Ministry of Health

Kenya Population-based HIV Impact Assessment

KENPHIA 2018

FINAL REPORT | AUGUST 2022

NASCOP

Kenya Population-based HIV Impact Assessment KENPHIA 2018

KENPHIA 2018 COLLABORATING INSTITUTIONS

- Ministry of Health (MOH) through
  - National AIDS & STI Control Program (NASCOP) – Survey Principal Investigator Institution
  - National Public Health Laboratories
  - National AIDS Control Council
  - Kenya Medical Research Institute (KEMRI)
- Ministry of Devolution and Planning through
  - Kenya National Bureau of Statistics (KNBS)
  - National Council for Population and Development
- Ministry of Interior and Coordination of National Government
- Kenya Council of Governors
- United Nations (UN) Family
- Associations of People Living with HIV/AIDS in Kenya
- Westat
- United States (US) President's Emergency Plan for AIDS Relief (PEPFAR)
- US Centers for Disease Control and Prevention (CDC)-Survey Principal Investigator Institution
- ICAP at Columbia University – Survey Principal Investigator Institution

DONOR SUPPORT AND DISCLAIMER

This project is supported by the U.S. President's Emergency Plan for AIDS Relief (PEPFAR) through the US Centers for Disease Control and Prevention (CDC) under the terms of cooperative agreement #U2GGH001226. The findings and conclusions are those of the authors and do not necessarily represent the official position of the funding agencies.

SUGGESTED CITATION

National AIDS and STI Control Programme (NASCOP). Kenya Population-based HIV Impact Assessment (KENPHIA) 2018: Final Report. Nairobi: NASCOP; August 2022.

ACCESS THIS REPORT ONLINE

The PHIA Project: http://phia.icap.columbia.edu
NASCOP online: http://www.nascop.or.ke/KENPHIA

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GLOSSARY OF TERMS

90-90-90: An ambitious treatment target proposed by the Joint United Nations Programme on HIV and AIDS (UNAIDS) to help end the AIDS epidemic. By 2020, 90% of all people living with HIV will know their HIV status, 90% of all people with diagnosed HIV will receive sustained antiretroviral therapy (ART), and 90% of all people receiving ART will have viral load (VL) suppression (VLS).

Acquired Immunodeficiency Syndrome (AIDS): AIDS is a disease that can develop after HIV causes severe damage to the immune system, leaving the body vulnerable to life-threatening conditions, such as infections and cancers.

Adolescents: Unless otherwise noted, individuals aged 10-14 years are referred to as young adolescents; individuals aged 15-19 years are referred to as older adolescents. (Note: Older adolescents are included among young people [ages 15-24 years] and are also categorized as part of the adult population for reporting purposes.)

Adults: Unless otherwise noted, adults are defined in this survey as the population of individuals aged 15-64 years.

Antiretroviral (ARV): A type of medication used to treat HIV.

Antiretroviral Therapy (ART): Treatment with antiretroviral (ARV) drugs that inhibit the ability of HIV to multiply in the body, leading to improved health and survival among people living with HIV.

CD4+ T Cells: CD4+ T cells (CD4) are white blood cells that are an essential part of the human immune system. These cells are often referred to as T-helper cells. HIV attacks and kills CD4 cells, leaving the body vulnerable to a wide range of infections. The CD4 count is used to determine the degree of weakness of the immune system from HIV infection.

Children: Defined in this survey as the population of individuals aged 0-14 years.

De Facto Household Resident: A person who slept in the household the night before the survey.

Enumeration Area (EA): A limited geographic area defined by the national statistical authority and the primary sampling unit for the Population-based HIV Impact Assessment (PHIA) surveys.

Head of Household: The person who is recognized within the household as being the head and is aged 18 years or older or is considered an emancipated minor (an individual aged 15-17 years who is married or is free from any legally competent representative) as defined by law in Kenya.

Hepatitis B: Hepatitis B is a viral infection of the liver caused by the hepatitis B virus (HBV). Like HIV, the virus is passed from person to person through blood, semen, or other bodily fluids. Coinfection with HIV is common and is associated with a higher prevalence of chronic hepatitis B, which can lead to serious, even life-threatening health issues like cirrhosis or liver cancer.

Human Immunodeficiency Virus (HIV): HIV is the virus that causes AIDS. The virus is passed from person to person through blood, semen, vaginal fluids, and breast milk. HIV attacks CD4 cells in the body, leaving a person living with HIV vulnerable to illnesses that a healthy immune system would eliminate.

HIV Incidence: A measure of the frequency with which new cases of HIV occur in a population over a period of time. The denominator is the population at risk; the numerator is the number of new cases that occur during a given time period.

HIV Prevalence: The proportion of persons in a population who are living with HIV at a specific point in time.

HIV Viral Load (VL): The concentration of HIV RNA in the blood, usually expressed as copies per milliliter (mL).

HIV Viral Load Suppression: An HIV VL of less than 1,000 HIV RNA copies per mL.

Household: A person or group of persons related or unrelated to each other who live in the same compound (fenced or unfenced), share the same cooking arrangements, and have one person whom they identify as head of that household.

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 he or she gives consent.

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 through heterosexual intercourse. Voluntary medical male circumcision is an important part of national HIV prevention programs in most HIV high burden countries.

Prevention of Mother-to-Child-Transmission (PMTCT): Mother-to-child transmission (MTCT) occurs when an HIV-positive woman passes HIV to her baby during pregnancy, labor, or delivery or while breastfeeding. The World Health Organization (WHO) recommends a four-pronged approach for effective PMTCT: (1) primary prevention of HIV infection among women of childbearing age; (2) preventing unintended pregnancies among women living with HIV; (3) preventing HIV transmission from women living with HIV to their infants; and (4) providing appropriate treatment, care, and support to mothers living with HIV and their children and families.

Sexually Transmitted Infections (STIs): STIs are transmitted through person-to-person sexual contact. They are sometimes called sexually transmitted diseases.

Syphilis: Syphilis is a curable STI caused by a bacterium, *Treponema pallidum*. Syphilis can be transmitted to the fetus during pregnancy or to the infant during delivery.

Tuberculosis: Tuberculosis (TB) is a bacterial disease that most often affects the lungs but can also affect other parts of the body. When a person with active TB coughs, sneezes, sings, or talks, TB bacilli can spread through the air. It is the leading cause of death among people living with HIV in Africa.

Young Adults: Unless otherwise noted, individuals 20-24 years of age are defined as young adults.

Young People: In this report, the term young people includes older adolescents and young adults as defined above.

LIST OF ABBREVIATIONS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
ARV	Antiretroviral
CDC	US Centers for Disease Control and Prevention
CD4	CD4+ T cell
CI	Confidence Interval
DBS	Dried Blood Spot
EA	Enumeration Area
EID	Early Infant Diagnosis
HBTC	Home-Based Testing and Counseling
HBV	Hepatitis B Virus
HIV	Human Immunodeficiency Virus
KEMRI	Kenya Medical Research Institute
KNBS	Kenya National Bureau of Statistics
KENPHIA	Kenya Population-based HIV Impact Assessment
LAg	Limiting Antigen
mL	Milliliter
MOH	Ministry of Health
MTCT	Mother-to-Child Transmission
MUAC	Mid-Upper Arm Circumference
NASCOP	National AIDS and STI Control Programme
ODn	(normalized) Optical Density
PCR	Polymerase Chain Reaction
PEPFAR	US President's Emergency Plan for AIDS Relief
PHIA	Population-based HIV Impact Assessment
PMTCT	Prevention of Mother-to-Child Transmission
POC	Point of Care
QA	Quality Assurance
QC	Quality Control
RR	Response Rate
RSE	Relative Standard Error
SMS	Short Message Service
STI	Sexually Transmitted Infection
TB	Tuberculosis
TNA	Total Nucleic Acid
UNAIDS	Joint United Nations Programme on HIV and AIDS
VL	Viral Load
VLS	Viral Load Suppression
VMMC	Voluntary Medical Male Circumcision
WHO	World Health Organization

FOREWORD

It is with great pleasure that we launch this report, which presents the Kenya Population-based HIV Impact Assessment (KENPHIA). This survey was planned, conducted, and analyzed by a team of survey experts, technical advisors, and government officials for the people of Kenya. With KENPHIA, we continue along the innovative pathway that we began with the first and second Kenya AIDS Indicator Surveys (KAIS 2007 and KAIS 2012).

We are all aware of the global HIV burden, with an estimated 38 million people across the globe living with HIV/AIDS in 2019. Of these, 36.2 million are adults (ages 15-64 years old), and 1.8 million are children (ages 0-14 years). KENPHIA shows that Kenya has an overall HIV prevalence among adults of 4.9%—twice as high in women, at 6.6%, than in men, at 3.1%.

This corresponds to approximately 1,303,000 adults living with HIV in 2018. HIV prevalence among children was 0.7%, which translates to approximately 139,000 children living with HIV in Kenya. HIV/AIDS has posed a significant threat to the health and the economic and social wellbeing of our citizens since it was first reported in Kenya in 1983. Since then, Kenya has mustered a coordinated and multidisciplinary, multisectoral approach in the fight against HIV. As a result, we have witnessed tremendous progress over the past decade with reductions in the annual number of new HIV infections and AIDS-related deaths and improved quality of life for people living with HIV.

However, despite this progress, the HIV epidemic remains a significant health challenge in Kenya. The Government of Kenya will continue to do everything possible to sustain the progress made to date and continue to attain the ambitious targets the Joint United Nations Programme on HIV and AIDS (UNAIDS) has set to achieve an end to the epidemic by 2030. I would like to take this opportunity to affirm the Ministry's commitment to translating the findings of the KENPHIA 2018 Final Report into enhanced policies and a renewed focus that will contribute to the control and elimination of this epidemic in Kenya. Furthermore, the Government of Kenya remains committed to continuing the path toward HIV epidemic control as part of achieving universal health coverage. Let us join hands in working with H.E., the President of the Republic of Kenya, Uhuru Muigai Kenyatta, in his commitment to achieving universal health care for the betterment of all Kenyans both in the present and for future generations to come.

Hon. Mutahi Kagwe, EGH
Cabinet Secretary
Ministry of Health, Kenya

PREFACE

KENPHIA builds on previous Kenya AIDS Indicator Survey Reports of 2012 and 2007 and the Demographic Health Surveys of 2008-2009 and 2003. This is the first report on HIV which has been aligned to the 2010 constitution of Kenya, which provides vital HIV statistics for the 47 counties of Kenya that oversee health services implementation.

KENPHIA expands on previous surveys by including children aged 0-18 months, using new laboratory methods to confirm HIV infections, and serves as the first nationally representative survey assessing the prevalence of hepatitis B in Kenya.

This survey presents key results that serve as a scorecard to assess the impact of the many years of HIV programming and policy efforts and the significant financial investment made to stem the infection.

The Ministry of Health is proud to have supported KENPHIA with the human resources for health to enable data collection and mobilized resources to help the survey procure some of the necessary supplies and equipment to ensure a successful survey.

This comprehensive report provides a useful reference for policymakers, program implementers, and researchers in evaluating the impact of HIV prevention and treatment programs in Kenya and a guide for future interventions.

Being the first survey that provides data at the county level, aligning with the objectives of devolution as per Kenya's 2010 constitution, we are pleased that the county governments have used the KENPHIA 2018 results into their strategic plans for effective HIV response.

Susan N. Mochache, CBS
Principal Secretary
Ministry of Health

TOPLINE FINDINGS

Dr. Patrick Amoth, EBS
Ag. Director General
Ministry of Health

The annual incidence of HIV among adults (ages 15-64) in Kenya was

0.14%

0.15%

0.13%

Approximately

36,000

new cases of HIV occur annually among adults

HIV prevalence among children (ages 0-14) was

0.7%

translating to approximately 139,000 children living with HIV in Kenya

Overall, HIV prevalence among adults was

4.9%

This corresponds to approximately 1,303,000 adults living with HIV in 2018

6.6%

3.1%

Viral load suppression among people living with HIV in Kenya

Among adults,

71.6%

had viral load suppression

74.6%

65.1%

Children 48.3%

Ages 15-64 years Ages 0-14 years

ACKNOWLEDGEMENTS

The Ministry of Health appreciates all those who contributed to the successful development of the KENPHIA Final Report. We thank the top leadership of the Ministry of Health for their support, especially the Office of the Cabinet Secretary, Principal Secretary, Director General, Department of Preventive and Promotive Health, and the National AIDS and STI Control Program, whose guidance led to the successful development of this report. Notably, we wish to convey our gratitude to the technical working group and the team leads who worked tirelessly to ensure the successful completion of this final report.

We are grateful to ICAP at Columbia University, the strategic partner leading the overall program and logistical survey development process. Special thanks go to Dr. Catherine Ngugi, former Head of the National AIDS and STI Control Program (NASCOP), who provided impeccable support and strategic leadership in the development process, and Dr. Violet Oramisi, the Program Manager in charge of the Strategic Information unit at NASCOP who coordinated the entire process. We also wish to acknowledge the contributions of the principal investigators Dr. Jessica Justman, Dr. Kevin De Cock, Dr. Peter Cherutich, Dr. Kigen Bartilol, Dr. Martin Sirengo, and Dr. Lucy N'gang'a. The technical team consisting of NASCOP Managers, Program Officers, Dr. Joyce Wamicwe and Dr. Lilly Nyagah, as well as Peter Young and Dr. Emily Zielinski-Gutierrez of CDC Kenya, Dr. Mark Hawken, ICAP Kenya Country Director, Dr. Duncan Chege, ICAP Kenya KENPHIA Director, and Doris Naitore, ICAP Kenya did a sterling job. We would like to recognize and appreciate the technical input, commitment, and dedication of various experts from public, private, and faith-based institutions. In this regard, we particularly recognize the National Public Health Laboratory Services (NPLS), Kenya National Bureau of Statistics (KNBS), National Council for Population and Development (NCPD), National AIDS Control Programme (NACC), Kenya Medical Research Institute (KEMRI), the Council of Governors, and UNAIDS representing the UN family. I would also like to thank the National Empowerment Network of People Living with AIDS in Kenya (NEPHAK) for their invaluable support and community sensitization. Lastly, I would like to acknowledge and thank the United States Centers for Disease Control and Prevention (CDC) for their expert technical support and the United States President's Emergency Plan for AIDS Relief (PEPFAR), which supported KENPHIA financially.

The development of this final report has been a long journey with many challenges, but we finally have this document, which provides a significant milestone in the country's response to HIV. We look forward to making use of the rich survey data obtained to strengthen the planning and implementation of the national HIV program.

Dr. Andrew Mulwa
Director, Medical Services
Preventive and Promotive Health
Ministry of Health

KEY MESSAGES

KENPHIA indicates that adult HIV prevalence in Kenya has stabilized at less than 4.9% in 2018. The annual incidence of new HIV infections among adults in this report is 0.14%, while 71.6% of all adults living with HIV in Kenya have attained viral load suppression (VLS). From these results, we can infer that the programs currently in place have successfully stabilized the HIV epidemic by controlling new infections and providing treatment to those who are aware of their HIV status, which improves their health and reduces the risk of transmission to others. However, the KENPHIA results also highlight issues that warrant significant attention in the coming years. Of note, we have yet to attain the first UNAIDS 90 target, awareness of HIV positive status, which is currently at 79.5%, and only 43.6% of adults reported having been tested within the 12 months preceding the survey. Additionally, women bear a disproportionate burden of HIV, with twice the prevalence of HIV compared to men (6.6% women; 3.1% men). Finally, children who were on treatment in our care and treatment programs were less likely to achieve VLS compared to adults (67.1% of children on ART; 90.6% of adults on ART), and already we are putting in place strategies to address these priorities.

Dr. Nazila Ganatra
Head of Department
National Strategic Public Health Programmes

KENPHIA was a very large HIV impact survey with several unique features. The survey reached 16,918 households across the 47 counties of Kenya and recruited 35,610 people. KENPHIA provided data on HIV incidence, the prevalence of viral load suppression, as well as information on the prevalence of HIV, syphilis, and hepatitis B. It also included an extensive questionnaire that provided information on demographic characteristics of respondents, including reproductive history, prevention of mother-to-child transmission (PMTCT), male circumcision, HIV/AIDS knowledge and attitudes, HIV testing and awareness of HIV status, care and treatment status, the uptake of tuberculosis (TB) services by people living with HIV, prevalence of sexually transmitted infection (STI) symptoms and diagnoses, and the experience of violence by women.

Dr. Rose Wafula
Head, National AIDS and STI Control
Program (NASCOP)
Ministry of Health

REPORT OVERVIEW

KENPHIA was performed to assess the progress that has been made in HIV programming and provide critical information to plan and implement our HIV programming for the next five years. The specific objectives of this survey were to estimate the national HIV incidence, national and county level prevalence of viral load suppression (VLS), as well as national and county HIV prevalence in a representative sample of households in all 47 counties in Kenya.

The report has eighteen chapters that provide critical data on the primary outcomes of HIV incidence among adults and HIV prevalence among adults and children.

Chapter 1: The Introduction addresses the background of Kenya's past and current AIDS strategic frameworks that enhance evidence-based programming.

Chapter 2: This chapter covers survey design methods and the response rates; KENPHIA was a nationally representative, cross-sectional, two-stage, population-based survey of households across Kenya. Its target population was children (defined as those aged 0-14 years) and adults (defined as persons aged 15-64 years). The survey population excluded institutionalized children and adults.

Chapter 3: This chapter describes survey household characteristics and basic demographic characteristics of the interviewed population. The survey assessed key indicators and outcomes for children, adolescents (those aged 10-14 years), and adults.

Chapter 4: This chapter describes survey respondent characteristics and assesses key indicators and outcomes for children, adolescents, and adults.

Chapter 5: This chapter presents annual estimates of HIV incidence among adults at the national level.

Chapter 6: This chapter presents representative estimates of HIV prevalence among adults at the national and county level by selected demographic and behavioral characteristics. It also provides an estimate of the number of people living with HIV in Kenya. HIV prevalence testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Kenya's national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay.

Chapter 7: HIV testing is necessary for awareness of HIV status and is a critical part of reaching HIV epidemic control targets. This chapter reports data on adults, men, and women, who reported that they had ever had an HIV test and received the test results. Data on participants who tested and received the test results in the 12 months before the survey are also presented to understand frequent or recent testing.

Chapter 8: This chapter presents data on the proportion of people living with HIV in Kenya who reported that they were aware of their status at the time of the survey, as well as the proportion of those aware of their status who reported that they were on antiretroviral (ARV) therapy (ART).

Chapter 9: This chapter describes viral load suppression among the population of HIV-positive adults by age, sex, region, and other demographic characteristics.

Chapter 10: This chapter presents the status of the UNAIDS 90-90-90 indicators, which indicate program performance.

Chapter 11: This chapter assesses whether those started on treatment remain on treatment and provides a platform to understand whether there are barriers to retention on ART among certain populations.

Chapter 12: This chapter presents data on ANC attendance, breastfeeding practices, awareness of a woman's HIV status before or during pregnancy, use of ART during pregnancy in women who were aware of their HIV-positive status during pregnancy, and infant HIV testing to confirm HIV infection through self-report by the mother and through biomarker testing during the survey.

Chapter 13: This chapter presents results on the UNAIDS 90-90-90 cascade in children, using both parent/guardian-reported data (on awareness of a child's HIV status and ARV use) and data on detectable ARVs. Analyses for the 90-90-90 tables for children are like those described for adults in Chapter 10.

Chapter 14: This chapter describes the prevalence of sexual debut before age 15 years among young people aged 15-24 years by marital status, counties of residence, and socioeconomic and demographic characteristics. Also, the chapter outlines the 90-90-90 cascade among young people.

Chapter 15: This chapter describes the prevalence of sexual behaviors that increase the risk of HIV infection. With this information, programs can target those individuals most in need of information and most at risk for HIV infection.

Chapter 16: This chapter provides data on physical and sexual violence.

Chapter 17: This chapter focuses on potential stigmatization directed against HIV and people living with HIV. In KENPHIA, the assessment of discriminatory attitudes towards people living with HIV follows the guidance for global AIDS monitoring by UNAIDS.

Chapter 18: This chapter describes the TB clinical care cascade for HIV-positive individuals, the prevalence of hepatitis B and syphilis, and prior screening for STIs in both men and women in adults by age, HIV status, county distribution, socioeconomic, and demographic characteristics.

SUMMARY OF KEY FINDINGS

TOPLINE FINDINGS IN FOCUS

- The annual incidence of HIV among adults (defined as those aged 15-64 years) in Kenya was 0.14%, 0.15% among women and 0.13% among men (Table 5.B).
- Approximately 36,000 new cases of HIV occur annually among adults (Table 5.C).
- Overall, HIV prevalence among adults was 4.9%—and twice as high in women, at 6.6% (95% confidence interval [CI]: 6.0%-7.1%), than in men, at 3.1% (95% CI: 2.7%-3.5%) (Table 6.C). This corresponds to approximately 1,303,000 adults aged 15-64 years living with HIV in 2018 (Table 5.C).
- HIV prevalence among children (defined as those aged 0-14 years) was 0.7% which translates to approximately 139,000 children living with HIV in Kenya (Tables 6.E).
- Among adults living with HIV in Kenya, 71.6% had viral load suppression (VLS) (less than <1,000 HIV RNA copies per mL). Men had significantly lower prevalence of VLS at 65.1% (95% CI: 58.8%-71.4%) compared to women at 74.6% (95 CI: 71.5%-77.6%) (Table 9.B). (Note: These estimates of VLS among HIV-positive adults were regardless of their knowledge of HIV status or use of ART.)

