas, 11.5% of children were orphaned compared to 8.6% of children in urban areas. Nyanza province had the highest percent of children orphaned at 20.9% and North Eastern province had the lowest percent at 6.6%, compared to other provinces (7.4%-11.7%). This means that nearly two times as many children under 18 years of age were orphaned in Nyanza province as compared to the national level.

Similar to other population-based surveys, including the 2003 KDHS, a vulnerable child was defined as a child aged 0-17 years (1) living in a household in which an adult aged 18-64 years had been very ill for at least three of the 12 months preceding the survey; (2) living in a household where an adult had died in the 12 months preceding the survey; or (3) a child whose mother or father was not living in the same household but had been very ill (too sick to work or do normal activities) for at least three months of 12 months preceding the survey. A child could be counted in one or all three of these categories (chronically ill adult, adult death in household or chronically ill parent). Additionally, a child could be considered both an orphan and a vulnerable child, but was only counted once in the overall orphan or vulnerable child (OVC) category in Table 14.8b.

Four percent (4.0%) of children under the age of 18 years had a chronically ill parent living in another household, 1.8% had a household death in the 12 months prior to the survey, and 5.5% had a chronically ill adult in the household. Overall, 5.7% of children under 18 years of age were vulnerable children and 15.8% of all children were OVCs based on the definitions provided in this section. Similar patterns to those observed for orphans were observed for OVCs. Children in female-headed households were significantly more likely to be OVCs than those in male-headed households (25.0% compared to 11.4%, respectively). A significantly higher percent of children in Nyanza (29.3%) were OVCs compared to children in other provinces (8.7%-16.4%). Children in rural areas were marginally more likely to be OVCs than children in urban areas (16.9% versus 14.5%, respectively). The percent of children who were OVC differed greatly across age groups, from 9.7% among children 0-4 years of age to 28.4% of children aged 15-17 years.

14.9 Care and Support for Orphans and Vulnerable Children

Among all households in Kenya, 18.4% included an OVC and 11.4% included more than one OVC. Among households with at least one OVC, 38.2% had one OVC and 61.8% included more than one OVC (data not shown).

Of the 11.0% HIV-affected households in the survey, 79.9% had at least one child under the age of 18 years, out of which 36.5% had at least one OVC. Among the unaffected households, 75.2% had at least one child, out of which a significantly lower percent had at least one OVC (19.4%).
For consistency with other population-based surveys that capture and present data on care and support for OVCs, Table 14.9 is limited to the 84.4% of all reported OVCs for whom complete care and support information was available.

Table 14.9 External support for orphans and vulnerable children (OVC), Kenya 2007.

Type of external support received by households with OVC aged 0-17 years in the 12 months preceding the survey (%):									
Background characteristics	Medical support	Emotional support	Material support	Social/ practical support	School support (ages 5 years and older)	Any support	No support	All types of support	Number of OVCs (aged 0-17 years)
Age group									
0-4	5.4	15.1	9.7	4.9	n/a	19.7	80.3	0.00	1120
5-9	5.8	12.0	8.4	2.9	12.5	22.7	77.3	0.07	1325
10-14	3.2	11.8	7.7	3.0	11.9	21.5	78.5	0.00	1588
15-17	4.9	9.4	8.9	2.7	12.6	20.8	79.2	0.08	626
<15	4.5	12.6	8.4	3.4	12.1	21.5	78.5	0.02	4033
Sex									
Male	4.2	12.0	8.4	3.5	12.9	21.5	78.5	0.04	2350
Female	4.9	12.2	8.5	3.1	11.6	21.3	78.7	0.02	2309
Residence									
Rural	4.8	13.2	8.1	3.6	12.2	21.7	78.3	0.04	4104
Urban	2.7	5.0	10.8	0.92	12.1	19.7	80.3	0.00	555
Region									
Nairobi	3.7	14.5	6.3	3.4	10.2	18.5	81.5	0.00	189
Central	2.4	14.7	11.8	3.5	36.0	36.9	63.1	0.00	307
Coast	1.9	5.3	9.0	0.6	14.1	12.4	87.6	0.00	419
Eastern	5.6	13.5	8.7	5.1	9.7	22.9	77.1	0.00	799
North Eastern	20.7	10.3	21.3	7.5	24.3	21.8	78.2	0.72	208
Nyanza	5.0	13.0	5.9	1.3	10.9	21.4	78.6	0.00	1323
Rift Valley	5.0	10.1	12.5	6.6	11.6	21.2	78.8	0.00	593
Western	2.1	12.1	5.7	1.1	8.0	17.8	82.2	0.15	821
Total	4.6	12.1	8.4	3.3	12.2	21.4	78.6	0.03	4659

Due to the large number of estimates presented in this table, Appendix B.14 does not include usual parameters. Instead, row totals (N) are provided.

The 2007 KAIS included questions about care and support given to households with OVCs. The study gathered information on whether orphans were supported with any free external support (other than from family and friends) for (1) medical needs, such as medical care, supplies or medicine;
(2) emotional or psychosocial needs such as companionship, or spiritual support; (3) material needs, such as clothing, food or financial support; (4) social or practical needs, such as assistance with housework or legal services; or (5) for schooling needs in the case of OVCs aged 5 years and older.

Among all OVCs, 21.4% lived in households that received at least one type of free, external support to help care for the OVCs. The majority of OVCs and their households, 78.6%, had not received any type of support. Very few households (0.03%) had received all types of support. OVCs were more likely to receive emotional support (12.1%) or school support (12.2%) as compared to medical support (4.6%) or practical support (3.3%). Levels of support were similar across age groups and sex, but differed significantly by residence and by province. A significantly higher percent of OVCs in rural areas lived in households that received emotional support (13.2%) and social or practical support (3.9%) compared to OVCs in urban areas (5.0% and 0.92%, respectively). Compared to other provinces, Central province (36.9%) had the highest percent of OVCs living in households that received any of the five types of support (four types among 0-4 year olds) and Coast province had the lowest percent (12.4%). In Central province more than one-third of OVCs (36.0%) age 5 years or older received school support. In North Eastern province, levels of medical support (20.7%), material support (21.3%) and school support (24.3%) for OVCs were notably high though the number of observations was too small to draw conclusions for this province.

14.10 Care and Support for Chronically Ill Adults

In this section, we present findings from the 2007 KAIS on care and support for chronically ill adults, defined as adults aged 18-64 years who were very ill for three or more months during the 12 months preceding the survey. For purposes of the survey, very ill was defined as being too sick to work or do normal activities. Table 14.10 shows the percentage of women and men who were chronically ill whose households received free, external support to help caring for these households members within the 12 months preceding the survey. Four types of support were captured by the survey: (1) medical support, such as medical care, supplies or medicine; (2) emotional or psychosocial support such as companionship, or spiritual counselling; (3) material support, such as clothing, food or financial support; and (4) social or practical support, such as assistance with housework, caregiver training or legal services.

It should be noted that although the intent of this module within the household questionnaire was to obtain data on the extent of care and support provided to those sick with HIV- and AIDS-related illness, data from the survey indicate that only 21.4% of adults who were reported to have been very ill for at least three months out of the 12 months preceding the survey were confirmed to be HIV-infected according to KAIS testing results.

For consistency with other population-based surveys that capture and present data on chronically ill adults, Table 14.10 is limited to the 94.4% of all reported chronically sick adults for whom complete care and support information was available.

Overall, 2.4% of adults aged 18-64 years were reported as chronically ill by the head of household. The survey shows that 3.9% of rural households and 1.8% of urban households reported at least one sick adult (data not shown).

Table 14.10 External support for chronically ill adults, Kenya 2007.

Type of external support received by households with chronically ill adults aged 18-64 years in the 12 months preceding the survey (%):								
Background characteristics	**Medical support**	**Emotional support**	**Material support**	**Social/ practical support**	**Any support**	**No support**	**All types of support**	**Number of chronically ill persons**
Age group (years)								
18-19	*	*	*	*	*	*	*	14
20-29	10.0	20.5	10.0	5.0	30.7	69.3	0.9	98
30-39	14.0	24.7	7.9	6.2	34.1	65.9	0.0	91
40-49	7.0	27.9	6.9	7.1	30.7	69.3	2.2	117
50-59	15.4	25.7	8.2	13.8	37.0	63.0	3.5	95
60+	17.3	38.5	4.2	0.0	47.1	52.9	0.0	34
Sex								
Male	10.4	27.7	8.3	5.3	34.5	65.5	1.3	148
Female	12.8	25.3	7.4	8.2	34.6	65.4	1.6	**305**
Residence								
Rural	11.4	26.7	7.2	7.9	34.2	65.8	1.5	**370**
Urban	14.8	23.4	10.0	4.7	36.1	63.9	1.3	83
Province								
Nairobi	20.3	18.4	2.9	7.6	43.1	56.9	0.0	34
Central	13.9	49.7	20.1	12.7	58.3	41.7	3.6	48
Coast	16.3	23.4	13.2	1.8	34.3	65.7	0.0	34
Eastern	9.0	28.2	8.8	2.6	36.7	63.3	1.3	65
North Eastern	*	*	*	*	*	*	*	8
Nyanza	9.0	22.4	3.9	3.3	25.6	74.4	1.2	**121**
Rift Valley	15.0	20.1	6.5	12.2	32.5	67.5	1.6	**65**
Western	10.5	29.6	7.3	9.4	34.9	65.1	1.7	**78**
HIV status								
HIV-uninfected	10.7	24.7	8.0	8.1	33.3	66.6	1.4	305
HIV-infected	22.5	31.1	8.9	5.3	45.9	64.1	2.0	88
Total	**12.1**	**26.1**	**7.7**	**7.3**	**34.6**	**65.4**	**1.5**	453

* Estimates not presented due to small denominators of less than 25 observations in this category.
Due to the large number of estimates presented in this table, Appendix B.14 does not include usual parameters. Instead, row totals (N) are provided.

According to the 2007 KAIS findings, 12.1% of chronically ill adults lived in households that received medical support, 26.1% received emotional or psychosocial support, 7.7% received material support and 7.3% of received some form of social or practical support. Less than two percent (1.5%) received all types of support. Most chronically ill adults (65.4%) lived in households that received no support to help care for their sick members. There were no significant differences in the pattern of support by sex. Sick adults in urban areas tended to receive more medical and material support than rural households, while rural households tended to receive more emotional and social or practical support than adults in urban areas; these differences were no statistically significant. Sick adults aged 60 years or older were more likely to have received medical (17.3%) or social support (25.3%), and subsequently any support (47.1%) compared to younger sick adults. Looking across all types of support, a marginally higher percent of chronically sick adults in Central province (58.3%) received any type of support compared to other provinces; Nyanza had the lowest percent for any type of support at 25.6%. The difference in medical support received by HIV-affected households (22.5%) compared to HIV-unaffected households (10.7%) was statistically significant, while other differences were not.

14.11 Gaps and Unmet Needs

- Increasing efforts to capture and record all births, especially in provinces with large rural areas, could help policy makers better plan for services in these areas.
- Most HIV-affected households do not know they are affected because the HIV-infected member in the home is unaware of his or her HIV status. Increasing knowledge of HIV status among HIV-infected persons and supportive disclosure to family members could increase the number of households able to provide care and support for their HIV-infected household member and long-term planning for the well-being of the household
- In most HIV-infected households, the infected member is the head of the household. Programs are need to support these households in case the infected head of household becomes too ill to support the household.
- Most households do not treat their drinking water leaving household members potentially vulnerable to infections and illness. Universal access to safe drinking water would benefit all households and keep HIV-infected and uninfected members healthier.
- More than one in 10 children in Kenya have lost their mother or father or both. Most of these children are living in households that received no external support.
- Care and support for chronically ill adults could be improved by increasing general knowledge and awareness of any existing services for this group.

15

Returning Test Results

15.1 Key Findings

- Nearly half (45.6%) of all KAIS participants who completed an interview and provided a blood sample travelled to select health facilities to receive their test results
- More than one third (35.8%) of HIV-infected participants who had never tested or who believed themselves to be uninfected learned their HIV status during the 2007 KAIS.
- Participants in rural areas were twice as likely to return to receive their test results (52.5%) compared to those in urban areas (24.5%).
- Over 40% of participants in each province returned to receive their test results except in Nairobi, where it was 15.2%. North Eastern province recorded the highest rate of returning for test results at 74.0%

15.2 Introduction

In the 2007 KAIS, all participants who consented to give blood samples during the survey were given the opportunity to receive their HIV, HSV-2 and syphilis test results and CD4 count (if HIV-infected) approximately six weeks after the interview in select health facilities. Participants who received their test results also received appropriate counselling and referrals to prevention, care and treatment services from trained counsellors. Testing and returning test results in the 2007 KAIS provided an important health service to survey participants, especially in underserved areas such as rural communities that may otherwise not have access to testing.

This chapter presents data on participants who visited a health facility to receive their test results for any of the blood tests conducted in the 2007 KAIS (HIV, CD4 cell count for HIV-infected persons, HSV-2 and syphilis). In this chapter the phrase **"returned to receive test results"** refers to participants that physically came to a selected health facility approximately six weeks after sample collection to collect their test results. Results were returned to participants through assigned health facilities within and near the sampled study clusters. Persons infected with HIV and STIs were counselled to seek care and treatment, reduce transmission to others and protect themselves from acquiring other STIs. Uninfected persons who received their test results were given risk reduction counselling messages on how to protect themselves from acquiring HIV and other STIs.

Currently, results of HSV-2 serology are not widely available to clinicians and there are no guidelines on how to interpret and manage test results. HSV-2 counselling messages were adapted from studies conducted in Kenya and other countries.

Unlike earlier chapters, the percents reported in this chapter are not weighted; that is, we report the proportion of the 2007 KAIS participants who returned or did not return for their test results. Weighted statistics are not required for presenting uptake rates within a defined study population because the study participants who collected or did not collect their results are not expected to represent a wider population.

Appendix B.15 provides sample sizes and 95% confidence intervals for estimates presented in this chapter. Throughout the chapter, the term significant indicates a chi-square p-value less than 0.05; marginally significant indicates a p-value between 0.05 and 0.10, inclusive; and not significant indicates a p-value greater than 0.10.

Data in Context: Methods for Returning Test Results in the 2007 KAIS

In the 2007 KAIS, survey participants who consented to the blood draw were given the opportunity to receive their test results with appropriate counselling and referrals to prevention, care and treatment services for HIV and other STIs. At the time of specimen collection, laboratory technicians in the field provided participants a results voucher that contained a unique barcode identical to the barcode on their blood specimen. The voucher listed two facilities (one within the cluster and one outside of the cluster) where they could receive their test results approximately six weeks after the blood draw. Interviewers and laboratory technicians were trained to educate participants on the benefits of knowing one's disease status and encouraged them to visit a designated facility to receive their test results. Receiving test results, however, was completely voluntary. Vouchers were required for receiving results; participants without their vouchers were referred for re-testing. Counsellors that were trained to returning test results from the 2007 KAIS directed respondents who required follow-up to testing and treatment facilities as needed. Counsellors also recorded basic information from participants, including the date the participant returned to receive his/her test results, whether the person returned as an individual or a couple, and referrals the counsellor made during the session.

There were noted delays in returning test results to the field. This occurred mainly in the beginning of the survey, due to delays in testing and challenges in the initial coordination of returning test results to health facilities, and at the end of the survey when the country's political climate was unstable and road travel was unsafe.

A detailed description on the 2007 KAIS methods for returning test results is provided in Appendix A, section A.5.

15.3 Participants Who Returned for Test Results by Socio-demographic Characteristics

Figure 15.3a. Participants aged 15-64 years who returned to receive their test results by sex, Kenya 2007.

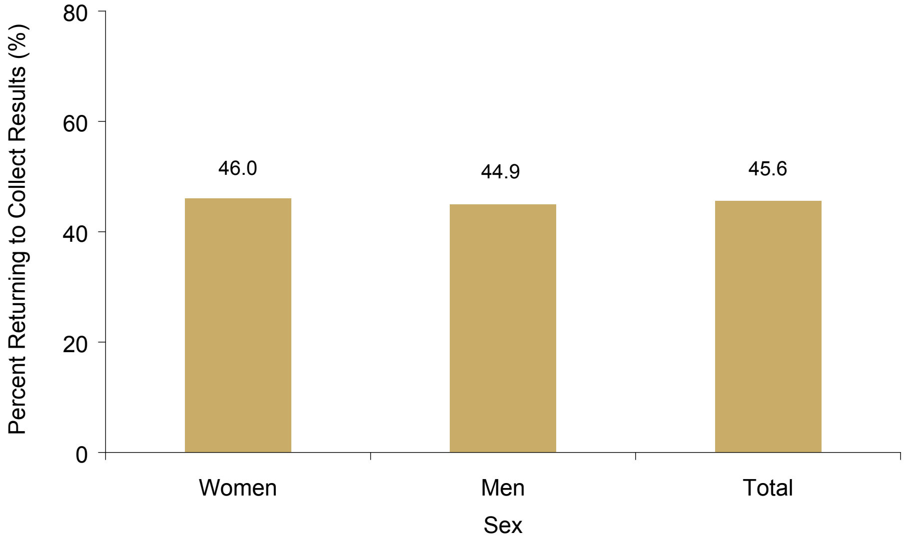


Figure 15.3a The percent returning for test results was similar among women and men.

Overall, 45.6% of participants who consented to the blood draw during the survey returned for their test results. There was no significant difference in the percent returning for test results between women (46.0%) and men (44.9%).

Figure 15.3b. Participants aged 15-64 years who returned to receive their test results by residence, Kenya 2007.

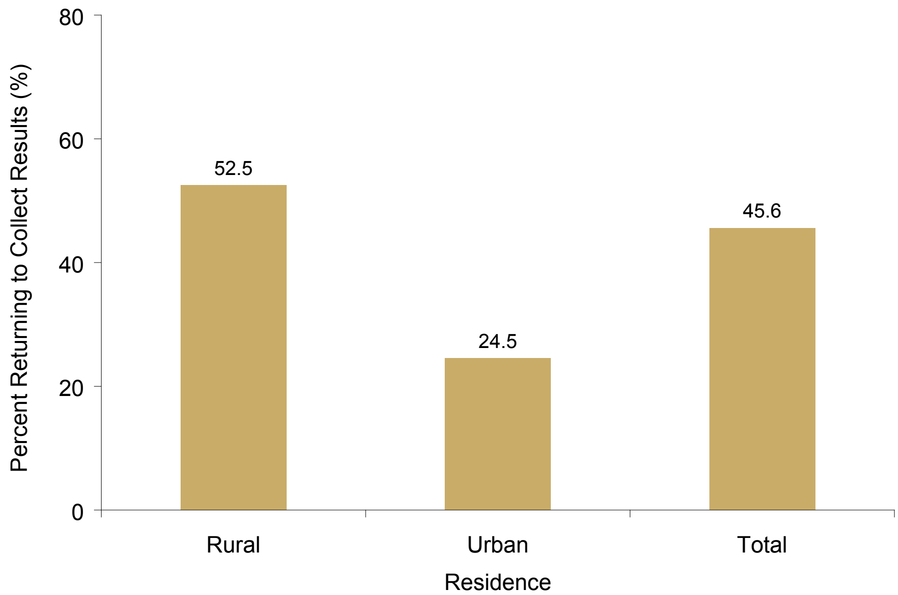


Figure 15.3b One in two rural residents returned to receive their test results compared to one in four urban residents.

There was a significant association between the percent of participants who returned to receive their test result and rural/urban residence. More than half of rural participants (52.5%) returned for their test results compared to 24.5% of participants in urban areas.

Figure 15.3c Participants aged 15-64 years who returned to receive their test results by province, Kenya 2007.

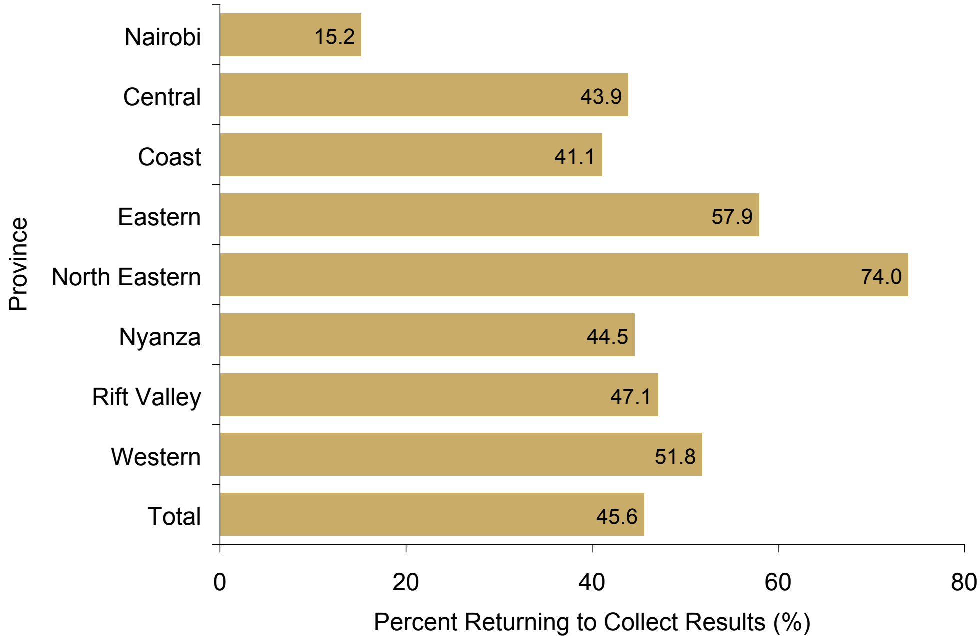


Figure 15.3c Almost three in four (74.0%) participants in North Eastern province returned to receive their test results but fewer than one in six did so in Nairobi province.

The rate of returning to receive test results varied significantly by province, with the highest percent of participants returning to receive test results in North Eastern province (74.0%) and the lowest percent in Nairobi province (15.2%).

Figure 15.3d. Participants aged 15-64 years who returned to receive their test results by age group, Kenya 2007.

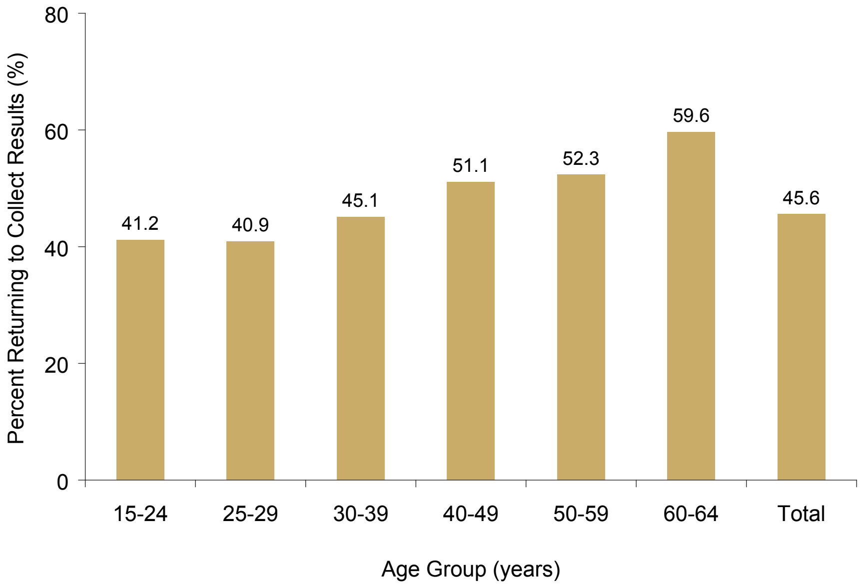


Figure 15.3d Rates of returning to receive test results increased significantly with increasing age.

Overall, there was a significant association between the percent of participants who returned for test results and age group. Older participants were more likely to return to receive their test results compared to younger participants. A total of 59.6% of participants aged 60-64 years returned to receive their test results compared to 41.2% of participants aged 15-24 years.

Figure 15.3e Participants aged 15-64 years who returned to receive their test results by marital status, Kenya 2007.

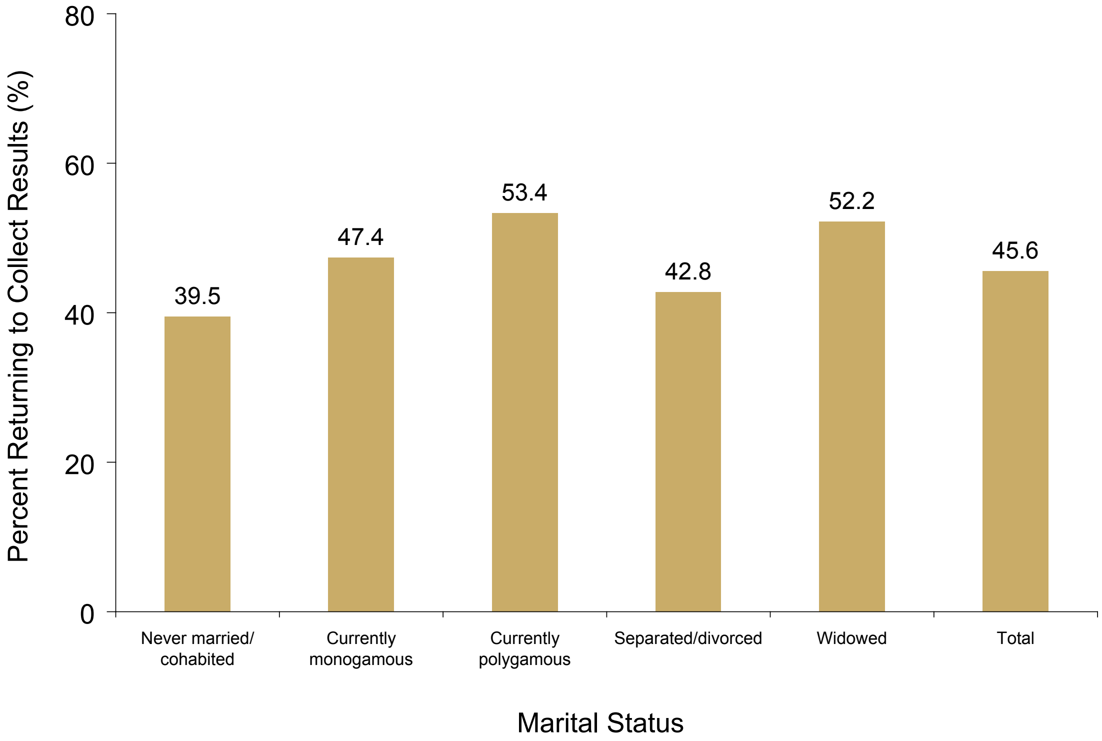


Figure 15.3e Participants who had never married or cohabited were least likely to return to receive their results.

The term "currently monogamous" refers to respondents that were married or cohabiting in a union with only one spouse or one sexual partner.

The proportion of participants who returned to receive their test results varied significantly by marital status. Among participants who were polygamous or widowed, the proportion that returned to receive their test results was more than 10 percentage points higher than among participants who had never married or cohabited.

During fieldwork, survey participants were encouraged to learn their test results with their spouses or partners, and provisions were made for couples counselling when participants returned for test results. Among those who returned to receive their test results and were married or cohabiting as a monogamous couple, the majority (73.4%) received their results as individuals while 26.1% came with a partner or spouse.[1] Similarly, among those who received their results and were married or cohabiting as a polygamous couple, the majority (80.1%) received results as individuals while 19.6% came with a partner or spouse.[1] Among those who were separated or divorced, those who were widowed and those who had never married or cohabited, less than 4% came to receive their results with a partner. One of five participants with at least one sexual partner in year before the survey received their test results as a couple (22.1%) and 77.4% came to the health facility alone.

1 Data for 0.55% of monogamous participants and 0.32% of polygamous participants that returned for their results were missing.

Figure 15.3f. Participants aged 15-64 years who returned to receive their test results by wealth index, Kenya 2007.

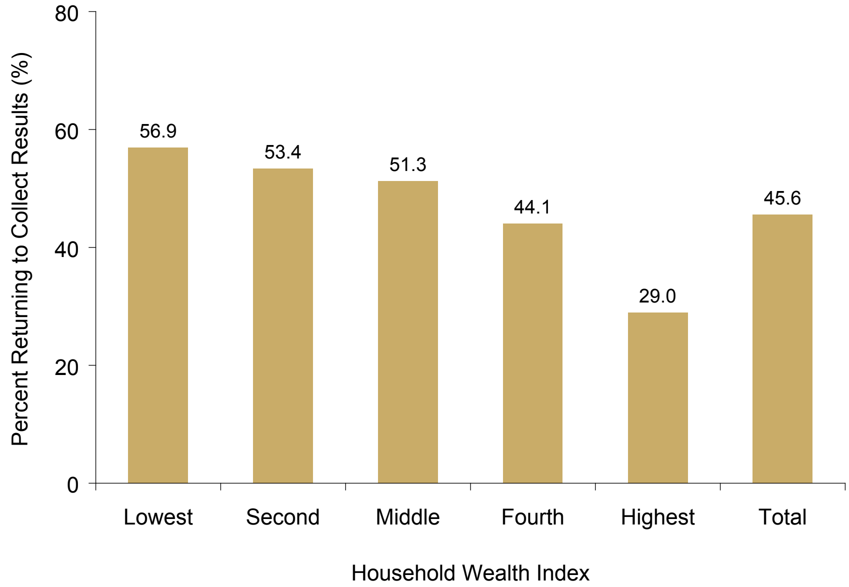


Figure 15.3f As wealth index increased, the proportion of participants who returned to receive their test results declined.

The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, water access and sanitation facilities. The wealth index placed households on a continuous scale of relative wealth using principal components analysis. Individuals were ranked according to the score of the household in which they resided and the sample was divided into five groups, each with an equal number of individuals (quintiles), ranging from the lowest to highest level of wealth.

The rate of returning to receive test results declined significantly with increasing wealth index category. Participants in the lowest wealth quintile were more likely to return to receive their test results (56.9%) compared to persons in the highest wealth quintile (29.0%).

Figure 15.3g Participants aged 15-64 years who returned to receive their test results by education level, Kenya 2007.

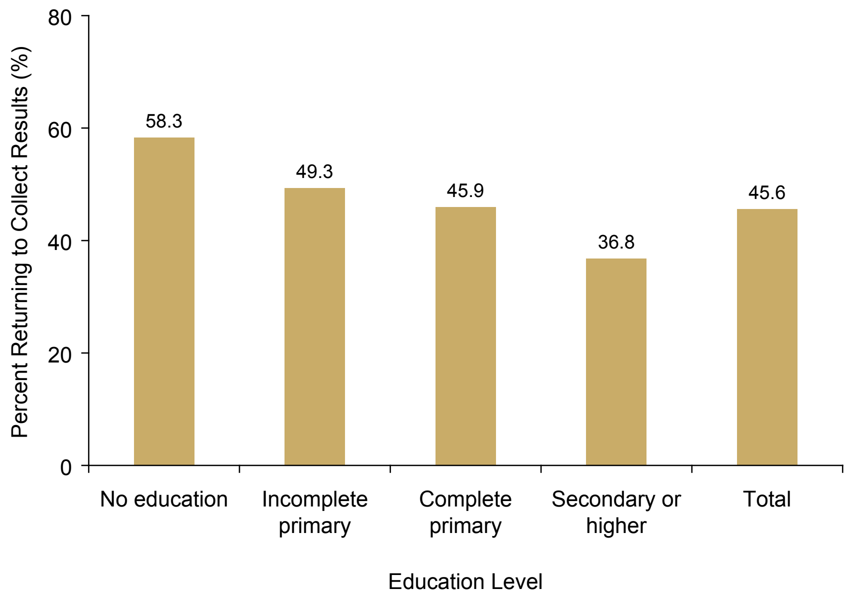


Figure 15.3g Participants who reported higher levels of education were less likely to return to receive their results.

Rates of returning to receive test results varied significantly by education level. Participants with no formal education were significantly more likely to return for test results (58.3%) compared to those who reported incomplete primary (49.3%), complete primary (45.9%), and secondary or higher (36.8%) levels of formal education.

15.4 Returning to Receive Test Results by HIV Testing Behaviour and HIV Status

Figure 15.4a Participants aged 15-64 years who returned to receive their test results by HIV testing history, Kenya 2007.

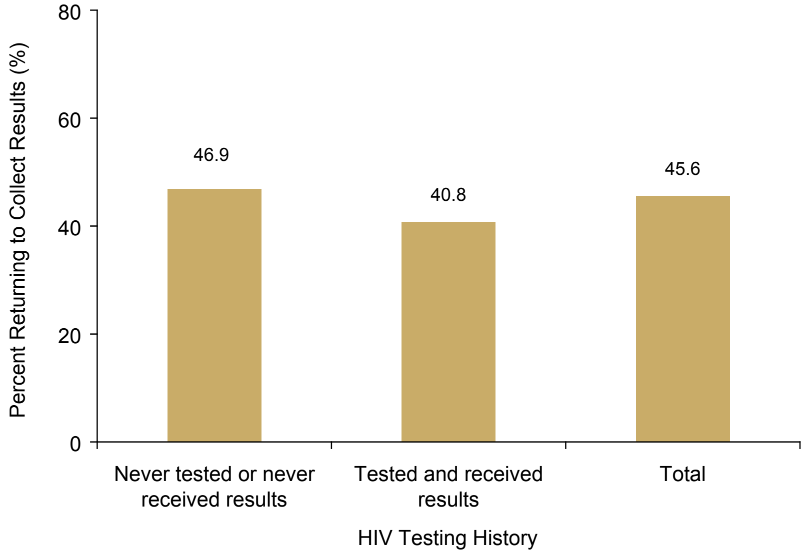


Figure 15.4a Almost half of respondents who had never tested for HIV or tested but never received test results returned to receive their test results during the 2007 KAIS survey.

Among survey participants who had never tested for HIV before the 2007 KAIS survey or who had tested but did not receive test results, approximately half (46.9%) returned to receive their results. Four out of ten (40.8%) of those who had previously tested for HIV returned for their results. These differences were statistically significant.

Figure 15.4b HIV-infected participants aged 15-64 years who returned to receive their test results by self-reported HIV status, Kenya 2007.

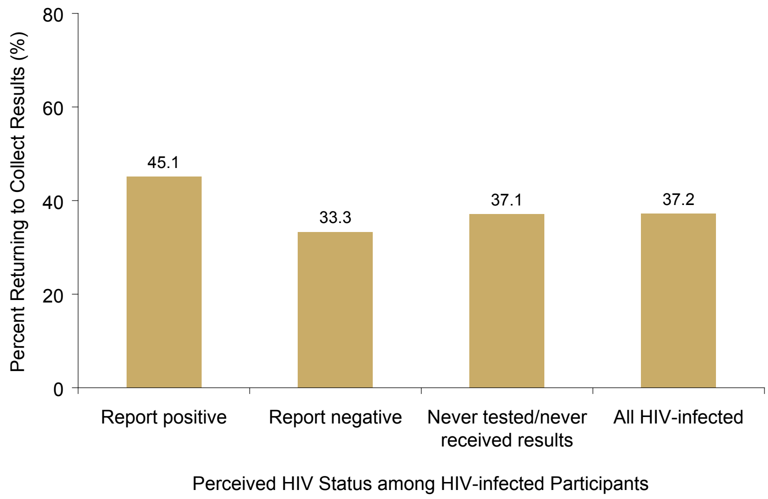


Figure 15.4b More than a third of HIV-infected participants who had never tested for HIV returned to receive their test results.

Overall, 37.2% of HIV-infected participants returned to receive their results during the 2007 KAIS. This estimate was lower than the overall proportion of participants who returned to receive test results. This difference could be due the different reasons: some HIV-infected persons already knew their status; some participants may have suspected they were infected and did not want to confirm their actual status; or some participants may have been too sick to travel to the health facility for results. HIV-infected participants who disclosed their status during the survey were more likely to return for their test results than HIV-infected participants who had never tested, believed that they were uninfected based on their last test or who did not disclose their HIV status.

More than one third (35.8%) of HIV-infected individuals who did not know their current HIV status prior to the survey (that is, they had never been tested for HIV or believed themselves to be uninfected based on their last test) learned they were infected with HIV through the 2007 KAIS. Individuals who learned they were HIV-infected were provided behavioural counselling, referred to appropriate care and treatment services and to partner testing. These results demonstrate an important service that HIV testing and returning test results provided to participants in the 2007 KAIS.

15.5 Returning To Receive Test Results By Pregnancy Status

Figure 15.5 Women aged 15-64 years who returned to receive their test results by pregnancy status, Kenya 2007.

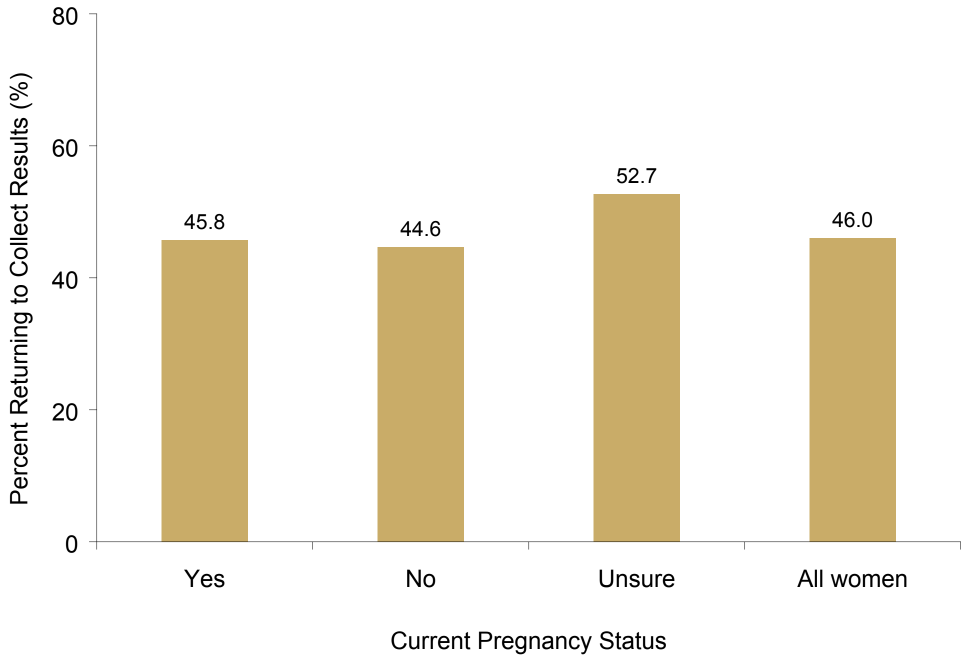


Figure 15.5 Almost half of women who were pregnant at the time of the survey returned for their test results.

The proportion of women who returned to receive test results did not vary by categories of self-reported pregnancy status. In total, 45.8% of women who were pregnant and 44.6% of women who were not pregnant during the survey returned to receive their test results. The rate of returning to receive test results was slightly higher among women who were unsure of their pregnancy status (52.7%), but this difference was not significant. Among women who were pregnant or unsure if they were pregnant and infected with HIV, HSV-2 or syphilis, 43.0% returned to receive their test results and 57.0% did not.

15.6 Gaps and Unmet Needs

- **Over one-half of participants in the 2007 KAIS did not return to receive their test results. For future population-based surveys, methods to return a greater proportion of HIV and other test results should be explored. The use of health facilities to return test results, for example, is logistically challenging and may delay participants from receiving test results in a timely manner. Future surveys should explore how to notify participants of their status efficiently and quickly.**
- **The proportion of respondents that returned to receive their test results was significantly greater in rural areas than in urban areas. Different approaches for returning survey test results may need to be developed for participants in rural versus urban areas.**
- **The proportion of participants who returned to receive their test results as a couple was relatively low in the 2007 KAIS. Programs for couples testing and counseling should be strengthened.**

Glossary of Terms

"Access" to care: Access refers to the proportion of people that has been diagnosed with a disease that is receiving care or a specific treatment.

"Coverage" of care: Coverage refers to the proportion of people who have a disease that is receiving medical care. In the case of HIV, coverage refers to the number of persons with HIV receiving care divided by the total number of persons with HIV, both diagnosed and undiagnosed.

95% confidence interval (95% CI): A confidence interval gives a range of possible values (using an upper and lower bound) within which the true population value of a variable (e.g. the mean, proportion, or rate) will fall 95 times out of 100. It is a measure of certainty and precision around the sample estimate when estimating the true population value.

Acquired immunodeficiency syndrome (AIDS): AIDS is a clinical syndrome characterized by life-threatening opportunistic infections or malignancies and/or severe depletion of CD4 cells that occurs in the final stage of HIV infection. It is caused by the cumulative damage that HIV has done to the immune system.

Anaemia: Anaemia is a deficiency in the blood's capacity for carrying oxygen. Laboratory tests of haematocrit, haemoglobin, red blood cell volume, and red blood cell number can determine whether anaemia is present. Symptoms of anaemia may include fatigue, chest pain, or shortness of breath.

Antenatal care: Care given to a pregnant woman in the months before she gives birth, with the goal of ensuring that she and her baby are as healthy as possible.

Antiretroviral therapy (ART): Administration of medications that stop or slow down HIV from multiplying in the body and therefore extend the length of a person's life. ART is given to patients with HIV who have low counts of CD4 cells or severe opportunistic infections or malignancies to help them fight HIV disease.

ART eligibility: World Health Organization (WHO) guidelines for the use of ART in low-income countries state that HIV-infected individuals are eligible for ART if they have WHO stage IV disease; stage III disease and a CD4 cell count of ≤350 cells/μL; or stage I or II disease with CD4 ≤200 cells/μL. Recently, WHO has recommended increasing the threshold for stage I and II disease to <350 cells/μL.

CD4 cells: A CD4 lymphocyte cell is a key cell of the immune system that carries the CD4 surface protein. CD4 cells are very important to a normal health immune system. CD4 cells are attacked by HIV. HIV infects and kills CD4 cells, leading to a weakened immune system.

Cohort effect: In this context, "cohort" refers to a given generation of people born in a location within a certain time-frame, e.g. "children born in Kenya in the late 1990s." The cohort effect is the variation in health status between members of one birth cohort and the members of another, due to the differences in economic, environmental, social, and other conditions to which each cohort has been exposed.

Concurrent partnerships: Having more than one regular sexual partner in the same time period, e.g., if a man is married, but he also has a regular girlfriend or mistress on the side, one could describe this as a concurrent partnership.

Cotrimoxazole (CTX): Also known as Septrin. A combination of two antibiotics used in the treatment of a variety of bacterial infections. Kenya policy recommends that cotrimoxazole be given as prevention to all people HIV to help avoid some opportunistic infections and therefore extend the length of a person's life.

Discordant couples: Also called "sero-discordant couples." When one member of a couple (sexual partners) has HIV, and the other does not, they are a discordant couple.

Dried blood spot: Dried blood spot testing (DBS) is a method of screening for HIV infection and other conditions using DNA amplification. Unlike ELISA testing for HIV-antibodies in the blood, which may be transmitted to infants in pregnancy independently of the virus itself, dried blood spot testing can be used to detect genetic material of the actual virus, thereby avoiding the likelihood of a false positive result.

Epidemiology: Epidemiology is the study of the distribution and determinants of health-related states or events in a given population. For example, epidemiologists could investigate what factors are involved in a health condition being more prevalent in one population than in another. "Population" in this sense may refer to the inhabitants of an area, the workers in a particular occupation, people of a certain age range, or some other description of people in a discrete grouping.

Family planning: Family planning includes a range of educational, comprehensive medical or social activities to enable people to plan the number and spacing of their children, and to select the means by which this may be achieved. A key component of family planning is informed, voluntary contraception.

Generalised epidemic: When more than one percent of a country or region's adult population has HIV infection, it is described as a generalised epidemic. This is the situation in most of sub-Saharan Africa.

Genital ulcer disease: A genital ulcer is an ulcer located on the genital area, caused by a sexually transmitted disease such as genital herpes, syphilis, chancroid, or thrush. Some other signs of having genital ulcers include enlarged lymph nodes in the groin area, or vesicular lesions, which are small, elevated sores or blisters. The presence of a genital ulcer disease increases the chances of HIV transmission between sexual partners.

Herpes simplex virus-2 (HSV-2): Also known as genital herpes, HSV-2 is a sexually transmitted viral infection characterized by lesions and ulcers in genital areas, the anus, buttocks, or thighs. HSV-2 is mainly transmitted through skin-to-skin contact and can be treated but cannot be cured.

HIV counselling and testing: Most people with HIV do not realize that they have the infection. Studies have shown that people who are tested for HIV and then counselled about ways to prevent transmission (or further transmission), are more likely to use better preventive practices. In many low and middle income countries, the primary model for HIV testing has been the provision of client-initiated voluntary counselling and testing services. Increasingly, provider-initiated approaches in clinical settings are being promoted, i.e. health care providers routinely initiating an offer of HIV testing in a context in which the provision of, or referral to, effective prevention and treatment services is assured. There are four types of HIV testing: voluntary counselling and testing; diagnostic HIV testing; routine offer of HIV testing by health care providers; and mandatory HIV screening (e.g. of blood donors).

Home-based voluntary counselling and testing: This is the provision of voluntary counselling and testing in individuals' homes.

Human immunodeficiency virus (HIV): HIV is the virus that causes AIDS (acquired immunodeficiency syndrome. The virus is passed from person to person through blood, semen, vaginal fluids, and breast milk. HIV replicates slowly; most of the time, several years pass between initial infection and the onset of symptoms. HIV attacks the human immune system and leaves infected persons very vulnerable to illnesses that are normally easily controlled by healthy immune systems.

Incidence: The number of new cases of a disease in a defined population, within a specified period of time, expressed as a percentage among all person who are susceptible to the disease divided by time. Incident cases make up a portion of all prevalent cases.

Informed consent: Informed consent is a legal condition whereby a person can give consent based upon a clear understanding of the facts, implications and future consequences of an action. In order to give informed consent, the individual concerned must have adequate reasoning faculties and be in possession of all relevant facts at the time consent is given. Impairments to reasoning and judgment would include severe mental retardation, severe mental illness, intoxication, severe sleep deprivation, or being in a coma. Decision-making bodies such as legislatures or ethical research boards will define what is considered informed consent. In most cases, parents or guardians of children under the age of 12 years give informed consent on behalf of the child. Guidelines for informed consent by teenagers vary.

Insecticide-treated bed nets: Studies show that the use of insecticide-treated bed nets can reduce malaria transmission by as much as 90%. Bed nets prevent malaria transmission by creating a protective barrier against mosquitoes at night, when the vast majority of transmissions occur. A bed net is usually hung above the center of a bed or sleeping space so that it completely covers the sleeping person. A net treated with pyrethroid insecticide offers about twice the protection of an untreated net and can reduce the number of mosquitoes that enter the house as well as the overall number of mosquitoes in the area.

Male circumcision: Male circumcision is the removal of some or the entire foreskin (prepuce) from the penis. Medically supervised adult male circumcision is a scientifically proven method for reducing a man's risk of acquiring HIV infection through heterosexual intercourse. Circumcision can also provide some protection against genital herpes and human papillomavirus infections.

Mixed epidemic: Epidemics where data suggest a heterogeneity of new infections from both the general population and from traditional and newly-emerging high-risk populations are mixed epidemics. .

Monogamous: Monogamy is the practice of having only one sexual partner and being faithful to that partner.

Opt-out testing: Provider-initiated, routine HIV counselling and testing, in which the client must "opt out" (i.e. must actively refuse), if he or she does not wish to be tested.

Polygamous: Polygamy is a practice in some cultures in which a man may have more than one wife. A few cultures in Oceania traditionally practiced polyandry, in which a woman may have more than one husband.

Population-based survey: An investigation in which information is systematically collected. Such a survey may be conducted by face-to-race inquiry, questionnaires, by telephone, or in other ways.

Prevalence: The number of cases of a given disease (or other health conditions), in a given population, at a single point in time, expressed as a percentage of all persons in the population. Prevalence can increase or decrease over time depending on the number of new infections, the rate of mortality, in or out-migration, the availability of treatment, and surveillance methods.

Prevention of mother-to-child-transmission (PMTCT): Mother-to-child transmission (MTCT) is when an HIV-infected woman passes the virus to her baby. This can occur during pregnancy, labour and delivery, or during breastfeeding. Effective PMTCT includes a three-fold approach: preventing HIV infection among prospective mothers; avoiding unwanted pregnancies among HIV-infected women; and preventing the transmission of HIV from HIV-infected mothers to their infants during pregnancy, labour, delivery and breastfeeding. This last may be accomplished through antiretroviral therapy, elective Caesarean section, feeding interventions, or a combination of these.

Replacement donors: A replacement blood donor is a friend or family member of a person who received a blood transfusion, who donates blood to replace the stored blood used by the transfusion. This ensures a consistent supply in the hospital or clinic.

Safe water system: A system devised by the US Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) of simple, acceptable, low-cost interventions at the household and community level to improve water quality and decrease risk of diarrhoeal disease. The system includes water purification with dilute sodium hypochlorite, safe water storage, and behaviour change, with social marketing and community mobilisation.

Serological testing: This is the clinical testing of a person's blood serum for antibodies to determine whether a particular disease or infection is present.

Seronegative: If a person's blood serum shows no evidence of infection, that person is said to be seronegative.

Seropositive: If a person's blood serum shows evidence of infection, that person is said to be seropositive.

Sexually transmitted infections (STI): Sexually transmitted infections are infections that are transmitted through person-to-person sexual contact. They are sometimes called sexually transmitted diseases (STD).

Standard precautions: Standard precautions are a means of reducing the risk of HIV transmission in medical settings and are based on the principle that all blood, body fluids, secretions, excretions except sweat, non-intact skin, and mucous membranes may contain transmissible infectious agents. Standard precautions include a group of infection prevention practices that apply to all patients, regardless of suspected or confirmed infection status, in any setting in which healthcare is delivered. These include: hand hygiene; use of gloves, gown, mask, eye protection, or face shield, depending on the anticipated exposure; and safe injection practices.

Statistical significance: The probability that the results observed during the study was not likely to be due to chance alone. The threshold for statistical significance is an arbitrary value called a p value which is usually set at 0.05 or 5%. If the probability that the observed result was due to chance is that less than the set p value, the result is considered statistically significant.

Surveillance: Surveillance is a public health method based on the continuous monitoring of the occurrence and spread of a disease and is used to drive effective control. Surveillance may include the systematic collection and evaluation of morbidity and mortality reports, special reports of field investigations, and other relevant epidemiologic data.

Syndromic management: Syndromic management refers to the approach of treating symptoms and signs based on the organisms most commonly responsible for the syndrome. Laboratory tests require resources often not available in resource-limited countries; add to the cost of treatment; may require clients to make extra visits to the clinic; and almost always result in delays in treatment. For these reasons, in the context of STIs, syndromic management guidelines are widely used for syndromes such as lower abdominal pain, urethral discharge and genital ulcer, even in countries with advanced laboratory facilities.

Syphilis: Syphilis is a curable STI caused by a bacterium, Treponema pallidum. Three weeks after exposure to syphilis, a lesion appears in the genital area; this is referred to as primarily syphilis. Secondary syphilis occurs a few weeks after primary syphilis and is characterized by a rash on the body, arms and legs. If left untreated, infected people can develop tertiary syphilis over many years, which is characterized by bone, cardiovascular and neurological disease. Pregnant women can also transmit syphilis to their fetuses.

Tuberculosis: Tuberculosis (TB) is a contagious bacterial disease. Like the common cold, it spreads through the air. Only people who are sick with TB in their lungs or upper airways are infectious. When infectious people cough, sneeze, talk or spit, they propel TB germs, known as bacilli, into the air. A person needs only to inhale a small number of these to be infected. Left untreated, each person with active TB will infect on average between 10 and 15 people every year. But most people infected with TB bacilli will not necessarily become sick with the disease. When someone's immune system is weakened, the chances of becoming sick are greater. TB is a leading cause of death among people who are HIV-infected in Africa.

Venous blood sample: This is a sample of blood, taken by syringe from a person's vein.

Volunteer donors: In the developed world, most blood donors are unpaid volunteers who give blood for a community supply. In poorer countries, established supplies are limited and donors usually volunteer to give blood when family or friends need a transfusion. Many donors donate as an act of charity, but some are paid and in some cases there are incentives other than money such as paid time off from work.

WHO Clinical Staging: The WHO Clinical Staging system classifies HIV disease based on the clinical manifestations that can be recognized and treated by clinicians in diverse settings, including resource-constrained settings, and by clinicians with varying levels of HIV expertise and training. HIV disease can be classified as stage I, II, III, or IV, with stage IV being the most advanced disease stage.

Appendix A

Methods of the 2007 KAIS

This Appendix describes the methods of the 2007 KAIS. First we describe **survey methods**, including the population covered by the survey, sample size, sampling frame and sample allocation. We summarize **field methods**, which cover implementation of the survey questionnaires, blood draw and related training, community mobilisation, and supervision of the field teams. Protection of **human subjects** is described in the following section. **Laboratory methods** also are included, along with training of staff; sample collection, processing, labelling, and transport; receipt of samples and biological testing; repository storage; and data management. We also describes the **methods for returning test results** to participants, including organization and flow of test results from the laboratory to participants, selection of facilities for returning test results, training counsellors, dispatching results to the field, documentation, supervision, and data management. The final section covers the methods used for calculating **weights, non-response adjustments, and statistical analysis**. This final section reminds readers that estimates in this report are unadjusted univariate and bivariate associations only. Multivariate analysis and associations adjusted for age and other factors will be provided in manuscripts and other dissemination materials.

A.1 Survey Methods

Geographic coverage and target population

The 2007 KAIS was a national, population-based, cross-sectional survey. The survey was conducted among a representative sample of households selected from all eight provinces and covered both rural and urban areas. A household was defined as a person or group of people related or unrelated to each other who live together in the same dwelling unit or compound (group of dwelling units), share similar cooking arrangements, and identify the same person as head of household. The 2007 KAIS was designed to allow reliable estimation of HIV prevalence and behavioural indicators relating to HIV/AIDS. All women and men aged 15-64 years who were either usual residents of the selected households or visitors present in the household on the night before the survey were eligible to participate in the study provided they gave informed consent. The inclusion criteria may have captured non-Kenyans living as usual residents or visitors in a sampled household. Military personnel and the institutionalized population are typically not captured in household-based surveys, although they may have been included in the 2007 KAIS if at home during the survey.

Sampling frame

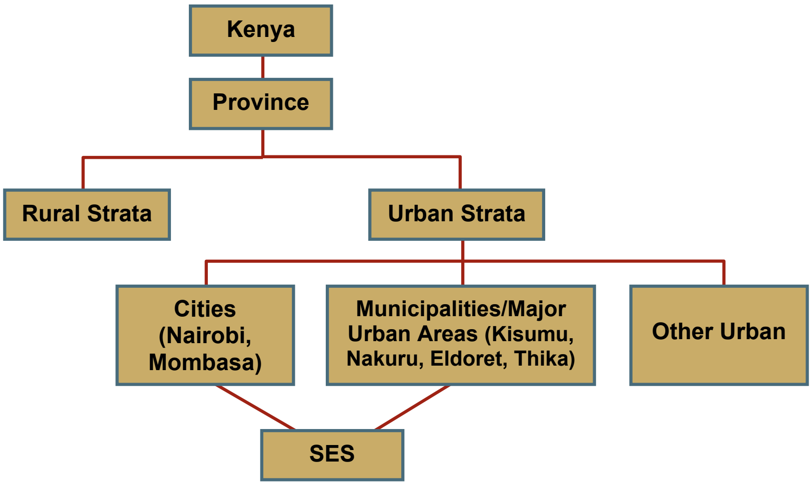
Administratively, Kenya is divided into eight provinces. Each province is divided into districts, each district into divisions, each division into locations, each location into sub-locations, and each sub-location into villages. For the 1999 Population and Household Census, KNBS delineated sub-locations into 62,000 small units called Enumeration Areas (EAs) that constituted a village, a part of a village, or a combination of villages. The primary sampling unit for Kenya's master sampling frame, and for KAIS, is a cluster, which is constituted as one or more EAs.

As of February 2009 Kenya was divided into eight provinces and 149 districts; however, the sample frame used for the 2007 KAIS, the National Sample Survey and Evaluation Programme IV (NASSEP

IV), was based on the 1999 Kenya Population and Housing Census, which covered a total of 69 districts. The NASSEP IV was created and is maintained by KNBS. The frame is a two-stage stratified cluster sample with 1800 clusters, comprised of 1,260 rural and 540 urban clusters. The clusters were sampled using the probability proportional to measure of size (PPS) method within each rural and urban stratum. The clusters were defined based on one measure of size with an average of 100 households and upper and lower limits of 149 and 50 households, respectively.

During the creation of the master frame, the country was divided into various districts and rural/urban strata. The six major urban areas (Nairobi, Mombasa, Kisumu, Nakuru, Eldoret and Thika) were further stratified into five socio-economic classes (upper, upper-middle, middle, lower-middle and lower) to account for socio-economic variations. It should be noted that Nairobi and Mombasa have no rural areas and that Nairobi is both a district and a province. Figure A.1 shows the stratification of EAs before sampling clusters were sampled for NASSEP IV.

Figure A.1 NASSEP IV enumeration area stratification, Kenya 2007.



SES, socio-economic status

Sample size

The target of the 2007 KAIS sample was to obtain approximately 9,000 completed household interviews. Based on the level of household non-response in the 2003 KDHS (13.2% of selected households), approximately 10,375 households in 415 clusters (294 rural and 121 urban) were selected for potential participation in the 2007 KAIS. Table A.1 shows the provincial distribution of households and clusters originally sampled for the 2007 KAIS.

Table A.1 Distribution of sampled clusters and households by province, KAIS 2007.

	Clusters			Households		
Province	**Rural**	**Urban**	**Total**	**Rural**	**Urban**	**Total**
Nairobi	0	58	58	0	1,450	1,450
Central	48	7	55	1,200	175	1,375
Coast	24	22	46	600	550	1,150
Eastern	50	5	55	1,250	125	1,375
North Eastern	23	5	28	575	125	700
Nyanza	54	7	61	1,350	175	1,525
Rift Valley	51	12	63	1,275	300	1,575
Western	44	5	49	1,100	125	1,225
Total	**294**	**121**	**415**	**7,350**	**3,025**	**10,375**

Of the original 415 clusters, 402 were accessed and surveyed. Thirteen clusters were inaccessible due to impassable roads or tenuous security situations. All reported estimates and design weights for households, individual interviews, and blood draws were based on data from the 402 clusters. Details about how cluster-level non-response was accounted for in the calculation of weights are provided in Section A.6 of this appendix. The survey was not designed to produce reliable district-level estimates; estimates are presented by rural/urban residence, and by province.

KAIS sample allocation

The 2007 KAIS sample used a stratified, two-stage cluster sample design for comparability to the 2003 KDHS. The first stage involved sampling clusters from NASSEP IV, and the second stage involved selecting households from these clusters for the survey.

Selection of clusters (probability sampling units). The sample was allocated first to provinces in proportion to the square root of the number of households in the 1999 census and among rural and urban areas of the districts within each province based on the distribution of households.

A simple systematic sampling method was used to select 294 clusters in rural areas and 121 clusters in urban areas for a total of 415 clusters. KNBS selected clusters from the NASSEP IV frame using the equal probability selection method independently within rural and urban domains of each district. The resulting sample retained the properties of PPS, as used in creation of the frame. EAs were arranged in serpentine order prior to the 1999 Census, and later clusters in the NASSEP IV master frame were serialized in the same order within districts and rural and urban strata. The systematic random sampling method had a sampling procedure with a random start, then every *kth* cluster was sampled in each category until the sample was achieved.

Selection of households. Household listings in 111 clusters were updated immediately before commencement of the survey. Listings in the remaining 301 clusters had been updated in 2005-2006 for other national surveys.

An equal probability systematic sampling method was applied in each cluster to reach a uniform sample of 25 households per cluster. The following procedure was used to sample households from clusters:

Let L be the total number of households listed in the cluster; let Random be a random number between (0, I) (Random numbers are different and independent from cluster to cluster); let n be the number of households to be selected in the cluster; let I = L/n be the sampling interval.

(1) The first selected sample household is k (k is the serial number of the household in the listing) if and only if:
*k = Random*I, where I is the sampling interval as defined above.*
(2) The subsequent selected households are those having serial numbers:
*k + (j-1)*I,   (rounded to integers) for j = 2, 3, … n;*

A.2 Field Methods

Data Collection

Questionnaires. Two questionnaires were used in the 2007 KAIS: a household and individual questionnaire. The content of the questionnaires was adapted from standard AIDS Indicator Survey questionnaires developed by ORC MACRO and technical partners, the 2003 KDHS HIV Module and previous surveys conducted in Africa. Stakeholders including NACC, NASCOP and other HIV/AIDS organizations working in Kenya met to determine the key HIV program information needs and gaps. The KAIS Technical Working Group (TWG) collated opinions from these stakeholders, modified existing questions and designed new questions to reflect issues relevant to Kenya's current epidemic. The final questionnaires were translated from English into Kiswahili and 11 vernacular languages and back-translated into English to ensure accuracy. The questionnaires were further refined after a pilot study prior to distribution of the final versions to field staff.

The household questionnaire gathered basic information from the heads of the households on each usual member and visitor in the household, including age, sex, relationship to the head of the household and orphanhood among children. Information was collected on characteristics of the household's dwelling unit, such as the source of water, type of toilet facilities, and mosquito nets. Information was also collected on whether the household had received specific types of care and support in the year before the survey for any chronically ill adults, household members who died and orphans and vulnerable children. The household questionnaire was also used to record respondents' consent for blood collection and testing.

The individual questionnaire collected information from eligible women and men aged 15-64 years and covered basic demographic characteristics, reproductive history, fertility preferences, family planning, marriage and sexual activity. The individual questionnaire also captured HIV and STI knowledge, attitudes and behaviours, HIV testing, access to care and treatment services, blood donation history, medical injections, and other health issues, such as tuberculosis.

Figure A.2. Data collection tools, KAIS 2007.

Household Questionnaire	**Individual Questionnaire**
▪ Household census ▪ Parental survivorship ▪ Household characteristics ▪ Mosquito net use ▪ Support to households for sick and recently deceased adults, and OVCs	▪ Socio-demographic characteristics ▪ HIV/STI knowledge and attitudes ▪ Marriage and sexual partnerships ▪ Fertility and family planning ▪ Uptake of HIV prevention, care and treatment services
Blood Draw	**Results Form**
▪ Venous blood ▪ HIV, HSV-2, syphilis testing; CD4 for those with HIV ▪ Dried blood spot: HIV testing only	▪ Specific test results retrieved ▪ Individual or couple counselling ▪ Minors with or without parents ▪ Referrals provided

Blood draw. All eligible women and men were asked individually for their voluntary consent to provide a venous blood sample in the home for HIV, syphilis, and HSV-2 testing, as well as CD4 cell quantification if seropositive for HIV. They also were asked to consent to extended storage of their samples for future, unspecified testing.

Experienced technicians were responsible for the collection of blood from the arm by venipuncture. Blood was collected into two separate tubes, one with anticoagulant from which serum was obtained for HIV, HSV-2, and syphilis testing and the other designed to stabilise CD4 cells for up to seven days after collection. For participants who were willing to participate but refused the venous blood sample, dried blood spot (DBS) samples from a finger prick were collected. DBS samples were also collected in cases in which venipuncture was not feasible.

Training. In July 2007, 204 skilled interviewers, laboratory technicians, laboratory scientists and field supervisors were recruited and trained for two weeks in procedures for the survey. Interviewers were trained to identify eligible households and individuals, administer informed consent, educate participants about HIV, HSV-2, and syphilis, use objective interview techniques, and administer the household and individual questionnaires. Field laboratory technicians and scientists were trained in preparing respondents for the blood draw and in collection, processing, storage, and transportation of specimens to the central laboratory in Nairobi. Laboratory training emphasized ways to minimise risks in handling biological specimens. Laboratory technicians were trained to process and analyse specimens in the laboratory and to issue vouchers for participants to retrieve their test results. The training involved didactic presentations, small group discussions and practical sessions, such as mock interviews and blood draws.

Community mobilisation. On August 1, 2007, KAIS was officially launched in conjunction with a national television, radio, and print media campaign to educate, sensitise, and mobilise Kenyans about the survey and the importance of broad participation. Mobilisation efforts then shifted to interpersonal communications at the community and village levels to raise awareness of the survey as a major surveillance initiative by the GOK. Mobilization also prepared communities before survey teams arrived.

District statistical officers and enumerators helped to locate sampled clusters and sampled households. As KNBS staff, these officers and enumerators were knowledgeable about census enumeration systems and had developed a rapport with community and village leaders through previous surveys. Teams of trained community mobilisers then visited the village leaders to discuss the survey and when possible held community meetings to explain the survey and answer questions in a public forum. Mobilisers communicated regularly with data collection teams and were able to convey estimated dates of data collection to the sampled households.

Fieldwork. Each field team consisted of four interviewers, two laboratory technicians, one supervisor and one driver. A total of 29 field teams conducted fieldwork over a period of four months from August to December 2007. Teams were given local language questionnaires in addition to instruments in Kiswahili and English to accommodate respondents who were not conversant in the local languages. Completed questionnaires for each cluster were packed and delivered to KNBS headquarters in Nairobi through secured courier services for data processing.

After obtaining consent from the head of the household, interviewers administered the household questionnaire to household heads. This was followed by interviews and blood draws among all eligible and consenting individuals in participating households. Participants received bilingual (English and Kiswahili) brochures on HIV, HSV-2, syphilis, and tuberculosis, including information on the association between diseases and the value of knowing one's HIV status.

Supervision. Data collection teams were routinely visited by teams of supervisors representing different KAIS collaborating institutions. These supervision teams travelled throughout the country to meet with field teams, deliver survey supplies, perform quality checks on questionnaires, assess mobilisation efforts, and help address challenges to data collection. Supervision reports were circulated to the 2007 KAIS TWG members and pending issues in the field were resolved after discussion.

A.3 Human Subjects

The KEMRI Ethical Review Committee and the Institutional Review Board of the CDC approved the 2007 KAIS protocol prior to survey implementation. All participants provided oral informed consent and had the choice to consent separately to the interview, blood draw, and blood specimen storage for future testing. Permission to obtain oral consent instead of written consent was requested from the KEMRI Ethical Review Committee and the Institutional Review Board of the CDC due to the high rate of illiteracy in some regions of the country and its potential to negatively impact survey uptake. For minors aged 15-17 years, parental consent and minor assent were both required for participation. Data collectors signed the consent form for each of the components and indicated whether or not oral consent was provided. Data collectors informed all eligible persons that participation in the survey was strictly voluntary and that there would be no consequences if a household or person refused participation. Every effort was made to identify space in households that provided privacy during the interview.

A.4 Laboratory Methods

The 2007 KAIS included several novel concepts and methods for maximising laboratory testing in a national surveillance effort.

Recruitment and training

Field and core laboratory staff were recruited from existing laboratory staff within NPHLS and from KEMRI laboratories. Training included the following components: a didactic overview of the 2007 KAIS methodology; a detailed description of the roles and structure of field and core laboratory survey teams; a review of basic laboratory operations, including collection, handling, and transport of blood specimens and bio-safety considerations; and a review of technical procedures, including specific assays, quality assurance, and general logistics.

Ensuring sufficient staff capacity was critical given the large volume of samples received per week (on average 500 samples per week), the rapid turnover required to quantify CD4 cells within seven days of sample collection, and the need to report test results for an entire cluster within six weeks of sample collection.

Laboratory field process

The laboratory field process consisted of three main components: (1) sample collection at the participants' home; (2) preparation of samples at temporary field laboratories, which were laboratory facilities within the cluster or hotel rooms designated for sample processing if laboratory facilities were not available; and (3) proper packing and documentation of samples before transport to the central laboratory in Nairobi. The procedures for each of these elements are summarised in the following sections.

Sample collection. Trained, experienced laboratory technicians were responsible for the collection of blood from the arm by venipuncture using an evacuated tube collection system. Five milliliters (ml) of blood were collected into a "red-top" glass tube without anticoagulant for HIV, HSV-2, and syphilis testing. Immediately after the first 5 ml of blood was collected, an additional 2 ml of blood was collected into a special "green-top" blood collection tube (Becton Dickinson [BD] Vacutainer CD4 Stabilization Blood Collection System) designed to stabilise CD4 cells for up to seven days. The 2007 KAIS was the first national survey to utilise these tubes for CD4 testing. To protect against potential loss of specimens in transit, DBS samples for HIV testing were prepared from all CD4 blood tubes at temporary field laboratories at the end of each day.