Approximately 36,000 new cases of HIV occur annually among adults

THE UNAIDS 90-90-90 TARGETS:

The 90-90-90 targets are that by 2020, 90% of all people living with HIV should be aware of their status, 90% of those who are aware of their HIV-positive status should be on ART (which translates to 81% [90%x90%] of the overall population of people living with HIV should be taking ART), and 90% of those who are on ART should have VLS (which translates to close to 73% [90%x90%x90%] of the overall population of people living with HIV that should be on ART with VLS). Kenya's progress towards achieving these targets is presented in both ways below: the conditional and the overall 90-90-90s.

Adults: Based on self-report and ARV detection, KENPHIA found

For the conditional 90-90-90:

- **Diagnosed:** 79.5% of those who tested HIV positive in the survey were aware of their status; 82.7 among women and 72.6% among men.
- **On treatment:** Among those who were aware of their HIV-positive status, 96.0% were receiving ART; 96.6% of women and 94.5% of men (exceeding the conditional target of 90%).
- **Viral load suppression:** Among those aware of their status and on treatment, 90.6% had VLS; 90.4% of women and 90.9% of men (meeting the conditional target of 90%) (Table 10.A, Figures 10.A, 10.B, and 10.C).

Looking at the overall population of adults living with HIV in Kenya, KENPHIA found

- As noted above, 79.5% of all HIV-positive adults in Kenya were aware of their HIV status: 82.7% among women and 72.6% among men.
- When including all the adults living with HIV in the country for whom these data were available, 76.3% were receiving ART, 79.8% of all HIV-positive women and 68.6% of all HIV-positive men, (approaching the target of 81% for the overall population on treatment by 2020).
- Finally, out of all the adults living with HIV in Kenya, 69.1% were on treatment and had achieved VLS, 72.2% of all HIV-positive women, and 62.3% of all HIV-positive men—just shy of the overall target of 73% (Table 10.B). (Please see chapter 10 for a full explanation of the differences between estimates of VLS and the two 90-90-90 cascades.)

1.3 million adults were living with HIV in 2018

KENPHIA estimated progress toward achievement of the UNAIDS 90-90-90 targets at 79%, 96%, and 91% among all adults living with HIV

Young people (defined as those aged 15-24 years): Based on self-reported and ARV-detection data, KENPHIA found,

For the conditional 90-90-90:

- **Diagnosed:** 70.6% of young people who tested positive in the survey were aware of their status.
- **On treatment:** Among those who were aware of their HIV-positive status, 93.1% were receiving ART.
- **Viral load suppression:** Among those aware of their status and on treatment, 79.2% had VLS (Table 10.A, Figure 14.A).

And among the overall population of young people living with HIV in Kenya:

- 70.6% of all young people living with HIV in Kenya were aware of their HIV-positive status.
- When including all the young people living with HIV in the country, 65.7% were receiving ART.
- Out of all the young people living with HIV in Kenya, 52.1% were on treatment and had achieved VLS (Table 10.B).

Children (defined as those aged 0-14 years): Based on guardian/parental reported and ARV-detection data, KENPHIA found,

For the conditional 90-90-90:

- **Diagnosed:** 78.9% of HIV-positive children were classified as previously diagnosed (their parents/guardian were aware of the child's HIV-positive status).
- **On treatment:** 93.2% of previously diagnosed HIV-positive children were on ART.
- **Viral load suppression:** Among previously diagnosed children who were on treatment, 67.1% had VLS (Table 13.B, Figure 13.A).

And among the overall population of children living with HIV in Kenya:

- 78.9% of all HIV-positive children had a previous diagnosis (a parent/guardian who was aware of their status);
- 73.6% of all the children living with HIV in the country were receiving ART;
- Of all the children living with HIV in Kenya, 49.4% were on treatment and had achieved VLS (Table 13.C, Figure 13.A).

OTHER KEY FINDINGS

Household characteristics

- In Kenya, 9.1% of households had at least one HIV-positive member (9.5% in rural and 8.3% in urban households) (Table 3.D, Figure 3.C).
- Among households with at least one person living with HIV, 16.5% had two or more people living with HIV (Table 3.E, Figure 3.D).
- The proportion of households headed by a person living with HIV was higher among female-headed households: 13.8% (95% CI: 12.5%-15.2%) than among male-headed households: 5.0% (95% CI: 4.4%-5.7%) (Table 3.F and Figure 3.E).

KENPHIA estimated the UNAIDS 90-90-90 achievement at 79%, 93%, and 67% among children living with HIV

Survey respondent characteristics

- Among adults, 62.0% lived in rural, and 38.0% lived in urban areas (Table 4.A).
- Among adult survey respondents, 36.5% had never married, 48.6% were married monogamously, and 4.5% were married polygamously. More women (6%) were widowed compared to men (0.8%) (Table 4.A).
- Only 14.4% of the adults had received secondary education; 34.5% had completed only primary school education, while 44.8% of the respondents had an incomplete primary education and 6.4% had no education: 3.7% among men and 9.0% among women (Table 4.A).
- Of the participants, 20.2% were in the lowest wealth quintile, while 18.1% were in the highest wealth quintile. There was no major difference between men and women in terms of wealth disparity (Table 4.A).
- Half of the adult respondents (50.1%) were not employed in the 12 months before the survey: 61.5% among women and 38.4% among men. (Table 4.A).

HIV Prevalence

- The prevalence of HIV among adults aged 15-49 years in Kenya was 4.5%. HIV prevalence was more than twice as high among women at 6.2% (95% CI:5.7%-6.8%) compared to men at 2.7% (95% CI: 2.4%-3.1%) (Table 6.A).
- The prevalence of HIV among adults aged 15-64 years in Kenya was 4.9%. This translates to approximately 1.3 million (95% CI: 1.2-1.4 million) adults living with HIV in Kenya. Again, HIV prevalence was twice as high among women at 6.6% (95% CI: 6.0%-7.1%), compared to men at 3.1% (95% CI: 2.7%-3.5%) (Table 6.C).
- HIV prevalence in children was 0.7%, which corresponds to approximately 139,000 children living with HIV in Kenya. There was no significant difference between girls and boys: HIV prevalence was 0.7% (95% CI: 0.2%-1.1%) among girls and 0.8% (95% CI: 0.4%-1.1%) among boys (Table 6.E).
- Among adults, HIV prevalence increased with age until ages 45-49 years, reaching 9.4%. Among women, HIV prevalence peaked at ages 40-44 years (11.9%), though it remained high at ages 45-49 years (10.6%) and ages 50-54 years (11.7%). HIV prevalence peaked at 8.3% among men aged 45-49 years (Table 6.E, Figure 6.B).
- During young adulthood and over most of their early childbearing years, women were approximately three times more likely to be HIV positive than their male counterparts: 3.4% (95% CI: 2.5%-4.3%) among women versus 0.6% (95% CI: 0.2%-1.1%) among men at ages 20-24 years; 6.0% (95% CI: 4.9%-7.1%) among women versus 2.2% (95% CI: 1.1%-3.3%) among men at ages 25-29 years; and 9.5% (95% CI: 8.0%-11.0%) among women versus 3.2% (95% CI: 2.1%-4.3%) among men at ages 30-34 years (Table 6.E, Figure 6.B).
- HIV prevalence varied geographically across the country. The counties with the highest-prevalence were Homa Bay, 19.6% (95% CI: 15.9%-23.3%); Kisumu, 17.5% (95% CI: 13.6%-21.3%); Siaya, 15.3% (95% CI: 12.2%-18.3%); Migori, 13.0% (95% CI: 9.0%-17.0%); and Busia,: 9.9% (95% CI: 5.9%-13.9%); and those with lowest prevalence (<2.0%) were Samburu, Tana River, Garissa, Wajir, Mandera, Marsabit, Kiambu, West Pokot, and Baringo (Tables 6.D, Figure 6.C).
- HIV prevalence was 2.2% (95% CI: 1.5%-2.8%) among adults with a secondary education—significantly lower than those who had only completed primary, 3.5% (95% CI: 3.0-4.0%), or had an incomplete primary, 6.6% (95% CI: 6.0-7.1%), or had no primary education, 6.2% (95% CI: 4.7%-7.7%) (Table 6.C).

HIV testing

- Overall, 78.0% of adults reported that they had ever been tested for HIV and received their results, while 43.6% indicated that they had been tested and received their results in the 12 months preceding the survey (Table 7.E).
- A significantly lower proportion of men than women reported that they had ever tested for HIV, 70.7% (95% CI: 69.6%-71.9%) versus 85.1% (95% CI: 84.4%-85.9%) (Tables 7.A and 7.C).

HIV diagnosis and treatment status

- Among those who tested HIV positive in KENPHIA, 34.3% of the men and 26.0% the women reported that they had been unaware of their HIV status before the survey (Tables 8.A and 8.B).
- However, 28.1% of the HIV-positive adults who reported that they had not been previously diagnosed were in fact aware of their HIV status since they had detectable ARVs in their blood and therefore were on treatment. In addition, 7.8% of those who reported that they were previously diagnosed but not on ART also had detectable ARVs in their blood (Table 8.F).

Viral load suppression

- The percentage of HIV-positive adults with VLS ranged from 56.4% in young people aged 15-24 years to 82.5% in adults aged 50-64 years (Table 9.B).
- Children and young people living with HIV in Kenya had a lower prevalence of VLS (48.3% [95% CI: 30.9%-65.7%] and 56.4% [95%CI: 45.9%-66.8%]), respectively, compared to adults aged 25-49 years (71.0% [95% CI: 67.4%-74.5%]) and 50-64 years (82.5% [95% CI: 76.6%-88.4%]) (Tables 9.B and 9.C).
- In Kenya, the prevalence of VLS among HIV-positive adults varies geographically, ranging from a low of 39.7% in Turkana County in the Northwest (although this estimate was based on a denominator between 25-49 and should be interpreted with caution) to 72.8% in Nairobi, and up to 84% in Machakos County (although this latter estimate is based upon a denominator between 25-49 and should be interpreted with caution) (Table 9.A, Figures 9.B, and 9C).

Clinical perspectives on people living with HIV

- Among HIV-positive adults in Kenya, 99.3% of those who reported initiating ART less than 12 months before the survey, and 98.1% of those who reported initiating ART more than 12 months before the survey, reported that they were still taking ART at the time of the survey (Tables 11.A and 11.B).
- In a resistance substudy, specimens from recently infected participants were sequenced in order to detect evidence of transmitted drug resistance. Among the 11 (unweighted) out of 14 successfully sequenced specimens, primary drug resistance to non-nucleoside reverse transcriptase inhibitors (two sequences) and nucleoside reverse transcriptase inhibitors (one sequence) was observed. No protease inhibitor resistance mutations were detected in the sequenced specimens (Table 11.C).
- There was a range of HIV subtypes among an unweighted subsample of 98 adults living with HIV who underwent HIV genotyping: 65% had subtype A, 14% had subtype C, 13% had subtype D, and 7% had recombinant viruses (Table 11.D).

Prevention of mother-to-child transmission of HIV

- Evidence from the survey shows that many women of childbearing age (15-49 years of age—the age of the women discussed in this subsection) continue to be at high risk of HIV acquisition. For instance, among those who had sex with a nonmarital, noncohabitating partner in the 12 months before the survey, less than half (45.7%) reported using a condom at last sex (Table 15.C).

There were 139,000 children living with HIV in Kenya in 2018

- Overall, 97.3% of women who had a delivery in the three years preceding the survey had at least one antenatal care (ANC) visit. (Table 12.A).
- Only 0.8% of the pregnant women presented with moderate acute malnutrition based upon mid-upper arm circumference (MUAC) measurement. No pregnant woman was severely malnourished based on MUAC measurement (Table 12.C).
- Among women who delivered their last child in the three years before the survey, 68.7% were breastfeeding their child 12-17 months after childbirth and 12.9% were still breastfeeding more than two years after childbirth (Table 12.D).
- Among women who delivered within the three years before the survey, 1.7% of HIV-positive women reported that they had never breastfed, and 36.3% that they were currently breastfeeding, while 0.5% of HIV-negative women never breastfed and 53.1% were currently breastfeeding (Table 12.D).
- Among women who gave birth in the 12 months before the survey, 96.0% reported that they had known their HIV status before delivery (Table 12.E).
- Among pregnant women, HIV prevalence was 4.4% (Table 6.A), hepatitis B prevalence was 4.2% (Table 18.D), while no syphilis infections were observed during the survey (Table 18.E).
- Of the HIV-positive women who delivered within one year before the survey, 92.1% reported that they received ART during their pregnancy (Table 12.F).
- Of the 31 infants born to mothers living with HIV who were included in this survey, 6.7% were found to be HIV infected (although this estimate was based upon a denominator between 25 and 49 and should be interpreted with caution) (Table 12.G). Both preventing new infections and increasing rapid diagnosis and treatment of HIV infection in pregnant and breastfeeding women are needed in order to reduce HIV transmission to infants.

Children (ages 0-14 years)

- The overall HIV prevalence among children was 0.7%, which translates to 139,000 children living with HIV in Kenya (Tables 6.E).
- HIV prevalence among children ranged between 0.4% among children aged 0-4 years and 1.1% among young adolescents aged 10-14 years. There was no difference between girls and boys aged 0-14 years, with an HIV prevalence of 0.7% (95% CI: 0.2%-1.1%) among girls and 0.8% (95% CI: 0.4%-1.1%) among boys (Tables 6.E).
- The proportion of children with a known HIV status (either their caregiver reported knowledge of child's HIV status or there were detectable ARVs in the child's blood) was 78.9%. Knowledge of status ranged from 70.3% for younger children aged 0- 9 years to 89.6% for young adolescents (although these estimate were based on a denominator between 25-49 and should be interpreted with caution) (Table 13.B).
- Among children, 93.2% (95% CI: 84.4%-100.0%) of those who were known to be HIV positive were also on ART at the time of the survey, based upon parent-guardian report or the detection of ARVs in the child's blood (Table 13.B, Figure 13.A).
- VLS was 67.1% among HIV-positive children who were reported by their caregivers to be receiving ART or who had detectable ARV's in their blood (Table 13.B and Figure 13.A). However, at the population level among all children living with HIV, viral suppression was 48.3% (Table 9.C); this measurement was based on viral suppression among all HIV-positive children regardless of knowledge of HIV status or use of ARVs.
- The majority (98.9%) of children aged 6-59 months had appropriate MUAC for their age and there was no difference between children in rural and urban settings (Table 13.A).

Young people (ages 15-24 years)

- Only 70.6% of young people who tested positive were aware of their status, and among these, 93.1% were on treatment, and among those on treatment, 79.2% had achieved VLS. However, in light of the low awareness of HIV status, little more than one half of all Kenyan young people living with HIV (52.1%) were on treatment and had achieved VLS (Table 10.A, 10.B, Figure 14.A).
- HIV prevalence was generally higher among older adolescent girls (aged 15-19 years) and young women (aged 20-24 years) at 2.2% (95% CI: 1.7%-2.8%) than among older adolescent boys and young men, at 0.6% (95% CI: 0.3%-0.8%) (Table 6.E, Figure 6.B).
- Among young people, 21.5% reported having sexual intercourse before the age of 15 years (30.3% among the older adolescent boys and young men and 12.6% among older adolescent girls and young women). Similarly, young men aged 20-24 years were more likely to report sex before the age of 15 years, at 23% (95% CI: 20.2%-25.8%), compared to young women, at 8.6% (95% CI: 7.3%-9.9%), respectively (Table 14.A). It should be noted that older adolescents were more than twice as likely to report having had sex before the age of 15 years than young adults aged 20-24 years, 33.6% (95% CI: 31.2%-36.1%) versus 15.6% (95% CI: 14.0%-17.2%) (Table 14.A).
- There were geographical differences with regards to early sexual debut, ranging from less than 10% of young people who reported sex before the age 15 years in Kiambu, Kirinyaga, and Laikipia counties to over 30% of young people reporting early sexual debut in Baringo, Homa Bay, Nakuru, and Samburu counties (Table 14.A).
- Early sexual debut was significantly more likely to be reported by young people residing in rural areas at 23.5% (95% CI: 21.5%-25.4%) than by those residing in urban areas, at 18.5% (95% CI: 16.3-20.6) (Table 14.A).
- Early sexual debut was also significantly more likely to be reported by young people who did not attend secondary school, including those with no education, at 24.2% (95% CI: 17.2%-31.1%), those with an incomplete primary education, at 27.8% (95% CI: 25.1%-30.5%) and those who completed only primary school, at 20.6% (95% CI: 18.6-22.6%) and by those who had some secondary school education, at 11.3% (95% CI: 8.3-14.4). This pattern was most pronounced among older adolescent girls and young women, with 25.2% (95% CI: 16.9%-33.5%) of those with no primary level education compared to only 3.7% (95% CI: 1.3%-6.2%) of those with secondary school education reporting early sexual debut (Table 14.A).
- Among young people, 42.3% correctly responded to all questions (in a set of five) that assessed knowledge of HIV transmission and prevention (44.8% of older adolescent boys and young men and 39.7% of older adolescent girls and young women) (Tables 14.B, 14.C and 14.D).
- Knowledge of HIV transmission and prevention among young people varied by levels of education. For instance, 62.5% among those with secondary education, and 16.1% among those with no primary school education correctly answered all five survey questions on HIV knowledge (Table 14.D).

HIV risk factors

- Among adults who reported having sex in the 12 months before the survey, 30.1% reported having sex with a nonmarital, noncohabitating partner, 37.4% of men and 22.8% of women. Of these adults, 53.8% (59.7% of men and 45.0% of women) reported using a condom during their last sexual intercourse with this nonmarital, noncohabitating partner (Tables 15.B, 15.C and 15.D).
- HIV prevalence among adults who had intercourse before the age of 15 years was 6.4%, while it was 4.1% among those who first had intercourse after reaching the age of 25 years. Among women who had sex before the age of 15 years, HIV prevalence was 12.5%, while it was 4.7% among those who reported that they did not have sex until reaching the age of 25 years (Table 15.A).

- Among older adolescent boys aged 15-19 years who reported having sex in the 12 months before the survey, 98.0% reported having sex with a nonmarital, noncohabitating partner, and among them, 69.6% reported using a condom the last time they had sex with a nonmarital, noncohabitating partner (Table 15.B).
- Among older adolescent girls aged 15-19 years who reported having sex in the 12 months before the survey, 68.4% reported having sex with a nonmarital, noncohabitating partner, and among them, 48.7% reported using a condom the last time they had sex with a nonmarital, noncohabitating partner (Table 15.C).
- Among men aged 15-64 years, 91.7% reported having undergone male circumcision (MC) (Table 15.F). (Note: This and the subsequent estimates include both medical and nonmedical MC.)
- HIV prevalence was more than four times higher among uncircumcised men at 10.3% (95% CI: 8.3%-12.4%) compared to circumcised men at 2.5% (95% CI: 2.1%-2.9%) (Table 6.C). Among those who tested HIV positive in the survey, 71.7% reported that they were circumcised, while among those who tested HIV negative, 91.9% were self-reported as circumcised (Table 15.F).
- In the thirteen voluntary medical male circumcision (VMMC) priority counties, male circumcision was reported by 83.2% of men aged 15-64 years. In the five culturally non-circumcising counties in these thirteen counties, male circumcision was reported by 56.4% in Turkana, 53.3% in Kisumu, 61.2% in Siaya, 59.1% in Homa Bay, and 66.7% in Migori (Table 15.G).

Among adults that had sex with a nonmarital, noncohabitating partner, only one half (53.8%) reported using a condom at last sex with this partner

Violence experienced by women

- While experiences of violence appear to be under-reported across PHIAs compared to other data sources, 12.1% of women aged 15-64 years had ever experienced physical violence and 11.0% of women had ever experienced sexual violence. While 21.5% of the women who had ever experienced sexual violence had also been forced to have sex within the 12 months before the survey, only 17.7% of those who had ever experienced sexual violence had ever sought professional help afterwards (Table 16.A).
- There was wide geographical variation in the prevalence of both physical and/or sexual violence. Some of the highest percentages, ranging from 17.2% to 21.7% for physical violence and 13.2% to 18.9% for sexual violence, were in HIV high-burden counties Homa Bay, Kisumu, Migori, and Siaya (Table 16.A).

Discriminatory attitudes towards people living with HIV

- Among adults who have heard of HIV, 18.3% held discriminatory attitudes towards people living with HIV as assessed by two survey questions. The proportion varied by educational attainment, from 8.3% of those with secondary education to 42.3% of those with no education having discriminatory attitudes (Table 17.A).

Tuberculosis, hepatitis B, syphilis, and other sexually transmitted infections

- Among adults who reported that they were HIV positive, 74.3% reported that they were screened for TB symptoms at their last HIV clinic visit (Table 18.A).
- Among adults who reported that they were HIV positive, 17.9% reported that they had ever been diagnosed with TB. Of those who reported a TB diagnosis, 94.2% reported that they had initiated TB treatment (Table 18.B).
- Among adults living with HIV, based on self report, 65.3% had ever been initiated on isoniazid therapy to prevent active TB (Table 18.C).
- The overall prevalence of acute or chronic hepatitis B among adults in Kenya was 3.0%; 2.8% among women and 3.3% among men. Among adults living with HIV, the prevalence was 4.7% (Table 18.D).
- The burden of acute or chronic hepatitis B ranged from 1.5% among young adults aged 20-24 years to 8.5% among adults aged 45-49 years (Table 18.D).

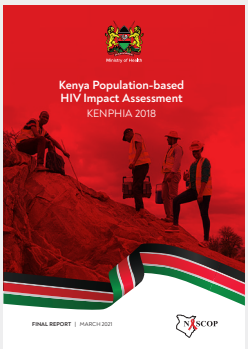
- Among women, the prevalence of acute or chronic hepatitis B was 4.2% among those who were pregnant and 2.7% among those who were not pregnant at time of survey (Table 18.D).
- The prevalence of hepatitis B was 10% or higher in three counties: Turkana (16.8%), Baringo (11.9%) (although this estimate was based upon a denominator between 25-49 and should be interpreted with caution), and Migori (10.0%) (Table 18.D).
- The prevalence of ever having syphilis among adults was 2.3% (2.2% among women and 2.4% among men) (Table 18.E).
- Among adults living with HIV, the prevalence of ever having syphilis was 4.9% and the prevalence of active syphilis was 0.7%. The prevalence of ever having syphilis was significantly higher among people living with HIV (4.9% [95% CI: 3.5%-6.3%] than among those who were HIV negative (2.2% [95% CI 1.2%-3.1%]) (Table 18.E).
- The prevalence of ever having syphilis peaked at 5.8% among adults aged 40-44 years, while for active infection, the prevalence peaked at 1.9% among those aged 50-54 years (Table 18.E).
- The highest burden of ever having syphilis was observed among widowed participants (7.2%) (Table 18.E).
- No syphilis infections were observed among pregnant women (Table 18.E).
- KENPHIA also asked participants about sexually transmitted infections (STIs) in the 12 months before the survey. Among men, 3.7% reported that they had abnormal urethral discharge and 3.4% reported they had had an ulcer or sore on or near the penis. Among those who reported STI symptoms in the 12 months before the survey, 38.8% reported that they were diagnosed with an STI by a doctor, clinical officer, or nurse. Among women, 8.3% reported abnormal vaginal discharge and 4.0% reported an ulcer or sore on or near the vagina. Among those who reported symptoms, 29.3% were diagnosed with an STI (Tables 18.F and 18.G).

CONCLUSION

KENPHIA 2018 provided critical data on the primary outcomes of HIV incidence among adults and HIV prevalence among children. The KENPHIA team encourages public health staff, programmers, epidemiologists and policy makers to examine the KENPHIA data for their respective program areas and utilize the data to assess the impact of ongoing efforts, identify gaps and unmet needs, and inform program planning.

1. INTRODUCTION

Kenya's past and current AIDS Strategic Frameworks mandate that Kenya obtain strategic information on HIV/AIDS in order to enhance evidence-based programming



KENPHIA 2018 was a general population household-based survey conducted between June 2018 and February 2019 to describe the status of the HIV epidemic in Kenya

The goal of KENPHIA

- To estimate the incidence of HIV in Kenya
- To determine the level of viral suppression of HIV among the national population of people living with HIV
- To assess the prevalence of HIV infection in Kenya
- To measure coverage and impact of HIV services at the population level
- To characterize HIV-related risk behaviors using a nationally-representative sample of adults and minors

1.1 BACKGROUND

Kenya's past and current AIDS Strategic Frameworks mandate that Kenya obtain strategic information on HIV/AIDS in order to enhance evidence-based programming. Consequently, Kenya has performed routine and periodic surveillance activities, including routine aggregation of monthly facility data, annual mathematical modeling, antenatal surveillance programming data from pregnant women (from 1990 to 2011), the 2003 and 2009 Kenya Demographic Health Surveys that included HIV, and the Kenya AIDS indicator surveys (KAIS 2007 and 2012).

The Kenya Population-based HIV Impact Assessment (KENPHIA) 2018 survey was a national household HIV survey that was part of the multicountry PHIA performed in 13 sub-Saharan African countries and Haiti funded by the United States President's Emergency Plan for AIDS Relief (PEPFAR) to describe the status of the HIV epidemic. The surveys measure important national and regional HIV-related parameters, including progress toward the achievement of the Joint United Nations Programme on HIV and AIDS (UNAIDS) 90-90-90 targets (UNAIDS, 2014), and will guide policy and funding priorities.

The Government of Kenya led KENPHIA under the National AIDS and STI Control Programme (NASCOP). Other Ministry of Health (MOH) sub-units were also involved, including the National Public Health Laboratories, National AIDS Control Council, and the Kenya Medical Research Institute (KEMRI). Additional partners included the Ministry of Devolution and Planning through the Kenya National Bureau of Statistics (KNBS) and the National Council for Population and Development; the Ministry of Interior and Coordination of National Government; and the Kenya Council of Governors. Other nongovernmental partners included the Global Fund and the UN Family. The main funding partner was the United States President's Emergency Plan for AIDS Relief (PEPFAR) through the United States Centers for Disease Control and Prevention (CDC). Both Global Fund and USAID also provided support. ICAP at Columbia University administered the survey.

1.2 OVERVIEW OF KENPHIA 2018

KENPHIA 2018 was a general population household-based survey conducted between June 2018 and February 2019. The goal of KENPHIA was to estimate the incidence of human immunodeficiency virus (HIV) in Kenya, determine the level of viral suppression of HIV among the national population of people living with HIV, assess the prevalence of HIV infection in Kenya, and measure coverage and impact of HIV services at the population level, as well as assess key HIV-related risk behaviors using a nationally-representative sample of adults and minors. This report provides information on these goals, which ultimately provides a national and regional summary of the burden of HIV in Kenya and progress made towards control of the HIV epidemic. This survey will help give an accurate measure of the status and gaps of Kenya's national and county HIV response to better help policy makers and HIV program implementing health units to tailor their strategies to the specific needs of an area or population.

KENPHIA offered home-based testing and counseling (HBTC) with return of results and collected information about households' and individuals' backgrounds, as well as the uptake of HIV care and treatment services. The results provide information on national and regional progress toward control of the HIV epidemic.

With its focus on measuring key biological endpoints in a nationally representative sample of the population, KENPHIA provides direct estimates of HIV infection risk and burden, the effectiveness and population-level impact of HIV-related prevention, care, and treatment interventions implemented in the country, and Kenya's progress toward the achievement of the UNAIDS 90-90-90 targets.

1.3 SPECIFIC OBJECTIVES

The goal of the survey was to estimate incidence and prevalence of HIV in Kenya, to assess the coverage and impact of HIV services at the population level and to characterize HIV-related risk behaviors using a nationally representative sample of adults (defined as participants aged 15-64 years in this survey unless otherwise indicated) and children (defined as participants aged 0-14 years).

Primary Objectives

To estimate the following in a household-based, nationally representative sample of adults:

- National HIV incidence
- National prevalence of HIV viral suppression [HIV RNA <1,000 copies/milliliter (mL)], and prevalence of HIV viral suppression in counties with greater than 2.2% HIV prevalence
- National and county HIV prevalence

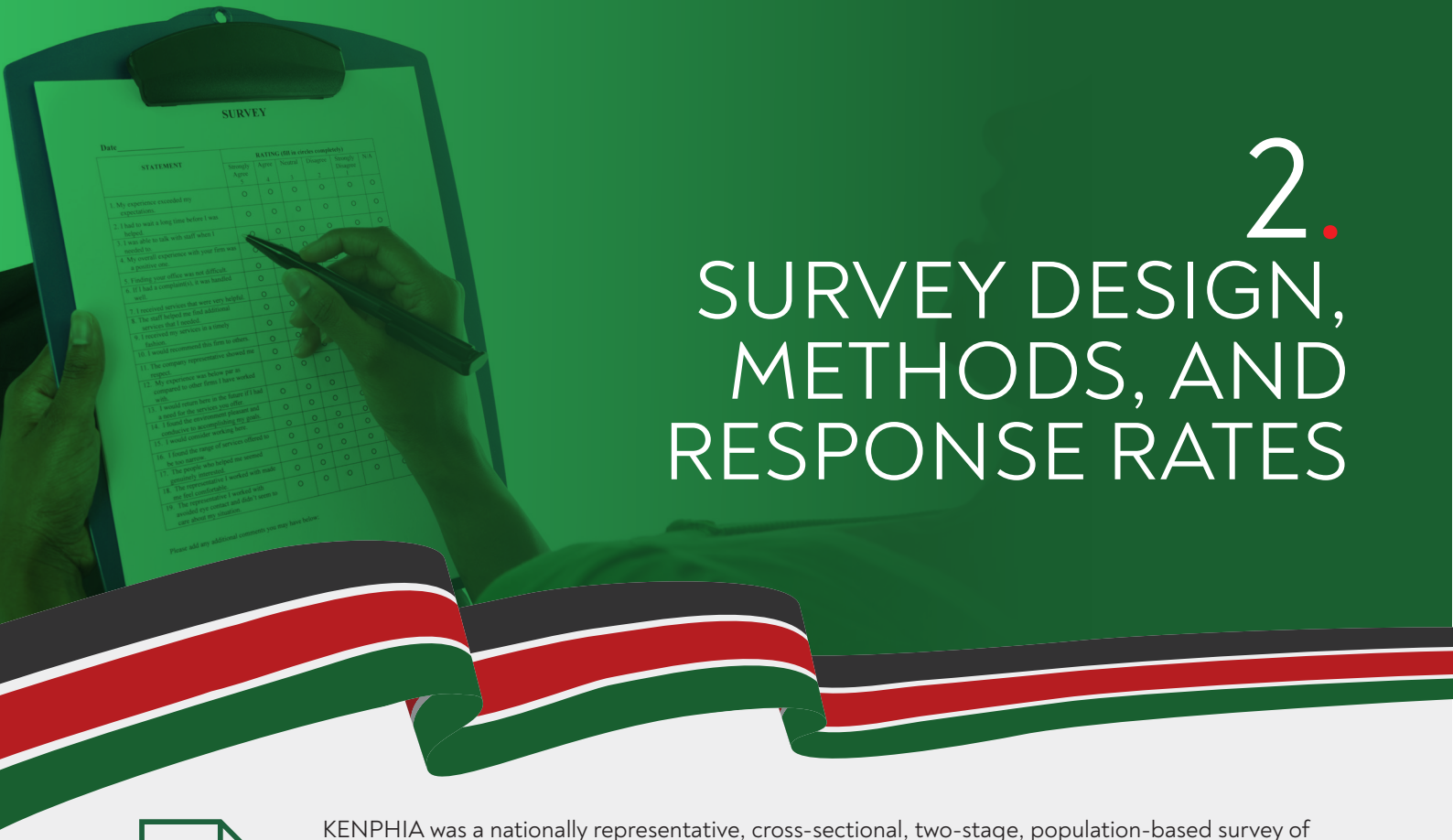
Secondary Objectives

To estimate the following among adults:

- Prevalence of HIV-related risk behaviors, knowledge, and attitudes
- Behavioral and demographic determinants of HIV incidence and prevalence
- National prevalence of syphilis
- National prevalence of hepatitis B virus (HBV) infection

To estimate the following among adults and children:

- Uptake of HIV-related services to assess the attainment of the Joint United Nations Programme on HIV and AIDS (UNAIDS) 90-90-90 goals
- Uptake of tuberculosis (TB) and TB/HIV services
- Prevalence of drug resistance (DR) among recently infected HIV-positive individuals and a subset of long-term infected individuals
- Prevalence of detectable antiretrovirals (ARVs) among all HIV-positive individuals
- Nutritional status among children (aged 6 months to 5 years) and pregnant women
- To estimate among children aged 0-14 years:
- The national pediatric HIV prevalence



2. SURVEY DESIGN, METHODS, AND RESPONSE RATES

KENPHIA was a nationally representative, cross-sectional, two-stage, population-based survey of households across Kenya

Target population

Children (ages 0-14)

Adults (ages 15-64)

KENPHIA used a two-stage, stratified cluster sample design

The first stage
800 enumeration areas selected using a probability-proportional-to-size method. The 800 EAs were stratified by 47 counties

The second stage
A sample of 25 households was randomly selected within each cluster

Response rates

Out of 19,996 Households selected	**18,226** were occupied	**16,918** were interviewed
33,267 Eligible adults (ages 15-64)	**Out of 14,840 men,** 86.1% were interviewed Out of those, 89.9% had their blood drawn	**Out of 18,427 women,** 94.3% were interviewed Out of those, 90.7% had their blood drawn
Out of 6,385 eligible children (ages 0-9)	**83.5% young boys** had their blood drawn	**82.3% young girls** had their blood drawn
Out of 3,041 eligible young adolescents (ages 10-14)	**Out of 1,550 young adolescent boys,** 86.8% were interviewed Out of those, 96.9% had their blood drawn	**Out of 1,491 young adolescent girls,** 89.4% were interviewed Out of those, 94.2% had their blood drawn

Response rates are weighted

KENPHIA was a nationally representative, cross-sectional, two-stage, population-based survey of households across Kenya. Its target population corresponded to children (defined as those aged 0-14 years) and adults (defined as persons aged 15-64 years). The survey population excluded institutionalized children and adults.

2.1 SAMPLE FRAME AND DESIGN

KENPHIA used a two-stage, stratified cluster sample design. The sampling frame was comprised of all households in the country, based upon the National Sample Survey and Evaluation Programme (NASSEP-V) sampling frame which includes 5,360 clusters derived from the approximately 96,000 enumeration areas (EAs) created for the 2009 Kenya Population and Housing Census. The first stage selected 800 EAs using a probability-proportional-to-size method. The 800 EAs were stratified by 47 counties. During the second stage, a sample of 25 households was randomly selected within each cluster. Table 2.1.A describes the distribution of sampled EAs and households.

The required number of households in each stratum accounted for adjustments for household vacancy and nonresponse, number of individuals per household, individual nonresponse, refusal of blood testing or specimen loss, and expected HIV prevalence in each stratum. The required number of clusters was obtained by dividing the number of households by the target number of occupied households sampled in each cluster.

In addition, the sample was allocated to ensure a maximum expected relative standard error (RSE) of 36.4% for HIV prevalence for all counties with a prevalence above 2.2% among adults aged 15-49 years. A floor of 13 clusters per county was also applied for counties with a prevalence above 2.2%.

For the remaining nine counties with HIV prevalence below 2.2%, a floor of 12 clusters per county was employed to ensure that all counties could estimate questionnaire-based indicators with a minimum RSE of 10%. One-third of the households were randomly selected for inclusion of children, which was designed to provide a representative estimate of pediatric HIV prevalence at the national level as low as 0.50% with RSE less than 33%. The target sample size was 27,897 for individuals aged 15-64 years, and 6,713 for children aged 0-14 years.

Table 2.1.A Distribution of sampled enumeration areas and households, by county

Distribution of sampled enumeration areas and households, by county, KENPHIA 2018

County	Enumeration Areas			Households		
	Urban	Rural	Total	Urban	Rural	Total
Baringo	4	8	12	100	200	300
Bomet	5	14	19	125	350	475
Bungoma	6	14	20	150	350	500
Busia	4	11	15	100	275	375
Elgeyo-Marakwet	4	8	12	100	200	300
Embu	5	11	16	125	275	400
Garissa	4	8	12	100	200	300
Homa Bay	6	14	20	150	350	500
Isiolo	8	8	16	200	200	400
Kajiado	8	8	16	200	200	400
Kakamega	5	12	17	125	300	425
Kericho	9	11	20	225	275	500
Kiambu	8	6	14	200	150	350
Kilifi	6	9	15	150	225	375

Table 2.1.A Distribution of sampled enumeration areas and households, by county (continued)

Distribution of sampled enumeration areas and households, by county, KENPHIA 2018

County	Enumeration Areas			Households		
	Urban	Rural	Total	Urban	Rural	Total
Kirinyaga	6	13	19	150	325	475
Kisii	5	10	15	125	250	375
Kisumu	10	10	20	250	250	500
Kitui	6	14	20	150	350	500
Kwale	5	8	13	125	200	325
Laikipia	6	12	18	150	300	450
Lamu	5	9	14	125	225	350
Machakos	11	9	20	275	225	500
Makueni	4	10	14	100	250	350
Mandera	4	8	12	100	200	300
Marsabit	4	8	12	100	200	300
Meru	5	15	20	125	375	500
Migori	9	11	20	225	275	500
Mombasa	19	0	19	475	0	475
Murang'a	5	11	16	125	275	400
Nairobi	55	0	55	1,375	0	1,375
Nakuru	9	9	18	225	225	450
Nandi	6	13	19	150	325	475
Narok	5	14	19	125	350	475
Nyamira	4	10	14	100	250	350
Nyandarua	6	13	19	150	325	475
Nyeri	7	12	19	175	300	475
Samburu	4	8	12	100	200	300
Siaya	5	14	19	125	350	475
Taita-Taveta	5	9	14	125	225	350
Tana River	4	8	12	100	200	300
Tharaka-Nithi	5	10	15	125	250	375
Trans-Nzoia	5	8	13	125	200	325
Turkana	6	15	21	150	375	525
Uasin Gishu	8	8	16	200	200	400
Vihiga	6	9	15	150	225	375
Wajir	4	8	12	100	200	300
West Pokot	3	9	12	75	221	296
Total	333	467	800	8,325	11,671	19,996

Unweighted figures.

Appendix A Sample Design and Weighting provides a more detailed explanation of the sampling and weighting processes.

2.2 ELIGIBILITY CRITERIA, RECRUITMENT, AND CONSENT PROCEDURES

In KENPHIA, the eligible survey population included individuals aged 0-64 years. The consent criteria are determined in each country, and it should be noted that the age ranges are different than the adult, adolescent, and children population age groups used for sampling and reporting purposes in this report. The consent criteria included:

- Adults aged 17-64 years and emancipated minors aged 15-17 years living in the selected households and adult visitors or emancipated minors who slept in the household the night before the survey, who were willing and able to provide written consent.
- Minors aged 15-17 years living in the selected households, and minors in the same age bracket who slept in the household the night before the survey, who were willing and able to provide written assent and whose parents or guardians were willing and able to provide written permission.
- Young adolescents aged 10-14 years living in the selected households and visitors in the same age bracket who slept in the household the night before the survey, who were willing and able to provide written assent, and whose parents or guardians were willing and able to provide written permission for their participation.
- Children aged 0-9 years living in the selected households and child visitors who slept in the household the night before the survey, whose parents or guardians were willing and able to provide written consent for their participation.

An electronic informed consent form was administered using a tablet (Appendix H). At each stage of the consent process, participants indicated consent by signing or making a mark on the consent form on the tablet and on a printed copy, which was retained by the participant. A designated head of household provided written consent to conduct a household interview, during which individual members were rostered. Adults and emancipated minors (ages 15-17 years) then provided written consent on the tablet for an interview and for participation in the biomarker component of the survey, including HBTC, with the return of HIV testing results during the household visit. Receipt of tests results was a requirement for participation in the biomarker component. If an individual did not want to receive his or her HIV test result, this was considered a refusal and the survey was concluded. Adults were also asked for written consent to store their blood samples in a repository to perform additional tests in the future.

Young adolescents aged 10-14 years were asked for assent to the interview and biomarker components after permission was granted by their parents or guardians. Parents provided consent for biomarker testing for minors below the age of assent (ages 0-9 years). In both cases, if a parent or guardian did not want to receive his or her child's HIV test result, this was considered a refusal and the survey was concluded. Procedures with illiterate participants or participants with a sight disability involved the use of an impartial witness, chosen by the potential participant, who also signed or made a mark on the consent form on the tablet and the printed copy. If no witness could be identified, the potential participant or household (if the head of household was sight disabled or illiterate) was deemed ineligible.

All PHIA survey protocols, consent forms, screening forms, refusal forms, referral forms, recruitment materials, and questionnaires were reviewed and approved by in-country ethics and regulatory bodies and the institutional review boards of Columbia University Medical Center, Westat, and the CDC.

2.3 SURVEY IMPLEMENTATION

Training of Field and Laboratory Staff

Survey staff received training on both the contents of the data collection instruments and tablet use. The training curriculum included:

- Scientific objectives of the survey
- Survey design and methods
- Completion of survey forms
- Data collection
- Staff responsibilities

- Recruitment of participants
- Informed consent procedures, including human participants' protection, privacy, and confidentiality
- Blood collection for children and adults, including venipuncture and finger/heel stick
- Home-based HIV testing and counseling
- Referral of participants to health and social services
- Management and transportation of blood specimens
- Biosafety
- Communication skills
- Protocol deviations, adverse events, and reporting of events

Laboratory staff were trained in specimen management, including sample processing, labeling, and quality assurance (QA). Central laboratory staff were trained in VL measurement, early infant diagnosis, HIV confirmatory testing, and HIV recency testing using a limiting antigen (LAg) avidity enzyme immunoassay.

Survey Staff

Fieldwork started at the beginning of June 2018 and was completed in February 2019.

Fieldwork was conducted by 50 locally hired field teams, each composed of a team leader, two interviewers, two HBTC counselors, two field laboratory technologists, and two drivers. Field teams included both male and female staff and members spoke the languages used in the areas to which they were deployed. The field teams were supervised by five regional teams each consisting of a regional coordinator, an information and communications technologies (ICT) supervisor, a HBTC supervisor, and a field laboratory supervisor. In addition, 20 community mobilization coordinators supervised the approximately 1,600 members of the community mobilization teams. The ICAP technical team guided and oversaw community mobilization efforts and data collection activities, performed quality checks, and provided technical support (Appendix D).

In addition, the laboratory staff was organized at different levels (central laboratory staff, regional field supervisors, onsite laboratory supervisors, satellite lab technicians, and satellite lab logisticians). Approximately six satellite laboratories were concurrently operational during data collection, and each consisted of a satellite laboratory team leader, six satellite laboratory technologists, and one logistician/laboratory technologist. Overall, eight central lab technicians processed samples and performed additional procedures for HIV-1 VL, infant virological HIV testing, and quality control (QC) and QA. National and international monitors periodically conducted direct observation of data collection activities in the field and in the laboratories to provide technical support and ensure quality.