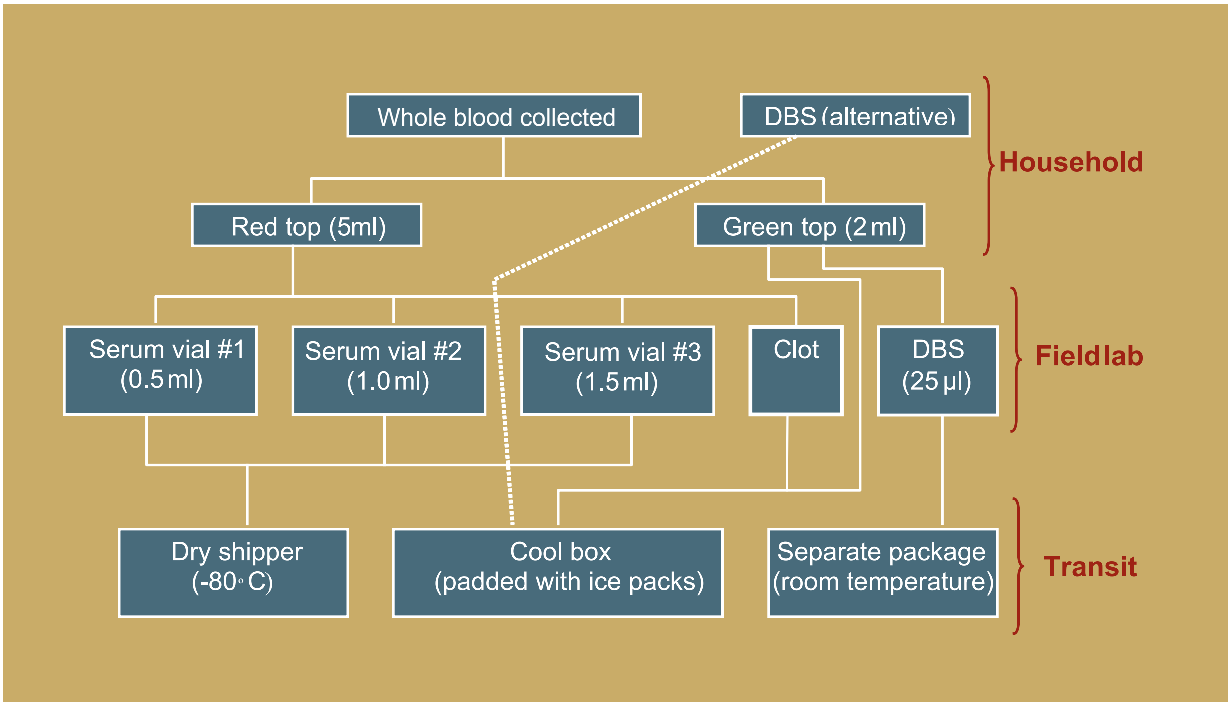
For participants who were willing to participate but refused the venous blood sample or for whom venipuncture was not feasible, technicians collected finger-prick DBS samples which were air-dried overnight, separated by glassine paper, and stored at ambient temperature in groups of 20 in sealable plastic bags (Zip-loc) containing desiccant and a humidity indicator card.

Processing blood samples in the field. At the end of each field day, laboratory technicians brought samples to a temporary field laboratory for processing. The red-top tube used in the 2007 KAIS allowed for complete separation of serum from the clotted red cells; however, each survey team was equipped with a manual centrifuge as a backup. Once separated from the clotted red cells, serum samples were transferred from the red-top tube to three cryovials; the packed red cells (red blood cells/buffy coat blood clot) remained in the red-top tube and were transported to the core laboratory. The CD4 tubes were kept at ambient temperature at the field laboratory until transportation to the National HIV Reference Laboratory (NHRL), within the larger NPHLS system, in Nairobi.

Labeling of blood samples in the field. A unique, bar-coded, random identification number was assigned to each participant who consented to testing. At the time of sample collection, labels containing the code were affixed to the household questionnaire, red-top and green-top tubes, DBS filter paper cards, cryovials and specimen tracking forms. To cross-check specimens in the field with those received at the NHRL, the location of each cryovial or DBS filter paper card within a shipping container or bag was recorded on a specimen inventory form.

Packing and transporting samples. The three cryovials containing serum were stored in a dry shipper (-80° C). The red-top tubes containing the blood clot were packaged in cold boxes for transportation. The green-top tubes were transported at room temperature. A contract courier service collected these samples and transported them overnight to the NHRL in Nairobi two to three times per week. The tubes containing the blood clot were stored at -80° C at the NHRL for future testing, and the dried blood spots were stored at -20° C. Because certain remote areas of North Eastern province could not be reached easily by road transport, the 2007 KAIS laboratory logistics team coordinated with the European Commission Humanitarian Organization (ECHO) to provide room in a small airline operated by ECHO to transport dry shippers, cool boxes and other supplies between remote areas in North Eastern province and the NPHLS in Nairobi. This service was provided free of cost to survey implementers.

Figure A.3 Laboratory field process, 2007 KAIS.



Central laboratory process

The central laboratory in Nairobi was responsible for coordinating all laboratory logistics for the survey including securing supplies for the field laboratory activities, receiving, archiving and processing samples, testing, coordinating with the quality assurance laboratory, and dispatching testing results to NASCOP.

Receipt of specimens at central laboratory. An average of 500 samples from the eight provinces were received at the NHRL each week and logged into a laboratory information management system (LIMS) using an automated barcode reader. The specimen barcode labels were cross-checked against the sample tracking form. Core laboratory staff checked the integrity of the samples and recorded this information in the LIMS (e.g. satisfactory, haemolysed, contaminated). Overall, 98.9% of whole blood samples and 99.8% of serum samples collected in the 2007 KAIS were of adequate quality for testing. The three serum cryovials, which were marked for testing, quality assurance or long-term storage were sorted and forwarded to the appropriate stations for testing or archiving.

Specimen testing. The following section summarises the testing protocols followed at the NHRL and KEMRI quality assurance (QA) laboratories:

HIV testing. Specimens were first tested at the NHRL according to the manufacturer's recommendations using a fourth-generation HIV enzyme linked immunoassay (EIA) (Vironostika HIV-1/2 antigen/antibody) for screening and a third-generation EIA (Murex HIV.1.2.O) for confirmation in a serial testing algorithm. The screening test was completed within 24 hours of logging-in the specimen into the LIMS, and seropositive samples were referred for immediate CD4 testing. The HIV confirmatory test was completed the same day or one day later. Samples showing discordant results were tested again with the two assays. Polymerase chain reaction (PCR) testing (Roche HIV DNA v1.5) was conducted at the KEMRI QA laboratory to resolve specimens with two sets of discordant results. For QA purposes, all seropositive and 5% of seronegative specimens were transported to the KEMRI QA laboratory and re-tested using the same algorithm. Specimens with discordant results between the two laboratories were tested again at the KEMRI QA laboratory with the same algorithm. Specimens that were still discordant after re-testing were resolved by PCR at the KEMRI QA laboratory.

CD4 cell count. Stabilised whole blood specimens for CD4 testing were prepared in the temporary field laboratory at the end of each day. Specimens were transported to the NHRL at room temperature (18°–22°C). Only samples found to be reactive for HIV using the serial HIV testing algorithm described earlier were eligible for a CD4 cell count. Single-platform technology was used to determine both absolute and percentage lymphocyte subset values from each CD4 tube of blood using BD FACSComp™ software and BD CaliBRITE™ reagents. CD4 and CD8 cells were enumerated to calculate the CD4:CD8 ratio. For quality control of CD4 testing, internal controls with known CD4 quantities were included with each run. When the system detected an error with the control, results from the run were discarded, the specific error was rectified based on the error code generated by the software, and CD4 testing was repeated. All CD4 testing and re-testing was conducted at the NHRL.

Syphilis. Testing was conducted using two laboratory tests. All serum specimens were screened at the NHRL using a Treponema pallidum particle agglutination assay (TPPA) (Serodia-TPPA, Fujirebio Diagnostics Inc.). All TPPA positive specimens were reviewed by a second laboratory staff member and then tested using the rapid plasma reagin (RPR) (Macrovu-Vue RPR Card Test, BD USA) on undiluted (i.e. neat) serum. RPR results also were reviewed and reported by a second laboratory staff member. TPPA was used as an antibody-screening test to identify previous exposure to syphilis antigens, whereas RPR served as a test for presence of reaginic antigens, an indicator of active infection. For quality control, all TPPA-reactive specimens and 5% of nonreactive specimens were re-tested at the QA laboratory using the same TPPA/RPR algorithm. Specimens with discordant results between the two laboratories were reported as indeterminate.

HSV-2. All specimens were tested using Kalon HSV2 IgG ELISA based on gG-2 according to the manufacturer's recommendations. All samples reactive with the first EIA run were re-tested using Kalon HSV2 IgG ELISA and read by a second reader. For quality control, all reactive specimens, 5% of randomly-selected nonreactive specimens and specimens in gray zones were re-tested at the QA laboratory using the above EIA test. Specimens with discordant results between the two laboratories were reported as indeterminate.

Dried blood spots. The DBS samples prepared from the CD4 blood tubes at the temporary field laboratories were stored in freezers at temperatures of -20o C at the NHRL. These samples were tested for HIV if serum samples were lost in transit or if respondents did not consent to giving venous blood but were willing to give blood from a finger prick. Sera were eluted from 6-mm discs punched from the DBS samples and were tested following the manufacturer's recommendations using a parallel testing algorithm using two HIV EIAs (Vironostika HIV UNIFORM II Plus O v 3.3 and Murex HIV 1.2.0). For quality control, all reactive specimens and 5% of nonreactive specimens were re-tested at the QA laboratory using the same testing algorithm. Specimens with discordant results between the two laboratories were resolved by HIV DNA PCR or reported as indeterminate.

Repository specimens

Serum, plasma, packed cells, and DBS samples remaining after testing were stored at -80^{o}C at the NHRL for future testing. Proposals for the use of repository specimens will be reviewed following standard procedures by KAIS leadership and submitted to the necessary ethical review committees for approval.

Field supervision

As part of the main survey supervision, a member of the central laboratory team visited field-based laboratory staff each month during the data collection period. Laboratory supervisors ensured high quality of specimens and replenished supplies for field teams. They also helped monitor and evaluate adherence to laboratory-related procedures, including bio-safety standards, and provided support to the laboratory field staff and assistance in problem solving any laboratory-related issues.

Laboratory data management

The LIMS used for the 2007 KAIS was developed by the Ugandan Ministry of Health, CDC-Uganda and other collaborators for the 2005 Uganda AIS. The platform for the system was Microsoft Access software. Upon receipt of specimens at the core laboratory, technicians scanned barcodes into the LIMS, which immediately identified any duplicate entries. The LIMS was installed at the NHRL and the KEMRI QA laboratory. During testing, the LIMS automatically captured HIV, HSV-2 and CD4 results from laboratory EIA readers. Syphilis results were double-entered manually into a separate, stand-alone database system. The LIMS, programmed with the approved testing algorithms, generated a final set of results for each participant.

A.5 Returning Laboratory Test Results To Participants

Returning test results with appropriate post-test counselling to persons infected with HIV and STIs can help HIV-infected individuals recognize symptoms, seek care and treatment, reduce transmission to others and protect themselves from acquiring other STIs. Uninfected persons who learn their test results can also benefit from risk reduction counselling messages on how to protect themselves from acquiring HIV and other STIs.

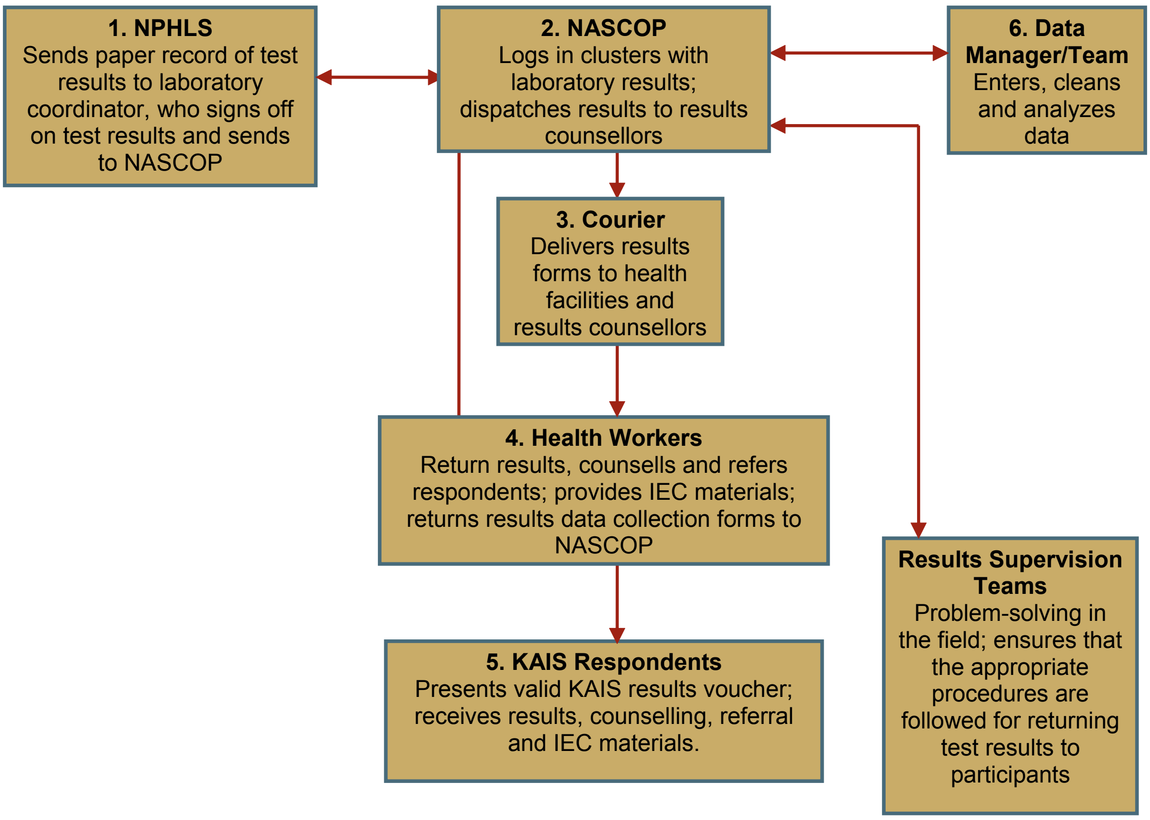
In the 2007 KAIS, participants who consented to blood draw during the survey were given an opportunity to learn their test results approximately six weeks after sample collection. This activity was entirely voluntary and not a requirement for participation in the 2007 KAIS. The survey utilized a facility-based approach in which selected health facilities within and near the study clusters were involved in returning test results to participants. Persons who received their test results were provided post-test counselling, and if infected they were provided referrals to HIV and STI prevention, care, and treatment services.

This section outlines the methods used to return test results to participants and the data management and analysis procedures used to analyze data on persons who came to collect results

Organization and structure of returning test results to participants

NASCOP coordinated the activity for returning test results to participants in close collaboration with the NHRL. The NASCOP coordinator for returning test results provided overall technical, administrative, and logistical oversight of the activity for returning test results to participants. Trained health workers (results counsellors) who returned test results to participants provided appropriate counselling and referral according to national guidelines for voluntary counselling and testing. Counsellors recorded information about participants who returned for results and any referrals that were made during the session. The NASCOP data management team coordinated entry of this information, linkage to the questionnaire and laboratory databases, and cleaning of these data.

Figure A5.a Structure and flow of test results, KAIS 2007.



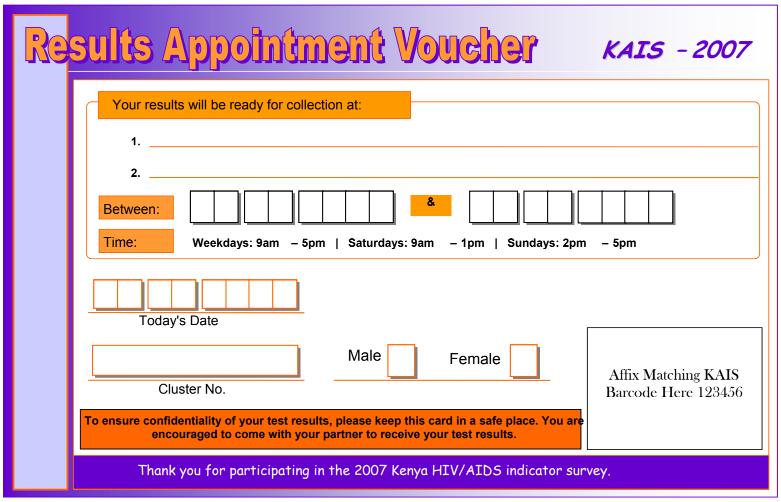
Results returned. Samples from participants who consented to venous blood draw were tested for HIV, HSV-2 and syphilis, and received a CD4 count test if HIV-infected. Participants who provided DBS samples were tested only for HIV. Table A5 shows the format used to report KAIS test results.

Table A.5 Results formats for laboratory testing, KAIS 2007.

Test	Venous blood	Dried blood spot	Results format
HIV	Yes	Yes	Positive, negative, indeterminate
CD4	Yes	No	Counts (number of cells per micro-litre of blood) for HIV-infected people only
HSV-2	Yes	No	Positive, negative, indeterminate
Syphilis	Yes	No	Positive, negative, indeterminate

Results voucher. After blood sample collection, laboratory technicians issued results vouchers (see Figure A5.b) and counselled participants on the importance of knowing their disease status. The voucher contained the participant's study identification number, sex, the dates of the four-week period during which their test results would be available, and a list of two or three health facilities in the area where participants could receive their test results. Participants were provided with a choice of facilities in case they had concerns about confidentiality at nearby facilities and preferred to travel farther away for greater anonymity. Participants who wished to know their results prior to the voucher dates were given a listing of VCT sites and health facilities in the area where they could be tested for HIV.

Figure A.5b Results voucher, KAIS 2007.


Results Appointment Voucher
KAIS - 2007
Your results will be ready for collection at:
1.
2.
Between: &
Time: Weekdays: 9am – 5pm | Saturdays: 9am – 1pm | Sundays: 2pm – 5pm
Today's Date
Male
Female
Cluster No.
Affix Matching KAIS Barcode Here 123456
To ensure confidentiality of your test results, please keep this card in a safe place. You are encouraged to come with your partner to receive your test results.
Thank you for participating in the 2007 Kenya HIV/AIDS indicator survey.

Selection of health facilities. District hospitals and health centres where respondents could access further testing and follow-up services were selected as results collection points. Dispensaries and other facilities, such as mission hospitals or VCT sites, were designated as results collection points in clusters far from major health facilities. The selected health facilities had to be accessible to participants and willing to participate in this activity by providing needed space for results counsellors on weekdays and weekends.

Recruitment and training of results counsellors. Effective results counselling in KAIS required that all counsellors be equipped with basic knowledge of STIs covered in the survey and with appropriate counselling skills. The results coordinator in collaboration with Provincial AIDS/STI Coordinators (PASCOs) identified, recruited, and assisted in the training of the 2007 KAIS results counsellors. In September 2007, a total of 202 health workers attended a training on how to return KAIS test results to participants. Counsellors and health workers, regardless of their health care experience, attended the training to refresh their counselling skills, learn how to return the 2007 KAIS test results to participants, and to refer them and their partners for further testing, care and treatment if necessary. The training covered the following topic areas:

- Overview of HIV and CD4, HSV-2, and syphilis
- Protocol for returning HIV, CD4 count, HSV-2, and syphilis results
- Counselling and referral messages
- Effective counselling skills
- Documentation of information from persons who receive their test results
- Confidentiality
- Supervision

The training also included role plays and other opportunities for building practical experience in results counselling.

Documentation of results at laboratory. Upon completion of laboratory testing for a given cluster, the LIMS coordinator produced a laboratory results form through a computer-automated process for each cluster, listing results for each individual who provided specimen. The form was populated with the province, district, and cluster names; dates of sample collection; study identification numbers for a cluster; positive, negative, or indeterminate results for HIV, syphilis, HSV-2, and CD4 counts for HIV-infected persons; and codes indicating the reason for any missing results (e.g. insufficient sample, rejection sample, DBS only). Forms were submitted for review by the NPHLS lab coordinator (see Figure A5.c). After reviewing the results and resolving any discrepancies, the laboratory coordinator delivered hard copy results forms to the NASCOP results coordinator.

Dispatching results to the field. Upon receiving results from NHRL, the NASCOP results team logged in cluster numbers with results and arranged for a courier service to pick-up the paper results and deliver to the selected health facilities. The courier service was given the mobile telephone numbers of results counsellors so they could communicate directly to arrange a secure drop off.

Methods for returning test results to participants. Results counsellors were trained to follow a standardized protocol for returning test results to participants. Counsellors were provided with counselling messages for each test result to guide them during the counselling session and to ensure consistency in the quality of counselling. The 2007 KAIS followed similar procedures for returning laboratory results that are followed in general health care settings in Kenya, including abbreviated counselling on basic disease information, an explanation of test results, the importance of partner testing, risk reduction messages, and referrals for further care and treatment services.

Procedures for returning test results to minors complied with Kenyan law, Ministry of Health policy guidelines and international standards of ethics and practice. Youth were encouraged but not required to come with a parent or guardian to receive their test results. Test results were first returned to the minor and then, upon consent of the minor, shared with the accompanying parent or guardian.

The following core elements for returning test results to participants were emphasized during specimen collection and results counselling sessions:

Validity of KAIS test results and importance of further testing. In addition to delivering KAIS test results, results counsellors discussed the reliability of results with participants. Due to the time lapse between sample collection and returning test results, reported results reflected the participant's infection status at the time of specimen collection. When giving test results to participants, results counsellors explained that the participant's current status might be different based on the window period of HIV infection and recent exposures. Participants with negative test results were advised to seek further testing if they had engaged in risk behaviour after sample collection.

Relationship between HIV, genital herpes, and syphilis. Counselling of respondents emphasized the links between HIV and tuberculosis, and between HIV and genital herpes and syphilis.

Partner testing. Partner testing or couples testing is a main strategy of national testing initiatives in Kenya. During specimen collection, respondents were encouraged to learn their test results with their partner.

Prevention of transmission to partners and children. Participants who received their test results as individuals (instead of as a couple) were encouraged to disclose their test results to their sexual partners, if safe. Participants were also offered free condoms when they received their test results, except at mission hospitals which did not supply condoms. Additionally, results counsellors provided specific messages to both male and female participants on prevention of transmission of HSV-2, syphilis and HIV to children.

Referrals for follow-up testing and counselling. Results counsellors provided appropriate referrals to infected persons for additional testing, counselling, care and treatment services. All participants received brochures on HIV, TB, syphilis, and genital herpes.

Confidentiality. During sample collection, laboratory technicians explained the need to keep results vouchers safe to ensure confidentiality of test results. A results voucher served as the only basis for providing test results to respondents. Results counsellors verified that the sex of the person who returned for their test result was the sex of the participant who received the results voucher by cross-checking with the sex indicated on the voucher. Results counsellors were trained to observe confidentiality of participants' test results in line with existing national guidelines for voluntary counselling and testing. In addition, respondents could receive results at a health facility outside their study cluster if they had concerns about confidentiality among the staff at facilities near their homes. Participants who did not have a valid results voucher were referred for testing and counselling at the nearest health facility.

Figure A.5c Sample laboratory test results form, 2007 KAIS.

NASCOP AND NPHLS – 2007 KAIS LAB TEST RESULTS

**To be completed by NPHLS*

*Province:………………..........................…… *District : …….....................................……….. *Cluster No: …….......................…..……….

*Dates of sample collection: From dd…......................…./mm……..…............…/2007 to dd…….................…./mm….............……./2007

Name of health facility……………...................................………… Health facility Code .... (to be completed by HW)

*Checked: Date: dd……....................…. /mm…......................…. /2007 *Sign:…….........…...........………………………………

*Missing Code: 01-Participant provided DBS only 02-Rejected/invalid specimen 03-Missing specimen 04-Insufficient specimen

** Referral Code: 01-Comprehensive care centre/ART 02-STI clinic 03-TB clinic 04-VCT centre 05-PMTCT/antenatal clinic 06-Other (specify in space provided – do not use abbreviations) 07-Respondant received condom

No.	IDNO	HIV	CD4 (cells/ µl)	SYP	HSV2	Reason for missing test result (Enter code*)	Results collected by Individual/ Couple I/C	Sex M/F	Returned results Enter date (dd/mm/ yy) & tick results returned below each test	Referral (Enter code**)	Health worker code
1	01234	Pos	180	Neg	Neg		C-03	M	13/10/2007	01, 07	555
2	01235	Neg	-	Neg	Neg		I	F	25/10/2007	05	555
3	01236	Neg	-	Neg	Neg		C- 01	F	13/10/2007	02, 07	555
4											
…											
…											
…											
20											

Remarks……...……………………

....……………………

....……………………

(To be completed by the PASCO)

Checked: Date: dd……...........…mm……..............…..2007 PASCO Code: ….......................................………

Documentation. Results counsellors recorded information about respondents who received their test results and any referrals onto the results form. This information included the sex of the person collecting the result, specific test results returned, the date results were returned, and whether the person came as an individual or was accompanied by a spouse or partner. All forms were submitted to NASCOP at the end of the four to six week period that the test results were available.

Monitoring and supervision. Supervision teams monitored procedures for returning test results to participants and supported results counsellors in the field. Supervision teams visited the field three times during the survey and verified adherence to the protocol for returning test results, ensured supplies were sufficient, and addressed any acute issues reported by results counsellors. After each supervisory visit, all supervisors submitted a status report on the progress of the exercise. Supervisors also met to discuss outcomes of the supervision visits and address unresolved issues. Feedback was provided to results counsellors as necessary.

Data management and analysis: A Microsoft Access database was created to capture information on the activity for returning test results to participants. The database was pre-populated with cluster numbers, participant identification numbers, laboratory test results, and reasons for any missing test results. A team of six data managers at NASCOP was trained on data editing and entry. Upon receiving completed results forms, the team logged in the cluster numbers to keep track of counsellors who had filed their results forms. The results forms were photocopied to provide a backup copy in case of loss and were then manually edited and double entered into two separate datasets.

The two datasets were compared for consistency and discrepancies were resolved by referring to the results forms and making changes to the databases accordingly. Once the two datasets were equivalent, the team ran a series of consistency and range checks to ensure the data were accurate. Descriptive analyses were performed on the final, cleaned dataset. Findings from these analyses are reported in Chapter 15 of this report.

A.6 Weighting, Non-Response Adjustment and Statistical Analysis

Sampling weights

Sampling weights were incorporated into all statistical analyses. The purpose of weighting was to correct for unequal probability of selection and to adjust for non-response to produce results that were representative of the larger population from which the sample was drawn. We used standard weighting procedures similar to methods used in the 2003 KDHS to increase comparability of results between surveys.

Design weights

The 2007 KAIS sample was not self-weighted and thus a weighting adjustment was required to provide estimates representative of the target population. The design weights incorporated the probabilities of selection of the 1800 clusters into the NASSEP IV sample frame and the probabilities of selection of the 402 clusters into the KAIS sample from the NASSEP IV clusters. The probabilities of selection of clusters into NASSEP IV were taken from the documentation of the NASSEP IV master sample, which was available through KNBS.

Post-stratification adjustment

The allocation of clusters among the urban and rural areas in each province was based on the distribution of households across the districts. The allocation resulted in 34 districts with no clusters in their urban strata. Consequently, an adjustment to the weights was made to increase the representation of urban areas within the affected provinces.

Table A6.a shows the ratios of the weighted number of households according to NASSEP IV to the weighted numbers using the base KAIS weights. There was reasonably close agreement between the two samples by province for Nairobi and for rural areas, but an under-representation for other urban areas except Central Province. Thus, we multiplied the original weights (for the urban areas outside of Nairobi) by the ratios shown in Table A6.a.

Table A.6a Ratio of NASSEP IV to original KAIS using sampling fractions at the district level, KAIS 2007.

Province	Rural	Urban	Total
Nairobi	na	1.033	1.033
Central	1.037	0.807	1.002
Coast	1.084	1.019	1.053
Eastern	1.086	1.397	1.104
North Eastern	0.950	1.169	0.975
Nyanza	1.055	1.183	1.066
Rift Valley	1.013	1.762	1.105
Western	1.064	1.766	1.113
Total	**1.047**	**1.149**	**1.070**

Non-response adjustment

Base weights were adjusted for cluster non-response, household non-response, and individual non-response (both for the interview and the blood draw). Ultimately, each cluster had three cluster-specific weights: household, individual interview, and blood draw. All household members captured in the household questionnaire were assigned the same household weight. All individuals within a cluster who participated in the individual interview or blood draw were assigned the same cluster-specific weights for individual interview or blood draw.

Normalisation of weights

Normalised weights were used to avoid generating incorrect standard errors and confidence intervals and were valid for estimation of proportions and means at any aggregation level. They were not valid for estimation of totals, however. Weights were normalised to the KAIS sample size and had a mean of 1.0

Population estimates

Estimation of adult population sizes through extrapolation provides a useful measure of the number of adults affected by a particular infection or accessing particular HIV services. In this report, we calculated estimates of population sizes by multiplying weighted estimates from the 2007 KAIS (proportions or percentages) by national and provincial-level population projections for 2007. We used population projections presented in the *Revised Population Projections for Kenya 2000-2020* (Kenya National Bureau of Statistics [KNBS], August 2006). The projections are based on findings from the 1999 Census. Tables in Appendices I and II of the KNBS report provide age group-specific and sex-specific population projections, by year, for Kenya and for each province. Projections were summed across 5-year age categories for women and men separately (from 15-19 through 60-64 years), summed for Kenya and for each province, and then rounded to the nearest 1000. Sex-specific projections were used in analyses requiring population estimates for women only (e.g. PMTCT) or women and men separately. Table A6.b presents the projected population in 2007 by sex and province.

Due to variations in provincial distributions between the 1999 Census population and the 2007 KAIS study population, the sum of provincial-level population estimates (or sex-specific estimates) may not equal the national population estimate. The number of HIV-infected persons summed across provinces, for example, may not sum to the number obtained by multiplying the national projected population by the national KAIS HIV prevalence estimate. Analysts opted to utilize national level KAIS estimates whenever possible, rather than summing across provinces or across sexes, because national estimates were more precise than provincial estimates given the larger sample size. In many analyses stratified by province, population estimates for North Eastern province were not presented because the parameter estimate was derived from a sample size too small to generate valid estimates.

Similarly, where possible, a "one-step" process for calculating population estimates was employed. For example, to estimate the total number of pregnant women who were HIV-infected, we multiplied the projected number of women in Kenya by the weighted percent of women in the 2007 KAIS who were both pregnant and HIV-infected. In a two-step process, we would have first estimated the number of pregnant women and secondly, the number HIV-infected among those pregnant. The one-step process was both simpler and more appropriate given that the 2007 KAIS sampling and weighting design produced nationally representative 2007 KAIS estimates.

Table A.6b Projected number of women and men aged 15-64 years in 2007 by province, Kenya.

Province	Women	Men	Total
Nairobi	933,000	1,140,000	2,073,000
Central	1,367,000	1,259,000	2,627,000
Coast	903,000	895,000	1,799,000
Eastern	1,622,000	1,403,000	3,025,000
North Eastern	323,000	342,000	664,000
Nyanza	1,536,000	1,270,000	2,806,000
Rift Valley	2,462,000	2,376,000	4,838,000
Western	1,174,000	979,000	2,152,000
Total	**10,320,000**	**9,664,000**	**19,984,000**

For this 2007 KAIS Final Report, population projections were rounded to the nearest 1,000 adults. That is, we used a national population projection of 19,984,000. The 2007 KAIS estimates were rounded to two decimal points for calculation of population estimates. The final population estimates presented were also rounded to the nearest 1,000 adults. Confidence intervals around population estimates were calculated by multiplying the same base population (rounded to the nearest 1,000 adults) by the lower and upper bounds of the 95% confidence interval around the 2007 KAIS point estimate (rounded to two decimal points).

Data processing and statistical analysis

Data processing included a number of steps to prepare data collected in the field for analysis. The initial steps included editing questionnaires, both in the field and at KNBS, and double-data entry of all questionnaire responses to minimise errors. Data were double entered using Census and Survey Processing System (CSPro) version 3.3. Once all survey responses were electronically entered, the double entered databases were compared for concordance, using paper questionnaires to resolve any discrepancies in transcription. A series of internal consistency and range checks helped to identify any illogical responses and to verify that responses adhered to skip patterns in the questionnaire. Data validation programs for data cleaning were written in Stata version 8.0 and corrections were entered directly in CSPro at KNBS.

A concurrent process for cleaning raw laboratory data was conducted at the NHRL. The final, cleaned questionnaire database at KNBS was merged with the laboratory results database at the NHRL using unique survey identification numbers to ensure accurate matches (>99.9% of identification numbers were matched). After successfully merging the questionnaire and laboratory results databases, cluster and household identification numbers were serialized from 1-402 and from 1-25, respectively. Original cluster and household numbers, barcodes, and individual survey identification numbers were stripped from the database prior to weighting and analysis to ensure anonymity of survey participants.

This report presents the results of univariate and bivariate analyses using the 2007 KAIS data. Analyses are not adjusted for any confounding factors; multivariate analyses have been reserved for other dissemination materials, such as scientific manuscripts. By convention, we present weighted proportions (except where noted) and unweighted frequencies. In addition to weights, appropriate survey design variables were included in the analyses to obtain standard errors and chi-square p-values. Weighted proportions based on a denominator of less than 25 participants were suppressed in the chapters and appendices given the instability of the estimate, although the corresponding unweighted number of cases and unweighted total (unweighted n/N) was still presented in Appendix B. Most analyses were stratified by sex given the importance of this variable in understanding the distribution of HIV, HSV-2, and syphilis. With the exception of Chapter 3 (Trends in HIV Prevalence), statistical significance was assessed based on chi-square p-values produced in standard statistical software packages. In Chapter 3, we assumed the estimates from the 2003 KDHS and the 2007 KAIS were independent and used the z-test to compare two weighted estimates and determine if differences were statistically significant. The z-statistic was constructed as the difference in the point estimates between 2003 and 2007 divided by the standard error of the difference:

$$Z = (p_{2007} - p_{2003}) \Big/ \sqrt{(\mathrm{var}_{2007} + \mathrm{var}_{2003})}$$

where var2007 and var2003 are the variances for the two estimates.

We used the z-statistic to calculate a p-value for differences between estimates in 2003 and 2007. Throughout the report, the term significant indicates a p-value less than 0.05. Marginally significant indicates a p-value between 0.05 and 0.10; and not significant indicates a p-value greater than 0.10. Terms such as “apparent” or “appears to be” refer to the general shape of the graph or a possible pattern of data that has not been formally evaluated with a statistical test; such testing was beyond the scope of this report.

The program used for the analysis of the 2007 KAIS data was SAS version V9.13. This program accounts for the clustered, stratified design of the KAIS survey sample and can produce reliable standard errors and confidence intervals.

Appendix B

Chapter Data Tables

In this appendix we present chapter data tables describing the unweighted numerator (n), unweighted denominator (N), weighted percents, and 95% confidence intervals for all 2007 KAIS estimates presented in the final report. For indicators with less than 25 observations in the denominator, only the unweighted n and N are presented; weighted percent and 95% confidence interval are suppressed. Most estimates in the chapter data tables have been presented in aggregate (total) and stratified by sex. In some cases, the estimates were further stratified by select demographic and behavioural characteristics in the chapter and reported at this level of stratification in the corresponding chapter data table. Due to rounding error, the sum of stratum-specific estimates for some indicators may not equal 100.0 percent.

Estimates in the chapter data tables are listed in numerical order, according to the order in which they are presented in each chapter of the report. If an estimate was presented as a figure or table in the chapter it is labeled in the chapter data table as "Figure" or "Table" with the chapter's section number. If the estimate was presented in the chapter as text only, it is labeled in the data table according to the chapter's section number.

National population estimates for select indicators and corresponding 95% confidence intervals are provided in the data tables. Provincial estimates are also presented in limited cases. The parameters presented for each population estimate include the base population used, the 2007 KAIS estimate for the indicator, the population estimate for the indicator, and the 95% confidence intervals for the estimated population size. The process for calculating population estimates is described in Appendix A. In brief, population estimates were calculated by multiplying the projected number of adults in the base population by the weighted percent of adults in the 2007 KAIS that were positively defined by the indicator. Confidence intervals were calculated by multiplying the same projected population by the lower and upper bounds (rounded to one-hundredth of a percent) of the weighted KAIS estimate. The projected population was abstracted from the Revised Population Projections for Kenya 2000-2020 (Kenya National Bureau of Statistics [KNBS], August 2006). Weighted 2007 KAIS estimates were rounded to two decimal points, and population estimates were rounded to the nearest 1,000.

In most cases, the sum of sex- or province-stratified population estimates does not equal the national population estimate presented. This is largely due to differences in the distribution of adults by sex and province between the 2007 KAIS sample and the projected population based on the Census. Parameters for national, aggregated population estimates are more precise relative to stratified estimates, due to the larger sample size; thus, the national population estimates provided in this appendix should be used rather than totalling estimates across sex or province.

All estimates presented in this appendix were calculated using SAS version 9.13.

APPENDIX B.1: BACKGROUND CHARACTERISTICS OF RESPONDENTS

Percent distribution of women and men adults aged 15-64 years by selected background characteristics, Kenya 2007.

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	WOMEN			MEN			TOTAL		
Age group (years)									
15-19	1543/10239	15.5	(14.7, 16.3)	1358/7701	18.6	(17.3, 19.8)	2901/17940	16.8	(16.1, 17.6)
20-24	1826/10239	17.8	(16.9, 18.8)	1164/7701	15.7	(14.7, 16.6)	2990/17940	16.9	(16.1, 17.7)
25-29	1531/10239	15.0	(14.2, 15.9)	1009/7701	12.6	(11.7, 13.6)	2540/17940	14.0	(13.3, 14.7)
30-34	1297/10239	12.3	(11.5, 13.1)	878/7701	11.3	(10.4, 12.1)	2175/17940	11.9	(11.2, 12.5)
35-39	1058/10239	10.7	(10.0, 11.4)	776/7701	10.1	(9.4, 10.9)	1834/17940	10.5	(9.9, 11.0)
40-44	840/10239	8.2	(7.5, 8.8)	637/7701	8.2	(7.4, 8.9)	1477/17940	8.2	(7.6, 8.7)
45-49	806/10239	7.9	(7.3, 8.5)	611/7701	7.7	(7.1, 8.4)	1417/17940	7.8	(7.4, 8.3)
50-54	574/10239	5.2	(4.7, 5.7)	471/7701	5.5	(5.0, 6.1)	1045/17940	5.3	(4.9, 5.7)
55-59	481/10239	4.7	(4.1, 5.2)	427/7701	5.6	(5.0, 6.2)	908/17940	5.1	(4.7, 5.5)
60-64	283/10239	2.7	(2.3, 3.0)	370/7701	4.7	(4.2, 5.3)	653/17940	3.5	(3.2, 3.9)
Residence									
Urban	2614/10239	23.9	(20.5, 27.2)	1965/7701	22.4	(19.7, 25.1)	4579/17940	23.2	(20.3, 26.2)
Rural	7625/10239	76.1	(72.8, 79.5)	5736/7701	77.6	(74.9, 80.3)	13361/17940	76.8	(73.8, 79.7)
Province									
Nairobi	1199/10239	9.6	(8.3, 11.0)	928/7701	9.1	(7.7, 10.6)	2127/17940	9.4	(8.2, 10.6)
Central	1443/10239	14.1	(12.7, 15.5)	1123/7701	14.3	(12.8, 15.7)	2566/17940	14.2	(12.9, 15.5)
Coast	1157/10239	7.9	(6.5, 9.3)	825/7701	7.5	(6.4, 8.6)	1982/17940	7.8	(6.6, 8.9)
Eastern	1683/10239	17.1	(15.4, 18.8)	1297/7701	18.2	(15.9, 20.5)	2980/17940	17.6	(15.7, 19.4)
North Eastern	500/10239	2.0	(1.7, 2.3)	336/7701	1.8	(1.4, 2.1)	836/17940	1.9	(1.6, 2.2)
Nyanza	1507/10239	15.4	(13.8, 17.0)	1102/7701	15.3	(13.4, 17.1)	2609/17940	15.3	(13.7, 16.9)
Rift Valley	1418/10239	22.1	(19.0, 25.2)	1097/7701	22.1	(19.8, 24.4)	2515/17940	22.1	(19.4, 24.8)
Western	1332/10239	11.7	(10.4, 13.1)	993/7701	11.8	(10.4, 13.2)	2325/17940	11.8	(10.5, 13.1)
Marital status									
Never married/ cohabited	2390/10239	23.1	(21.8, 24.4)	2799/7701	37.1	(35.5, 38.6)	5189/17940	29.1	(27.9, 30.2)
Currently married/ cohabiting	6394/10239	62.7	(61.2, 64.3)	4483/7701	57.3	(55.7, 58.9)	10877/17940	60.4	(59.1, 61.7)
Monogamous	5489/10239	54.4	(52.8, 55.9)	4107/7701	52.7	(51.2, 54.2)	9596/17940	53.7	(52.4, 54.9)
Polygamous	905/10239	8.3	(7.5, 9.2)	376/7701	4.6	(4.0, 5.2)	1281/17940	6.7	(6.1, 7.4)
Separated/divorced	708/10239	6.8	(6.0, 7.5)	322/7701	4.2	(3.7, 4.8)	1030/17940	5.7	(5.2, 6.2)
Widowed	747/10239	7.4	(6.8, 8.0)	97/7701	1.4	(1.0, 1.7)	844/17940	4.8	(4.4, 5.2)
Education									
No education	1832/10239	15.0	(13.6, 16.4)	665/7701	6.5	(5.5, 7.5)	2497/17940	11.4	(10.3, 12.5)
Incomplete primary	2887/10239	29.6	(28.1, 31.2)	2134/7701	29.3	(27.5, 31.2)	5021/17940	29.5	(28.0, 31.0)
Complete primary	2434/10239	24.8	(23.6, 25.9)	1843/7701	24.5	(23.1, 25.8)	4277/17940	24.6	(23.6, 25.6)
Secondary +[1]	3086/10239	30.5	(28.5, 32.6)	3059/7701	39.7	(37.5, 42.0)	6145/17940	34.5	(32.5, 36.4)
Wealth index[2]									
Lowest	1807/10239	15.6	(13.8, 17.4)	1262/7701	15.4	(13.4, 17.4)	3069/17940	15.5	(13.7, 17.3)
Second	1860/10239	17.6	(16.1, 19.2)	1369/7701	17.8	(16.1, 19.5)	3229/17940	17.7	(16.1, 19.3)
Middle	1933/10239	19.6	(18.2, 21.1)	1489/7701	19.9	(18.3, 21.5)	3422/17940	19.7	(18.3, 21.2)
Fourth	2020/10239	21.5	(19.8, 23.3)	1534/7701	21.3	(19.3, 23.3)	3554/17940	21.4	(19.7, 23.2)
Highest	2619/10239	25.6	(22.7, 28.5)	2047/7701	25.6	(22.9, 28.4)	4666/17940	25.6	(22.9, 28.3)
Employment									
Currently employed[3]	6359/10239	63.3	(61.9, 64.8)	6192/7701	80.8	(79.5, 82.1)	12551/17940	70.8	(69.7, 71.9)
Religion									
Roman Catholic	2417/10239	24.8	(22.9, 26.7)	2043/7701	28.0	(25.8, 30.2)	4460/17940	26.1	(24.2, 28.0)
Protestant/ other Christian	6329/10239	65.8	(63.8, 67.9)	4456/7701	60.7	(58.3, 63.0)	10785/17940	63.6	(61.6, 65.7)
Muslim	1256/10239	7.1	(6.1, 8.1)	864/7701	6.5	(5.6, 7.5)	2120/17940	6.9	(5.9, 7.8)
No religion	165/10239	1.7	(1.2, 2.2)	273/7701	4.1	(3.3, 4.8)	438/17940	2.7	(2.2, 3.2)
Other	72/10239	0.60	(0.2, 1.1)	65/7701	0.70	(0.4, 1.1)	137/17940	0.7	(0.4, 1.0)

APPENDIX B.1: BACKGROUND CHARACTERISTICS OF RESPONDENTS

Percent distribution of women and men adults aged 15-64 years by selected background characteristics, Kenya 2007.

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	WOMEN			MEN			TOTAL		
Ethnic group									
Embu	122/10239	1.2	(0.8, 1.6)	103/7701	1.4	(0.8, 2.0)	225/17940	1.3	(0.8, 1.7)
Kalenjin	723/10239	9.4	(7.4, 11.4)	593/7701	10.3	(8.2, 12.4)	1316/17940	9.8	(7.8, 11.8)
Kamba	1080/10239	11.6	(9.6, 13.6)	816/7701	11.7	(8.9, 14.5)	1896/17940	11.7	(9.4, 13.9)
Kikuyu	2201/10239	23.1	(20.8, 25.5)	1647/7701	22.1	(19.8, 24.5)	3848/17940	22.7	(20.5, 24.9)
Kisii	654/10239	6.4	(5.5, 7.2)	515/7701	7.0	(5.8, 8.2)	1169/17940	6.6	(5.7, 7.6)
Luhya	1585/10239	14.6	(13.1, 16.1)	1243/7701	15.2	(13.5, 17.0)	2828/17940	14.9	(13.4, 16.4)
Luo	1231/10239	12.7	(11.2, 14.2)	888/7701	11.9	(10.2, 13.6)	2119/17940	12.3	(10.9, 13.8)
Masai	96/10239	1.7	(0.6, 2.8)	71/7701	1.7	(0.6, 2.9)	167/17940	1.7	(0.6, 2.8)
Meru	599/10239	6.5	(5.5, 7.6)	472/7701	6.8	(5.8, 7.9)	1071/17940	6.7	(5.7, 7.7)
Mijikenda	647/10239	4.6	(3.5, 5.7)	449/7701	4.3	(3.4, 5.1)	1096/17940	4.5	(3.5, 5.4)
Somali	598/10239	2.5	(2.0, 2.9)	390/7701	2.1	(1.7, 2.5)	988/17940	2.3	(1.9, 2.7)
Taita/Taveta	178/10239	1.3	(0.6, 2.0)	112/7701	0.8	(0.6, 1.1)	290/17940	1.1	(0.6, 1.6)
Swahili	15/10239	0.10	(0.0, 0.2)	2119047	0.10	(0.0, 0.1)	25/17940	0.10	(0.0, 0.1)
Other	510/10239	4.3	(3.2, 5.4)	392/7701	4.5	(3.4, 5.6)	902/17940	4.4	(3.3, 5.5)
Current pregnancy status									
Pregnant	587/8896	7.0	(6.2, 7.8)	-	-	- -	-	-	-
Not pregnant	8187/8896	91.8	(91.0, 92.6)	-	-	- -	-	-	-
Unsure	122/8896	1.2	(1.0, 1.5)	-	-	- -	-	-	-
Male circumcision									
Circumcised	-	-	-	6586/7678	85.0	(83.2, 86.8)	-	-	-
Total 15-64	**10239**	**100.0**		**7701**	**100.0**		**17940**	**100.0**	

[1] "Secondary+" includes any years of secondary schooling whether completed or not.

[2] The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, water access and sanitation facilities. The wealth index placed households on a continuous scale of relative wealth using principal components analysis. Individuals were ranked according to the score of the household in which they resided and the sample was divided into five groups, each with an equal number of individuals (quintiles), ranging from the lowest to highest level of wealth.

[3] Current employment was defined as having worked in the week prior to the survey.

APPENDIX B.2: PREVALENCE OF HIV

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
Fig 2.3 & 2.5 HIV prevalence by age group									
(years)	**Women**			**Men**			**Total**		
15-19	42/1328	3.5	(2.3, 4.7)	13/1175	1.0	(0.40, 1.5)	55/2503	2.3	(1.6, 3.0)
20-24	135/1598	7.4	(5.9, 8.9)	24/1034	1.9	(1.0, 2.8)	159/2632	5.2	(4.3, 6.2)
25-29	122/1345	10.2	(8.2, 12.2)	60/874	7.3	(5.4, 9.3)	182/2219	9.1	(7.6, 10.6)
30-34	152/1154	13.3	(10.9, 15.7)	62/772	8.9	(6.5, 11.3)	214/1926	11.6	(9.7, 13.4)
35-39	102/950	11.2	(8.9, 13.6)	62/678	9.3	(6.7, 12.0)	164/1628	10.5	(8.5, 12.4)
40-44	62/742	9.4	(6.8, 12.0)	56/576	10.2	(7.2, 13.1)	118/1318	9.7	(7.6, 11.8)
45-49	61/732	8.8	(6.3, 11.3)	40/549	5.6	(3.7, 7.4)	101/1281	7.5	(5.8, 9.1)
50-54	37/519	7.5	(5.0, 9.9)	30/425	8.3	(5.2, 11.4)	67/944	7.8	(5.9, 9.8)
55-59	18/425	4.7	(2.3, 7.1)	11/380	2.3	(0.8, 3.9)	29/805	3.6	(2.0, 5.2)
60-64	4/256	1.7	(0.0, 3.5)	11/341	3.4	(1.3, 5.6)	15/597	2.7	(1.0, 4.4)
15-24	177/2926	5.6	(4.6, 6.6)	37/2209	1.4	(0.90, 1.9)	214/5135	3.8	(3.2, 4.4)
25-49	449/4923	10.8	(9.5, 12.1)	280/3449	8.3	(7.2, 9.4)	779/8372	9.8	(8.8, 10.8)
50-64	59/1200	5.2	(3.7, 6.7)	52/1146	4.7	(3.3, 6.2)	111/2346	5.0	(3.9, 6.1)
15-49	676/7849	8.8	(7.9, 9.7)	317/5658	5.5	(4.8, 6.2)	993/13507	7.4	(6.7, 8.1)
Total (15-64)	735/9049	8.4	(7.5, 9.2)	369/6804	5.4	(4.7, 6.0)	1104/15853	7.1	(6.5, 7.7)
Fig 2.4 HIV prevalence among youth									
(age in years)	**Women**			**Men**			**Total**		
15	6/239	3.0	(0.48, 5.4)	5/202	2.3	(0.27, 4.3)	11/441	2.6	(1.0, 4.2)
16	4/226	2.5	(0.0, 4.9)	1/236	0.68	(0.0, 2.0)	5/462	1.5	(0.24, 2.8)
17	7/241	3.1	(0.72, 5.5)	1/234	0.41	(0.0, 1.2)	8/475	1.8	(0.52, 3.1)
18	13/322	4.4	(1.8, 6.9)	3/247	1.1	(0.0, 2.5)	16/569	2.9	(1.4, 4.5)
19	12/300	4.0	(1.1, 6.8)	3/256	0.60	(0.0, 1.3)	15/556	2.5	(0.83, 4.2)
20	22/383	5.5	(3.0, 8.1)	3/236	0.66	(0.0, 1.5)	25/619	3.5	(1.9, 5.2)
21	25/311	6.5	(3.7, 9.3)	3/201	2.3	(0.0, 5.0)	28/512	4.8	(2.8, 6.9)
22	20/279	6.7	(3.2, 10.3)	5/202	2.0	(0.0, 4.0)	25/481	4.9	(2.6, 7.1)
23	27/342	6.9	(4.0, 9.9)	7/203	2.6	(0.41, 4.9)	34/545	5.3	(3.3, 7.2)
24	41/283	12.0	(8.0, 16.1)	6/192	2.3	(0.35, 4.2)	47/475	8.0	(5.5, 10.6)
Fig 2.6a HIV prevalence by residence									
	Women			**Men**			**Total**		
Rural	516/6822	7.8	(7.1, 8.6)	257/5109	5.2	(4.5, 5.9)	773/11931	6.7	(6.1, 7.3)
Urban	219/2227	10.0	(7.6, 12.5)	112/1695	6.1	(4.3, 7.9)	331/3922	8.4	(6.5, 10.3)
Fig 2.6b HIV prevalence by residence and age group									
(years)	**Rural**			**Urban**			**Total**		
15-19	41/2061	2.1	(1.4, 2.9)	14/442	3.1	(1.4, 4.9)	55/2503	2.3	(1.6, 3.0)
20-24	108/1741	5.7	(4.5, 6.8)	51/891	4.3	(2.6, 6.0)	159/2632	5.2	(4.3, 6.2)
25-29	131/1463	9.5	(7.9, 11.2)	51/756	8.1	(5.3, 11.0)	182/2219	9.1	(7.6, 10.6)
30-34	139/1359	10.0	(8.3, 11.8)	75/567	15.8	(11.1, 20.5)	214/1926	11.6	(9.7, 13.4)
35-39	113/1255	9.6	(7.5, 11.7)	51/373	13.8	(9.2, 18.5)	164/1628	10.5	(8.5, 12.4)
40-44	82/1033	9.1	(7.0, 11.2)	36/285	12.1	(5.4, 18.8)	118/1318	9.7	(7.6, 11.8)
45-49	69/1043	6.5	(4.8, 8.1)	32/238	12.5	(7.0, 18.0)	101/1281	7.5	(5.8, 9.1)
50-54	56/777	8.3	(6.1, 10.5)	11/167	5.5	(1.6, 9.4)	67/944	7.8	(5.9, 9.8)
55-59	22/683	3.2	(1.6, 4.8)	7/122	6.1	(1.3, 11.0)	29/805	3.6	(2.0, 5.2)
60-64	12/516	2.7	(0.88, 4.6)	3/81	2.4	(0.0, 6.1)	15/597	2.7	(1.0, 4.4)

APPENDIX B.2: PREVALENCE OF HIV

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
Fig 2.7a HIV prevalence by province									
	Women			**Men**			**Total**		
Nairobi	92/1018	10.4	(7.7, 13.2)	48/793	6.5	(3.5, 9.5)	140/1811	8.8	(6.3, 11.4)
Central	50/1289	3.9	(2.5, 5.2)	27/988	3.3	(1.5, 5.0)	77/2277	3.6	(2.3, 4.9)
Coast	85/1026	9.5	(7.6, 11.3)	47/747	6.3	(4.0, 8.6)	132/1773	8.1	(6.8, 9.5)
Eastern	83/1458	6.1	(4.0, 8.3)	26/1095	2.5	(1.4, 3.6)	109/2553	4.6	(3.1, 6.0)
North Eastern	3/434	0.85	(0.0, 1.7)	4/319	0.76	(0.0, 2.0)	7/753	0.81	(0.0, 1.6)
Nyanza	240/1386	17.2	(15.2, 19.1)	122/994	11.6	(9.3, 14.0)	362/2380	14.9	(13.1, 16.6)
Rift Valley	103/1266	7.4	(5.2, 9.6)	58/1002	4.8	(3.6, 6.1)	161/2268	6.3	(4.7, 7.9)
Western	79/1172	6.0	(4.1, 7.8)	37/866	4.5	(2.9, 6.1)	116/2038	5.4	(3.9, 6.8)
Fig 2.7b HIV prevalence by province and residence									
	Rural			**Urban**			**Total**		
Nairobi[1]	-	-	-	140/1811	8.8	(6.3, 11.4)	140/1811	8.8	(6.3, 11.4)
Central	70/2017	3.9	(2.4, 5.3)	7/260	1.7	(0.0, 4.2)	77/2277	3.6	(2.3, 4.9)
Coast	54/1031	5.4	(3.5, 7.3)	78/742	11.1	(9.3, 12.9)	132/1773	8.1	(6.8, 9.5)
Eastern	85/2220	4.0	(3.0, 5.1)	24/333	10.0	(0.0, 20.8)	109/2553	4.6	(3.1, 6.0)
North Eastern	3/706	0.48	(0.0, 0.97)	4/47	8.5	(8.5, 8.5)	7/753	0.81	(0.0, 1.6)
Nyanza	343/2268	14.9	(13.1, 16.7)	19/112	13.9	(8.0, 19.8)	362/2380	14.9	(13.1, 16.6)
Rift Valley	116/1851	6.3	(4.8, 7.7)	45/417	6.4	(0.8, 12.0)	161/2268	6.3	(4.7, 7.9)
Western	102/1838	5.3	(3.8, 6.7)	14/200	6.0	(0.8, 11.3)	116/2038	5.4	(3.9, 6.8)
Fig 2.8 HIV prevalence by marital status									
	Women			**Men**			**Total**		
Never married/cohabited	93/2069	4.6	(3.4, 5.9)	53/2454	1.9	(1.3, 2.4)	146/4523	3.1	(2.5, 3.7)
Currently married/ cohabiting	413/5665	7.4	(6.5, 8.3)	279/3974	7.3	(6.3, 8.3)	692/9639	7.4	(6.6, 8.2)
Monogamous	330/4838	7.0	(6.1, 7.9)	240/3624	7.0	(6.0, 8.0)	570/8462	7.0	(6.2, 7.8)
Polygamous	83/827	10.1	(7.4, 12.9)	39/350	10.2	(6.6, 13.7)	122/1177	10.2	(7.7, 12.6)
Separated/divorced	97/632	16.0	(12.0, 20.0)	20/287	6.0	(3.1, 9.0)	117/919	12.9	(10.0, 15.7)
Widowed	132/683	20.1	(16.8, 23.4)	17/89	17.3	(8.7, 26.0)	149/772	19.8	(16.5, 23.0)
Fig 2.9 HIV prevalence by education									
	Women			**Men**			**Total**		
No primary	92/1605	7.7	(5.7, 9.6)	20/609	4.1	(2.1, 6.1)	112/2214	6.8	(5.3, 8.3)
Incomplete primary	262/2609	9.9	(8.5, 11.4)	102/1890	5.3	(4.0, 6.6)	364/4499	8.0	(6.9, 9.0)
Complete primary	211/2170	9.6	(8.1, 11.0)	107/1632	6.4	(5.0, 7.8)	318/3802	8.2	(7.2, 9.3)
Secondary +[2]	170/2665	6.2	(4.9, 7.5)	140/2673	5.0	(4.1, 6.0)	310/5338	5.6	(4.7, 6.5)
Fig 2.10a HIV prevalence by wealth index[3]									
	Women			**Men**			**Total**		
Lowest	133/1621	9.7	(7.9, 11.5)	59/1137	5.4	(3.7, 7.1)	192/2758	7.9	(6.4, 9.4)
Second	145/1674	9.0	(7.3, 10.7)	67/1239	5.9	(4.4, 7.4)	212/2913	7.7	(6.4, 9.0)
Middle	129/1740	7.7	(6.1, 9.3)	69/1309	5.1	(3.7, 6.4)	198/3049	6.6	(5.4, 7.8)
Fourth	154/1755	8.7	(7.0, 10.5)	69/1340	4.9	(3.6, 6.2)	223/3095	7.1	(5.8, 8.4)
Highest	174/2259	7.3	(5.5, 9.2)	105/1779	5.6	(4.2, 7.1)	279/4038	6.6	(5.2, 8.0)
Fig 2.10b HIV prevalence by wealth index[3] and residence									
	Rural			**Urban**			**Total**		
Lowest	189/2657	8.0	(6.5, 9.5)	3/101	3.7	(0.0, 9.4)	192/2758	7.9	(6.4, 9.4)
Second	203/2811	7.6	(6.3, 8.9)	9/102	10.6	(3.4, 17.8)	212/2913	7.7	(6.4, 9.0)
Middle	164/2807	5.9	(4.8, 7.1)	34/242	14.0	(7.9, 20.1)	198/3049	6.6	(5.4, 7.8)
Fourth	146/2435	5.9	(4.7, 7.1)	77/660	12.0	(7.6, 16.4)	223/3095	7.1	(5.8, 8.4)
Highest	71/1221	6.0	(3.9, 8.1)	208/2817	6.9	(5.0, 8.9)	279/4038	6.6	(5.2, 8.0)
Fig 2.10c HIV prevalence by employment status									
	Women			**Men**			**Total**		
Currently employed[4]	547/5714	9.7	(8.6, 10.7)	341/5475	6.2	(5.4, 7.0)	888/11189	8.0	(7.3, 8.7)
Unemployed	188/3335	6.0	(5.0, 7.1)	28/1329	1.8	(1.0, 2.7)	216/4664	4.9	(4.0, 5.7)

APPENDIX B.2: PREVALENCE OF HIV

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
Fig 2.11 HIV prevalence by time away from home									
	Women			Men			Total		
Never traveled away from home	361/4918	7.8	(6.7, 8.8)	191/3861	4.9	(4.1, 5.7)	552/8779	6.5	(5.7, 7.2)
Traveled & slept away for >1 month at a time	89/1034	9.1	(7.1, 11.2)	57/913	5.8	(4.1, 7.6)	146/1947	7.6	(6.2, 9.0)
Traveled but did not sleep away for >1 month at a time	285/3097	9.0	(7.7, 10.4)	121/2030	6.2	(4.9, 7.4)	406/5127	7.9	(7.0, 8.9)
Fig 2.12 HIV prevalence by religion									
	Women			Men			Total		
Roman Catholic	189/2175	8.4	(6.8, 10.0)	93/1809	5.4	(4.3, 6.6)	282/3984	7.1	(5.9, 8.2)
Protestant/other Christian	484/5612	8.5	(7.6, 9.5)	245/3942	5.7	(4.8, 6.5)	729/9554	7.4	(6.6, 8.1)
Muslim	44/1051	6.3	(4.0, 8.7)	16/761	2.5	(1.1, 3.9)	60/1812	4.7	(3.2, 6.2)
No religion	16/154	11.8	(5.5, 18.0)	13/237	5.5	(2.1, 8.9)	29/391	7.7	(4.2, 11.2)
Other	2/57	2.8	(0.0, 7.9)	2/55	2.6	(0.0, 6.8)	4/112	2.7	(0.0, 6.2)
Fig 2.13a Male circumcision by province									
	Percent of men circumcised								
Nairobi	792/925	83.2	(75.9, 90.5)	-	-	-	-	-	
Central	1072/1121	95.5	(93.8, 97.2)	-	-	-	-	-	
Coast	794/822	97.0	(95.6, 98.4)	-	-	-	-	-	
Eastern	1243/1295	96.3	(94.6, 98.0)	-	-	-	-	-	
North Eastern	325/334	97.3	(95.2, 99.5)	-	-	-	-	-	
Nyanza	533/1099	48.2	(42.0, 54.3)	-	-	-	-	-	
Rift Valley	970/1090	88.7	(85.4, 91.9)	-	-	-	-	-	
Western	857/992	87.8	(82.0, 93.5)	-	-	-	-	-	
Total	6586/7678	85.0	(83.2, 86.8)	-	-	-	-	-	
Fig 2.13b HIV prevalence by province and male circumcision status									
	Circumcised men			Uncircumcised men					
Nairobi	26/669	3.2	(1.5, 4.9)	21/122	20.2	(12.8, 27.5)	-	-	
Central	27/943	3.4	(1.6, 5.3)	0/43	0.0	(0.0, 0.0)	-	-	
Coast	42/720	6.1	(3.7, 8.4)	5/24	*[5]	*[5]	-	-	
Eastern	25/1045	2.6	(1.4, 3.7)	1/49	0.93	(0.0, 2.6)	-	-	
North Eastern	3/308	0.58	(0.0, 1.4)	1/9	*[5]	*[5]	-	-	
Nyanza	25/490	5.5	(3.4, 7.6)	96/501	17.3	(13.3, 21.2)	-	-	
Rift Valley	45/884	4.5	(3.0, 5.9)	12/112	7.0	(2.0, 11.9)	-	-	
Western	29/746	4.2	(2.6, 5.8)	8/119	6.8	(2.0, 11.6)	-	-	
Fig 2.13c HIV prevalence by age group and male circumcision status									
(years)	Circumcised men			Uncircumcised men					
15-24	24/1749	1.3	(0.8, 1.9)	13/452	1.7	(0.6, 2.8)	-	-	
25-29	31/754	4.6	(2.7, 6.5)	27/117	21.7	(14.0, 29.5)	-	-	
30-39	76/1291	6.3	(4.7, 7.9)	47/156	29.7	(21.5, 37.9)	-	-	
40-49	59/986	5.7	(4.1, 7.3)	37/137	25.0	(16.8, 33.3)	-	-	
50-64	32/1025	3.4	(2.1, 4.7)	20/117	16.2	(8.8, 23.6)	-	-	
Total (15-64)	222/5805	3.9	(3.3, 4.5)	144/979	13.2	(10.8, 15.7)	-	-	

[1] All provinces consist of rural and urban areas, with the exception of Nairobi province, which is entirely urban.

[2] "Secondary+" includes any years of secondary schooling whether completed or not.

[3] The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, water access and sanitation facilities. The wealth index placed

[4] Current employment was defined as having worked in the week prior to the survey.

[5] Weighted estimates and 95% CI are not shown due to small denominators (<25 observations).

APPENDIX B.2: PREVALENCE OF HIV

2.6 & 2.7 Population estimates of women and men aged 15-64 years old infected with HIV by province (2007)

TOTAL

	2007 Projected population (15-64 years old)[6,7]	HIV prevalence (15-64 years old)[8] (%)	Estimated population infected with HIV (15-64 years old)[7,9]	95% CI[10]
National	**19,984,000**	**7.09**	**1,417,000**	**(1 291 000, 1 543 000)**
Nairobi	2,073,000	8.85	183,000	(131 000, 236 000)
Central	2,627,000	3.61	95,000	(60 000, 130 000)
Coast	1,799,000	8.14	146,000	(122 000, 171 000)
Eastern	3,025,000	4.56	138,000	(94 000, 182 000)
North Eastern	664,000	0.81	5,000	(0, 11 000)
Nyanza	2,806,000	14.85	417,000	(368 000, 466 000)
Rift Valley	4,838,000	6.29	304,000	(226 000, 383 000)
Western	2,152,000	5.35	115,000	(226 000, 383 000)
Rural	19,984,000	5.14	1,027,000	(925 000, 1 129 000)
Urban	19,984,000	1.95	390,000	(310 000, 470 000)

WOMEN

Province	2007 Projected female population (15-64 years old)[6,7]	HIV prevalence among women (15-64 years old)[8] (%)	Estimated female population infected with HIV (15-64 years old)[7,9]	95% CI[10]
National	**10,320,000**	**8.36**	**863,000**	**(778 000, 948 000)**
Nairobi	933,000	10.44	97,000	(71 000, 123 000)
Central	1,367,000	3.87	53,000	(35 000, 71 000)
Coast	903,000	9.48	86,000	(69 000, 102 000)
Eastern	1,622,000	6.12	99,000	(64 000, 134 000)
North Eastern	323,000	0.85	3,000	(0, 5 000)
Nyanza	1,536,000	17.19	264,000	(234 000, 294 000)
Rift Valley	2,462,000	7.40	182,000	(128 000, 237 000)
Western	1,174,000	5.98	70,000	(48 000, 92 000)

MEN

Province	2007 Projected male population (15-64 years old)[6,7]	HIV prevalence among men (15-64 years old)[8] (%)	Estimated male population infected with HIV (15-64 years old)[7,9]	95% CI[10]
National	**9,664,000**	**5.37**	**519,000**	**(455 000, 583 000)**
Nairobi	1,140,000	6.51	74,000	(39 000, 109 000)
Central	1,259,000	3.27	41,000	(19 000, 63 000)
Coast	895,000	6.29	56,000	(36 000, 77 000)
Eastern	1,403,000	2.50	35,000	(20 000, 51 000)
North Eastern	342,000	0.76	3,000	(0, 7 000)
Nyanza	1,270,000	11.63	148,000	(118 000, 177 000)
Rift Valley	2,376,000	4.84	115,000	(85 000, 145 000)
Western	979,000	4.50	44,000	(28 000, 60 000)

[6] Source: Revised Population Projections for Kenya 2000-2020 (Kenya National Bureau of Statistics, August 2006).

[7] Figures rounded to the nearest 1,000

[8] Weighted estimates from the 2007 KAIS rounded to one-hundredth of a percent.

[9] Estimate obtained by multiplying projected base population by the weighted KAIS estimate.

[10] Confidence intervals obtained by multiplying projected population by lower and upper bounds (rounded to one-hundredth of a percent) of the corresponding 2007 KAIS estimate.

APPENDIX B.3: COMPARISON OF HIV PREVALENCE OF 2003 KDHS AND 2007 KAIS

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
		KAIS 2007			KDHS 2003	
Fig 3.3a HIV prevalence by sex						
Women (aged 15-49 years)	676/7849	8.8	(7.9, 9.7)	275/3273	8.7	(7.5, 9.9)
Men (aged 15-49 years)	317/5658	5.5	(4.8, 6.2)	124/2723	4.6	(3.6, 5.5)
Total (aged 15-49 years)	993/13507	7.4	(6.7, 8.1)	399/5996	6.7	(5.8, 7.6)
Fig 3.4a HIV prevalence by age group (years) among women						
15-19	42/1328	3.5	(2.3, 4.7)	25/732	3.0	(1.7, 4.3)
20-24	135/1598	7.4	(5.9, 8.9)	58/684	9.0	(6.5, 11.5)
25-29	122/1345	10.2	(8.2, 12.2)	63/536	12.9	(9.6, 16.2)
30-34	152/1154	13.3	(10.9, 15.7)	54/470	11.7	(8.2, 15.2)
35-39	102/950	11.2	(8.9, 13.6)	40/356	11.8	(8.2, 15.3)
40-44	62/742	9.4	(6.8, 12.0)	26/293	9.5	(5.3, 13.6)
45-49	61/732	8.8	(6.3, 11.3)	9/202	3.9	(1.0, 6.8)
Fig 3.4b HIV prevalence by age group (years) among men						
15-19	13/1175	1.0	(0.40, 1.5)	4/701	0.40	(0.0, 0.75)
20-24	24/1034	1.9	(1.0, 2.8)	14/533	2.4	(1.1, 3.7)
25-29	60/874	7.3	(5.4, 9.3)	31/409	7.3	(4.5, 10.2)
30-34	62/772	8.9	(6.5, 11.3)	22/353	6.6	(3.9, 9.3)
35-39	62/678	9.3	(6.7, 12.0)	24/308	8.4	(4.9, 11.9)
40-44	56/576	10.2	(7.2, 13.1)	22/253	8.8	(4.8, 12.7)
45-49	40/549	5.6	(3.7, 7.4)	7/166	5.2	(1.3, 9.1)
3.5 HIV prevalence among youth (15-24 years)						
Women	177/2926	5.6	(4.6, 6.6)	83/1416	5.9	(4.5, 7.3)
Men	37/2209	1.4	(0.90, 1.9)	18/1234	1.2	(0.63, 1.9)
Total	214/5135	3.8	(3.2, 4.4)	101/2650	3.6	(2.8, 4.4)
Fig 3.6a HIV prevalence by residence among women						
Rural	468/5794	8.3	(7.4, 9.2)	159/2292	7.5	(6.2, 8.8)
Urban	208/2055	10.4	(7.8, 13.0)	116/981	12.3	(9.8, 14.8)
Fig 3.6a HIV prevalence by residence among men						
Rural	215/4161	5.3	(4.5, 6.0)	65/1926	3.6	(2.5, 4.6)
Urban	102/1497	6.3	(4.3, 8.2)	59/797	7.5	(5.3, 9.8)
Fig 3.6a HIV prevalence by residence (total)						
Rural	683/9955	7.0	(6.3, 7.7)	224/4218	5.6	(4.6, 6.7)
Urban	310/3552	8.7	(6.7, 10.7)	175/1778	10	(8.2, 11.9)
Fig 3.7a HIV prevalence by province among women						
Nairobi	89/939	11.0	(8.0, 14.0)	39/355	11.9	(8.0, 15.8)
Central	47/1066	4.3	(2.8, 5.8)	39/522	7.6	(5.3, 10.0)
Coast	70/873	9.2	(7.2, 11.2)	26/384	6.6	(3.0, 10.3)
Eastern	76/1239	6.6	(4.2, 9.1)	24/382	6.1	(3.9, 8.4)
North Eastern	3/360	1.0	(0.0, 2.0)	0/152	0	(0.0, 0.0)
Nyanza	217/1214	17.6	(15.3, 19.9)	80/465	18.3	(13.3, 23.2)
Rift Valley	97/1143	7.8	(5.4, 10.1)	36/568	6.9	(4.5, 9.3)
Western	77/1015	6.6	(4.5, 8.8)	31/445	5.8	(3.5, 8.1)
Fig 3.7a HIV prevalence by province among men						
Nairobi	42/703	6.4	(3.2, 9.7)	21/306	7.8	(4.9, 10.6)
Central	24/807	3.4	(1.4, 5.5)	9/430	2.0	(0.77, 3.2)
Coast	40/575	6.9	(4.1, 9.7)	12/270	4.8	(2.2, 7.4)
Eastern	18/894	1.9	(0.93, 2.9)	6/349	1.5	(0.30, 2.8)
North Eastern	4/246	1.0	(0.0, 2.5)	0/126	0	(0.0, 0.0)
Nyanza	101/848	11.4	(9.0, 13.7)	45/387	11.6	(6.7, 16.4)
Rift Valley	55/873	5.3	(3.9, 6.7)	17/488	3.6	(1.5, 5.7)
Western	33/712	4.9	(3.0, 6.7)	14/367	3.8	(1.6, 6.1)

APPENDIX B.3: COMPARISON OF HIV PREVALENCE OF 2003 KDHS AND 2007 KAIS

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
		KAIS 2007			KDHS 2003	
Fig 3.7a HIV prevalence by province (total)						
Nairobi	131/1642	9.2	(6.5, 11.9)	60/661	9.9	(7.0, 12.8)
Central	71/1873	3.9	(2.4, 5.5)	48/952	4.9	(3.4, 6.4)
Coast	110/1448	8.3	(6.8, 9.8)	38/654	5.8	(3.7, 7.9)
Eastern	94/2133	4.6	(3.0, 6.2)	30/731	4.0	(2.4, 5.5)
North Eastern	7/606	1.0	(0.05, 1.9)	0/278	0	(0.0, 0.0)
Nyanza	318/2062	15.0	(13.1, 17.0)	125/852	15.1	(10.8, 19.5)
Rift Valley	152/2016	6.7	(5.0, 8.5)	53/1056	5.3	(3.4, 7.2)
Western	110/1727	5.9	(4.2, 7.6)	45/812	4.9	(3.1, 6.7)
Fig 3.8a HIV prevalence by marital status among women						
Never married/ cohabited	92/2038	4.7	(3.4, 5.9)	42/941	4.7	(3.2, 6.2)
Currently married	390/4916	8.0	(7.0, 9.0)	154/1985	8.0	(6.6, 9.4)
Monogamous	315/4246	7.6	(6.5, 8.6)	118/1631	7.2	(5.7, 8.7)
Polygamous	75/670	11.3	(7.9, 14.7)	36/354	11.5	(7.8, 15.2)
Separated/divorced	93/538	17.6	(13.2, 21.9)	38/211	19.2	(12.4, 26.0)
Widowed	101/357	29.1	(23.8, 34.4)	41/136	30.2	(21.0, 39.4)
Fig 3.8a HIV prevalence by marital status among men						
Never married/ cohabited	53/2442	1.9	(1.3, 2.4)	24/1295	1.6	(0.88, 2.2)
Currently married	236/2935	8.3	(7.1, 9.5)	89/1325	7.0	(5.3, 8.7)
Monogamous	206/2729	7.9	(6.7, 9.1)	75/1193	6.5	(4.7, 8.3)
Polygamous	30/206	13.6	(8.7, 18.4)	14/132	11.9	(5.4, 18.3)
Separated/divorced	16/230	5.9	(2.6, 9.1)	4/86	6.4	(0.34, 12.5)
Widowed	12/51	18.9	(7.0, 30.9)	7/17	44.1	(16.2, 72.1)
Fig 3.8a HIV prevalence by marital status (total)						
Never married/ cohabited	145/4480	3.1	(2.5, 3.8)	66/2236	2.8	(2.1, 3.5)
Currently married	626/7851	8.1	(7.2, 9.0)	243/3310	7.6	(6.2, 8.9)
Monogamous	521/6975	7.7	(6.7, 8.6)	193/2824	6.9	(5.6, 8.3)
Polygamous	105/876	11.8	(8.8, 14.9)	50/486	11.6	(8.1, 15.1)
Separated/divorced	109/768	14.1	(10.9, 17.2)	42/297	15.1	(10.1, 20.0)
Widowed	113/408	27.6	(22.6, 32.7)	48/153	31.8	(23.0, 40.7)
Table 3.8a Marital status among women						
Never married/cohabited	2390/10239	23.1	(21.8, 24.4)	2466/8195	29.8	(28.4, 31.3)
Currently married/cohabiting	6394/10239	62.7	(61.2, 64.3)	4876/8195	60.0	(58.3, 61.8)
Monogamous	5489/10239	54.4	(52.8, 55.9)	3939/8195	48.7	(47.4, 50.1)
Polygamous	905/10239	8.3	(7.5, 9.2)	823/8195	9.9	(8.8, 11.0)
Separated/divorced	708/10239	6.8	(6.0, 7.5)	337/8195	4.2	(3.6, 4.8)
Widowed	747/10239	7.4	(6.8, 8.0)	516/8195	5.9	(5.3, 6.6)
Table 3.8a Marital status among men						
Never married/cohabited	2799/7701	37.1	(35.5, 38.6)	1584/3578	45.0	(43.1, 47.0)
Currently married/cohabiting	4483/7701	57.3	(55.7, 58.9)	1855/3578	50.8	(48.7, 52.9)
Monogamous	4107/7701	52.7	(51.2, 54.2)	1665/3578	45.8	(44.0, 47.7)
Polygamous	376/7701	4.6	(4.0, 5.2)	190/3578	5.0	(4.1, 5.9)
Separated/divorced	322/7701	4.2	(3.7, 4.8)	23/3578	0.65	(0.36, 0.94)
Widowed	97/7701	1.4	(1.0, 1.7)	116/3578	3.5	(2.8, 4.2)
Table 3.8a Marital status (total)						
Never married/cohabited	5189/17940	29.1	(27.9, 30.2)	4050/11773	34.4	(33.1, 35.7)
Currently married/cohabiting	10877/17940	60.4	(59.1, 61.7)	6731/11773	57.2	(55.8, 58.6)
Monogamous	9596/17940	53.7	(52.4, 54.9)	5604/11773	47.9	(46.7, 49.1)
Polygamous	1281/17940	6.7	(6.1, 7.4)	1013/11773	8.4	(7.4, 9.3)
Separated/divorced	1030/17940	5.7	(5.2, 6.2)	360/11773	3.1	(2.7, 3.6)
Widowed	844/17940	4.8	(4.4, 5.2)	632/11773	5.2	(4.7, 5.7)

APPENDIX B.3: COMPARISON OF HIV PREVALENCE OF 2003 KDHS AND 2007 KAIS

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	KAIS 2007			KDHS 2003		
Fig 3.9a HIV prevalence by education level among women						
No primary	69/1082	9.1	(6.4, 11.8)	20/513	4.4	(2.2, 6.6)
Incomplete primary	244/2295	10.5	(8.9, 12.1)	95/1025	9.3	(7.1, 11.5)
Complete primary	202/1961	10.0	(8.4, 11.6)	81/762	10.6	(8.1, 13.1)
Secondary+[1]	161/2511	6.3	(4.9, 7.7)	79/973	8.2	(6.2, 10.1)
Fig 3.9a HIV prevalence by education level among men						
No primary	14/363	5.4	(2.5, 8.4)	4/201	2.7	(0.0, 5.5)
Incomplete primary	90/1615	5.5	(4.1, 6.9)	32/890	3.4	(2.0, 4.7)
Complete primary	90/1339	6.4	(4.9, 7.9)	31/615	5.9	(3.7, 8.0)
Secondary+[1]	123/2341	4.9	(3.9, 6.0)	57/1017	5.2	(3.7, 6.6)
Fig 3.9a HIV prevalence by education level (total)						
No primary	83/1445	8.2	(6.2, 10.3)	24/714	3.9	(2.3, 5.6)
Incomplete primary	334/3910	8.4	(7.2, 9.7)	127/1915	6.4	(4.9, 7.9)
Complete primary	292/3300	8.6	(7.4, 9.7)	112/1377	8.5	(6.6, 10.3)
Secondary+[1]	284/4852	5.7	(4.7, 6.6)	136/1990	6.6	(5.3, 7.8)
Fig 3.10a HIV prevalence by wealth index[2] among women						
Lowest	121/1419	10.1	(8.1, 12.1)	19/557	3.9	(2.0, 5.8)
Second	133/1408	9.6	(7.7, 11.4)	45/586	8.5	(6.1, 10.9)
Middle	118/1469	8.2	(6.4, 10.0)	42/598	7.1	(5.0, 9.2)
Fourth	142/1501	9.5	(7.5, 11.5)	64/640	9.7	(7.0, 12.4)
Highest	162/2052	7.5	(5.6, 9.5)	105/892	12.2	(9.7, 14.6)
Fig 3.10a HIV prevalence by wealth index[2] among men						
Lowest	53/914	6.0	(4.0, 7.9)	13/434	3.4	(1.6, 5.1)
Second	56/1010	5.9	(4.3, 7.6)	20/464	4.2	(2.2, 6.3)
Middle	57/1077	5.2	(3.7, 6.6)	9/494	2.2	(0.34, 4.0)
Fourth	61/1095	5.2	(3.7, 6.7)	26/566	4.3	(2.4, 6.3)
Highest	90/1562	5.4	(3.8, 6.9)	56/765	7.3	(5.3, 9.3)
Fig 3.10a HIV prevalence by wealth index[2] (total)						
Lowest	174/2333	8.4	(6.7, 10.2)	32/991	3.6	(2.2, 5.1)
Second	189/2418	8.0	(6.6, 9.5)	65/1050	6.5	(4.6, 8.4)
Middle	175/2546	6.9	(5.7, 8.2)	51/1092	4.8	(3.3, 6.3)
Fourth	203/2596	7.7	(6.3, 9.1)	90/1206	7.1	(5.2, 9.0)
Highest	252/3614	6.6	(5.1, 8.1)	161/1657	9.8	(8.2, 11.4)
Fig 3.11a HIV prevalence by age of sexual debut among women						
<15 years	122/924	13.2	(10.6, 15.7)	67/529	12.9	(9.1, 16.7)
15-17 years	316/2833	11.1	(9.5, 12.6)	110/1086	10.3	(8.3, 12.3)
18+ years	221/3060	7.5	(6.3, 8.8)	73/967	8.1	(6.0, 10.1)
Fig 3.11a HIV prevalence by age of sexual debut among men						
<15 years	58/960	5.9	(4.2, 7.5)	38/659	6.0	(3.8, 8.1)
15-17 years	122/1824	6.6	(5.3, 7.9)	39/794	4.4	(2.9, 5.9)
18+ years	127/1927	6.5	(5.2, 7.8)	39/799	5.2	(3.5, 7.0)
Fig 3.11a HIV prevalence by age of sexual debut (total)						
<15 years	180/1884	9.4	(7.8, 11.1)	105/1188	8.8	(6.5, 11.1)
15-17 years	438/4657	9.3	(8.2, 10.5)	149/1880	7.7	(6.3, 9.1)
18+ years	348/4987	7.1	(6.2, 8.1)	112/1766	6.8	(5.4, 8.1)

[1] Secondary includes any years of Secondary schooling whether completed or not.

[2] The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, water access and sanitation facilities. The wealth index placed households on a continuous scale of relative wealth using principal components analysis. Individuals were ranked according to the score of the household in which they resided and the sample was divided into five groups, each with an equal number of individuals (quintiles), ranging from the lowest to highest level of wealth.

APPENDIX B.4: HIV TESTING

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	WOMEN			MEN			TOTAL		
4.3 Testing behaviour									
Fig 4.3a HIV testing history									
Ever been tested and received results	4047/9949	40.7	(39.2, 42.3)	1931/7573	24.9	(23.3, 26.5)	5978/17522	33.9	(32.6, 35.3)
Ever been tested but did not receive results	199/9949	2.2	(1.7, 2.6)	100/7573	1.3	(1.0, 1.6)	299/17522	1.8	(1.5, 2.1)
Never been tested	5703/9949	57.1	(55.5, 58.8)	5542/7573	73.8	(72.2, 75.5)	11245/17522	64.3	(62.9, 65.7)
Ever been tested but did not receive results or never been tested	5902/9949	59.3	(57.7, 60.8)	5642/7573	75.1	(73.5, 76.7)	11544/17522	66.1	(64.7, 67.4)
Fig 4.3b Ever been tested for HIV									
Adults aged15-49 years (KAIS 2007)	3873/8667	44.6	(43.0, 46.2)	1687/6343	25.6	(24.0, 27.3)	5560/15010	36.6	(35.2, 38.0)
Adults aged 15-49 years (KDHS 2003)	1239/8050	14.9	(13.9, 16.0)	555/3314	15.8	(14.3, 17.4)	1794/11364	15.2	(14.2, 16.2)
Fig 4.3c Ever been tested for HIV by residence									
Rural	2563/7363	35.4	(33.6, 37.2)	1131/5618	20.6	(18.9, 22.2)	3694/12981	29.0	(27.4, 30.5)
Urban	1484/2586	57.4	(54.6, 60.3)	800/1955	39.7	(36.6, 42.7)	2284/4541	50.1	(48.0, 52.2)
Total	4047/9949	40.7	(39.2, 42.3)	1931/7573	24.9	(23.3, 26.5)	5978/17522	33.9	(32.6, 35.3)
Fig 4.3d Ever been tested for HIV by province									
Nairobi	751/1193	64.3	(60.6, 68.1)	448/925	44.4	(39.8, 49.0)	1199/2118	56.1	(53.1, 59.0)
Central	596/1437	42.2	(39.2, 45.3)	270/1121	24.3	(21.7, 26.9)	866/2558	34.5	(31.9, 37.1)
Coast	555/1156	47.8	(43.6, 52.0)	229/824	28.9	(24.8, 33.0)	784/1980	40.0	(36.2, 43.8)
Eastern	538/1661	33.1	(30.4, 35.7)	232/1289	17.5	(14.8, 20.3)	770/2950	26.2	(23.9, 28.4)
North Eastern	29/320	8.1	(2.1, 14.1)	15/254	5.6	(1.1, 10.1)	44/574	7.0	(2.0, 12.0)
Nyanza	573/1505	39.1	(35.2, 43.0)	301/1098	29.0	(25.1, 33.0)	874/2603	34.8	(31.5, 38.1)
Rift Valley	507/1363	37.0	(32.3, 41.8)	235/1080	22.4	(17.7, 27.1)	742/2443	30.7	(26.4, 35.0)
Western	498/1314	38.2	(34.8, 41.7)	201/982	20.6	(17.5, 23.7)	699/2296	30.7	(28.0, 33.3)
Total	4047/9949	40.7	(39.2, 42.3)	1931/7573	24.9	(23.3, 26.5)	5978/17522	33.9	(32.6, 35.3)
Fig 4.3e Ever been tested for HIV by wealth index[1]									
Lowest	497/1624	31.3	(28.1, 34.5)	163/1190	14.3	(11.7, 17.0)	660/2814	23.9	(21.5, 26.4)
Second	610/1809	33.4	(30.7, 36.1)	219/1344	16.2	(13.7, 18.7)	829/3153	26.0	(23.9, 28.1)
Middle	651/1903	34.0	(31.7, 36.4)	320/1471	21.5	(19.1, 23.8)	971/3374	28.6	(26.8, 30.4)
Fourth	829/2010	41.5	(38.7, 44.3)	378/1524	24.9	(22.1, 27.6)	1207/3534	34.4	(32.1, 36.8)
Highest	1460/2603	55.5	(53.1, 57.8)	851/2044	39.6	(36.7, 42.4)	2311/4647	48.6	(46.8, 50.5)
Total	4047/9949	40.7	(39.2, 42.3)	1931/7573	24.9	(23.3, 26.5)	5978/17522	33.9	(32.6, 35.3)
4.3e Ever had sex									
Never married/ cohabited	1219/2389	51.1	(48.5, 53.7)	1762/2798	62.1	(59.3, 64.9)	2981/5187	57.1	(54.9, 59.2)
Total	9067/10237	88.7	(87.9, 89.5)	6663/7699	86.0	(84.8, 87.2)	15730/17936	87.5	(86.8, 88.2)
4.3e Ever been tested for HIV by ever had sex									
Ever had sex	3935/8812	44.7	(43.0, 46.3)	1848/6573	27.6	(25.9, 29.2)	5783/15385	37.5	(36.0, 38.9)
Never had sex	111/1135	9.8	(8.0, 11.6)	81/998	8.1	(5.6, 10.6)	192/2133	9.0	(7.4, 10.6)
Fig 4.3f Ever been tested for HIV by age group (years) among those who ever had sex									
15-19	300/650	45.8	(41.4, 50.2)	93/586	15.1	(11.5, 18.6)	393/1236	31.4	(28.3, 34.6)
20-24	1016/1565	66.2	(63.0, 69.4)	317/966	32.2	(28.8, 35.6)	1333/2531	53.1	(50.5, 55.8)
25-29	875/1451	61.3	(58.0, 64.7)	337/944	33.8	(29.8, 37.9)	1212/2395	50.8	(47.8, 53.8)
30-34	674/1249	52.4	(48.6, 56.3)	297/856	34.0	(29.9, 38.1)	971/2105	44.9	(42.1, 47.7)
35-39	453/1030	43.4	(39.6, 47.2)	242/764	30.7	(26.4, 35.0)	695/1794	38.1	(35.2, 41.1)
40-44	265/810	31.4	(27.0, 35.7)	166/628	26.8	(22.8, 30.8)	431/1438	29.4	(26.5, 32.3)
45-49	180/777	21.7	(18.3, 25.1)	152/600	23.8	(19.7, 28.0)	332/1377	22.6	(19.6, 25.6)
50-54	88/552	16.0	(12.7, 19.3)	108/461	24.2	(19.8, 28.7)	196/1013	19.7	(16.8, 22.6)
55-59	67/469	15.6	(10.6, 20.6)	80/420	19.3	(14.4, 24.3)	147/889	17.3	(13.3, 21.4)
60-64	17/259	6.0	(2.8, 9.1)	56/348	18.9	(12.9, 24.8)	73/607	13.3	(9.7, 16.9)
Total	3935/8812	44.7	(43.0, 46.3)	1848/6573	27.6	(25.9, 29.2)	5783/15385	37.5	(36.0, 38.9)

APPENDIX B.4: HIV TESTING

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	WOMEN			MEN			TOTAL		
Fig 4.3g Testing behaviour and location of last HIV test among women ages 15-49 years									
Late test at ANC	2575/7731	33.5	(31.8, 35.30	-	-	-	-	-	-
Last test not at ANC	1371/7731	17.7	(16.3, 19.1)	-	-	-	-	-	-
Never been tested	3787/7731	48.7	(46.8, 50.6)	-	-	-	-	-	-
Fig 4.3h Ever been tested for HIV by marital status									
Never married/ cohabited	567/1215	44.5	(41.3, 47.7)	485/1759	25.6	(23.1, 28.0)	1052/2974	33.3	(31.3, 35.3)
Currently married/ cohabiting	2843/6201	46.2	(44.1, 48.3)	1245/4403	28.4	(26.3, 30.5)	4088/10604	38.9	(37.1, 40.7)
Monogamous	2547/5346	47.9	(45.8, 50.0)	1141/4032	28.4	(26.2, 30.5)	3688/9378	39.7	(37.9, 41.5)
Polygamous	296/855	34.9	(30.4, 39.3)	104/371	28.1	(22.9, 33.3)	400/1226	32.8	(29.2, 36.5)
Separated/divorced	321/669	49.4	(44.4, 54.4)	84/316	25.4	(20.1, 30.7)	405/985	41.6	(38.1, 45.2)
Widowed	204/727	27.8	(24.2, 31.5)	34/95	34.7	(22.7, 46.8)	238/822	28.7	(25.2, 32.2)
Total	3935/8812	44.7	(43.0, 46.3)	1848/6573	27.6	(25.9, 29.2)	5783/15385	37.5	(36.0, 38.9)

4.4 Testing experiences among those who had ever been tested for HIV

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
Fig 4.4a Timing of most recent HIV test									
<12 months ago	1893/4047	48.0	(46.2, 49.8)	1005/1931	52.7	(50.1, 55.3)	2898/5978	49.5	(47.9, 51.1)
12-23 months ago	1071/4047	25.4	(23.9, 26.9)	431/1931	21.7	(19.4, 24.0)	1502/5978	24.2	(22.9, 25.6)
24+ months ago	1083/4047	26.6	(25.1, 28.1)	495/1931	25.6	(23.2, 27.9)	1578/5978	26.3	(25.0, 27.5)
Fig 4.4b Location of last HIV test									
Public	1115/2032	55.3	(52.2, 58.4)	913/1931	48.0	(44.8, 51.1)	2028/3963	51.8	(49.2, 54.4)
Private	508/2032	24.3	(21.6, 26.9)	411/1931	19.4	(17.4, 21.4)	919/3963	22.0	(20.1, 23.8)
VCT/mobile	219/2032	10.9	(8.9, 12.9)	332/1931	18.0	(15.7, 20.4)	551/3963	14.3	(12.8, 15.8)
Other	190/2032	9.6	(7.5, 11.6)	275/1931	14.6	(12.4, 16.7)	465/3963	12.0	(10.4, 13.5)

4.5 Reasons for not testing

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
Fig 4.5a Reasons for not testing for HIV									
Low risk	2499/5703	43.3	(41.1, 45.4)	2824/5542	51.2	(49.3, 53.0)	5323/11245	47.2	(45.6, 48.7)
No reason given	1394/5703	25.2	(23.1, 27.3)	1121/5542	19.6	(18.0, 21.2)	2515/11245	22.4	(21.0, 23.9)
Don't want to know	481/5703	9.2	(8.0, 10.5)	452/5542	8.7	(7.8, 9.7)	933/11245	9.0	(8.1, 9.9)
Don't know about test	564/5703	8.6	(7.5, 9.6)	396/5542	6.3	(5.4, 7.2)	960/11245	7.5	(6.6, 8.3)
Lack of access to testing	372/5703	6.5	(5.4, 7.5)	403/5542	7.4	(6.5, 8.3)	775/11245	6.9	(6.2, 7.7)
Afraid others will know about test results	277/5703	5.2	(4.5, 6.0)	439/5542	8.0	(7.0, 8.9)	716/11245	6.6	(6.0, 7.2)
Don't know where	447/5703	6.6	(5.7, 7.5)	297/5542	4.9	(4.1, 5.6)	744/11245	5.7	(5.1, 6.4)
Lack of access to treatment	51/5703	0.69	(0.39, 1.0)	58/5542	0.77	(0.53, 1.0)	109/11245	0.73	(0.51, 0.95)
Fig 4.5b HIV prevalence by reason for not testing									
Low risk	93/1715	5.9	(4.5, 7.3)	94/2038	4.9	(3.8, 6.0)	187/3753	5.3	(4.5, 6.2)
No reason given	130/1079	11.3	(9.0, 13.6)	60/884	7.1	(5.2, 9.0)	190/1963	9.5	(7.7, 11.3)
Other reason(s)	109/1417	8.0	(6.2, 9.8)	59/1201	4.7	(3.5, 6.0)	168/2618	6.5	(5.2, 7.7)
Total	332/4211	8.0	(7.0, 9.1)	213/4123	5.3	(4.5, 6.1)	543/8334	6.7	(5.9, 7.5)

4.6 Attitudes towards home testing

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
Fig 4.6a Willingness to be tested for HIV at home by province									
Nairobi	969/1174	81.5	(77.6, 85.4)	740/923	77.3	(73.4, 81.2)	1709/2097	79.7	(76.4, 83.1)
Central	1143/1426	79.5	(75.9, 83.1)	932/1113	82.8	(78.0, 87.7)	2075/2539	80.9	(77.4, 84.5)
Coast	1014/1148	87.8	(85.0, 90.6)	684/822	84.3	(80.3, 88.4)	1698/1970	86.4	(83.7, 89.1)
Eastern	1381/1654	85.3	(83.0, 87.6)	1010/1288	79.0	(74.8, 83.2)	2391/2942	82.5	(79.8, 85.2)
North Eastern	129/319	41.0	(29.0, 53.1)	140/254	57.0	(48.2, 65.7)	269/573	48.1	(39.0, 57.1)
Nyanza	1315/1454	90.1	(87.9, 92.4)	940/1069	88.3	(86.7, 89.9)	2255/2523	89.3	(87.8, 90.9)
Rift Valley	1125/1350	81.9	(78.4, 85.4)	948/1073	88.0	(85.6, 90.3)	2073/2423	84.6	(82.2, 86.9)
Western	1110/1290	84.8	(82.4, 87.3)	797/975	81.9	(78.2, 85.7)	1907/2265	83.6	(81.1, 86.0)
Total	8186/9815	83.7	(82.5, 84.9)	6191/7517	83.2	(81.9, 84.6)	14377/17332	83.5	(82.5, 84.5)

APPENDIX B.4: HIV TESTING

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	WOMEN			MEN			TOTAL		
4.6a Willingness to be tested for HIV at home by testing history									
Tested and received results	3395/3913	86.2	(84.6, 87.8)	1581/1875	84.6	(82.4, 86.8)	4976/5788	85.7	(84.3, 87.0)
Never been tested or tested but did not receive results	4791/5902	82.0	(80.7, 83.4)	4610/5642	82.8	(81.3, 84.3)	9401/11544	82.4	(81.3, 83.5)

[1] The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, water access and sanitation facilities. The wealth index placed

4.3 Population estimate of women and men (15-64 years old) in need of HIV testing to reach Kenya's 2010 goal of testing 80% of all adolescents and adults, Kenya 2007

	2007 Projected population (15-64 years old)[2,3]	Persons (15-64 years old) in need of HIV testing to reach 2010 HIV testing goal[4] (%)	Estimated population (15-64 years old) in need of HIV testing to reach 2010 HIV testing goal[3.5]	95% CI[6]
National	19,984,000	46.08	9,209,000	(8 941 000, 9 474 000)

[2] Source: Revised Population Projections for Kenya 2000-2020 (Kenya National Bureau of Statistics. August 2006.)

[3] Figures rounded to the nearest 1,000.

[4] Weighted estimates from the 2007 KAIS rounded to one-hundredth of a percent.

[5] Estimate obtained by multiplying projected base population by the weighted national KAIS estimate.

[6] Confidence intervals obtained by multiplying projected population by lower and upper bounds (rounded to one-hundredth of a percent) of the corresponding 2007 KAIS estimate.

APPENDIX B.5: KNOWLEDGE AND DISCLOSURE OF HIV STATUS

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI

5.3 Knowledge of HIV infection

5.3 HIV status

	Women			Men			Total		
HIV positive	735/9049	8.4	(7.5, 9.2)	369/6804	5.4	(4.7, 6.0)	1104/15853	7.1	(6.5, 7.7)

5.3 Data in context: Willing to share results of last HIV test

	Women			Men			Total		
Willing to share	3983/4047	98.4	(97.8, 98.9)	1880/1931	97.5	(96.7, 98.3)	5863/5978	98.1	(97.6, 98.6)

Fig 5.3a Self-reported HIV status among HIV-infected persons

	Women			Men			Total		
Self-reported positive	114/720	17.5	(13.7, 21.2)	50/357	14.0	(9.7, 18.4)	164/1077	16.4	(13.2, 19.6)
Self-reported negative	239/720	31.4	(27.5, 35.4)	76/357	19.5	(14.6, 24.4)	315/1077	27.6	(24.3, 31.0)
Never tested or tested but never received results	367/720	51.1	(46.3, 55.8)	231/357	66.5	(60.7, 72.2)	598/1077	56.0	(51.9, 60.0)

5.3a Ever tested for HIV among HIV-infected persons

	Women			Men			Total		
Ever tested for HIV	362/729	49.5	(44.8, 54.2)	135/366	35.5	(29.6, 41.3)	497/1095	45.0	(41.0, 49.0)

5.3a Self-reported HIV status among HIV-infected persons who ever tested for HIV

	Women			Men			Total		
HIV positive	114/353	35.7	(29.4, 42.0)	50/126	41.9	(31.2, 52.5)	164/479	37.2	(31.3, 43.1)
HIV negative	239/353	64.3	(58.0, 70.6)	76/126	58.1	(47.5, 68.8)	315/479	62.8	(56.9, 68.7)

5.3a Time since last HIV test among HIV-infected persons who self-reported as HIV negative

	Women			Men			Total		
=24 months ago	85/239	31.3	(24.3, 38.3)	29/76	33.8	(20.5, 47.0)	114/315	31.9	(25.6, 38.2)
12-23 months ago	65/239	28.7	(22.0, 35.5)	8/76	10.0	(1.7, 18.3)	73/315	24.5	(19.3, 29.8)
<12 months ago	89/239	39.9	(32.3, 47.5)	39/76	56.2	(41.9, 70.6)	128/315	43.6	(36.6, 50.6)

Fig 5.3b Self-reported HIV status among HIV-infected women by marital status

	Never married/cohabited			Currently married/cohabiting (total)			Currently married (monogamous)		
Self-reported positive	5/93	12.5	(1.9, 23.0)	54/403	13.9	(9.9, 17.9)	44/321	13.9	(9.6, 18.1)
Self-reported negative	31/93	24.3	(14.5, 34.0)	145/403	35.2	(29.7, 40.7)	126/321	38.2	(32.1, 44.3)
Never tested	57/93	63.3	(52.6, 73.9)	204/403	50.9	(44.8, 56.9)	151/321	47.9	(41.4, 54.4)

Fig 5.3b Self-reported HIV status among HIV-infected women by marital status (continued)

	Currently married (polygamous)			Separated/divorced			Widowed		
Self-reported positive	10/82	14.1	(4.3, 23.9)	12/94	14.9	(1.4, 28.5)	43/130	32.9	(24.2, 41.7)
Self-reported negative	19/82	22.0	(11.9, 32.1)	36/94	37.1	(24.8, 49.5)	27/130	21.6	(12.1, 31.0)
Never tested	53/82	63.9	(51.4, 76.5)	46/94	47.9	(33.7, 62.2)	60/130	45.5	(34.9, 56.1)

Fig 5.3b Self-reported HIV status among HIV-infected women by marital status (continued)

	Total								
Self-reported positive	114/720	17.5	(13.7, 21.2)	-	-	-	-	-	-
Self-reported negative	239/720	31.4	(27.5, 35.4)	-	-	-	-	-	-
Never tested	367/720	51.1	(46.3, 55.8)	-	-	-	-	-	-

5.3b and 5.3c Marital status among HIV-infected persons

	Women			Men			Total		
Never married/ cohabited	93/735	12.6	(9.4, 15.8)	53/369	12.9	(9.5, 16.3)	146/1104	12.7	(10.4, 15.0)
Currently married/ cohabiting	413/735	55.5	(50.8, 60.2)	279/369	77.7	(73.2, 82.2)	692/1104	62.7	(58.9, 66.4)
Monogamous	330/735	45.2	(41.0, 49.4)	240/369	68.4	(63.4, 73.5)	570/1104	52.7	(49.0, 56.3)
Polygamous	83/735	10.3	(7.5, 13.2)	39/369	9.2	(6.0, 12.5)	122/1104	10	(7.6, 12.4)
Separated/divorced	97/735	13.0	(9.7, 16.4)	20/369	4.7	(2.4, 7.1)	117/1104	10.4	(7.9, 12.8)
Widowed	132/735	18.8	(15.4, 22.3)	17/369	4.7	(2.5, 6.9)	149/1104	14.3	(11.6, 17.0)

APPENDIX B.5: KNOWLEDGE AND DISCLOSURE OF HIV STATUS

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI

Fig 5.3c Self-reported HIV status among HIV-infected men by marital status

	Never married/cohabited			Currently married/cohabiting (total)			Currently married (monogamous)		
Self-reported positive	1/52	1.4	(0.0, 4.1)	46/270	16.8	(11.5, 22.1)	38/232	16.4	(10.9, 21.9)
Self-reported negative	15/52	24.4	(11.7, 37.0)	55/270	19.1	(13.1, 25.0)	49/232	19.8	(13.2, 26.4)
Never tested	36/52	74.3	(61.5, 87.0)	169/270	64.1	(57.5, 70.7)	145/232	63.8	(56.6, 71.1)

Fig 5.3c Self-reported HIV status among HIV-infected men by marital status (continued)

	Currently married (polygamous)			Separated/divorced			Widowed		
Self-reported positive	8/38	20.1	(7.7, 32.5)	1/19	*	*	2/16	*	*
Self-reported negative	6/38	13.5	(1.7, 25.2)	3/19	*	*	3/16	*	*
Never tested	24/38	66.4	(52.6, 80.2)	15/19	*	*	11/16	*	*

** Weighted estimates and 95% CI are not shown due to small denominators (<25 observations)*

Fig 5.3c Self-reported HIV status among HIV-infected men by marital status (continued)

	Total					
Self-reported positive	50/357	14.0	(9.7, 18.4)	-	-	-
Self-reported negative	76/357	19.5	(14.6, 24.4)	-	-	-
Never tested	231/357	66.5	(60.6, 72.3)	-	-	-

5.4 Disclosure of HIV status to sexual partners

Fig 5.4 Data in context: Number of partners in past 12 months

	Women			Men			Total		
No partner	2998/10200	29.2	(27.8, 30.6)	1947/7656	26.5	(25.1, 28.0)	4945/17856	28.0	(27.0, 29.1)
One partner	7040/10200	69.2	(67.8, 70.6)	4797/7656	61.6	(60.1, 63,0)	11837/17856	66.0	(64.9, 67.0)
Two or more partners	162/10200	1.6	(1.3, 2.0)	912/7656	11.9	(11.0, 12.7)	1074/17856	6.0	(5.6, 6.4)

Fig 5.4a Partnerships in which respondents disclosed their HIV status to their partners by partnership type

	Women			Men			Total		
Marital/cohabiting	2595/3068	86.2	(84.5, 87.8)	1277/1784	76.4	(73.8, 79.1)	3872/4852	83.0	(81.5, 84.5)
Boyfriend/girlfriend	423/3068	12.4	(10.9, 13.9)	414/1784	20.3	(17.7, 22.9)	837/4852	15.0	(13.5, 16.4)
Casual/other	50/3068	1.4	(1.0, 1.9)	93/1784	3.2	(2.4, 4.1)	143/4852	2.0	(1.6, 2.5)
All partners	3068/7394	42.0	(40.2, 43.9)	1784/6695	26.1	(24.4, 27.9)	4852/14089	35.1	(33.6, 36.5)

5.5 Knowledge of HIV infection in partnerships

Fig 5.5a Knowledge of partner's HIV status

	Women			Men			Total		
Partner HIV-infected	83/7200	1.1	(0.86, 1.4)	60/6494	1.0	(0.69, 1.3)	143/13694	1.1	(0.87, 1.3)
Partner HIV-uninfected	1369/7200	18.6	(17.2, 20.1)	1517/6494	24.2	(22.6, 25.8)	2886/13694	21.1	(19.8, 22.3)
Partner of unknown HIV status	5748/7200	80.2	(78.8, 81.7)	4917/6494	74.8	(73.1, 76.5)	10665/13694	77.9	(76.6, 79.1)

5.5a Knowledge of partner's HIV status among self-reported positives and self-reported negatives

	Women			Men			Total		
HIV non-discordant	1139/3182	34.7	(32.2, 37.1)	926/1765	53.4	(50.4, 56.4)	2065/4947	40.5	(38.5, 42.6)
HIV discordant	44/3182	1.3	(0.78, 1.8)	34/1765	1.8	(1.1, 2.5)	78/4947	1.5	(1.0, 1.9)
Unknown	1999/3182	64.0	(61.7, 66.3)	805/1765	44.8	(41.8, 47.8)	2804/4947	58.0	(56.0, 60.0)

Fig 5.5b Partner of unknown HIV status by partnership type

	Women			Men			Total		
Married/cohabiting	4976/6133	81.1	(79.7, 82.6)	3289/4577	71.1	(69.0, 73.2)	8265/10710	77.2	(75.7, 78.6)
Boyfriend/girlfriend	654/926	72.8	(69.2, 76.5)	1205/1465	82.7	(80.3, 85.1)	1859/2391	78.5	(76.4, 80.7)
Casual/other	118/141	84.7	(78.3, 91.0)	423/452	95.6	(93.3, 97.9)	541/593	92.2	(89.7, 94.8)
Total	5748/7200	80.2	(78.8, 81.7)	4917/6494	74.8	(73.1, 76.5)	10665/13694	77.9	(76.6, 79.1)

APPENDIX B.5: KNOWLEDGE AND DISCLOSURE OF HIV STATUS

Fig 5.5c Unaware of partner's HIV status by respondent's actual HIV status and knowledge of HIV infection

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
HIV-infected, self-reported positive	24/58	46.0	(30.5, 61.5)	14/47	26.6	(15.9, 37.4)	38/105	38.3	(27.4, 49.3)
HIV-infected, self-reported negative	145/205	69.9	(62.0, 77.7)	38/79	45.1	(32.1, 58.1)	183/284	64.1	(58.0, 70.2)
HIV-uninfected, self-reported negative	1620/2557	64.5	(61.9, 67.1)	678/1452	45.8	(42.5, 49.0)	2298/4009	58.6	(56.4, 60.8)
HIV-infected, never tested	260/278	94.1	(91.1, 97.0)	214/254	81.4	(74.7, 88.1)	474/532	88.6	(85.1, 92.0)
HIV-uninfected, never tested	2870/3088	93.0	(91.8, 94.1)	3360/3840	86.0	(84.5, 87.4)	6230/6928	89.4	(88.4, 90.3)
Total	4919/6186	80.0	(78.4, 81.5)	4304/5672	74.8	(73.1, 76.5)	9223/11858	77.7	(76.5, 79.0)

5.6 HIV-concordance and discordance among married and cohabiting couples

Fig 5.6a HIV-concordance and discordance among couples

Indicator	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
Concordant positive couple (both HIV-infected)	98/2752	3.8	(3.0, 4.5)	-	-	-	-	-	-
Concordant negative couple (both HIV-uninfected)	2485/2752	90.4	(89.1, 91.7)	-	-	-	-	-	-
Discordant couple (male HIV+, female HIV-)	87/2752	3.0	(2.3, 3.7)	-	-	-	-	-	-
Discordant couple (female HIV+, male HIV-)	82/2752	2.9	(2.1, 3.6)	-	-	-	-	-	-

Fig 5.6b HIV status of primary partners among HIV-infected women and men

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Unweighted n/N	Weighted %	95% CI
HIV-infected partner	98/180	56.6	(48.6, 64.7)	98/185	55.6	(48.1, 63.1)	-	-	-
HIV-uninfected partner	82/180	43.4	(35.3, 51.4)	87/185	44.4	(36.9, 51.9)	-	-	-

Fig 5.6c Ever been tested for HIV by HIV status of couple

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Unweighted n/N	Weighted %	95% CI
Both HIV-infected	50/98	50.5	(39.2, 61.8)	37/97	37.3	(27.3, 47.4)	-	-	-
Woman HIV-uninfected, Man HIV-infected	49/86	55.9	(44.1, 67.7)	37/87	38.4	(26.4, 50.3)	-	-	-
Woman HIV-infected, Man HIV-uninfected	39/82	46.7	(36.2, 57.3)	28/82	35.5	(23.9, 47.2)	-	-	-
Both HIV-uninfected	1043/2425	43.2	(40.5, 45.9)	594/2446	24.9	(22.3, 27.5)	-	-	-
Total	**1181/2691**	**43.9**	**(41.3, 46.5)**	**696/2712**	**26.1**	**(23.7, 28.5)**	**-**	**-**	**-**

5.6c Knowledge of partner's status among HIV-discordant couples

Indicator	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
Partner HIV-infected	13/400	3.4	(1.3, 5.4)
Partner HIV-uninfected	85/400	20.3	(15.4, 25.2)
Unaware of partner's HIV status	293/400	73.5	(67.6, 79.2)
Refused	9/400	2.9	(1.4, 4.4)

APPENDIX B.5: KNOWLEDGE AND DISCLOSURE OF HIV STATUS

5.3 Population estimate of HIV-infected women and men (15-64 years old) who were unaware of their HIV infection, Kenya 2007

TOTAL

	2007 Projected population (15-64 years old)[1,2]	HIV-infected women and men unaware of their HIV infection[3] (%)	Estimated population (women and men 15-64 years old) unaware of their HIV infection[2,4]	95% CI[5]
National	19,984,000	5.77	1,153,000	(1 045 000, 1 259 000)

WOMEN

	2007 Projected female population (15-64 years old)[1,2]	HIV-infected women unaware of their HIV infection[3] (%)	Estimated female population (15-64 years old) unaware of their HIV infection[2,4]	95% CI[5]
National	10,320,000	6.75	697,000	(626 000, 768 000)

MEN

	2007 Projected male population (15-64 years old)[1,2]	HIV-infected men unaware of their HIV infection[3] (%)	Estimated male population (15-64 years old) unaware of their HIV infection[2,4]	95% CI[5]
National	9,664,000	4.43	428,000	(371 000, 486 000)

[1] Source: Revised Population Projections for Kenya 2000-2020 (Kenya National Bureau of Statistics. August 2006.)

[2] Figures rounded to the nearest 1,000.

[3] Weighted estimates from the 2007 KAIS rounded to one-hundredth of a percent.

[4] Estimate obtained by multiplying projected base population by the weighted national KAIS estimate.

[5] Confidence intervals obtained by multiplying projected population by lower and upper bounds (rounded to one-hundredth of a percent) of the corresponding 2007 KAIS estimate.

APPENDIX B.6: SEXUAL PARTNERS, SEXUAL DEBUT AND CIRCUMCISION

6.3 Number of sexual partners

Fig 6.3a Lifetime number of sexual partners by sex

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
0 partners	1171/10065	11.5	(10.7, 12.3)	1038/7235	14.9	(13.7, 16.2)	2209/17300	13.0	(12.2, 13.7)
1 partner	3824/10065	36.3	(34.7, 38.0)	966/7235	12.0	(11.0, 12.9)	4790/17300	26.2	(25.0, 27.4)
2-3 partners	3929/10065	40.4	(39.0, 41.9)	1982/7235	27.2	(26.0, 28.5)	5911/17300	34.9	(33.9, 35.9)
4-5 partners	848/10065	8.8	(8.0, 9.5)	1253/7235	17.8	(16.7, 18.9)	2101/17300	12.5	(11.9, 13.2)
6-9 partners	183/10065	1.9	(1.6, 2.2)	819/7235	11.2	(10.3, 12.1)	1002/17300	5.8	(5.3, 6.3)
10 or more partners	110/10065	1.1	(0.8, 1.3)	1177/7235	16.9	(15.6, 18.1)	1287/17300	7.7	(7.1, 8.3)
Total	10065	100.0		7235	100.0		17300	100.0	

Fig 6.3b HIV prevalence by number of lifetime partners and sex

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
0 partners	14/979	2.0	(1.0, 2.9)	10/895	1.0	(0.3, 1.7)	24/1874	1.5	(0.9, 2.1)
1 partner	132/3319	4.7	(3.7, 5.7)	12/824	1.5	(0.6, 2.4)	144/4143	4.1	(3.3, 4.9)
2-3 partners	383/3566	10.1	(8.9, 11.2)	74/1755	4.2	(3.0, 5.3)	457/5321	8.2	(7.3, 9.1)
4-5 partners	129/781	16.8	(13.2, 20.4)	75/1135	5.7	(4.1, 7.2)	204/1916	10.3	(8.6, 12.1)
6-9 partners	37/162	22.7	(15.2, 30.3)	50/755	7.7	(5.4, 10.0)	87/917	10.5	(7.9, 13.2)
10 or more partners	15/103	16.6	(6.9, 26.4)	97/1062	9.1	(7.1, 11.1)	112/1165	9.8	(7.6, 12.0)
Total	710/8910	8.2	(7.4, 9.0)	318/6426	4.9	(4.2, 5.6)	1028/15336	6.8	(6.2, 7.5)

Fig 6.3c Number of sexual partners the year before the survey

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
0 partners	2998/10200	29.2	(27.8, 30.6)	1947/7656	26.5	(25.1, 28.0)	4945/17856	28.0	(27.0, 29.1)
1 partner	7040/10200	69.2	(67.8, 70.6)	4797/7656	61.6	(60.1, 63.0)	11837/17856	66.0	(64.9, 67.0)
2 partners	146/10200	1.5	(1.1, 1.8)	754/7656	9.8	(9.0, 10.6)	900/17856	5.0	(4.6, 5.4)
3 or more partners	16/10200	0.20	(0.1, 0.3)	158/7656	2.1	(1.7, 2.5)	174/17856	1.0	(0.8, 1.2)
Total	10200	100.0		7656	100.0		17856	100.0	

Fig 6.3d HIV prevalence by number of sexual partners the year before the survey

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
0 partners	195/2592	8.6	(7.2, 10.1)	46/1691	2.4	(1.7, 3.2)	241/4283	6.1	(5.2, 7.1)
1 partner	507/6276	8.0	(7.1, 9.0)	246/4241	6.0	(5.2, 6.8)	753/10517	7.2	(6.5, 8.0)
2 partners	24/136	15.5	(9.1, 21.8)	55/695	7.5	(5.2, 9.9)	79/831	8.9	(6.7, 11.1)
3 or more partners	3/14	19.5	(0.0, 42.2)	20/145	13.7	(7.3, 20.1)	23/159	14.2	(8.0, 20.4)
Total	729/9018	8.3	(7.5, 9.2)	367/6772	5.4	(4.7, 6.0)	1096/15790	7.1	(6.5, 7.7)

Fig 6.3e & 6.3f Reported 1 non-marital/non-cohabiting partner the year before the survey by marital status

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
Never married/cohabiting	608/689	88.3	(85.3, 91.4)	884/1136	78.4	(75.4, 81.4)	1492/1825	82.2	(79.8, 84.5)
Currently married/cohabiting	76/6055	1.2	(0.86, 1.5)	303/4369	7.2	(6.3, 8.2)	397/10424	3.7	(3.2, 4.1)
Monogamous	53/5255	1.0	(0.65, 1.3)	270/4000	7.0	(6.0, 7.9)	323/9255	3.5	(3.1, 4.0)
Polygamous	23/800	2.6	(1.5, 3.7)	33/369	10.1	(6.4, 13.7)	56/1169	4.9	(3.5, 6.4)
Separated/divorced	180/331	54.0	(47.7, 60.4)	128/221	58.7	(51.6, 65.8)	308/552	55.9	(51.1, 60.6)
Widowed	105/154	68.1	(59.5, 76.7)	24/34	71.5	(56.1, 86.9)	129/188	68.7	(61.4, 76.0)
Total	969/7229	13.3	(12.0, 14.5)	1339/5760	23.7	(22.3, 25.1)	2308/12989	17.8	(16.7, 18.9)

Fig 6.3e & 6.3f Reported 2-3 non-marital/non-cohabiting partners the year before the survey by marital status

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
Never married/cohabiting	37/689	5.1	(3.2, 7.0)	203/1136	17.3	(14.4, 20.1)	240/1825	12.7	(10.7, 14.7)
Currently married/cohabiting	4/6055	0.05	(0.0, 0.10)	30/4369	0.64	(0.39, 0.91)	34/10424	0.29	(0.18, 0.41)
Monogamous	3/5255	0	(0.0, 0.10)	27/4000	0.60	(0.35, 0.88)	30/9255	0.30	(0.2, 0.4)
Polygamous	1/800	0	(0.0, 0.11)	3/369	1.0	(0.0, 2.3)	4/1169	0.30	(0.0, 0.8)
Separated/divorced	16/331	5.5	(2.3, 8.6)	42/221	19.4	(13.3, 25.6)	58/552	11.0	(7.4, 14.5)
Widowed	5/154	3.7	(0.0, 7.4)	4/34	15.3	(2.4, 28.2)	9/188	5.8	(2.0, 9.7)
Total	62/7229	0.9	(0.6, 1.1)	279/5760	4.8	(4.1, 5.4)	341/12989	2.6	(2.2, 2.9)

APPENDIX B.6: SEXUAL PARTNERS, SEXUAL DEBUT AND CIRCUMCISION

Fig 6.3g Reported 1+ non-married/cohabiting sexual partners in the year before the survey by age and sex

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	Women			Men			Total		
15-19	212/503	40.3	(33.7, 47.0)	329/358	91.4	(88.4, 94.5)	541/861	61.0	(55.6, 66.4)
20-24	306/1376	21.3	(18.5, 24.0)	533/739	71.7	(67.7, 75.7)	839/2115	38.9	(36.0, 41.8)
25-29	181/1342	13.1	(10.5, 15.7)	295/826	34.8	(30.7, 38.9)	476/2168	21.1	(18.6, 23.7)
30-34	115/1138	9.8	(7.3, 12.3)	167/812	20.3	(16.9, 23.7)	282/1950	14.2	(12.0, 16.5)
35-39	89/904	11.4	(8.1, 14.7)	103/738	14.3	(11.4, 17.1)	192/1642	12.6	(10.4, 14.9)
40-44	63/678	8.1	(5.5, 10.7)	60/589	10.6	(7.7, 13.5)	123/1267	9.2	(7.3, 11.2)
45-49	35/601	5.0	(3.3, 6.8)	60/564	11.1	(8.1, 14.1)	95/1165	7.9	(6.3, 9.6)
50-54	19/337	6.0	(3.1, 8.9)	33/442	7.9	(5.1, 10.7)	52/779	7.1	(5.1, 9.1)
55-59	9/245	5.7	(1.6, 9.8)	23/386	5.2	(3.0, 7.4)	32/631	5.4	(3.3, 7.5)
60-64	2/105	2.0	(0.0, 5.2)	15/306	5.8	(2.3, 9.2)	17/411	4.8	(1.9, 7.7)
Total	1031/7229	14.1	(12.8, 15.4)	1618/5760	28.5	(26.9, 30.0)	2649/12989	20.4	(19.1, 21.6)

6.4 Condom use

6.4 Had sex with at least one partner the year before the survey

	Women			Men			Total		
Sex in last 12 months	7229/10239	70.8	(69.5, 72.2)	5760/7701	73.8	(72.4, 75.2)	12989/17940	72.1	(71.1, 73.2)

Fig 6.4a Consistent condom use by type of partnership and sex

	Partnerships reported by women			Partnerships reported by men			Total		
Married/cohabiting	146/6276	2.4	(1.9, 2.9)	158/4731	3.7	(3.0, 4.3)	304/11007	2.9	(2.5, 3.4)
Boyfriend/girlfriend	267/949	27.0	(22.1, 32.0)	642/1493	42.8	(38.8, 46.7)	909/2442	36.1	(32.6, 39.6)
Casual/other	33/151	16.8	(10.2, 23.4)	212/464	41.2	(35.1, 47.3)	245/615	33.4	(28.8, 38.0)
All partners	446/7376	5.6	(4.8, 6.4)	1012/6688	13.7	(12.4, 14.9)	1458/14064	9.1	(8.3, 9.9)

Fig 6.4b Consistent condom use with partner of unknown HIV status by partnership type and sex

	Partnerships reported by women			Partnerships reported by men			Total		
Married/cohabiting	87/4997	1.7	(1.3, 2.2)	86/3321	2.7	(2.0, 3.4)	173/8318	2.1	(1.7, 2.5)
Boyfriend/girlfriend	177/654	27.3	(21.3, 33.4)	509/1210	41.2	(37.2, 45.2)	686/1864	35.8	(31.9, 39.6)
Casual/other	25/124	15.6	(8.0, 23.3)	189/430	40.1	(33.9, 46.3)	214/554	33.0	(28.1, 37.9)
All partners	289/5775	4.8	(4.0, 5.6)	784/4961	14.1	(12.7, 15.4)	1073/10736	8.7	(7.8, 9.5)

6.4b Partner of unknown HIV status by partnership type

	Women			Men			Total		
Marital/cohabiting	4976/6133	81.1	(79.7, 82.6)	3289/4577	71.1	(69.0, 73.2)	8265/10710	77.2	(75.7, 78.6)
Boyfriend/girlfriend	654/926	72.8	(69.2, 76.5)	1205/1465	82.7	(80.3, 85.1)	1859/2391	78.5	(76.4, 80.7)
Casual/other	118/141	84.7	(78.3, 91.0)	423/452	95.6	(93.3, 97.9)	541/593	92.2	(89.7, 94.8)
Total	5748/7200	80.2	(78.8, 81.7)	4917/6494	74.8	(73.1, 76.5)	10665/13694	77.9	(76.6, 79.1)

Fig 6.4c Consistent condom use in marital and cohabiting partnerships by self-reported HIV status and sex

	Partnerships reported by women			Partnerships reported by men			Total		
Self-reported positive	19/63	30.1	(18.2, 41.9)	20/50	38.2	(20.8, 55.6)	39/113	33.4	(21.6, 45.2)
Self-reported negative	82/2734	3.2	(2.3, 4.1)	52/1198	4.7	(3.2, 6.1)	134/3932	3.6	(2.7, 4.5)
Never tested of never received result	43/3220	1.3	(0.9, 1.7)	80/3346	2.7	(2.0, 3.4)	123/6566	2.0	(1.6, 2.4)
Total	144/6017	2.5	(2.0, 3.0)	152/4594	3.6	(3.0, 4.3)	296/10611	2.9	(2.5, 3.4)

APPENDIX B.6: SEXUAL PARTNERS, SEXUAL DEBUT AND CIRCUMCISION

6.5 Sexual debut among youth aged 15-24 years

Fig 6.5a Youth that had sex by age and sex

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
15	54/279	20.0	(14.8, 25.1)	51/237	22.4	(16.4, 28.3)	105/516	21.1	(17.0, 25.2)
16	61/263	22.3	(16.2, 28.4)	76/272	26.5	(20.5, 32.6)	137/535	24.6	(20.3, 28.9)
17	117/280	43.1	(35.8, 50.4)	114/271	38.8	(32.2, 45.4)	231/551	41.0	(36.2, 45.8)
18	200/371	53.7	(46.9, 60.6)	155/288	56.4	(49.4, 63.5)	355/659	54.9	(49.9, 59.9)
19	233/350	69.7	(63.4, 75.9)	193/290	68.7	(62.8, 74.5)	426/640	69.2	(64.8, 73.7)
20	348/442	81.4	(77.2, 85.7)	201/274	71.6	(61.5, 81.8)	549/716	77.5	(72.8, 82.2)
21	291/348	85.2	(81.1, 89.3)	181/222	80.8	(74.8, 86.7)	472/570	83.5	(80.1, 86.8)
22	290/328	88.0	(83.8, 92.2)	195/231	84.6	(79.3, 90.0)	485/559	86.7	(83.6, 89.7)
23	353/381	93.5	(90.7, 96.3)	203/226	89.9	(85.3, 94.4)	556/607	92.2	(89.7, 94.6)
24	312/327	95.2	(92.6, 97.9)	190/210	92.8	(89.8, 95.8)	502/537	94.2	(92.3, 96.2)
Total	2259/3369	67.9	(65.7, 70.1)	1559/2521	61.4	(58.5, 64.3)	3818/5890	65.1	(63.3, 66.9)

Fig 6.5b Youth with sexual debut before 15 years of age by sex

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
2003 KDHS	457/3530	13.7	(12.1, 15.2)	388/1503	28.8	(25.7, 31.9)	845/5033	18.3	(16.7, 19.8)
2007 KAIS	333/2070	16.4	(14.5, 18.2)	499/1543	33.7	(30.7, 36.8)	832/3613	23.8	(22.1, 25.4)

Fig 6.5c Condom use at first sex by age of sexual debut, 15-24 year olds

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
Debut prior to 15	51/327	17.7	(11.8, 23.6)	58/492	12.3	(9.0, 15.5)	109/819	14.4	(11.4, 17.5)
Debut 15+	495/1688	28.0	(25.3, 30.8)	389/1009	37.0	(33.4, 40.6)	884/2697	31.3	(29.0, 33.7)
Total	546/2015	26.3	(23.8, 28.8)	447/1501	28.5	(25.7, 31.4)	993/3516	27.3	(25.4, 29.2)

Fig 6.5d Condom use at first sex by sex, 15-24 year olds

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
2003 KDHS	270/2192	11.9	(10.2, 13.7)	149/958	14.0	(11.6, 16.4)	419/3150	12.6	(11.1, 14.1)
2007 KAIS	562/2197	25.5	(22.8, 28.1)	447/1513	28.4	(25.6, 31.2)	1009/3710	26.7	(24.7, 28.6)

Fig 6.5e HIV prevalence by age at sexual debut and sex, 15-24 year olds

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
Debut prior to 15	31/296	9.8	(6.3, 13.3)	9/433	1.5	(0.4, 2.5)	40/729	4.9	(3.3, 6.4)
Debut 15+	124/1542	6.8	(5.3, 8.3)	18/932	1.7	(0.8, 2.6)	142/2474	4.9	(3.9, 5.9)
Total	155/1838	7.3	(5.8, 8.7)	27/1365	1.6	(0.9, 2.3)	182/3203	4.9	(4.0, 5.7)

6.6 Male circumcision

Fig 6.6a Male circumcision in Kenya by province

Indicator	Percent of men circumcised: Unweighted n/N	Weighted %	95% CI
Nairobi	792/925	83.2	(75.9, 90.5)
Central	1072/1121	95.5	(93.8, 97.2)
Coast	794/822	97.0	(95.6, 98.4)
Eastern	1243/1295	96.3	(94.6, 98.0)
North Eastern	325/334	97.3	(95.2, 99.5)
Nyanza	533/1099	48.2	(42.0, 54.3)
Rift Valley	970/1090	88.7	(85.4, 91.9)
Western	857/992	87.8	(82.0, 93.5)
Total (all provinces)	6586/7678	85.0	(83.2, 86.8)

APPENDIX B.7: ATTITUDES, KNOWLEDGE & BELIEFS

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI

7.3 Knowledge of HIV/AIDS

7.3 Had ever heard of AIDS	Women			Men			Total		
Total	9949/10239	97.9	(97.3, 98.5)	7573/7701	98.9	(98.6, 99.3)	17522/17940	98.3	(97.9, 98.8)

The remaining analysis presented in this chapter data table refer only to those persons who have ever heard of AIDS.