Community Sensitization and Mobilization

Community mobilization was conducted prior to data collection to maximize community support and participation in the survey. The mobilization began before fieldwork commenced with a high-level national launch meeting that included key national and regional leaders, mass media, and other stakeholders. A community mobilization team consisted of two local gatekeepers from the EA who were either a KNBS village elder and/or a community health worker or other person of high regard in the community. Community mobilization teams visited each EA prior to initiation of data collection and partnered with community mobilizers to meet key gatekeepers in the communities (chiefs, local government officials, and religious and community leaders). The mobilization teams held community sensitization meetings, disseminated written informational materials such as brochures and posters, and held discussions with community residents.

Supervision

Data collection teams were continuously overseen by field-based supervisors as well as periodically monitored by national and international teams with representation from collaborating institutions. Monitoring teams visited field and laboratory sites at least monthly and provided direct supervision as well as verification of results by household revisits. Daily monitoring forms for household and individual outcome tracking were also reviewed by monitors for completeness. Field-based supervisors also supported teams by organizing supplies and transport of blood samples, coordinating community mobilization efforts, providing technical troubleshooting, and checking the quality of household procedures and data collected.

The national and international monitoring teams observed and assessed the quality of survey procedures, including adherence to protocol and standard operating procedures, and identified and responded to challenges with data collection. Regular debriefing sessions were held between field-based supervisors and monitoring teams. Monitoring reports were circulated to collaborating institutions and the KENPHIA Technical Working Group to respond to any issues.

Electronic monitoring system

An electronic dashboard system was established to monitor the progression of the survey. The dashboard summarized data uploaded to the KENPHIA in-country cloud server, which was later de-identified before being sent to the PHIA server daily for processing and summary statistics display. The dashboard tracked coverage and completion of EAs, sampled households, household response, eligible household members providing consent to the interview, and biomarker components of the survey, blood draws, response rates (RRs), and overall progress towards the achievement of the target sample.

Questionnaire Data Collection

Questionnaire and field laboratory data were collected on mobile tablet devices using an application programmed in Open Data Kit (ODK), an open-source mobile data collection application. The household interview collected information on household residents, assets, economic support, recent deaths, and orphans and vulnerable children (see Appendix E). The adult interview was administered to participants aged 15-64 years and included modules on demographic characteristics, sexual and reproductive health, marriage, male circumcision, sexual activity, HIV/acquired immune deficiency syndrome (AIDS) knowledge and attitudes, HIV testing and treatment history, TB and other diseases, alcohol use, and gender norms (see Appendix F). Participants who reported their HIV-positive status were asked questions about their HIV care experience. Parents also answered questions about the health and participation of their children aged 0-14 years in HBTC services as a part of the adult interview. In each household, one woman was also randomly selected to answer questions about her experiences with violence. Participants of any age who reported being victims of violence and minors who reported being victims of sexual exploitation were provided with referrals to social services. Female participants were interviewed by female staff, and male participants by male staff whenever possible. The questionnaire was administered in English, Kiswahili, Kikuyu, Luo, Luhya, Kalenjin, Kisii, Maasai, Miji Kenda, Meru, Embu, Somali, Borana, Turkana, Kamba, or Pokot, depending upon participant language preference. Versions of the questionnaires in the local languages were reviewed and tested thoroughly for acceptability, feasibility, and flow of questions.

2.4 FIELD-BASED BIOMARKER TESTING

Blood Collection

Blood was collected by qualified survey staff from consenting participants: 14 mL of venous blood from adults, 6 mL of venous blood from children aged 2-14 years, and 1 mL of capillary blood from infants and children younger than 24 months of age or adults aged 15-64 years where venous blood draw failed, using finger-stick for individuals aged 6 months to 64 years and heel-stick for infants younger than 6 months of age.

Blood samples were labeled with a unique barcoded participant identification number and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for processing into plasma aliquots by centrifugation at 3,000 rpm for 10 minutes and dried blood spots (DBS) by spotting 75 uL of whole blood per spot. The plasma aliquots were frozen at minus 20 degrees Celsius within 24 hours of blood collection. The DBS samples were first air dried at room temperature for 4 to 12 hours. Each barcoded card was individually wrapped in a glycine paper before being placed in a zippered storage bag with a humidity indicator card and desiccants. Excess air in the bag was removed, and the zippered storage bag tightly sealed before being stored at minus 20 degrees Celsius. Plasma and DBS samples were transferred weekly to the central laboratory for repository storage at minus 80 degrees Celsius.

HIV Home-Based Testing and Counseling

HIV HBTC was conducted in each household in accordance with national guidelines (Figure 2.4.A). As per these guidelines, the survey used a sequential rapid-testing algorithm in the field.

Infants younger than 18 months of age:
All infants in a child-sampled household aged <18 months who received parental permission to participate, received one rapid test (RT) in the household (Determine™ HIV-1/2 RT, Abbott, Chicago, Illinois, United States, formerly Alere) to screen for HIV exposure. Those that had a nonreactive Determine™ test result were reported as HIV-negative. If the Determine™ test result was reactive, the child was considered to be HIV exposed, and their sample was transported to the satellite laboratory for point-of-care (POC) early infant diagnosis (EID) testing using GeneXpert® (Cepheid, Inc., Sunnyvale, California, United States).

However, if the mother of the infant was HIV positive or of unknown HIV status (eg, if the mother of the child was reported to be deceased, or the child was being raised by a guardian), the sample was flagged for EID POC testing at the satellite laboratory regardless of the rapid screening results. All samples tested on EID POC were also tested at the central laboratory on total nucleic acid (TNA) polymerase chain reaction (PCR) as a QA measure. Additionally, in cases where the satellite laboratory was a mobile lab or where EID POC testing equipment was not functional, the sample was tested via TNA PCR at the central laboratory. Children that had a negative GeneXpert or TNA PCR result were categorized as HIV negative but exposed, while those that were positive by GeneXpert or TNA PCR were reported as HIV positive. All EID results were returned to the participant's parent/guardian at their household within two days to six weeks.

Individuals aged 18 months to 64 years:
Participants aged 18 months to 64 years were screened first with Alere Determine™ HIV-1/2 RT. Individuals with a nonreactive result on the Determine™ test were reported as HIV-negative, and no further HIV testing was performed at the home. Persons with a reactive Determine™ test result underwent confirmatory testing using a second RT, First Response® HIV 1-2.0 Card Test (PMC Medical, Gujarat, India), at the household. Those with a reactive result on both screening and confirmatory tests were classified as HIV positive.

Individuals with a reactive screening test result followed by a nonreactive confirmatory test result were classified as possible inconclusive/indeterminate and referred to a different member of the survey staff to repeat the screening and confirmatory tests as described above. Upon repeat testing, individuals that tested nonreactive on the screening test were reported as HIV negative, while those with a reactive result on both screening and confirmatory tests were classified as HIV positive.

In cases where an inconclusive/indeterminate result was again obtained by the second tester, the blood sample was referred for diagnostic HIV TNA PCR testing at the central laboratory, as per Kenya's HIV testing algorithm (Figure 2.4.A). This central laboratory TNA PCR result was returned to the facility of choice of the survey participant for collection within approximately 2 days to 6 weeks, with a follow-up via phone call, short message service (SMS) or email.

HIV-positive participants were referred to HIV care and treatment services at a health facility of their choice. For minors under the age of 15 years, results were returned to a parent or guardian.

For participants who reported an HIV-positive status but tested HIV-negative at the time of the survey, additional laboratory-based testing was conducted using HIV TNA PCR for confirmation of the status. In conjunction with Ministry of Health staff, survey staff revisited these participants and health providers to provide counseling and guidance on next steps to confirm these results, particularly for those on antiretroviral therapy (ART).

Appendix B provides further details on the PHIA HIV testing methodology.

Hepatitis B Testing
All HIV-positive adult participants and 1,500 randomly selected HIV-negative adult participants were tested for hepatitis B virus surface antigen. Testing for hepatitis B virus infection was conducted using a serological hepatitis B surface antigen rapid diagnostic test, Determine HBsAg (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere), which is indicative of acute or chronic hepatitis B virus (HBV) infection. All participants who received a positive hepatitis B test result were referred to their preferred healthcare facility to receive care and were given a brochure offering information on hepatitis prevention and treatment.

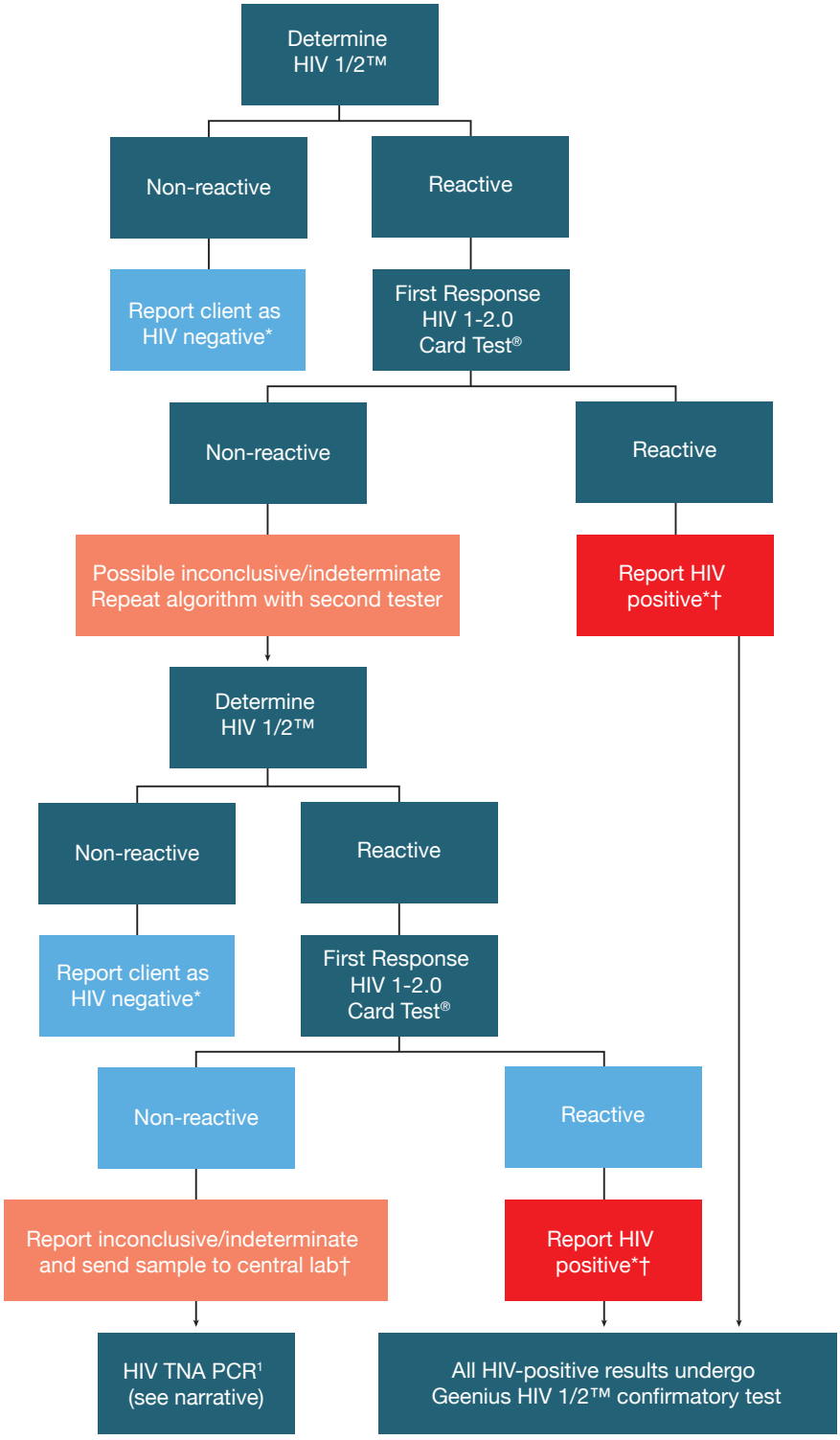


Figure 2.4.A
Household-based HIV testing algorithm, ages 18 months to 64 years, KENPHIA 2018

*Return of Results
†National algorithm: Refer client to clinic for confirmatory testing
[1]TNA PCR = total nucleic acid polymerase chain reaction

Syphilis Testing

All HIV-positive adult participants and 1,500 randomly selected HIV-negative adult participants were tested for syphilis. Syphilis testing was conducted using the Chembio Dual Path Platform (DPP) Syphilis Screen and Confirm Assay (Chembio Diagnostic Systems, Medford, New York, United States). Syphilis test results were categorized as either negative or positive, with positive results further defined as either active infection if both treponemal and nontreponemal antibodies were detected, or ever infected if only treponemal antibodies were detected. All participants who received a positive syphilis test result were referred to their preferred healthcare facility to receive care and were given a brochure offering information on syphilis prevention and treatment.

Quality Assurance

To ensure quality of household-based rapid testing, field staff tested a QC panel of HIV, hepatitis B and syphilis-positive and negative dried tube specimens every other week. In addition, QA proficiency testing was conducted twice in the course of the survey, using a panel of masked HIV, hepatitis B and syphilis-positive and negative dried tube specimens. Proficiency in the correct performance and interpretation of each test was assessed, and corrective action was implemented as necessary.

Anthropometric Assessment

Mid-upper arm circumference (MUAC) measurements were conducted for all minors 6-59 months of age and all pregnant women. All respondents found with sub-optimal nutrition (severely malnourished, underweight, overweight, and obese) were referred for nutritional services at a health facility of their choice. For minors younger than 17 years of age, results were returned to the parents/guardians, while emancipated minors/adults received their nutritional assessment results during the session. Survey staff provided a basic explanation of the results obtained as they were issued. Respondents receiving sub-optimal nutrition (ie, wasting, underweight, or being overweight) were referred to a health facility for follow-up. Further, all adults meeting the definition of underweight or obese were referred to a health facility for follow-up. All anthropometric results were also entered into the tablet.

2.5 LABORATORY-BASED BIOMARKER TESTING

Satellite and Central Laboratories

Seventeen satellite laboratories for the survey were established in existing health facility laboratories, and 17 additional mobile satellite labs sites were established on the premises of health facilities. One central reference laboratory (the National HIV Reference Laboratory in Nairobi) and one advanced laboratory (KEMRI HIV Research Laboratory in Kisumu) were chosen for more specialized tests. At each satellite laboratory, trained technicians performed HIV confirmatory testing, POC EID, QA testing, and processing of whole blood specimens into plasma aliquots and DBS cards for temporary storage at -20°C.

HIV QA and confirmatory testing: For QA of the HIV rapid testing conducted in the field, the first 50 samples tested by each field tester and a random sample of 5.0% of HIV-negative specimens were retested in the satellite laboratory using the national HIV rapid-testing algorithm. All specimens that tested HIV positive during HBTC, and retested positive during QA testing underwent confirmatory testing using the Geenius™ HIV 1/2 Confirmatory Assay (Bio-Rad, Hercules, California, United States). A positive Geenius™ result defined HIV-positive status for the survey. All minors <18 months of age who had a reactive Determine™ test during HBTC had their samples tested for POC EID using GeneXpert®. Central laboratory procedures included HIV VL testing, HIV TNA PCR for infant virological testing and for confirmation of status of those who reported an HIV-positive status but tested negative in HBTC, HIV recency testing and long-term storage of samples at -80°C.

The survey conducted household revisits for investigation of discrepancies between the results of testing in the field and in the laboratory. The specimens collected during the revisit underwent comprehensive retesting in the laboratory. For each case, an analysis of the nature of the discrepancy, and potential sources of error, was performed to define the definitive HIV status for analytical purposes.

Viral Load (VL) Testing

Determination of HIV-1 VL (HIV RNA copies per mL) of HIV-positive participants with plasma samples was measured using the COBAS AmpliPrep/Taqman 96 assay on the COBAS AmpliPrep/COBAS TaqMan (CAP/CTM) HIV-1, v2.0 Test (Roche

Molecular Diagnostics, Branchburg, New Jersey, United States). In cases where plasma samples were not available, HIV-1 VL was performed on dried blood spot (DBS) samples using the COBAS AmpliPrep/COBAS TaqMan (CAP/CTM) Free Virus Elution (FVE) Protocol (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). The COBAS AmpliPrep/TaqMan HIV-1 is a nucleic acid amplification test for the quantification of HIV Type 1 (HIV-1) RNA in human plasma or dried blood spots. Specimen preparation was automated using COBAS AmpliPrep with amplification and detection using TaqMan. Viral load results were returned by the return-of-results coordinator within six to 10 weeks to the health facility chosen by each HIV-positive participant. Participants were provided with a referral form during HBTC for subsequent retrieval of their results. Survey staff also contacted each participant via mobile phones, informing them that their VL results were available at the chosen facility and further advising them to seek care and treatment.

Infant HIV Virological Testing

HIV TNA PCR was conducted at the satellite laboratory on the GeneXpert® instrument system using the Cepheid® Xpert HIV-1 qualitative assay (Cepheid, Inc., Sunnyvale, California, United States). Results were returned to the child's parent or guardian at the household within 2 days to 6 weeks. Infants who had HIV TNA PCR tested at the satellite laboratory were again tested at the central lab using the COBAS® AmpliPrep/COBAS® TaqMan HIV-1 Qualitative Test, version 2.0 (Roche Molecular Diagnostics, Branchburg, New Jersey, United States).

HIV Recent Infection Testing Algorithm

To distinguish recent from long-term HIV infections, in order to estimate incidence, the survey used two different laboratory-based testing algorithms. Each algorithm employed a combination of assays: 1) an HIV-1 limiting antigen (LAg) avidity assay and VL (Figure 2.5.A) and 2) an HIV-1 LAg avidity assay, VL, and ARV detection (Figure 2.5.B), as described in Appendix B.

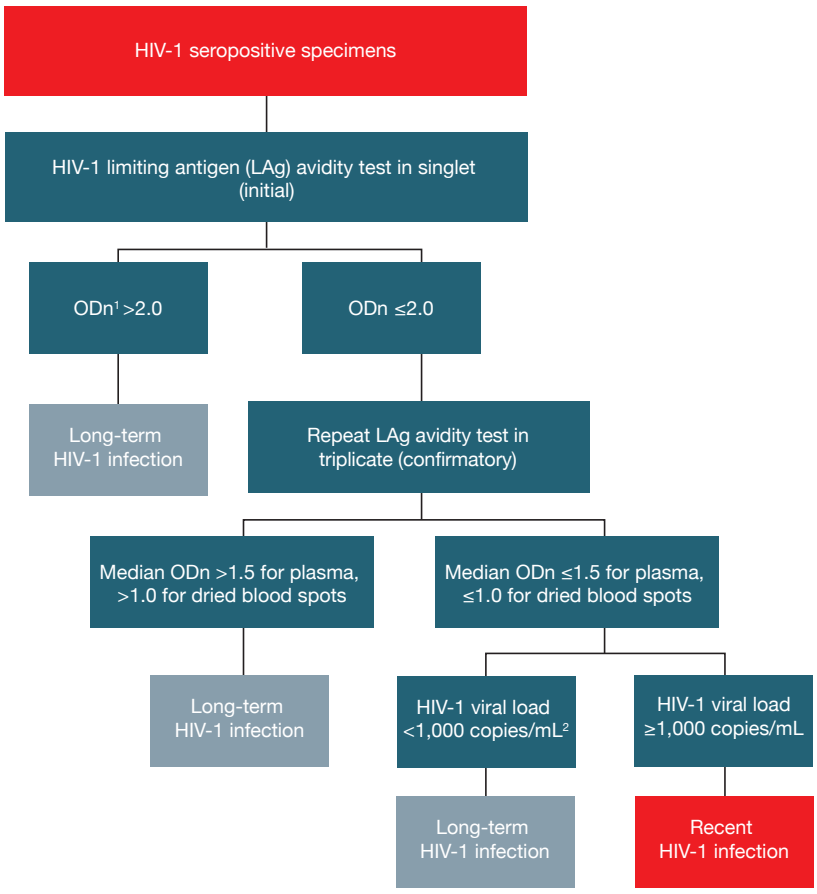
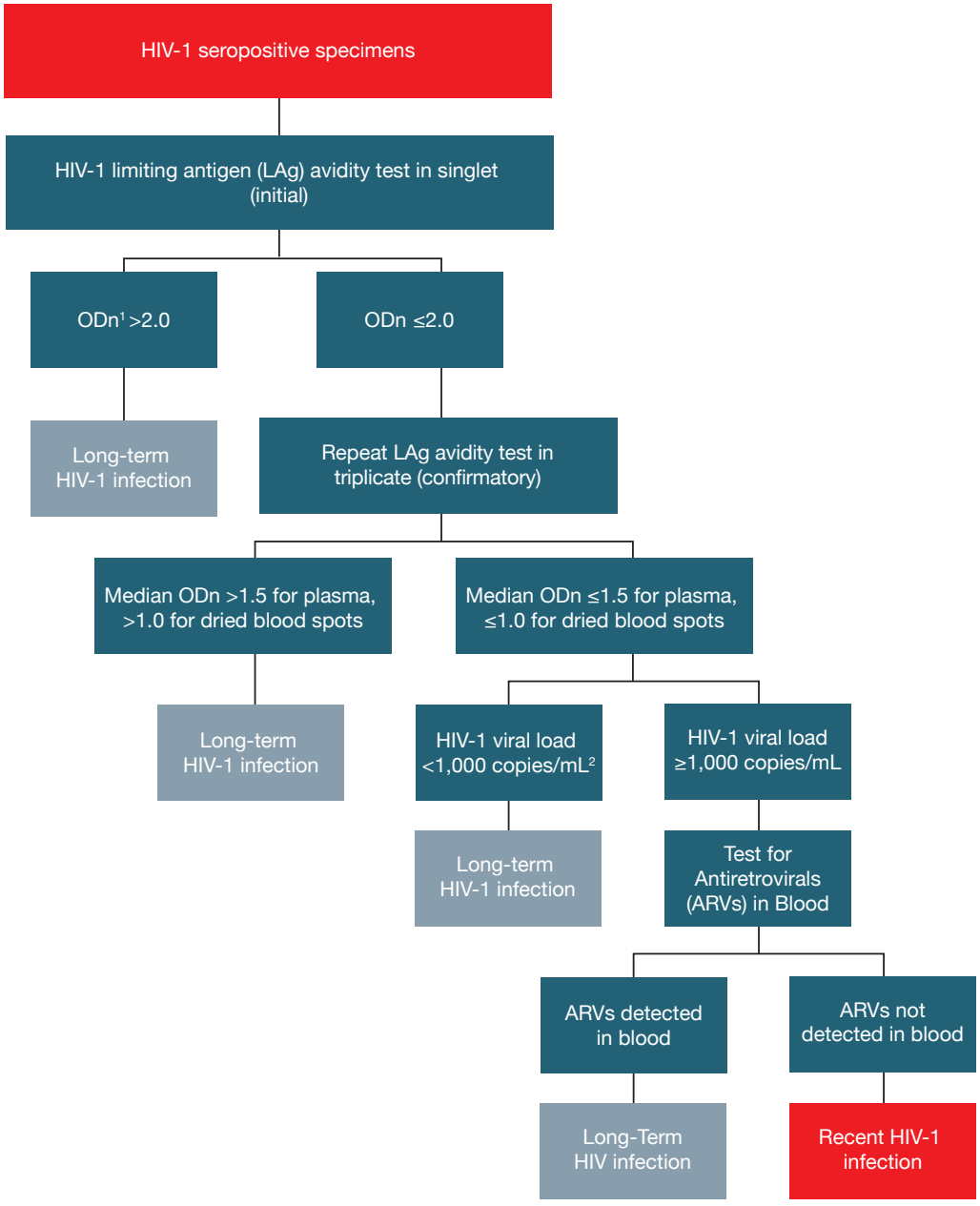


Figure 2.5.A
HIV-1 recent infection testing algorithm (LAg/VL algorithm), ages 18 months to 64 years, KENPHIA 2018

[1]ODn: normalized optical density; [2]mL: milliliter

The Sedia HIV-1 LAg-Avidity EIA (Sedia Biosciences Corporation, Portland, Oregon, United States) was used on plasma specimens, while the Maxim HIV-1 Limiting Antigen-Avidity Dried Blood Spot (DBS) EIA (Maxim Biomedical, Bethesda, Maryland, United States) was used on DBS specimens. Using LAg avidity testing, plasma specimens with median normalized optical density (ODn) ≤ 1.5 and DBS specimens with median ODn ≤ 1.0 were classified as potential recent infections and their VL results were assessed. In the non-ARV adjusted algorithm, specimens with VL < 1,000 copies/mL were classified as long-term infections, while those with VL ≥ 1,000 copies/mL were classified as recent infections (Figure 2.5.A). In the ARV-adjusted algorithm, specimens with VL ≥ 1,000 copies/mL and detectable ARVs were classified as long-term infections. Specimens with VL ≥ 1,000 copies/mL and without detectable ARVs were classified as recent infections (Figure 2.5.B).