Fig 7.3a Most common source of information on HIV/AIDS

	Women			Men			Total		
Radio	4283/9949	44.2	(42.5, 45.9)	4221/7573	57.9	(56.0, 59.8)	8504/17522	50.1	(48.6, 51.5)
Television/film/internet	536/9949	5.1	(4.3, 6.0)	480/7573	6.2	(5.0, 7.3)	1016/17522	5.6	(4.7, 6.4)
Print	312/9949	2.8	(2.4, 3.3)	390/7573	5.0	(4.3, 5.6)	702/17522	3.7	(3.3, 4.2)
Family/friends	823/9949	7.9	(7.0, 8.8)	328/7573	3.8	(3.3, 4.3)	1151/17522	6.1	(5.6, 6.7)
Service providers	2450/9949	24.5	(23.1, 25.8)	1353/7573	17.5	(16.3, 18.7)	3803/17522	21.5	(20.5, 22.4)
Opinion leaders	840/9949	8.6	(7.8, 9.4)	332/7573	4.1	(3.5, 4.8)	1172/17522	6.7	(6.1, 7.2)
Drama	12/9949	0.08	(0.02, 0.13)	7/7573	0.12	(0.01, 0.22)	19/17522	0.09	(0.04, 0.15)
Other	693/9949	6.8	(5.9, 7.7)	462/7573	5.5	(4.7, 6.2)	1155/17522	6.2	(5.5, 6.9)
Total	9949/9949	100.0		7573/7573	100.0		17522/17522	100.0	

Fig 7.3b Most common source of information on HIV/AIDS by residence

	Rural			Urban			Total		
Radio	6587/12981	52.2	(50.9, 53.5)	1917/4541	43.1	(38.9, 47.2)	8504/17522	50.1	(48.6, 51.5)
Television/film/internet	303/12981	2.7	(2.2, 3.3)	713/4541	14.9	(12.3, 17.5)	1016/17522	5.6	(4.7, 6.4)
Print	413/12981	3.3	(2.8, 3.7)	289/4541	5.3	(4.2, 6.3)	702/17522	3.7	(3.3, 4.2)
Family/friends	810/12981	5.6	(5.1, 6.1)	341/4541	7.9	(6.3, 9.5)	1151/17522	6.1	(5.6, 6.7)
Service providers	3016/12981	22.4	(21.4, 23.4)	787/4541	18.4	(16.1, 20.8)	3803/17522	21.5	(20.5, 22.4)
Opinion leaders	1001/12981	7.5	(6.8, 8.2)	171/4541	3.9	(3.1, 4.7)	1172/17522	6.7	(6.1, 7.2)
Drama	11/12981	0.08	(0.03, 0.14)	8/4541	0.12	(0.0, 0.28)	19/17522	0.09	(0.04, 0.15)
Other	840/12981	6.2	(5.4, 7.0)	315/4541	6.3	(4.8, 7.8)	1155/17522	6.2	(5.5, 6.9)
Total	12981/12981	100.0		4541/4541	100.0		17522/17522	100.0	

7.3 Most common source of information on HIV/AIDS by age group (youth and adults)

	Ages 15 - 24 years			Ages 25 - 64 years			Total		
Radio	2384/5778	41.8	(39.9, 43.7)	6120/11744	54.3	(52.8, 55.8)	8504/17522	50.1	(48.6, 51.5)
Television/film/internet	387/5778	6.9	(5.6, 8.3)	629/11744	4.9	(4.2, 5.6)	1016/17522	5.6	(4.7, 6.4)
Print	197/5778	3.4	(2.8, 4.0)	505/11744	3.9	(3.4, 4.4)	702/17522	3.7	(3.3, 4.2)
Family/friends	384/5778	5.9	(5.2, 6.7)	767/11744	6.3	(5.6, 6.9)	1151/17522	6.1	(5.6, 6.7)
Service providers	1872/5778	32.5	(31.0, 34.1)	1931/11744	15.8	(14.9, 16.8)	3803/17522	21.5	(20.5, 22.4)
Opinion leaders	269/5778	4.6	(3.9, 5.2)	903/11744	7.7	(7.1, 8.4)	1172/17522	6.7	(6.1, 7.2)
Drama	9/5778	0.17	(0.03, 0.31)	10/11744	0.06	(0.01, 0.10)	19/17522	0.09	(0.04, 0.15)
Other	276/5778	4.6	(3.9, 5.3)	879/11744	7.0	(6.2, 7.9)	1155/17522	6.2	(5.5, 6.9)
Total	5778/5778	100.0		11744/11744	100.0		17522/17522	100.0	

Fig 7.3c Correctly answered general HIV/AIDS transmission knowledge items

	Women			Men			Total		
Can people get the AIDS virus because of witchcraft or other supernatural means?	8978/9949	90.3	(89.5, 91.1)	7059/7573	93.4	(92.6, 94.1)	16037/17522	91.6	(91.0, 92.3)
Can people reduce their chance of getting the AIDS virus by having just one uninfected sex partner who has sexual intercourse with no other partners?	8882/9949	89.8	(88.7, 90.9)	7046/7573	93.3	(92.6, 94.0)	15928/17522	91.3	(90.5, 92.0)
Is it possible for a healthy-looking person to have the AIDS virus?	8701/9949	87.4	(85.9, 88.9)	6917/7573	92.0	(91.2, 92.9)	15618/17522	89.4	(88.3, 90.4)
Can people reduce their chance of getting the AIDS virus by not having sexual intercourse at all?	8342/9948	83.7	(82.3, 85.2)	6893/7572	91.1	(90.2, 92.0)	15235/17520	86.9	(85.9, 87.9)
Can people get the AIDS virus by sharing utensils with a person who has AIDS?	8373/9949	84.5	(83.4, 85.6)	6358/7573	84.1	(82.9, 85.3)	14731/17522	84.3	(83.4, 85.2)
Can people reduce their chance of getting the AIDS virus by using a condom every time they have sex?	6865/9949	69.2	(67.7, 70.7)	5697/7572	75.7	(74.3, 77.0)	12562/17521	72.0	(70.8, 73.1)
Can people get the AIDS virus from mosquito or other insect bites?	6926/9949	68.8	(67.3, 70.3)	5611/7573	73.7	(72.2, 75.3)	12537/17522	70.9	(69.7, 72.1)
If a woman has the virus that causes AIDS, does her sexual partner always have the AIDS virus, almost always, or only sometimes?	3190/9949	31.2	(29.5, 32.9)	2570/7573	33.0	(31.2, 34.9)	5760/17522	32.0	(30.5, 33.5)
If a man has the virus that causes AIDS, does his sexual partner always have the AIDS virus, almost always, or only sometimes?	3198/9949	31.4	(29.5, 33.2)	2527/7573	32.5	(30.7, 34.3)	5725/17522	31.8	(30.4, 33.3)

APPENDIX B.7: ATTITUDES, KNOWLEDGE & BELIEFS

Fig 7.3d Correctly answered three knowledge items on mother-to-child transmission

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %
Can the virus that causes AIDS be transmitted from a mother to her baby:	**Women**			**Men**			**Total**	
By breastfeeding?	8739/9949	89.0	(88.1, 90.0)	6007/7573	80.0	(78.7, 81.3)	14746/17522	85.1
During delivery?	6950/9949	70.4	(68.9, 72.0)	5228/7573	70.0	(68.1, 71.9)	12178/17522	70.2
During pregnancy?	5286/9949	54.1	(52.3, 55.8)	3825/7573	50.8	(49.0, 52.5)	9111/17522	52.6

Fig 7.3e Overall scores for 12 HIV/AIDS knowledge items

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %
	Women			**Men**			**Total**	
0 - 4 Correct	532/9949	4.7	(4.0, 5.5)	307/7573	3.2	(2.6, 3.7)	839/17522	4.1
5 - 8 Correct	3977/9949	40.9	(39.4, 42.3)	2813/7573	38.7	(37.0, 40.5)	6790/17522	40.0
9 - 12 Correct	5440/9949	54.4	(52.7, 56.1)	4453/7573	58.1	(56.2, 60.0)	9893/17522	56.0
Total	**9949/9949**	**100.0**		**7573/7573**	**100.0**		**17522/17522**	**100.0**

Fig 7.3f Answered at least 9 out of 12 knowledge items correctly by educational level

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %
	Women			**Men**			**Total**	
No primary	434/1583	28.2	(25.1, 31.4)	121/563	26.8	(21.1, 32.4)	555/2146	27.9
Incomplete primary	1385/2863	47.9	(45.5, 50.4)	973/2113	45.0	(42.2, 47.8)	2358/4976	46.7
Complete primary	1434/2422	58.1	(55.7, 60.5)	1150/1838	62.6	(59.8, 65.4)	2584/4260	60.0
Secondary +[1]	2187/3081	69.2	(66.3, 72.1)	2209/3059	69.5	(66.7, 72.2)	4396/6140	69.3
Total	5440/9949	54.4	(52.7, 56.1)	4453/7573	58.1	(56.2, 60.0)	9893/17522	56.0

Fig 7.3g Answered at least 9 out of 12 knowledge items correctly by HIV testing and self-reported HIV status

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %
	Women			**Men**			**Total**	
Self-reported HIV infected	96/134	74.4	(65.5, 83.4)	46/56	80.7	(68.0, 93.4)	142/190	76.2
Self-reported not HIV infected	2405/3783	61.9	(59.8, 64.1)	1255/1772	68.1	(65.1, 71.1)	3660/5555	63.8
Never tested or received results	2864/5902	49.1	(47.2, 51.0)	3077/5642	54.6	(52.5, 56.7)	5941/11544	51.8
Total	5365/9819	54.4	(52.7, 56.1)	4378/7470	57.9	(56.0, 59.8)	9743/17289	55.9

Fig 7.3h Correct responses to selected knowledge items in 15-49-year-old men - KDHS 2003 and KAIS 2007

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	KDHS 2003			**KAIS 2007**		
Can people reduce their chance of getting the AIDS virus by having just one uninfected sex partner who has sexual intercourse with no other partners?	2928/3348	88.8	(87.3, 90.3)	5896/6343	93.1	(92.4, 93.9)
Can people get the AIDS virus by sharing utensils with a person who has AIDS?	2677/3348	80.5	(78.5, 82.4)	5400/6343	85.2	(83.9, 86.5)
Can the virus that causes AIDS be transmitted from a mother to her baby by breastfeeding?	2263/3348	68.4	(66.5, 70.3)	5096/6343	80.9	(79.6, 82.2)
Can people reduce their chance of getting the AIDS virus by using a condom every time they have sex?	2377/3348	72.0	(69.8, 74.3)	4860/6342	76.7	(75.3, 78.2)
Can people get the AIDS virus from mosquito or other insect bites?	2486/3348	74.2	(72.0, 76.3)	4812/6343	75.5	(73.9, 77.1)

Fig 7.3i Correct responses to selected knowledge items in 15-49-year-old women - KDHS 2003 and KAIS 2007

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	KDHS 2003			**KAIS 2007**		
Can people reduce their chance of getting the AIDS virus by having just one uninfected sex partner who has sexual intercourse with no other partners?	6462/8195	80.5	(78.9, 82.0)	7767/8667	90.1	(89.0, 91.3)
Can people get the AIDS virus by sharing utensils with a person who has AIDS?	5750/8195	71.3	(69.5, 73.0)	7426/8667	86.0	(84.9, 87.2)
Can the virus that causes AIDS be transmitted from a mother to her baby by breastfeeding?	5826/8195	71.8	(70.2, 73.3)	7699/8667	89.9	(89.0, 90.9)
Can people reduce their chance of getting the AIDS virus by using a condom every time they have sex?	4899/8195	61.0	(59.2, 62.9)	6157/8667	71.3	(69.7, 72.8)
Can people get the AIDS virus from mosquito or other insect bites?	5003/8195	61.0	(59.2, 62.9)	6247/8667	71.2	(69.7, 72.7)

APPENDIX B.7: ATTITUDES, KNOWLEDGE & BELIEFS

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %
7.3 Overall scores for 12 HIV/AIDS knowledge items by residence								
	Rural			**Urban**			**Total**	
0 - 4 Correct	711/12981	4.5	(3.8, 5.1)	128/4541	2.7	(1.6, 3.8)	839/17522	4.1
5 - 8 Correct	5424/12981	42.0	(40.7, 43.4)	1366/4541	33.3	(29.8, 36.7)	6790/17522	40.0
9 - 12 Correct	6846/12981	53.5	(52.0, 55.1)	3047/4541	64.0	(60.2, 67.9)	9893/17522	56.0
Total	12981/12981	100.0		4541/4541	100.0		17522/17522	100.0
7.3 Comprehensive HIV knowledge among youth aged 15-24 years[2]								
	Women			**Men**			**Total**	
Comprehensive HIV knowledge	1454/3369	42.0	(39.7, 44.4)	1221/2522	47.5	(45.2, 49.9)	2675/5891	44.4

7.4 Stigma toward HIV-infected persons

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %
Fig 7.4a Expressed accepting attitudes to persons with HIV/AIDS by stigma scale item								
	Women			**Men**			**Total**	
If a relative of yours became sick with the virus that causes AIDS, you would be willing to care for her or him in your own household.	9041/9949	91.9	(91.1, 92.7)	6787/7573	91.0	(90.0, 92.0)	15828/17522	91.5
People with the AIDS virus should not be blamed for bringing the disease into the community.	8324/9949	84.5	(83.4, 85.6)	5821/7573	76.0	(74.5, 77.5)	14145/17522	80.9
People with the AIDS virus should not be ashamed of themselves.	7822/9949	79.1	(77.8, 80.4)	5668/7573	74.0	(72.5, 75.5)	13490/17522	76.9
A female teacher has the AIDS virus should be allowed to continue teaching in the school.	7566/9949	77.0	(75.5, 78.5)	5656/7573	75.0	(73.4, 76.7)	13222/17522	76.2
You would buy fresh vegetables from a vendor who has the AIDS virus.	7077/9949	72.2	(70.5, 73.8)	5785/7573	77.0	(75.4, 78.6)	12862/17522	74.2
If a member of your family got infected with the virus that causes AIDS, you would want it to remain a secret or not.	6446/9949	65.2	(63.7, 66.6)	5323/7573	70.3	(68.9, 71.6)	11769/17522	67.4
Fig 7.4b Changes in accepting attitudes toward persons with HIV/AIDS among women 15-49 years old - KDHS 2003 and KAIS 2007								
	KDHS 2003			**KAIS 2007**				
If a relative of yours became sick with the virus that causes AIDS, you would be willing to care for her or him in your own household.	6602/8052	84.1	(82.9, 85.3)	7863/8667	91.8	(91.0, 92.6)		
A female teacher has the AIDS virus should be allowed to continue teaching in the school.	4602/8052	57.0	(55.0, 59.1)	6642/8667	77.6	(76.1, 79.2)		
You would buy fresh vegetables from a vendor who has the AIDS virus.	4734/8052	60.1	(58.3, 62.0)	6233/8667	72.8	(71.2, 74.5)		
If a member of your family got infected with the virus that causes AIDS, you would want it to remain a secret or not.	4838/8052	58.8	(57.5, 60.2)	5599/8667	64.9	(63.4, 66.4)		
Fig 7.4c Changes in accepting attitudes toward persons with HIV/AIDS among men 15-49 years old - KDHS 2003 and KAIS 2007								
	KDHS 2003			**KAIS 2007**				
If a relative of yours became sick with the virus that causes AIDS, you would be willing to care for her or him in your own household.	2917/3316	87.5	(85.6, 89.3)	5694/6343	91.0	(89.9, 92.1)		
A female teacher has the AIDS virus should be allowed to continue teaching in the school.	2023/3316	59.7	(57.3, 62.1)	4805/6343	76.1	(74.4, 77.8)		
You would buy fresh vegetables from a vendor who has the AIDS virus.	2436/3316	73.5	(71.2, 75.8)	4925/6343	78.2	(76.5, 79.8)		
If a member of your family got infected with the virus that causes AIDS, you would want it to remain a secret or not.	2295/3316	71.5	(69.4, 73.6)	4402/6343	69.4	(67.9, 70.8)		

7.5 Perceived risk of HIV infection

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %
Fig 7.5a Perceived risk of HIV infection								
	Women			**Men**			**Total**	
No risk	1666/7001	23.2	(21.7, 24.7)	1677/5644	30.2	(28.6, 31.8)	3343/12645	26.3
Small risk	2809/7001	40.8	(39.0, 42.6)	2776/5644	49.0	(47.2, 50.8)	5585/12645	44.4
Moderate/Great Risk	1727/7001	24.2	(22.6, 25.9)	868/5644	15.5	(14.4, 16.6)	2595/12645	20.4
Don't know	799/7001	11.8	(10.3, 13.3)	323/5644	5.3	(4.7, 6.0)	1122/12645	9.0
Total	7001/7001	100.0		5644/5644	100.0		12645/12645	100.0

APPENDIX B.7: ATTITUDES, KNOWLEDGE & BELIEFS

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	
Fig 7.5b HIV prevalence by perceived risk of HIV infection									
	Women			Men			Total		
No Risk	68/1448	5.2	(3.7, 6.6)	57/1451	4.7	(3.4, 6.0)	125/2899	4.9	
Small Risk	159/2516	6.1	(4.9, 7.2)	117/2477	4.5	(3.6, 5.5)	276/4993	5.3	
Moderate/Great Risk	184/1582	11.3	(9.5, 13.2)	70/792	8.3	(6.2, 10.4)	254/2374	10.3	
Don't Know	60/701	7.9	(5.2, 10.6)	31/291	10.5	(6.9, 14.1)	91/992	8.6	
Total	496/6341	7.4	(6.5, 8.3)	290/5085	5.5	(4.7, 6.2)	786/11426	6.6	
Fig 7.5c Reasons given for being at no or small risk of HIV infection									
	Women			Men			Total		
Not having sex	124/4475	2.6	(2.0, 3.2)	115/4453	2.5	(2.0, 3.0)	239/8928	2.6	
Uses condoms	273/4475	5.7	(4.8, 6.6)	653/4453	14.4	(13.0, 15.8)	926/8928	10.0	
Has only one partner	3620/4475	81.0	(79.3, 82.6)	3210/4453	72.3	(70.6, 74.1)	6830/8928	76.7	(
Limits number of partners	314/4475	7.4	(6.2, 8.5)	620/4454	13.4	(12.2, 14.7)	934/8929	10.4	
Partner has no other partners	612/4475	13.4	(11.8, 15.1)	647/4453	13.0	(11.6, 14.4)	1259/8928	13.2	(
Other	360/4475	7.4	(6.4, 8.5)	206/4453	3.9	(3.2, 4.5)	566/8928	5.7	
Fig 7.5d Reasons given for being at moderate or great risk of HIV infection									
	Women			Men			Total		
Does not use condoms	459/1727	26.5	(23.5, 29.6)	238/868	26.7	(23.1, 30.4)	697/2595	26.6	(
Has more than one partner	225/1727	14.0	(11.6, 16.5)	323/868	36.2	(32.4, 39.9)	548/2595	21.4	(
Partner has other partners	733/1727	41.6	(38.7, 44.6)	140/868	15.3	(12.2, 18.4)	873/2595	32.8	(
Homosexual contacts	8/1727	0.37	(0.09, 0.64)	12/868	1.6	(0.56, 2.54)	20/2595	0.76	(
Had blood transfusions\injections	121/1727	7.0	(5.4, 8.6)	66/868	7.7	(5.1, 10.2)	187/2595	7.2	
Other	551/1727	30.8	(27.6, 34.1)	285/868	31.8	(27.8, 35.8)	836/2595	31.2	(

7.6 Attitudes toward women's role in sexual decision-making

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	
Fig 7.6a Attitudes toward negotiating safer sex									
	Women			Men			Total		
If a wife knows her husband has a disease that she can get during sexual intercourse, is she justified in refusing to have sex with him?	8421/10239	82.8	(81.4, 84.2)	6672/7701	86.7	(85.4, 88.1)	15093/17940	84.5	(
If a wife knows her husband has a disease that she can get during sexual intercourse, is she justified in asking that they use a condom when they have sex?	7860/10239	78.2	(76.5, 79.8)	6262/7701	82.4	(81.1, 83.6)	14122/17940	80.0	(
Is a wife justified in refusing to have sex with her husband when she knows her husband has sex with other women?	7741/10239	76.4	(74.8, 78.0)	6166/7701	79.9	(78.6, 81.2)	13907/17940	77.9	(
Is a wife justified in refusing to have sex with her husband when she is tired or not in the mood?	6071/10239	59.9	(58.0, 61.8)	5044/7701	66.5	(64.9, 68.2)	11115/17940	62.7	(
Fig 7.6b Agreement with all three empowerment statements[3] by self-reported HIV status									
	Women			Men			Total		
Self-reported HIV infected	81/134	61.9	(53.0, 70.8)	47/56	81.8	(70.6, 92.9)	128/190	67.5	(
Self-reported not HIV infected	2578/3783	67.1	(64.9, 69.3)	1344/1772	75.8	(73.0, 78.5)	3922/5555	69.8	(
Never tested or received results	3356/5902	58.9	(56.7, 61.0)	3661/5642	65.6	(63.9, 67.3)	7017/11544	62.2	(
Total	6015/9819	62.1	(60.3, 63.9)	5052/7470	68.1	(66.7, 69.7)	11067/17289	64.7	(

[1] "Secondary+" includes any years of secondary schooling whether completed or not.

[2] UNGASS indicator 13: Correct knowledge on 5 questions regarding prevention of sexual transmission of HIV including rejection of major misconceptions about HIV transmiss

[3] The three empowerment statements are: (1) A wife is justified in refusing to have sex with her husband if she knows her husband has sex with other women. (2) A wife is jus refusing to have sex with her husband if she knows her husband has a disease she can get during sexual intercourse. (3) A wife is justified in asking that she and her husband condom when they have sex if she knows her husband has a disease she can get during sexual intercourse.

APPENDIX B.8: PREVENTION OF MOTHER-TO-CHILD TRANSMISSION AND FAMILY PLANNING

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI

8.3 Antenatal clinic (ANC) attendance, 2003-2007

Fig 8.3a ANC attendance for last live birth among women aged 15-54 years giving birth from 2003 to 2007, by province

	Last live birth 2003-2007		
Nairobi	356/369	96.5	(94.5, 98.6)
Central	462/484	95.9	(94.0, 97.8)
Coast	469/509	93.2	(90.5, 96.0)
Eastern	610/683	94.7	(92.4, 97.0)
North Eastern	54/267	20.9	(9.0, 32.8)
Nyanza	639/691	92.7	(90.3, 95.2)
Rift Valley	622/724	84.8	(80.1, 89.5)
Western	570/619	91.0	(87.5, 94.4)
Total	3782/4346	89.6	(88.1, 91.2)

8.3 ANC attendance for last live birth among women aged 15-54 years giving birth from 2003 to 2007, by year of last birth

	Last live birth 2003-2007		
2003	402/468	89.5	(86.4, 92.6)
2004	583/655	90.5	(87.3, 93.7)
2005	779/897	90.2	(87.8, 92.7)
2006	1102/1261	89.2	(86.9, 91.6)
2007	916/1065	89.0	(86.4, 91.6)

8.3 ANC attendance for last live birth among women aged 15-54 years giving birth from 2003 to 2007, by age

	Last live birth 2003-2007		
15-24	1318/1483	90.2	(88.1, 92.3)
25-29	965/1111	90.8	(88.5, 93.1)
30-39	1205/1396	89.1	(86.7, 91.4)
40-49	286/346	85.4	(81.1, 89.7)
50-54	8/10	--	--

8.3 ANC attendance for last live birth among women aged 15-54 years giving birth from 2003 to 2007, by education

	Last live birth 2003-2007		
No primary	361/709	61.3	(53.3, 69.3)
Incomplete primary	1225/1339	90.8	(88.4, 93.1)
Complete primary	1147/1193	96.2	(94.9, 97.5)
Secondary+[1]	1049/1105	94.4	(92.1, 96.6)

8.3 ANC attendance for last live birth among women aged 15-54 years giving birth from 2003 to 2007, by wealth index[2]

	Last live birth 2003-2007		
Lowest	716/1035	76.7	(72.1, 81.4)
Second	748/845	90.2	(87.8, 92.6)
Middle	720/778	92.0	(89.2, 94.9)
Fourth	747/803	92.9	(90.5, 95.2)
Highest	851/885	96.3	(94.4, 98.2)

Fig 8.3b Place of ANC attendance among women aged 15-54 years attending ANC for their last live birth, 2003-2007

	Attended ANC 2003-2007		
Home	25/3782	0.61	(0.27, 0.95)
Public facility	3046/3782	80.0	(77.7, 82.4)
Private facility	364/3782	9.7	(8.2, 11.2)
FBO facility	315/3782	8.7	(6.8, 10.5)

APPENDIX B.8: PREVENTION OF MOTHER-TO-CHILD TRANSMISSION AND FAMILY PLANNING

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI

8.4 Knowledge of mother-to-child transmission (MTCT) and antiretroviral therapy for prevention of MTCT (PMTCT)

Fig 8.4a Knowledge of modes of MTCT by ANC attendance, 15-to-54-year-old women

	Last live birth 2003-2007, attended ANC			Last live birth 2003-2007, did not attend ANC			All last live births 2003-2007		
Pregnancy	2063/3744	56.3	(54.0, 58.7)	200/478	41.0	(33.1, 48.9)	2263/4222	54.9	(52.8, 57.0)
Delivery	2749/3744	73.2	(71.0, 75.3)	239/478	53.5	(46.2, 60.8)	2988/4222	71.3	(69.1, 73.6)
Breastfeeding	3474/3744	93.0	(92.0, 94.0)	296/478	69.8	(62.8, 76.9)	3770/4222	90.8	(89.5, 92.2)

8.4 Knowledge of pregnancy as mode of MTCT among 15-to-54-year-old women, by year of last birth

	Last live birth 2003-2007, attended ANC			Last live birth 2003-2007, did not attend ANC			All last live births 2003-2007		
2003	230/400	58.9	(53.3, 64.6)	25/58	44.5	(27.5, 61.5)	255/458	57.6	(52.3, 62.9)
2004	316/578	56.9	(52.3, 61.4)	28/58	39.0	(19.3, 58.7)	344/636	55.4	(51.2, 59.6)
2005	436/775	57.2	(52.8, 61.6)	34/103	38.8	(23.4, 54.2)	470/878	55.5	(51.3, 59.7)
2006	591/1089	55.2	(52.1, 58.4)	52/128	40.1	(28.1, 52.1)	643/1217	53.8	(50.6, 57.1)
2007	490/902	55.4	(51.7, 59.1)	61/131	43.2	(30.7, 55.6)	551/1033	54.2	(50.7, 57.7)

8.4 Knowledge of delivery as mode of MTCT among 15-to-54-year-old women, by year of last birth

	Last live birth 2003-2007, attended ANC			Last live birth 2003-2007, did not attend ANC			All last live births 2003-2007		
2003	296/400	75.1	(70.7, 79.4)	31/58	57.2	(40.3, 74.1)	327/458	73.4	(69.3, 77.5)
2004	434/578	75.9	(71.7, 80.1)	33/58	45.9	(24.5, 67.3)	467/636	73.4	(69.1, 77.7)
2005	581/775	74.5	(70.6, 78.4)	41/103	47.1	(31.4, 62.8)	622/878	72.0	(68.0, 76.0)
2006	801/1089	72.7	(69.1, 76.4)	66/128	54.5	(42.6, 66.4)	867/1217	71.0	(67.6, 74.4)
2007	637/902	70.0	(66.1, 73.9)	68/131	59.7	(47.6, 71.9)	705/1033	69.0	(65.3, 72.6)

8.4 Knowledge of breastfeeding as mode of MTCT among 15-to-54-year-old women, by year of last birth

	Last live birth 2003-2007, attended ANC			Last live birth 2003-2007, did not attend ANC			All last live births 2003-2007		
2003	378/400	94.3	(91.8, 96.9)	32/58	59.1	(42.3, 76.0)	410/458	91.0	(88.2, 93.8)
2004	541/578	94.5	(92.5, 96.5)	42/58	79.1	(65.9, 92.4)	583/636	93.2	(91.1, 95.3)
2005	711/775	91.8	(89.5, 94.1)	56/103	68.0	(57.8, 78.1)	767/878	89.6	(87.0, 92.2)
2006	1018/1089	92.9	(91.2, 94.7)	85/128	71.4	(60.8, 81.9)	1103/1217	90.9	(89.1, 92.7)
2007	826/902	92.5	(90.6, 94.5)	81/131	69.3	(58.6, 80.1)	907/1033	90.2	(88.1, 92.3)

Fig 8.4b Knowledge of ART for PMTCT[3] by ANC attendance, 15-to-54-year-old women

	Last live birth 2003-2007, attended ANC			Last live birth 2003-2007, did not attend ANC			All last live births 2003-2007		
ART for PMTCT	2773/3611	76.3	(74.5, 78.1)	163/310	58.3	(50.5, 66.1)	2936/3921	75.0	(73.3, 76.8)

8.5 HIV Counseling and testing at ANCs, 2003-2007

Fig 8.5a Women offered, and women receiving HIV testing at ANC by year of last live birth, from 2003 to 2007

	Tested at ANC			Offered, but not tested at ANC			Not offered, not tested at ANC		
2003	199/400	50.4	(43.3, 57.4)	20/400	6.5	(2.9, 10.0)	181/400	43.2	(36.6, 49.8)
2004	332/578	57.5	(52.3, 62.7)	36/578	7.0	(4.7, 9.4)	210/578	35.5	(30.3, 40.6)
2005	457/775	56.0	(51.6, 60.5)	48/775	7.1	(5.1, 9.2)	270/775	36.8	(32.7, 41.0)
2006	775/1089	69.3	(65.4, 73.2)	47/1089	4.8	(3.1, 6.4)	267/1089	25.9	(22.4, 29.4)
2007	720/902	78.6	(74.9, 82.4)	28/902	3.5	(1.8, 5.2)	154/902	17.9	(14.6, 21.2)
Total	2483/3744	64.9	(62.3, 67.5)	179/3744	5.5	(4.5, 6.5)	1082/3744	29.6	(27.2, 32.0)

8.5 Women offered, and women receiving HIV testing at ANC between 2003-2007, by place of ANC attendance

	Tested at ANC			Offered, but not tested at ANC			Not offered, not tested at ANC		
Home	17/25	72.6	(51.8, 93.3)	0/25	--	--	8/25	27.4	(6.7, 48.2)
Public	1977/3013	64.4	(61.7, 67.0)	140/3013	5.5	(4.3, 6.6)	896/3013	30.2	(27.7, 32.6)
Private	252/359	67.3	(60.7, 73.8)	20/359	6.0	(3.3, 8.8)	87/359	26.7	(20.1, 33.4)
Faith-Based	221/315	68.4	(61.3, 75.4)	14/315	4.6	(2.3, 7.0)	80/315	27.0	(19.9, 34.1)

APPENDIX B.8: PREVENTION OF MOTHER-TO-CHILD TRANSMISSION AND FAMILY PLANNING

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
Fig 8.5b HIV testing at ANC between 2003-2007, among all women aged 15-49 years who ever received an HIV test									
	Ever tested								
Tested at ANC between 2003-2007 only	1608/4063	39.3	(37.0, 41.6)						
Tested at ANC between 2003-2007, and tested elsewhere	874/4063	22.2	(20.4, 24.1)						
Previously tested, but did not test at ANC between 2003-2007	1581/4063	38.5	(36.1, 40.8)						
8.5 HIV testing history among women aged 15-49 years who tested at ANC between 2003-2007									
	Tested at ANC 2003-2007								
Tested at ANC between 2003-2007 only	1608/2482	63.8	(61.2, 66.4)						
Tested at ANC between 2003-2007, and tested elsewhere	874/2482	36.2	(33.6, 38.8)						
Fig 8.5c Self-reported ANC HIV testing history from 2003- 2007, among women found to be HIV-infected in KAIS									
	HIV-infected								
Previously tested at ANC	116/280	47.2	(37.6, 56.7)						
Never tested / Never received result	145/280	52.8	(46.2, 59.5)						
8.5 Self-reported ANC HIV test results from 2003- 2007, among women found to be HIV-infected in KAIS who reported testing at ANC									
	HIV-infected women who tested at ANC 2003-2007								
Self-reported HIV-positive test result	19/135	13.1	(6.9, 19.3)						
Self-reported HIV-negative test result	116/135	86.9	(80.7, 93.1)						
8.5 Self-reported ANC HIV test results among women found to be HIV-infected in KAIS, by year of last live birth									
	Self-reported HIV-positive test result			**Self-reported HIV-negative test result**			**Never tested / Never received result**		
2003	1/44	1.3	(0, 4.0)	14/44	27.7	(11.7, 43.7)	29/44	71.0	(54.7, 87.2)
2004	2/53	2.7	(0, 7.3)	20/53	39.9	(23.8, 56.0)	31/53	57.4	(41.5, 73.3)
2005	0/57	--	--	22/57	36.0	(23.4, 48.5)	35/57	64.0	(51.5, 76.6)
2006	3/72	3.9	(0, 8.5)	40/72	56.9	(43.9, 69.9)	29/72	39.3	(26.3, 52.2)
2007	13/54	24.0	(11.6, 36.3)	20/54	36.9	(22.4, 51.3)	21/54	39.2	(24.2, 54.2)
Total	19/280	6.2	(3.1, 9.2)	116/280	41	(34.5, 47.5)	145/280	52.8	(46.2, 59.5)

8.7 Currently pregnant women: ANC clinic attendance

Indicator	Unweighted n/N	Weighted %	95% CI
8.7 Women aged 15-49 years currently pregnant at the time of KAIS			
	Women		
Currently pregnant	587/8894	7.0	(6.2, 7.8)
Not pregnant	8185/8894	91.8	(90.9, 92.6)
Don't know	122/8894	1.2	(1.0, 1.5)
Fig 8.7 ANC attendance among currently pregnant women aged 15-49 years, by gestational age			
	Currently pregnant women		
1-3 months	8/143	6.3	(1.9, 10.7)
4-6 months	68/143	33.5	(26.9, 40.2)

APPENDIX B.8: PREVENTION OF MOTHER-TO-CHILD TRANSMISSION AND FAMILY PLANNING

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI

8.8 Currently pregnant women: HIV testing, HIV status and CD4 cell count

8.8 Testing history among currently pregnant women aged 15-49 years

	Currently pregnant women		
Previously tested for HIV	358/574	66.1	(60.4, 71.7)
Not previously tested for HIV	216/574	33.9	(28.3, 39.6)

8.8 KAIS test results among currently pregnant women aged 15-49 years

	Currently pregnant women		
HIV-infected	52/518	9.0	(6.2, 11.8)
HIV-uninfected/ indeterminate	466/518	91.0	(88.2, 93.8)

8.8 HIV prevalence among currently pregnant women aged 15-49 years , by province

	Currently pregnant women		
Nairobi	10/50	15.0	(2.7, 27.2)
Central	3/41	3.5	(0, 8.0)
Coast	4/70	10.2	(0, 20.7)
Eastern	3/65	3.1	(0, 8.1)
North Eastern	0/24	--	--
Nyanza	20/104	18.2	(10.6, 25.8)
Rift Valley	5/84	6.0	(0.52, 11.5)
Western	7/80	6.6	(0.77, 12.3)
Total	52/518	9	(6.2, 11.8)

8.8 Testing history and test results among currently pregnant HIV-infected women aged 15-49 years

	HIV-infected pregnant women		
Self-reported positive HIV test result	4/50	8.2	(0, 17.1)
Self-reported negative HIV test result	19/50	38.7	(22.0, 55.5)
Never tested / Never received results	27/50	53.1	(37.0, 69.1)

Fig 8.8 CD4 counts among currently pregnant HIV-infected women aged 15-49 years

	HIV-infected pregnant women		
<250	9/48	22.9	(8.8, 37.1)
250-349	4/48	9.2	(0, 19.4)
350-499	4/48	6.9	(0.12, 13.6)
500+	31/48	61.0	(46.5, 75.4)

8.9 Currently pregnant women: HIV, HSV-2, and syphilis

Fig 8.9a HIV and HSV-2 co-infection among currently pregnant women aged 15-49 years

	Currently pregnant women		
HIV only	9/514	1.8	(0.42, 3.1)
HSV-2 only	162/514	32.9	(27.4, 38.4)
Both HIV and HSV-2	42/514	7.1	(4.7, 9.5)
Neither HIV nor HSV-2	301/514	58.2	(52.8, 63.7)

8.9 HSV-2 infection among currently pregnant women aged 15-49 years, by HIV infection status

	HIV-infected			HIV-uninfected/Indeterminate		
HSV-2-infected	42/51	80.1	(66.9, 93.4)	162/463	36.1	(30.3, 41.9)
HSV-2-uninfected/ indeterminate	9/51	19.9	(6.6, 33.1)	301/463	63.9	(58.1, 69.7)

APPENDIX B.8: PREVENTION OF MOTHER-TO-CHILD TRANSMISSION AND FAMILY PLANNING

Fig 8.9b HIV and syphilis infection among currently pregnant women aged 15-49 years

Indicator	Currently pregnant women Unweighted n/N	Weighted %	95% CI
HIV only	51/514	8.9	(6.1, 11.6)
Syphilis only	7/514	1.6	(0.42, 2.7)
Both HIV and syphilis	0/514	--	--
Neither HIV nor syphilis	456/514	89.5	(86.5, 92.6)

8.9 Syphilis infection among currently pregnant women aged 15-49 years, by HIV infection status

Indicator	HIV-infected Unweighted n/N	Weighted %	95% CI	HIV-uninfected/Indeterminate Unweighted n/N	Weighted %	95% CI
Syphilis-infected	0/51	--	--	7/463	1.7	(0.46, 3.0)
Syphilis-uninfected/ indeterminate	51/51	100.0	(100, 100)	456/463	98.3	(97.0, 99.5)

8.10 HIV status and sexual partnerships

Fig 8.10a Knowledge of partners' HIV status among HIV-uninfected currently pregnant or breastfeeding women who reported having unprotected sex in the last 12 months

Indicator	HIV-uninfected pregnant women Unweighted n/N	Weighted %	95% CI	HIV-uninfected breastfeeding women Unweighted n/N	Weighted %	95% CI
Reported partner is HIV-infected	5/464	1.4	(0, 3.1)	11/1747	0.67	(0.25, 1.1)
Reported partner is HIV-uninfected	108/464	25.9	(20.4, 31.4)	375/1747	21.8	(19.1, 24.4)
Did not know status of partner	351/464	72.7	(67.5, 77.9)	1361/1747	77.6	(74.9, 80.2)

Fig 8.10b Actual HIV status of primary partner among HIV-uninfected currently pregnant and currently breastfeeding women

Indicator	HIV-uninfected pregnant women Unweighted n/N	Weighted %	95% CI	HIV-uninfected breastfeeding women Unweighted n/N	Weighted %	95% CI
HIV-infected	10/199	4.5	(1.8, 7.1)	28/812	3.0	(1.7, 4.3)
HIV-uninfected/ Indeterminate	189/199	95.5	(92.9, 98.2)	784/812	97	(95.7, 98.3)

8.11 Fertility desires

Fig 8.11a Desire for a child in the future among married or cohabiting women aged 15-49 years

Indicator	Women Unweighted n/N	Weighted %	95% CI
Want a child, time unspecified	188/5406	3.0	(2.2, 3.7)
Want a child in ≤ 2 years	1192/5406	20.1	(18.5, 21.7)
Want a child in >2 years	1014/5406	19.6	(18.2, 21.0)
Do not want a child	2630/5406	50.9	(48.7, 53.2)
Unsure if want a child	382/5406	6.4	(5.7, 7.2)

Fig 8.11b Desire for a child in the future among married or cohabiting women aged 15-49 years, by self-reported HIV status

Indicator	Self-reported positive HIV test Unweighted n/N	Weighted %	95% CI	Self-reported negative HIV test Unweighted n/N	Weighted %	95% CI	Never tested/Never received results Unweighted n/N	Weighted %	95% CI
Want a child, time unspecified	2/62	4.1	(0, 10.3)	52/2575	2.3	(1.5, 3.1)	98/2547	2.9	(2.0, 3.7)
Want a child in ≤ 2 years	8/62	8.1	(2.1, 14.1)	513/2575	19.3	(17.4, 21.2)	591/2547	20.5	(18.5, 22.5)
Want a child in >2 years	6/62	10.5	(1.3, 19.7)	690/2575	27.1	(25.1, 29.1)	293/2547	12.1	(10.4, 13.8)
Do not want a child	45/62	76.3	(64.5, 88.1)	1160/2575	45.6	(42.5, 48.6)	1377/2547	57.6	(54.9, 60.2)
Unsure if want a child	1/62	1.1	(0, 3.3)	160/2575	5.8	(4.7, 6.8)	188/2547	7.0	(5.9, 8.1)

Fig 8.11c Desire for a child in the future among married or cohabiting women aged 15-49 years, by HIV infection status

Indicator	HIV-infected women Unweighted n/N	Weighted %	95% CI	HIV-uninfected women Unweighted n/N	Weighted %	95% CI
Want a child, time unspecified	12/377	2.4	(0.51, 4.3)	138/4402	2.9	(2.2, 3.7)
Want a child in ≤ 2 years	89/377	24.0	(18.84, 29.1)	949/4402	19.2	(17.4, 21.0)
Want a child in >2 years	70/377	18.6	(14.06, 23.1)	817/4402	19.3	(17.6, 21.0)
Do not want a child	182/377	48.2	(42.67, 53.8)	2191/4402	51.9	(49.3, 54.6)
Unsure if want a child	24/377	6.9	(3.64, 10.1)	307/4402	6.6	(5.7, 7.5)

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI

8.12 Contraceptive use

Fig 8.12a Contraceptive use[4] among married or cohabiting women aged 15-49 years not wanting a child ever in the future or wanting a child but not in the next two years

	Women		
Using Modern Contraception	1518/3263	45.0	(42.6, 47.4)
Using Traditional Methods	80/3263	2.6	(1.9, 3.3)
Not Using Contraception	1665/3263	52.4	(50.1, 54.7)

Fig 8.12b Contraceptive use[4] among married or cohabiting women aged 15-49 years not wanting a child ever in the future or wanting a child but not in the next two years, by self-reported knowledge of HIV status

	Self-reported positive HIV test			Self-reported negative HIV test			Never tested/never received results		
Using Modern Contraception	21/47	52.0	(36.8, 67.1)	827/1623	49.4	(46.2, 52.6)	650/1532	41.4	(37.8, 44.9)
Using Traditional Methods	0/47	--	--	43/1623	2.7	(1.7, 3.7)	36/1532	2.6	(1.4, 3.8)
Not Using Contraception	26/47	48.0	(32.9, 63.2)	753/1623	47.9	(44.8, 51)	846/1532	56.0	(52.6, 59.5)

Fig 8.12c Contraceptive use[4] among married or cohabiting women aged 15-49 years not wanting a child ever in the future or wanting a child but not in the next two years, by actual HIV infection status

	HIV-infected women			HIV-uninfected women		
Using Modern Contraception	89/219	40.5	(33.1, 48)	1272/2705	45.6	(43.1, 48.1)
Using Traditional Methods	4/219	1.6	(0, 3.3)	69/2705	2.7	(2, 3.4)
Not Using Contraception	126/219	57.9	(50.2, 65.5)	1364/2705	51.8	(49.4, 54.2)

[1] "Secondary+" includes any years of secondary schooling whether completed or not

[2] The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, water access and sanitation facilities. The wealth index placed households on a continuous scale of relative wealth using principal components analysis. Individuals were ranked according to the score of the household in which they resided and the sample was divided into five groups, each with an equal number of individuals (quintiles), ranging from the lowest to highest level of wealth.

[3] Knowledge of ART for PMTCT was only assessed among those who identified at least one mode of MTCT

[4] "Modern contraception" includes male or female sterilization, oral pill, intrauterine device, injections, implant, condom, and female condom. "Traditional methods" include withdrawal and rhythm/natural methods.

8.8 Population estimate of currently pregnant HIV-infected women (15-49 years old), by province, Kenya 2007

Province	2007 Projected female population (women 15-49 years old)[5,6]	Women HIV-infected and currently pregnant[7] (%)	Estimated female population (women 15-49 years old) HIV-infected and currently pregnant[6,8]	95% CI[9]
National	**9,228,000**	**0.63**	**58,000**	**(41 000, 76 000)**
Nairobi	887,000	1.18	10,000	(3 000, 18 000)
Central	1,200,000	0.14	2,000	(0, 4 000)
Coast	809,000	0.83	7,000	(0, 13 000)
Eastern	1,421,000	0.18	3,000	(0, 7 000)
North Eastern	294,000	--	--	--
Nyanza	1,358,000	1.48	20,000	(11 000, 29 000)
Rift Valley	2,227,000	0.46	10,000	(1 000, 20 000)
Western	1,031,000	0.50	5,000	(0, 10 000)

[5] Source: Revised Population Projections for Kenya 2000-2020 (Kenya National Bureau of Statistics. August 2006).

[6] Figures rounded to the nearest 1000.

[7] Weighted percent estimate of current pregnancy and HIV-infection from the 2007 KAIS rounded to one-hundredth of a percent.

[8] Estimate obtained by multiplying projected base population by the weighted KAIS estimate.

[9] Confidence intervals were calculated by multiplying projected base population by the lower and upper bounds (rounded to one-hundredth of a percent) of the corresponding KAIS estimate.

APPENDIX B.9: BLOOD AND INJECTION SAFETY

9.3 Blood donations among adults

9.3 Donation history

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	Women			Men			Total		
Donated blood in year before survey	140/10239	1.1	(0.87, 1.4)	305/7701	4.0	(3.4, 4.6)	445/17940	2.3	(2.0, 2.6)

Fig 9.3a Source of blood donation request

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	Women			Men			Total		
NBTS	63/119	56.6	(46.0, 67.2)	127/272	45.4	(38.0, 52.8)	190/391	48.3	(42.5, 54.1)
Replacement	39/119	28.5	(18.6, 38.4)	120/272	44.6	(37.4, 51.8)	159/391	40.4	(34.4, 46.3)
Other request	17/119	14.9	(7.0, 22.8)	25/272	10.0	(5.6, 14.5)	42/391	11.3	(7.5, 15.1)

Fig 9.3b Source of blood donation request by province

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	NBTS			Replacement			Other		
Nairobi	76/190	33.4	(23.9, 42.9)	48/159	18.6	(13.0, 24.1)	16/42	29.1	(12.4, 45.8)
Central	33/190	19.8	(13.1, 26.4)	20/159	15.5	(8.9, 22.1)	4/42	14.4	(1.3, 27.5)
Coast	12/190	4.3	(1.6, 7.1)	16/159	9.6	(5.1, 14.1)	4/42	4.1	(0.0, 9.5)
Eastern	10/190	6.1	(2.2, 9.9)	18/159	14.5	(8.3, 20.7)	5/42	13.6	(1.7, 25.5)
North Eastern	2/190	0.33	(0.0, 1.0)	3/159	0.70	(0.0, 1.5)	0/42	0	(0.0, 0.0)
Nyanza	21/190	14.5	(7.7, 21.2)	24/159	19.9	(11.4, 28.3)	3/42	10.1	(0.0, 21.7)
Rift Valley	18/190	12.7	(6.5, 19.0)	14/159	11.2	(5.3, 17.1)	4/42	15.9	(0.0, 32.8)
Western	18/190	8.9	(5.0, 12.8)	16/159	10.1	(4.6, 15.6)	6/42	12.9	(0.48, 25.2)

Fig 9.3b Source of blood donation request by province - continued

Indicator	Unweighted n/N	Weighted %	95% CI
	Total		
Nairobi	140/391	26.9	(20.7, 33.1)
Central	57/391	17.4	(12.4, 22.4)
Coast	32/391	6.4	(3.8, 9.1)
Eastern	33/391	10.3	(6.7, 13.9)
North Eastern	5/391	0.44	(0.0, 1.1)
Nyanza	48/391	16.2	(10.7, 21.6)
Rift Valley	36/391	12.5	(8.2, 16.7)
Western	40/391	9.8	(6.6, 13.1)

Fig 9.3c Source of blood donation request among women and men

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	NBTS			Replacement			Other		
Women	63/190	30.8	(22.3, 39.4)	39/159	18.6	(11.7, 25.5)	17/42	34.7	(17.3, 52.0)
Men	127/190	69.2	(60.6, 77.7)	120/159	81.4	(74.5, 88.3)	25/42	65.3	(48.0, 82.7)

Fig 9.3c Source of blood donation request among women and men - continued

Indicator	Unweighted n/N	Weighted %	95% CI
	Total		
Women	119/391	26.3	(20.9, 31.8)
Men	272/391	73.7	(68.2, 79.1)

Fig 9.3d Source of blood donation request by age group (in years)

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	NBTS			Replacement			Other		
15-24	127/190	69.2	(61.7, 76.6)	26/159	17.5	(10.3, 24.6)	20/42	51.4	(32.6, 70.2)
25-29	22/190	10.4	(5.8, 14.9)	33/159	21.7	(14.2, 29.3)	13/42	31.5	(13.4, 49.6)
30-39	20/190	11.5	(6.1, 16.8)	55/159	32.4	(24.3, 40.4)	4/42	5.1	(0.0, 11.5)
40-49	12/190	5.3	(1.9, 8.6)	28/159	18.1	(11.4, 24.8)	2/42	6.1	(0.0, 14.1)
50-59	8/190	3.6	(0.31, 7.0)	16/159	9.3	(4.5, 14.1)	3/42	6.0	(0.0, 13.8)
60-64	1/190	0.09	(0.0, 0.26)	1/159	1.1	(0.0, 3.1)	0/42	0	(0.0, 0.0)

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Fig 9.3d Origins of blood donation request by age group (in years) - continued

Indicator	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
15-24	173/391	46.3	(40.7, 51.8)
25-29	68/391	17.3	(12.8, 21.9)
30-39	79/391	19.2	(15.2, 23.2)
40-49	42/391	10.5	(7.2, 13.8)
50-59	27/391	6.2	(3.6, 8.8)
60-64	2/391	0.47	(0.0, 1.3)

Fig 9.3e HIV prevalence by source of blood donation request

Indicator	NBTS: Unweighted n/N	NBTS: Weighted %	NBTS: 95% CI	Replacement: Unweighted n/N	Replacement: Weighted %	Replacement: 95% CI	Other: Unweighted n/N	Other: Weighted %	Other: 95% CI
HIV positive	5/164	2.5	(0.16, 4.8)	7/139	7.4	(1.5, 13.3)	1/35	2.8	(0.0, 8.2)

Fig 9.3e HIV prevalence by source of blood donation request - continued

Indicator	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
HIV positive	13/338	4.4	(1.9, 7.0)

9.4 Blood transfusions

9.4 History of blood transfusion

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
Ever received a blood transfusion	695/10239	7.1	(6.4, 7.8)	434/7701	6.2	(5.1, 7.3)	1129/17940	6.7	(6.1, 7.4)

Fig 9.4a Time since last blood transfusion (in years)

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
Past year	103/678	17.1	(12.8, 21.5)	72/421	17.6	(13.4, 21.8)	175/1099	17.3	(14.3, 20.4)
1-2 years	50/678	7.1	(4.8, 9.3)	42/421	8.9	(5.1, 12.8)	92/1099	7.8	(5.7, 9.9)
3-5 years	96/678	15.5	(11.8, 19.2)	67/421	20.3	(14.4, 26.2)	163/1099	17.4	(14.6, 20.2)
5-10 years	114/678	14.8	(11.6, 17.9)	90/421	18.5	(13.8, 23.2)	204/1099	16.2	(13.5, 19.0)
11+ years	315/678	45.5	(40.9, 50.1)	150/421	34.7	(29.3, 40.1)	465/1099	41.2	(37.7, 44.7)

Fig 9.4b HIV prevalence by time since last blood transfusion (in years)

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
Past year	6/87	3.3	(0.0, 6.7)	4/60	4.1	(0.0, 9.0)	10/147	3.6	(0.82, 6.5)
1-2 years	6/41	14.5	(2.9, 26.2)	3/35	4.2	(0.0, 10.6)	9/76	9.6	(2.3, 16.8)
3-5 years	7/81	11.1	(2.5, 19.7)	2/56	2.1	(0.0, 5.2)	9/137	7.0	(1.7, 12.3)
5-10 years	12/108	13.9	(5.3, 22.5)	6/75	0.40	(0.0, 0.95)	14/183	8.2	(3.5, 12.9)
11+ years	21/282	8.1	(4.2, 12.0)	6/138	4.1	(0.76, 7.5)	27/420	6.8	(3.9, 9.6)
Total	55/611	9.6	(6.4, 12.9)	17/375	2.9	(1.2, 4.6)	72/986	7.0	(4.8, 9.2)

9.5 Medical injections

9.5 History of injection in the past year

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
Medical injection	3911/10239	38.3	(36.7, 39.8)	2004/7701	26.1	(24.7, 27.5)	5915/17940	33.1	(31.9, 34.3)
Traditional healer injection	42/10239	0.43	(0.28, 0.58)	36/7701	0.50	(0.27, 0.72)	78/17940	0.46	(0.33, 0.58)

Fig 9.5a Preference of injections or pills among women and men

Indicator	Women: Unweighted n/N	Women: Weighted %	Women: 95% CI	Men: Unweighted n/N	Men: Weighted %	Men: 95% CI	Total: Unweighted n/N	Total: Weighted %	Total: 95% CI
Injection	5172/10238	51.2	(49.8, 52.6)	2948/7701	38.3	(36.9, 39.7)	8120/17939	45.7	(44.6, 46.8)
Pills	4708/10238	46.0	(44.5, 47.4)	4430/7701	57.8	(56.3, 59.3)	9138/17939	51.0	(49.9, 52.1)
No preference	358/10238	2.8	(2.3, 3.4)	323/7701	3.8	(3.3, 4.4)	681/17939	3.3	(2.8, 3.7)

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Fig 9.5b Number of medical injections in the past year

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
1	933/3911	25.3	(23.8, 26.9)	641/2004	33.7	(30.2, 37.3)	1574/5915	28.2	(26.4, 29.9)
2 to 3	1735/3911	43.9	(42.0, 45.8)	843/2004	41.2	(38.3, 44.1)	2578/5915	43.0	(41.5, 44.5)
4 to 10	1058/3911	25.6	(23.9, 27.4)	459/2004	22.2	(20.0, 24.4)	1517/5915	24.5	(23.0, 26.0)
11+	185/3911	5.2	(4.1, 6.2)	61/2004	2.9	(2.1, 3.6)	246/5915	4.4	(3.7, 5.1)

9.5 Medical injections

Fig 9.5c HIV Prevalence by reported history of medical injections in the past year

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
At least 1	335/3506	9.9	(8.6, 11.2)	141/1797	7.7	(6.2, 9.2)	476/5303	9.2	(8.0, 10.3)
None	400/5543	7.4	(6.4, 8.3)	228/5007	4.5	(3.9, 5.2)	628/10550	6.0	(5.4, 6.7)

Fig 9.5d HIV Prevalence by number of medical injections in the past year

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
1	77/822	10.2	(7.5, 12.9)	33/567	5.7	(3.2, 8.2)	110/1389	8.4	(6.2, 10.5)
2-3	134/1549	8.1	(6.5, 9.6)	59/757	7.8	(5.7, 9.9)	193/2306	8.0	(6.6, 9.3)
4-10	105/968	11.6	(9.1, 14.1)	45/418	10.5	(7.2, 13.8)	150/1386	11.2	(9.2, 13.2)
11+	19/167	15.4	(8.0, 22.8)	4/55	7.8	(0.0, 16.3)	23/222	13.9	(7.9, 19.8)

9.5 Saw the health worker remove needle and syringe from unopened packet among persons who received a medical injection in the past year

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
Yes	3723/3909	95.7	(94.9, 96.5)	1880/2004	94.6	(93.4, 95.8)	5603/5913	95.3	(94.7, 95.9)
No	57/3909	1.3	(0.91, 1.7)	39/2004	1.6	(1.1, 2.2)	96/5913	1.4	(1.1, 1.7)
Don't know	129/3909	3.0	(2.3, 3.7)	85/2004	3.8	(2.8, 4.7)	214/5913	3.3	(2.7, 3.8)

9.5 Number of medical injections in the past year by self-reported HIV status

Indicator	Self-reported positive Unweighted n/N	Self-reported positive Weighted %	Self-reported positive 95% CI	Self-reported negative Unweighted n/N	Self-reported negative Weighted %	Self-reported negative 95% CI	Never tested or never received results Unweighted n/N	Never tested or never received results Weighted %	Never tested or never received results 95% CI
1	26/93	25.0	(16.9, 33.1)	18/66	24.4	(13.8, 35.1)	8/27	26.3	(10.1, 42.5)
2 to 3	30/93	26.8	(18.2, 35.5)	22/66	28.4	(18.3, 38.5)	8/27	23.1	(7.5, 38.8)
4 to 10	28/93	33.9	(24.2, 43.7)	19/66	30.4	(18.3, 42.5)	9/27	42.5	(23.7, 61.3)
11+	9/93	14.2	(5.6, 22.9)	7/66	16.8	(5.4, 28.1)	2/27	8.1	(0, 18.6)

9.3 Population estimate of adults (15-64 years old) that donated blood in the past year, Kenya 2007

	2007 Projected adult population (women and men 15-64 years old)[1,2]	Percent that donated blood in the past year[3]	Estimated adult population (women and men 15-64 years old) that donated blood in the past year[2,4]	95% CI[5]
National	19,984,000	2.30	460,000	(400,000, 520,000)

9.3 Population estimate of adults (15-64 years old) that donated blood to NBTS the past year, Kenya 2007

	2007 Projected adult population (women and men 15-64 years old)[1,2]	Percent that donated blood to NBTS in the past year[3]	Estimated adult population (women and men 15-64 years old) that donated blood to NBTS in the past year[2,4]	95% CI[5]
National	19,984,000	0.99	198,000	(160,000, 240,000)

9.3 Population estimate of adults (15-64 years old) that donated blood as a replacement donor in the past year, Kenya 2007

	2007 Projected adult population (women and men 15-64 years old)[1,2]	Percent that donated blood as a replacement donor in the past year[3]	Estimated adult population (women and men 15-64 years old) that donated blood as a replacement donor in the past year[2,4]	95% CI[5]
National	19,984,000	0.83	166,000	(136,000, 196,000)

APPENDIX B.9: BLOOD AND INJECTION SAFETY

9.3 Population estimate of adults (15-64 years old) that donated blood to other places in the past year, Kenya 2007

	2007 Projected adult population (women and men 15-64 years old)[1,2]	Percent that donated blood to other places in the past year[3]	Estimated adult population (women and men 15-64 years old) that donated blood to other places in the past year[2,4]	95% CI[5]
National	19,984,000	0.23	46,000	(28,000, 64,000)

9.4 Population estimate of adults (15-64 years old) that ever received a blood transfusion in the past year, Kenya 2007

	2007 Projected adult population (women and men 15-64 years old)[1,2]	Percent that ever received a blood transfusion[3]	Estimated adult population (women and men 15-64 years old) that ever received a blood transfusion[2,4]	95% CI[5]
National	19,984,000	1.11	222,000	(170,000, 274,000)

9.5 Population estimate of adults (15-64 years old) that received at least one medical injection in the past year, Kenya 2007

	2007 Projected adult population (women and men 15-64 years old)[1,2]	Percent that received at least one medical injection in the past year[3]	Estimated adult population (women and men 15-64 years old) that received at least one medical injection in the past year[2,4]	95% CI[5]
National	19,984,000	33.10	6,610,000	(6,375,000, 6,855,000)

[1] Source: Revised Population Projections for Kenya 2000-2020 (Kenya National Bureau of Statistics, August 2006)

[2] Figures rounded to the nearest 1,000

[3] Weighted estimates from the 2007 KAIS rounded to one-hundredth of a percent

[4] Estimate obtained by multiplying projected base population by the weighted national KAIS estimate.

[5] Confidence intervals obtained by multiplying projected population by lower and upper bounds (rounded to one-hundredth of a percent) of the corresponding 2007 KAIS estimate.

APPENDIX B.10: CARE AND TREATMENT OF ADULTS INFECTED WITH HIV

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI

10.3 Cotrimoxazole prophylaxis for HIV-infected adults

Fig 10.3a Cotrimoxazole coverage among all HIV-infected individuals

	HIV-infected individuals		
Aware of HIV status/Taking cotrimoxazole	125/1104	12.1	(9.3, 15.0)
Aware of HIV status/Not taking cotrimoxazole	39/1104	3.8	(2.4, 5.2)
Unaware of HIV status/Not taking cotrimoxazole	940/1104	84.1	(80.9, 87.2)

Fig 10.3b Cotrimoxazole coverage among all HIV-infected individuals, by province

	HIV-infected individuals		
Nairobi	13/140	13.6	(3.9, 23.3)
Central	11/77	15.8	(5.7, 25.9)
Coast	7/132	4.2	(1.1, 7.3)
Eastern	6/109	6.5	(1.8, 11.2)
North Eastern	1/7	--	--
Nyanza	56/362	16.3	(9.7, 22.9)
Rift Valley	11/161	8.0	(3.4, 12.6)
Western	20/116	16.2	(7.5, 24.9)

10.3 Cotrimoxazole coverage among all HIV-infected individuals, by sex

	HIV-infected individuals		
Women	88/735	13.3	(10.0, 16.7)
Men	37/369	9.7	(6.3, 13.0)

10.3 Cotrimoxazole coverage among all HIV-infected individuals, by age

	HIV-infected individuals		
15-24	10/214	4.7	(1.7, 7.7)
25-29	12/182	7.0	(2.3, 11.7)
30-39	55/378	15.3	(10.1, 20.4)
40-49	34/219	17.8	(10.8, 24.8)
50-59	12/96	12.7	(5.3, 20.2)
60-64	2/15	--	--

10.3 Cotrimoxazole coverage among all HIV-infected individuals, by education

	HIV-infected individuals		
No primary	11/112	9.4	(3.3, 15.5)
Incomplete primary	34/364	9.6	(5.7, 13.4)
Complete primary	53/318	19.2	(13.1, 25.2)
Secondary+[1]	27/310	9.0	(5.3, 12.7)

10.3 Cotrimoxazole coverage among all HIV-infected individuals, by marital status

	HIV-infected individuals		
Never married/cohabited	3/146	6.6	(0, 14.0)
Currently married/cohabiting	75/692	10.9	(7.6, 14.2)
Monogamous	61/570	10.7	(7.5, 14.0)
Polygamous	14/122	11.7	(4.1, 19.3)
Separated/divorced	10/117	8.1	(1.8, 14.4)
Widowed	37/149	25.3	(16.5, 34.2)

10.3 Cotrimoxazole coverage among all HIV-infected individuals, by residence

	HIV-infected individuals		
Urban	24/331	10.8	(5.8, 15.8)
Rural	101/773	12.6	(9.2, 16.1)

Fig 10.3a Cotrimoxazole access among HIV-infected individuals aware of their status

	HIV-infected individuals aware of their status		
Aware of HIV status/Taking cotrimoxazole	125/164	76.1	(68.4, 83.8)
Aware of HIV status/Not taking cotrimoxazole	39/164	23.9	(16.2, 31.6)

APPENDIX B.10: CARE AND TREATMENT OF ADULTS INFECTED WITH HIV

10.3 Cotrimoxazole access among HIV-infected individuals aware of their status, by sex

Indicator	Unweighted n/N	Weighted %	95% CI
	HIV-infected individuals aware of their status		
Women	88/114	77.8	(69.1, 86.4)
Men	37/50	71.6	(58.1, 85.1)

Fig 10.3d Source of Cotrimoxazole

Indicator	Unweighted n/N	Weighted %	95% CI
	HIV-Infected individuals taking cotrimoxazole		
Public sector	100/125	74.5	(65.6, 83.4)
Private sector and other facilities	25/125	25.5	(16.6, 34.4)

10.4 ARV eligibility, coverage and access

10.4 ARV use among all HIV-infected individuals

Indicator	Unweighted n/N	Weighted %	95% CI
	HIV-infected individuals		
Persons on ARV	92/1104	9.7	(7.1, 12.3)
Persons not on ARV	1012/1104	90.3	(87.7, 92.9)

Table 10.4 CD4 cell count distribution among HIV-infected individuals not taking ARVs

Indicator	Unweighted n/N	Weighted %	95% CI
	HIV-infected individuals not taking ARVs		
<250	172/936	18.1	(15.1, 21.0)
250-349	104/936	12.1	(9.8, 14.4)
350+	660/936	69.8	(66.3, 73.4)

Fig 10.4a ARV coverage among eligible HIV-infected individuals, based on eligibility criteria

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	Based on CD4 count <250 cells/μL			Based on CD4 count <350 cells/μL		
Persons on ARV	92/254	40.5	(32.2, 48.8)	92/357	28.6	(22.0, 35.2)
Persons eligible, aware of status but NOT taking ARV	10/254	3.7	(1.2, 6.2)	24/357	6.6	(3.8, 9.4)
Persons eligible, unaware of status and not taking ARV	152/254	55.8	(47.6, 64.0)	241/357	64.8	(57.8, 71.7)

Fig 10.4b ARV coverage among eligible (CD4 <250 cells/μL) HIV-infected individuals, by province

Indicator	Unweighted n/N	Weighted %	95% CI
	HIV-infected individuals with CD4 <250 cells/μL		
Nairobi	13/38	47.3	(17.1, 77.5)
Central	8/16	--	--
Coast	4/32	10.9	(6.0, 15.8)
Eastern	5/21	--	--
North Eastern	0/0	--	--
Nyanza	37/86	45.6	(31.6, 59.7)
Rift Valley	10/31	38.9	(20.2, 57.6)
Western	15/30	48.5	(27.6, 69.5)

10.4 ARV coverage among eligible (CD4 <250 cells/μL) HIV-infected individuals, by sex

Indicator	Unweighted n/N	Weighted %	95% CI
	HIV-infected individuals with CD4 <250 cells/μL		
Women	63/162	44.4	(34.1, 54.6)
Men	29/92	32.5	(21.0, 43.9)

10.4 ARV coverage among eligible (CD4 <250 cells/μL) HIV-infected individuals, by age

Indicator	Unweighted n/N	Weighted %	95% CI
	HIV-infected individuals with CD4 <250 cells/μL		
15-24	7/33	21.9	(6.8, 37.0)
25-29	8/32	28.5	(7.5, 49.5)
30-39	34/100	39.2	(27.8, 50.6)
40-49	30/68	49.9	(35.0, 64.9)
50-59	12/26	47.8	(27.1, 68.6)
60-64	1/5	--	--

10.4 ARV coverage among eligible (CD4 <250 cells/μL) HIV-infected individuals, by education

Indicator	Unweighted n/N	Weighted %	95% CI
	HIV-infected individuals with CD4 <250 cells/μL		
No primary	16/25	37	(15.9, 58.1)
Incomplete primary	21/80	31.6	(18.2, 44.9)
Complete primary	36/80	51.1	(38.6, 63.7)
Secondary+[1]	26/69	38.2	(25.1, 51.4)

APPENDIX B.10: CARE AND TREATMENT OF ADULTS INFECTED WITH HIV

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
10.4 ARV coverage among eligible (CD4 <250 cells/μL) HIV-infected individuals, by marital status						
	HIV-infected individuals with CD4 <250 cells/μL					
Never married/cohabited	3/27	30.5	(2.8, 58.3)			
Currently married/cohabiting	53/156	41.1	(25.0, 43.1)			
Monogamous	42/130	32.4	(22.8, 42.0)			
Polygamous	11/26	43.7	(22.7, 64.7)			
Separated/divorced	7/23	--	--			
Widowed	29/48	66.3	(52.1, 80.5)			
10.4 ARV coverage among eligible (CD4 <250 cells/μL) HIV-infected individuals, by residence						
	HIV-infected individuals with CD4 <250 cells/μL					
Urban	20/75	39.2	(20.5, 58.0)			
Rural	72/179	41.2	(32.7, 49.6)			
Fig 10.4a ARV access among eligible (CD4 <250 cells/μL) HIV-infected individuals aware of their status						
	Based on CD4 count <250 cells/μL			**Based on CD4 count <350 cells/μL**		
Persons on ARV	92/102	91.6	(86.0, 97.2)	92/116	81.2	(73.5, 89.0)
Persons eligible, and aware of status but not taking ARV	10/102	8.4	(2.8, 14.0)	24/116	18.8	(11.1, 26.5)
10.4 ARV access among eligible (CD4 <250 cells/μL) HIV-infected individuals aware of their status, by sex						
	HIV-infected individuals aware of their status with CD4 <250 cells/μL					
Women	63/70	91.7	(85.6, 97.7)			
Men	29/32	91.5	(82.8, 100)			
10.4 Knowledge of status among eligible (CD4 <250 cells/μL) HIV-infected individuals not on treatment						
	HIV-infected individuals with CD4 <250 cells/μL, not on treatment					
Aware of HIV infection	10/162	6.2	(2.2, 10.2)			
Unaware of HIV infection	152/162	93.8	(89.8, 97.8)			
10.4 Knowledge of anti-retroviral drugs (ARVs) among HIV-infected individuals aware of their status but not on treatment						
	HIV-infected individuals aware of their status, not on treatment					
Had heard of "anti-retroviral drugs (ARVs)"	42/72	57.7	(45.2, 70.3)			
Had not heard of "anti-retroviral drugs (ARVs)"	30/72	42.3	(29.7, 54.8)			
Fig 10.4d Received CD4 test among HIV-infected individuals aware of their status						
	HIV-infected individuals aware of their status					
Not offered a CD4 test	58/164	34.0	(25.2, 42.8)			
Offered, did not receive CD4 test	4/164	2.1	(0.01, 4.2)			
Offered and received CD4 Test	102/164	63.9	(55.2, 72.7)			
10.4 Received CD4 test among HIV-infected individuals aware of their status who were offered a CD4 test						
	HIV-infected individuals aware of their status, offered a CD4 test					
Offered, did not receive a CD4 test	4/106	3.2	(0.05, 6.3)			
Received CD4 test	102/106	96.8	(93.7, 100)			

[1]"Secondary+" includes any years of secondary schooling whether completed or not

APPENDIX B.10: CARE AND TREATMENT OF ADULTS INFECTED WITH HIV

10.3 Population estimate of HIV-infected adults (15-64 years old) taking cotrimoxazole, Kenya 2007

	2007 Projected adult population (women and men 15-64 years old)[2,3]	HIV-infected and taking cotrimoxazole[4] (%)	Estimated HIV-infected adult population (women and men 15-64 years old) taking cotrimoxazole[3,5]	95% CI[7]
National	19,984,000	0.86	172,000	(128000, 218000)

Fig 10.3c Population estimates of HIV-infected adults (15-64 years old) taking Cotrimoxazole, by province

Province	2007 Projected adult population (women and men 15-64 years old)[2,3]	HIV-infected and taking cotrimoxazole[4] (%)	Estimated HIV-infected adult population (women and men 15-64 years old) taking cotrimoxazole[3,6]	95% CI[7]
Nairobi	2,073,000	1.20	25,000	(6000, 44000)
Central	2,627,000	0.57	15,000	(3000, 28000)
Coast	1,799,000	0.34	6,000	(1000, 11000)
Eastern	3,025,000	0.30	9,000	(2000, 16000)
North Eastern	664,000	--	--	--
Nyanza	2,806,000	2.42	68,000	(39000, 97000)
Rift Valley	4,838,000	0.50	24,000	(7000, 42000)
Western	2,152,000	0.87	19,000	(7000, 31000)

10.3 Population estimate of HIV-infected adults (15-64 years old) not taking cotrimoxazole

	2007 Projected adult population (women and men 15-64 years old)[2,3]	HIV-infected and not taking cotrimoxazole[4] (%)	Estimated HIV-infected adult population (women and men 15-64 years old) not taking cotrimoxazole[3,5]	95% CI[7]
National	19,984,000	6.23	1,245,000	(1131000, 1359000)

Fig 10.3c Population estimates of HIV-infected adults (15-64 years old) not taking cotrimoxazole, by province

Province	2007 Projected adult population (women and men 15-64 years old)[2,3]	HIV-infected and not taking cotrimoxazole[4] (%)	Estimated HIV-infected adult population (women and men 15-64 years old) not taking cotrimoxazole[3,6]	95% CI[7]
Nairobi	2,073,000	7.65	159,000	(109000, 208000)
Central	2,627,000	3.04	80,000	(52000, 108000)
Coast	1,799,000	7.80	140,000	(117000, 164000)
Eastern	3,025,000	4.26	129,000	(89000, 169000)
North Eastern	664,000	--	--	--
Nyanza	2,806,000	12.44	349,000	(301000, 397000)
Rift Valley	4,838,000	5.79	280,000	(211000, 349000)
Western	2,152,000	4.48	96,000	(70000, 123000)

10.4 Population estimate of HIV-infected adults (15-64 years old) taking ARV

	2007 Projected adult population (women and men 15-64 years old)[2,3]	HIV-infected and taking ARV[4] (%)	Estimated HIV-infected adult population (women and men 15-64 years old) taking ARV[3,5]	95% CI[7]
National	19,984,000	0.69	138,000	(98000, 178000)

Fig 10.4c Population estimates of HIV-infected adults (15-64 years old) taking ARV, by province

Province	2007 Projected adult population (women and men 15-64 years old)[2,3]	HIV-infected and taking ARV[4] (%)	Estimated HIV-infected adult population (women and men 15-64 years old) taking ARV[3,6]	95% CI[7]
Nairobi	2,073,000	1.42	29,000	(2000, 57000)
Central	2,627,000	0.45	12,000	(1000, 23000)
Coast	1,799,000	0.21	4,000	(0, 8000)
Eastern	3,025,000	0.27	8,000	(1000, 15000)
North Eastern	664,000	--	--	--
Nyanza	2,806,000	1.58	44,000	(25000, 64000)
Rift Valley	4,838,000	0.49	24,000	(7000, 41000)
Western	2,152,000	0.64	14,000	(5000, 22000)

APPENDIX B.10: CARE AND TREATMENT OF ADULTS INFECTED WITH HIV

10.4 Population estimate of HIV-infected adults (15-64 years old) not taking ARV

	2007 Projected adult population (women and men 15-64 years old)[2,3]	HIV-infected and not taking ARV[4] (%)	Estimated HIV-infected adult population (women and men 15-64 years old) not taking ARV[3,5]	95% CI[7]
National	19,984,000	6.40	1,279,000	(1165000, 1395000)

10.4 Population estimate of HIV-infected adults (15-64 years old) not taking ARV, with CD4 count 350+

	2007 Projected adult population (women and men 15-64 years old)[2,3]	HIV-infected and not taking ARV, with CD4 count 350+[4] (%)	Estimated HIV-infected adult population (women and men 15-64 years old) not taking ARV, with CD4 count 350+[3,5]	95% CI[7]
National	19,984,000	4.13	825,000	(741000, 909000)

10.4 Population estimate of HIV-infected adults (15-64 years old) not taking ARV, with CD4 count 250-349

	2007 Projected adult population (women and men 15-64 years old)[2,3]	HIV-infected and not taking ARV, with CD4 count 250-349[4] (%)	Estimated HIV-infected adult population (women and men 15-64 years old) not taking ARV, with CD4 count 250-349[3,5]	95% CI[7]
National	19,984,000	0.72	144,000	(112000, 174000)

10.4 Population estimate of HIV-infected adults (15-64 years old) not taking ARV but eligible (CD4 count<250)

	2007 Projected adult population (women and men 15-64 years old)[2,3]	HIV-infected and not taking ARV, with CD4 count <250[4] (%)	Estimated HIV-infected adult population (women and men 15-64 years old) not taking ARV, with CD4 count<250[3,5]	95% CI[7]
National	19,984,000	1.07	214,000	(172000, 256000)

Fig 10.4c Population estimates of HIV-infected adults (15-64 years old) not taking ARV but eligible (CD4 count <250), by province

Province	2007 Projected adult population (women and men 15-64 years old)[2,3]	HIV-infected and not taking ARV, with CD4 count <250[4] (%)	Estimated HIV-infected adult population (women and men 15-64 years old) not taking ARV, with CD4 count<250[3,6]	95% CI[7]
Nairobi	2,073,000	1.68	35,000	(14000, 56000)
Central	2,627,000	0.46	12,000	(1000, 24000)
Coast	1,799,000	1.79	32,000	(22000, 42000)
Eastern	3,025,000	0.76	23,000	(8000, 38000)
North Eastern	664,000	--	--	--
Nyanza	2,806,000	2.00	56,000	(38000, 74000)
Rift Valley	4,838,000	0.82	40,000	(17000, 62000)
Western	2,152,000	0.71	15,000	(7000, 24000)

[2] Source: Revised Population Projections for Kenya 2000-2020 (Kenya National Bureau of Statistics. August 2006).

[3] Figures rounded to the nearest 1000.

[4] Weighted percent estimates from the 2007 KAIS rounded to one-hundredth of a percent.

[5] Population estimate obtained by multiplying projected base population by the weighted national KAIS estimate.

[6] Population estimates obtained by multiplying province-specific projected base populations by the appropriate weighted province-specific KAIS estimates.

[7] Confidence intervals were calculated by multiplying projected base population by the lower and upper bounds (rounded to one-hundredth of a percent) of the corresponding KAIS estimate.

APPENDIX B.11: HEALTH CARE UTILIZATION, TUBERCULOSIS, AND BASIC PREVENTION AMONG HIV-INFECTED

	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
11.3 Health care utilization						
Fig 11.3a & Fig 11.3b Health care utilization among HIV-infected adults aged 15-64 years						
	1 or more outpatient facility visits in 4 weeks before interview			**1 or more hospitalizations in 6 months before interview**		
All adults	2552/17940	15.2	(14.4, 16.1)	285/17940	1.6	(1.4, 1.9)
HIV-infected and unaware of status	205/940	22.9	(19.4, 26.4)	30/940	3.2	(2, 4.4)
HIV-infected and aware of status	79/164	51.2	(42.4, 60.0)	21/164	14.1	(8.3, 20)
HIV-infected, aware of status, CD4<250	19/27	75.8	(58.6, 92.9)	4/27	14.9	(0.40, 29.4)
11.3a Knowledge of status	**1 or more outpatient facility visits in 4 weeks before interview**			**1 or more hospitalizations in 6 months before interview**		
Unaware of status	205/940	22.9	(19.4, 26.4)	30/940	3.2	(2.0, 4.4)
Aware of status	79/164	51.2	(42.4, 60.0)	21/164	14.1	(8.3, 20)
11.3b Sex	**1 or more outpatient facility visits in 4 weeks before interview**			**1 or more hospitalizations in 6 months before interview**		
Women	190/735	28.0	(23.9, 32.1)	34/735	5.2	(3.3, 7.1)
Men	94/369	26.2	(20.7, 31.7)	17/369	4.4	(2.3, 6.5)
11.3b Age group (years)	**1 or more outpatient facility visits in 4 weeks before interview**			**1 or more hospitalizations in 6 months before interview**		
15-24	42/214	18.6	(12.3, 24.9)	4/214	1.2	(0, 2.4)
25-49	203/779	28.4	(24.3, 32.5)	39/779	5.3	(3.6, 7.1)
50-64	39/111	36.2	(25.5, 46.9)	8/111	9.0	(2.7, 15.3)
11.3b Province	**1 or more outpatient facility visits in 4 weeks before interview**			**1 or more hospitalizations in 6 months before interview**		
Nairobi	20/140	17.6	(9.2, 26)	4/140	5.7	(0.80, 10.7)
Central	25/77	35.4	(23, 47.8)	3/77	4.8	(0.34, 9.3)
Coast	25/132	16.4	(10.3, 22.6)	6/132	2.8	(0.68, 5)
Eastern	33/109	33.2	(20, 46.4)	8/109	7.1	(2.3, 12)
North Eastern	2/7	--	--	0/7	--	--
Nyanza	119/362	33.5	(27.6, 39.5)	19/362	6.1	(3.2, 9)
Rift Valley	33/161	23.5	(14.9, 32)	4/161	2.2	(0.19, 4.3)
Western	27/116	24.3	(16.9, 31.7)	7/116	5.3	(0.88, 9.8)
11.3b Residence	**1 or more outpatient facility visits in 4 weeks before interview**			**1 or more hospitalizations in 6 months before interview**		
Rural	218/773	28.3	(24.5, 32.2)	38/773	4.8	(3.3, 6.4)
Urban	66/331	25.1	(17.5, 32.7)	13/331	5.3	(2.3, 8.4)
11.3b Marital status	**1 or more outpatient facility visits in 4 weeks before interview**			**1 or more hospitalizations in 6 months before interview**		
Never married/cohabited	17/146	15.8	(7.8, 23.9)	5/146	3.4	(0.17, 6.6)
Currently married/cohabiting	190/692	27.3	(23.1, 31.6)	25/692	3.6	(2.1, 5.0)
Monogamous	151/570	26.7	(22.3, 31.0)	21/570	3.6	(2.1, 5.1)
Polygamous	39/122	30.7	(18.6, 42.7)	4/122	3.3	(0, 7.2)
Separated/divorced	32/117	31.7	(21.6, 41.8)	3/117	2.7	(0, 6.0)
Widowed	45/149	35.2	(25.8, 44.5)	18/149	14.2	(7.2, 21.2)
11.3b Education	**1 or more outpatient facility visits in 4 weeks before interview**			**1 or more hospitalizations in 6 months before interview**		
No primary	29/112	25.5	(17.7, 33.4)	3/112	2.0	(0, 4.7)
Incomplete primary	101/364	29.6	(24.1, 35)	12/364	4.1	(1.6, 6.7)
Complete primary	78/318	27.1	(21.4, 32.8)	20/318	7.5	(4.1, 10.9)
Secondary +[1]	76/310	25.9	(19.3, 32.5)	16/310	4.6	(2.2, 6.9)
11.3b Wealth index[2]	**1 or more outpatient facility visits in 4 weeks before interview**			**1 or more hospitalizations in 6 months before interview**		
Lowest	55/192	26.6	(18.9, 34.3)	5/192	2.2	(0.0, 4.6)
Second	59/212	28.6	(21.8, 35.4)	12/212	5.5	(2.3, 8.7)
Middle	57/198	29.7	(22.9, 36.5)	15/198	9.9	(5.0, 14.8)
Fourth	62/223	33.0	(25.5, 40.4)	8/223	4.5	(1.1, 7.9)
Highest	51/279	20.5	(11.4, 29.6)	11/279	3.1	(1.2, 5.1)

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	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
Fig 11.3c Rates of hospitalization and CD4 cell counts among all HIV-infected adults						
	1 or more outpatient facility visits in 4 weeks before interview			**1 or more hospitalizations in 6 months before interview**		
<250	62/189	35.2	(27.7, 42.8)	17/189	8.2	(4.3, 12.2)
250-349	29/120	24.8	(15.7, 34.0)	7/120	6.4	(0.61, 12.3)
350-499	45/171	26.8	(19.0, 34.6)	6/171	2.8	(0.50, 5.1)
500+	122/538	25.0	(20.0, 30.0)	17/538	3.7	(1.8, 5.6)
Fig 11.3d Knowledge of HIV status and CD4 category						
	1 or more outpatient facility visits in 4 weeks before interview			**1 or more hospitalizations in 6 months before interview**		
Unaware of status						
CD4 <350	56/252	22.1	(16.6, 27.6)	16/252	5.4	(2.5, 8.2)
CD4 ≥350	131/618	22.9	(18.6, 27.3)	12/618	2.0	(0.86, 3.2)
Aware of status						
CD4 <350	35/57	65.1	(51.1, 79.1)	8/57	15.7	(3.3, 28.1)
CD4 ≥350	36/91	41.9	(31.9, 52.0)	11/91	13.0	(5.0, 21.0)
11.3d Number of outpatient visits or hospitalizations among all HIV-infected adults						
	Number of outpatient facility visits in 4 weeks before interview			**Number of hospitalizations in 6 months before interview**		
None	820/11104	72.9	(69.4, 76.4)	1053/1104	95.0	(93.6, 96.5)
1+	284/1104	27.1	(23.6, 30.6)	51/1104	5.0	(3.5, 6.4)
11.3d Among HIV-infected adults with 1 or more outpatient visit or hospitalization						
	Number of outpatient facility visits in 4 weeks before interview[3]			**Number of hospitalizations in 6 months before interview**		
1	161/278	56.4	(49, 63.7)	41/51	79.5	(67, 92)
2	72/278	26.9	(19.8, 33.9)	6/51	11.5	(1.5, 21.6)
3+	45/278	16.7	(11.3, 22.2)	4/51	9.0	(0.20, 17.8)
11.3d Type of facility utilized at last outpatient visit or last hospitalization						
	Last outpatient visit in 4 weeks before interview[3]			**Last hospitalization in 6 months before interview[4]**		
	HIV-infected adults unaware of status			**All HIV-infected adults**		
Public	167/278	60.3	(51.9, 68.7)	32/48	63.2	(47.3, 79.0)
Private	41/278	14.3	(9.0, 19.6)	8/48	21.6	(7.0, 36.1)
Chemist/pharmacy	34/278	10.8	(6.0, 15.7)	--	--	--
Faith-based	17/278	8.1	(3.9, 12.3)	8/48	15.3	(4.0, 26.6)
Other (NGO, traditional healers, medical shops)	19/278	6.5	(3.2, 9.8)	--	--	--

11.4 Tuberculosis among HIV-infected adults

11.4 Knowledge about tuberculosis	**All HIV-infected adults**			**All adults**		
Ever heard of tuberculosis	1088/1104	98.2	(96.9, 99.4)	17531/17940	97.9	(97.6, 98.2)
Correctly answered that TB spreads through the air when coughing or sneezing	782/1104	69.1	(65.8, 72.4)	12684/17940	69.9	(68.8, 71.1)
Correctly answered that TB can be cured	1004/1104	89.9	(87.6, 92.1)	15781/17940	87.7	(86.9, 88.5)
Would want family member's TB to remain a secret or not						
Yes	142/1104	13.4	(10.8, 15.9)	1956/17940	11.4	(10.7, 12.1)
No	932/1104	83.8	(81.2, 86.4)	15348/17940	85.4	(84.6, 86.3)
Don't know/depends/never heard of TB	30/1104	2.8	(1.4, 4.3)	636/17940	3.2	(2.8, 3.5)
Fig 11.4a Self-reported to have been diagnosed with TB by health professional						
	Ever diagnosed with TB			**Diagnosed with TB in 12 months before interview**		
All adults	417/17940	2.3	(2.0, 2.5)	94/17940	0.50	(0.38, 0.63)
HIV-infected	97/1104	9.6	(7.3, 11.9)	32/1104	2.7	(1.5, 3.9)
HIV-uninfected	277/14723	1.8	(1.6, 2.1)	52/14723	0.40	(0.24, 0.47)
Fig 11.4b Completed treatment among those diagnosed with TB						
	Ever diagnosed with TB and completed treatment			**Diagnosed with TB in 12 months before interview and completed treatment**		
All adults	356/417	84.1	(79.7, 88.5)	56/94	55.8	(43.7, 68.0)
HIV-infected	81/97	85.3	(76.9, 93.7)	19/32	56.0	(33.8, 78.2)
Unaware of status	33/44	75.9	(61.2, 90.6)	7/15	--	--
Aware of status	48/53	91.3	(82.0, 100)	12/17	--	--
HIV-uninfected	241/277	84.7	(79.0, 90.4)	32/52	57.7	(40.7, 74.8)

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	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
Fig 11.4c HIV prevalence by history of TB diagnosis						
	HIV prevalence					
Ever diagnosed with TB	97/374	28.5	(22.4, 34.7)			
Diagnosed with TB in 12 months before interview	32/84	36.6	(23.2, 50)			
Never diagnosed with TB	1007/15479	6.6	(6.0, 7.2)			
Fig 11.4d Knowledge of HIV infection by history of TB diagnosis						
	Aware of HIV status					
HIV-infected and ever diagnosed with TB	53/97	61.1	(49.3, 73)			
HIV-infected and diagnosed with TB in 12 months before interview	17/32	56.8	(34.5, 79.1)			
HIV-infected and never diagnosed with TB	111/1007	11.1	(8.6, 13.7)			
11.4e Cotrimoxazole coverage among HIV-infected adults with history of TB by knowledge of HIV status						
	Taking cotrimoxazole					
All HIV-infected						
Aware of HIV status/taking cotrimoxazole	42/97	51.2	(38.0, 64.3)			
Aware of HIV status/not taking cotrimoxazole	11/97	10.0	(3.5, 16.4)			
Unaware of HIV status/not taking cotrimoxazole	44/97	38.9	(27.0, 50.7)			
Diagnosed with TB in 12 months before interview	14/32	48.3	(24.2, 72.3)			
Fig 11.4e Cotrimoxazole access among HIV-infected adults with history of TB by knowledge of HIV status						
HIV-infected/knew status						
Aware of HIV status/taking cotrimoxazole	42/53	83.7	(72.9, 94.5)			
Aware of HIV status/not taking cotrimoxazole	11/53	16.3	(5.5, 27.1)			
Diagnosed with TB in 12 months before interview	14/17	--	--			
HIV-infected/knew status/CD4<250		--	--			
Ever diagnosed with TB	11/13	--	--			
Diagnosed with TB in 12 months before interview	4/5	--	--			

11.5 Basic prevention for people living with HIV: Clean water

	All HIV-infected adults			HIV-infected aware of status		
Fig 11.5a Percent of HIV-infected adults by water treatment practice of their household						
No treatment	569/1104	54.5	(50.1, 58.8)	74/164	47.1	(36.1, 58.1)
Any treatment	535/1104	45.5	(41.2, 49.9, 2.0)	90/164	52.9	(41.9, 63.9)
Boiling	285/1104	26.5	(23.0, 30.1)	40/164	26.7	(17.1, 36.2)
Disinfection (i.e chlorine)	226/1104	17.7	(14.5, 21.0)	47/164	25.2	(16.0, 34.4)
Other	24/1104	1.2	(0.45, 2.0)	3/164	1.1	(0.0, 2.9)

Fig 11.5b Percent of HIV-infected adults in a household with treated drinking water by province			
	Any water treatment		
Nairobi	78/140	46.0	(31.5, 60.5)
Central	32/77	41.4	(30.4, 52.4)
Coast	36/132	26.3	(16.7, 36.0)
Eastern	49/109	42.8	(31.6, 54)
North Eastern	4/7	--	--
Nyanza	235/362	64.2	(57.3, 71.1)
Rift Valley	62/161	31.3	(20.9, 41.7)
Western	39/116	34.8	(23.7, 45.9)
11.5b Residence	Any water treatment		
Rural	376/773	47.3	(42.2, 52.3)
Urban	159/331	40.9	(32.5, 49.3)
11.5b Sex	Any water treatment		
Women	349/735	44.8	(39.9, 49.7)
Men	186/369	47.0	(41.2, 52.7)
11.5b Pregnant women	Any water treatment		
Currently pregnant	26/52	53.8	(37.9, 69.6)

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11.6 Basic prevention for people living with HIV: Bednets[5, 6]

Fig 11.6a Bednet usage among adults aged 15-64 years by HIV status

	Slept under any mosquito net night before interview			Slept under any insecticide treated net (ITN) ni before interview		
	Unweighted n/N	**Weighted %**	**95% CI**	**Unweighted n/N**	**Weighted %**	**95% CI**
All adults	6192/15813	38.0	(36.2, 39.8)	2784/15813	17.5	(16.2, 18.8
HIV infected	466/964	45.3	(40.5, 50.1)	210/964	20.2	(17.0, 23.5
Aware of status	84/148	54.2	(43.4, 65.0)	29/148	19.2	(11.4, 26.9
Unaware of status	382/816	43.6	(38.4, 48.9)	181/816	20.4	(16.8, 24.0
HIV-uninfected	5002/13053	37.5	(35.7, 39.3)	10849/13053	16.9	(15.6, 18.2

Fig 11.6b HIV-infected adults who slept under a bednet by province

	Slept under any mosquito net night before interview			Slept under any insecticide treated net (ITN) ni before interview		
	Unweighted n/N	**Weighted %**	**95% CI**	**Unweighted n/N**	**Weighted %**	**95% CI**
Nairobi	43/140	35.5	(27.6, 43.4)	13/140	12.1	(6.9, 17.3)
Central	13/77	15.2	(8.0, 22.4)	7/77	7.9	(1.8, 14.0)
Coast	75/132	58.4	(44.0, 72.7)	27/132	23.8	(13.2, 34.5
Eastern	39/109	31.8	(18.3, 45.3)	16/109	10.3	(2.1, 18.4)
North Eastern	4/7	--	--	2/7	--	--
Nyanza	223/362	61.1	(54.0, 68.2)	110/362	29.6	(23.4, 35.8
Rift Valley	47/161	28.6	(16.3, 40.8)	16/161	9.8	(4.2, 15.4)
Western	65/116	53.5	(43.4, 63.5)	32/116	28.4	(18.9, 37.9

11.6b HIV-infected adults who slept under a bednet by residence

	Slept under any mosquito net night before interview			Slept under any insecticide treated net (ITN) ni before interview		
	Unweighted n/N	**Weighted %**	**95% CI**	**Unweighted n/N**	**Weighted %**	**95% CI**
Rural	370/773	45.0	(39.9, 50.1)	157/773	18.7	(15.3, 22.0
Urban	96/191	46.6	(33.0, 60.2)	53/191	27.3	(17.1, 37.5

11.7 Basic prevention for people living with HIV: Nutritional supplements

Fig 11.7a HIV-infected adults aware of their infection taking nutritional supplements by type of supplement

	HIV-infected adults, aware of status		
	Unweighted n/N	**Weighted %**	**95% CI**
Caloric supplements[7]	11/164	7.3	(3.1, 11.5)
Immune boosters	8/164	4.6	(1.4, 7.9)
Multivitamins	62/164	36.4	(28.2, 44.6)

11.7a Taking multivitamins by sex	HIV-infected adults, aware of status		
Women	42/114	36.2	(26.5, 45.9)
Men	20/50	37.1	(24.4, 49.8)

11.7a Taking multivitamins by residence	HIV-infected adults, aware of status		
Rural	53/132	40.3	(33.2, 47.4)
Urban	9/32	24.5	(1.9, 47.0)

11.7a Taking multivitamins by age group (years)	HIV-infected adults, aware of status		
15-24	4/13	--	--
25-49	50/132	37.2	(28.0, 46.4)
50-64	8/19	--	--

11.7a Taking multivitamins by marital status	HIV-infected adults, aware of status		
Never married/cohabited	2/6	--	--
Currently married/cohabiting	35/100	33.8	(24.2, 43.5)
Monogamous	28/82	33.8	(23.1, 44.5)
Polygamous	7/18	--	--
Separated/divorced	4/13	--	--
Widowed	21/45	40.8	(25.6, 56.0)

11.7a Taking multivitamins by education	HIV-infected adults, aware of status		
No primary	4/13	--	--
Incomplete primary	20/45	41.7	(27.6, 55.9)
Complete primary	25/65	34.8	(20.2, 49.4)
Secondary +[1]	13/41	34.7	(20.8, 48.6)

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	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
11.7a Taking multivitamins by wealth index[2]	**HIV-infected adults, aware of status**					
Lowest	14/36	41.0	(23.0, 59.1)			
Second	12/30	41.1	(21.5, 60.8)			
Middle	14/37	35.4	(18.4, 52.5)			
Fourth	12/30	27.5	(6.6, 48.5)			
Highest	10/31	38.5	(17.3, 59.6)			

[1] "Secondary+" includes any years of secondary schooling whether completed or not.

[2] The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, water access and sanitation facilities. The wealth index placed households on a continuous scale of relative wealth using principal components analysis. Individuals were ranked according to the score of the household in which they resided and the sample was divided into five groups, each with an equal number of individuals (quintiles), ranging from the lowest to highest level of wealth.

[3] Denominator is 278 not 284 due to missing data on number of visits and type of facility used.

[4] Denominator is 48 not 51 due to missing data on type of facility used.

[5] Any mosquito net includes insecticide-treated and untreated bednets. Insecticide-treated nets (ITNs) include bednets manufactured with insecticide and bednets treated with an insecticide in the past six months within the home.

[6] Nairobi residents not included in bed net analyses.

[7] Caloric supplements include plumpy nut, nutrimix, first food, foundation plus+ foundation advantage.

11.4 Population estimate of all adults aged 15-64 years with prior diagnosis of TB

	2007 Projected adult population (women and men 15-64 years old)[8, 9]	Diagnosed by health professional with TB[10] (%)	Estimated adult population (women and men 15-64 years old) diagnosed with TB[9,11]	95% CI
Ever diagnosed with TB	19,984,000	2.27	454,000	(386 000, 490 000)
Diagnosed with TB in 12 months before interview	19,984,000	0.50	100,000	(73 000, 122 000)

[8] Source: Revised Population Projections for Kenya 2000-2020 (Kenya National Bureau of Statistics. August 2006).

[9] Figures rounded to the nearest 1000.

[10] Weighted percent estimates of TB from the 2007 KAIS rounded to one-hundredth of a percent.

[11] Estimate obtained by multiplying projected base population by the weighted national KAIS estimate.

APPENDIX B.12: PREVALENCE OF HSV-2

12.3 HSV-2 prevalence

Fig 12.3a HSV-2 prevalence by age group

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
15-19	165/1314	12.6	(10.3, 14.8)	54/1164	5.5	(3.1, 7.9)	219/2478	9.2	(7.4, 11.1)
20-24	443/1578	27.7	(24.9, 30.6)	106/1024	10.2	(7.9, 12.5)	549/2602	20.8	(18.7, 22.8)
25-29	511/1334	40.9	(37.6, 44.2)	176/870	20.7	(17.4, 24.0)	687/2204	33.2	(30.7, 35.7)
30-34	562/1142	51.4	(47.8, 54.9)	219/767	29.1	(25.2, 33.0)	781/1909	42.5	(39.7, 45.2)
35-39	507/936	55.9	(52.1, 59.6)	236/671	37.1	(32.7, 41.5)	743/1607	48.1	(44.9, 51.2)
40-44	421/736	59.4	(55.2, 63.7)	253/571	47.3	(41.2, 53.4)	674/1307	54.2	(50.5, 57.9)
45-49	400/726	55.6	(50.3, 60.8)	249/548	45.0	(40.2, 49.7)	649/1274	51.2	(47.4, 54.9)
50-54	276/511	54.3	(49.1, 59.5)	158/423	42.4	(36.3, 48.4)	434/934	49.0	(44.9, 53.2)
55-59	230/420	57.3	(51.8, 62.7)	150/378	39.6	(33.6, 45.5)	380/798	49.0	(44.9, 53.2)
60-64	116/256	50.6	(42.7, 58.5)	121/338	40.5	(33.5, 47.4)	237/594	44.8	(38.6, 51.1)
Total	3631/8953	41.7	(40.1, 43.2)	1722/6754	26.3	(24.8, 27.7)	5353/15707	35.1	(33.9, 36.3)

Fig 12.3b HSV-2 prevalence by marital status

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
Never married/cohabited	346/2041	17.3	(15.3, 19.4)	181/2434	7.4	(5.7, 9.1)	527/4475	11.9	(10.5, 13.3)
Currently married/cohabiting	2463/5609	45.0	(43.1, 46.9)	1411/3947	37.5	(35.6, 39.5)	3874/9556	42.0	(40.2, 43.6)
Monogamous	1954/4786	41.9	(39.9, 44.0)	1229/3597	35.8	(33.7, 37.8)	3183/8383	39.4	(37.7, 41.0)
Polygamous	509/823	64.3	(59.9, 68.8)	182/350	56.2	(50.3, 62.0)	691/1173	61.9	(57.9, 65.9)
Separated/divorced	356/627	57.9	(53.2, 62.7)	91/285	29.8	(24.0, 35.6)	447/912	49.1	(45.1, 53.1)
Widowed	466/676	71.0	(67.1, 75.0)	39/88	52.3	(37.9, 66.8)	505/764	68.8	(64.8, 72.7)
Total	3631/8953	41.7	(40.1, 43.2)	1722/6754	26.3	(24.8, 27.7)	5353/15707	35.1	(33.9, 36.3)

Fig 12.3c HSV-2 prevalence by province and residence

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
Nairobi	385/986	42.3	(36.5, 48.0)	214/782	27.2	(21.3, 33.1)	599/1768	36.1	(31.1, 41.1)
Central	435/1280	34.0	(31.2, 36.7)	188/983	19.6	(16.7, 22.5)	623/2263	27.9	(25.5, 30.2)
Coast	474/1024	47.1	(42.2, 52.1)	216/744	29.3	(25.3, 33.4)	690/1768	39.6	(36.0, 43.2)
Eastern	509/1449	36.3	(32.5, 40.1)	202/1092	18.4	(15.9, 20.9)	711/2541	28.6	(25.8, 31.4)
North Eastern	30/426	6.4	(3.3, 9.6)	24/316	7.1	(3.8, 10.4)	54/742	6.7	(4.2, 9.3)
Nyanza	800/1371	57.3	(52.9, 61.8)	372/986	37.7	(34.2, 41.3)	1172/2357	49.1	(45.5, 52.7)
Rift Valley	488/1263	39.3	(35.7, 42.8)	241/997	26.5	(22.7, 30.3)	729/2260	33.7	(30.9, 36.6)
Western	510/1154	44.1	(40.4, 47.9)	265/854	31.5	(27.9, 35.2)	775/2008	38.7	(35.7, 41.8)
Rural	2667/6769	40.5	(38.9, 42.2)	1242/5077	25.4	(23.9, 26.9)	3909/11846	34.0	(32.7, 35.4)
Urban	964/2184	45.2	(41.8, 48.7)	480/1677	29.1	(25.6, 32.6)	1444/3861	38.6	(35.9, 41.3)
Total	3631/8953	41.7	(40.1, 43.2)	1722/6754	26.3	(24.8, 27.7)	5353/15707	35.1	(33.9, 36.3)

Fig 12.3d HSV-2 prevalence by education level

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
No primary	621/1592	46.4	(42.2, 50.6)	126/605	27.1	(20.7, 33.5)	747/2197	41.6	(37.9, 45.3)
Incomplete primary	1171/2588	45.0	(42.5, 47.6)	432/1875	22.6	(20.2, 24.9)	1603/4463	35.6	(33.5, 37.6)
Complete primary	963/2152	44.1	(41.5, 46.7)	519/1623	33.4	(30.8, 36.0)	1482/3775	39.6	(37.5, 41.6)
Secondary+[1]	876/2621	34.0	(31.8, 36.2)	645/2651	24.5	(22.4, 26.7)	1521/5272	29.3	(27.5, 31.1)
Total	3631/8953	41.7	(40.1, 43.2)	1722/6754	26.3	(24.8, 27.7)	5353/15707	35.1	(33.9, 36.3)

12.3 HSV-2 prevalence by wealth index[2]

Indicator	Women Unweighted n/N	Women Weighted %	Women 95% CI	Men Unweighted n/N	Men Weighted %	Men 95% CI	Total Unweighted n/N	Total Weighted %	Total 95% CI
Lowest	610/1602	43.7	(40.5, 46.9)	281/1127	28.1	(24.3, 31.9)	891/2729	37.1	(34.3, 39.9)
Second	705/1661	42.3	(39.0, 45.5)	309/1232	24.8	(21.9, 27.7)	1014/2893	34.7	(32.2, 37.3)
Middle	680/1729	38.9	(35.8, 42.0)	320/1301	25.0	(22.3, 27.6)	1000/3030	33.0	(30.7, 35.3)
Fourth	769/1746	43.0	(39.9, 46.2)	354/1333	28.2	(24.0, 32.4)	1123/3079	36.7	(34.0, 39.4)
Highest	867/2215	41.0	(37.9, 44.0)	458/1761	25.6	(22.5, 28.6)	1325/3976	34.4	(31.9, 37.0)
Total	3631/8953	41.7	(40.1, 43.2)	1722/6754	26.3	(24.8, 27.7)	5353/15707	35.1	(33.9, 36.3)

APPENDIX B.12: PREVALENCE OF HSV-2

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI

12.4 Acquiring and transmitting HSV-2

Fig 12.4a HSV-2 prevalence by lifetime sexual partners

	Women			Men			Total		
0 partners	60/963	6.5	(4.4, 8.5)	44/888	5.6	(2.7, 8.6)	104/1851	6.1	(4.3, 7.8)
1 partner	952/3284	31.6	(29.5, 33.7)	94/815	16.0	(10.0, 22.0)	1046/4099	28.7	(26.5, 30.9)
2-3 partners	1844/3536	51.3	(49.2, 53.3)	397/1741	23.3	(20.5, 26.1)	2241/5277	42.4	(40.6, 44.2)
4-5 partners	506/772	65.3	(61.6, 69.0)	322/1128	27.2	(24.2, 30.2)	828/1900	43.1	(40.4, 45.8)
6-9 partners	105/158	66.6	(58.2, 75.0)	259/748	35.1	(30.9, 39.3)	364/906	41.0	(37.0, 45.0)
10+ partners	77/102	74.1	(62.8, 85.4)	420/1057	41.4	(38.0, 44.9)	497/1159	44.4	(41.0, 47.8)
Total	3544/8815	41.2	(39.7, 42.8)	1536/6377	25.0	(23.5, 26.5)	5080/15192	34.5	(33.3, 35.7)

Fig 12.4b HSV-2 prevalence by number of sexual partners in the last 12 months

	Women			Men			Total		
0 partners	834/2558	33.9	(31.3, 36.4)	175/1677	10.5	(8.4, 12.7)	1009/4235	24.5	(22.7, 26.2)
1 partner	2693/6215	44.4	(42.7, 46.2)	1220/4209	30.8	(28.7, 32.9)	3913/10424	39.1	(37.5, 40.6)
2 partners	78/135	58.2	(47.2, 69.2)	262/692	37.2	(32.9, 41.6)	340/827	40.8	(36.5, 45.1)
3+ partners	8/14	41.3	(11.7, 70.8)	54/144	40.3	(31.2, 49.4)	62/158	40.4	(31.7, 49.2)
Total	3613/8922	41.6	(40.1, 43.1)	1711/6722	26.3	(24.9, 27.8)	5324/15644	35.1	(33.9, 36.3)

Fig 12.4c HSV-2 prevalence by circumcision status

	Circumcised men			Uncircumcised men			Total		
Men	1320/5762	24.0	(22.4, 25.5)	396/972	38.8	(35.1, 42.5)	1716/6734	26.2	(24.8, 27.7)

12.5 Co-Infection with HIV and HSV-2

Table 12.5 Prevalence of co-infection with HIV and HSV-2

	Women			Men			Total		
HIV only	119/8953	1.3	(1.1, 1.6)	97/6754	1.4	(1.1, 1.8)	216/15707	1.4	(1.1, 1.6)
HSV-2 only	3019/8953	34.6	(33.3, 35.8)	1450/6754	22.3	(20.9, 23.6)	4469/15707	29.3	(28.3, 30.4)
Both HIV and HSV-2	612/8953	7.1	(6.3, 7.8)	272/6754	4.0	(3.4, 4.5)	884/15707	5.8	(5.2, 6.3)
Neither HIV not HSV-2	5203/8953	57.0	(55.5, 58.5)	4935/6754	72.3	(70.9, 73.8)	10138/15707	63.5	(62.3, 64.7)

Fig 12.5a HIV prevalence by HSV-2 status

	HIV-infected			HIV-uninfected		
HSV2-infected	884/5353	16.4	(15.0, 17.8)	4469/5353	83.6	(82.2, 85.0)
HSV2-uninfected	216/10354	2.1	(1.7, 2.5)	10138/10354	97.9	(97.5, 98.3)

Fig 12.5b HSV-2 prevalence among couples by HIV status

	Both partners HIV-uninfected			1 HIV-infected partner			Both partners HIV-infected		
Neither partner HSV2-infected	1318/2445	52.5	(49.9, 55.1)	31/166	20.9	(13.3, 28.5)	6/97	5.0	(0.7, 9.2)
1 partner HSV2-infected	508/2445	20.5	(18.6, 22.3)	54/166	29.3	(22.0, 36.6)	14/97	14.0	(6.9, 21.2)
Both partners HSV2-infected	619/2445	27.0	(24.9, 29.2)	81/166	49.8	(41.2, 58.3)	77/97	81.0	(72.9, 89.1)

12.6 Associations between HSV-2 prevalence and perceived risk of HIV, STI symptoms, STI treatment-seeking behaviour, and condom use

12.6 HSV-2 prevalence by HIV status

	HSV2-infected			HSV2-uninfected		
HIV-infected	884/1100	80.7	(77.6, 83.8)	216/1100	19.3	(16.2, 22.4)
HIV-uninfected	4469/14607	31.6	(30.5, 32.7)	10138/14607	68.4	(67.3, 69.5)

12.6 Self-perception of HIV risk among HSV2-infected

	HSV2-infected		
No risk	891/4284	21.5	(19.7, 23.3)
Small risk	1820/4284	42.3	(40.5, 44.1)
Moderate/great risk	1152/4284	26.1	(24.1, 28.1)
Don't know	421/4284	10.1	(8.9, 11.3)

APPENDIX B.12: PREVALENCE OF HSV-2

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
12.6 Had heard of STIs other than HIV									
	Women			**Men**			**Total**		
	9137/10239	89.6	(88.4, 90.7)	7043/7701	91.8	(90.9, 92.6)	16180/17940	90.5	(89.7, 91.3)
12.6 Reported STI or STI symptoms									
	Women			**Men**			**Total**		
	176/8167	2.4	(1.9, 2.9)	285/6248	4.6	(3.9, 5.2)	461/14415	3.3	(3.0, 3.7)
12.6 Reported STI or STI symptoms by HSV-2 status									
	HSV2-infected			**HSV2-uninfected**			**Total**		
	213/4966	4.6	(3.9, 5.2)	231/7754	3.1	(2.6, 3.5)	444/12720	3.7	(3.3, 4.0)
Fig 12.6a Treatment-seeking behaviour among women and men reporting an STI or STI symptoms by HSV-2 status									
	Women			**Men**			**Total**		
HSV2-infected	79/104	70.1	(55.8, 84.3)	52/109	43.9	(32.6, 55.1)	131/213	57.4	(48.1, 66.7)
HSV2-uninfected	53/66	84.3	(73.9, 94.8)	84/164	50.1	(42.1, 58.2)	137/230	61.2	(53.9, 68.6)
Total	132/170	75.6	(65.3, 85.9)	136/273	47.5	(40.0, 55.1)	268/443	59.3	(52.4, 66.2)
Fig 12.6b Condom use at last sex by HSV-2 status									
	Women			**Men**			**Total**		
HSV2-infected	252/2798	9.2	(7.6, 10.7)	175/1547	10.6	(8.8, 12.5)	427/4345	9.7	(8.4, 10.9)
HSV2-uninfected	309/3598	8.3	(7.1, 9.6)	695/3540	20.6	(18.7, 22.5)	1004/7138	14.3	(13.1, 15.6)
Total	561/6396	8.7	(7.6, 9.8)	870/5087	17.4	(16.0, 18.9)	1431/11483	12.5	(11.5, 13.5)
Fig 12.6c Consistent condom use by partnership type and HSV-2 status									
	HSV2-infected			**HSV2-uninfected**			**Total**		
Married/cohabiting	134/3942	3.3	(2.5, 4.0)	133/5754	2.6	(2.0, 3.2)	267/9696	2.9	(2.4, 3.3)
Non-cohabiting boyfriend/girlfriend	175/600	30.2	(24.2, 36.1)	638/1594	38.8	(35.0, 42.6)	813/2194	36.5	(33.0, 40.0)
Casual/Other	71/202	28.7	(21.1, 36.3)	148/358	35.1	(28.5, 41.8)	219/560	32.6	(27.8, 37.4)
Total	380/4744	7.1	(6.0, 8.2)	919/7706	10.7	(9.6, 11.8)	1299/12450	9.3	(8.5, 10.1)

[1] "Secondary+" includes any years of secondary schooling whether completed or not.

[2] The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, water access and sanitation facilities. The wealth index placed households on a continuous scale of relative wealth using principal components analysis. Individuals were ranked according to the score of the household in which they resided and the sample was divided into five groups, each with an equal number of individuals (quintiles), ranging from the lowest to highest level of wealth.

12.3 Population estimates of adults aged 15-64 years with HSV-2 infection by sex and by province, Kenya 2007

	2007 Projected adult population (women and men 15-64 years old)[3,4]	HSV-2 prevalence (%)[5]	Estimated adult population (women and men 15-64 years old) infected with HSV-2[4,6]	95% CI[7]
National	19,984,000	35.09	7,012,000	(6 775 000, 7 254 000)
Women	10,320,000	41.65	4,298,000	(4 142 000, 4 455 000)
Men	9,664,000	26.25	2,537,000	(2 400 000, 2 675 000)
Nairobi	2,073,000	36.13	749,000	(645 000, 853 000)
Central	2,627,000	27.87	732,000	(670 000, 794 000)
Coast	1,799,000	39.64	713,000	(649 000, 778 000)
Eastern	3,025,000	28.57	864,000	(780 000, 949 000)
North Eastern	664,000	6.72	45,000	(28 000, 62 000)
Nyanza	2,806,000	49.10	1,378,000	(1 278 000, 1 478 000)
Rift Valley	4,838,000	33.74	1,632,000	(1 495 000, 1 770 000)
Western	2,152,000	38.74	834,000	(769 000, 899 000)

[3] Source: Revised Population Projections for Kenya 2000-2020 (Kenya National Bureau of Statistics. August 2006).

[4] Figures rounded to the nearest 1000.

[5] Weighted, HSV-2 prevalence estimates from the 2007 KAIS rounded to one-hundredth of a percent.

[6] Population estimates obtained by multiplying projected base population by the appropriate weighted KAIS estimate.

[7] Confidence intervals were calculated by multiplying projected populations by the lower and upper bounds (rounded to one-hundredth of a percent) of the corresponding 2007 KAIS HSV-2 prevalence estimate.

APPENDIX B.13: PREVALENCE OF SYPHILIS AND CO-INFECTION WITH HIV & HSV-2

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
13.3 Syphilis prevalence									
Fig 13.3a Syphilis prevalence by age group									
	Women			Men			Total		
15-24	22/2892	0.70	(0.36, 1.0)	7/2183	0.40	(0.0, 0.77)	29/5075	0.57	(0.29, 0.84)
25-29	19/1332	1.5	(0.71, 2.2)	8/869	0.79	(0.12, 1.5)	27/2201	1.2	(0.62, 1.8)
30-39	38/2074	1.9	(1.2, 2.6)	32/1430	2.4	(1.4, 3.3)	70/3504	2.1	(1.5, 2.6)
40-49	35/1456	3.0	(1.8, 4.2)	31/1113	2.7	(1.6, 3.8)	66/2569	2.9	(2.0, 3.7)
50-64	28/1181	2.5	(1.4, 3.6)	42/1132	4.4	(2.8, 6.0)	70/2313	3.4	(2.5, 4.4)
15-24	22/2892	0.70	(0.36, 1.0)	7/2183	0.40	(0.02, 0.77)	29/5075	0.57	(0.29, 0.84)
25-49	92/4862	2.1	(1.6, 2.6)	71/3412	2.1	(1.5, 2.7)	163/8274	2.1	(1.7, 2.5)
50-64	28/1181	2.5	(1.4, 3.6)	42/1132	4.4	(2.8, 6.0)	70/2313	3.4	(2.5, 4.4)
Total (15-64)[1]	142/8935	1.7	(1.3, 2.1)	120/6727	1.9	(1.5, 2.3)	262/15662	1.8	(1.5, 2)
Fig 13.3b Syphilis prevalence by residence									
	Women			Men			Total		
Rural	110/6755	1.9	(1.4, 2.3)	90/5054	1.9	(1.4, 2.4)	200/11809	1.9	(1.6, 2.2)
Urban	32/2180	1.2	(0.54, 1.8)	30/1673	1.7	(0.87, 2.6)	62/3853	1.4	(0.87, 2.0)
Fig 13.3c Syphilis prevalence by province									
	Women			Men			Total		
Nairobi	10/986	1.0	(0.11, 1.9)	15/781	2.2	(0.66, 3.7)	25/1767	1.5	(0.65, 2.3)
Central	18/1276	1.6	(0.88, 2.4)	9/982	0.9	(0.29, 1.5)	27/2258	1.3	(0.79, 1.9)
Coast	15/1023	1.6	(0.48, 2.7)	16/743	1.8	(0.70, 2.9)	31/1766	1.7	(0.80, 2.6)
Eastern	27/1446	2.1	(1.2, 3.1)	28/1090	3.0	(1.6, 4.4)	55/2536	2.5	(1.8, 3.2)
North Eastern	4/425	1.0	(0.0, 2.4)	0/316	0.0	(0.0, 0.0)	4/741	0.56	(0.0, 1.4)
Nyanza	34/1364	2.3	(1.4, 3.2)	25/975	2.5	(1.6, 3.4)	59/2339	2.4	(1.7, 3.1)
Rift Valley	25/1262	1.8	(0.84, 2.7)	16/987	1.5	(0.48, 2.5)	41/2249	1.7	(0.93, 2.4)
Western	9/1153	0.94	(0.14, 1.7)	11/853	1.4	(0.55, 2.3)	20/2006	1.1	(0.60, 1.7)
Fig 13.3d Syphilis prevalence by marital status									
	Women			Men			Total		
Never married/cohabited	10/2041	0.38	(0.12, 0.65)	15/2430	0.72	(0.28, 1.2)	25/4471	0.57	(0.29, 0.84)
Currently married/cohabiting	96/5601	1.8	(1.3, 2,2)	95/3941	2.6	(2.0, 3.2)	191/9542	2.1	(1.9, 4.3)
Monogamous	74/4781	1.6	(1.2, 2.0)	78/3592	2.3	(1.7, 2.9)	152/8373	1.9	(1.5, 2.3)
Polygamous	22/820	2.9	(1.6, 4.3)	17/349	5.4	(2.8, 8.0)	39/1169	3.7	(2.5, 4.9)
Separated/divorced	14/627	2.4	(0.81, 3.9)	5/285	1.0	(0, 2.0)	18/912	2.0	(0.83, 3.1)
Widowed	22/675	4.3	(2.0, 6.5)	5/58	5.4	(0, 11.2)	27/763	4.4	(2.3, 6.5)
Fig. 13.3e Syphilis prevalence by education level									
	Women			Men			Total		
No primary	38/1587	3.6	(2.2, 4.9)	18/602	4.5	(2.0, 7.1)	56/2189	3.8	(2.5, 5.1)
Incomplete primary	49/2582	1.8	(1.2, 2.5)	45/1867	2.6	(1.7, 3.5)	94/4449	2.2	(1.6, 2.7)
Complete primary	30/2146	1.3	(0.78, 1.7)	33/1615	1.9	(1.2, 2.6)	63/3761	1.5	(1.1, 1.9)
Secondary +[2]	25/2620	1.0	(0.52, 1.5)	24/2643	0.90	(0.47, 1.3)	49/5263	0.95	(0.62, 1.3)
Fig. 13.3f Syphilis prevalence by wealth index[3]									
	Women			Men			Total		
Lowest/second lowest	62/3257	2.3	(1.6, 2.9)	44/2351	2.0	(1.3, 2.7)	106/5608	2.2	(1.7, 2.6)
Middle/second highest	60/3469	1.8	(1.3, 2.4)	55/2619	2.5	(1.7, 3.2)	115/6088	2.1	(1.7, 2.6)
Highest	20/2209	0.72	(0.29, 1.2)	19/1228	0.78	(0.36, 1.2)	41/3966	0.75	(0.41, 1.1)
Lowest	35/1600	3.0	(1.8, 4.3)	25/1123	2.5	(1.4, 3.6)	60/723	2.8	(1.9, 3.6)
Second	27/1657	1.6	(0.92, 2.3)	19/1228	1.6	(0.88, 2.4)	46/288	1.6	(1.1, 2.1)
Middle	32/1725	2.1	(1.3, 2.9)	30/1291	2.8	(1.6, 3.9)	62/3016	2.4	(1.7, 3.1)
Fourth	28/1744	1.6	(0.86, 2.4)	25/1328	2.2	(1.3, 3.1)	53/3072	1.9	(1.3, 2.4)
Highest	20/2209	0.72	(0.29, 1.2)	21/1757	0.78	(0.36, 1.2)	41/3966	0.75	(0.41, 1.09)

APPENDIX B.13: PREVALENCE OF SYPHILIS AND CO-INFECTION WITH HIV & HSV-2

Indicator	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweigl n/N
13.4 Acquiring and transmitting syphilis							
Fig. 13.4a Syphilis prevalence by number of lifetime partners							
	Women			**Men**			
No partner	2/965	0.20	(0.0, 0.48)	3/887	0.35	(0.0, 0.84)	5/185
1 Lifetime Partner	39/3274	1.3	(0.83, 1.8)	7/809	0.87	(0.19, 1.6)	46/40
2-3 Lifetime Partners	59/3524	1.7	(1.2, 2.3)	19/1733	1.2	(0.62, 1.8)	78/52
4+ Lifetime Partners	35/1027	3.5	(2.1, 4.9)	74/2914	2.7	(2.0, 3.4)	109/39
Total	135/8790	1.6	(1.3, 2.0)	103/6343	1.7	(1.3, 2.2)	238/15

Fig 13.4b Syphilis prevalence among men aged 15-64 years by circumcision status

	Syphilis prevalence among	circumcised men		Syphilis prevalence among uncircumcised men			Syphilis
Total (15-64)	88/5746	1.6	(1.2, 2.1)	32/961	3.3	(2.0, 4.6)	120/67

13.5 Syphilis co-infection with HIV and HSV-2

13.5 Syphilis prevalence by HIV and HSV-2 status

	Women			Men			
HIV-infected	17/730	3.2	(1.3, 5.1)	23/363	6.4	(3.1, 9.7)	40/10
HIV-uninfected	125/8191	1.6	(1.2, 1.9)	97/6353	1.6	(1.2, 2.0)	222/14
HSV2-infected	111/3623	3.2	(2.4, 3.9)	78/1705	4.5	(3.4, 5.7)	189/53
HSV2-uninfected	31/5212	0.65	(0.39, 0.90)	40/4905	0.95	(0.60, 1.3)	71/101

Fig. 13.5a Prevalence of HIV, HSV-2 and both infections by syphilis status

	HIV-infected			HSV2-infected			
Syphilis-infected	40/262	16.9	(10.6, 23.2)	189/260	71.5	(65.3, 77.7)	37/26
Syphilis-uninfected	1053/15375	7.0	(6.3, 7.6)	5139/15185	34.9	(33.6, 36.1)	841/15

[1] Participants with indeterminate syphilis testing results (n=26) have been excluded from analysis for Chapter 13

[2] "Secondary+" includes any years of secondary schooling whether completed or not

[3] The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected asset construction, water access and sanitation facilities. The wealth index placed households on a continuous scale of relative wealth using principal compon according to the score of the household in which they resided and the sample was divided into five groups, each with an equal number of individuals (qu highest level of wealth.

13.3 Population estimates of adults aged 15-64 years with syphilis

	2007 Projected adult population (women and men 15-64 years old)[4,5]	Syphilis prevalence[6] (%)	Estimated adult population (women and men 15-64 years old) infected with syphilis[5,7]	95% CI f popula syphilis
National	**19,984,000**	**1.78**	**356,000**	**(300**
Women	10,320,000	1.70	175,000	(138
Men	9,664,000	1.88	182,000	(141

[4] Source: Revised Population Projections for Kenya 2000-2020 (Kenya National Bureau of Statistics. August 2006).

[5] Figures rounded to the nearest 1000.

[6] Weighted, syphilis prevalence estimates from the 2007 KAIS rounded to one-hundredth of a percent.

[7] Population estimates obtained by multiplying projected base population by the appropriate weighted KAIS estimate.

[8] Confidence intervals were calculated by multiplying projected populations by the lower and upper bounds (rounded to one-hundredth of a percent) of tl prevalence estimate.

APPENDIX B.14: HOUSEHOLD CHARACTERISTICS AND IMPACT OF HIV ON HOUSEHOLDS

14.3 Household composition

Fig 14.3a & 14.3b Households distribution by sex of head of household (HH) and residence (KAIS 2007)

	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	Women-headed			Men-headed			Total		
Rural	2740/6925	38.5	(37.1, 39.9)	4185/6925	61.5	(60.1, 62.9)	6925/9691	75.5	(72.7, 78.4)
Urban	1042/2766	39.6	(34.3, 45.0)	1724/2766	60.4	(55.0, 65.7)	2766/9691	24.5	(21.6, 27.3)
Total	3782/9691	38.8	(37.1, 40.4)	5909/9691	61.2	(59.6, 62.9)	9691/9691	100.0	-

Fig 14.3a & 14.3b Households distribution by sex of head of household (HH) and residence (KDHS 2003)

	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	Women-headed			Men-headed			Total		
Rural	1884/5668	33.8	32.1, 35.5	3784/5668	66.2	64.5, 67.9	5668/8561	75.0	73.5, 76.5
Urban	744/2893	25.6	23.3, 27.9	2149/2893	74.4	72.1, 76.7	2893/8561	25.0	23.5, 26.5
Total	2628/8561	31.7	(30.3, 33.1)	5933/8561	68.3	66.9, 69.7	8561/8561	100.0	-

Fig 14.3a & 14.3b Households distribution by sex of head of household (HH) and province (KAIS 2007)

	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	Women-headed			Men-headed			Total		
Nairobi	469/1264	38.7	(32.2, 44.5)	795/1264	61.6	(55.5, 67.8)	1264/9691	9.5	(8.5, 10.4)
Central	506/1369	37.2	(34.2, 40.2)	863/1369	62.8	(59.8, 65.8)	1369/9691	14.5	(13.0, 16.0)
Coast	419/1105	38.9	(33.5, 44.2)	686/1105	61.1	(55.8, 66.5)	1105/9691	8.0	(6.9, 9.1)
Eastern	584/1474	39.4	(36.3, 44.5)	890/1474	60.6	(57.5, 63.7)	1474/9691	15.5	(14.1, 16.9)
North Eastern	281/490	58.4	50.5, 66.4)	209/490	41.6	(33.6, 49.5)	490/9691	1.9	(1.6, 2.2)
Nyanza	582/1349	43.8	(40.6, 47.1)	767/1349	56.2	(52.9, 59.4)	1349/9691	15.2	(13.5, 16.9)
Rify Valley	555/1504	37.1	(32.1, 42.8)	949/1504	62.9	(57.9, 67.9)	1504/9691	24.6	(21.9, 27.2)
Western	386/1136	33.4	(30.5, 36.3)	750/1136	66.6	(63.7, 69.5)	1136/9691	10.8	(9.8, 11.9)
Total	3782/9691	38.8	(37.1, 40.4)	5909/9691	61.2	(59.6, 62.9)	9691/9691	100.0	-

Fig 14.3c Mean size of household by residence, KAIS 2007 and KDHS 2003

	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	KAIS 2007			KDHS 2003		
Rural	6925	4.5	(4.4, 4.6)	5668	4.4	(4.5, 4.8)
Urban	2766	3.3	(3.1, 3.5)	2893	3.5	(3.3, 3.6)
Total	9691	4.2	(4.1, 4.3)	8561	4.3	(4.3, 4.4)

Fig 14.3d Household population, by age and sex among RURAL households

years	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	Women			Men			Total		
0-4	2504/16582	15.0	(14.3, 15.6)	2670/5148	17.4	(16.6, 18.2)	5174/31730	16.2	(15.6, 16.7)
5-14.	5048/16582	30.2	(29.3, 31.1)	5262/5148	34.2	(33.2, 35.2)	10310/31730	32.1	(31.3, 32.)
15-49	6861/16582	41.9	(41.1, 42.8)	5312/5148	36.1	(34.9, 37.2)	12173/31730	39.1	(38.3, 40.0)
50+	2169/16582	12.8	(12.1, 13.5)	1904/5148	12.3	11.7, 12.9)	4073/31730	12.6	(12.0, 13.2)
Total	16582/16582	100.0	-	5148/5148	100.0	-	31730/31730	100.0	-

Fig 14.3d Household population, by age and sex among URBAN households -continued

years	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	Women			Men			Total		
0-4	622/4663	13.5	(11.9, 15.1)	611/4050	16.1	(14.6, 17.7)	1233/8713	14.7	(13.5, 15.9)
5-14.	1004/4663	23.1	(21.4, 24.7)	897/4050	22.3	(19.8, 24.7)	1901/8713	22.7	(21.1, 24.3)
15-49	2696/4663	57.3	(55.4, 59.2)	2161/4050	53.7	(50.5, 56.8)	4857/8713	55.6	(53.6, 57.7)
50+	341/4663	6.1	(4.9, 7.4)	381/4050	7.9	(6.6, 9.3)	722/8713	7.0	(5.9, 8.0)
Total	4663/4663	100.0	-	4050/4050	100.0	-	8713/8713	100.0	-

Fig 14.3d Household population, by age and sex among ALL households -continued

years	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	Women			Men			Total		
0-4	3126/21245	14.7	(14.2, 15.3)	3281/19198	17.2	(16.5, 17.9)	6407/40443	15.9	(15.4, 16.4)
5-14.	6052/21245	28.8	(28.0, 29.6)	6159/19198	32.1	(31.1, 33.0)	12211/40443	30.3	(29.6, 31.1)
15-49	9557/21245	44.9	(44.0, 45.8)	7473/19198	39.2	(38.1, 40.4)	17030/40443	42.2	(41.4, 43.1)
50+	2510/21245	11.5	(10.9, 12.2)	2285/19198	11.5	(11.0, 12.1)	4795/40443	11.5	(11.0, 12.1)
Total	21245/21245	100.0	-	19198/19198	100.0	-	40443/40443	100.0	-

APPENDIX B.14: HOUSEHOLD CHARACTERISTICS AND IMPACT OF HIV ON HOUSEHOLDS

14.4 Birth registrations

Fig 14.4a Children under five years of age who were issued a birth certificate or registered with the civil authority by province

	Children under 5 years of age		
	Unweighted n/N	Weighted %	95% CI
Nairobi	338/439	74.3	(66.1, 82.4)
Central	506/617	83.8	(80.7, 86.9)
Coast	546/716	75.5	(68.7, 82.2)
Eastern	697/1034	69.5	(64.7, 74.4)
North Eastern	126/482	27.2	(18.6, 35.7)
Nyanza	557/1040	54.4	(49.7, 59.1)
Rift Valley	614/1118	54.4	(47.8, 61.1)
Western	588/961	61.0	(56.7, 65.3)
Rural	3052/5174	60.5	(57.9, 63.0)
Urban	920/1233	72.8	(66.0, 79.6)
Total	3972/6407	62.6	(60.2, 65.1)

14.5 Prevalence of HIV-affected households

Fig 14.5a Households with at least one HIV-infected adult aged 15-64 years

	HIV-affected households		
	Unweighted n/N	Weighted %	95% CI
Rural	662/6398	10.9	(10.0, 11.8)
Urban	297/2696	11.3	(9.0, 13.7)
Total	959/9094	11.0	-

Fig 14.5b HIV-affected households by number of HIV-infected members

	Rural			Urban			Total		
	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
1 member	556/662	84.1	(81.4, 86.9)	266/297	89.7	(85.9, 93.6)	822/959	85.6	(83.4, 87.9)
2 members	101/662	15.2	(12.6, 17.7)	28/297	9.1	(5.4, 12.8)	129/959	13.6	(11.4, 15.7)
3 members	5/662	0.71	(0.05, 1.4)	3/297	1.2	(0.0, 2.5)	8/959	0.83	(0.23, 1.4)

Fig 14.5c HIV-affected households with HIV-infected head of household

	Percent		
	Unweighted n/N	Weighted %	95% CI
Rural	399/550	73.2	(69.2, 77.3)
Urban	212/265	81.6	(76.3, 87)

Fig 14.5d CD4 cell category and ARV status of the infected member in HIV-affected households by rural/urban residence

	CD4 <250 cells/uL			CD4 ≥250 cells/uL		
	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
HIV-affected households with no member on ARVs	238/873	26.5	(22.8, 30.2)	635/873	73.5	(69.8, 77.2)

14.6 Drinking water and toilet facilities

Fig 14.6a Source of drinking water by rural and urban residence

	Rural			Urban		
	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
Piped into dwelling or compound	716/6925	11.7	(9.0,14.4)	1467/2766	52.1	(44.7,59.5)
Public tap	694/6925	10.6	(8.3,12.8)	802/2766	34.5	(29.0,40.0)
Well water	2160/6925	29.2	(26.0,32.5)	197/2766	5.9	(2.7,9.2)
Spring water	1051/6925	15.3	(13.6,17.0)	46/2766	1.0	(0.22,1.8)
Rainwater	269/6925	4.1	(3.2,5.0)	12/2766	0.31	(0,0.64)
Surface water*	1880/6925	27.2	(24.5,29.9)	98/2766	2.8	(0.48,5.1)
Other	155/6925	2.0	(1.0,2.9)	144/2766	3.3	(1.9,4.8)

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14.6a Source of drinking water by province

	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
	Coast			**Nyanza**			**Central**		
Piped into Dwelling or compound	163/1105	15	(9.2 - 20.7)	89.0/1349	7.1	(2.2 - 12.1)	475/1369	39.1	(29.0 - 49.2)
Public Tap	576/1105	55.5	(46.4 - 64.6)	161/1349	15.9	(8.4 - 23.4)	69.0/1369	5.2	(2.6 - 7.8)
Well water	176/1105	14.1	(6.2 - 22.0)	330/1349	22.5	(17.8 - 27.3)	276/1369	20	(13.1 - 26.9)
Spring water	10.0/1105	0.62	(0.0 - 1.5)	389/1349	26.6	(21.6 - 31.6)	134/1369	8.5	(5.4 - 11.5)
Rain water	3.0/1105	0.21	(0.0 - 0.5)	65.0/1349	4.6	(2.9 - 6.4)	107/1369	7.6	(4.9 - 10.3)
Surface water	159/1105	13.6	(5.4 - 21.7)	303/1349	21.8	(15.3 - 28.2)	292/1369	18.7	(13.9 - 23.4)
Other	18.0/1105	0.9	(0.2 - 1.6)	12.0/1349	1.4	(0.0 - 3.3)	16.0/1369	1	(0.1 - 1.8)
	Eastern			**Nairobi**			**Western**		
Piped into Dwelling or compound	247/1474	17.4	(9.7 - 25.1)	956/1264	72.1	(63.3, 81.0)	45.0/1136	4.3	(1.7, 6.8)
Public Tap	185/1474	12	(6.8 - 17.1)	205/1264	23.2	(15.6, 30.7)	88.0/1136	7.2	(3.8, 10.7)
Well water	425/1474	28.7	(21.6 - 35.8)	29/1264	2.3	(0.0, 5.8)	386/1136	33.7	(27.5, 39.9)
Spring water	99.0/1474	7.6	(4.0 - 11.1)	0/1264	.	(., .)	256/1136	22.2	(17.4, 27.1)
Rain water	0.0	1.4	(0.6 - 2.2)	0/1264	.	(., .)	15.0/1136	1.1	(0.32, 1.9)
Surface water	390/1474	27	(21.5 - 32.5)	0/1264	.	(., .)	334/1136	30.6	(24.1, 37.0)
Other	105/1474	6	(1.6 - 10.4)	0.1	2.5	(1.4, 3.5)	12.0/1136	0.94	(0.42, 1.5)
	Rift-Valley			**North-Eastern**					
Piped into Dwelling or compound	204/1504	14.7	(7.9, 21.5)	4.0/ 490	0.8	(0.0, 2.0)			
Public Tap	186/1504	15.6	(10.4, 20.8)	26.0/ 490	7.3	(0.0, 15.8)			
Well water	397/1504	26.6	(19.5, 33.7)	330/ 490	64.6	(50.7, 78.6)			
Spring water	185/1504	11.4	(8.4, 14.4)	24.0/ 490	4.3	(0.0, 10.9)			
Rain water	67.0/1504	4.1	(2.2, 5.9)	1.0/ 490	0.42	(0.0, 1.0)			
Surface water	434/1504	25.9	(20.1, 31.7)	66.0/ 490	13	(2.4, 23.6)			
Other	31.0/1504	1.8	(0.83, 2.7)	39.0/ 490	9.6	(2.8, 16.5)			

Fig 14.6b Method of treating drinking water by rural and urban residence

	Rural			**Urban**		
Boiling	1675/6925	26.5	(24.8,28.3)	909/2766	30.6	(27.5,33.7)
Disinfection	802/6925	11.4	(10.2,12.6)	446/2766	15.8	(12.5,19.1)
Bottled water	21/6925	0.28	(0.11,0.45)	98/2766	1.5	(0.94,2.1)
Other	130/6925	1.7	(1.3,2.1)	39/2766	0.80	(0.36,1.2)
Does not treat water	4297/6925	60.1	(58.0,62.3)	1274/2766	51.2	(47.2,55.2)

Fig 14.6b Method of treating drinking water by province

	Coast			**Nyanza**			**Central**		
Boiling	100/1105	7.9	(5.9, 10.0)	459/1349	34.3	(30.1, 38.6)	519/1369	38.2	(34.6, 41.9)
Disinfection	209/1105	16.9	(13.7, 20.1)	294/1349	20.9	(16.9, 24.9)	80.0/1369	5.4	(4.0, 6.9)
Bottled water	7.0/1105	0.3	(0.0, 0.6)	6.0/1349	0.5	(0.0, 1.1)	2.0/1369	0.1	(0.0, 0.3)
Other	7.0/1105	0.7	(0.0, 1.5)	32.0/1349	2.3	(1.3, 3.3)	13.0/1369	0.8	(0.3, 1.3)
Does not treat water	782/1105	74.2	(70.3, 78.0)	558/1349	41.9	(36.3, 47.6)	755/1369	55.4	(51.5, 59.3)

14.6c Method of treating drinking water by province

	Eastern			**Nairobi**			**Western**		
Boiling	311/1474	22.6	(19.3, 25.9)	588/1264	42.7	(38.1, 47.3)	143/1136	12.4	(9.8, 14.9)
Disinfection	238/1474	15.1	(11.8, 18.4)	139/1264	12.1	(9.5, 14.8)	167/1136	14.8	(10.5, 19.0)
Bottled water	5.0/1474	0.2	(0.0, 0.4)	86.0/1264	2.7	(1.7, 3.7)	10.0/1136	0.9	(0.1, 1.6)
Other	25.0/1474	1.4	(0.7, 2.2)	16.0/1264	0.4	(0.0, 0.7)	56.0/1136	4.8	(3.2, 6.3)
Does not treat water	895/1474	60.7	(56.2, 65.2)	435/1264	42.1	(36.6, 47.5)	760/1136	67.2	(61.7, 72.7)
	Rift-Valley			**North-Eastern**					
Boiling	452/1504	29.3	(25.2, 33.4)	12.0/ 490	2	(0.0, 5.8)			
Disinfection	106/1504	8.2	(5.1, 11.2)	15.0/ 490	3.9	(0.5, 7.3)			
Bottled water	2.0/1504	0.3	(0.0, 0.7)	1.0/ 490	0.2	(0.0, 0.7)			
Other	10.0/1504	0.5	(0.2, 0.8)	10.0/ 490	2.7	(0.0, 5.8)			
Does not treat water	934/1504	61.8	(56.7, 66.8)	452/ 490	91.1	(84.1, 98.1)			

APPENDIX B.14: HOUSEHOLD CHARACTERISTICS AND IMPACT OF HIV ON HOUSEHOLDS

Fig 14.6c Method of treating drinking water among HIV-affected and HIV-unaffected households

	HIV unaffected			HIV-affected and at least one knows status			HIV-affected and none knows status		
	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI	Unweighted n/N	Weighted %	95% CI
Boiling	2196/8135	27.8	(26.2, 29.4)	37/148	28.5	(18.8, 38.2)	215/811	27.0	(23.3, 30.7)
Disinfection	1036/8135	12.5	(11.2, 13.9)	39/148	23.9	(15.5, 32.2)	140/811	14.9	(11.9, 17.9)
Bottled water	103/8135	0.64	(0.41, 0.86)	1/148	0.08	(0, 0.22)	9/811	0.36	(0, 0.75)
Other	149/8135	1.50	(1.2, 1.9)	2/148	1.20	(0, 3.5)	8/811	0.75	(0.2, 1.3)
Does not treat water	4651/8135	57.5	(55.5, 59.5)	69/148	46.4	(36.2, 56.6)	439/811	57.0	(52.8, 61.3)

14.6 Drinking water and toilet facilities

Fig 14.6d Type of household toilet facility by residence

	Rural			Urban		
Traditional pit latrine	4772/6925	70.4	(67.8, 72.9)	1201/2766	46.9	(40, 53.8)
VIP	566/6925	9.8	(7.6, 12)	290/2766	15.0	(9.8, 20.2)
No facility	1492/6925	18.5	(15.8, 21.2)	56/2766	0.90	(0.46, 1.4)
Flush toilet	87/6925	1.3	(0.88, 1.7)	1199/2766	37.1	(29.4, 44.7)

14.6d Sharing toilet facilities, by Province

	Households		
Nairobi	734/1254	71.2	(62.7, 79.8)
Central	624/1369	47.8	(41.8, 53.8)
Coast	510/ 816	61.8	(52.8, 70.9)
Eastern	460/1273	33.4	(26.8, 40.0)
North-Eastern	89.0/ 113	77.2	(70.2, 84.2)
Nyanza	400/1016	40	(33.0, 47.1)
Rift-Valley	591/1215	52.1	(43.5, 60.8)
Western	439/1085	40.5	(35.4, 45.6)

14.7 Household ownership of mosquito bednets

Fig 14.7a Households that owned at least one mosquito bednet by province

	Any bednet			ITN		
Nairobi	662/1264	53.2	(47.4-59)	303/1264	22.8	(19.1 - 26.5)
Central	486/1369	34.1	(28.3-39.9)	329/1369	22.6	(19.0 - 26.1)
Coast	785/1105	71.2	(67.6-74.7)	602/1105	53.7	(50.7 - 56.7)
Eastern	931/1474	63.3	(59.4-67.2)	714/1474	50.2	(46.1 - 54.3)
North Eastern	215/490	43.6	(33.8-53.4)	105/490	20.2	(11.3 - 29.1)
Nyanza	1060/1349	78.6	(74.8-82.4)	865/1349	64.6	(60.7 - 68.6)
Rift Valley	620/1504	40.8	(35.8-45.8)	475/1504	30.5	(26.9 - 34.0)
Western	815/1136	71.7	(68.1-75.3)	699/1136	61.1	(57.1 - 65.1)