Figure 2.5.B
HIV-1 recent infection testing algorithm (LAg/VL/ARV algorithm), ages 18 months to 64 years, KENPHIA 2018



[1]ODn: normalized optical density; [2]mL: milliliter

Detection of Antiretroviral Drug Resistance

HIV resistance to ARVs was assessed for all HIV-positive participants aged 18 months and older classified as recent HIV infections and a small subset of confirmed long-term infections. In addition, all infants younger than the age of 18 months with confirmed infection were evaluated to determine vertical transmission of ARV-resistant HIV. Mutations in the HIV protease and reverse transcriptase genes that confer ARV drug resistance (according to the Stanford University HIV Drug Resistance Database) were detected simultaneously using the WHO-approved Thermo Fisher Scientific HIV-1 Drug Resistance Test Kit (Thermo Fisher Scientific, Waltham, Massachusetts, United States). HIV DR specimens were tested at the KEMRI HIV Research Laboratory.

Detection of Antiretrovirals

Qualitative screening for detectable concentrations of selected ARVs was conducted on DBS specimens from all HIV-positive adults and children by means of high-resolution liquid chromatography coupled with tandem mass spectrometry. The method used for ARV detection was a modified version of the methodology described by Koal et al.[1] This qualitative assay is highly specific, as it separates the parent compound from the fragments, and is highly sensitive, with a limit of detection of 0.02 µg/mL for each drug, and a signal-to-noise ratio of at least 5:1 for all drugs. As detection of all ARVs in use at the time of the survey was cost-prohibitive, testing for adults aged 15 years and older was limited to three ARVs: efavirenz, nevirapine and atazanavir. For children aged 18 months to 14 years, efavirenz, nevirapine and lopinavir were selected as markers for the most commonly prescribed first- and second-line regimens. These ARVs were also selected based on their relatively long half-lives, allowing for a longer period of detection following intake.

Detection of ARVs indicates participant use of a given drug at the time of blood collection. Results below the limit of detection among individuals who reported taking ART indicate that there was no recent exposure to the regimen and that adherence to a prescribed regimen is suboptimal, but cannot be interpreted as "not on ART." In addition, given the limited number of ARVs selected for detection, their absence could not rule out the use of other ART regimens that do not include them.

ARV detection was performed by the Division of Clinical Pharmacology of the Department of Medicine at the University of Cape Town, South Africa.

2.6 DATA PROCESSING AND ANALYSIS

Raw data (questionnaire and field laboratory results) from the field were first sent to a local in-country cloud server before being pushed to the PHIA cloud server (Westat) on a daily basis after stripping personal identifying information–name, phone number/email address, GPS coordinates. Data were encrypted using the hyper-text transfer protocol secure (https) during transmission, which is the current standard for secure transfer of "data-in-motion."

Data cleaning was conducted using SAS 9.4 (SAS Institute Inc., Cary, North Carolina, United States). Laboratory data were cleaned and merged with the final questionnaire database using unique specimen barcodes and study identification numbers.

All results presented in the report are based on weighted estimates unless otherwise noted. Analysis weights accounted for sample selection probabilities and were adjusted for nonresponse and noncoverage. Nonresponse adjusted weights were calculated for households, individual interviews, and individual blood draws in a hierarchical form. Adjustment for nonresponse for initial individual and blood-level weights was based on the development of weighting adjustment cells defined by a combination of variables that are potential predictors of response and HIV status. The nonresponse adjustment cells were constructed using chi-square automatic interaction detection, or Chi-square Automatic Interaction Detector (CHAID), algorithm. The cells were defined based on data from the household interview for the adjustment of individual-level weights, and from both the household and individual interviews for the adjustment of blood sample-level weights. Post-stratification adjustments were implemented to compensate for noncoverage in the sampling process. Finally, weights were normalized to sum to the total sample size. Again, Appendix A describes the sample design, while Appendix C provides sampling errors for estimates for selected key indicators presented in this report. For a more detailed explanation of the sampling and weighting processes, see the Sampling and Weighting Technical Report, available on the PHIA website at https://phia-data.icap.columbia.edu/.

Descriptive analyses of RR, characteristics of respondents, HIV prevalence, HIV testing, self-reported HIV status, self-reported ART, VLS, prevention of mother-to-child transmission (PMTCT) indicators, and sexual behavior were conducted using SAS 9.4.

Incidence estimates were based on the number of HIV infections identified as recent with the HIV-1 LAg avidity plus VL algorithm and the HIV-1 LAg avidity plus VL and ARV detection algorithm, and obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays, with assay performance characteristics of mean duration of recent infection = 130 days (95% CI: 118, 142), time cutoff = 1.0 year and percentage false recent = 0.00.

Unless otherwise noted, claims of statistically significant comparisons in the report were based upon nonoverlapping 95% CIs; (the CIs shown in the narrative will be available in the final release data set available on the PHIA website).

Where applicable, the UNAIDS and PEPFAR indicators corresponding to a given table are specified at the end of the table. The UNAIDS Global Monitoring indicators refer to the 2020 release of the indicators, available at: https://www.unaids.org/sites/default/files/media_asset/global-aids-monitoring_en.pdf and the PEPFAR indicators are available at: https://www.state.gov/wp-content/uploads/2019/10/PEPFAR-MER-Indicator-Reference-Guide-Version-2.4-FY20.pdf.

2.7 RESPONSE RATES

Household response rates were calculated using the American Association for Public Opinion Research Response Rate 4 method (AAPOR, 2016) as the number of complete and incomplete household interviews among all eligible households and those estimated to be eligible among those with unknown eligibility (households not located, not attempted, or unreachable). Vacant and destroyed households, nonresidential units, and household units with no eligible respondents were considered not eligible and excluded from the calculation.

Individual interview RRs were calculated as the number of individuals who were interviewed divided by the number of individuals eligible to participate in the survey. Blood draw RRs for adults were calculated as the number of individuals who provided blood divided by the number of individuals who were interviewed. Blood draw RRs for children were calculated as the number of individuals who provided blood divided by the number of individuals eligible to participate in the survey. All RRs presented below are weighted unless otherwise specified.

Of the 19,996 selected households, 18,226 and 16,918 were occupied and interviewed, respectively. The overall household RR (unweighted) was 92.4%. After adjusting for differential sampling probabilities and nonresponse, the overall household RR was 91.8% (Table 2.7.A).

A total of 33,267 individuals aged 15-64 years (14,840 men and 18,427 women) were eligible to participate in the survey. A total of 30,384 individuals aged 15-64 years participated in the individual interview: interview RRs were 86.1% for men and 94.3% for women. Among those individuals aged 15-64 years who were interviewed, 89.9% of men and 90.7% of women also had their blood drawn (Table 2.7.B).

Children in one-third of the selected households were eligible for blood draw. Of the 6,385 eligible children aged 0-9 years, 83.5% of boys and 82.3% of girls had their blood drawn. A total of 3,041 young adolescents aged 10-14 years were eligible to participate in the survey, 1,550 boys and 1,491 girls. Interview response rates were 86.8% among the boys and 89.4% among the girls. Among the young adolescents who were interviewed, 96.9% of boys and 94.2% of girls had their blood drawn (Table 2.7.B).

Table 2.7.A Household response rates

Number of households selected, occupied, and interviewed and household response rates (unweighted and weighted), by residence, KENPHIA 2018

Results	Residence		Total
	Urban	Rural	
Household interviews			
Households selected	8,325	11,671	19,996
Households occupied	7,397	10,829	18,226
Households interviewed	6,589	10,329	16,918
Household response rate[1] (unweighted)	88.6	95.1	92.4
Household response rate[1] (weighted)	86.9	95.0	91.8

[1]Household response rate was calculated using the American Association for Public Opinion Research (AAPOR) Response Rate 4 (RR4) method: http://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions20169theditionfinal.pdf.

Table 2.7.B Interview and blood draw response rates

Number of eligible individuals and response rates for individual interviews[1] and blood draws[2] (unweighted and weighted), by residence and sex, KENPHIA 2018

Results	Residence				Total by sex		Total
	Urban		Rural				
Eligible individuals, ages 0-9 years	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	
Number of eligible individuals	995	935	2,334	2,121	3,329	3,056	6,385
Blood draw response rate (unweighted)	80.3	78.8	85.3	83.8	83.8	82.3	83.1
Blood draw response rate (weighted)	77.8	77.3	85.9	84.5	83.5	82.3	82.9
Eligible individuals, ages 10-14 years							
Number of eligible individuals	462	432	1,088	1,059	1,550	1,491	3,041
Interview response rate (unweighted)	87.4	88.0	87.1	90.2	87.2	89.5	88.4
Interview response rate (weighted)	87.5	87.6	86.6	90.0	86.8	89.4	88.1
Blood draw response rate (unweighted)	95.0	92.6	96.7	95.1	96.2	94.4	95.3
Blood draw response rate (weighted)	95.9	93.2	97.3	94.6	96.9	94.2	95.6
Eligible individuals, ages 15-24 years							
Number of eligible individuals	1,771	2,199	3,134	3,484	4,905	5,683	10,588
Interview response rate (unweighted)	87.7	92.5	86.9	92.1	87.2	92.3	89.9
Interview response rate (weighted)	87.3	92.4	86.7	92.0	86.9	92.2	89.7
Blood draw response rate (unweighted)	90.1	90.5	93.4	92.5	92.2	91.7	91.9
Blood draw response rate (weighted)	89.1	87.5	93.5	92.7	92.0	90.7	91.3
Eligible individuals, ages 15-49 years							
Number of eligible individuals	4,976	6,042	7,605	9,735	12,581	15,777	28,358
Interview response rate (unweighted)	84.5	93.9	87.3	94.9	86.2	94.5	90.8
Interview response rate (weighted)	82.8	92.7	87.0	94.8	85.4	94.0	90.2
Blood draw response rate (unweighted)	88.0	90.0	92.0	92.5	90.5	91.5	91.1
Blood draw response rate (weighted)	85.7	87.9	91.9	92.5	89.5	90.7	90.2
Eligible individuals, ages 15-64 years							
Number of eligible individuals	5,698	6,851	9,142	11,576	14,840	18,427	33,267
Interview response rate (unweighted)	85.0	94.1	88.2	95.3	87.0	94.8	91.3
Interview response rate (weighted)	83.2	93.0	87.9	95.2	86.1	94.3	90.6

Table 2.7.B Interview and blood draw response rates (continued)

Number of eligible individuals and response rates for individual interviews[1] and blood draws[2] (unweighted and weighted), by residence and sex, KENPHIA 2018

Results	Residence				Total by sex		Total
	Urban		Rural				
Blood draw response rate (unweighted)	88.4	90.0	92.3	92.6	90.8	91.7	91.3
Blood draw response rate (weighted)	86.2	87.4	92.2	92.6	89.9	90.7	90.4
Overall response rate (unweighted)	66.6	75.1	77.4	83.9	73.0	80.4	77.1

[1]Interview response rate = number of individuals interviewed/number of eligible individuals.
[2]Blood draw response rate = number of individuals who provided blood/number of individuals interviewed.

Table 2.7.C Response rates by county

Household, interview, blood draw, and overall response rates (unweighted), by county, KENPHIA 2018

County	Household			Individual Interview (10-64 years)			Blood Draw (0-64 years)			Overall Response Rate (Household RR x Blood Draw)
	N	n	Response Rate	N	n	Response Rate	N	n	Response Rate	
TOTAL	18,226	16,918	92.8	36,308	33,071	91.1	42,693	35,610	83.4	77.4
Baringo	256	235	91.8	474	434	91.6	561	469	83.6	76.7
Bomet	451	435	96.5	980	893	91.1	1,153	980	85.0	82.0
Bungoma	443	421	95.0	1,008	935	92.8	1,198	1,062	88.6	84.2
Busia	349	345	98.9	724	697	96.3	898	847	94.3	93.2
Elgeyo-Marakwet	286	279	97.6	718	693	96.5	806	762	94.5	92.2
Embu	384	371	96.6	825	771	93.5	915	797	87.1	84.2
Garissa	269	257	95.5	630	613	97.3	799	679	85.0	81.2
Homa Bay	477	459	96.2	994	923	92.9	1,179	1,044	88.5	85.2
Isiolo	364	338	92.9	685	606	88.5	854	677	79.3	73.6
Kajiado	348	309	88.8	675	594	88.0	790	617	78.1	69.3
Kakamega	388	365	94.1	790	712	90.1	931	793	85.2	80.1
Kericho	445	413	92.8	948	824	86.9	1,100	835	75.9	70.5
Kiambu	299	270	90.3	523	443	84.7	596	422	70.8	63.9
Kilifi	354	290	81.9	696	598	85.9	833	615	73.8	60.5
Kirinyaga	433	417	96.3	771	714	92.6	874	743	85.0	81.9
Kisii	354	343	96.9	791	742	93.8	922	831	90.1	87.3
Kisumu	459	403	87.8	844	710	84.1	978	782	80.0	70.2
Kitui	474	458	96.6	1,174	1,046	89.1	1,354	1,064	78.6	75.9
Kwale	299	264	88.3	719	575	80.0	838	549	65.5	57.8
Laikipia	373	342	91.7	616	550	89.3	701	546	77.9	71.4
Lamu	321	280	87.2	642	568	88.5	739	544	73.6	64.2
Machakos	457	422	92.3	1,039	963	92.7	1,158	973	84.0	77.6
Makueni	321	293	91.3	658	620	94.2	741	638	86.1	78.6
Mandera	278	257	92.4	478	457	95.6	632	522	82.6	76.4
Marsabit	250	235	94.0	421	375	89.1	532	411	77.3	72.6
Meru	476	463	97.3	1,108	1,022	92.2	1,249	1,064	85.2	82.9
Migori	488	469	96.1	1,163	1,092	93.9	1,430	1,313	91.8	88.2

Table 2.7.C Response rates by county (continued)

Household, interview, blood draw, and overall response rates (unweighted), by county, KENPHIA 2018

County	Household			Individual Interview (10-64 years)			Blood Draw (0-64 years)			Overall Response Rate (Household RR x Blood Draw)
	N	n	Response Rate	N	n	Response Rate	N	n	Response Rate	
Mombasa	425	340	80.0	617	533	86.4	664	476	71.7	57.3
Murang'a	365	352	96.4	613	572	93.3	692	585	84.5	81.5
Nairobi	1,170	945	80.8	1,714	1,489	86.9	1,925	1,454	75.5	61.0
Nakuru	411	388	94.4	721	621	86.1	834	631	75.7	71.4
Nandi	452	439	97.1	1,034	979	94.7	1,199	1,067	89.0	86.4
Narok	404	371	91.8	753	663	88.0	961	749	77.9	71.6
Nyamira	334	317	94.9	638	602	94.4	735	667	90.7	86.1
Nyandarua	428	397	92.8	822	712	86.6	939	691	73.6	68.3
Nyeri	438	417	95.2	728	681	93.5	791	654	82.7	78.7
Samburu	274	265	96.7	459	425	92.6	619	521	84.2	81.4
Siaya	443	409	92.3	828	750	90.6	983	818	83.2	76.8
Taita-Taveta	319	305	95.6	631	585	92.7	724	632	87.3	83.5
Tana River	283	262	92.6	600	570	95.0	748	663	88.6	82.1
Tharaka-Nithi	357	349	97.8	805	770	95.7	920	840	91.3	89.3
Trans-Nzoia	280	264	94.3	603	560	92.9	703	613	87.2	82.2
Turkana	465	440	94.6	945	858	90.8	1,216	1,053	86.6	81.9
Uasin Gishu	371	355	95.7	710	673	94.8	848	770	90.8	86.9
Vihiga	356	344	96.6	736	655	89.0	851	705	82.8	80.1
Wajir	273	249	91.2	528	511	96.8	679	593	87.3	79.7
West Pokot	282	277	98.2	729	692	94.9	901	849	94.2	92.6

Unweighted figures.
N = Eligible number.
n = Number responding.

2.8 REFERENCES

1. Koal T, Burhenne H, Römling R, Svoboda M, Resch K, Kaever V. Quantification of antiretroviral drugs in dried blood spot samples by means of liquid chromatography/tandem mass spectrometry. *Rapid Commun Mass Spectrom*. 2005;19(21): 2995-3001.

2. American Association for Public Opinion Research (AAPOR). *Standard Definitions: Final Dispositions of Case Codes and Outcome Rates for Surveys. 9th edition*. AAPOR; 2016. http://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions20169theditionfinal.pdf. Accessed May 18, 2020.

3. SURVEY HOUSEHOLD CHARACTERISTICS

This chapter describes survey household characteristics

Median size of rural household (total 5)

3 adults (ages 15-64)

2 children (ages 0-14)

Median size of urban household (total 3)

2 adults (ages 15-64)

1 child (ages 0-14)

In Kenya, 9.1% of households had at least 1 HIV-positive member

5.0% of male-headed households were headed by a man living with HIV

13.8% of female-headed households were headed by a woman living with HIV

3.1 BACKGROUND

This chapter provides a description of the basic demographic characteristics of the population who were interviewed during the KENPHIA survey. This knowledge is essential in understanding health outcomes of various population demographics in the succeeding chapters of this report. The survey assessed key indicators and outcomes for children (defined as those under the age of 15 years), adolescents (those aged 10-14 years), and adults (defined as those aged 15-64 years). The majority of key indicators in this report were analyzed based on these demographics and socioeconomic characteristics as the background characteristics.

3.2 RESULTS

The following tables and figures describe the household characteristics in KENPHIA, such the number of children and adults in a household, and the distribution by age and sex in the households, and by urban and rural setting. In addition, data are presented on the prevalence of HIV-affected households in Kenya, and within rural and urban settings, and on the burden of HIV within affected households.

Table 3.A Household composition

Percent distribution of households by sex of head of household; median (Q1, Q3) size of household and median (Q1, Q3) number of children under 18 years of age, by residence, KENPHIA 2018

Characteristic	Residence				Total	
	Urban		Rural			
	Percent	Number	Percent	Number	Percent	Number
Head of household						
Male	64.1	4,157	65.9	6,669	65.2	10,826
Female	35.9	2,432	34.1	3,660	34.8	6,092
Total	100.0	6,589	100.0	10,329	100.0	16,918

Characteristic	Residence				Total	
	Urban		Rural			
	Median	Q1, Q3	Median	Q1, Q3	Median	Q1, Q3
Size of households	3	(2, 5)	5	(3, 6)	4	(2, 6)
Number of children under 18 years of age	1	(0, 3)	2	(1, 4)	2	(0, 3)

Weighted figures calculated using hhwt0.