Fig 14.7a Households that owned at least one mosquito bednet by residence, KDHS 2003 and KAIS 2007

	KAIS 2007			KDHS 2003		
Rural	3892/6925	54.8	(52.8-56.9)	964/5668	16.6	14.5, 18.8
Urban	1682/2766	59.8	(55.2-64.5)	1170/2893	37.6	33.5, 41.6
Total	5574/9691	56.1	(54.2-58.0)	2134/8561	21.8	19.9, 23.8

Fig 14.7b HIV-affected and HIV-unaffected households that owned at least one mosquito bednet by rural/urban residence

	HIV-affected			HIV-unaffected		
Rural	449/662	65.0	(60.4-69.5)	3262/5736	55.6	(53.5-57.7)
Urban	179/297	57.3	(47.5-67.5)	1476/2399	60.2	(56.0-65.0)
Total	621/959	62.9	(58.6-62.3)	4738/8135	56.8	(54.8-57.8)

Fig 14.7c Household ownership of at least one insecticide treated mosquito bednet (ITN), by rural/urban residence

	Percent		
Rural	3179/6925	43.4	(41.7, 45.2)
Urban	1031/2791	36.8	(32.1, 67.3)
Total	`	41.8	(40.2, 43.5)

APPENDIX B.15: COLLECTION OF TEST RESULTS

	Unweighted n/N	Unweighted %	95% CI	Unweighted n/N	Unweighted %	95% CI	Unweighted n/N	Unweighted %	95% CI

15.3 Collection of test results by socio-demographic characteristics

Fig 15.3a Percent of participants who collected test results

	Women			Men			Total		
	4164/9049	46.0	(43.2, 48.9)	3058/6804	44.9	(42.2, 47.7)	7222/15853	45.6	(42.9, 48.2)

Fig 15.3b Percent of participants who collected test results by residence

	Women			Men			Total		
Rural	3623/6822	53.1	(49.7, 56.5)	2637/5109	51.6	(48.4, 54.9)	6260/11931	52.5	(49.3, 55.7)
Urban	541/2227	24.3	(20.0, 28.6)	421/1695	24.8	(20.2, 29.5)	962/3922	24.5	(20.4, 28.7)

Fig 15.3c Percent of participants who collected test results by province

	Women			Men			Total		
Nairobi	149/1018	14.6	(10.9, 18.3)	126/793	15.9	(11.6, 20.1)	275/1811	15.2	(11.7, 18.7)
Central	564/1289	43.8	(35.8, 51.7)	435/988	44.0	(36.6, 51.5)	999/2277	43.9	(36.4, 51.3)
Coast	426/1026	41.5	(30.9, 52.1)	302/747	40.4	(31.8, 49.0)	728/1773	41.1	(31.8, 50.3)
Eastern	849/1458	58.2	(51.2, 65.2)	630/1095	57.5	(50.9, 64.2)	1479/2553	57.9	(51.3, 64.5)
North Eastern	335/434	77.2	(61.8, 92.6)	222/319	69.6	(50.0, 89.1)	557/753	74.0	(57.0, 90.9)
Nyanza	654/1386	47.2	(39.5, 54.9)	406/994	40.8	(33.5, 48.2)	1060/2380	44.5	(37.4, 51.7)
Rift Valley	584/1266	46.1	(38.8, 53.4)	484/1002	48.3	(40.2, 56.4)	1068/2268	47.1	(39.8, 54.4)
Western	603/1172	51.5	(43.6, 59.3)	453/866	52.3	(45.4, 59.3)	1056/2038	51.8	(44.6, 59.1)

Fig 15.3d Percent of participants who collected test results by age group

(years)	Women			Men			Total		
15-24	1194/2926	40.8	(37.7, 43.9)	920/2209	41.6	(38.2, 45.1)	2114/5135	41.2	(38.3, 44.1)
25-29	593/1345	44.1	(40.2, 48.0)	314/874	35.9	(31.8, 40.0)	907/2219	40.9	(37.6, 44.1)
30-39	963/2104	45.8	(42.3, 49.3)	640/1450	44.1	(40.6, 47.7)	1603/3554	45.1	(42.1, 48.1)
40-49	769/1474	52.2	(48.4, 55.9)	558/1125	49.6	(45.5, 53.7)	1327/2599	51.1	(47.6, 54.5)
50-59	496/944	52.5	(48.1, 57.0)	419/805	52.0	(47.5, 56.6)	915/1749	52.3	(48.5, 56.1)
60-64	149/256	58.2	(51.5, 64.9)	207/341	60.7	(55.2, 66.2)	356/597	59.6	(54.8, 64.5)

Fig 15.3e Percent of participants who collected test results by marital status

	Women			Men			Total		
Never married/cohabited	798/2069	38.6	(35.4, 41.7)	988/2454	40.3	(36.9, 43.6)	1786/4523	39.5	(36.6, 42.4)
Currently married/cohabiting	2745/5665	48.5	(45.3, 51.6)	1895/3974	47.7	(44.7, 50.6)	4640/9639	48.1	(45.3, 51.0)
Monogamous	2297/4838	47.5	(44.4, 50.6)	1715/3624	47.3	(44.4, 50.3)	4012/8462	47.4	(44.5, 50.3)
Polygamous	448/827	54.2	(49.0, 59.4)	180/350	51.4	(45.6, 57.3)	628/1177	53.4	(48.6, 58.1)
Separated/divorced	256/632	40.5	(35.5, 45.6)	137/287	47.7	(41.4, 54.0)	393/919	42.8	(38.4, 47.1)
Widowed	365/683	53.4	(48.6, 58.3)	38/89	42.7	(32.0, 53.4)	403/772	52.2	(47.6, 56.8)

15.3e Percent of participants who collected test results by marital status and how results were collected

	Collected results as individual			Collected results as couple			Unknown/missing		
Never married/cohabited	1702/1785	95.4	(94.2, 96.5)	66/1785	3.7	(2.7, 4.7)	17/1785	1.0	(0.38, 1.5)
Currently married/cohabiting	3445/4637	74.3	(71.8, 76.8)	1168/4637	25.2	(22.7, 27.7)	0.01	0.52	(0, 0.76)
Monogamous	2942/4009	73.4	(70.8, 76.0)	1045/4009	26.1	(23.5, 28.7)	22/4009	0.55	(0.21, 0.89)
Polygamous	503/628	80.1	(75.8, 84.4)	123/628	19.6	(15.2, 24.0)	2/628	0.32	(0, 0.94)
Separated/divorced	382/393	97.2	(95.6, 98.8)	10/393	2.5	(1.1, 4.0)	1/393	0.25	(0, 0.76)
Widowed	393/404	97.3	(95.5, 99.1)	10/404	2.5	(0.72, 4.2)	1/404	0.25	(0, 0.73)

15.3e Percent of sexually active participants who collected test results by how results were collected

	Collected results as individual			Collected results as couple			Unknown/missing		
Sexually Active in the last 12 months	4106/5306	77.4	(75.2, 79.6)	1171/5306	22.1	(19.9, 24.3)	29/5306	0.55	(0.25, 0.85)

Fig 15.3f Percent of participants who collected test results by wealth index1

	Women			Men			Total		
Lowest	953/1621	58.8	(52.5, 65.1)	617/1137	54.3	(47.5, 61.0)	1570/2758	56.9	(50.7, 63.1)
Second	908/1674	54.2	(50.0, 58.5)	647/1239	52.2	(47.7, 56.8)	1555/2913	53.4	(49.3, 57.4)
Middle	883/1740	50.7	(46.3, 55.2)	680/1309	51.9	(47.5, 56.4)	1563/3049	51.3	(47.1, 55.4)
Fourth	777/1755	44.3	(40.0, 48.6)	587/1340	43.8	(39.3, 48.4)	1364/3095	44.1	(40.1, 48.1)
Highest	643/2259	28.5	(24.8, 32.2)	527/1779	29.6	(25.9, 33.3)	1170/4038	29.0	(25.6, 32.3)

APPENDIX B.15: COLLECTION OF TEST RESULTS

Fig 15.3g Percent of participants who collected test results by education

	Women			Men			Total		
	Unweighted n/N	**Unweighted %**	**95% CI**	**Unweighted n/N**	**Unweighted %**	**95% CI**	**Unweighted n/N**	**Unweighted %**	**95% CI**
No primary	932/1605	58.1	(51.9, 64.3)	359/609	58.9	(49.1, 68.8)	1291/2214	58.3	(51.5, 65.1)
Incomplete primary	1295/2609	49.6	(45.8, 53.5)	925/1890	48.9	(45.1, 52.8)	2220/4499	49.3	(45.9, 52.8)
Complete primary	982/2170	45.3	(41.7, 48.8)	765/1632	46.9	(43.3, 50.5)	1747/3802	45.9	(42.7, 49.2)
Secondary +[2]	955/2665	35.8	(32.7, 39.0)	1009/2673	37.7	(34.6, 40.9)	1964/5338	36.8	(34.0, 39.6)

Fig 15.4a Percent of participants who collected test results by HIV testing history

	Women			Men			Total		
Never tested or tested but never received results	2518/5239	48.1	(45.0, 51.2)	2279/4997	45.6	(42.7, 48.5)	4797/10236	46.9	(44.0, 49.7)
Tested and received results	1447/3554	40.7	(37.4, 44.0)	690/1690	40.8	(37.3, 44.4)	2137/5244	40.8	(37.7, 43.8)

Fig 15.4b Percent of HIV-infected participants who collected test result by self-reported HIV status

	Women			Men			Total		
Self-reported positive	53/114	46.5	(36.8, 56.2)	21/50	42.0	(27.7, 56.3)	74/164	45.1	(36.2, 54.1)
Self-reported negative	81/239	33.9	(27.1, 40.7)	24/76	31.6	(20.6, 42.6)	105/315	33.3	(27.1, 39.5)
Never tested or tested but never received results	138/367	37.6	(31.6, 43.6)	84/231	36.4	(29.9, 42.8)	222/598	37.1	(32.1, 42.2)

15.4b Percent of participants who collected test results by HIV status

	Women			Men			Total		
HIV-infected	279/735	38.0	(33.0, 42.9)	132/369	35.8	(30.2, 41.3)	411/1104	37.2	(32.9, 41.6)
HIV-uninfected/ indeterminate	3885/8314	46.7	(43.9, 49.6)	2926/6435	45.5	(42.7, 48.2)	6811/14749	46.2	(43.5, 48.9)

15.4b Knowledge of status among HIV-infected

	Women			Men			Total		
Previously aware of status	60/129	46.5	(37.3, 55.7)	24/62	38.7	(25.7, 51.7)	84/191	44.0	(35.7, 52.3)
Previously unaware of status	219/606	36.1	(30.9, 41.4)	108/307	35.2	(29.4, 40.9)	327/913	35.8	(31.2, 40.4)

15.5 Collection of test results by pregnancy status

Fig 15.5 Women who collected test results by pregnancy status

	Women		
Pregnant	237/518	45.8	(40.5, 51)
Not Pregnant	3220/7213	44.6	(41.8, 47.5)
Unsure	59/112	52.7	(42.6, 62.8)

15.5 Women who collected test results by pregnancy status and HIV, HSV-2, or syphilis infection

	Women		
Pregnant or unsure of pregnancy status and infected with HIV, HSV-2, or syphilis	113/263	43.0	(36.1, 49.8)

[1] The wealth index was a composite measure of the living standard of a household, calculated using data on a household's ownership of selected assets, materials used for housing construction, water access and sanitation facilities. The wealth index placed households on a continuous scale of relative wealth using principal components analysis. Individuals were ranked according to the score of the household in which they resided and the sample was divided into five groups, each with an equal number of individuals (quintiles), ranging from the lowest to highest level of wealth.

[2] "Secondary+" includes any years of secondary schooling whether completed or not.

Appendix C

Estimates of Sampling Errors

The 2007 KAIS was implemented with a stratified, two-stage cluster design. A representative sample of households from all eight provinces, in both urban and rural areas were included.

The 2007 KAIS sample of respondents selected represents only one of many possible samples that could have been selected using this same sampling design and size. Therefore, other possible samples would yield results that differ somewhat from the results obtained from this survey. Sampling errors are measures of this variability between all possible samples. Although the degree of variability is not known, it can be estimated from the survey results.

The standard error of a given estimate is one measure of sampling error. This measure is defined as the square root of the sample variance. From the standard error, confidence intervals of the estimate can be determined, a range within which the true estimate can reasonably be assumed to fall. Usually confidence intervals are reported as 95% confidence intervals in which the estimate of interest lies within a range of values calculated as plus or minus two times the standard error. In addition to this appendix, Appendix B provides 95% confidence intervals for all estimates presented in the report.

Because the 2007 KAIS used a complex sampling design, it was not possible to calculate standard errors using methods found in surveys using simple random sampling. For this report, standard errors were calculated using the Taylor linearization method of variance estimation.

In addition to the standard error, the design effect (DEFT) (also known as the design factor) is calculated for each estimate; it is the ratio between the standard error using the complex sample design and the standard error that would have resulted if a simple random sample was used instead. Thus, the DEFT is a measure of sampling efficiency of the complex design compared with that of a simple random sample. A DEFT value of 1.0 indicates that the complex sample design is just as efficient as a simple random design for that given estimate, whereas a value greater than 1.0 indicates the increase in the sampling error due to the use of a more complex, less statistically efficient design. A DEFT of less than 1.0 indicates the increase in sampling efficiency (or decrease in sampling error) that resulted because of the complex design.

Presented in this appendix are sampling errors for selected variables representing a cross-section of indicators from the 2007 KAIS report. Table C.1 lists these indicators as well as how their base population was defined. For many of the indicators, the base population is simply the 2007 KAIS sample population (adults between 15-64 years). However, other indicators are limited to a specific population sub-group. For example, the base population for the indicator 'sexual abstinence among youth (never has sex)' is never-married men and women between 15-24 years.

Tables C.2 to C.12 report the weighted proportion (R), the standard error (SE), the un-weighted sample size (N), the design effect (DEFT), the relative error (SE/R), and the lower (R-2SE) and upper (R+2SE) 95% confidence intervals. All tables report sampling errors for indicators stratified by sex with the exception of care and support for orphaned and vulnerable children. Table C.2 reports sampling errors for the national sample, Tables C.2 and C.3 reports sampling errors by urban and rural samples, and C.4 to C.12 reports sampling errors by the eight Kenyan provinces.

Table C.1 List of selected indicators and base population for sampling errors, KAIS 2007.

No	Indicator	Base Population
1	Urban residence	Women/men 15-64 years
2	No education	Women/men 15-64 years
3	With secondary education or higher	Women/men 15-64 years
4	Never married/never cohabited	Women/men 15-64 years
5	Currently married/cohabiting	Women/men 15-64 years
6	Currently using any contraceptive method1	Women 15-49 years, not currently pregnant, sexually active during lifetime
7	Using a modern contraceptive method[1]	Women 15-49 years, not currently pregnant, sexually active during lifetime
8	Had first sex before age 15 - youth	Women/men 15-24 years
9	Had two or more sexual partners in past 12 months	Women/men 15-64 years who had sex in the past 12 months
10	Condom use at first sex - youth	Women/men 15-24 years
11	Comprehensive knowledge[2] of HIV transmission - all	Women/men 15-64 years
12	Comprehensive knowledge[2] of HIV transmission - youth	Women/men 15-24 years
13	Abstinence among youth (never had sex)	Never married women/men 15-24 years
14	Sexual activity in past 12 months (never-married youth)	Never married women/men 15-24 years
15	Had medical injections in past 12 months	Women/men 15-64 years
16	Had HIV test and received results last time	Women/men 15-64 years
17	Accepting attitudes[3] towards people with HIV	Women/men 15-64 years who have heard of HIV/AIDS
18	HIV prevalence	Women/men 15-64 years who were tested for HIV
19	Syphilis prevalence	Women/men 15-64 years who were tested for syphilis
20	Herpes prevalence	Women/men 15-64 years who were tested for HSV2
21	Care and support for orphans and vulnerable children who received ANY type[4] of free basic external support	Children 0-17 years whose mother or father died, or who lived in a household in which a person aged 18-64 years either died in the past 12 months or was illl for 3 or more months in the past 12 months

1 Any contraception use includes female sterilisation, male sterilisation, use of birth control pills, IUD, injections, implant, condom, female condom, rhythm/natural methods, and withdrawal. Modern contraception includes female sterilisation, male sterilisation, use of birth control pills, IUD, injections, implant, condom, or female condom.

2 Percentage who correctly answered 9 of the 12 knowledge questions regarding HIV transmission including questions on whether a person can reduce their risk for AIDS by having just one sex partner and no others, whether the risk of transmississsion can be reduced by using a condom everytime they have sexual intercourse, whether mosquito or other insects bites can transmit HIV, whether people can get AIDS by sharing utensils with a person who has AIDS, whether people can reduce their chance of getting AIDS by not having sex at all, whether people can get AIDS virus because of witchcraft or other supernatural means, whether an infected man or woman always transmits the virus to his/her partner, whether it is possible for a health-looking person to have the AIDS virus, and whether HIV can be transmitted to mother to her baby during pregnancy, delivery, or breastfeeding.

3 Percentage who answered all six questions regarding accepting attitudes correctly including that they would be willing to care for a relative sick with AIDS in their own households, and would be willing to buy fresh vegetables from a vendor who had the AIDS virus, and thought that a female teacher who has the AIDS virus should be allowed to continue teaching, and that if a member of their family got infected with the virus that causes AIDS they would not necessarily want it to remain a secret, and said they disagreed with the opinion that people with the AIDS virus should be ashamed with themselves, and disagreed with the opinion that people with AIDS should be blamed for bringing the disease into the community.

4 Refers to five types of support (medical, emotional, material, social, and school) for those between 5-17 year, and four types (excludes school) for those between 0-4 years.

Table C.2 Sampling errors for the national sample, KAIS 2007. All estimates (R) are proportions.

Indicator	Value (R)	Standard error (SE)	Unweighted (N)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
				WOMEN			
Urban residence	0.239	0.017	10239	4.028	0.071	0.205	0.272
No education	0.150	0.007	10239	2.015	0.047	0.136	0.164
With secondary education or higher	0.305	0.011	10239	2.325	0.035	0.285	0.326
Never married/never cohabited	0.231	0.007	10239	1.571	0.028	0.218	0.244
Currently married/cohabiting	0.627	0.008	10239	1.650	0.013	0.612	0.643
Currently using any contraceptive method	0.360	0.008	7112	1.462	0.023	0.343	0.376
Using a modern contraceptive method	0.339	0.009	7112	1.563	0.026	0.322	0.356
Had first sex before age 15 - youth	0.164	0.009	2070	1.157	0.058	0.145	0.182
Had two or more sexual partners in past 12 months	0.023	0.003	7192	1.419	0.109	0.018	0.028
Condom use at first sex - youth	0.255	0.013	2197	1.439	0.053	0.228	0.281
Comprehensive knowledge of HIV transmission - all	0.544	0.008	9949	1.700	0.016	0.527	0.561
Comprehensive knowledge of HIV transmission - youth	0.548	0.012	3293	1.413	0.022	0.524	0.572
Abstinence among youth (never had sex)	0.578	0.014	1915	1.247	0.024	0.550	0.605
Sexual activity in past 12 months (never-married youth)	0.251	0.014	1915	1.378	0.054	0.224	0.278
Had medical injections in past 12 months	0.383	0.008	10239	1.666	0.021	0.367	0.398
Had HIV test and received results last time	0.407	0.008	9949	1.571	0.019	0.392	0.423
Accepting attitudes towards people with HIV	0.350	0.009	9949	1.812	0.025	0.333	0.367
HIV prevalence	0.084	0.004	9049	1.443	0.050	0.075	0.092
Syphilis prevalence	0.017	0.002	8944	1.307	0.105	0.013	0.020
Herpes prevalence	0.417	0.008	8953	1.479	0.019	0.401	0.432
				MEN			
Urban residence	0.224	0.014	7701	2.936	0.062	0.197	0.251
No education	0.065	0.005	7701	1.852	0.080	0.055	0.075
With secondary education or higher	0.397	0.011	7701	2.049	0.029	0.375	0.420
Never married/never cohabited	0.371	0.008	7701	1.411	0.021	0.355	0.386
Currently married/cohabiting	0.573	0.008	7701	1.448	0.014	0.557	0.589
Had first sex before age 15 - youth	0.337	0.015	1543	1.287	0.046	0.307	0.368
Had two or more sexual partners in past 12 months	0.161	0.006	5720	1.147	0.035	0.150	0.172
Condom use at first sex - youth	0.284	0.014	1514	1.233	0.050	0.256	0.312
Comprehensive knowledge of HIV transmission - all	0.581	0.010	7573	1.684	0.016	0.562	0.600
Comprehensive knowledge of HIV transmission - youth	0.557	0.014	2485	1.437	0.026	0.529	0.585
Abstinence among youth (never had sex)	0.432	0.016	2253	1.515	0.037	0.401	0.463
Sexual activity in past 12 months (never-married youth)	0.362	0.014	2254	1.345	0.038	0.336	0.389
Had medical injections in past 12 months	0.261	0.007	7701	1.407	0.027	0.247	0.275
Had HIV test and received results last time	0.249	0.008	7573	1.614	0.032	0.233	0.265
Accepting attitudes towards people with HIV	0.348	0.008	7573	1.548	0.024	0.331	0.365
HIV prevalence	0.054	0.003	6804	1.224	0.062	0.047	0.060
Syphilis prevalence	0.019	0.002	6744	1.303	0.115	0.015	0.023
Herpes prevalence	0.263	0.007	6754	1.349	0.028	0.248	0.277
				INFANTS/CHILDREN			
Care and support for orphans and vulnerable children who received ANY type of free basic external support	0.209	0.013	3226	1.886	0.138	0.182	0.235

Table C.3 Sampling errors for the urban sample, KAIS 2007. All estimates (R) are proportions.

Indicator	Value (R)	Standard error (SE)	Un-weighted (N)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
				WOMEN			
Urban residence	.	.	.	.	.	.	.
No education	0.089	0.012	2614	2.153	0.135	0.065	0.112
With secondary education or higher	0.491	0.027	2614	2.786	0.055	0.437	0.545
Never married/never cohabited	0.282	0.023	2614	2.577	0.080	0.238	0.327
Currently married/cohabiting	0.563	0.027	2614	2.773	0.048	0.510	0.616
Currently using any contraceptive method	0.444	0.017	1961	1.491	0.038	0.411	0.477
Using a modern contraceptive method	0.417	0.017	1961	1.557	0.042	0.383	0.451
Had first sex before age 15 - youth	0.111	0.015	680	1.252	0.136	0.081	0.141
Had two or more sexual partners in past 12 months	0.032	0.006	1850	1.499	0.191	0.020	0.044
Condom use at first sex - youth	0.326	0.029	693	1.601	0.087	0.270	0.382
Comprehensive knowledge of HIV transmission - all	0.627	0.023	2586	2.383	0.036	0.582	0.671
Comprehensive knowledge of HIV transmission - youth	0.601	0.031	979	1.989	0.052	0.539	0.662
Abstinence among youth (never had sex)	0.446	0.028	582	1.379	0.064	0.390	0.502
Sexual activity in past 12 months (never-married youth)	0.375	0.032	582	1.584	0.085	0.312	0.437
Had medical injections in past 12 months	0.342	0.018	2614	1.956	0.053	0.306	0.378
Had HIV test and received results last time	0.574	0.014	2586	1.465	0.025	0.546	0.603
Accepting attitudes towards people with HIV	0.420	0.024	2586	2.496	0.058	0.372	0.467
HIV prevalence	0.100	0.013	2227	1.975	0.125	0.076	0.125
Syphilis prevalence	0.012	0.003	2182	1.410	0.275	0.005	0.018
Herpes prevalence	0.452	0.017	2184	1.642	0.039	0.418	0.487
				MEN			
Urban residence	.	.	.	.	.	.	.
No education	0.027	0.006	1965	1.730	0.233	0.015	0.040
With secondary education or higher	0.621	0.027	1965	2.501	0.044	0.567	0.675
Never married/never cohabited	0.386	0.017	1965	1.559	0.044	0.352	0.420
Currently married/cohabiting	0.565	0.017	1965	1.528	0.030	0.532	0.599
Had first sex before age 15 - youth	0.285	0.040	395	1.750	0.140	0.206	0.363
Had two or more sexual partners in past 12 months	0.175	0.013	1546	1.321	0.073	0.150	0.201
Condom use at first sex - youth	0.294	0.034	384	1.471	0.116	0.227	0.362
Comprehensive knowledge of HIV transmission - all	0.659	0.025	1955	2.302	0.037	0.611	0.708
Comprehensive knowledge of HIV transmission - youth	0.607	0.048	569	2.330	0.079	0.513	0.701
Abstinence among youth (never had sex)	0.404	0.053	497	2.408	0.131	0.300	0.508
Sexual activity in past 12 months (never-married youth)	0.436	0.045	498	2.028	0.103	0.348	0.525
Had medical injections in past 12 months	0.245	0.015	1965	1.555	0.062	0.215	0.275
Had HIV test and received results last time	0.397	0.016	1955	1.410	0.039	0.366	0.427
Accepting attitudes towards people with HIV	0.435	0.018	1955	1.610	0.041	0.400	0.471
HIV prevalence	0.061	0.009	1695	1.582	0.151	0.043	0.079
Syphilis prevalence	0.017	0.004	1676	1.377	0.253	0.009	0.026
Herpes prevalence	0.291	0.018	1677	1.624	0.062	0.256	0.326
				INFANTS/CHILDREN			
Care and support for orphans and vulnerable children who received ANY type of free basic external support	0.194	0.042	384	2.070	0.138	0.112	0.276

Table C.4 Sampling errors for the rural sample, KAIS 2007. All estimates (R) are proportions.

Indicator	Value (R)	Standard error (SE)	Un-weighted (N)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
WOMEN							
Urban residence	.	.	.	.	.	.	.
No education	0.170	0.009	7625	2.005	0.051	0.153	0.187
With secondary education or higher	0.247	0.009	7625	1.904	0.038	0.229	0.266
Never married/never cohabited	0.215	0.006	7625	1.185	0.026	0.204	0.226
Currently married/cohabiting	0.647	0.007	7625	1.215	0.010	0.634	0.660
Currently using any contraceptive method	0.331	0.009	5151	1.376	0.027	0.313	0.348
Using a modern contraceptive method	0.312	0.010	5151	1.478	0.031	0.293	0.331
Had first sex before age 15 - youth	0.189	0.012	1390	1.151	0.064	0.165	0.212
Had two or more sexual partners in past 12 months	0.020	0.003	5342	1.415	0.135	0.015	0.025
Condom use at first sex - youth	0.221	0.013	1504	1.252	0.061	0.195	0.248
Comprehensive knowledge of HIV transmission - all	0.518	0.009	7363	1.601	0.018	0.499	0.536
Comprehensive knowledge of HIV transmission - youth	0.527	0.013	2314	1.223	0.024	0.502	0.552
Abstinence among youth (never had sex)	0.625	0.015	1333	1.147	0.024	0.595	0.655
Sexual activity in past 12 months (never-married youth)	0.206	0.014	1333	1.225	0.066	0.179	0.233
Had medical injections in past 12 months	0.395	0.008	7625	1.486	0.021	0.379	0.412
Had HIV test and received results last time	0.354	0.009	7363	1.660	0.026	0.336	0.372
Accepting attitudes towards people with HIV	0.328	0.008	7363	1.515	0.025	0.312	0.344
HIV prevalence	0.078	0.004	6822	1.231	0.051	0.071	0.086
Syphilis prevalence	0.019	0.002	6762	1.277	0.113	0.014	0.023
Herpes prevalence	0.405	0.009	6769	1.429	0.021	0.389	0.422
MEN							
Urban residence	.	.	.	.	.	.	.
No education	0.076	0.006	5736	1.840	0.085	0.063	0.089
With secondary education or higher	0.333	0.010	5736	1.686	0.032	0.312	0.353
Never married/never cohabited	0.366	0.009	5736	1.365	0.024	0.349	0.383
Currently married/cohabiting	0.575	0.009	5736	1.421	0.016	0.557	0.594
Had first sex before age 15 - youth	0.353	0.016	1148	1.163	0.047	0.320	0.385
Had two or more sexual partners in past 12 months	0.157	0.006	4174	1.093	0.039	0.145	0.169
Condom use at first sex - youth	0.281	0.015	1130	1.157	0.055	0.250	0.311
Comprehensive knowledge of HIV transmission - all	0.558	0.010	5618	1.505	0.018	0.539	0.578
Comprehensive knowledge of HIV transmission - youth	0.543	0.013	1916	1.139	0.024	0.518	0.569
Abstinence among youth (never had sex)	0.440	0.014	1756	1.213	0.033	0.411	0.468
Sexual activity in past 12 months (never-married youth)	0.343	0.012	1756	1.091	0.036	0.318	0.367
Had medical injections in past 12 months	0.265	0.008	5736	1.370	0.030	0.250	0.281
Had HIV test and received results last time	0.206	0.008	5618	1.565	0.041	0.189	0.222
Accepting attitudes towards people with HIV	0.323	0.009	5618	1.477	0.029	0.304	0.341
HIV prevalence	0.052	0.003	5109	1.110	0.066	0.045	0.059
Syphilis prevalence	0.019	0.002	5068	1.279	0.128	0.014	0.024
Herpes prevalence	0.254	0.008	5077	1.244	0.030	0.239	0.269
INFANTS/CHILDREN							
Care and support for orphans and vulnerable children who received ANY type of free basic external support	0.211	0.014	2842	1.860	0.138	0.183	0.239

Table C.5 Sampling errors for the Nairobi sample, KAIS 2007. All estimates (R) are proportions.

Indicator	Value (R)	Standard error (SE)	Un-weighted (N)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
				WOMEN			
Urban residence	1.000	0.000	1199	.	0.000	1.000	1.000
No education	0.041	0.013	1199	2.246	0.314	0.016	0.066
With secondary education or higher	0.605	0.042	1199	3.001	0.070	0.522	0.689
Never married/never cohabited	0.385	0.027	1199	1.928	0.070	0.332	0.439
Currently married/cohabiting	0.474	0.030	1199	2.104	0.064	0.414	0.533
Currently using any contraceptive method	0.451	0.025	903	1.508	0.055	0.402	0.500
Using a modern contraceptive method	0.411	0.024	903	1.449	0.058	0.365	0.458
Had first sex before age 15 - youth	0.103	0.020	334	1.227	0.199	0.063	0.143
Had two or more sexual partners in past 12 months	0.042	0.009	800	1.240	0.209	0.025	0.060
Condom use at first sex - youth	0.373	0.038	328	1.412	0.101	0.299	0.447
Comprehensive knowledge of HIV transmission - all	0.705	0.025	1193	1.922	0.036	0.655	0.754
Comprehensive knowledge of HIV transmission - youth	0.689	0.035	469	1.613	0.050	0.621	0.757
Abstinence among youth (never had sex)	0.384	0.037	325	1.374	0.097	0.311	0.457
Sexual activity in past 12 months (never-married youth)	0.408	0.037	325	1.345	0.090	0.336	0.480
Had medical injections in past 12 months	0.358	0.022	1199	1.575	0.061	0.315	0.401
Had HIV test and received results last time	0.643	0.019	1193	1.384	0.030	0.606	0.681
Accepting attitudes towards people with HIV	0.442	0.023	1193	1.615	0.053	0.397	0.488
HIV prevalence	0.104	0.014	1018	1.472	0.135	0.077	0.132
Syphilis prevalence	0.010	0.005	986	1.422	0.451	0.001	0.019
Herpes prevalence	0.423	0.029	986	1.849	0.069	0.365	0.480
				MEN			
Urban residence	1.000	0.000	928	.	0.000	1.000	1.000
No education	0.013	0.006	928	1.505	0.425	0.002	0.024
With secondary education or higher	0.724	0.037	928	2.490	0.051	0.652	0.796
Never married/never cohabited	0.420	0.032	928	1.979	0.076	0.356	0.483
Currently married/cohabiting	0.537	0.031	928	1.877	0.057	0.477	0.597
Had first sex before age 15 - youth	0.305	0.047	182	1.363	0.153	0.214	0.397
Had two or more sexual partners in past 12 months	0.149	0.016	726	1.215	0.108	0.117	0.181
Condom use at first sex - youth	0.312	0.049	177	1.402	0.157	0.215	0.408
Comprehensive knowledge of HIV transmission - all	0.716	0.026	925	1.736	0.036	0.666	0.767
Comprehensive knowledge of HIV transmission - youth	0.676	0.030	253	1.008	0.044	0.617	0.734
Abstinence among youth (never had sex)	0.358	0.049	229	1.536	0.136	0.262	0.454
Sexual activity in past 12 months (never-married youth)	0.470	0.043	229	1.299	0.091	0.385	0.554
Had medical injections in past 12 months	0.212	0.012	928	0.908	0.058	0.188	0.236
Had HIV test and received results last time	0.444	0.023	925	1.434	0.053	0.398	0.490
Accepting attitudes towards people with HIV	0.496	0.029	925	1.764	0.059	0.439	0.553
HIV prevalence	0.065	0.015	793	1.764	0.238	0.035	0.095
Syphilis prevalence	0.022	0.008	782	1.467	0.353	0.007	0.037
Herpes prevalence	0.272	0.030	782	1.887	0.110	0.213	0.331
				INFANTS/CHILDREN			
Care and support for orphans and vulnerable children who received ANY type of free basic external support	0.183	0.068	134	2.036	0.138	0.048	0.317

Table C.6 Sampling errors for the Central province sample, KAIS 2007. All estimates (R) are proportions.

Indicator	Value (R)	Standard error (SE)	Un-weighted (N)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
				WOMEN			
Urban residence	0.109	0.030	1443	3.616	0.272	0.051	0.167
No education	0.055	0.006	1443	1.053	0.115	0.042	0.067
With secondary education or higher	0.402	0.017	1443	1.344	0.043	0.368	0.437
Never married/never cohabited	0.258	0.016	1443	1.348	0.060	0.228	0.289
Currently married/cohabiting	0.607	0.016	1443	1.279	0.027	0.574	0.639
Currently using any contraceptive method	0.530	0.019	967	1.206	0.037	0.492	0.569
Using a modern contraceptive method	0.506	0.019	967	1.207	0.038	0.468	0.545
Had first sex before age 15 - youth	0.087	0.025	229	1.335	0.286	0.038	0.136
Had two or more sexual partners in past 12 months	0.012	0.004	991	1.181	0.336	0.004	0.020
Condom use at first sex - youth	0.219	0.031	228	1.113	0.140	0.159	0.279
Comprehensive knowledge of HIV transmission - all	0.647	0.017	1437	1.361	0.027	0.613	0.681
Comprehensive knowledge of HIV transmission - youth	0.697	0.025	404	1.072	0.035	0.649	0.745
Abstinence among youth (never had sex)	0.618	0.030	277	1.036	0.049	0.558	0.678
Sexual activity in past 12 months (never-married youth)	0.198	0.030	277	1.253	0.152	0.139	0.257
Had medical injections in past 12 months	0.363	0.020	1443	1.592	0.056	0.323	0.402
Had HIV test and received results last time	0.422	0.016	1437	1.198	0.037	0.392	0.453
Accepting attitudes towards people with HIV	0.449	0.016	1437	1.241	0.036	0.417	0.481
HIV prevalence	0.039	0.007	1289	1.266	0.176	0.025	0.052
Syphilis prevalence	0.016	0.004	1278	1.084	0.235	0.009	0.024
Herpes prevalence	0.340	0.014	1280	1.062	0.041	0.312	0.367
				MEN			
Urban residence	0.112	0.030	1123	3.138	0.264	0.054	0.170
No education	0.004	0.002	1123	0.889	0.429	0.001	0.007
With secondary education or higher	0.509	0.019	1123	1.268	0.037	0.471	0.546
Never married/never cohabited	0.389	0.020	1123	1.356	0.051	0.350	0.427
Currently married/cohabiting	0.560	0.020	1123	1.378	0.036	0.520	0.601
Had first sex before age 15 - youth	0.299	0.032	226	1.052	0.107	0.236	0.362
Had two or more sexual partners in past 12 months	0.146	0.011	840	0.940	0.078	0.124	0.169
Condom use at first sex - youth	0.290	0.031	223	1.002	0.105	0.230	0.350
Comprehensive knowledge of HIV transmission - all	0.682	0.017	1121	1.238	0.025	0.648	0.716
Comprehensive knowledge of HIV transmission - youth	0.702	0.027	368	1.127	0.038	0.649	0.755
Abstinence among youth (never had sex)	0.423	0.030	343	1.107	0.070	0.364	0.481
Sexual activity in past 12 months (never-married youth)	0.374	0.034	343	1.284	0.090	0.308	0.440
Had medical injections in past 12 months	0.259	0.016	1123	1.203	0.061	0.228	0.290
Had HIV test and received results last time	0.243	0.013	1121	1.024	0.054	0.217	0.269
Accepting attitudes towards people with HIV	0.470	0.022	1121	1.482	0.047	0.427	0.514
HIV prevalence	0.033	0.009	988	1.560	0.270	0.015	0.050
Syphilis prevalence	0.009	0.003	983	1.047	0.347	0.003	0.015
Herpes prevalence	0.196	0.015	983	1.160	0.075	0.167	0.225
				INFANTS/CHILDREN			
Care and support for orphans and vulnerable children who received ANY type of free basic external support	0.366	0.047	214	1.438	0.138	0.272	0.459

Table C.7 Sampling errors for the Coast province sample, KAIS 2007. All estimates (R) are proportions.

Indicator	Value (R)	Standard error (SE)	Un-weighted (N)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
				WOMEN			
Urban residence	0.465	0.048	1157	3.301	0.104	0.370	0.560
No education	0.361	0.035	1157	2.499	0.098	0.292	0.430
With secondary education or higher	0.192	0.019	1157	1.677	0.101	0.153	0.230
Never married/never cohabited	0.188	0.016	1157	1.363	0.083	0.157	0.219
Currently married/cohabiting	0.655	0.019	1157	1.375	0.029	0.617	0.693
Currently using any contraceptive method	0.278	0.029	797	1.809	0.103	0.221	0.334
Using a modern contraceptive method	0.271	0.027	797	1.741	0.101	0.217	0.325
Had first sex before age 15 - youth	0.189	0.027	193	0.944	0.141	0.137	0.242
Had two or more sexual partners in past 12 months	0.033	0.007	843	1.090	0.204	0.020	0.046
Condom use at first sex - youth	0.168	0.036	231	1.446	0.212	0.098	0.238
Comprehensive knowledge of HIV transmission - all	0.497	0.027	1156	1.830	0.054	0.444	0.550
Comprehensive knowledge of HIV transmission - youth	0.463	0.048	343	1.780	0.104	0.368	0.557
Abstinence among youth (never had sex)	0.640	0.043	165	1.160	0.068	0.555	0.726
Sexual activity in past 12 months (never-married youth)	0.242	0.048	165	1.431	0.198	0.148	0.336
Had medical injections in past 12 months	0.412	0.020	1157	1.406	0.049	0.372	0.452
Had HIV test and received results last time	0.478	0.021	1156	1.458	0.045	0.436	0.520
Accepting attitudes towards people with HIV	0.227	0.025	1156	2.004	0.109	0.179	0.276
HIV prevalence	0.095	0.009	1026	1.034	0.100	0.076	0.113
Syphilis prevalence	0.016	0.006	1023	1.424	0.353	0.005	0.027
Herpes prevalence	0.471	0.025	1024	1.610	0.053	0.422	0.521
				MEN			
Urban residence	0.500	0.039	825	2.250	0.078	0.423	0.577
No education	0.135	0.025	825	2.131	0.188	0.085	0.185
With secondary education or higher	0.331	0.027	825	1.636	0.081	0.278	0.384
Never married/never cohabited	0.274	0.016	825	1.049	0.060	0.242	0.306
Currently married/cohabiting	0.654	0.015	825	0.877	0.022	0.626	0.683
Had first sex before age 15 - youth	0.169	0.039	130	1.173	0.229	0.092	0.245
Had two or more sexual partners in past 12 months	0.242	0.022	670	1.347	0.092	0.198	0.286
Condom use at first sex - youth	0.332	0.040	127	0.959	0.121	0.253	0.411
Comprehensive knowledge of HIV transmission - all	0.547	0.023	824	1.299	0.041	0.503	0.591
Comprehensive knowledge of HIV transmission - youth	0.583	0.028	187	0.770	0.048	0.528	0.637
Abstinence among youth (never had sex)	0.345	0.038	159	1.008	0.111	0.270	0.420
Sexual activity in past 12 months (never-married youth)	0.475	0.044	159	1.096	0.092	0.390	0.561
Had medical injections in past 12 months	0.298	0.020	825	1.250	0.067	0.259	0.337
Had HIV test and received results last time	0.289	0.021	824	1.321	0.072	0.248	0.330
Accepting attitudes towards people with HIV	0.307	0.018	824	1.116	0.058	0.271	0.342
HIV prevalence	0.063	0.012	747	1.296	0.183	0.040	0.086
Syphilis prevalence	0.018	0.006	743	1.159	0.312	0.007	0.029
Herpes prevalence	0.293	0.021	744	1.229	0.070	0.253	0.334
				INFANTS/CHILDREN			
Care and support for orphans and vulnerable children who received ANY type of free basic external support	0.125	0.039	279	1.987	0.138	0.047	0.202

Table C.8 Sampling errors for the Eastern province sample, KAIS 2007. All estimates (R) are proportions.

Indicator	Value (R)	Standard error (SE)	Un-weight-ed (N)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
				WOMEN			
Urban residence	0.092	0.022	1683	3.109	0.238	0.049	0.135
No education	0.130	0.013	1683	1.614	0.102	0.104	0.156
With secondary education or higher	0.252	0.019	1683	1.813	0.076	0.214	0.290
Never married/never cohabited	0.230	0.012	1683	1.213	0.054	0.206	0.255
Currently married/cohabiting	0.624	0.015	1683	1.294	0.024	0.594	0.654
Currently using any contraceptive method	0.379	0.020	1146	1.384	0.052	0.340	0.419
Using a modern contraceptive method	0.370	0.021	1146	1.446	0.056	0.329	0.410
Had first sex before age 15 - youth	0.198	0.023	318	1.013	0.114	0.153	0.243
Had two or more sexual partners in past 12 months	0.021	0.006	1189	1.334	0.265	0.010	0.032
Condom use at first sex - youth	0.242	0.027	335	1.166	0.113	0.188	0.296
Comprehensive knowledge of HIV transmission - all	0.524	0.017	1661	1.386	0.032	0.490	0.557
Comprehensive knowledge of HIV transmission - youth	0.493	0.020	526	0.923	0.041	0.454	0.533
Abstinence among youth (never had sex)	0.589	0.033	317	1.176	0.055	0.525	0.653
Sexual activity in past 12 months (never-married youth)	0.237	0.032	317	1.340	0.135	0.174	0.300
Had medical injections in past 12 months	0.409	0.022	1683	1.821	0.053	0.366	0.452
Had HIV test and received results last time	0.331	0.013	1661	1.166	0.041	0.304	0.357
Accepting attitudes towards people with HIV	0.202	0.018	1661	1.873	0.091	0.165	0.238
HIV prevalence	0.061	0.011	1458	1.751	0.180	0.040	0.083
Syphilis prevalence	0.021	0.005	1447	1.232	0.219	0.012	0.031
Herpes prevalence	0.363	0.019	1449	1.539	0.054	0.325	0.401
				MEN			
Urban residence	0.078	0.019	1297	2.608	0.250	0.040	0.116
No education	0.052	0.008	1297	1.340	0.160	0.035	0.068
With secondary education or higher	0.300	0.021	1297	1.633	0.069	0.259	0.341
Never married/never cohabited	0.398	0.019	1297	1.381	0.047	0.361	0.435
Currently married/cohabiting	0.531	0.019	1297	1.348	0.035	0.494	0.568
Had first sex before age 15 - youth	0.320	0.037	260	1.269	0.115	0.248	0.392
Had two or more sexual partners in past 12 months	0.111	0.013	878	1.256	0.120	0.084	0.137
Condom use at first sex - youth	0.271	0.028	259	1.023	0.104	0.215	0.327
Comprehensive knowledge of HIV transmission - all	0.526	0.023	1289	1.669	0.044	0.481	0.572
Comprehensive knowledge of HIV transmission - youth	0.491	0.023	452	0.983	0.047	0.446	0.537
Abstinence among youth (never had sex)	0.441	0.032	423	1.326	0.073	0.378	0.504
Sexual activity in past 12 months (never-married youth)	0.258	0.025	423	1.187	0.098	0.208	0.308
Had medical injections in past 12 months	0.254	0.015	1297	1.212	0.058	0.225	0.283
Had HIV test and received results last time	0.175	0.014	1289	1.324	0.080	0.148	0.203
Accepting attitudes towards people with HIV	0.212	0.018	1289	1.554	0.084	0.177	0.247
HIV prevalence	0.025	0.006	1095	1.194	0.225	0.014	0.036
Syphilis prevalence	0.030	0.007	1091	1.378	0.237	0.016	0.044
Herpes prevalence	0.184	0.013	1092	1.093	0.070	0.159	0.209
				INFANTS/CHILDREN			
Care and support for orphans and vulnerable children who received ANY type of free basic external support	0.220	0.029	537	1.613	0.138	0.163	0.277

Table C.9 Sampling errors for the North Eastern province sample, KAIS 2007. All estimates (R) are proportions.

Indicator	Value (R)	Standard error (SE)	Un-weighted (N)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
WOMEN							
Urban residence	0.039	0.038	500	4.352	0.963	0.000	0.114
No education	0.914	0.039	500	3.079	0.042	0.838	0.990
With secondary education or higher	0.031	0.025	500	3.235	0.806	0.000	0.081
Never married/never cohabited	0.098	0.015	500	1.120	0.152	0.069	0.128
Currently married/cohabiting	0.745	0.019	500	0.998	0.026	0.706	0.783
Currently using any contraceptive method	0.033	0.026	347	2.645	0.765	0.000	0.084
Using a modern contraceptive method	0.026	0.025	347	2.947	0.963	0.000	0.076
Had first sex before age 15 - youth	0.214	0.083	39	1.244	0.387	0.051	0.376
Had two or more sexual partners in past 12 months	.	.	354	.	.	.	.
Condom use at first sex - youth	0.039	0.028	77	1.284	0.733	0.000	0.095
Comprehensive knowledge of HIV transmission - all	0.159	0.040	320	1.933	0.249	0.081	0.237
Comprehensive knowledge of HIV transmission - youth	0.181	0.058	87	1.389	0.318	0.068	0.295
Abstinence among youth (never had sex)	0.956	0.032	48	1.076	0.034	0.893	1.000
Sexual activity in past 12 months (never-married youth)	0.029	0.029	48	1.189	1.010	0.000	0.086
Had medical injections in past 12 months	0.203	0.028	500	1.562	0.138	0.148	0.259
Had HIV test and received results last time	0.081	0.030	320	1.999	0.377	0.021	0.141
Accepting attitudes towards people with HIV	0.052	0.033	320	2.613	0.622	0.000	0.117
HIV prevalence	0.008	0.004	434	0.959	0.498	0.000	0.017
Syphilis prevalence	0.010	0.007	425	1.488	0.718	0.000	0.024
Herpes prevalence	0.064	0.016	426	1.338	0.247	0.033	0.096
MEN							
Urban residence	0.046	0.044	336	3.840	0.959	0.000	0.132
No education	0.723	0.053	336	2.180	0.074	0.619	0.828
With secondary education or higher	0.104	0.039	336	2.317	0.372	0.028	0.180
Never married/never cohabited	0.284	0.023	336	0.936	0.081	0.239	0.330
Currently married/cohabiting	0.678	0.025	336	0.983	0.037	0.628	0.727
Had first sex before age 15 - youth	.	.	5	.	.	.	.
Had two or more sexual partners in past 12 months	0.161	0.027	237	1.129	0.168	0.108	0.214
Condom use at first sex - youth	0.060	0.060	10	0.759	1.000	0.000	0.178
Comprehensive knowledge of HIV transmission - all	0.159	0.051	254	2.205	0.319	0.059	0.259
Comprehensive knowledge of HIV transmission - youth	0.174	0.074	62	1.524	0.425	0.028	0.319
Abstinence among youth (never had sex)	0.975	0.019	69	0.985	0.019	0.938	1.000
Sexual activity in past 12 months (never-married youth)	0.009	0.009	69	0.792	0.992	0.000	0.027
Had medical injections in past 12 months	0.120	0.030	336	1.693	0.250	0.061	0.179
Had HIV test and received results last time	0.056	0.023	254	1.580	0.408	0.011	0.101
Accepting attitudes towards people with HIV	0.097	0.033	254	1.758	0.338	0.033	0.161
HIV prevalence	0.008	0.006	319	1.237	0.791	0.000	0.020
Syphilis prevalence	.	.	316	.	.	.	.
Herpes prevalence	0.071	0.017	316	1.151	0.235	0.038	0.104
INFANTS/CHILDREN							
Care and support for orphans and vulnerable children who received ANY type of free basic external support	0.224	0.075	152	2.214	0.138	0.076	0.372

Table C.10 Sampling errors for the Nyanza province sample, KAIS 2007. All estimates (R) are proportions.

Indicator	Value (R)	Standard error (SE)	Un-weighted (N)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
				WOMEN			
Urban residence	0.065	0.030	1507	4.745	0.464	0.006	0.124
No education	0.091	0.007	1507	0.953	0.078	0.077	0.105
With secondary education or higher	0.271	0.021	1507	1.864	0.079	0.229	0.313
Never married/never cohabited	0.210	0.012	1507	1.128	0.056	0.187	0.234
Currently married/cohabiting	0.637	0.011	1507	0.912	0.018	0.615	0.659
Currently using any contraceptive method	0.253	0.017	1032	1.274	0.068	0.219	0.287
Using a modern contraceptive method	0.244	0.017	1032	1.238	0.068	0.212	0.277
Had first sex before age 15 - youth	0.212	0.020	397	0.958	0.093	0.174	0.251
Had two or more sexual partners in past 12 months	0.029	0.006	1050	1.141	0.204	0.017	0.040
Condom use at first sex - youth	0.242	0.024	402	1.117	0.099	0.195	0.289
Comprehensive knowledge of HIV transmission - all	0.499	0.021	1505	1.633	0.042	0.457	0.540
Comprehensive knowledge of HIV transmission - youth	0.518	0.028	568	1.327	0.054	0.463	0.573
Abstinence among youth (never had sex)	0.565	0.034	285	1.143	0.059	0.499	0.631
Sexual activity in past 12 months (never-married youth)	0.253	0.030	285	1.168	0.119	0.194	0.313
Had medical injections in past 12 months	0.440	0.019	1507	1.480	0.043	0.403	0.477
Had HIV test and received results last time	0.391	0.020	1505	1.563	0.050	0.352	0.430
Accepting attitudes towards people with HIV	0.410	0.022	1505	1.719	0.053	0.367	0.453
HIV prevalence	0.172	0.010	1386	0.981	0.058	0.152	0.191
Syphilis prevalence	0.023	0.005	1369	1.183	0.209	0.014	0.032
Herpes prevalence	0.573	0.023	1371	1.692	0.039	0.529	0.618
				MEN			
Urban residence	0.081	0.032	1102	3.891	0.395	0.018	0.144
No education	0.024	0.006	1102	1.262	0.244	0.012	0.035
With secondary education or higher	0.414	0.026	1102	1.732	0.062	0.364	0.465
Never married/never cohabited	0.413	0.017	1102	1.145	0.041	0.379	0.446
Currently married/cohabiting	0.549	0.017	1102	1.144	0.031	0.515	0.582
Had first sex before age 15 - youth	0.380	0.028	325	1.024	0.073	0.325	0.434
Had two or more sexual partners in past 12 months	0.220	0.014	846	0.984	0.064	0.192	0.247
Condom use at first sex - youth	0.299	0.032	318	1.239	0.106	0.237	0.362
Comprehensive knowledge of HIV transmission - all	0.621	0.016	1098	1.116	0.026	0.589	0.653
Comprehensive knowledge of HIV transmission - youth	0.613	0.030	469	1.332	0.049	0.554	0.672
Abstinence among youth (never had sex)	0.352	0.031	408	1.289	0.087	0.292	0.412
Sexual activity in past 12 months (never-married youth)	0.466	0.027	408	1.088	0.058	0.413	0.519
Had medical injections in past 12 months	0.328	0.019	1102	1.359	0.059	0.290	0.366
Had HIV test and received results last time	0.290	0.020	1098	1.471	0.069	0.251	0.330
Accepting attitudes towards people with HIV	0.312	0.018	1098	1.276	0.057	0.277	0.347
HIV prevalence	0.116	0.012	994	1.161	0.102	0.093	0.140
Syphilis prevalence	0.025	0.005	983	0.952	0.191	0.015	0.034
Herpes prevalence	0.377	0.018	986	1.172	0.048	0.342	0.413
				INFANTS/CHILDREN			
Care and support for orphans and vulnerable children who received ANY type of free basic external support	0.204	0.026	955	2.005	0.138	0.153	0.256

Table C.11 Sampling errors for the Rift Valley sample, KAIS 2007. All estimates (R) are proportions.

Indicator	Value (R)	Standard error (SE)	Un-weight-ed (N)	Design effect (DEFT)	Rela-tive error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
				WOMEN			
Urban residence	0.221	0.063	1418	5.678	0.283	0.098	0.345
No education	0.194	0.025	1418	2.369	0.128	0.145	0.243
With secondary education or higher	0.269	0.033	1418	2.798	0.123	0.204	0.334
Never married/never cohabited	0.196	0.016	1418	1.515	0.082	0.164	0.227
Currently married/cohabiting	0.659	0.023	1418	1.806	0.034	0.615	0.704
Currently using any contraceptive method	0.307	0.025	1058	1.766	0.082	0.258	0.357
Using a modern contraceptive method	0.276	0.028	1058	2.067	0.103	0.220	0.332
Had first sex before age 15 - youth	0.166	0.029	289	1.337	0.177	0.108	0.223
Had two or more sexual partners in past 12 months	0.018	0.006	1034	1.474	0.340	0.006	0.030
Condom use at first sex - youth	0.256	0.042	317	1.695	0.163	0.174	0.338
Comprehensive knowledge of HIV transmission - all	0.457	0.022	1363	1.637	0.048	0.414	0.501
Comprehensive knowledge of HIV transmission - youth	0.439	0.030	439	1.262	0.068	0.380	0.497
Abstinence among youth (never had sex)	0.584	0.042	227	1.280	0.072	0.501	0.666
Sexual activity in past 12 months (never-married youth)	0.243	0.043	227	1.495	0.175	0.159	0.327
Had medical injections in past 12 months	0.364	0.020	1418	1.593	0.056	0.324	0.404
Had HIV test and received results last time	0.370	0.024	1363	1.855	0.066	0.323	0.418
Accepting attitudes towards people with HIV	0.343	0.024	1363	1.900	0.071	0.295	0.391
HIV prevalence	0.074	0.011	1266	1.533	0.153	0.052	0.096
Syphilis prevalence	0.018	0.005	1262	1.266	0.266	0.008	0.027
Herpes prevalence	0.393	0.018	1263	1.312	0.046	0.357	0.428
				MEN			
Urban residence	0.172	0.044	1097	3.876	0.257	0.085	0.258
No education	0.100	0.018	1097	2.031	0.184	0.064	0.136
With secondary education or higher	0.350	0.034	1097	2.386	0.098	0.283	0.418
Never married/never cohabited	0.337	0.019	1097	1.304	0.055	0.300	0.373
Currently married/cohabiting	0.607	0.021	1097	1.445	0.035	0.565	0.649
Had first sex before age 15 - youth	0.393	0.049	209	1.438	0.124	0.297	0.489
Had two or more sexual partners in past 12 months	0.130	0.015	797	1.250	0.114	0.101	0.160
Condom use at first sex - youth	0.178	0.035	198	1.282	0.196	0.109	0.247
Comprehensive knowledge of HIV transmission - all	0.483	0.028	1080	1.868	0.059	0.427	0.539
Comprehensive knowledge of HIV transmission - youth	0.416	0.041	336	1.505	0.097	0.337	0.496
Abstinence among youth (never had sex)	0.481	0.052	300	1.805	0.108	0.378	0.584
Sexual activity in past 12 months (never-married youth)	0.316	0.042	300	1.568	0.133	0.233	0.399
Had medical injections in past 12 months	0.259	0.020	1097	1.540	0.079	0.219	0.299
Had HIV test and received results last time	0.224	0.024	1080	1.877	0.106	0.177	0.271
Accepting attitudes towards people with HIV	0.341	0.017	1080	1.182	0.050	0.308	0.375
HIV prevalence	0.048	0.006	1002	0.955	0.134	0.036	0.061
Syphilis prevalence	0.015	0.005	992	1.339	0.344	0.005	0.025
Herpes prevalence	0.265	0.019	997	1.370	0.072	0.227	0.303
				INFANTS/CHILDREN			
Care and support for orphans and vulnerable children who received ANY type of free basic external support	0.214	0.037	422	1.853	0.138	0.142	0.287

Table C.12 Sampling errors for the Western province sample, KAIS 2007. All estimates (R) are proportions.

Indicator	Value (R)	Standard error (SE)	Un-weighted (N)	Design effect (DEFT)	Relative error (SE/R)	Confidence limits R-2SE	Confidence limits R+2SE
				WOMEN			
Urban residence	0.124	0.028	1332	3.107	0.226	0.069	0.180
No education	0.112	0.009	1332	1.078	0.083	0.093	0.130
With secondary education or higher	0.256	0.023	1332	1.929	0.090	0.211	0.302
Never married/never cohabited	0.220	0.017	1332	1.509	0.078	0.186	0.254
Currently married/cohabiting	0.669	0.019	1332	1.456	0.028	0.632	0.706
Currently using any contraceptive method	0.409	0.019	862	1.112	0.046	0.372	0.446
Using a modern contraceptive method	0.386	0.021	862	1.251	0.054	0.345	0.427
Had first sex before age 15 - youth	0.163	0.023	271	1.005	0.139	0.118	0.207
Had two or more sexual partners in past 12 months	0.024	0.010	931	1.942	0.407	0.005	0.043
Condom use at first sex - youth	0.269	0.031	279	1.156	0.114	0.209	0.330
Comprehensive knowledge of HIV transmission - all	0.608	0.020	1314	1.519	0.034	0.568	0.649
Comprehensive knowledge of HIV transmission - youth	0.628	0.031	457	1.386	0.050	0.567	0.690
Abstinence among youth (never had sex)	0.674	0.030	271	1.065	0.045	0.614	0.734
Sexual activity in past 12 months (never-married youth)	0.187	0.021	271	0.900	0.114	0.145	0.229
Had medical injections in past 12 months	0.356	0.019	1332	1.427	0.053	0.319	0.393
Had HIV test and received results last time	0.382	0.017	1314	1.301	0.046	0.348	0.417
Accepting attitudes towards people with HIV	0.419	0.022	1314	1.616	0.052	0.376	0.463
HIV prevalence	0.060	0.009	1172	1.357	0.157	0.041	0.078
Syphilis prevalence	0.009	0.004	1154	1.434	0.433	0.001	0.017
Herpes prevalence	0.441	0.019	1154	1.303	0.043	0.404	0.479
				MEN			
Urban residence	0.118	0.027	993	2.597	0.225	0.066	0.170
No education	0.046	0.007	993	1.036	0.149	0.033	0.060
With secondary education or higher	0.313	0.024	993	1.662	0.078	0.265	0.361
Never married/never cohabited	0.352	0.016	993	1.071	0.046	0.320	0.384
Currently married/cohabiting	0.583	0.019	993	1.229	0.033	0.545	0.621
Had first sex before age 15 - youth	0.354	0.039	206	1.177	0.111	0.277	0.432
Had two or more sexual partners in past 12 months	0.179	0.014	726	0.971	0.077	0.152	0.206
Condom use at first sex - youth	0.386	0.045	202	1.296	0.115	0.299	0.474
Comprehensive knowledge of HIV transmission - all	0.637	0.022	982	1.414	0.034	0.594	0.680
Comprehensive knowledge of HIV transmission - youth	0.586	0.038	358	1.452	0.065	0.511	0.660
Abstinence among youth (never had sex)	0.494	0.027	322	0.983	0.056	0.440	0.548
Sexual activity in past 12 months (never-married youth)	0.360	0.023	323	0.856	0.064	0.315	0.405
Had medical injections in past 12 months	0.227	0.019	993	1.414	0.083	0.190	0.264
Had HIV test and received results last time	0.206	0.016	982	1.227	0.077	0.175	0.237
Accepting attitudes towards people with HIV	0.410	0.026	982	1.670	0.064	0.358	0.461
HIV prevalence	0.045	0.008	866	1.153	0.181	0.029	0.061
Syphilis prevalence	0.014	0.004	854	1.089	0.311	0.005	0.023
Herpes prevalence	0.315	0.018	854	1.163	0.059	0.279	0.352
				INFANTS/CHILDREN			
Care and support for orphans and vulnerable children who received ANY type of free basic external support	0.166	0.023	533	1.423	0.138	0.121	0.212

Appendix D

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Appendix E

Household Questionnaire

9/7/2009

MINISTRY OF HEALTH
KENYA AIDS INDICATOR SURVEY
HOUSEHOLD QUESTIONNAIRE

IDENTIFICATION

PROVINCE* ____________________

DISTRICT ____________________

NASSEP CLUSTER NUMBER . . . .

HOUSEHOLD NUMBER . . . .

LARGE CITY/SMALL CITY/TOWN/RURAL . . . .
(NAIROBI/MOMBASA/KISUMU=1, NAKURU/ELDORET/THIKA/NYERI=2, SMALL TOWN=3, RURAL=4)
NAME OF HOUSEHOLD HEAD . . . .

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE	____	____	____	DAY / MONTH / YEAR 2 0 0 7
INTERVIEWER'S NAME	____	____	____	INT. CODE
RESULT*	____	____	____	RESULT
NEXT VISIT: DATE	____	____		TOTAL NUMBER OF VISITS
TIME	____	____		

TOTAL PERSONS IN HOUSEHOLD | TOTAL ELIGIBLE WOMEN | TOTAL ELIGIBLE MEN | LINE NO. OF RESPONDENT TO HOUSEHOLD QUESTIONNAIRE

TIME STARTED — HOUR . . . . MINUTES . . . .

TIME ENDED — HOUR . . . . MINUTES . . . .

ENGLISH

SUPERVISOR	OFFICE EDITOR	KEYED BY
NAME ____________		
DATE ____________		

*RESULT CODES:
1 COMPLETED
2 NO HOUSEHOLD MEMBER AT HOME OR NO COMPETENT RESPONDENT AT HOME AT TIME OF VISIT
3 ENTIRE HOUSEHOLD ABSENT FOR EXTENDED PERIOD OF TIME
4 POSTPONED
5 REFUSED
6 DWELLING VACANT OR ADDRESS NOT A DWELLING
7 DWELLING DESTROYED
8 DWELLING NOT FOUND
9 OTHER ____________________ (SPECIFY)

Household Informant Consent Form

[Interviewer: The statement should be read to the adult age 18-64 years or emancipated individual age 15-17 years, i.e., with no parent/guardian or not living with their parent/guardian, who will respond to the household questionnaire. Throughout the process of obtaining consent, it is important that you are patient and allow the respondent to ask questions and to consider the decision. Never rush or otherwise pressure the respondent to give consent. Provide a copy of this consent script to all eligible persons age 15-64]

Hello, my name is …. and I am working with the Ministry of Health. We are doing a national survey on HIV/AIDS and other health issues. This study will help the Ministry of Health to improve health services for Kenyans. You can help by taking part of this survey.

As part of this survey, we would like to ask some questions about your household. The interview will take about 30 minutes. All of the answers you give will be private and will not be shown to others. No one will know your answers.

Taking part in the survey is up to you. If I ask any questions that you don't want to answer, just let me know and I will go on to the next question. You can stop the interview at any time.

If you take part of this survey, the risk to you is small. I will ask you questions that may be uncomfortable to answer. You are free to not answer any questions that you feel are too personal. However, if you take part, the benefit is that the information that you provide to us will be used to improve the health of Kenyans by making healthcare programs stronger.

Do you want to ask me anything about the survey? If you have any questions we want you to tell us. You can also ask the person in charge of the survey teams at the Kenya National Bureau of Statistics. If you feel that you have been harmed by taking part you should contact the Ministry of Health. If you have any questions on your rights in the study you can contact the chairman on the Ethical Review Committee at the Kenya Medical Research Institute (KEMRI). ***[Interviewer: provide the following information to the participant:]***

National AIDS and STD Control Program (NASCOP): Godfrey Baltazar
P O Box 19361-00200 Nairobi
Tel: 2729549

Kenya National Bureau of Statistics (KNBS): Fredrick Otieno
P O Box 30266-00100 Nairobi
Tel: 216134

Chairman of Ethical Review Committee: Professor Samuel Sinei
Kenya Medical Research Institute (KEMRI)
P O Box 54840 - 00100 Nairobi
Tel: 272 25 41

May I begin the interview now? ______Yes ______No

Signature or initial of Interviewer Date

[Interviewer: Indicate whether participant says "Yes" or "No" to the above statement, sign/initial on the above line, and record the date.]