Figure 3.A
Distribution of the de facto population by sex and age, KENPHIA 2018

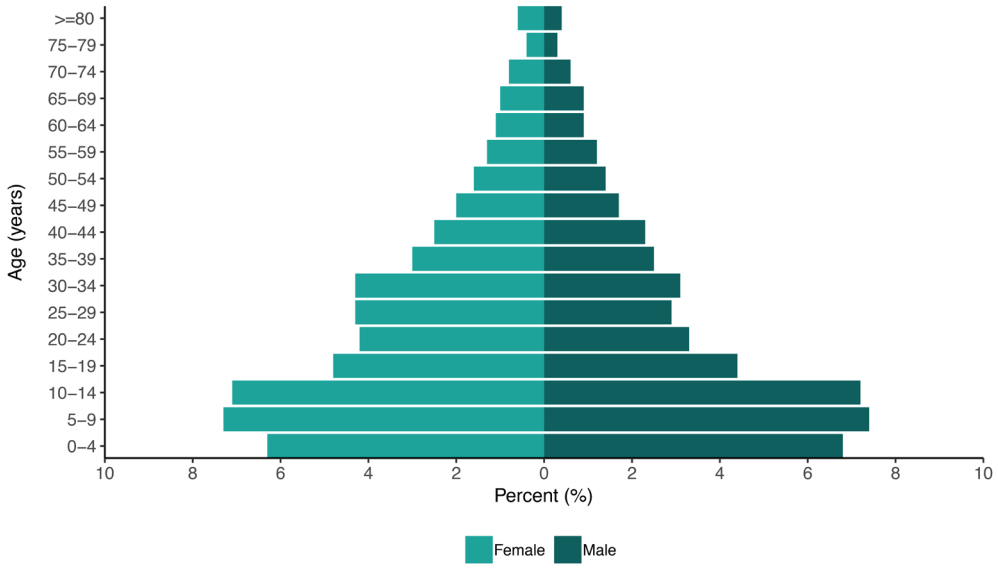


Table 3.B Distribution of the de facto household population

Percent distribution of the de facto household population, by five-year age groups and sex, KENPHIA 2018

Age	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
0-4	6.8	4,652	6.3	4,319	13.1	8,971
5-9	7.4	5,050	7.3	4,994	14.7	10,044
10-14	7.2	4,795	7.1	4,587	14.3	9,382
15-19	4.4	2,948	4.8	3,023	9.2	5,971
20-24	3.3	2,001	4.2	2,684	7.5	4,685
25-29	2.9	1,715	4.3	2,735	7.2	4,450
30-34	3.1	1,886	4.3	2,635	7.4	4,521
35-39	2.5	1,567	3.0	1,894	5.6	3,461
40-44	2.3	1,454	2.5	1,590	4.8	3,044
45-49	1.7	1,085	2.0	1,256	3.6	2,341
50-54	1.4	895	1.6	1,039	3.0	1,934
55-59	1.2	742	1.3	850	2.5	1,592
60-64	0.9	631	1.1	761	2.1	1,392
65-69	0.9	543	1.0	640	1.8	1,183
70-74	0.6	407	0.8	539	1.3	946
75-79	0.3	223	0.4	288	0.8	511
≥80	0.4	258	0.6	404	1.0	662
Total	47.3	30,852	52.7	34,238	100.0	65,090

Weighted figures calculated using hhwt0.

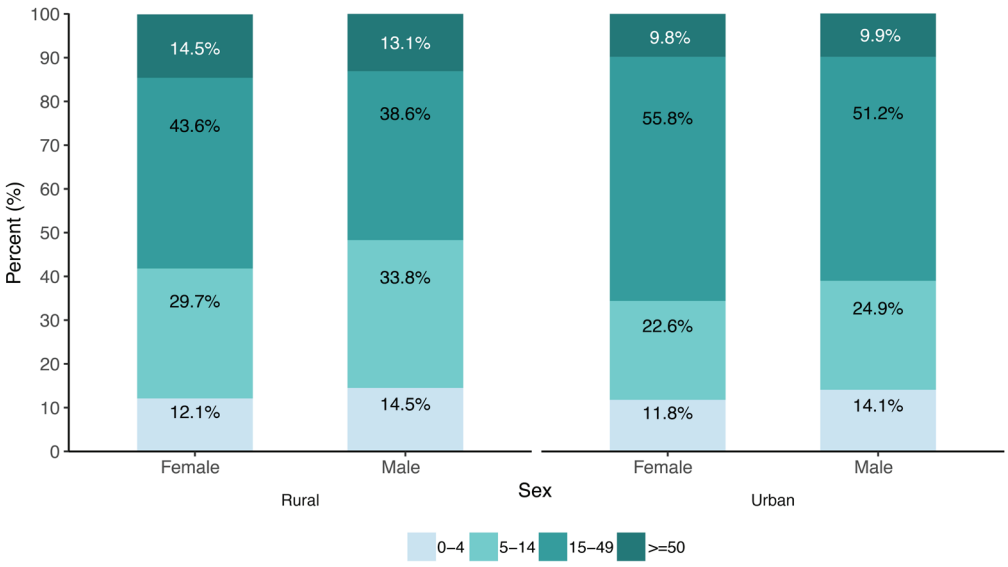


Figure 3.B
Household population by age, sex, and residence, KENPHIA 2018

Table 3.C De facto household population by age, sex, and residence

Percent distribution of the household population, by sex, age, and residence, KENPHIA 2018

Age	Urban					
	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
0-4	14.1	1,466	11.8	1,371	12.9	2,837
5-14	24.9	2,783	22.6	2,730	23.7	5,513
15-49	51.2	4,997	55.8	6,059	53.6	11,056
≥50	9.9	1,062	9.8	1,267	9.8	2,329
5-9	12.9	1,431	11.7	1,421	12.3	2,852
10-14	12.0	1,352	10.9	1,309	11.4	2,661
15-24	17.2	1,782	20.0	2,209	18.7	3,991
Total	100.0	10,308	100.0	11,427	100.0	21,735

Age	Rural					
	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
0-4	14.5	3,186	12.1	2,948	13.3	6,134
5-14	33.8	7,062	29.7	6,851	31.7	13,913
15-49	38.6	7,659	43.6	9,758	41.2	17,417
≥50	13.1	2,637	14.5	3,254	13.8	5,891
5-9	16.9	3,619	15.0	3,573	15.9	7,192
10-14	16.9	3,443	14.8	3,278	15.8	6,721
15-24	15.9	3,167	15.7	3,498	15.8	6,665
Total	100.0	20,544	100.0	22,811	100.0	43,355

Weighted figures calculated using hhwt0.

Table 3.D Prevalence of HIV-affected households

Percentage of households with at least one HIV-positive household member, by residence, KENPHIA 2018

Residence	Percent	Number
Urban	8.3	5,686
Rural	9.5	8,998
Total	9.1	14,684

Weighted figures calculated using hhwt0.

Figure 3.C
Prevalence of HIV-affected households by residence, KENPHIA 2018

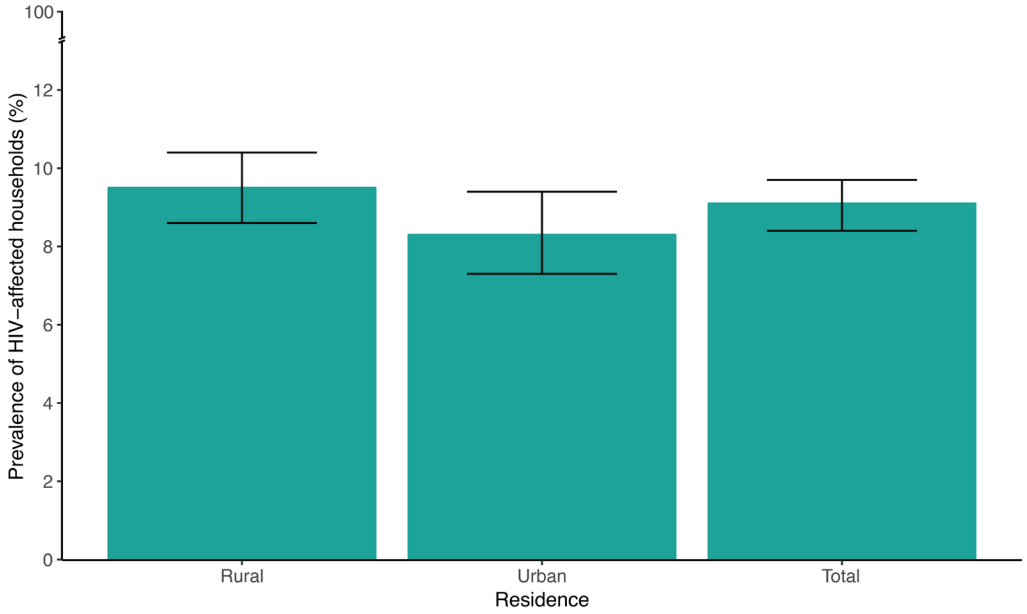


Table 3.E HIV-affected households by number of HIV-positive members

Among households with at least one HIV-positive household member, percent distribution of households by number of HIV-positive household members, by residence, KENPHIA 2018

Number of HIV-positive household members	Residence				Total	
	Urban		Rural			
	Percent	Number	Percent	Number	Percent	Number
1	88.3	473	80.9	632	83.5	1,105
2	11.5	69	16.7	134	14.9	203
3	0.2	2	2.1	17	1.4	19
4	0.0	0	0.3	3	0.2	3
5	0.0	0	0.0	0	0.0	0
≥6	0.0	0	0.0	0	0.0	0
Total	100.0	544	100.0	786	100.0	1,330

Weighted figures calculated using hhwt0.

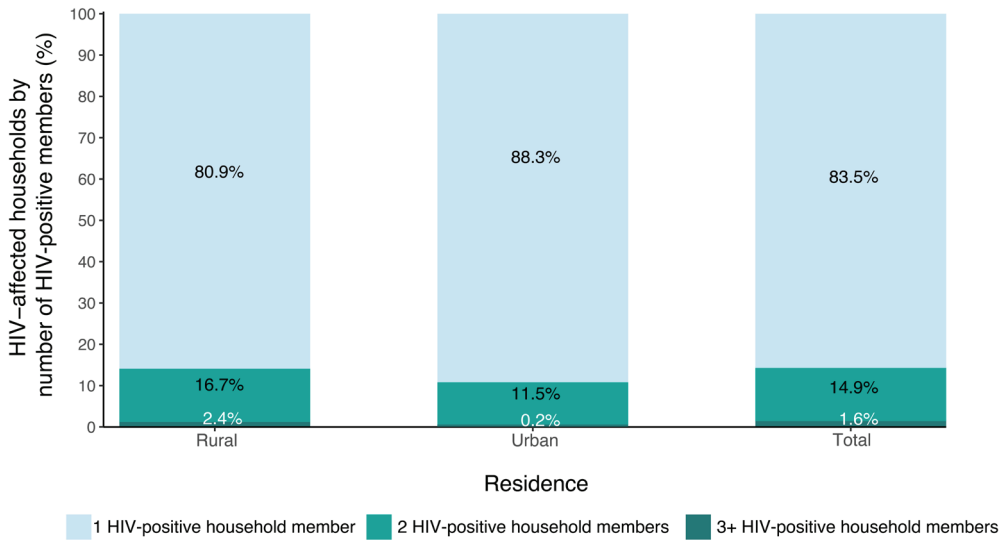


Figure 3.D
HIV-affected households by number of HIV-positive members and residence, KENPHIA 2018

Table 3.F Prevalence of households with an HIV-positive head of household

Percentage of households with an HIV-positive head of household, by sex of head of household, KENPHIA 2018

Sex of head of household	Percent	Number
Male	5.0	6,682
Female	13.8	4,273

Weighted figures calculated using hhwt0.

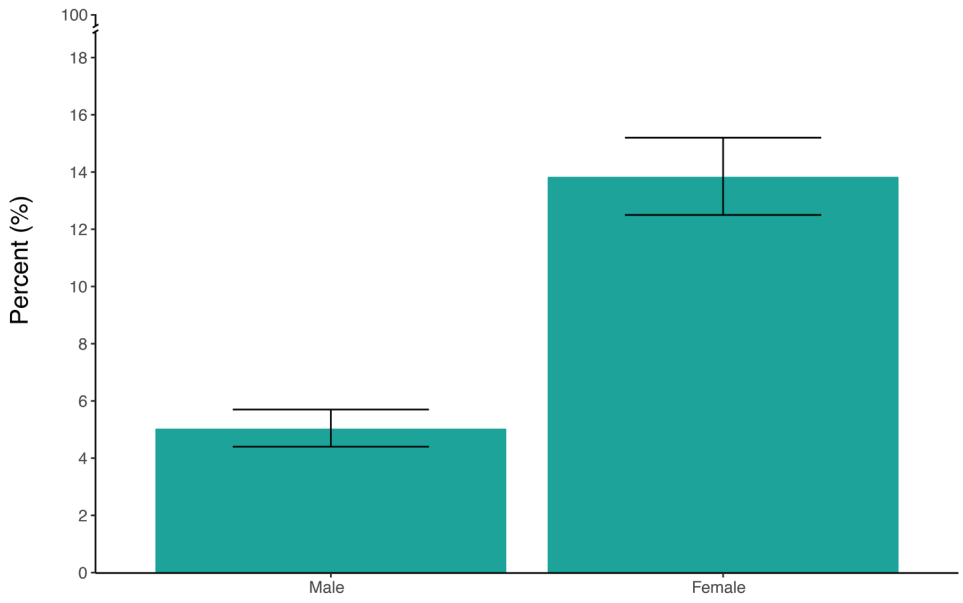


Figure 3.E
Prevalence of households with an HIV-positive head of household by sex, KENPHIA 2018

4. SURVEY RESPONDENT CHARACTERISTICS

This chapter provides a description of the basic demographic and socioeconomic characteristics of the population who were interviewed during the KENPHIA survey

Among adults

(ages 15-64)

62.0%
lived in rural areas

38.0%
lived in urban areas

36.5%
had never married

48.6%
were married monogamously

4.5%
were married polygamously

6.0%
of the women were widowed

0.8%
of the men were widowed

4.1 BACKGROUND

KENPHIA assessed key indicators and outcomes for children (defined as those under the age of 15 years), adolescents (those aged 10-14 years), and adults (defined as those aged 15-64 years). To provide context for these outcomes, this chapter summarizes the basic demographic and socioeconomic characteristics of survey respondents. Most key indicators in this report were stratified according to these characteristics.

4.2 RESULTS

The following tables present the demographic characteristics of KENPHIA's respondents.

Table 4.A Demographic characteristics of the adult population

Percent distribution of the population aged 15-64 years, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Residence						
Urban	38.6	4,843	37.3	6,447	38.0	11,290
Rural	61.4	8,065	62.7	11,029	62.0	19,094
Marital status						
Never married	42.4	4,958	30.6	4,447	36.5	9,405
Married/cohabitating – monogamous	48.3	6,493	48.9	8,478	48.6	14,971
Married/cohabitating – polygamous	2.9	485	6.2	1,310	4.5	1,795
Divorced or separated	5.7	746	8.3	1,418	7.0	2,164
Widowed	0.8	150	6.0	1,248	3.4	1,398
Education						
No primary	3.7	744	9.0	2,284	6.4	3,028
Incomplete primary	43.2	5,941	46.3	8,470	44.8	14,411
Complete primary	36.5	4,397	32.5	4,879	34.5	9,276
Secondary	16.5	1,814	12.3	1,827	14.4	3,641
Wealth quintile						
Lowest	19.4	3,184	20.9	4,736	20.2	7,920
Second	21.1	2,852	21.9	3,823	21.5	6,675
Middle	21.4	2,798	20.2	3,570	20.8	6,368
Fourth	20.4	2,507	18.6	3,097	19.5	5,604
Highest	17.7	1,566	18.4	2,246	18.1	3,812
Religion						
Roman Catholic	22.7	2,967	20.3	3,608	21.4	6,575
Protestant/Other Christian	64.0	7,684	70.2	11,383	67.2	19,067
Muslim	7.7	1,511	7.5	2,099	7.6	3,610
No Religion	4.7	622	1.3	237	3.0	859
Other	1.0	118	0.7	147	0.9	265
Employment status (previous 12 months)						
Employed[1]	61.6	7,501	38.5	6,220	49.9	13,721
Not employed	38.4	5,403	61.5	11,251	50.1	16,654

Table 4.A Demographic characteristics of the adult population (continued)

Percent distribution of the population aged 15-64 years, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Had been away from home for more than three days in the six months before the survey						
Yes	27.0	3,384	20.1	3,321	23.5	6,705
No	73.0	9,522	79.9	14,154	76.5	23,676
Circumcision status						
Circumcised	92.0	11,731	NA	NA	NA	NA
Medical circumcision	54.5	6,463	NA	NA	NA	NA
Nonmedical circumcision	37.2	5,231	NA	NA	NA	NA
Unknown whether medical or nonmedical	(0.3)	37	NA	NA	NA	NA
Uncircumcised	7.9	1,163	NA	NA	NA	NA
Unknown	*	14	NA	NA	NA	NA
Age						
15-19	19.6	2,539	18.4	2,717	19.0	5,256
20-24	16.7	1,739	16.5	2,526	16.6	4,265
25-29	14.6	1,448	15.2	2,596	14.9	4,044
30-34	12.5	1,585	13.5	2,530	13.0	4,115
35-39	10.3	1,325	10.9	1,817	10.6	3,142
40-44	8.2	1,250	7.9	1,520	8.0	2,770
45-49	6.5	958	6.3	1,204	6.4	2,162
50-54	4.9	808	4.8	1,003	4.9	1,811
55-59	3.8	678	3.7	822	3.7	1,500
60-64	2.8	578	2.8	741	2.8	1,319
Total 15-24	36.3	4,278	34.9	5,243	35.6	9,521
Total 25-49	52.1	6,566	53.8	9,667	53.0	16,233
Total 15-49	88.5	10,844	88.7	14,910	88.6	25,754
Total 50-64	11.5	2,064	11.3	2,566	11.4	4,630
Total 15-64	100.0	12,908	100.0	17,476	100.0	30,384

[1]Answered yes to the question "Have you done any work in the last 12 months for which you received a paycheck, cash or goods as payment?"
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 4.B Demographic characteristics of the adult population by county

Percent distribution of the population aged 15-64 years, by sex and county, KENPHIA 2018

County	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Baringo	1.3	183	1.1	218	1.2	401
Bomet	2.1	350	2.0	460	2.0	810
Bungoma	3.5	344	3.5	466	3.5	810
Busia	1.6	263	1.8	363	1.7	626
Elgeyo-Marakwet	1.2	279	1.2	379	1.2	658
Embu	1.9	299	2.0	426	2.0	725
Garissa	0.8	244	0.9	307	0.8	551
Homa Bay	2.6	352	2.7	491	2.6	843
Isiolo	0.4	223	0.4	337	0.4	560
Kajiado	1.9	247	1.7	303	1.8	550
Kakamega	3.8	237	4.5	398	4.2	635
Kericho	2.3	349	1.9	422	2.1	771
Kiambu	4.9	168	5.5	249	5.2	417
Kilifi	3.2	210	3.7	335	3.4	545
Kirinyaga	1.7	294	1.7	382	1.7	676
Kisii	2.5	290	2.6	380	2.5	670
Kisumu	2.3	244	2.7	402	2.5	646
Kitui	2.6	395	2.8	552	2.7	947
Kwale	1.3	210	1.5	324	1.4	534
Laikipia	1.2	218	1.2	302	1.2	520
Lamu	0.2	210	0.3	304	0.3	514
Machakos	4.9	379	4.7	510	4.8	889
Makueni	1.7	238	1.7	325	1.7	563
Mandera	0.5	161	0.6	257	0.5	418
Marsabit	0.5	124	0.6	224	0.5	348
Meru	4.9	420	4.6	521	4.7	941
Migori	2.1	387	2.4	571	2.2	958
Mombasa	3.5	249	2.7	266	3.1	515
Murang'a	2.3	253	2.0	278	2.2	531
Nairobi	9.7	622	9.1	783	9.4	1,405
Nakuru	3.6	258	3.2	333	3.4	591
Nandi	2.3	417	2.1	484	2.2	901
Narok	1.6	254	1.6	344	1.6	598
Nyamira	1.3	229	1.5	327	1.4	556
Nyandarua	1.5	263	1.6	392	1.6	655
Nyeri	1.8	299	1.6	346	1.7	645
Samburu	0.3	159	0.3	228	0.3	387
Siaya	2.2	275	2.2	416	2.2	691
Taita-Taveta	0.9	259	0.8	285	0.9	544
Tana River	0.6	225	0.6	295	0.6	520
Tharaka-Nithi	1.4	337	1.3	390	1.3	727
Trans-Nzoia	2.4	200	2.5	304	2.5	504

Table 4.B Demographic characteristics of the adult population by county (continued)

Percent distribution of the population aged 15-64 years, by sex and county, KENPHIA 2018

County	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Turkana	1.1	314	1.2	461	1.2	775
Uasin Gishu	2.7	292	2.3	336	2.5	628
Vihiga	1.5	240	1.7	349	1.6	589
Wajir	0.5	177	0.6	290	0.5	467
West Pokot	1.1	268	1.0	361	1.0	629
Total	100.0	12,908	100.0	17,476	100.0	30,384

Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 4.C Demographic characteristics of the pediatric population

Percent distribution of children aged 0-14 years, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Age						
0-17 months	9.3	410	9.1	353	9.2	763
18-59 months	27.6	1,155	27.8	1,012	27.7	2,167
5-9 years	33.6	1,671	33.6	1,602	33.6	3,273
10-14 years	29.5	1,352	29.4	1,335	29.5	2,687
Residence						
Urban	28.5	1,374	29.4	1,290	29.0	2,664
Rural	71.5	3,214	70.6	3,012	71.0	6,226
County						
Baringo	1.2	63	1.2	57	1.2	120
Bomet	2.5	138	2.1	115	2.3	253
Bungoma	5.0	171	4.2	142	4.6	313
Busia	2.8	129	2.7	116	2.8	245
Elgeyo-Marakwet	0.8	58	1.0	64	0.9	122
Embu	1.6	73	1.3	62	1.4	135
Garissa	1.3	124	1.1	101	1.2	225
Homa Bay	3.2	130	3.1	124	3.2	254
Isiolo	0.5	111	0.5	101	0.5	212
Kajiado	1.3	76	1.4	79	1.4	155
Kakamega	5.1	108	5.4	105	5.2	213
Kericho	2.2	111	1.9	87	2.1	198
Kiambu	(3.2)	41	4.7	52	4.0	93
Kilifi	5.1	103	4.4	81	4.8	184
Kirinyaga	1.2	67	1.4	71	1.3	138
Kisii	2.7	102	2.9	101	2.8	203
Kisumu	2.8	99	2.7	91	2.7	190

Table 4.C Demographic characteristics of the pediatric population (continued)

Percent distribution of children aged 0-14 years, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Kitui	3.1	151	2.4	117	2.8	268
Kwale	1.2	74	1.5	74	1.4	148
Laikipia	1.0	63	(0.7)	48	0.9	111
Lamu	0.3	81	0.2	68	0.3	149
Machakos	3.8	95	4.1	96	4.0	191
Makueni	1.5	67	1.6	73	1.5	140
Mandera	1.2	115	0.8	75	1.0	190
Marsabit	0.8	73	0.8	65	0.8	138
Meru	4.0	105	4.7	114	4.3	219
Migori	3.1	193	3.4	206	3.3	399
Mombasa	(1.4)	32	(1.3)	30	1.4	62
Murang'a	2.1	68	1.6	52	1.9	120
Nairobi	6.8	151	6.3	138	6.5	289
Nakuru	2.6	66	3.2	74	2.9	140
Nandi	2.4	123	2.3	118	2.3	241
Narok	2.7	146	2.3	115	2.5	261
Nyamira	1.2	74	1.4	68	1.3	142
Nyandarua	1.4	77	1.7	90	1.5	167
Nyeri	(0.9)	49	1.0	50	1.0	99
Samburu	0.6	100	0.7	91	0.6	191
Siaya	2.2	106	2.1	102	2.1	208
Taita-Taveta	0.8	61	1.0	70	0.9	131
Tana River	0.8	96	0.9	97	0.8	193
Tharaka-Nithi	1.1	81	1.0	77	1.1	158
Trans-Nzoia	2.4	69	2.9	87	2.6	156
Turkana	1.7	164	1.6	180	1.6	344
Uasin Gishu	2.4	84	2.6	91	2.5	175
Vihiga	1.7	91	1.8	88	1.7	179
Wajir	0.9	103	0.9	90	0.9	193
West Pokot	1.3	126	1.2	109	1.3	235
Wealth quintile						
Lowest	30.5	1,725	29.8	1,570	30.1	3,295
Second	26.4	1,146	25.6	1,053	26.0	2,199
Middle	18.4	789	18.9	780	18.7	1,569
Fourth	14.4	608	15.2	574	14.8	1,182
Highest	10.3	319	10.5	325	10.4	644
Age						
Total 0-4	36.9	1,565	36.9	1,365	36.9	2,930
Total 0-14	100.0	4,588	100.0	4,302	100.0	8,890

Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 4.D Demographic characteristics of the young adolescent population

Percent distribution of young adolescents aged 10-14 years, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Residence						
Urban	26.2	404	26.2	380	26.2	784
Rural	73.8	948	73.8	955	73.8	1,903
County						
Baringo	*	20	*	13	(1.0)	33
Bomet	(2.7)	44	(2.1)	39	2.4	83
Bungoma	5.8	62	5.5	63	5.7	125
Busia	(2.3)	31	(2.8)	40	2.6	71
Elgeyo-Marakwet	*	15	*	20	(0.9)	35
Embu	(2.1)	28	*	18	(1.7)	46
Garissa	(1.2)	37	(0.8)	25	1.0	62
Homa Bay	(2.9)	39	(3.4)	41	3.2	80
Isiolo	*	20	(0.4)	26	(0.4)	46
Kajiado	*	17	(1.4)	27	(1.2)	44
Kakamega	(5.1)	31	(7.7)	46	6.4	77
Kericho	(2.0)	29	*	24	1.8	53
Kiambu	*	12	*	14	(3.3)	26
Kilifi	(5.0)	29	*	24	4.6	53
Kirinyaga	*	20	*	18	(1.1)	38
Kisii	(3.4)	41	(2.7)	31	3.1	72
Kisumu	(3.0)	33	(2.6)	31	2.8	64
Kitui	3.7	56	(2.5)	43	3.1	99
Kwale	*	21	*	20	(1.3)	41
Laikipia	*	15	*	15	(0.9)	30
Lamu	(0.3)	29	(0.2)	25	0.3	54
Machakos	(4.1)	36	(4.9)	38	4.5	74
Makueni	(2.5)	31	(1.6)	26	2.0	57
Mandera	(0.7)	26	*	13	(0.6)	39
Marsabit	*	10	*	17	(0.7)	27
Meru	(4.4)	36	(4.9)	45	4.6	81
Migori	3.0	59	3.9	75	3.4	134
Mombasa	*	8	*	10	*	18
Murang'a	(2.8)	25	*	16	(2.3)	41
Nairobi	(5.8)	39	(6.2)	45	6.0	84
Nakuru	*	15	*	15	(2.6)	30
Nandi	(2.1)	36	(2.5)	42	2.3	78
Narok	(2.2)	37	(1.9)	28	2.1	65
Nyamira	(1.3)	26	*	20	(1.2)	46
Nyandarua	(1.5)	29	(1.7)	28	1.6	57
Nyeri	*	20	*	16	(1.0)	36
Samburu	*	20	*	18	(0.3)	38
Siaya	(2.0)	30	(2.0)	29	2.0	59

Table 4.D Demographic characteristics of the young adolescent population (continued)

Percent distribution of young adolescents aged 10-14 years, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Taita-Taveta	*	18	*	23	(0.8)	41
Tana River	(0.8)	29	*	21	0.7	50
Tharaka-Nithi	(1.1)	25	*	18	(1.0)	43
Trans-Nzoia	*	24	(4.0)	32	3.3	56
Turkana	(1.1)	31	1.4	52	1.3	83
Uasin Gishu	*	24	*	21	(1.9)	45
Vihiga	(2.0)	32	(2.1)	34	2.1	66
Wajir	*	24	*	20	(0.6)	44
West Pokot	(1.2)	33	(0.9)	30	1.0	63
Education						
No primary education	(2.1)	30	(2.3)	41	2.2	71
Incomplete primary	94.5	1,280	93.7	1,250	94.1	2,530
Complete primary	(3.4)	41	(4.1)	42	3.7	83
Age						
Total 10-14	100.0	1,352	100.0	1,335	100.0	2,687

Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

5. HIV INCIDENCE

HIV incidence, the measure of new HIV infections in a population over time, provides important information on the status of the HIV epidemic. This chapter presents annual estimates of HIV incidence among adults at the national level

Total number of adults (ages 15-64) living with HIV

1,303,000

Number of new infections per year among adults (ages 15-64)

36,000

Number of new HIV infections per year

5.1 BACKGROUND

HIV incidence, the measure of new HIV infections in a population over time, provides important information on the status of the HIV epidemic. It can be used for effective targeted HIV prevention planning in groups that are most vulnerable to infection and to measure impact of HIV prevention programs. This chapter presents annual estimates of HIV incidence among adults (defined as ages 15-64 years in this survey) at the national level. For the purposes of this analysis, HIV incidence is expressed as the cumulative incidence or risk of new infections in a 12-month period, which is a close approximation to the instantaneous incidence rate. It is important to note that KENPHIA was not powered to estimate incidence at the regional level or across different sub-groups.

Two laboratory-based incidence testing algorithms (HIV-1 LAg avidity plus viral load and HIV-1 LAg avidity plus viral load and ARV detection) were used to distinguish recent from long-term infection, and incidence estimates were obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays, and with assay performance characteristics of a mean duration of recent infection = 130 days (95% CI: 118, 142), with time cutoff = 1.0 year and residual proportion false recent = 0.00. Survey weights were utilized for all estimates. All HIV-positive adults were tested for recent infection using HIV-1 LAg avidity assay.

Incidence estimation was based on recent/long-term (LT) classification using algorithms with limiting antigen (LAg) avidity.[1,2,3] The first testing algorithm (ie, HIV-1 LAg avidity plus VL) uses VL testing to exclude specimens with low VL and limit misclassification of persons as recent infections who are elite controllers[1] or on effective ART. The second algorithm (ie, HIV-1 LAg avidity plus VL and ARV detection) uses ARV detection to exclude specimens with high VL and limit misclassification as recent infections of persons who are on ART but have drug resistance or poor treatment adherence.

5.2 RESULTS

These tables report HIV incidence in Kenya at the time of the KENPHIA survey.

Table 5.A Annual HIV incidence using LAg/VL testing algorithm

Annual incidence of HIV among persons aged 15-49 and 15-64 years, by sex and age, using the limiting antigen (LAg) + viral load (VL) recent infection algorithm, KENPHIA 2018

Age	Male		Female		Total	
	Percentage annual incidence[1]	95% CI	Percentage annual incidence[1]	95% CI	Percentage annual incidence[1]	95% CI
15-24	0.14	0.00-0.33	0.02	0.00-0.09	0.08	0.00-0.18
25-49	0.16	0.00-0.34	0.28	0.02-0.54	0.22	0.06-0.38
25-34	0.16	0.00-0.41	0.32	0.00-0.74	0.24	0.00-0.48
35-49	0.15	0.00-0.45	0.24	0.00-0.53	0.19	0.00-0.40
15-49	0.15	0.02-0.28	0.18	0.02-0.33	0.16	0.07-0.26
50-64	0.00	0.00-0.57	0.13	0.00-0.37	0.06	0.00-0.19
15-64	0.13	0.02-0.24	0.17	0.03-0.31	0.15	0.07-0.24

[1]Relates to Global AIDS Monitoring 2020 Indicator 3.1: HIV incidence.
Note: KENPHIA was not powered to estimate incidence by sex or age with precision; therefore, the estimates by disaggregation should be interpreted with caution.

[1] Elite controllers are a small subset of people living with HIV whose immune systems are able to maintain viral load suppression for years without treatment.

Table 5.B Annual HIV incidence using LAg/VL/ARV testing algorithm

Annual incidence of HIV among persons aged 15-49 and 15-64 years, by sex and age, using the limiting antigen (LAg) + viral load (VL) + antiretroviral detection (ARV) recent infection algorithm, KENPHIA 2018

Age	Male		Female		Total	
	Percentage annual incidence[1]	95% CI	Percentage annual incidence[1]	95% CI	Percentage annual incidence[1]	95% CI
15-24	0.14	0.00-0.33	0.00	0.00-0.22	0.07	0.00-0.16
25-49	0.16	0.00-0.34	0.26	0.00-0.52	0.21	0.05-0.37
25-34	0.16	0.00-0.41	0.28	0.00-0.69	0.22	0.00-0.46
35-49	0.15	0.00-0.45	0.24	0.00-0.53	0.19	0.00-0.40
15-49	0.15	0.02-0.28	0.15	0.00-0.31	0.15	0.06-0.24
50-64	0.00	0.00-0.57	0.13	0.00-0.37	0.06	0.00-0.19
15-64	0.13	0.02-0.24	0.15	0.01-0.29	0.14	0.06-0.23

[1]Relates to Global AIDS Monitoring 2020 Indicator 3.1: HIV incidence.
Note: KENPHIA was not powered to estimate incidence by sex or age with precision; therefore, estimates by disaggregation should be interpreted with caution.

Table 5.C Number of new HIV infections per year incorporating antiretroviral (ARV) detection into the recent infection algorithm

People living with HIV and number of new HIV infections per year, among persons aged 10-14, 15-24, 15-49 and 15-64 years, by age and gender, using the limiting antigen (LAg) + viral load (VL) + ARV recent infection algorithm, KENPHIA 2018

	Total number of people living with HIV	95% CI	Number of new infections per year	95% CI
Ages 10-14				
Male	38,800	13,500-64,000	n/a	n/a
Female	22,200	6,700-37,700	n/a	n/a
Total	61,000	29,900-92,000	n/a	n/a
Ages 15-24				
Male	26,500	13,300-39,700	6,600	0-16,000
Female	105,200	80,200-13,0200	0	0-12,600
Total	131,700	103,900-159,400	6,600	0-15,400
Ages 15-49				
Male	317,600	273,600-361,600	16,800	2,000-31,600
Female	748,200	680,300-816,100	17,400	4,400-30,400
Total	1,065,800	974,600-1,157,000	34,200	14,600-53,800
Ages 15-64				
Male	410,600	360,700-460,500	16,800	2,500-31,100
Female	892,700	816,900-968,400	19,100	5,800-32,400
Total	1,303,300	1,199,800-1,406,700	35,900	16,200-55,600

Weighted figures calculated using btwt0.
Note: mean duration recent infection = 130 days (95% CI: 118-142 days); proportion false recent = 0.00; time cutoff = 1 year.

5.3 REFERENCES

1. Duong YT, Kassanjee R, Welte A, et al. Recalibration of the limiting antigen avidity EIA to determine mean duration of recent infection in divergent HIV-1 subtypes. *PLoS One.* 2015 Feb 24;10(2):e0114947. doi: 10.1371/journal.pone.0114947.

2. Kassanjee R, McWalter TA, Bärnighausen T, Welte A. A new general biomarker-based incidence estimator. Epidemiology. 2012 Sep;23(5):721-8. doi: 10.1097/EDE.0b013e3182576c07.

3. Duong YT, Qiu M, De AK, et al. Detection of recent HIV-1 infection using a new limiting-antigen avidity assay: potential for HIV-1 incidence estimates and avidity maturation studies. *PLoS One.* 2012;7(3):e33328. doi: 10.1371/journal.pone.0033328. Epub 2012 Mar 27.

6. HIV PREVALENCE

This chapter presents representative estimates of HIV prevalence among adults at the national and county level by selected demographic and behavioral characteristics

HIV prevalence was

4.4%

among pregnant women

HIV prevalence among children was

0.7%

among children (ages 0-14)

0.4%

among children (ages 0-4)

1.1%

among young adolescents (ages 10-14)

HIV prevalence was

2.2%

among older adolescent girls (ages 15-19) and young women (ages 20-24)

0.6%

among older adolescent boys (ages 15-19) and young men (ages 20-24)

HIV prevalence was

more than 4 times higher among uncircumcised men at 10.3% compared to circumcised men at 2.5%

6.1 BACKGROUND

This chapter presents representative estimates of HIV prevalence among adults at the national and county level by selected demographic and behavioral characteristics. It also provides an estimate of the number of people living with HIV in Kenya. HIV prevalence testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Kenya's national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. Appendix B describes the PHIA HIV testing methodology.

6.2 RESULTS

The following tables and figures report HIV prevalence data in Kenya at the time of the KENPHIA survey.

Table 6.A HIV prevalence by demographic characteristics: Ages 15-49 years

Prevalence of HIV among persons aged 15-49 years, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	2.3	3,701	6.3	5,103	4.4	8,804
Rural	3.0	6,108	6.2	8,543	4.6	14,651
Marital status						
Never married	0.9	4,474	2.7	3,863	1.6	8,337
Married/cohabitating – monogamous	4.1	4,405	5.0	6,728	4.6	11,133
Married/cohabitating – polygamous	7.4	251	10.3	982	9.5	1,233
Divorced or separated	5.7	567	12.4	1,091	9.7	1,658
Widowed	9.5	59	35.5	515	32.5	574
Education						
No primary	4.9	453	6.7	1,464	6.2	1,917
Incomplete primary	3.3	4,512	8.9	6,643	6.2	11,155
Complete primary	2.4	3,465	3.9	4,041	3.1	7,506
Secondary	1.7	1,372	2.4	1,486	2.0	2,858
Wealth quintile						
Lowest	3.4	2,439	6.3	3,725	4.9	6,164
Second	2.8	2,175	6.7	2,995	4.8	5,170
Middle	2.9	2,147	7.5	2,754	5.2	4,901
Fourth	2.4	1,884	5.9	2,418	4.1	4,302
Highest	2.1	1,163	4.5	1,753	3.4	2,916
Religion						
Roman Catholic	3.3	2,190	6.2	2,783	4.7	4,973
Protestant/Other Christian	2.7	5,967	6.6	9,011	4.8	14,978
Muslim	0.8	1,092	2.4	1,565	1.6	2,657
No Religion	3.3	467	4.6	174	3.6	641
Other	8.0	89	8.6	112	8.2	201
Employment status (previous 12 months)						
Employed[1]	3.1	5,645	7.8	4,878	4.9	10,523
Not employed	2.2	4,161	5.2	8,766	4.1	12,927

Table 6.A HIV prevalence by demographic characteristics: Ages 15-49 years (continued)

Prevalence of HIV among persons aged 15-49 years, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Circumcision status						
Circumcised	2.2	8,868	NA	NA	NA	NA
Medical circumcision	2.4	5,183	NA	NA	NA	NA
Nonmedical circumcision	2.0	3,659	NA	NA	NA	NA
Unknown whether medical or nonmedical	(8.4)	26	NA	NA	NA	NA
Uncircumcised	8.6	933	NA	NA	NA	NA
Unknown	*	8	NA	NA	NA	NA
Pregnancy status						
Currently pregnant	NA	NA	4.4	911	NA	NA
Not currently pregnant	NA	NA	6.3	12,618	NA	NA
Age						
Total 15-49	2.7	9,809	6.2	13,646	4.5	23,455

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 6.B HIV prevalence by county: Ages 15-49 years

Prevalence of HIV among persons aged 15-49 years, by sex and county, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
County						
Baringo	0.2	148	3.2	163	1.5	311
Bomet	1.9	271	3.1	370	2.5	641
Bungoma	1.0	294	3.3	364	2.1	658
Busia	7.1	209	11.5	305	9.5	514
Elgeyo-Marakwet	2.1	224	5.3	317	3.7	541
Embu	1.4	229	3.2	339	2.3	568
Garissa	0.0	170	0.0	242	0.0	412
Homa Bay	12.8	298	25.3	414	19.1	712
Isiolo	1.5	162	2.4	263	2.0	425
Kajiado	2.6	189	6.5	233	4.4	422
Kakamega	0.9	175	4.9	322	3.1	497
Kericho	2.7	258	4.5	326	3.6	584
Kiambu	0.0	114	2.4	169	1.3	283
Kilifi	0.3	139	3.4	251	2.0	390
Kirinyaga	2.0	221	4.7	289	3.4	510
Kisii	4.6	222	6.8	312	5.7	534
Kisumu	9.6	205	21.0	314	15.6	519

Table 6.B HIV prevalence by county: Ages 15-49 years (continued)

Prevalence of HIV among persons aged 15-49 years, by sex and county, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Kitui	2.1	282	8.0	397	5.2	679
Kwale	1.1	155	5.9	240	3.7	395
Laikipia	1.5	158	1.1	232	1.3	390
Lamu	1.2	161	3.0	202	2.1	363
Machakos	1.4	267	5.0	373	3.2	640
Makueni	0.5	165	5.9	238	3.3	403
Mandera	0.5	120	0.0	197	0.2	317
Marsabit	0.8	82	1.9	177	1.4	259
Meru	2.3	327	4.4	413	3.3	740
Migori	7.1	338	17.6	493	12.6	831
Mombasa	2.4	182	8.2	206	5.1	388
Murang'a	1.3	183	3.7	195	2.4	378
Nairobi	2.5	453	4.1	640	3.3	1,093
Nakuru	1.8	205	3.8	256	2.7	461
Nandi	1.6	338	2.9	390	2.2	728
Narok	3.0	199	6.4	274	4.7	473
Nyamira	2.5	165	4.3	256	3.5	421
Nyandarua	2.4	184	2.0	283	2.2	467
Nyeri	4.1	195	6.1	249	5.1	444
Samburu	1.7	116	1.6	177	1.7	293
Siaya	9.6	222	19.1	318	14.3	540
Taita-Taveta	1.3	183	8.8	206	4.8	389
Tana River	0.3	169	1.4	236	0.9	405
Tharaka-Nithi	0.8	250	3.0	304	1.9	554
Trans-Nzoia	0.6	164	5.6	232	3.2	396
Turkana	6.3	254	7.9	376	7.1	630
Uasin Gishu	3.1	227	7.7	290	5.3	517
Vihiga	4.3	178	4.4	263	4.4	441
Wajir	0.6	131	0.0	232	0.2	363
West Pokot	1.7	228	0.4	308	1.0	536
Age						
Total 15-49	2.7	9,809	6.2	13,646	4.5	23,455

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 6.C HIV prevalence by demographic characteristics: Ages 15-64 years