HOUSEHOLD SCHEDULE

							IF AGE 15 OR OLDER	
LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	MARITAL STATUS	ELIGIBILITY
	Please give me the names of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household. AFTER LISTING THE NAMES AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON, ASK QUESTIONS 2A-2C TO BE SURE THAT THE LISTING IS COMPLETE. THEN ASK APPROPRIATE QUESTIONS IN COLUMNS 5-29 FOR EACH PERSON.	What is the relationship of (NAME) to the head of the household? SEE CODES BELOW.	Is (NAME) male or female?	Does (NAME) usually live here?	Did (NAME) sleep here last night?	How old is (NAME)?	What is (NAME'S) current marital status? 1 = MARRIED OR LIVING TOGETHER 2 = DIVORCED/ SEPARATED 3 = WIDOWED 4 = NEVER-MARRIED AND NEVER LIVED TOGETHER	CIRCLE LINE NUMBER OF ALL MEN AND WOMEN AGE 15-64
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
			M F	Y N	Y N	IN YEARS		
01		☐☐	1 2	1 2	1 2	☐☐	☐	01
02		☐☐	1 2	1 2	1 2	☐☐	☐	02
03		☐☐	1 2	1 2	1 2	☐☐	☐	03
04		☐☐	1 2	1 2	1 2	☐☐	☐	04
05		☐☐	1 2	1 2	1 2	☐☐	☐	05
06		☐☐	1 2	1 2	1 2	☐☐	☐	06
07		☐☐	1 2	1 2	1 2	☐☐	☐	07
08		☐☐	1 2	1 2	1 2	☐☐	☐	08
09		☐☐	1 2	1 2	1 2	☐☐	☐	09
10		☐☐	1 2	1 2	1 2	☐☐	☐	10

TICK HERE IF CONTINUATION SHEET USED ☐

TOTAL ELIGIBLE (MEN +WOMEN) ☐☐

TOTAL AGED ((17) ☐☐

2A) Just to make sure that I have a complete listing. Are there any other persons such as small children or infants that we have not listed? YES ☐ → ADD TO TABLE NO ☐

2B) Are there any other people who may not be members of your family, such as domestic servants, lodgers, or friends who usually live here? YES ☐ → ADD TO TABLE NO ☐

2C) Are there any guests or temporary visitors staying here, or anyone else who stayed here last night, who have not been listed? YES ☐ → ADD TO TABLE NO ☐

CODES FOR Q. 3: RELATIONSHIP TO HOUSEHOLD HEAD

01 = HEAD
02 = WIFE/HUSBAND/ PARTNER
03 = SON OR DAUGHTER
04 = SON-IN-LAW OR DAUGHTER-IN-LAW
05 = GRANDCHILD
06 = PARENT
07 = PARENT-IN-LAW
08 = BROTHER/ SISTER
09 = NIECE/NEPHEW BY BLOOD
10 = NIECE/NEPHEW BY MARRIAGE
11 = CO-WIFE
12 = OTHER RELATIVE
13 = ADOPTED/FOSTER/ STEPCHILD
14 = NOT RELATED
98 = DON'T KNOW

	IF AGE 18-64 YEARS	IF AGE 0-17 YEARS							
LINE NO.	SICK PERSON	SURVIVORSHIP AND RESIDENCE OF BIOLOGICAL PARENTS							
	Has (NAME) been very sick for at least 3 months during the past 12 months, that is (NAME) was too sick to work or do normal activities?	Is (NAME)'s natural mother alive?	Does (NAME)'s natural mother usually live in this household or was she a guest last night? IF YES: What is her name? RECORD MOTHER'S LINE NUMBER. IF NO, RECORD '00'.	**IF MOTHER NOT LISTED IN HOUSEHOLD** Has (NAME)'s mother been very sick for at least 3 months during the past 12 months, that is she was too sick to work or do normal activities?	Is (NAME)'s natural father alive?	Does (NAME)'s natural father usually live in this household or was he a guest last night? IF YES: What is his name? RECORD FATHER'S LINE NUMBER. IF NO, RECORD '00'.	**IF FATHER NOT LISTED IN HOUSEHOLD** Has (NAME)'s father been very sick for at least 3 months during the past 12 months, that is he was too sick to work or do normal activities?	**MOTHER AND/OR FATHER DEAD/ SICK** CIRCLE LINE NUMBER IF CHILD'S MOTHER AND/OR FATHER HAS DIED (Q.11 OR 14 = NO) OR BEEN SICK (Q.13 OR 16 = YES).	**BOTH PARENTS ALIVE** IF YES TO Q.11 AND Q.14 (BOTH ALIVE), CIRCLE '1'. FOR ALL OTHER CASES, CIRCLE '2'.
	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
	Y N DK	Y N DK		Y N DK	Y N DK		Y N DK		
01	1 2 8	1 2 8 GO TO 14	☐☐	1 2 8	1 2 8 GO TO 17	☐☐	1 2 8	01	1 2 GO TO 21
02	1 2 8	1 2 8 GO TO 14	☐☐	1 2 8	1 2 8 GO TO 17	☐☐	1 2 8	02	1 2 GO TO 21
03	1 2 8	1 2 8 GO TO 14	☐☐	1 2 8	1 2 8 GO TO 17	☐☐	1 2 8	03	1 2 GO TO 21
04	1 2 8	1 2 8 GO TO 14	☐☐	1 2 8	1 2 8 GO TO 17	☐☐	1 2 8	04	1 2 GO TO 21
05	1 2 8	1 2 8 GO TO 14	☐☐	1 2 8	1 2 8 GO TO 17	☐☐	1 2 8	05	1 2 GO TO 21
06	1 2 8	1 2 8 GO TO 14	☐☐	1 2 8	1 2 8 GO TO 17	☐☐	1 2 8	06	1 2 GO TO 21
07	1 2 8	1 2 8 GO TO 14	☐☐	1 2 8	1 2 8 GO TO 17	☐☐	1 2 8	07	1 2 GO TO 21
08	1 2 8	1 2 8 GO TO 14	☐☐	1 2 8	1 2 8 GO TO 17	☐☐	1 2 8	08	1 2 GO TO 21
09	1 2 8	1 2 8 GO TO 14	☐☐	1 2 8	1 2 8 GO TO 17	☐☐	1 2 8	09	1 2 GO TO 21
10	1 2 8	1 2 8 GO TO 14	☐☐	1 2 8	1 2 8 GO TO 17	☐☐	1 2 8	10	1 2 GO TO 21

LINE NO.	IF AGE 0-17 YEARS BROTHERS AND SISTERS		IF AGE 5 YEARS OR OLDER EDUCATION		IF AGE 5-24 YEARS	IF AGE 5-17 YEARS BASIC MATERIAL NEEDS		IF AGE 0-4 YEARS BIRTH REGISTRATION
	Does (NAME) have any brothers or sisters under age 18 who have the same mother and the same father?	Do any of these brothers and sisters under age 18 not live in this household?	Has (NAME) ever attended school?	What is the highest level of school (NAME) has attended? SEE CODES BELOW. What is the highest grade (NAME) completed at that level? SEE CODES BELOW.	Did (NAME) attend school at any time during the current school year?	Does (NAME) have a blanket?	Does (NAME) have at least two sets of clothes?	Does (NAME) have a birth certificate? IF NO, PROBE: Has (NAME)'s birth ever been registered with the civil authority? 1 = HAS CERTIFICATE 2 = REGISTERED 3 = NEITHER 8 = DON'T KNOW
	(19)	(20)	(21)	(22)	(23)	(24)	(25)	(26)
	Y N DK	Y N	Y N	LEVEL GRADE	Y N	Y N DK	Y N DK	
01	1 2 8 GO TO 21	1 2	1 2 GO TO 24	☐ ☐☐	1 2	1 2 8	1 2 8	☐
02	1 2 8 GO TO 21	1 2	1 2 GO TO 24	☐ ☐☐	1 2	1 2 8	1 2 8	☐
03	1 2 8 GO TO 21	1 2	1 2 GO TO 24	☐ ☐☐	1 2	1 2 8	1 2 8	☐
04	1 2 8 GO TO 21	1 2	1 2 GO TO 24	☐ ☐☐	1 2	1 2 8	1 2 8	☐
05	1 2 8 GO TO 21	1 2	1 2 GO TO 24	☐ ☐☐	1 2	1 2 8	1 2 8	☐
06	1 2 8 GO TO 21	1 2	1 2 GO TO 24	☐ ☐☐	1 2	1 2 8	1 2 8	☐
07	1 2 8 GO TO 21	1 2	1 2 GO TO 24	☐ ☐☐	1 2	1 2 8	1 2 8	☐
08	1 2 8 GO TO 21	1 2	1 2 GO TO 24	☐ ☐☐	1 2	1 2 8	1 2 8	☐
09	1 2 8 GO TO 21	1 2	1 2 GO TO 24	☐ ☐☐	1 2	1 2 8	1 2 8	☐
10	1 2 8 GO TO 21	1 2	1 2 GO TO 24	☐ ☐☐	1 2	1 2 8	1 2 8	☐

CODES FOR Q. 22: EDUCATION

LEVEL

0= NUSERY/KINDERGARTEN

1 = PRIMARY
2= POST PRIMARY, VOCATIONAL
3 = SECONDARY
4 = COLLEGE (MIDDLE LEVEL)
5 = UNIVERSITY
8 = DON'T KNOW

GRADE

00 = LESS THAN 1 YEAR COMPLETED
98 = DON'T KNOW
Number of years/ classes/grades

LINE NO.	OUTPATIENT VISITS AND EXPENDITURE			
	Did (name) seek any outpatient care for the last four weeks?	How many outpatient visits did <NAME> make in the last four weeks?	Check 28(a) for No. of visits. In the most recent (first, second, third and fourth most recent) visit, where did (NAME) go for outpatient care? (Use codes below) **IF DK RECORD 99**	How much did (NAME) spend in the most recent (second, third and fourth most recent) outpatient visit? In KShs. **IF DK RECORD 999999**
	(28)	(28a)	(28b)	(28c)
01	Y 1 N 2 DK 8 GO TO Q29	Don't know 95 Go to 29	Most recent → Vst 1 Vst 2 Vst 3 Vst 4	Most recent → Vst 1 Vst 2 Vst 3 Vst 4
02	1 2 8 GO TO Q29	Don't know 95 Go to 29	Vst 1 Vst 2 Vst 3 Vst 4	Vst 1 Vst 2 Vst 3 Vst 4
03	1 2 8 GO TO Q29	Don't know 95 Go to 29	Vst 1 Vst 2 Vst 3 Vst 4	Vst 1 Vst 2 Vst 3 Vst 4
04	1 2 8 GO TO Q29	Don't know 95 Go to 29	Vst 1 Vst 2 Vst 3 Vst 4	Vst 1 Vst 2 Vst 3 Vst 4
05	1 2 8 GO TO Q29	Don't know 95 Go to 29	Vst 1 Vst 2 Vst 3 Vst 4	Vst 1 Vst 2 Vst 3 Vst 4
06	1 2 8 GO TO Q29	Don't know 95 Go to 29	Vst 1 Vst 2 Vst 3 Vst 4	Vst 1 Vst 2 Vst 3 Vst 4
07	1 2 8 GO TO Q29	Don't know 95 Go to 29	Vst 1 Vst 2 Vst 3 Vst 4	Vst 1 Vst 2 Vst 3 Vst 4
08	1 2 8 GO TO Q29	Don't know 95 Go to 29	Vst 1 Vst 2 Vst 3 Vst 4	Vst 1 Vst 2 Vst 3 Vst 4
09	1 2 8 GO TO Q29	Don't know 95 Go to 29	Vst 1 Vst 2 Vst 3 Vst 4	Vst 1 Vst 2 Vst 3 Vst 4
10	1 2 8 GO TO Q29	Don't know 95 Go to 29	Vst 1 Vst 2 Vst 3 Vst 4	Vst 1 Vst 2 Vst 3 Vst 4

CODES for Question 28B: OUTPATIENT VISITS AND EXPENDITURE

Public Sector
01 Government hospital
02 Government health center
03 Government dispensary
04 Other (specify)

Private Sector
05 Faith based hospital
06 Faith based health center
07 Private Hospital
08 Private health centre/clinic
09 Care sought abroad
10 Pharmacy/ Chemist
11 Other private medical (specify)………………………

Other
12 Shop
13 Traditional healer
14 Others (specify)…………………

LINE NO.	INPATIENT VISITS AND EXPENDITURE			
	How many times was (NAME) admitted for an overnight stay in in a health facility in the last 6 months? write 000 if NEVER admitted, skip to 101 **IF DK RECORD 999**	Check 29, if no is >= 1 How long was (NAME) admitted during the last and second last admission? **IF DK RECORD 999**	How much did (NAME) spend during the last and second last admission. In KShs. **IF DK RECORD 999999**	Where was (NAME) admitted during the last and second last time he/she was admitted? (Enter code) **IF DK RECORD 99**
	(29)	(29a)	(29b)	(29c)
01		Days admitted Last 2nd last	Cost of admission Last 2nd last	Admission facility Last 2nd last
02		Last 2nd last	Last 2nd last	Last 2nd last
03		Last 2nd last	Last 2nd last	Last 2nd last
04		Last 2nd last	Last 2nd last	Last 2nd last
05		Last 2nd last	Last 2nd last	Last 2nd last
06		Last 2nd last	Last 2nd last	Last 2nd last
07		Last 2nd last	Last 2nd last	Last 2nd last
08		Last 2nd last	Last 2nd last	Last 2nd last
09		Last 2nd last	Last 2nd last	Last 2nd last
10		Last 2nd last	Last 2nd last	Last 2nd last

CODES for Question 29C: INPATIENT VISITS AND EXPENDITURE

Public Sector
01 Government hospital
02 Government health center
03 Government dispensary
04 Other (specify)

Private Sector
05 Faith based hospital
06 Faith based health center
07 Private Hospital
08 Private health centre/clinic
09 Care sought abroad
10 Other private medical (specify)……………………….

Other
11 Traditional healer
12 Others (specify)………………….

HOUSEHOLD CHARACTERISTICS			
NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	What is the main source of drinking water for members of your household?	PIPED WATER PIPED INTO DWELLING . . . . 11 PIPED TO YARD/PLOT . . . . 12 PUBLIC TAP/STANDPIPE . . . . 13 TUBE WELL OR BOREHOLE . . . . 21 DUG WELL PROTECTED WELL . . . . 31 UNPROTECTED WELL . . . . 32 WATER FROM SPRING PROTECTED SPRING . . . . 41 UNPROTECTED SPRING . . . . 42 RAINWATER . . . . 51 TANKER TRUCK . . . . 61 CART WITH SMALL TANK . . . . 71 SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL/ IRRIGATION CHANNEL) . . . . 81 BOTTLED WATER . . . . 91 OTHER ______________________ 96 (SPECIFY)	
101A	What do you do to make your water safe for drinking?	BOILING 01 FILTRATION (e.g. charcoal filter) 02 SEDIMENTATION 03 DISINFECTION (Waterguard, Chlorine...) 04 USE BOTTLED WATER 05 DO NOT TREAT WATER 06 OTHER ______________________ 96 specify	
102	What kind of toilet facility do members of your household usually use?	FLUSH OR POUR FLUSH TOILET 11 TRADITIONAL PIT LATRINE . . . . 21 VENTILATED IMPROVED PIT LATRINE (VIP) . . . . 22 NO FACILITY/BUSH/FIELD . . . . 61 OTHER ______________________ 96 (SPECIFY)	 → 104
103	Do you share this toilet facility with other households?	YES . . . . 1 NO 2	
104	Does your household have: Electricity? A radio? A television? A telephone/mobile telephone? A refrigerator?	YES NO ELECTRICITY . . . . 1 2 RADIO . . . . 1 2 TELEVISION . . . . 1 2 TELEPHONE/MOBILE . . . . 1 2 REFRIGERATOR 1 2	
105	What type of fuel does your household mainly use for cooking?	ELECTRICITY . . . . 01 LPG/NATURAL GAS . . . . 02 BIOGAS . . . . 04 PARAFFIN/KEROSENE .... 05 COAL, LIGNITE . . . . 06 CHARCOAL FROM WOOD . . . . 07 FIREWOOD/STRAW . . . . 08 DUNG . . . . 09 NO FOOD COOKED IN HOUSEHOLD . . . . 95 OTHER ______________________ 96 (SPECIFY)	
106	MAIN MATERIAL OF THE FLOOR. RECORD OBSERVATION.	NATURAL FLOOR EARTH/SAND . . . . 11 DUNG . . . . 12 RUDIMENTARY FLOOR WOOD PLANKS . . . . 21 PALM/BAMBOO . . . . 22 FINISHED FLOOR PARQUET OR POLISHED WOOD . . . . 31 VINYL OR ASPHALT STRIPS . . . . 32 CERAMIC TILES . . . . 33 CEMENT/ TERAZO……………….. 34 CARPET . . . . 35 OTHER ______________________ 96 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
107	MAIN MATERIAL OF THE ROOF. RECORD OBSERVATION.	NATURAL ROOFING NO ROOF . . . . 11 THATCH/PALM LEAF (MAKUTI) . 12 DUNG/MUD…………………. . 13 RUDIMENTARY ROOFING CORRUGATED IRON (MABATI) . 21 TIN CANS . . . . 22 FINISHED ROOFING ASBESTOS SHEET . . . . 31 CONCRETE . . . . 32 TILES . . . . 33 OTHER ______________________ 96 (SPECIFY)	
108	MAIN MATERIAL OF THE EXTERIOR WALLS. RECORD OBSERVATION.	NATURAL WALLS NO WALLS . . . . 11 CANE/PALM/TRUNKS . . . . 12 DUNG/MUD……………………….. 13 RUDIMENTARY WALLS BAMBOO WITH MUD . . . . 21 STONE WITH MUD . . . . 22 PLYWOOD/CARDBOARD……………. 24 CARTON……… . . . . 25 REUSED WOOD . . . . 26 FINISHED WALLS CEMENT . . . . 31 STONE WITH LIME/CEMENT . . . . 32 BRICKS . . . . 33 CEMENT BLOCKS . . . . 34 WOOD PLANKS/SHINGLES . . . . 36 OTHER ______________________ 96 (SPECIFY)	
109	How many rooms in this household are used for sleeping?	ROOMS . . . . [ ][ ]	
110	Does any member of your household own: A bicycle? A motorcycle or motor scooter? A car or truck? A boat with a motor?	YES NO BICYCLE . . . . 1 2 MOTORCYCLE/SCOOTER . . . . 1 2 CAR/TRUCK . . . . 1 2 BOAT WITH MOTOR 1 2	
110A	Does your household own any of the following: Cows? Goats/sheep? Poultry (e.g., chickens, ducks)? Dogs? Other animals (camels, horses, donkeys, etc).?	YES NO COWS . . . . 1 2 GOATS/SHEEP . . . . 1 2 POULTRY . . . . 1 2 DOGS . . . . 1 2 OTHER ANIMALS 1 2	
111	Does your household have any mosquito nets that can be used while sleeping?	YES . . . . 1 NO 2	 → 201

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES			SKIP
112	How many mosquito nets does your household have? IF 7 OR MORE NETS, RECORD '7'.	NUMBER OF NETS			
		NET # 1	NET # 2	NET # 3	
113	ASK RESPONDENT TO SHOW YOU THE NET(S) IN THE HOUSEHOLD.	OBSERVED . . . . 1 NOT OBSERVED . 2	OBSERVED . . . . 1 NOT OBSERVED . 2	OBSERVED . . . . 1 NOT OBSERVED . 2	
114	How many months ago did your household obtain the mosquito net? IF LESS THAN ONE MONTH, RECORD '00'.	MONTHS AGO 37 OR MORE MONTHS AGO . . . . 95 NOT SURE 98	MONTHS AGO 37 OR MORE MONTHS AGO . . . . 95 NOT SURE 98	MONTHS AGO 37 OR MORE MONTHS AGO . . . . 95 NOT SURE 98	
115	How did your household obtain the net: Was it bought or was it given free of charge? IF FREE: ASK: Was it from a non-governmental organisation or from the government?	BOUGHT . . . . 1 FREE NGO . . . . . . 2 FREE GOV'T . . . . 3 FREE OTHER........4 OTHER..................5 NOT SURE..............8	BOUGHT . . . . 1 FREE NGO . . . . . . 2 FREE GOV'T . . . . 3 FREE OTHER........4 OTHER..................5 NOT SURE..............8	BOUGHT . . . . 1 FREE NGO . . . . . . 2 FREE GOV'T . . . . 3 FREE OTHER...........4 OTHER..................5 NOT SURE..............8	
115A	OBSERVE OR ASK THE SHAPE OF THE NET.	CONICAL . . . . 1 RECTANGULAR 2 OTHER . . . . . . 6 NOT SURE 8	CONICAL . . . . 1 RECTANGULAR . 2 OTHER . . . . . . 6 NOT SURE 8	CONICAL . . . . 1 RECTANGULAR . 2 OTHER . . . . . . 6 NOT SURE 8	
115B	OBSERVE OR ASK THE COLOR OF THE NET.	WHITE . . . . 1 BLUE . . . . 2 GREEN . . . . . . 3 OTHER . . . . . . 6 NOT SURE 8	WHITE . . . . 1 BLUE . . . . 2 GREEN . . . . . . 3 OTHER . . . . . . 6 NOT SURE 8	WHITE . . . . 1 BLUE . . . . 2 GREEN . . . . . . 3 OTHER . . . . . . 6 NOT SURE 8	
116	When you got the net, was it already treated with an insecticide to kill or repel mosquitos?	YES . . . . 1 NO . . . . 2 NOT SURE 8	YES . . . . 1 NO . . . . 2 NOT SURE 8	YES . . . . 1 NO . . . . 2 NOT SURE 8	
117	Since you got the mosquito net, was it ever soaked or dipped in *dawa* or a liquid to repel mosquitos or insects?	YES . . . . 1 NO . . . . 2 (SKIP TO 119) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 119) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 119) NOT SURE 8	
118	How many months ago was the net last soaked or dipped? IF LESS THAN 1 MONTH, RECORD '00'.	MONTHS AGO . . . . 25 OR MORE MONTHS AGO . . . . 95 NOT SURE 98	MONTHS AGO . . . . 25 OR MORE MONTHS AGO . . . . 95 NOT SURE 98	MONTHS AGO . . . . 25 OR MORE MONTHS AGO . . . . 95 NOT SURE 98	
119	Did anyone sleep under this mosquito net last night?	YES . . . . 1 NO . . . . 2 (SKIP TO 121) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 121) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 121) NOT SURE 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES			SKIP
		NET # 1	NET # 2	NET # 3	
120	Who slept under this mosquito net last night? RECORD THE PERSON'S NAME AND LINE NUMBER FROM THE HOUSEHOLD SCHEDULE	NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ]	NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ]	NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ] NAME ____________ LINE NUMBER [ ][ ]	
121		GO BACK TO 113 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 201.	GO BACK TO 113 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 201.	GO TO 113 IN THE NEXT PAGE OR, IF NO MORE NETS NETS, GO TO 201.	

HOUSEHOLD CHARACTERISTICS					
		NET # 4	NET # 5	NET # 6	NET # 7
113	ASK RESPONDENT TO SHOW YOU THE NET(S) IN THE HOUSEHOLD.	OBSERVED . . . . 1 NOT OBSERVED . 2	OBSERVED . . . . 1 NOT OBSERVED . 2	OBSERVED . . . . 1 NOT OBSERVED . 2	OBSERVED . 1 NOT OBSERVED 2
114	How many months ago did your household obtain the mosquito net? IF LESS THAN ONE MONTH, RECORD '00'.	MONTHS AGO [ ][ ] 37 OR MORE MONTHS AGO . . . . 95 NOT SURE 98	MONTHS AGO [ ][ ] 37 OR MORE MONTHS AGO . . . . 95 NOT SURE 98	MONTHS AGO [ ][ ] 37 OR MORE MONTHS AGO . . . . 95 NOT SURE 98	MONTHS AGO [ ][ ] 37 OR MORE MONTHS AGO . 95 NOT SURE . 98
115	How did your household obtain the net: Was it bought or was it given free of charge? IF FREE: ASK: Was it from a non-governmental organisation or from the government?	BOUGHT . . . . 1 FREE NGO . . . . . . 2 FREE GOV'T . . . . 3 FREE OTHER........4 OTHER..................5 NOT SURE..............8	BOUGHT . . . . 1 FREE NGO . . . . . . 2 FREE GOV'T . . . . 3 FREE OTHER........4 OTHER..................5 NOT SURE..............8	BOUGHT . . . . 1 FREE NGO . . . . . . 2 FREE GOV'T . . . . 3 FREE OTHER...........4 OTHER..................5 NOT SURE..............8	BOUGHT . . . . 1 FREE NGO . . . . 2 FREE GOV'T . . . . 3 FREE OTHER...........4 OTHER..................5 NOT SURE..............8
115A	OBSERVE OR ASK THE SHAPE OF THE NET.	CONICAL . . . . 1 RECTANGULAR . 2 OTHER . . . . . . 6 NOT SURE 8	CONICAL . . . . 1 RECTANGULAR . 2 OTHER . . . . . . 6 NOT SURE 8	CONICAL . . . . 1 RECTANGULAR . 2 OTHER . . . . . . 6 NOT SURE 8	CONICAL . . . . 1 RECTANGULAR . . 2 OTHER . . . . 6 NOT SURE 8
115B	OBSERVE OR ASK THE COLOR OF THE NET.	WHITE . . . . 1 BLUE . . . . 2 GREEN . . . . . . 3 OTHER . . . . . . 6 NOT SURE 8	WHITE . . . . 1 BLUE . . . . 2 GREEN . . . . . . 3 OTHER . . . . . . 6 NOT SURE 8	WHITE . . . . 1 BLUE . . . . 2 GREEN . . . . . . 3 OTHER . . . . . . 6 NOT SURE 8	WHITE . . . . 1 BLUE . . . . 2 GREEN . . . . 3 OTHER . . . . 6 NOT SURE 8
116	When you got the net, was it already treated with an insecticide to kill or repel mosquitos?	YES . . . . 1 NO . . . . 2 NOT SURE 8	YES . . . . 1 NO . . . . 2 NOT SURE 8	YES . . . . 1 NO . . . . 2 NOT SURE 8	YES . . . . 1 NO . . . . 2 NOT SURE 8
117	Since you got the mosquito net, was it ever soaked or dipped in *dawa* or a liquid to repel mosquitos or insects?	YES . . . . 1 NO . . . . 2 (SKIP TO 119) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 119) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 119) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 119) NOT SURE 8
118	How many months ago was the net last soaked or dipped? IF LESS THAN 1 MONTH, RECORD '00'.	MONTHS AGO . . . . [ ][ ] 25 OR MORE MONTHS AGO . . . . 95 NOT SURE 98	MONTHS AGO . . . . [ ][ ] 25 OR MORE MONTHS AGO . . . . 95 NOT SURE 98	MONTHS AGO . . . . [ ][ ] 25 OR MORE MONTHS AGO . . . . 95 NOT SURE 98	MONTHS AGO . . [ ][ ] 25 OR MORE MONTHS AGO . . . . 95 NOT SURE 98
119	Did anyone sleep under this mosquito net last night?	YES . . . . 1 NO . . . . 2 (SKIP TO 121) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 121) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 121) NOT SURE 8	YES . . . . 1 NO . . . . 2 (SKIP TO 121) NOT SURE 8

		NET # 4	NET # 5	NET # 6	NET # 7
120	Who slept under this mosquito net last night? RECORD THE PERSON'S NAME AND LINE NUMBER FROM THE HOUSEHOLD SCHEDULE	NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ]	NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ]	NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ]	NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ] NAME ______ LINE NUMBER [ ][ ]
121		GO BACK TO 113 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 201.	GO BACK TO 113 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 201.	GO BACK TO 113 FOR NEXT NET; OR, IF NO MORE NETS, GO TO 201.	GO TO 201.

SUPPORT FOR SICK PEOPLE

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES			
201	CHECK QUESTIONS 7 AND 10 IN THE HOUSEHOLD SCHEDULE:	NONE..................................... 00 → 301 NUMBER OF SICK PEOPLE AGE 18-64 [ ][ ]			
202	ENTER IN QUESTION 203 THE LINE NUMBER AND NAME OF EACH SICK PERSON AGE 18-64, BEGINNING WITH THE FIRST SICK PERSON LISTED IN QUESTION 10 IN THE HOUSEHOLD SCHEDULE. IF THERE ARE MORE THAN 3 SICK PEOPLE, USE ADDITIONAL QUESTIONNAIRE(S). READ THE INTRODUCTION THAT FOLLOWS. THEN ASK QUESTIONS 204-215 AS APPROPRIATE FOR EACH OF THE PERSONS AGE 18-64 REPORTED AS HAVING BEEN VERY SICK. You told me that in your household one (some) of the members of your household has(ve) been very sick for at least three of the past 12 months. We are interested in learning about the care and support that they may have received for that/each of those persons. First I would like to ask you about any formal, organized help or support that your household may have been given for [that/ each of those] person(s) for which you did not have to pay. By formal, organized support I mean help provided by someone working for a program. This program could be government, private, religious, charity, or community based.				
203	NAME AND LINE NUMBER FROM COLUMNS 1 AND 2 OF THE HOUSEHOLD SCHEDULE	1ST SICK PERSON NAME ______ LINE NO. .... [ ][ ]	2ND SICK PERSON NAME ______ LINE NO. .... [ ][ ]	3RD SICK PERSON NAME ______ LINE NO. .... [ ][ ]	
204	Now I would like to ask you about any support you received for (NAME). In the last 12 months, has your household received any medical support for (NAME), such as medical care, supplies or medicine, for which you did not have to pay?	YES .... 1 NO .... 2 (SKIP TO 206) DK 8	YES .... 1 NO .... 2 (SKIP TO 206) DK 8	YES .... 1 NO .... 2 (SKIP TO 206) DK 8	
205	Did your household receive any of this medical support at least once a month while (NAME) was sick?	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	
206	In the last 12 months, has your household received any emotional or psychological support for (NAME), such as companionship, counseling from a trained counselor, or spiritual support, for which you did not have to pay?	YES .... 1 NO .... 2 (SKIP TO 208) DK 8	YES .... 1 NO .... 2 (SKIP TO 208) DK 8	YES .... 1 NO .... 2 (SKIP TO 208) DK 8	
207	Did your household receive any of this emotional or psychological support in the past 30 days?	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	
208	In the last 12 months, has your household received any material support for (NAME), such as clothing, food, or financial support, for which you did not have to pay?	YES .... 1 NO .... 2 (SKIP TO 210) DK 8	YES .... 1 NO .... 2 (SKIP TO 210) DK 8	YES .... 1 NO .... 2 (SKIP TO 210) DK 8	
209	Did your household receive any of this material support in the past 30 days?	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	
210	In the last 12 months, has your household received any social support for (NAME), such as help in household work, training for a caregiver, or legal services, for which you did not have to pay?	YES .... 1 NO .... 2 (SKIP TO 212) DK 8	YES .... 1 NO .... 2 (SKIP TO 212) DK 8	YES .... 1 NO .... 2 (SKIP TO 212) DK 8	
211	Did your household receive any of this social support in the past 30 days?	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES		
	NAME AND LINE NUMBER FROM COLUMNS 1 AND 2 OF THE HOUSEHOLD SCHEDULE	1ST SICK PERSON NAME ________ LINE NO.	2ND SICK PERSON NAME ________ LINE NO.	3RD SICK PERSON NAME ________ LINE NO. . . . .
212	Now I would like to ask about health problems (NAME) may have recently had. In the last 30 days, has (NAME) had severe pain, mild pain, or no pain at all?	SEVERE . . . . . . 1 MILD . . . . 2 NOT AT ALL . 3 (SKIP TO 214)	SEVERE . . . . . . 1 MILD . . . . 2 NOT AT ALL . 3 (SKIP TO 214)	SEVERE . . . . . . 1 MILD . . . . 2 NOT AT ALL . 3 (SKIP TO 214)
213	When (NAME) was in pain, was he/she able to reduce or stop the pain most of the time, some of the time, or not at all?	MOST TIME . 1 SOME TIME . 2 NOT AT ALL . 3	MOST TIME . 1 SOME TIME . 2 NOT AT ALL . 3	MOST TIME . 1 SOME TIME . 2 NOT AT ALL . 3
214	In the last 30 days, did (NAME) suffer from nausea, coughing, diarrhea, or constipation? IF YES: Was this problem (were any of these problems) ever severe?	YES, SEVERE 1 YES, MILD 2 NO . . . . 3 (SKIP TO 216)	YES, SEVERE 1 YES, MILD 2 NO . . . . 3 (SKIP TO 216)	YES, SEVERE 1 YES, MILD 2 NO . . . . 3 (SKIP TO 216)
215	Was (NAME) able to reduce or stop this (these) problem(s) most of the time, some of the time, or not at all?	MOST TIME . 1 SOME TIME . 2 NOT AT ALL . 3	MOST TIME . 1 SOME TIME . 2 NOT AT ALL . 3	MOST TIME . 1 SOME TIME . 2 NOT AT ALL . 3
216		GO BACK TO 204 IN NEXT COLUMN IN THIS QUESTIONNAIRE OR IN THE FIRST COLUMN OF ADDITIONAL QUESTIONNAIRE(S); IF THERE ARE NO MORE SICK PEOPLE, GO TO 301.		

SUPPORT FOR PERSONS WHO HAVE DIED

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
301	Now I would like to ask you a few more questions about your household. Think back over the past 12 months. Has any usual member of your household died in the last 12 months?	YES . . . . 1 NO . . . . 2 DON'T KNOW 3	2, 3 → 401
302	How many household members died in the last 12 months?	NUMBER OF DEATHS	
303	ASK 304-322 AS APPROPRIATE FOR EACH PERSON WHO DIED. IF THERE WERE MORE THAN 3 DEATHS, USE ADDITIONAL QUESTIONNAIRE(S).		

NO.	QUESTIONS AND FILTERS	NAME 1ST DEATH	NAME 2ND DEATH	NAME 3RD DEATH
304	What was the name of the person who died (most recently/before him/her)? If the baby was not given a name before death. **Record baby boy or girl**	______	______	______
305	Was (NAME) male or female?	MALE . . . . 1 FEMALE 2	MALE . . . . 1 FEMALE 2	MALE . . . . 1 FEMALE 2
306	How old was (NAME) when (he/she) died?	AGE .	AGE .	AGE .
307	CHECK 306: AGE OF PERSON AT DEATH	<18/65+ (SKIP TO 318) 18-64	<18/65+ (SKIP TO 318) 18-64	<18/65+ (SKIP TO 318) 18-64
308	Was (NAME) very sick for at least three of the 12 months before (he/she) died, that is (NAME) was too sick to work or do normal activities?	YES . . . . 1 NO . . . . 2 (SKIP TO 318) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 318) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 318) DK 8
309	I would like to ask you about any formal, organized help or support that your household may have received for [NAME] before (he/she) died, for which you did not have to pay. By formal, organized support I mean help provided by someone working for a program. This program could be government, private, religious, charity, or community based.			
310	In the last 12 months, did your household receive any medical supplies for (NAME), such as medical care, supplies or medicine, for which you did not have to pay?	YES . . . . 1 NO . . . . 2 (SKIP TO 312) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 312) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 312) DK 8
311	Did your household receive any of this medical support at least once a month while (NAME) was sick?	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8
312	In the last 12 months, did your household receive any emotional or psychological support for (NAME), such as companionship, counseling from a trained counselor, or spiritual support for which you did not have to pay?	YES . . . . 1 NO . . . . 2 (SKIP TO 314) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 314) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 314) DK 8
313	Did your household receive any of this emotional or psychological support in the last 30 days before (NAME)'s death?	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8
314	In the last 12 months, did your household receive any material support for (NAME), such as clothing, food, or financial support, for which you did not have to pay?	YES . . . . 1 NO . . . . 2 (SKIP TO 316) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 316) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 316) DK 8
315	Did your household receive any of this material support in the last 30 days before (NAME)'s death?	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8
316	In the last 12 months, did your household receive any social support for (NAME), such as help in household work, training for a caregiver, or legal services, for which you did not have to pay?	YES . . . . 1 NO . . . . 2 (SKIP TO 318) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 318) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 318) DK 8
317	Did your household receive any of this social support in the last 30 days before (NAME)'s death?	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES			SKIP
		NAME 1ST DEATH __________	NAME 2ND DEATH __________	NAME 3RD DEATH __________	
318	Now I would like to ask about the health problems (NAME) may have had. In the 30 days before (NAME) died, did he/she have severe pain, mild pain, or no pain at all?	SEVERE . . . . . . 1 MILD . . . . 2 NOT AT ALL . 3 (SKIP TO 320)	SEVERE . . . . . . 1 MILD . . . . 2 NOT AT ALL . 3 (SKIP TO 320)	SEVERE . . . . . . 1 MILD . . . . 2 NOT AT ALL . 3 (SKIP TO 320)	
319	When (NAME) was in pain, was he/she able to reduce or stop the pain most of the time, some of the time, or not at all?	MOST TIME . . . . 1 SOME TIME . . . . 2 NOT AT ALL . 3	MOST TIME . 1 SOME TIME . 2 NOT AT ALL . 3	MOST TIME . 1 SOME TIME . 2 NOT AT ALL . 3	
320	In the 30 days before (NAME) died, did he/she suffer from nausea, coughing, diarrhea, or constipation? IF YES: Was this problem (were any of these problems) severe?	YES, SEVERE . 1 YES, MILD 2 NO . . . . 3 (SKIP TO 322)	YES, SEVERE . 1 YES, MILD 2 NO . . . . 3 (SKIP TO 322)	YES, SEVERE . 1 YES, MILD 2 NO . . . . 3 (SKIP TO 322)	
321	Was (NAME) able to reduce or stop the problems he/she had most of the time, some of the time or not at all?	MOST TIME . . . . 1 SOME TIME . . . . 2 NOT AT ALL . 3	MOST TIME . 1 SOME TIME . 2 NOT AT ALL . 3	MOST TIME . 1 SOME TIME . 2 NOT AT ALL . 3	
322		GO BACK TO 304 IN NEXT COLUMN IN THIS QUESTIONNAIRE OR IN THE FIRST COLUMN OF ADDITIONAL QUESTIONNAIRE(S); IF NO MORE DEATHS, GO TO 401.			

SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES
401	CHECK COLUMN 7 IN THE HOUSEHOLD SCHEDULE: **ANY CHILD AGE 0-17?**	NONE………………….....………… 00 → End HH interview and go to cover page **NUMBER OF CHILDREN AGE 0-17**
402	CHECK COLUMN 10 IN THE HOUSEHOLD SCHEDULE: **ANY SICK ADULT AGE 18-64?**	NO SICK ADULT AGE 18-64 ↓ AT LEAST ONE SICK ADULT AGE 18-64 → GO TO 406. CHECK QUESTION 7 IN THE HOUSEHOLD SCHEDULE AND LIST THE NAME(S), LINE NUMBER(S) AND AGE(S) OF ALL PERSON(S) AGE 0-17 YEARS.
403	CHECK 306 IN THE PREVIOUS SECTION: **ANY ADULT AGE 18-64 WHO DIED IN PAST 12 MONTHS?**	NO ADULT DEATH AGE 18-64 IN 306 ↓ AT LEAST ONE ADULT DEATH AGE 18-64 IN 306 → GO TO 406. CHECK QUESTION 7 IN THE HOUSEHOLD SCHEDULE AND LIST THE NAME(S), LINE NUMBER(S) AND AGE(S) OF ALL PERSONS AGE 0-17 YEARS.
404	CHECK COLUMN 17 IN THE HOUSEHOLD SCHEDULE: **ANY CHILD WHOSE MOTHER AND/OR FATHER HAS DIED OR WHOSE MOTHER AND/OR FATHER IS NOT LISTED IN THE HOUSEHOLD SCHEDULE AND IS VERY SICK?**	AT LEAST ONE CHILD WHOSE MOTHER AND/OR FATHER HAS DIED/IS NOT LISTED IN THE HOUSEHOLD SCHEDULE AND HAS BEEN VERY SICK ↓ NO CHILD WHOSE MOTHER AND/OR FATHER HAS DIED OR IS NOT LISTED IN HOUSEHOLD SCHEDULE AND HAS BEEN VERY SICK → End HH interview and go to cover page
405	RECORD NAMES, LINE NUMBERS AND AGES OF CHILDREN AGE 0-17 FOR ALL CHILDREN WHO ARE IDENTIFIED IN COLUMN 17 AS HAVING A MOTHER AND/OR FATHER WHO HAS DIED OR HAS BEEN VERY SICK IN 406.	

		1ST CHILD	2ND CHILD	3RD CHILD	4TH CHILD
406	NAME (FROM COLUMN 2) LINE NUMBER (FROM COLUMN 1) AGE (FROM COLUMN 7)	NAME ______ LINE NO. [ ][ ] AGE [ ][ ]	NAME ______ LINE NO. [ ][ ] AGE [ ][ ]	NAME ______ LINE NO. [ ][ ] AGE [ ][ ]	NAME ______ LINE NO. [ ][ ] AGE [ ][ ]
407	I would like to ask you about any formal, organized help or support for children that your household may have received for which you did not have to pay. By formal, organized support I mean help provided by someone working for a program. This program could be government, private, religious, charity, or community based.				
408	Now I would like to ask you about the support your household received for (NAME). In the last 12 months, has your household received any medical support for (NAME), such as medical care, supplies or medicine, for which you did not have to pay?	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8
409	In the last 12 months, has your household received any emotional or psychological support for (NAME), such as companionship, counseling from a trained counselor, or spiritual support, which you received at home and for which you did not have to pay?	YES .... 1 NO .... 2 (SKIP TO 411) DK 8	YES .... 1 NO .... 2 (SKIP TO 411) DK 8	YES .... 1 NO .... 2 (SKIP TO 411) DK 8	YES .... 1 NO .... 2 (SKIP TO 411) DK 8
410	Did your household receive any of this emotional or psychological support in the past 3 months?	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8
411	In the last 12 months, has your household received any material support for (NAME), such as clothing, food, or financial support, for which you did not have to pay?	YES .... 1 NO .... 2 (SKIP TO 413) DK 8	YES .... 1 NO .... 2 (SKIP TO 413) DK 8	YES .... 1 NO .... 2 (SKIP TO 413) DK 8	YES .... 1 NO .... 2 (SKIP TO 413) DK 8
412	Did your household receive any of this material support in the past 3 months?	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8
413	In the last 12 months, has your household received any social support for (NAME) such as help in household work, training for a caregiver, or legal services for which you did not have to pay?	YES .... 1 NO .... 2 (SKIP TO 415) DK 8	YES .... 1 NO .... 2 (SKIP TO 415) DK 8	YES .... 1 NO .... 2 (SKIP TO 415) DK 8	YES .... 1 NO .... 2 (SKIP TO 415) DK 8
414	Did your household receive any of this social support in the past 3 months?	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8
415	CHECK 406: AGE OF CHILD	AGE 0-4 (SKIP TO 417) AGE 5-17	AGE 0-4 (SKIP TO 417) AGE 5-17	AGE 0-4 (SKIP TO 417) AGE 5-17	AGE 0-4 (SKIP TO 417) AGE 5-17
416	In the last 12 months, has your household received any support for (NAME'S) schooling, such as allowance, free admission, books or supplies, for which you did not have to pay?	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8	YES .... 1 NO .... 2 DK 8
417		GO BACK TO 408 FOR NEXT CHILD; OR, IF NO MORE CHILDREN → GO TO COVER PAGE			

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES			
		5TH CHILD	6TH CHILD	7TH CHILD	8TH CHILD
406	NAME (FROM COLUMN 2) LINE NUMBER (FROM COLUMN 1) AGE (FROM COLUMN 7)	NAME ________ LINE NO. . . . . [ ][ ] AGE . [ ][ ]	NAME ________ LINE NO. . . . . [ ][ ] AGE . [ ][ ]	NAME ________ LINE NO. . . . . [ ][ ] AGE . [ ][ ]	NAME ________ LINE NO. . . . . [ ][ ] AGE . [ ][ ]
408	Now I would like to ask you about the support your household received for (NAME). In the last 12 months, has your household received any medical support for (NAME), such as medical care, supplies or medicine, for which you did not have to pay?	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8
409	In the last 12 months, has your household received any emotional or psychological support for (NAME), such as companionship, counseling from a trained counselor, or spiritual support, which you received at home and for which you did not have to pay?	YES . . . . 1 NO . . . . 2 (SKIP TO 411) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 411) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 411) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 411) DK 8
410	Did your household receive any emotional or psychological support in the past 3 months?	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8
411	In the last 12 months, has your household received any material support for (NAME), such as clothing, food, or financial support, for which you did not have to pay?	YES . . . . 1 NO . . . . 2 (SKIP TO 413) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 413) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 413) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 413) DK 8
412	Did your household receive any material support in the past 3 months?	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8
413	In the last 12 months, has your household received any social support for (NAME) such as help in household work, training for a caregiver, or legal services for which you did not have to pay?	YES . . . . 1 NO . . . . 2 (SKIP TO 415) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 415) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 415) DK 8	YES . . . . 1 NO . . . . 2 (SKIP TO 415) DK 8
414	Did your household receive any social support in the past 3 months?	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8
415	CHECK 406: AGE OF CHILD	AGE 0-4 [ ] (SKIP TO 417) AGE 5-17 [ ]	AGE 0-4 [ ] (SKIP TO 417) AGE 5-17 [ ]	AGE 0-4 [ ] (SKIP TO 417) AGE 5-17 [ ]	AGE 0-4 [ ] (SKIP TO 417) AGE 5-17 [ ]
416	In the last 12 months, has your household received any support for (NAME'S) schooling, such as allowance, free admission, books or supplies, for which you did not have to pay?	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8	YES . . . . 1 NO . . . . 2 DK 8
417		GO BACK TO 408 FOR NEXT CHILD; OR, IF NO MORE CHILDREN → GO TO COVER PAGE			

Consent 1a: Blood Draw, Testing and Storage Consent Form

[Laboratory technician: This consent statement should be read to all adults age 18-64 years and to emancipated individuals age 15-17 years, i.e, those with no parent/guardian or those who are not living with their parent/guardian. In the case of all other individuals age 15-17 years, consent must be obtained from a parent/guardian or other adult responsible for the youth's health and welfare before the youth is asked for his/her assent (see consent form 1b).

Throughout the process of obtaining consent, it is important that you are patient and allow the respondent to ask questions and to consider the decision. Never rush or otherwise pressure the respondent to give consent. Provide a copy of this consent script to all eligible persons age 15-64]

[Interviewer introduces laboratory technician] My colleague is ______ and he/she is a member of the survey team

[Interviewer introduces laboratory technician] My colleague is ______ and he/she is a member of the survey team and will be talking to you about testing.

[Laboratory technician] As you know, we are doing a survey about HIV/AIDS and other health issues in Kenya. As part of this survey, we are asking people to give a small amount of blood to test for HIV, syphilis, and herpes infections. This information will help the Ministry of Health plan programs to take care of these diseases.

If you agree to take part, I will ask you for about one teaspoonful of blood which we will take from a vein in your arm. I will put a study number, but not your name on the blood tube. All of this will be private and no one else will know your results. Your blood will go to Nairobi where it will be tested for HIV, CD4 cell counts (if HIV positive), syphilis, and herpes infections. Here is some information on these infections. Here is a card that shows the day that your test results will be ready and the places where you can receive your results. The card has your study number on it and not your name.

[Laboratory technician: Provide the respondent with the brochure including information on HIV, CD4 cell counts, syphilis, and herpes and an appointment card with the date and locations where the respondent can receive their test results. Read off name of facilities and appointment date. Pause to allow the respondent time to look at the card and ask questions].

Your test results will be ready in 6 weeks. Please bring this card with you to get your results. The health worker will use your study number and not your name to tell you the test results. Your results will be given to you in a private room. If you want to know your HIV results sooner, here is a list of nearby places where you (and your partner if you want) can get tested again. If you want to know your syphilis results sooner, here is a list of nearby places where you (and your partner if you want) can get tested for syphilis.

[Laboratory Technician: Provide lists of nearby VCT and Sexually Transmitted Disease (STD) facilities where they can receive repeat HIV and syphilis testing and condoms, as appropriate. Pause to allow the respondent time to look at the materials and to ask questions.]

We will also be screening for other conditions at a later date, and therefore we would like to store some of the blood that you provide today for future testing. We do not yet know what these future tests will be. Also, since all identifiers will be removed from your blood before any future tests are conducted, we cannot tell you the results of these tests, and the results can never be traced back to you. You may take part in the study without having your blood stored for future testing. However, if you let us use your blood for future testing this may help improve health programs in Kenya.

The risk to you if you take part in testing is small. All the things that we use to take the blood are clean and safe. They have never been used before and will be thrown away after each use. You may bruise on your arm when we take the blood. If you have any pain, bleeding, or swelling from taking blood, please contact our study staff or your health worker.

There are benefits to you if you take part in testing. You will be given free HIV, CD4 cell count (if HIV positive), syphilis, and herpes testing, with counseling from trained health workers. You will also get information on how to prevent HIV and sexually transmitted diseases. If you have HIV, you will be sent to a nearby health facility for follow-up. If you have syphilis, you and your partners will get free treatment to cure the infection. If you have herpes, you will get counseling on how to prevent infection to your partners. The information from your tests will be used to make health programs stronger in Kenya.

Do you want to ask me anything about the survey? If you have any questions we want you to tell us. You can also ask the person in charge of the survey teams at the Kenya National Bureau of Statistics. If you feel that you have been harmed by taking part you should contact the Ministry of Health. If you have any questions on your rights in the study you can contact the chairman on the Ethical Review Committee at the Kenya Medical Research Institute (KEMRI).

Consent 1b: Blood Draw, Testing and Storage Assent Form for Minors

[Interviewer in presence of laboratory technician: This statement should be read to all individuals age 15-17 years who are not emancipated (i.e. individuals who are living with their parent/guardian) whose parent/guardian has given consent to participate in the survey and has given permission for blood to be collected from the youth.

Throughout the process of obtaining assent, it is important that you are patient and allow the respondent to ask questions and to consider the decision. Never rush or otherwise pressure the respondent to give assent. Provide a copy of this assent script to all eligible minors age 15-17]

[Interviewer introduces laboratory technician] My colleague is ______ and he/she is a member of the survey team

[Interviewer introduces laboratory technician] My colleague is ______ and he/she is a member of the survey team and will be talking to you about testing.

[Laboratory technician] As you know, we are doing a survey about HIV/AIDS and other health issues in Kenya. As part of this survey, we are asking people to give a small amount of blood to test for HIV, syphilis, and herpes infections. This information will help the Ministry of Health plan programs to take care of these diseases.

Your (parent/guardian) has agreed that you may provide a blood sample if you want to. If you agree to take part, I will ask you for about one teaspoonful of blood which we will take from a vein in your arm. I will put a study number, but not your name on the blood tube. All of this will be private and no one else will know your results. Your blood will go to Nairobi where it will be tested for HIV, CD4 cell counts (if HIV positive), syphilis, and herpes infections.

Here is some information on these infections. Here is a card that shows the day that your test results will be ready and the places where you can receive your results. The card has your study number on it and not your name.

[Interviewer: Provide the respondent with informational brochures on HIV, CD4 cell counts, syphilis, and herpes, as appropriate and an appointment card with the date and locations where the respondent can receive their test results. Read off name of facilities and appointment date. Pause to allow the respondent time to look at the card and ask questions].

Your test results will be ready in 6 weeks. Please bring this card with you to get your results. You will be encouraged, but not required, to receive the results with your parent or guardian. The health worker will use your study number and not your name to tell you the test results. Your results will be given to you in a private room. If you want to know your HIV results sooner, here is a list of nearby places where you (and your partner if you want) can get tested again. If you want to know your syphilis results sooner, here is a list of nearby places where you (and your partner if you want) can get tested for syphilis.

If you do not appear to be ready to receive these results at the planned time, the health care worker can arrange to provide the results at a different time. You will receive counseling and given information about prevention and treatment of any infections you have. All of this will be private and no one other than you or you and your parent/guardian will know the results.

[Interviewer: Provide the respondent with a list of nearby VCT and Sexually Transmitted Disease (STD) facilities where they can receive repeat HIV and syphilis testing. Pause to allow the respondent time to look at the materials and to ask questions.]

We will be screening for other conditions at a later date, and therefore we would like to store some of the blood that you provide today for future testing. We do not yet know what these future tests will be. Since all identifiers will be removed from your blood before any future tests are conducted, we cannot tell you the results of these tests, and the results can never be traced back to you. You may take part in the study without having your blood stored for future testing. However, if you let us use your blood for future testing this may help improve health programs in Kenya.

The risk to you if you take part in testing is small. All the things that we use to take the blood are clean and safe. They have never been used before and will be thrown away after each use.

You may bruise on your arm when we take the blood. If you have any pain, bleeding, or swelling from taking blood, please contact our study staff or your health worker.

You will benefit if you take part in testing. You will be given free HIV, syphilis, and herpes testing, with counseling. When you receive your results, you will also get information on how to prevent spread of these infections and you will be treated or referred for treatment as needed. The information from your tests will be used to make health programs stronger in Kenya.

Do you want to ask me anything about the survey? If you have any questions we want you to tell us. You can also ask the person in charge of the survey teams at the Kenya National Bureau of Statistics. If you feel that you have been harmed by taking part you should contact the Ministry of Health. If you have any questions on your rights in the study you can contact the chairman on the Ethical Review Committee at the Kenya Medical Research Institute (KEMRI).

[Lab Tech: provide the following information to the participant:]

Ministry of Health: Godfrey Baltazar
National AIDS and STD Control Program (NASCOP)
P O Box 19361-00200 Nairobi
Tel: 2729549

Kenya National Bureau of Statistics (KNBS): FreMrick Otieno
P O Box 30266-00100 Nairobi
Tel: 216134

Chairman of Ethical Review Committee: Professor Samuel Sinei
Kenya Medical Research Institute (KEMRI)
P O Box 54840 - 00100 Nairobi
Tel: 272 25 41

Would you allow me to take some of your blood from your arm for these tests?

______Yes ______No

[Laboratory Technician: Indicate whether participant says "Yes" or "No" to the above statement. If the respondent has said "Yes" and agreed to the blood draw above, read the following statement.]

And will you allow us to store some of this blood for future testing?

______Yes ______No

__________________________ __________________________

Signature or initial of Laboratory Technician Date

[Laboratory technician: Indicate whether participant says "Yes" or "No" to the above statement on consent for storage of blood later testing, sign/initial on the above line, and provide the date.]

[If the respondent had said "No" to the venous blood draw above, read the following statement:]

We can do the test for HIV with a few drops of blood from your finger. The materials used in pricking your finger to take the blood sample are clean and safe. They have never been used before and will be thrown away after each use.

No names would be attached so that no one will be able to know your test results.

The blood collected from a finger prick can only be tested for HIV. We will not be able to tell you about your CD4 count if you result is HIV positive or your results for herpes and syphilis infection.

Do you have any questions? If you have any questions at any time, we want you to tell us.

You can say yes or no to giving blood from a finger prick. It is up to you to decide. Would you allow me to take some blood from your finger for the HIV test?

______Yes ______No

__________________________ __________________________

Signature or initial of Laboratory Technician Date

[Laboratory technician: Indicate whether participant says "Yes" or "No" to the above statement on providing blood through a finger prick, sign or initial on the above line, and provide the date.]

[Laboratory Technician: After completing this consent form, record the participant's blood testing decisions for: 1) the venous blood draw, 2) storage for future testing, and 3) type of sample collected (i.e. test tube, filter paper with blood from finger prick, or no sample) on household question_naire (page HH25) for each eligible adult aged 18-64 and each eligible emancipated minor aged 15-17.]

5. BLOOD TESTING DECISIONS

Lab Tech Name________________________
ID No. [ ][ ][ ]

CHECK COLUMN (9): RECORD THE LINE NUMBER, NAME AND AGE OF ALL ELIGIBLE PERSONS

LINE NO. FROM COL. (9)	NAME OR INITIALS FROM COL. (2)	CHECK COL. (7) AGE	LINE NO. OF PARENT OR OTHER RESPONSIBLE ADULT	IF<18 YRS READ CONSENT TO PARENT/OTHER RESP. ADULT AND RECORD RESULT	IF 18-64 YEARS OR 15 -17 YEARS AND PARENT/OTHER RESP. ADULT AGREED, READ CONSENT STATEMENT AND RECORD IF AGREESTO: TEST	STORAGE	SAMPLE COLLECTED?	BAR CODE LABEL
(501)	(502)	(503)	(504)	(505)	(506)		(507)	(508)
[ ][ ]	____________	15-17……..1 18-64……..2 GO TO 506	[ ][ ]	AGREE………..……1 REFUSE………..……2 ABSENT/OTHER……...3 SIGN ____________	AGREE……………..1 REFUSE……………..2 ABSENT/OTHER…...3	AGREE……………..1 REFUSE……………..2 ABSENT/OTHER…...3	TEST TUBE…….1 FILTER PAPER...2 NO SAMPLE……3	
[ ][ ]	____________	15-17……..1 18-64……..2 GO TO 506	[ ][ ]	AGREE………..……1 REFUSE………..……2 ABSENT/OTHER……...3 SIGN ____________	AGREE……………..1 REFUSE……………..2 ABSENT/OTHER…...3	AGREE……………..1 REFUSE……………..2 ABSENT/OTHER…...3	TEST TUBE…….1 FILTER PAPER...2 NO SAMPLE……3	
[ ][ ]	____________	15-17……..1 18-64……..2 GO TO 506	[ ][ ]	AGREE………..……1 REFUSE………..……2 ABSENT/OTHER……...3 SIGN ____________	AGREE……………..1 REFUSE……………..2 ABSENT/OTHER…...3	AGREE……………..1 REFUSE……………..2 ABSENT/OTHER…...3	TEST TUBE…….1 FILTER PAPER...2 NO SAMPLE……3	
[ ][ ]	____________	15-17……..1 18-64……..2 GO TO 506	[ ][ ]	AGREE………..……1 REFUSE………..……2 ABSENT/OTHER……...3 SIGN ____________	AGREE……………..1 REFUSE……………..2 ABSENT/OTHER…...3	AGREE……………..1 REFUSE……………..2 ABSENT/OTHER…...3	TEST TUBE…….1 FILTER PAPER...2 NO SAMPLE……3	
[ ][ ]	____________	15-17……..1 18-64……..2 GO TO 506	[ ][ ]	AGREE………..……1 REFUSE………..……2 ABSENT/OTHER……...3 SIGN ____________	AGREE……………..1 REFUSE……………..2 ABSENT/OTHER…...3	AGREE……………..1 REFUSE……………..2 ABSENT/OTHER…...3	TEST TUBE…….1 FILTER PAPER...2 NO SAMPLE……3	
[ ][ ]	____________	15-17……..1 18-64……..2 GO TO 506	[ ][ ]	AGREE………..……1 REFUSE………..……2 ABSENT/OTHER……...3 SIGN ____________	AGREE……………..1 REFUSE……………..2 ABSENT/OTHER…...3	AGREE……………..1 REFUSE……………..2 ABSENT/OTHER…...3	TEST TUBE…….1 FILTER PAPER...2 NO SAMPLE……3	

MARK HERE IF CONTINUATION SHEET USED [ ]

INTERVIEWER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING INTERVIEW

COMMENTS ABOUT RESPONDENT:

COMMENTS ON SPECIFIC QUESTIONS:

ANY OTHER COMMENTS:

SUPERVISOR'S OBSERVATIONS

NAME OF THE SUPERVISOR: ______________________ DATE: ______________________

Appendix F

Individual Questionnaire

CONFIDENTIAL

MINISTRY OF HEALTH
KENYA AIDS INDICATOR SURVEY
INDIVIDUAL QUESTIONNAIRE

IDENTIFICATION

PROVINCE* ______________________

DISTRICT ______________________

NASSEP CLUSTER NUMBER . . . .

HOUSEHOLD NUMBER . . . .

LARGE CITY/SMALL CITY/TOWN/RURAL . . . .
(NAIROBI/MOMBASA/KISUMU=1, NAKURU/ELDORET/THIKA/NYERI=2, SMALL TOWN=3, RURAL=4)

NAME OF HOUSEHOLD HEAD ______________________

NAME AND LINE NUMBER OF RESPONDENT ______________________

SEX OF RESPONDENT (MALE = 1 FEMALE = 2)

INTERVIEWER VISITS

	1	2	3	FINAL VISIT
DATE	______	______	______	DAY
				MONTH
				YEAR 2 0 0 7
INTERVIEWER'S NAME	______	______	______	INT. NUMBER
RESULT*	______	______	______	RESULT
NEXT VISIT: DATE	______	______		TOTAL NUMBER OF VISITS
TIME	______	______		

LAB TECHNICIAN VISITS **Lab Tech ID**

RESULT**	______	______		RESULT
NEXT VISIT: DATE	______	______	AFFIX BAR CODE LABLE HERE	TOTAL NUMBER OF VISITS
TIME	______	______		

LANGUAGE OF QUESTIONNAIRE **ENGLISH**

LANGUAGE OF INTERVIEW: ______________________

HOME LANGUAGE OF RESPONDENT: ______________________

01 EMBU	04 KIKUYU	07 LUO	10 MIJIKENDA	13 ENGLISH
02 KALENJIN	05 KISII	08 MAASAI	11 SOMALI	14 OTHER ______
03 KAMBA	06 LUHYA	09 MERU	12 KISWAHILI	

SUPERVISOR	OFFICE EDITOR	KEYED BY
NAME ______		
DATE ______		

*RESULT CODES:
(1) COMPLETED (2) NOT AT HOME (3) POSTPONED (4) REFUSED (5) PARTLY COMPLETED (6) INCAPACITATED
(7) OTHER (SPECIFY) ______________

**RESULT CODES:
(1) AGREE (2) REFUSE (3) ABSENT

Consent form for Individual Interview

[Interviewer: The statement should be read to all adults age 18-64 years and to emancipated individuals age 15-17 years, i.e. those with no parent/guardian or those who are not living their parent/guardian. In the case of all other individuals age 15-17 years; consent must be obtained from a parent/guardian or other adult responsible for the youth's health and welfare before the youth is asked for his consent. Only if the parent or guardian agrees will consent be asked of the adolescent. Throughout the process of obtaining consent, it is important that you are patient and allow the respondent to ask questions and to consider the decision. Never rush or otherwise pressure the respondent to give consent. Provide a copy of this consent script to all eligible persons age 15-64]

Hello. My name is …. and I am working with the Ministry of Health. We are doing a national survey that asks women and men ages 15-64 about HIV/AIDS and other health issues. You can help by taking part of this survey. Your views are very important and will help to plan health services in Kenya. The survey usually takes about 30 minutes to complete. Some of these questions will be about your personal sexual behaviour. All of the answers you give will be private and will not be shown to others. No one will know your answers.

Taking part in the survey is up to you. If I ask any questions that you don't want to answer, just let me know and I will go on to the next question. You can stop the interview at any time.

If you take part of this survey, the risk to you is small. I will ask you questions that may be uncomfortable to answer. You are free to not answer any questions that you feel are too personal. However, if you take part, the benefit is that the information that you provide to us will be used to improve the health of Kenyans by making healthcare programs stronger.

Do you want to ask me anything about the survey? If you have any questions we want you to tell us. You can also ask the person in charge of the survey teams at the Kenya National Bureau of Statistics. If you feel that you have been harmed by taking part you should contact the Ministry of Health. If you have any questions on your rights in the study you can contact the chairman on the Ethical Review Committee at the Kenya Medical Research Institute (KEMRI). ***[Interviewer: provide the following information to the participant:]***

Ministry of Health: Godfrey Baltazar
National AIDS and STD Control Program (NASCOP)
P O Box 19361-00200 Nairobi
Tel: 2729549

Kenya National Bureau of Statistics (KNBS): Fredrick Otieno
P O Box 30266-00100 Nairobi
Tel: 216134

Chairman of Ethical Review Committee: Professor Samuel Sinei
Kenya Medical Research Institute (KEMRI)
P O Box 54840 - 00100 Nairobi
Tel: 272 25 41

May I begin the interview now? ______Yes ______No

________________________________ ________________________________

Signature or initial of Interviewer Date

[Interviewer: Indicate whether participant says "Yes" or "No" to the above statement, sign/initial on the above line, and record the date. Record decision on individual questionnaire for each eligible person age 15-64.]

Parental/Guardian Consent Form for Individual Interview

[Interviewer: The statement should be read to parents/guardians of individuals age 15-17. Consent must be obtained from a parent/guardian or other adult responsible for the youth's health and welfare before the youth is asked for consent. Only if the parent or guardian agrees will assent be asked of the minor. Throughout the process of obtaining consent, it is important that you are patient and allow the respondent to ask questions and to consider the decision. Never rush or otherwise pressure the respondent to give consent. Provide a copy of this consent script to all parents of eligible persons age 15-17]

Hello. My name is …. and I am working with the Ministry of Health. We are doing a national survey that asks women and men ages 15-64 about HIV/AIDS and other health issues. You can help by consenting to have (name of minor) take part of this survey. The answers he/she gives will help to plan health services in Kenya. The survey usually takes about 30 minutes to complete. Some of these questions will be about personal sexual behaviour. All of the answers (name of minor) gives will be private and will not be shown to others. No one will know (name of minor's) answers.

As part of this survey, we are also asking people to give a few teaspoons of blood to test for HIV, syphilis, and herpes infections. This information will help the Ministry of Health plan programs to take care of these diseases. We will ask (name of minor) for three teaspoons of blood which we will take from his/her arm. I will put a study number, but not (name of minor's) name on the blood tube. His/her blood will go to Nairobi where it will be tested for HIV, syphilis, and herpes infections. The results will be available in approximately 6 weeks. (Name of minor) will be given and appointment to receive the results. (Name of minor) will be urged, but not required, to receive the results with you. If (name of minor) does not appear to be ready to receive these results at that time, the health care worker can arrange to provide the results at a different time. (Name of minor) will receiver counseling about the results as appropriate, ways to prevent health problems as needed, and treatment as appropriate. All of this will be private and no one else will know his/her results.

[Interviewer: If the respondent does not want the minor to provide a venous blood sample, ask:]

We can also do a test for HIV with a few drops of blood from (name of minor's) finger.. No names will be attached so that no one will be able to know (name of minor's) results.

The blood collected from a finger prick can only be tested for HIV. We will not be able to tell you or (name of minor) about his/her CD4 count if the result is HIV positive or his/her results for herpes and syphilis infection.

We would also like to store some of (name of minor's) blood at the Kenya Medical Research Institute laboratory in Nairobi to be used for later testing. We do not know yet what tests will be done but they may be tests for infections or chemicals that affect health or illness. Any later test results cannot be traced back to (name of minor). Also, since we will not be keeping his/her name on the blood, we cannot tell you or (name of minor) the results.

Having (name of minor) take part in the survey is up to you and (name of minor). If I ask any questions that (name of minor) does not want to answer, he/she can let me know and I will go on to the next question. He/she can stop the interview at any time. (Name of minor) can say yes or no to giving blood. It is up to him/her to decide. (Name of minor) may take part in the study without having his/her blood stored for later testing.

If (name of minor) takes part of this survey, the risk to him/her is small. I will ask (name of minor) questions that may be uncomfortable to answer. He/she is free to not answer any questions that he/she feels are too personal. All the things that we use to take the blood are clean and safe. They have never been used before and will be thrown away after each use. He/she may bruise on his/her arm when we take the blood. If he/she has any pain, bleeding, or swelling from taking blood, please contact our study staff or your health worker.

If (name of minor) takes part, the benefit is that the answers that he/she gives to us will be used to improve the health of Kenyans by making health programs stronger. He/she will be given free tests for HIV, syphilis, and herpes, with counseling. When (name of minor) is given his/her results, he/she can receive information on prevention of spread of these infections as appropriate. If (name of minor) has HIV, he/she will get counseling and will be referred to a nearby health facility for follow-up. If (name of minor) has syphilis, he/she and his/her partners will get free treatment to cure the infection. If (name of minor) has herpes, he/she will get counseling on how to prevent infection to his/her partners. The information from (name of minor's) tests will be used to improve the health of Kenyans by making healthcare programs stronger.

Do you want to ask me anything about the survey? If you have any questions we want you to tell us. You can also ask the person in charge of the survey teams at the Kenya National Bureau of Statistics. If you feel that you have been harmed by taking part you should contact the Ministry of Health. If you have any questions on your rights in the study you can contact the chairman on the Ethical Review Committee at the Kenya Medical Research Institute (KEMRI). ***[Interviewer: provide the following information to the participant:]***

Ministry of Health: Godfrey Baltazar
National AIDS and STD Control Program (NASCOP)
P O Box 19361-00200 Nairobi
Tel: 2729549

Kenya National Bureau of Statistics (KNBS): Fredrick Otieno
P O Box 30266-00100 Nairobi
Tel: 216134

Chairman of Ethical Review Committee: Professor Samuel Sinei
Kenya Medical Research Institute (KEMRI)
P O Box 54840 - 00100 Nairobi
Tel: 272 25 41

May I interview (name of minor)?

_____Yes _____No

Would you allow me to take some of (name of minor's) blood from his/her arm for testing?

_____Yes _____No

And will you let us to store some of (name of minor's) blood for later testing?

_____Yes _____No

Signature or initial of Interviewer Date

[Interviewer: Indicate whether parent/guardian says "Yes" or "No" to the above statements, sign/initial on the above line, and record the date. Record parent/guardian's decision on household question_naire (page HH23) for each eligible minor aged 15-17. If parental/guardian consent is given, proceed to ask minor for assent]

RESPONDENT'S BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
101	RECORD THE TIME.	HOUR . . . . [ ][ ] MINUTES . . . . [ ][ ]	
102	In what month and year were you born?	MONTH . . . . [ ][ ] DON'T KNOW MONTH . . . . 98 YEAR . . . . [ ][ ][ ][ ] DON'T KNOW YEAR 9998	
103	How old were you at your last birthday? COMPARE AND CORRECT 102 AND/OR 103 IF INCONSISTENT.	AGE IN COMPLETED YEARS [ ][ ]	
104	Have you ever attended school?	YES . . . . 1 NO 2	 → 107
105	What is the highest level of school you attended: primary, vocational, secondary or higher?	NURSERY/KINDERGARTEN . . . . . . 0 PRIMARY . . . . 1 POST-PRIMARY/VOCATIONAL . . . . . . 2 SECONDARY/'A' LEVEL . . . . 3 COLLEGE (MIDDLE LEVEL) . . . . . . 4 UNIVERSITY 5	
106	What is the highest (standard/form/year) you completed at that level? RECORD '00' IF LESS THAN ONE GRADE COMPLETED AT THAT LEVEL.	STANDARD/FORM/YEAR . . . . [ ][ ]	
107	Do you read a newspaper or magazine almost every day, at least once a week, less than once a week or not at all?	ALMOST EVERY DAY . . . . 1 AT LEAST ONCE A WEEK . . . . 2 LESS THAN ONCE A WEEK . . . . 3 NOT AT ALL . . . . 4 CANNOT READ 8	
108	Do you listen to the radio almost every day, at least once a week, less than once a week or not at all?	ALMOST EVERY DAY . . . . 1 AT LEAST ONCE A WEEK . . . . 2 LESS THAN ONCE A WEEK . . . . 3 NOT AT ALL 4	
109	Do you watch television almost every day, at least once a week, less than once a week or not at all?	ALMOST EVERY DAY . . . . 1 AT LEAST ONCE A WEEK . . . . 2 LESS THAN ONCE A WEEK . . . . 3 NOT AT ALL 4	
110	FEMALE [ ] MALE [ ]		→ 113
111	Aside from your own housework, have you done any work in the last seven days?	YES . . . . 1 NO 2	→ 116
112	As you know, some women take up jobs for which they are paid in cash or kind. Others sell things, have a small business or work on the family farm or in the family business. In the last seven days, have you done any of these things or any other work?	YES . . . . 1 NO 2	→ 116 → 114
113	Have you done any work in the last seven days?	YES . . . . 1 NO 2	→ 116

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
114	Although you did not work in the last seven days, do you have any job or business from which you were absent for leave, illness, vacation or any other such reason?	YES . . . . . . 1 NO 2	→ 116
115	Have you done any work in the last 12 months?	YES . . . . . . 1 NO 2	 → 117
116	What is your occupation, that is, what kind of work do you mainly do? INTERVIEWER: PROBE TO OBTAIN DETAILED INFORMATION ON THE KIND OF WORK RESPONDENT DOES.	______________ ______________ ______________ [ ][ ][ ]	→ 118
117	What have you been doing for most of the time over the last 12 months?	GOING TO SCHOOL/STUDYING . . . . . . 01 LOOKING FOR WORK . . . . . . 02 RETIRED . . . . . . 03 TOO ILL TO WORK . . . . . . 04 HANDICAPPED, CANNOT WORK 05 HOUSEWORK/CHILD CARE . . . . . . 06 OTHER ______________ 96 (SPECIFY)	
118	How long have you been living continuously in (NAME OF CURRENT PLACE OF RESIDENCE)? IF LESS THAN ONE YEAR, RECORD '00' YEARS.	YEARS . . . . . . [ ][ ] ALWAYS . . . . . . 95 VISITOR 96	
119	In the last 12 months, on how many separate occasions have you traveled away from your home community and slept away?	NUMBER OF TRIPS . . . . . . [ ][ ] NONE 00	 → 121
120	In the last 12 months, have you been away from your home community for more than one month at a time?	YES . . . . . . 1 NO 2	
121	What is your religion?	ROMAN CATHOLIC . . . . . . 1 PROTESTANT/OTHER CHRISTIAN . 2 MUSLIM . . . . . . 3 NO RELIGION . . . . . . 4 OTHER ______________ 6 (SPECIFY)	
122	What is your ethnic group/tribe?	EMBU . . . . . . 01 KALENJIN . . . . . . 02 KAMBA . . . . . . 03 KIKUYU . . . . . . 04 KISII . . . . . . 05 LUHYA . . . . . . 06 LUO . . . . . . 07 MASAI . . . . . . 08 MERU . . . . . . 09 MIJIKENDA . . . . . . 10 SOMALI . . . . . . 11 TAITA/TAVETA . . . . . . 12 SWAHILI 13 OTHER ______________ 96	

SECTION 2 REPRODUCTION

<table>
<tr><th>NO.</th><th colspan="2">QUESTIONS AND FILTERS</th><th>CODING CATEGORIES</th><th>SKIP</th></tr>
<tr><td>201</td><td>MALE
Now I would like to ask about all of the children you have had during your lifetime. I am interested only in the children that are biologically yours, even if they are not legally yours or do not have your last name.
Have you ever fathered any children with any woman?</td><td>FEMALE
Now I would like to ask about all the births you have had during your lifetime. Have you ever given birth?</td><td>YES 1
NO . . . . . . 2</td><td>
→206</td></tr>
<tr><td>202</td><td>Do you have any sons or daughters that you have fathered who are now living with you?</td><td>Do you have any sons or daughters to whom you have given birth who are now living with you?</td><td>YES 1
NO . . . . . . 2</td><td>
→204</td></tr>
<tr><td>203</td><td colspan="2">How many sons live with you?

And how many daughters live with you?

IF NONE, RECORD '00'.</td><td>SONS AT HOME . . . . . . [ ][ ]
DAUGHTERS AT HOME . . . . . . [ ][ ]</td><td></td></tr>
<tr><td>204</td><td>MALE
Do you have any sons or daughters that you have fathered who are alive but do not live with you?</td><td>FEMALE
Do you have any sons or daughters to whom you have given birth who are alive but do not live with you?</td><td>YES 1
NO . . . . . . 2</td><td>
→206</td></tr>
<tr><td>205</td><td colspan="2">How many sons are alive but do not live with you?

And how many daughters are alive but do not live with you?

IF NONE, RECORD '00'.</td><td>SONS ELSEWHERE . . . . . . [ ][ ]
DAUGHTERS ELSEWHERE . [ ][ ]</td><td></td></tr>
<tr><td>206</td><td>MALE
Have you ever fathered a boy or girl who was born alive but later died?
Any baby who cried or showed signs of life but did not survive?</td><td>FEMALE
Have you ever given birth to a boy or girl who was born alive but later died?
Any baby who cried or showed signs of life but did not survive?</td><td>YES 1
NO . . . . . . 2</td><td>
→208</td></tr>
<tr><td>207</td><td colspan="2">How many boys have died?

And how many girls have died?

IF NONE, RECORD '00'.</td><td>BOYS DEAD [ ][ ]
GIRLS DEAD [ ][ ]</td><td></td></tr>
<tr><td>208</td><td colspan="2">SUM ANSWERS TO 203, 205, AND 207, AND ENTER TOTAL.
IF NONE, RECORD '00'.</td><td>TOTAL . . . . . . [ ][ ]</td><td></td></tr>
<tr><td>209</td><td>MALE
Just to make sure that I have this right: you have fathered in TOTAL ______ children during your life.
Is that correct?</td><td>FEMALE
Just to make sure that I have this right: you have had in TOTAL ______ births during your life.
Is that correct?</td><td></td><td></td></tr>
<tr><td></td><td colspan="2">YES [ ]   NO [ ] → PROBE AND CORRECT 201-208 AS NECESSARY.</td><td></td><td></td></tr>
</table>

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
210	CHECK 103: MALE ☐ FEMALE 55-64 YEARS ☐ FEMALE 15-54 YEARS ☐		214C 215
211	CHECK 103 AND 208: NO BIRTHS AND AGE 50-54 ☐ ONE OR MORE BIRTHS ☐ NO BIRTHS AND AGE 15-49 ☐		219 214
212	Now I would like to ask you about your last birth, whether the child is still alive or not. In what month and year did you have your last birth?	MONTH . . . . DON'T KNOW MONTH . . . . 98 YEAR . . . . DON'T KNOW YEAR 9998	213A
213	About how many years ago was your last birth?	YEARS AGO	
213A	CHECK 212 AND 213: LAST BIRTH IN 2003-2007/ CHILD BORN 0-4 YEARS AGO ☐ LAST BIRTH IN 2002 OR EARLIER/CHILD BORN 5 YEARS OR MORE AGO ☐		213D
213B	Now I would like to ask some questions about your last birth. Did you see anyone for antenatal care during that pregnancy?	YES . . . . 1 NO 2	 213D
213C	Where did you receive antenatal care for this pregnancy? Anywhere else? PROBE TO IDENTIFY TYPE(S) OF SOURCE(S) AND CIRCLE THE APPROPRIATE CODE(S). IF UNABLE TO DETERMINE IF A HOSPITAL, HEALTH CENTER OR CLINIC IS PUBLIC OR PRIVATE MEDICAL, WRITE THE NAME OF THE PLACE. ____________________ (NAME OF PLACE(S))	**HOME** YOUR HOME . . . . A OTHER HOME . . . . B **PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . . . . C GOVT. HEALTH CENTRE/CLINIC . D GOVERNMENT DISPENSARY . . . E OTHER PUBLIC __________ F (SPECIFY) **PRIVATE MEDICAL SECTOR** MISSION/CHURCH HOSP./CLNC G PRIVATE HOSPITAL/CLINIC . . . . . . H NURSING/MATERNITY HOME . . . . I OTHER PRIVATE MEDICAL __________ J (SPECIFY) OTHER __________ X (SPECIFY)	
213D	CHECK 103: 50-54 YEARS ☐ 15-49 YEARS ☐		215

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
213E	At the time you became pregnant, did you want to become pregnant <u>then</u>, did you want to wait until <u>later</u>, or did you <u>not want</u> to have any (more) children at all?	THEN . . . . . . 1 LATER . . . . . . 2 NOT AT ALL 3	
213F	Has your menstrual period returned since your last birth?	YES . . . . . . 1 NO 2	
213G	CHECK 212 AND 213: LAST BIRTH IN 2003-2007/ CHILD BORN 0-4 YEARS AGO ☐ ↓ LAST BIRTH IN 2002 OR EARLIER/CHILD BORN 5 YEARS OR MORE AGO ☐		→ 214
213H	Did you ever breastfeed your last born child?	YES . . . . . . 1 NO 2	 → 214
213I	Is your last born (last birth) child still alive?	YES . . . . . . 1 NO 2	 → 213K
213J	Are you still breastfeeding your last born child?	YES . . . . . . 1 NO 2	→ 214
213K	For how long did you breastfeed your last born child?	MONTHS . . . . . . ☐☐	
214	Are you pregnant now?	YES . . . . . . 1 NO . . . . . . 2 UNSURE 8	 2, 8 → 214C
214A	How many months pregnant are you?	MONTHS ☐☐	
214B	Have you attended an ANC during this current pregnancy?	YES....... 1 NO 2	1, 2 → 215
214C	Are you (your partner) currently doing something or using any method to delay or avoid getting pregnant?	YES . . . . . . 1 NO . . . . . . 2 Never had sex....... 3	 2, 3 → 215
214D	Which method are you (your partner) using? RECORD ALL MENTIONED. \#	FEMALE STERILISATION . . . . . . A MALE STERILISATION . . . . . . B PILL . . . . . . C IUD . . . . . . D INJECTIONS . . . . . . E IMPLANT . . . . . . F CONDOM . . . . . . G FEMALE CONDOM . . . . . . H RHYTHM/NATURAL METHODS . . . . I WITHDRAWAL . . . . . . M OTHER ______________ X (SPECIFY)	
215	CHECK 203 AND 205: AT LEAST ONE LIVING CHILD ☐ ↓ NO LIVING CHILDREN ☐		→ 219
216	How old is your (youngest) child?	AGE IN YEARS . . . . . . ☐☐	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
217	CHECK 216: (YOUNGEST) CHILD IS AGE 0-17 ☐ OTHER ☐		OTHER → 219
218	Now I would like to ask you about your own child(ren) who (is/are) under the age of 18. Have you made arrangements for someone to care for (him/her/them) in the event that you fall sick or are unable to care for (him/her/them)?	YES . . . . 1 NO . . . . 2 UNSURE 8	
219	(Besides your own child/children), are you the primary caregiver for any children under the age of 18?	YES . . . . 1 NO 2	 → 301
220	Have you made arrangements for someone to care for (this child/these children) in the event that you fall sick or are unable to care for (him/her/them)?	YES . . . . 1 NO . . . . 2 UNSURE 8	

SECTION 3 MARRIAGE AND SEXUAL ACTIVITY

NO.	QUESTIONS AND FILTERS		CODING CATEGORIES	SKIP
301	MALE Are you currently married or living together with a woman as if married?	FEMALE Are you currently married or living together with a man as if married?	YES, CURRENTLY MARRIED . . . . 1 YES, LIVING WITH A MAN/WOMAN . 2 NO, NOT IN UNION 3	1, 2 → 304
302	Have you ever been married or lived together with a woman as if married?	Have you ever been married or lived together with a man as if married?	YES, FORMERLY MARRIED . . . . 1 YES, LIVED WITH A MAN/WOMAN . 2 NO 3	3 → 320
303	What is your marital status now: are you widowed, divorced, or separated?	What is your marital status now: are you widowed, divorced, or separated?	WIDOWED . . . . 1 DIVORCED . . . . 2 SEPARATED 3	→ 310
304	Is your wife/partner living with you now or is she staying elsewhere?	Is your husband/partner living with you now or is he staying elsewhere?	LIVING TOGETHER . . . . 1 STAYING ELSEWHERE 2	
305	Do you have more than one wife or woman you live with as if married?	Does your husband/partner have other wives or does does he live with other women as if married?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	2, 8 → 307
306	Altogether, how many wives do you have or other partners do you live with as if married?	Including yourself, in total, how many wives or other partners does your husband live with now as if married?	NUMBER OF WIVES AND LIVE-IN PARTNERS . . . . [ ][ ] DON'T KNOW 98	

NO.	QUESTIONS AND FILTERS		NAME	LINE NUMBER	308 How old was your wife/ husband/ partner on his/her last birthday? AGE	SKIP
307	MALE CHECK 306 <u>IF ONE WIFE/PARTNER</u>: Please tell me the name of your wife or the woman you are living with as if married. <u>IF MORE THAN ONE WIFE/PARTNER</u>: Please tell me the name of each of your current wives (and/or of each woman you are living with as if married).	FEMALE Please tell me the name of your husband or the man you are living together with as if married.	______	[ ][ ]	[ ][ ]	
	RECORD THE NAME(S) AND THE LINE NUMBER(S) FROM THE HOUSEHOLD QUESTIONNAIRE FOR EACH SPOUSE AND LIVE-IN PARTNER.		______	[ ][ ]	[ ][ ]	
	IF THE PERSON IS NOT LISTED IN THE HOUSEHOLD, RECORD '00'.		______	[ ][ ]	[ ][ ]	
	ASK 308 FOR EACH PERSON.		______	[ ][ ]	[ ][ ]	

NO.	QUESTIONS AND FILTERS		CODING CATEGORIES	SKIP
309	CHECK 307: MALE ONE WIFE	FEMALE	MALE MORE THAN ONE WIFE	→ 318A
310	MALE Have you been married or lived with a woman only once or more than once?	FEMALE Have you been married or lived with a man only once or more than once?	ONLY ONCE . . . . 1 MORE THAN ONCE 2	2 → 313

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
311	MALE ☐ → 318 FEMALE ☐ ↓		318
312	CHECK 303: IS RESPONDENT CURRENTLY WIDOWED? CURRENTLY WIDOWED ☐ → 315 NOT ASKED OR CURRENTLY DIVORCED/SEPARATED ☐ → 318		315 318
313	MALE ☐ → 318A CHECK 303: IS FEMALE RESPONDENT CURRENTLY WIDOWED? FEMALE CURRENTLY WIDOWED ☐ → 315 FEMALE AND Q.303 NOT ASKED ☐ ↓ FEMALE CURRENTLY DIVORCED/SEPARATED ☐ → 318A		318A 315 318A
314	How did your previous marriage or union end?	DEATH/WIDOWHOOD . . . . 1 DIVORCE . . . . 2 SEPARATION 3	2, 3 → 318A
315	To whom did most of your late husband's property go?	RESPONDENT . . . . 1 OTHER WIFE . . . . 2 LATE HUSBAND'S CHILDREN . . . . 3 LATE HUSBAND'S FAMILY . . . . 4 OTHER ______________________ 6 (SPECIFY) NO PROPERTY 7	1 → 317
316	Did you receive any of your late husband's assets or valuables?	YES . . . . 1 NO 2	
317	CHECK 310: MARRIED/LIVED WITH A MAN ONLY ONCE OR MORE THAN ONCE MARRIED/LIVED WITH A MAN ONLY ONCE ☐ ↓ MARRIED/LIVED WITH A MAN MORE THAN ONCE ☐ → 318A		318A
318	MALE ☐ ↓ In what month and year did you start living with your wife/partner? FEMALE ☐ ↓ In what month and year did you start living with your husband/partner?	MONTH . . . . ☐☐ DON'T KNOW MONTH 98	
318A	Now I would like to ask a question about your first wife/partner. In what month and year did you start living with your first wife/partner? Now I would like to ask a question about your first husband/partner. In what month and year did you start living with your first husband/partner?	YEAR . . . . ☐☐☐☐ DON'T KNOW YEAR 9998	→ 320
319	How old were you when you first started living with her? How old were you when you first started living with him?	AGE . . . . ☐☐	
320	CHECK FOR THE PRESENCE OF OTHERS. BEFORE CONTINUING, MAKE EVERY EFFORT TO ENSURE PRIVACY.		

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
321	Now I need to ask you some questions about sexual activity in order to gain a better understanding of some important life issues. How old were you when you had sexual intercourse for the very first time?	NEVER HAD SEXUAL INTERCOURSE . 00 AGE IN YEARS . . . . [ ][ ] WHEN STARTED LIVING WITH HER (FIRST) HUSBAND/PARTNER..............95	→ 323 → 324
323	Do you intend to wait until you get married to have sexual intercourse for the first time?	YES . . . . 1 NO . . . . 2 DON'T KNOW/UNSURE 8	→ 360
324	CHECK 103: 15-24 YEARS OLD [ ] ↓ 25-64 YEARS OLD [ ]		→ 328A
325	The <u>first</u> time you had sexual intercourse, was a condom used?	YES . . . . 1 NO . . . . 2 DON'T KNOW/DON'T REMEMBER 8	
326	How old was the person you first had sexual intercourse with?	AGE OF PARTNER . . . . [ ][ ] DON'T KNOW 98	→ 328A
327	Was the person you first had sexual intercourse with older than you, younger than you, or about the same age as you?	OLDER . . . . 1 YOUNGER . . . . 2 ABOUT THE SAME AGE . . . . 3 DON'T KNOW/DON'T REMEMBER 8	→ 328A
328	Would you say the person you first had sexual intercourse with was ten or more years older than you or less than ten years older than you?	TEN OR MORE YEARS OLDER . . . . . . 1 LESS THAN TEN YEARS OLDER . . . . 2 OLDER, UNSURE HOW MUCH 3	
328A	Now I would like to ask you some questions about your recent sexual activity. Let me assure you again that your answers are completely confidential. Your name and other personal information will be separated from your responses so that no one will be able to link your responses to you.		
329	When was the <u>last</u> time you had sexual intercourse? IF LESS THAN 12 MONTHS, ANSWER MUST BE RECORDED IN DAYS, WEEKS OR MONTHS. IF 12 MONTHS (ONE YEAR) OR MORE, ANSWER MUST BE RECORDED IN YEARS.	DAYS AGO . . . . 1 [ ][ ] WEEKS AGO . . . . 2 [ ][ ] MONTHS AGO . . . . 3 [ ][ ] YEARS AGO . . . . 4 [ ][ ]	→ 331 → 358B

		LAST SEXUAL PARTNER	SECOND-TO-LAST SEXUAL PARTNER	THIRD-TO-LAST SEXUAL PARTNER
330	When was the last time you had sexual intercourse?		DAYS . 1 WEEKS 2 MONTHS 3	DAYS . 1 WEEKS 2 MONTHS 3
331	The last time you had sexual intercourse (with the last, second to last, third to last), sexual partner was a condom used?	YES .... 1 NO .... 2 (SKIP TO 333)←	YES .... 1 NO .... 2 (SKIP TO 333)←	YES .... 1 NO .... 2 (SKIP TO 333)←
332	Was a condom used every time you had sexual intercourse with the (last, second to last, third to last) partner in the last 12 months?	YES .... 1 NO 2	YES .... 1 NO 2	YES .... 1 NO 2
333	What was your relationship to this (second, third) person with whom you had sexual intercourse? IF BOYFRIEND/GIRLFRIEND: Were you living together as if married? IF YES, CIRCLE '2' IF NO, CIRCLE '3'	HUSBAND/WIFE .... 1 LIVE-IN PARTNER .... 2 BOYFRIEND/GIRLFRIEND NOT LIVING WITH RESPONDENT .... 3 CASUAL ACQUAINTANCE .... 4 PROSTITUTE .... 5 OTHER ____________ 6 (SPECIFY)	HUSBAND/WIFE .... 1 LIVE-IN PARTNER .... 2 BOYFRIEND/GIRLFRIEND NOT LIVING WITH RESPONDENT .... 3 CASUAL ACQUAINTANCE .... 4 PROSTITUTE .... 5 OTHER ____________ 6 (SPECIFY)	HUSBAND/WIFE .... 1 LIVE-IN PARTNER .... 2 BOYFRIEND/GIRLFRIEND NOT LIVING WITH RESPONDENT .... 3 CASUAL ACQUAINTANCE .... 4 PROSTITUTE .... 5 OTHER ____________ 6 (SPECIFY)
334	You told me the last (second/third) person with whom you had sexual intercourse was (RELATIONSHIP). Do you know if this (second/third) person ever had a test for the AIDS virus?	YES .... 1 NO .... 2 (SKIP TO 339)← NOT SURE 8	YES .... 1 NO .... 2 (SKIP TO 339)← NOT SURE 8	YES .... 1 NO .... 2 (SKIP TO 339)← NOT SURE 8
335	Did this (second/third) person tell you the result of their AIDS test?	YES .... 1 NO 2	YES .... 1 NO 2	YES .... 1 NO 2
336	Are you willing to share with me the result which this (second/third person) told you?	YES .... 1 NO .... 2 (SKIP TO 339)←	YES .... 1 NO .... 2 (SKIP TO 339)←	YES .... 1 NO .... 2 (SKIP TO 339)←
337	Did the test show that the (second/third) person had the AIDS virus?	YES .... 1 NO 2	YES .... 1 NO 2	YES .... 1 NO 2
339	FIRST FIND OUT IF RESPONDENT HAS EVER BEEN TESTED Did you tell this (second/third) person about the result of the (last) HIV test you had?	YES .... 1 NO disclosure 2 Never tested......... 3	YES .... 1 NO disclosure ... 2 Never tested......... 3	YES .... 1 NO disclosure ... 2 Never tested......... 3

		LAST SEXUAL PARTNER	SECOND-TO-LAST SEXUAL PARTNER	THIRD-TO-LAST SEXUAL PARTNER
340	For how long (have you had/did you have) a sexual relationship with this (second/third) person? IF ONLY HAD SEXUAL RELATIONS WITH THIS PERSON ONCE, RECORD '01' DAYS.	DAYS . 1 MONTHS 2 YEARS 3	DAYS . 1 MONTHS 2 YEARS 3	DAYS . 1 MONTHS 2 YEARS 3
341	CHECK 103:	WOMAN 15-24 / MAN 15-64/ WOMAN 25-64 (SKIP TO 345)	WOMAN 15-24 / MAN 15-64/ WOMAN 25-64 (SKIP TO 345)	WOMAN 15-24 / MAN 15-64/ WOMAN 25-64 (SKIP TO 345)
342	How old is this person?	AGE OF PARTNER (SKIP TO 345) DON'T KNOW 98	AGE OF PARTNER (SKIP TO 345) DON'T KNOW 98	AGE OF PARTNER (SKIP TO 345) DON'T KNOW 98
343	Is this person older than you, younger than you, or about the same age?	OLDER . . . . 1 YOUNGER . . . . . . 2 SAME AGE . . . . . . 3 DON'T KNOW . . . . 8 (SKIP TO 345)	OLDER . . . . 1 YOUNGER . . . . . . 2 SAME AGE . . . . . . 3 DON'T KNOW . . . . 8 (SKIP TO 345)	OLDER . . . . 1 YOUNGER . . . . . . 2 SAME AGE . . . . . . 3 DON'T KNOW . . . . 8 (SKIP TO 345)
344	Would you say this person is ten or more years older than you or less than ten years older than you?	TEN OR MORE YEARS OLDER . 1 LESS THAN TEN YEARS OLDER . 2 OLDER, UNSURE HOW MUCH 3	TEN OR MORE YEARS OLDER . 1 LESS THAN TEN YEARS OLDER . 2 OLDER, UNSURE HOW MUCH 3	TEN OR MORE YEARS OLDER . 1 LESS THAN TEN YEARS OLDER . 2 OLDER, UNSURE HOW MUCH 3
345	The last time you had sexual intercourse with this (second/third) person, did you or this person drink alcohol?	YES . . . . 1 NO . . . . 2 (SKIP TO 347)	YES . . . . 1 NO . . . . 2 (SKIP TO 347)	YES . . . . 1 NO . . . . 2 (SKIP TO 348)
346	Were you or your partner drunk at that time? IF YES: Who was drunk?	RESPONDENT ONLY 1 PARTNER ONLY . . . . 2 RESPONDENT AND PARTNER BOTH . 3 NEITHER 4	RESPONDENT ONLY 1 PARTNER ONLY . . . . 2 RESPONDENT AND PARTNER BOTH . 3 NEITHER 4	RESPONDENT ONLY 1 PARTNER ONLY 2 RESPONDENT AND PARTNER BOTH 3 NEITHER . . . . 4 (SKIP TO 348)
347	Apart from [this person/these two people], have you had sexual intercourse with any other person in the last 12 months?	YES . . . . 1 (GO BACK TO 330 IN NEXT COLUMN) NO 2	YES . . . . 1 (GO BACK TO 330 IN NEXT COLUMN) NO 2	
348	In total, with how many different people have you had sexual intercourse in the last 12 months? IF NON-NUMERIC ANSWER, PROBE TO GET AN ESTIMATE. IF NUMBER OF PARTNERS IS GREATER THAN 95, WRITE ' 95'.			NUMBER OF PARTNERS LAST 12 MONTHS DON'T KNOW 98

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
349	MALE ☐ FEMALE ☐		→358B
350	CHECK 333 (ALL COLUMNS): AT LEAST ONE PARTNER IS PROSTITUTE ☐ NO PARTNERS ARE PROSTITUTES ☐		→ 352
351	CHECK 332 AND 331 (ALL COLUMNS): NO CONDOM USED/ CONDOM NOT USED WITH EVERY PROSTITUTE ☐ CONDOM USED WITH EVERY PROSTITUTE ☐		358A → 358
352	In the last 12 months, did you pay anyone in exchange for having sexual intercourse?	YES . . . . 1 NO 2	 →358A
353	Do you know if the person with whom you had sex that time had ever been tested for the HIV virus?	YES . . . . 1 NO 2	 → 356
354	Did that person tell you the result of their HIV test?	YES . . . . 1 NO 2	 → 356
355	Did the test show that the person had the HIV virus?	YES.......................1 NO.......................2	
355A	CHECK 339 (LAST PARTNER) IF NO- NEVER TESTED SKIP TO 357 YES/NO-NO DISCLOSURE ☐		
356	Did you tell this person about the result of the (last) HIV test you had?	YES . . . . 1 NO (No disclosure) 2	
357	The last time you paid someone in exchange for sexual intercourse, was a condom used?	YES . . . . 1 NO 2	 →358B
358	Was a condom used during sexual intercourse every time you paid someone in exchange for having sexual intercourse in the last 12 months?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
358A	ANY 'YES' CIRCLED IN 325, 331, 357, 358 ☐ OTHER ☐		→359
358B	Have you ever used a condom?	YES . . . . 1 NO 2	
359	In total, with how many different people have you had sexual intercourse in your lifetime? IF NON-NUMERIC ANSWER, PROBE TO GET AN ESTIMATE. IF NUMBER OF PARTNERS IS GREATER THAN 95, WRITE '95.'	NUMBER OF PARTNERS IN LIFETIME . . . . . ☐☐ DON'T KNOW 98	
360	Do you know of a place where a person can get a man's condom?	YES . . . . 1 NO 2	 → 362

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
361	Where is that? Any other place? PROBE TO IDENTIFY EACH TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE(S). IF UNABLE TO DETERMINE IF HOSPITAL, HEALTH CENTER OR CLINIC IS PUBLIC OR PRIVATE MEDICAL, WRITE THE NAME OF THE PLACE. _______________ (NAME OF PLACE(S))	**PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . . . . A GOVT. HEALTH CENTRE/CLNC . B GOVT. DISPENSARY . . . . C OTHER PUBLIC _______________ D (SPECIFY) **PRIVATE MEDICAL SECTOR** MISSION/CHURCH HOSP./CLNC E FPAK HEALTH CENTRE/CLINIC . F PRIVATE HOSPITAL/CLINIC . . . . . . G PHARMACY/CHEMIST . . . . H NURSING/MATERNITY HOME . . . . I OTHER PRIVATE MEDICAL _______________ J (SPECIFY) MOBILE CLINIC . . . . K COMMUNITY-BASED DISTRIBUTOR L SHOP/KIOSK . . . . M FRIENDS/RELATIVES . . . . N BAR/HOTEL/RESTAURANT……………..O OTHER _______________ X (SPECIFY)	
362	Do you know of a place where a person can get a female condom?	YES . . . . 1 NO 2	 → 364
363	Where is that? Any other place? PROBE TO IDENTIFY EACH TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE(S). IF UNABLE TO DETERMINE IF HOSPITAL, HEALTH CENTER OR CLINIC IS PUBLIC OR PRIVATE MEDICAL, WRITE THE NAME OF THE PLACE. _______________ (NAME OF PLACE(S))	**PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . . . . A GOVT. HEALTH CENTRE/CLNC . B GOVT. DISPENSARY . . . . C OTHER PUBLIC _______________ D (SPECIFY) **PRIVATE MEDICAL SECTOR** MISSION/CHURCH HOSP./CLNC E FPAK HEALTH CENTRE/CLINIC . F PRIVATE HOSPITAL/CLINIC . . . . . . G PHARMACY/CHEMIST . . . . H NURSING/MATERNITY HOME . . . . I OTHER PRIVATE MEDICAL _______________ J (SPECIFY) MOBILE CLINIC . . . . K COMMUNITY-BASED DISTRIBUTOR L SHOP/KIOSK . . . . M FRIENDS/RELATIVES . . . . N BAR/HOTEL/RESTAURANT……………..O OTHER _______________ X (SPECIFY)	
364	Now I would like to read you some statements about condom use. Please tell me if you agree or disagree: Condoms diminish a man's sexual pleasure. It's okay to reuse a condom if you wash it. Condoms protect against disease. Condoms contain HIV. Buying condoms is embarassing.	AGREE / DIS-AGREE / DK DIMINSH PLEASURE . 1 2 8 OK TO REUSE . . . . 1 2 8 PROTECTS . . . . 1 2 8 CONTAINS HIV . . . . 1 2 8 EMBARASSING 1 2 8	

SECTION 4 FERTILITY PREFERENCES AND HUSBAND-PARTNER BACKGROUND

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
401	MALE ☐ ↓ FEMALE ☐ →		409
402	CHECK 301 AND 305: ONE WIFE (PARTNER) CURRENTLY ☐ ↓ MORE THAN ONE WIFE (PARTNER) CURRENTLY ☐ ↓ NOT CURRENTLY MARRIED/LIVING WITH A PARTNER ☐ →		501
403	CHECK 214D: NOT USING MALE STERILISATION ☐ ↓ USING MALE STERILISATION ☐ →		501
404	(Is your wife (partner)/Are any of your wives (partners)) currently pregnant?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
405	CHECK 404: NO WIFE/PARTNER PREGNANT OR DON'T KNOW ☐ ↓ Now I have some questions about the future. Would you like to have (a/another) child, or would you prefer not to have any (more) children? WIFE(WIVES)/ PARTNER(S) PREGNANT ☐ ↓ Now I have some questions about the future. After the child(ren) you and your (wife(wives)/partner(s)) are expecting now, would you like to have another child, or would you prefer not to have any more children?	HAVE (A/ANOTHER) CHILD . . . . 1 NO MORE/NONE . . . . 2 MAN INFECUND . . . . 3 WIFE/ALL WIVES (PARTNER(S)) INFECUND . . . . 4 WIFE/ALL WIVES (PARTNER(S)) STERILIZED . . . . 5 UNDECIDED/DON'T KNOW 8	501 (for 3, 4, 5)
406	CHECK 305: ONE WIFE/ PARTNER ☐ ↓ MORE THAN ONE WIFE/ PARTNER ☐ →		408
407	CHECK 404: WIFE/PARTNER NOT PREGNANT OR DON'T KNOW ☐ ↓ Do you think that your wife (partner) would like to have (a/another) child, or does she prefer not to have any (more) children? WIFE/PARTNER PREGNANT ☐ ↓ After the child you and your wife (partner) are expecting now, do you think she would like to another child, would she prefer not to have any more children?	WIFE (PARTNER) WANTS (A/ANOTHER) CHILD . . . . 1 WIFE (PARTNER) WANTS NO MORE/NONE . . . . 2 WIFE)/PARTNERUNDECIDED/ DON'T KNOW 8	501
408	CHECK 404: NO WIFE/PARTNER PREGNANT OR DON'T KNOW ☐ ↓ Do you think that any of your wives (partners) would like to have (a/another) child, or do they all prefer not to have any (more) children? WIFE(WIVES)/ PARTNER(S) PREGNANT ☐ ↓ Do you think that any of your wives (partners) would like to have (a/another) child in addition to the child(ren) you and (wife (wives)/partner(s)) are expecting now?	AT LEAST ONE WIFE/PARTNER WANTS (A/ANOTHER) CHILD . . . 1 ALL WIVES//PARTNER WANT NO MORE/NONE . . . . 2 WIVE(S)/PARTNER(S) UNDECIDED/ DON'T KNOW 8	501
409	CHECK 301 AND 302: CURRENTLY MARRIED/ LIVING WITH A MAN ☐ ↓ FORMERLY MARRIED/ LIVED WITH A MAN ☐ → 414 NEVER MARRIED AND NEVER LIVED WITH A MAN ☐ → 501		414 501

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
410	CHECK 214D: NOT USING FEMALE STERILISATION ☐ ↓ — USING FEMALE STERILISATION ☐ → 414		→ 414
411	CHECK 214: NOT PREGNANT OR UNSURE ☐ ↓ Now I have some questions about the future. Would you like to have (a/another) child, or would you prefer not to have any (more) children? PREGNANT ☐ ↓ Now I have some questions about the future. After the child you are expecting now, would you like to have another child, or would you prefer not to have any more children?	HAVE (A/ANOTHER) CHILD . . . . 1 NO MORE/NONE . . . . 2 SAYS SHE CAN'T GET PREGNANT . 3 UNDECIDED/DON'T KNOW 8	 → 413 → 413 → 413
412	CHECK 214: NOT PREGNANT OR UNSURE ☐ ↓ How long would you like to wait from now before the birth of (a/another) child? PREGNANT ☐ ↓ After the birth of the child you are expecting now, how long would you like to wait before the birth of another child?	MONTHS . . . . 1 ☐☐ YEARS . . . . 2 ☐☐ SOON/NOW . . . . 993 SAYS SHE CAN'T GET PREGNANT 994 AFTER MARRIAGE . . . . 995 OTHER ______________________ 996 (SPECIFY) DON'T KNOW 998	
413	CHECK 214: NOT PREGNANT OR UNSURE ☐ ↓ Do you think that your husband (partner) would like to have (a/another) child, or does he prefer not to have any (more) children? PREGNANT ☐ ↓ After the child you and your husband (partner) are expecting now, do you think he would like to another child, would she prefer not to have any more children?	HAVE (A/ANOTHER) CHILD . . . . 1 NO MORE/NONE . . . . 2 HUSBAND INFECUND . . . . 3 HUSBAND STERILIZED . . . . 4 UNDECIDED/DON'T KNOW 8	
414	Now I would like to ask some questions about your (last) husband/partner. Did he ever attend school?	YES . . . . 1 NO 2	 → 417
415	What was the highest level of school he attended ?	NURSERY/KINDERGARTEN . . . . . . 0 PRIMARY . . . . 1 POST-PRIMARY/VOCATIONAL . . . . . . 2 SECONDARY/'A' LEVEL . . . . 3 COLLEGE (MIDDLE LEVEL) . . . . . . 4 UNIVERSITY . . . . 5 DON'T KNOW 8	 → 417
416	What was the highest (standard/form/year) he completed at that level?	STANDARD/FORM/YEAR . . . . ☐☐ DON'T KNOW 98	
417	CHECK 301 AND 302: CURRENTLY MARRIED/ LIVING WITH A MAN ☐ ↓ What is your husband's/partner's occupation? That is, what kind of work does he mainly do? FORMERLY MARRIED/ LIVED WITH A MAN ☐ ↓ What was your (last) husband's/ partner's occupation? That is, what kind of work did he mainly do?	______________________ ☐☐☐ ______________________ ______________________	

SECTION 5 HIV/AIDS KNOWLEDGE AND ATTITUDES

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
501	Now I would like to talk about something else. Have you ever heard of an illness called AIDS?	YES . . . 1 NO . . . 2	 2 → 703
502	Can people reduce their chance of getting the AIDS virus by having just one uninfected sex partner who has sexual intercourse with no other partners?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8	
503	Can people get the AIDS virus from mosquito or other insect bites?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8	
504	Can people reduce their chance of getting the AIDS virus by using a condom every time they have sex?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8	
505	Can people get the AIDS virus by sharing utensils with a person who has AIDS?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8	
506	Can people reduce their chance of getting the AIDS virus by not having sexual intercourse at all?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8	
507	Can people get the AIDS virus because of witchcraft or other supernatural means?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8	
508	If a <u>man</u> has the virus that causes AIDS, does his sexual partner always have the AIDS virus, almost always, or only sometimes?	ALWAYS . . . 1 ALMOST ALWAYS . . . 2 ONLY SOMETIMES . . . 3 DON'T KNOW . . . 8	
509	If a <u>woman</u> has the virus that causes AIDS, does her sexual partner always have the AIDS virus, almost always, or only sometimes?	ALWAYS . . . 1 ALMOST ALWAYS . . . 2 ONLY SOMETIMES . . . 3 DON'T KNOW . . . 8	
510	Is it possible for a healthy-looking person to have the AIDS virus?	YES . . . 1 NO . . . 2 DON'T KNOW . . . 8	
511	CHECK 329 AND 330: HAD SEX PARTNER IN LAST 12 MONTHS ☐ ↓ NEVER HAD SEX/ NO SEX PARTNER IN LAST 12 MONTHS ☐ → 513		513
512	Do you think that your chances of getting the AIDS are small, moderate or great or is there no risk at all?	NO RISK AT ALL . . . 1 SMALL . . . 2 MODERATE . . . 3 GREAT . . . 4 HAS HIV OR AIDS . . . 5 DON'T KNOW . . . 8	 3, 4 → 512B 5, 8 → 513
512A	Why do you think you have no risk/a small chance of getting AIDS? Any other reasons? CIRCLE ALL MENTIONED.	IS NOT HAVING SEX . . . A USES CONDOMS . . . B HAS ONLY ONE PARTNER . . . C LIMITS NUMBER OF PARTNERS . . . D PARTNER HAS NO OTHER PARTNER . E OTHER ______ X (SPECIFY)	→ 513

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
512B	Why do you think you have (moderate/great) risk of getting AIDS? Any other reasons? CIRCLE ALL MENTIONED.	DOES NOT USE CONDOMS . . . . A HAS MORE THAN ONE PARTNER . . . . B PARTNER HAS OTHER PARTNERS . . . . C HOMOSEXUAL CONTACTS . . . . D HAD BLOOD TRANSFUSIONS/ INJECTIONS . . . . E OTHER ______________________ X (SPECIFY)	
513	What are the main channels of communication from which you receive AIDS information and education? PROBE: Any other channels? RECORD ALL MENTIONED.	RADIO . . . . A TELEVISION . . . . B FILM . . . . C DRAMA . . . . D NEWSPAPERS/MAGAZINES . . . . E BROCHURES . . . . F POSTERS . . . . G BILLBOARDS . . . . H COMMUNITY NOTICES . . . . I FAMILY . . . . J FRIENDS . . . . K PEERS . . . . L HEALTH WORKERS . . . . M TEACHERS . . . . N POLITICAL LEADERS . . . . O TRADITIONAL LEADERS . . . . P RELIGIOUS LEADERS . . . . Q INTERNET . . . . R OTHER ______________________ X (SPECIFY)	
514	CHECK 513: MORE THAN ONE RESPONSE CIRCLED ☐ ONLY ONE RESPONSE CIRCLED ☐		516
515	From which source have you learned <u>most</u> about AIDS? RECORD ONLY ONE RESPONSE.	RADIO . . . . 01 TELEVISION . . . . 02 FILM . . . . 03 DRAMA . . . . 04 NEWSPAPERS/MAGAZINES . . . . 05 BROCHURES . . . . 06 POSTERS . . . . 07 BILLBOARDS . . . . 08 COMMUNITY NOTICES . . . . 09 FAMILY . . . . 10 FRIENDS . . . . 11 PEERS . . . . 12 HEALTH WORKERS . . . . 13 TEACHERS . . . . 14 POLITICAL LEADERS . . . . 15 TRADITIONAL LEADERS . . . . 16 RELIGIOUS LEADERS . . . . 17 INTERNET . . . . 18 OTHER ______________________ 19 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
516	What is the most important message you have learned from this source? RECORD ONLY ONE RESPONSE.	ABSTAIN FROM SEX . . . . 01 USE CONDOMS . . . . 02 LIMIT SEX TO ONE PARTNER/STAY FAITHFUL TO ONE PARTNER . . . . . . 03 LIMIT NUMBER OF SEXUAL PARTNERS . . . . 04 FOLLOW THE ABC'S . . . . 05 AVOID SEX WITH PROSTITUTES . . . . 06 AVOID SEX WITH PERSONS WHO HAVE MANY PARTNERS . . . . 07 AVOID SEX WITH HOMOSEXUALS . . . . 08 AVOID SEX WITH PERSONS WHO INJECT DRUGS INTRAVENOUSLY . 09 AVOID BLOOD TRANSFUSIONS . . . . . . 10 AVOID INJECTIONS . . . . 11 ANTI-RETROVIRAL DRUGS AVAILABLE 12 PREVENT MOTHER-TO-CHILD TRANSMISSION . . . . 13 AVOID DISCRIMINATION AGAINST PERSONS LIVING WITH AIDS . . . . . . 14 ANYONE CAN GET AIDS . . . . 15 GET TESTED FOR AIDS (HIV) . . . . . . 16 AIDS IS A KILLER . . . . 17 DON'T TAKE CHANCES . . . . 18 OTHER ______________________ 96 (SPECIFY)	
517	Can the virus that causes AIDS be transmitted from a mother to her baby: During pregnancy? During delivery? By breastfeeding?	YES NO DK DURING PREG. . . . . . . 1 2 8 DURING DELIVERY . . . . 1 2 8 BREASTFEEDING 1 2 8	
518	CHECK 517: AT LEAST ONE 'YES' ☐ OTHER ☐		520
519	Are there any special drugs that a doctor or a nurse can give to a woman infected with the AIDS virus to reduce the risk of transmission to the baby?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
520	Have you heard of any special drugs that people infected with the AIDS virus can take to help them live longer?	YES . . . . 1 NO 2	NO → 524
521	What drugs do you know about? PROBE: Any other drugs? RECORD ALL MENTIONED.	ANTI-RETROVIRAL DRUGS (ARVs) . . A SEPTRIN/COTRIMOXAZOLE . . . . . . B HERBAL DRUGS . . . . C OTHER DRUGS ____________________ X (SPECIFY) DON'T KNOW . . . . Z	
522	CHECK 521: CODE 'A' CIRCLED ☐ CODE 'A' NOT CIRCLED ☐		524
523	For how long should a person with the AIDS virus take ARVs?	LESS THAN ONE YEAR . . . . 1 ONE YEAR OR MORE . . . . 2 REST OF LIFE . . . . 3 OTHER ______________________ 6 (SPECIFY) DON'T KNOW 8	
524	Would you buy fresh vegetables from a vendor who has the AIDS virus?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
525	If a member of your family got infected with the virus that causes AIDS, would you want it to remain a secret or not?	YES, REMAIN A SECRET .... 1 NO .... 2 DK/NOT SURE/DEPENDS 8	
526	If a relative of yours became sick with the virus that causes AIDS, would you be willing to care for her or him in your own household?	YES .... 1 NO .... 2 DK/NOT SURE/DEPENDS 8	
527	If a female teacher has the AIDS virus, should she be allowed to continue teaching in the school?	SHOULD BE ALLOWED .... 1 SHOULD NOT BE ALLOWED .... 2 DK/NOT SURE/DEPENDS 8	
528	Do you personally know someone who has been denied health services in the last 12 months because he or she is suspected to have the AIDS virus or has the AIDS virus?	YES .... 1 NO .... 2 DK ANYONE WITH AIDS 3	 → 533
529	Do you personally know someone who has been denied involvement in social events, religious services, or community events in the last 12 months because he or she is suspected to have the AIDS virus or has the AIDS virus?	YES .... 1 NO 2	
530	Do you personally know someone who has been verbally abused or teased in the last 12 months because he or she is suspected to have the AIDS virus or has the AIDS virus?	YES .... 1 NO 2	
531	CHECK 528, 529, and 530: NOT A SINGLE 'YES' ☐ ↓	AT LEAST ONE 'YES' ☐	→ 533
532	Do you personally know someone who is suspected to have the AIDS virus or who has the AIDS virus?	YES .... 1 NO 2	
533	Do you agree or disagree with the following statement: People with the AIDS virus should be ashamed of themselves.	AGREE .... 1 DISAGREE .... 2 DON'T KNOW/NO OPINION 8	
534	Do you agree or disagree with the following statement: People with the AIDS virus should be blamed for bringing the disease into the community.	AGREE .... 1 DISAGREE .... 2 DON'T KNOW/NO OPINION 8	
535	Should children age 12-14 be taught about using a condom to avoid AIDS?	YES .... 1 NO .... 2 DK/NOT SURE/DEPENDS 8	
536	Should children age 12-14 be taught to wait until they get married to have sexual intercourse in order to avoid AIDS?	YES .... 1 NO .... 2 DK/NOT SURE/DEPENDS 8	
537	Have you ever heard of VCT?	YES .... 1 NO .... 2 DK/NOT SURE 8	
538	If a trained counselor came to your home and offered you free HIV counseling and testing, would you be willing to have an HIV test done in your home?	YES .... 1 NO .... 2 DK/NOT SURE/DEPENDS 8	

SECTION 6 HIV/AIDS TESTING

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
601	FEMALE ☐	MALE ☐	→ 612
602	CHECK 213B: HAD ANTENATAL CARE ☐	NO ANTENATAL CARE ☐	→ 612
603	During any of the antenatal visits for that birth, did anyone talk to you about: Babies getting the AIDS virus from their mother? Things that you can do to prevent getting the AIDS virus? Getting tested for the AIDS virus? Getting tested for syphilis? Using family planning?	YES NO DK AIDS FROM MOTHER 1 2 8 THINGS TO DO . 1 2 8 GETTING AIDS TEST 1 2 8 GETTING SYPH. TST 1 2 8 USING FAMILY PLNG 1 2 8	
604	CHECK FOR PRESENCE OF OTHERS. BEFORE CONTINUING, MAKE EVERY EFFORT TO ENSURE PRIVACY.		
605	Did you have a test to see if you had the AIDS virus as part of your antenatal care?	YES . . . . 1 NO 2	 → 611
606	The last time you had a test for the AIDS virus as part of your antenatal care, did you ask for the test, was it offered to you and you accepted, or were you required to have the test?	ASKED FOR THE TEST . . . . 1 OFFERED AND ACCEPTED . . . . 2 REQUIRED 3	
607	When was the last time you were tested for the AIDS virus as part of your antenatal care?	LESS THAN 12 MONTHS AGO . . . . . 1 12 - 23 MONTHS AGO . . . . 2 2 OR MORE YEARS AGO 3	
608	Where was the last test done? PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. IF UNABLE TO DETERMINE IF HOSPITAL, HEALTH CENTER, VCT CENTER, OR CLINIC IS PUBLIC OR PRIVATE MEDICAL, WRITE THE NAME OF THE PLACE. ____________________ (NAME OF PLACE)	**PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . . . . 11 GOVT. HEALTH CENTRE/CLINIC . . 12 GOVERNMENT DISPENSARY . . 13 OTHER PUBLIC __________ 16 (SPECIFY) **PRIVATE MEDICAL SECTOR** MISSION/CHURCH HOSP./CLNC . . . 21 FPAK HEALTH CENTRE/CLINIC . . . 22 PRIVATE HOSPITAL/CLINIC . . . . . 23 VCT CENTRE . . . . 24 NURSING/MATERNITY HOME . . . 25 OTHER PRIVATE MEDICAL __________ 26 (SPECIFY) BLOOD DONATION CENTRE . . . . . 31 MOBILE CLINIC . . . . 41 OTHER __________ 96 (SPECIFY)	
609	Did you get the result of that test?	YES . . . . 1 NO 2	 → 610
609A	Would you be willing to share with me the results of your test?	YES . . . . 1 NO 2	 → 610
609B	Did the test show that you had the HIV virus	YES . . . . 1 NO 2	 → 610
609C	Were you given any medications from the ANC to stop your baby from getting HIV?	YES . . . . 1 NO 2	
609D	Did your baby receive an HIV test?	YES . . . . 1 NO 2	 → 610
609E	Did your baby receive any care, treatment or follow-up for HIV HIV infection?	YES . . . . 1 NO 2	
610	Have you been tested for the AIDS virus since that time you were tested during your pregnancy?	YES . . . . 1 NO 2	→ 613 → 617A

SECTION 6 HIV/AIDS TESTING

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
611	Were you offered a test for the AIDS virus as part of your antenatal care?	YES . . . . 1 NO 2	
612	Have you ever been tested to see if you have the virus that causes AIDS?	YES . . . . 1 NO 2	 → 619
613	When was the last time you were tested?	LESS THAN 12 MONTHS AGO . . . . . 1 12 - 23 MONTHS AGO . . . . 2 2 OR MORE YEARS AGO 3	
614	The last time you had the test, did you yourself ask for the test, was it offered to you and you accepted, or was it required?	ASKED FOR THE TEST . . . . 1 OFFERED AND ACCEPTED . . . . 2 REQUIRED 3	
615	Where was the test done? PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. IF UNABLE TO DETERMINE IF HOSPITAL, HEALTH CENTER, VCT CENTER, OR CLINIC IS PUBLIC OR PRIVATE MEDICAL, WRITE THE NAME OF THE PLACE. ____________________ (NAME OF PLACE)	**PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . . . . 11 GOVT. HEALTH CENTRE/CLINIC . . . 12 GOVERNMENT DISPENSARY . . 13 OTHER PUBLIC __________ 16 (SPECIFY) **PRIVATE MEDICAL SECTOR** MISSION/CHURCH HOSP./CLNC . . . 21 FPAK HEALTH CENTRE/CLINIC . . . 22 PRIVATE HOSPITAL/CLINIC . . . . . 23 VCT CENTRE . . . . 24 NURSING/MATERNITY HOME . . . 25 OTHER PRIVATE MEDICAL __________ 26 (SPECIFY) BLOOD DONATION CENTRE . . . . . 31 MOBILE CLINIC . . . . 41 OTHER __________ 96	
616	Did you get the result of the last AIDS test you had?	YES . . . . 1 NO 2	
617 617A	In addition to the test(s) you have told me about, have you been tested at any other time for the AIDS virus? IF YES: How many <u>other</u> times have you been tested? Did you ever have a test for HIV prior to your last pregnancy? IF YES: In addition to the test during your last pregnancy, how many times have you been tested for HIV?	NUMBER OF OTHER TIMES TESTED . . . . [ ][ ] NOT TESTED AT ANY OTHER TIMI . 95 [ ][ ]	 → 703

SECTION 6 HIV/AIDS TESTING

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
617B	CHECK 609 AND 616: DID NOT GET RESULT(S) OF LAST HIV TEST(S) ☐ ↓ GOT RESULTS OF LAST HIV TEST ☐ → 703		703
618	CHECK 617/617A: HAD ONE OTHER TEST ☐ ↓ — Did you get the result of the other HIV test you had? MORE THAN ONE OTHER TEST ☐ ↓ — Did you get the result of any of the other HIV tests you had?	YES . . . . 1 NO 2	 2 → 703
619	Why have you never had a test for HIV? PROBE: Any other reason? RECORD ALL MENTIONED.	NO KNOWLEDGE ABOUT HIV TEST . A DON'T KNOW WHERE TO GET ONE . B TEST COSTS TOO MUCH . . . . C TRANSPORT TO VCT SITE TOO MUCH D VCT SITE TOO FAR AWAY . . . . E AFRAID OTHERS WILL KNOW ABOUT TEST/TEST RESULTS . . . . F DON'T NEED TEST/LOW RISK . . . . . G DON'T WANT TO KNOW IF I HAVE THE AIDS VIRUS . . . . H CAN'T GET TREATMENT IF HAVE AIDS I OTHER ______ X (SPECIFY)	A, B → 703
620	Do you know of a place where people can go to get tested for HIV?	YES . . . . 1 NO 2	 2 → 703
621	Where is that? Any other place? RECORD ALL MENTIONED	**PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . . . . A GOVT. HEALTH CENTRE/CLINIC . . . B GOVERNMENT DISPENSARY . . C OTHER PUBLIC ______ D (SPECIFY) **PRIVATE MEDICAL SECTOR** MISSION/CHURCH HOSP./CLNC . . . E FPAK HEALTH CENTRE/CLINIC . . . F PRIVATE HOSPITAL/CLINIC . . . . . G VCT CENTRE . . . . H NURSING/MATERNITY HOME . . . I OTHER PRIVATE MEDICAL ______ J (SPECIFY) BLOOD DONATION CENTRE . . . . . K MOBILE CLINIC . . . . L OTHER ______ X (SPECIFY)	A–X → 703

SECTION 7: HIV STATUS, CARE AND TREATMENT

703	CHECK 609, 616, AND 618: YES IN ONE ONE OR MORE QUESTIONS ☐ ↓ NO/NO REPONSE IN ALL THREE QUESTIONS ☐		→ 801
704	Would you be willing to share with me the result of your (last) HIV test?	YES . . . . . 1 NO 2	 → 801
705	Did the test show that you had the HIV virus?	YES . . . . . 1 NO 2	 → 801
706	Are you taking Septrin or Cotrimoxazole daily?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	 NO, DON'T KNOW → 707
706A	From where did you get the Septrin (Cotrimoxazole) you are taking the last time? PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. IF UNABLE TO DETERMINE IF HOSPITAL, HEALTH CENTER, VCT CENTER, OR CLINIC IS PUBLIC OR PRIVATE MEDICAL, WRITE THE NAME OF THE PLACE. ____________________ (NAME OF PLACE)	**PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . . 11 GOVT. HEALTH CENTRE/CLINIC 12 GOVERNMENT DISPENSARY . . 13 OTHER PUBLIC ________ 16 (SPECIFY) **PRIVATE MEDICAL SECTOR** MISSION/CHURCH HOSP./CLNC 21 PRIVATE HOSPITAL/CLINIC . . . . . . 23 OTHER PRIVATE MEDICAL ________ 26 (SPECIFY) OTHER ________ 96 (SPECIFY)	
707	Are you taking ARVs, that is, antiretroviral medications daily?	YES . . . . . 1 NO . . . . . 2 DON'T KNOW 8	 NO, DON'T KNOW → 709
707A	From where did you get the ARVs you are taking the last time? PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. IF UNABLE TO DETERMINE IF HOSPITAL, HEALTH CENTER, VCT CENTER, OR CLINIC IS PUBLIC OR PRIVATE MEDICAL, WRITE THE NAME OF THE PLACE. ____________________ (NAME OF PLACE)	**PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . . 11 GOVT. HEALTH CENTRE/CLINIC 12 GOVERNMENT DISPENSARY . . 13 OTHER PUBLIC ________ 16 (SPECIFY) **PRIVATE MEDICAL SECTOR** MISSION/CHURCH HOSP./CLNC 21 PRIVATE HOSPITAL/CLINIC . . . . . . 23 OTHER PRIVATE MEDICAL ________ 26 (SPECIFY) OTHER ________ 96 (SPECIFY)	

708	How long have you been on the ARVs? RECORD THE ANSWER IN MONTHS IF LESS THAN ONE YEAR. RECORD '00' IF LESS THAN ONE MONTH.	MONTHS . . . . 1 YEARS 2	
709	Have you ever been offered a test of your immunity level, i.e., a test that shows the CD4 count?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	2, 8 → 711
710	Has the CD4 count test ever been done?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
711	Are you currently taking any daily nutritional supplements? IF YES: What are you taking?	PLUMPY NUT . . . . A NUTRIMIX . . . . B FIRST FOOD . . . . C FOUNDATION PLUS + ... D FOUNDATION ADVANTAGE . . . . E IMMUNE BOOSTERS . . . . F MULTIVITAMINS . . . . G OTHER ______________________ X (SPECIFY) NO SUPPLEMENTS . . . . Z	

SECTION 8 OTHER HEALTH ISSUES

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
801	Have you ever heard of an illness called tuberculosis or TB?	YES . . . . 1 NO 2	 → 809
802	How does tuberculosis spread from one person to another? PROBE: Any other ways? RECORD ALL MENTIONED.	THROUGH THE AIR WHEN COUGHING OR SNEEZING . . . . A THROUGH SHARING UTENSILS . . . . . B THROUGH TOUCHING A PERSON WITH TB . . . . C THROUGH FOOD . . . . D THROUGH SEXUAL CONTACT . . . . . E THROUGH MOSQUITO BITES . . . . F OTHER ________________ X (SPECIFY) DON'T KNOW . . . . Z	
803	Can tuberculosis be cured?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
804	If a member of your family got tuberculosis, would you want it to remain a secret or not?	YES, REMAIN A SECRET . . . . 1 NO . . . . 2 DON'T KNOW/NOT SURE/ DEPENDS 8	
805	Have you ever been told by a doctor or other health professionnal that you had tuberculosis?	YES . . . . 1 NO 2	 → 809
806	About how long ago has it been since a doctor or health professionnal last told you that you have (had) tuberculosis?	LESS THAN 6 MONTHS . . . . 1 6-11 MONTHS . . . . 2 1-5 YEARS . . . . 3 MORE THAN 5 YEARS . . . . 4 DON'T KNOW 8	
807	Were you ever treated for your tuberculosis?	YES . . . . 1 NO 2	 → 809
808	Did you complete the treatment?	YES . . . . 1 NO 2	
809	Have you been sick in the past one week?	YES . . . . 1 NO 2	
810	In the last three months, how many times did you seek health care outside of your home?	NONE . . . . 00 NUMBER . . . . [ ][ ]	→ 812
811	The last time you went for health care, where did you go? IF SOURCE IS HOSPITAL, HEALTH CENTER, OR CLINIC, WRITE THE NAME OF THE PLACE. PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. ________________ (NAME OF PLACE)	**PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . . . . 11 GOVT. HEALTH CENTRE/CLINIC 12 GOVERNMENT DISPENSARY . . 13 OTHER PUBLIC ________________ 16 (SPECIFY) **PRIVATE MEDICAL SECTOR** MISSION/CHURCH HOSP./CLNC 21 FPAK HEALTH CENTRE/CLINIC . 22 PRIVATE HOSPITAL/CLINIC . . . . . 23 NURSING/MATERNITY HOME . . . 24 PHARMACY . . . . 25 OTHER PRIVATE MEDICAL ________________ 26 (SPECIFY) **OTHER SOURCE** SHOP . . . . 31 TRADITIONAL HEALER . . . . 32 OTHER ________________ 96 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
812	Have you ever had a blood transfusion?	YES . . . 1 NO . . . 2	 → 814
813	When was the **last** time you had a blood transfusion?	DAYS AGO . . . 1 WEEKS AGO . . . 2 MONTHS AGO . . . 3 YEARS AGO . . . 4	
814	Have you been asked to donate blood in the last year?	YES . . . 1 NO . . . 2	 → 816
815	Who asked you to donate blood the last time?	FAMILY/FRIENDS . . . 1 BLOOD TRANSFUSION SERVICE . 2 OTHER ______ 6 (SPECIFY) DON'T KNOW . . . 8	
816	Have you donated blood in the last year?	YES . . . 1 NO . . . 2	
817	Now I would like to ask you some questions about any injections you have had in the last twelve months. Have you had an injection for any reason in the last twelve months? IF YES: How many injections did you have? IF NUMBER OF INJECTIONS IS GREATER THAN 90, OR DAILY FOR 3 MONTHS OR MORE, RECORD '90'. IF NON-NUMERIC ANSWER, PROBE TO GET AN ESTIMATE.	NUMBER OF INJECTIONS . . . . NONE . . . 00	 → 822
818	Among these injections, how many were administered by a traditional practitioner or healer? IF NUMBER OF INJECTIONS IS GREATER THAN 90, OR DAILY FOR 3 MONTHS OR MORE, RECORD '90'. IF NON-NUMERIC ANSWER, PROBE TO GET AN ESTIMATE.	NUMBER OF INJECTIONS . . . . NONE . . . 00	
819	Among these injections, how many were administered by a doctor, a nurse, a pharmacist, a dentist, or any other health worker? IF NUMBER OF INJECTIONS IS GREATER THAN 90, OR DAILY FOR 3 MONTHS OR MORE, RECORD '90'. IF NON-NUMERIC ANSWER, PROBE TO GET AN ESTIMATE.	NUMBER OF INJECTIONS . . . . NONE . . . 00	 → 822
820	The last time you had an injection given to you by a health worker, at what place did you receive the injection? PROBE TO IDENTIFY THE TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE. IF UNABLE TO DETERMINE IF HOSPITAL, HEALTH CENTER OR CLINIC IS PUBLIC OR PRIVATE MEDICAL, WRITE THE NAME OF THE PLACE. ______ (NAME OF PLACE)	**PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . 11 GOVT. HEALTH CENTRE/CLINIC 12 GOVERNMENT DISPENSARY . . 13 OTHER PUBLIC ______ 16 (SPECIFY) **PRIVATE MEDICAL SECTOR** MISSION/CHURCH HOSP./CLNC 21 FPAK HEALTH CENTRE/CLINIC . 22 PRIVATE HOSPITAL/CLINIC . . . 23 NURSING/MATERNITY HOME . . . 24 DENTAL OFFICE/CLINIC . . . 25 PHARMACY . . . 26 OTHER PRIVATE MEDICAL ______ 27 (SPECIFY) **OTHER** AT HOME . . . 31 OTHER ______ 96 (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
821	Did the health worker who gave you that injection take the syringe and needle from a new, unopened package?	YES . . . . 1 NO . . . . 2 DK 8	
822	If you have a choice, would you like to receive medicatior as an injection or pill?	INJECTION . . . . 1 PILL . . . . 2 DK 8	
823	Have you ever had an immunization against yellow fever?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	 → 825
824	When was the last time you had an immunization against yellov fever?	MONTHS AGO . . . . 1 [ ][ ] YEARS AGO . . . . 2 [ ][ ]	
825	FEMALE [ ] MALE [ ]		→ 828
826	Some men are circumcised. Are you circumcised?	YES . . . . 1 NO 2	 → 828
827	How old were you when you were cicumcised? IF RESPONDENT IS UNSURE, PROBE FOR APPROXIMATE AGE.	AGE . . . . [ ][ ]	
827A	Where were you circumcised?	HEALTH FACILITY . . . . 1 HOME . . . . 2 OTHER ________ 6 DON'T KNOW 8	
827B	Who performed the circumcision?	MEDICAL PRACTITIONER . . . . 1 TRADITIONAL PRACTITIONER . . . 2 HOME HEALTH WORKER . . . . 3 OTHER ________ 6 DON'T KNOW 8	
828	CHECK 203 AND 205: HAS LIVING SONS [ ] NO LIVING SONS [ ]		→ 833
829	Now I would like to ask a few questions about your youngest son. How old is your youngest son? IF RESPONDENT IS UNSURE, PROBE FOR APPROXIMATE AGE.	AGE . . . . [ ][ ]	
830	CHECK 829 YOUNGEST SON AGE 0-19 YEARS [ ] YOUNGEST SON AGE 20 AND OLDER [ ]		→ 833
831	Is your youngest son circumcised?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	→ 833 → 833
832	Are you planning to have your youngest son circumcised?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
833	CHECK 501: HEARD ABOUT AIDS: Apart from AIDS, have you heard about other infections that can be transmitted through sexual contact? NOT HEARD ABOUT AIDS: Have you heard about infections that can be transmitted through sexual contact?	YES . . . . . . 1 NO 2	
834	CHECK 321: HAS HAD SEXUAL INTERCOURSE / HAS NOT HAD SEXUAL INTERCOURSE		HAS NOT HAD SEXUAL INTERCOURSE → 842
835	CHECK 833: HEARD ABOUT OTHER SEXUALLY TRANSMITTED INFECTIONS? YES / NO		NO → 842
836	Now I would like to ask you some questions about your health in the last 12 months. During the last 12 months, have you had a disease which you got through sexual contact?	YES . . . . . . 1 NO . . . . . . 2 DON'T KNOW 8	
837	MALE / FEMALE Sometimes men experience an abnormal discharge from their penis. During the last 12 months, have you had an abnormal discharge from your penis?	YES . . . . . . 1 NO . . . . . . 2 DON'T KNOW 8	FEMALE → 839
838	Sometimes men have a sore or ulcer on or near their penis During the last 12 months, have you had an ulcer or sore on or near your penis?	YES . . . . . . 1 NO . . . . . . 2 DON'T KNOW 8	
839	CHECK 836, 837, AND 838: HAS HAD AN INFECTION (ANY 'YES') / HAS NOT HAD AN INFECTION OR DOES NOT KNOW		HAS NOT HAD AN INFECTION OR DOES NOT KNOW → 842
840	The last time you had (PROBLEM FROM 836/837/838), did you seek any kind of advice or treatment?	YES . . . . . . 1 NO 2	NO → 842
841	Where did you go? Any other place? PROBE TO IDENTIFY EACH TYPE OF SOURCE AND CIRCLE THE APPROPRIATE CODE(S). IF UNABLE TO DETERMINE IF HOSPITAL, HEALTH CENTER VCT CENTER, OR CLINIC IS PUBLIC OR PRIVATE MEDICAL, WRITE THE NAME OF THE PLACE. __________________ (NAME OF PLACE(S))	**PUBLIC SECTOR** GOVERNMENT HOSPITAL . . . . . . A GOVT. HEALTH CENTER/CLNC . B STAND-ALONE VCT CENTER . . . . C FAMILY PLANNING CLINIC . . . . D MOBILE CLINIC . . . . . . E FIELDWORKER . . . . . . F OTHER PUBLIC ________ G (SPECIFY) **PRIVATE MEDICAL SECTOR** PRIVATE HOSPITAL/CLINIC/ PRIVATE DOCTOR . . . . H STAND-ALONE VCT CENTER . . . . I PHARMACY . . . . . . J MOBILE CLINIC . . . . . . K FIELDWORKER . . . . . . L OTHER PRIVATE MEDICAL ________ M (SPECIFY) **OTHER SOURCE** SHOP . . . . . . N TRADITIONAL HEALER . . . . O OTHER ________ X (SPECIFY)	

NO.	QUESTIONS AND FILTERS	CODING CATEGORIES	SKIP
842	Husbands and wives do not always agree on everything. If a wife knows her husband has a disease that she can get during sexual intercourse, is she justified in refusing to have sex with him?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
843	If a wife knows her husband has a disease that she can get during sexual intercourse, is she justified in asking that they use a condom when they have sex?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
844	Is a wife justified in refusing to have sex with her husband when she is tired or not in the mood?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
845	Is a wife justified in refusing to have sex with her husband when she knows her husband has sex with other women?	YES . . . . 1 NO . . . . 2 DON'T KNOW 8	
846	CHECK 301: FEMALE, CURRENTLY MARRIED/ LIVING WITH A PARTNER ☐ FEMALE, NOT IN UNION ☐ MALE ☐		 → 849 → 849
847	Can you say no to your husband/partner if you do not want to have sexual intercourse?	YES . . . . 1 NO . . . . 2 DEPENDS/UNSURE 8	
848	Could you ask your husband/partner to use a condom if you wanted him to?	YES . . . . 1 NO . . . . 2 DEPENDS/UNSURE 8	
849	RECORD THE TIME.	HOUR . . . . [ ][ ] MINUTES . . . . [ ][ ]	

INTERVIEWER'S OBSERVATIONS

TO BE FILLED IN AFTER COMPLETING INTERVIEW

COMMENTS ABOUT RESPONDENT:

COMMENTS ON SPECIFIC QUESTIONS:

ANY OTHER COMMENTS:

SUPERVISOR'S OBSERVATIONS

NAME OF THE SUPERVISOR: ______________________ DATE: ______________________