Prevalence of HIV among persons aged 15-64 years, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	2.7	4,281	6.7	5,804	4.7	10,085
Rural	3.4	7,445	6.5	10,215	5.0	17,660
Marital status						
Never married	0.9	4,523	3.0	4,032	1.8	8,555
Married/cohabitating – monogamous	4.3	5,860	4.9	7,762	4.6	13,622
Married/cohabitating – polygamous	7.6	442	9.8	1,241	9.1	1,683
Divorced or separated	6.0	696	12.8	1,295	10.0	1,991
Widowed	13.9	135	26.4	1,165	24.9	1,300
Education						
No primary	4.8	676	6.8	2,078	6.2	2,754
Incomplete primary	3.8	5,505	9.1	7,915	6.6	13,420
Complete primary	2.7	3,973	4.4	4,435	3.5	8,408
Secondary	1.8	1,562	2.6	1,577	2.2	3,139
Wealth quintile						
Lowest	3.5	2,963	6.3	4,392	5.0	7,355
Second	3.3	2,643	7.2	3,590	5.3	6,233
Middle	3.6	2,563	8.0	3,307	5.8	5,870
Fourth	2.8	2,233	6.3	2,803	4.5	5,036
Highest	2.3	1,323	4.8	1,924	3.6	3,247
Religion						
Roman Catholic	3.6	2,711	6.5	3,342	5.0	6,053
Protestant/Other Christian	3.1	7,036	7.0	10,516	5.2	17,552
Muslim	0.9	1,320	3.0	1,817	1.9	3,137
No Religion	3.4	550	6.1	206	4.0	756
Other	8.1	104	9.8	136	8.9	240
Employment status (previous 12 months)						
Employed[1]	3.5	6,731	8.1	5,654	5.3	12,385
Not employed	2.6	4,992	5.6	10,361	4.5	15,353
Had been away from home for more than three days in the six months before survey						
Yes	3.0	3,022	6.3	3,029	4.5	6,051
No	3.2	8,702	6.7	12,989	5.0	21,691
Circumcision status						
Circumcised	2.5	10,609	NA	NA	NA	NA
Medical circumcision	2.4	5,810	NA	NA	NA	NA
Nonmedical circumcision	2.6	4,768	NA	NA	NA	NA
Unknown whether medical or nonmedical	(10.6)	31	NA	NA	NA	NA
Uncircumcised	10.3	1,109	NA	NA	NA	NA
Unknown	*	8	NA	NA	NA	NA

Table 6.C HIV prevalence by demographic characteristics: Ages 15-64 years (continued)

Prevalence of HIV among persons aged 15-64 years, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Pregnancy status						
Currently pregnant	NA	NA	4.4	911	NA	NA
Not currently pregnant	NA	NA	6.7	14,988	NA	NA
Age						
Total 15-64	3.1	11,726	6.6	16,019	4.9	27,745

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 6.D HIV prevalence by county: Ages 15-64 years

Prevalence of HIV among persons aged 15-64 years, by sex and county, KENPHIA 2018

County	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Baringo	0.3	172	3.6	196	1.8	368
Bomet	2.7	324	2.9	424	2.8	748
Bungoma	0.9	323	4.1	438	2.5	761
Busia	8.5	248	11.1	357	9.9	605
Elgeyo-Marakwet	1.9	271	5.0	373	3.5	644
Embu	1.5	272	3.9	396	2.7	668
Garissa	0.0	215	0.0	275	0.0	490
Homa Bay	13.9	333	24.9	472	19.6	805
Isiolo	1.3	200	3.1	302	2.2	502
Kajiado	2.7	216	6.7	266	4.6	482
Kakamega	1.7	220	5.7	375	3.9	595
Kericho	2.4	308	4.5	370	3.4	678
Kiambu	0.0	144	2.2	198	1.1	342
Kilifi	0.3	176	4.0	299	2.3	475
Kirinyaga	2.0	271	4.6	352	3.3	623
Kisii	4.4	275	7.7	368	6.1	643
Kisumu	12.6	234	21.8	373	17.5	607
Kitui	2.5	336	8.4	493	5.7	829
Kwale	2.0	184	6.0	278	4.2	462
Laikipia	1.3	184	2.6	272	2.0	456
Lamu	1.5	185	3.7	242	2.6	427
Machakos	1.8	335	5.6	465	3.7	800
Makueni	1.1	213	6.5	295	3.9	508
Mandera	0.5	146	0.0	231	0.2	377
Marsabit	0.7	109	1.7	203	1.2	312
Meru	2.7	389	4.5	483	3.6	872
Migori	7.9	375	17.6	549	13.0	924

Table 6.D HIV prevalence by county: Ages 15-64 years (continued)

Prevalence of HIV among persons aged 15-64 years, by sex and county, KENPHIA 2018

County	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Mombasa	2.8	211	9.0	224	5.6	435
Murang'a	1.8	231	4.4	247	3.0	478
Nairobi	3.2	515	4.4	691	3.8	1,206
Nakuru	1.8	229	4.3	292	3.0	521
Nandi	1.9	393	3.4	454	2.6	847
Narok	3.6	230	6.5	305	5.0	535
Nyamira	3.4	223	4.4	313	3.9	536
Nyandarua	2.3	217	2.0	342	2.2	559
Nyeri	4.3	258	5.9	310	5.1	568
Samburu	1.9	142	1.9	208	1.9	350
Siaya	9.8	253	20.6	379	15.3	632
Taita-Taveta	2.1	240	8.9	272	5.2	512
Tana River	0.6	216	1.5	280	1.1	496
Tharaka-Nithi	1.6	316	3.3	373	2.4	689
Trans-Nzoia	1.3	184	6.4	278	4.0	462
Turkana	5.9	296	7.7	434	6.8	730
Uasin Gishu	3.1	275	8.1	325	5.5	600
Vihiga	5.4	219	5.2	325	5.3	544
Wajir	0.5	160	0.0	264	0.2	424
West Pokot	1.9	260	0.7	358	1.3	618
Age						
Total 15-64	3.1	11,726	6.6	16,019	4.9	27,745

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Figure 6.A HIV prevalence by marital status: Ages 15-64 years, KENPHIA 2018

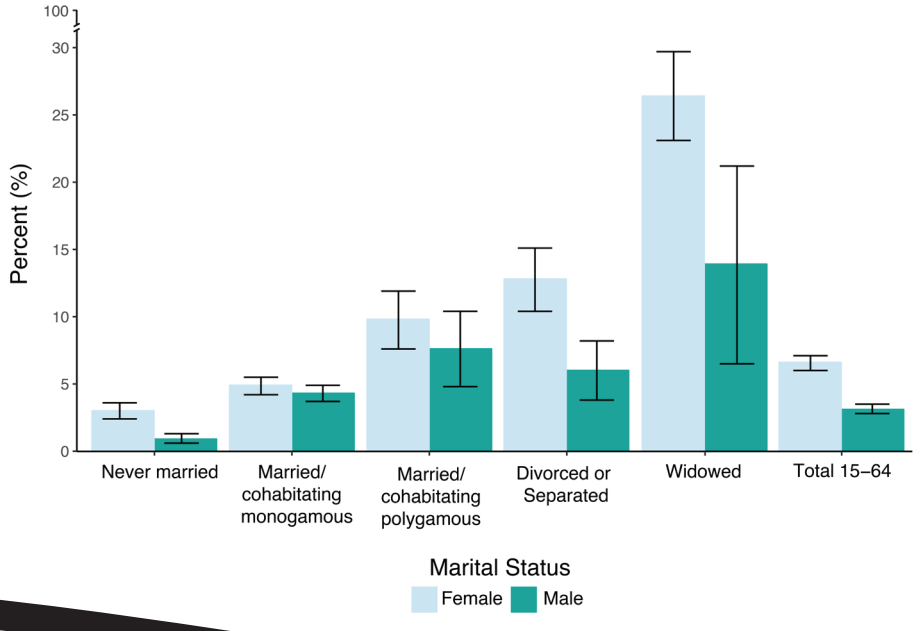


Table 6.E HIV prevalence by age and sex

Prevalence of HIV among persons aged 0-64 years, by sex and age, KENPHIA 2018

Age	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
0-17 months	0.3	326	0.5	274	0.4	600
18-59 months	0.6	994	0.1	863	0.4	1,857
5-9	0.5	1,469	1.1	1,378	0.8	2,847
10-14	1.3	1,301	0.8	1,260	1.1	2,561
Total 0-4	0.6	1,320	0.2	1,137	0.4	2,457
Total 0-14	0.8	4,090	0.7	3,775	0.7	7,865
15-19	0.5	2,386	1.2	2,504	0.8	4,890
20-24	0.6	1,557	3.4	2,305	2.0	3,862
25-29	2.2	1,256	6.0	2,370	4.2	3,626
30-34	3.2	1,427	9.5	2,304	6.5	3,731
35-39	4.3	1,186	8.7	1,673	6.6	2,859
40-44	6.3	1,141	11.9	1,390	9.1	2,531
45-49	8.3	856	10.6	1,100	9.4	1,956
50-54	6.6	744	11.7	912	9.2	1,656
55-59	5.9	632	9.0	766	7.5	1,398
60-64	5.6	541	6.2	695	5.9	1,236
Total 10-19	0.9	3,687	1.0	3,764	0.9	7,451
Total 15-24	0.6	3,943	2.2	4,809	1.4	8,752
Total 25-49	4.3	5,866	8.8	8,837	6.6	14,703
Total 15-49	2.7	9,809	6.2	13,646	4.5	23,455
Total 50-64	6.1	1,917	9.4	2,373	7.8	4,290
Total 15-64	3.1	11,726	6.6	16,019	4.9	27,745

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

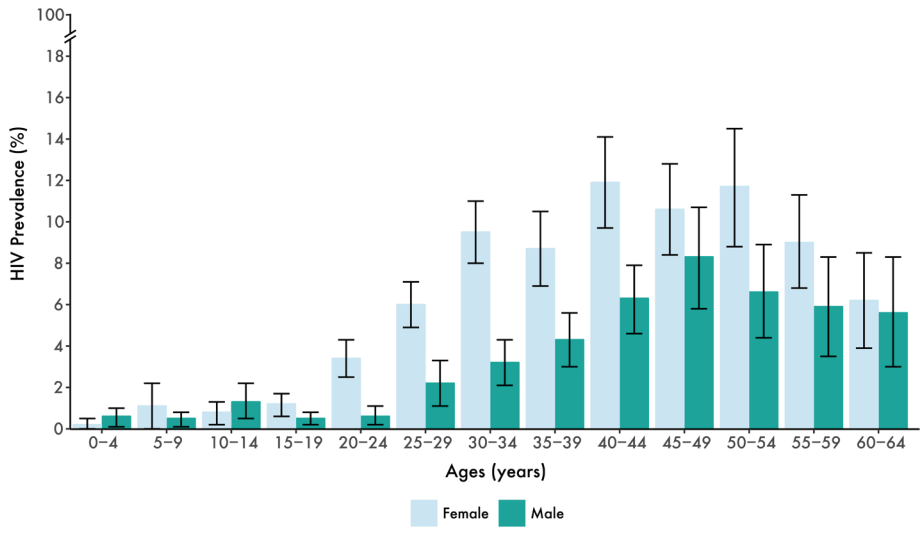
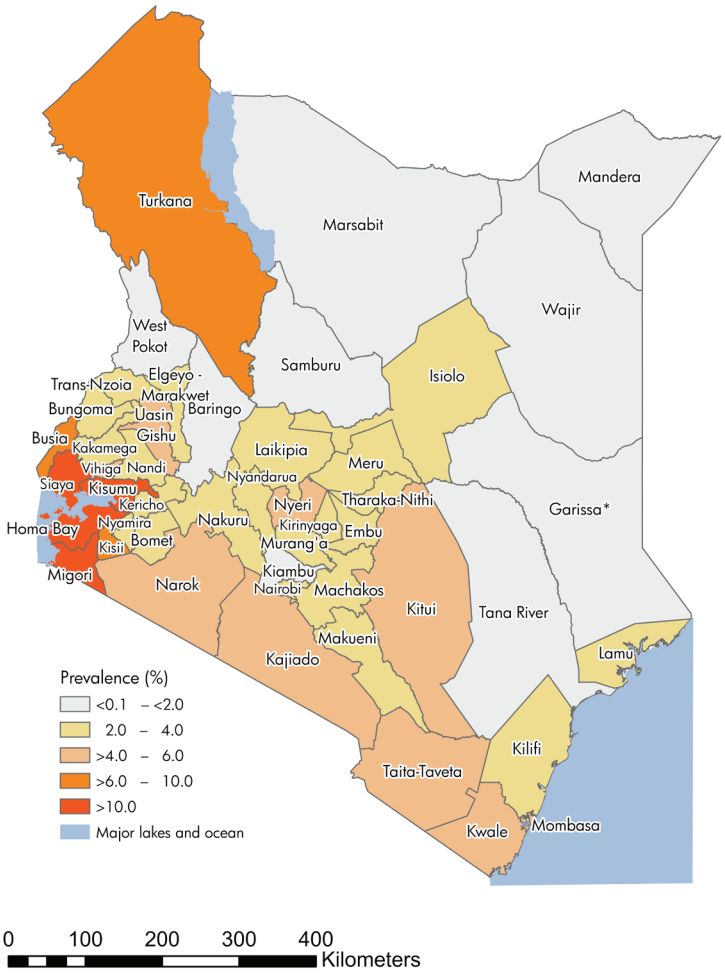


Figure 6.B
HIV prevalence by age and sex, KENPHIA 2018

Figure 6.C
HIV prevalence among adults, by county, KENPHIA 2018 (map)



* Garissa had no HIV-positive persons identified, thus is represented as having an HIV prevalence <0.1%.

7. HIV TESTING

HIV testing is necessary for awareness of HIV status and is a critical part of reaching HIV epidemic control targets. Awareness of HIV-positive status is the first step to engagement with HIV care and treatment services, accessing ART, prevention counseling for HIV-positive and HIV-negative individuals to reduce risk of HIV transmission or acquisition, and access to screening services for other comorbidities

Self-reported HIV testing among adults

(ages 15-64)

78%

Had ever tested for HIV and received their test results

70.7%

Had ever tested for HIV and received their test results

85.1%

Had ever tested for HIV and received their test results

7.1 BACKGROUND

HIV testing is necessary for awareness of HIV status and is a critical part of reaching HIV epidemic control targets. Awareness of HIV-positive status is the first step to engagement with HIV care and treatment services, accessing ART, prevention counseling for HIV-positive and HIV-negative individuals to reduce risk of HIV transmission or acquisition, and access to screening services for other comorbidities.

This section reports data on adults (defined as those aged 15-64 years), men and women, who reported that they had ever had an HIV test and received the test results. Data on participants who tested and received the test results in the 12 months before the survey are also presented to understand frequent or recent testing.

7.2 RESULTS

The following tables and figures show KENPHIA's HIV testing results.

Table 7.A Self-reported HIV testing: Men

Percentage of men aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by result of PHIA survey HIV test and selected demographic characteristics, KENPHIA 2018

Characteristic	Ever received HIV testing and received results		Received HIV testing in the 12 months before the survey and received results[1]		Number (Denominator)
	Numerator	Percentage	Numerator	Percentage	
Result of PHIA survey HIV test					
HIV positive	391	93.4	177	44.1	420
HIV negative	7,539	69.2	3,670	34.2	11,213
Not tested	859	76.8	524	47.7	1,169
Residence					
Urban	3,593	77.2	1,836	40.0	4,809
Rural	5,196	66.6	2,535	33.3	7,993
Marital status					
Never married	2,737	57.9	1,460	31.8	4,914
Married/cohabitating-monogamous	4,983	80.7	2,401	39.4	6,444
Married/cohabitating-polygamous	339	75.7	184	43.0	478
Divorced or separated	564	77.1	244	32.1	740
Widowed	108	74.1	50	33.9	150
Education					
No primary	345	49.9	143	21.2	734
Incomplete primary	3,790	65.7	1,736	30.1	5,881
Complete primary	3,107	72.5	1,609	38.5	4,369
Secondary	1,540	84.4	881	48.6	1,806
Wealth quintile					
Lowest	1,777	58.3	844	28.9	3,145
Second	1,908	67.1	919	32.4	2,830
Middle	1,964	71.5	962	35.7	2,777
Fourth	1,880	75.7	980	39.9	2,494
Highest	1,260	81.9	666	43.3	1,555

Table 7.A Self-reported HIV testing: Men (continued)

Percentage of men aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by result of PHIA survey HIV test and selected demographic characteristics, KENPHIA 2018

Characteristic	Ever received HIV testing and received results		Received HIV testing in the 12 months before the survey and received results[1]		Number (Denominator)
	Numerator	Percentage	Numerator	Percentage	
Religion					
Roman Catholic	2,100	72.9	1,050	37.2	2,934
Protestant/Other Christian	5,403	71.8	2,721	36.3	7,629
Muslim	817	59.1	368	30.1	1,503
No Religion	371	62.8	175	31.1	614
Other	97	84.4	56	50.5	116
Employment status (previous 12 months)					
Employed	5,701	77.6	2,863	39.2	7,452
Not employed	3,084	59.7	1,506	30.5	5,346
Circumcision status					
Circumcised	8,020	71.1	3,942	35.8	11,635
Medical circumcision	4,656	73.5	2,400	38.3	6,412
Nonmedical circumcision	3,338	67.5	1,528	32.2	5,186
Unknown whether medical or nonmedical	(26)	(79.5)	(14)	(44.5)	37
Uncircumcised	761	66.3	424	36.6	1,153
Unknown	*	*	*	*	14
Age					
15-19	1,047	43.2	527	21.8	2,516
20-24	1,203	70.4	701	41.9	1,725
25-29	1,157	81.9	641	45.3	1,438
30-34	1,287	83.0	633	40.4	1,581
35-39	1,059	82.7	528	41.1	1,314
40-44	963	77.8	428	34.3	1,239
45-49	711	76.9	314	34.3	949
50-54	571	74.9	254	34.9	803
55-59	429	69.5	188	30.1	667
60-64	362	66.2	157	28.0	570
Total 15-24	2,250	55.7	1,228	31.0	4,241
Total 25-49	5,177	81.1	2,544	40.2	6,521
Total 15-49	7,427	70.7	3,772	36.4	10,762
Total 50-64	1,362	71.0	599	31.6	2,040
Total 15-64	8,789	70.7	4,371	35.9	12,802

[1]Relates to PEPFAR Indicator HTS_TST: Number of individuals who received HIV Testing Services (HTS) and received their test results.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 7.B Self-reported HIV testing by county: Men

Percentage of men aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by county, KENPHIA 2018

Characteristic	Ever received HIV testing and received results		Received HIV testing in the 12 months before the survey and received results[1]		Number (Denominator)
	Numerator	Percentage	Numerator	Percentage	
County					
Baringo	106	54.5	55	28.6	182
Bomet	237	68.1	116	33.9	347
Bungoma	187	55.5	69	21.5	338
Busia	193	71.8	96	36.1	260
Elgeyo-Marakwet	166	57.0	67	23.2	278
Embu	189	61.9	73	25.3	298
Garissa	95	40.9	37	17.9	243
Homa Bay	323	93.2	215	60.6	347
Isiolo	133	61.5	65	31.4	220
Kajiado	178	79.4	80	40.1	247
Kakamega	144	59.6	67	28.8	235
Kericho	227	65.9	112	33.3	346
Kiambu	119	74.9	53	31.2	166
Kilifi	129	58.8	63	29.4	208
Kirinyaga	210	69.7	81	25.2	291
Kisii	214	76.8	120	44.0	285
Kisumu	221	91.9	138	55.6	243
Kitui	262	67.4	112	29.2	393
Kwale	142	69.1	73	39.2	210
Laikipia	173	82.2	94	44.7	216
Lamu	149	68.9	56	26.7	207
Machakos	262	72.3	117	33.0	372
Makueni	169	71.5	88	38.4	238
Mandera	61	37.5	31	18.5	161
Marsabit	80	70.6	34	32.9	121
Meru	272	65.6	107	27.3	416
Migori	335	85.9	224	58.6	386
Mombasa	186	73.1	95	38.1	246
Murang'a	179	69.0	95	38.3	250
Nairobi	494	80.4	257	42.6	617
Nakuru	186	72.5	101	41.7	258
Nandi	266	65.0	122	29.1	413
Narok	181	69.5	88	34.1	254
Nyamira	181	80.7	113	50.1	226
Nyandarua	171	66.9	85	35.0	262
Nyeri	215	72.2	109	36.6	297
Samburu	96	58.1	52	30.3	157
Siaya	247	91.4	172	64.3	273
Taita-Taveta	173	65.9	66	28.3	259

Table 7.B Self-reported HIV testing by county: Men (continued)

Percentage of men aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by county, KENPHIA 2018

Characteristic	Ever received HIV testing and received results		Received HIV testing in the 12 months before the survey and received results[1]		Number (Denominator)
	Numerator	Percentage	Numerator	Percentage	
Tana River	108	47.1	49	19.8	222
Tharaka-Nithi	189	56.3	76	23.4	334
Trans-Nzoia	131	66.4	55	29.6	197
Turkana	239	81.9	140	49.7	311
Uasin Gishu	217	73.6	84	31.5	291
Vihiga	171	70.7	85	35.3	239
Wajir	63	33.9	15	7.1	177
West Pokot	120	44.1	69	24.8	265
Age					
Total 15-64	8,789	70.7	4,371	35.9	12,802

[1]Relates to PEPFAR Indicator HTS_TST: Number of individuals who received HIV Testing Services (HTS) and received their test results.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 7.C Self-reported HIV testing: Women

Percentage of women aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by result of PHIA survey HIV test and selected demographic characteristics, KENPHIA 2018

Characteristics	Ever received HIV testing and received results		Received HIV testing in the 12 months before the survey and received results[1]		Number (Denominator)
	Numerator	Percentage	Numerator	Percentage	
Result of PHIA survey HIV test					
HIV positive	1,040	94.8	482	42.6	1,094
HIV negative	12,343	84.3	7,327	50.9	14,841
Not tested	1,232	86.0	841	59.2	1,441
Residence					
Urban	5,664	89.1	3,439	55.3	6,414
Rural	8,951	82.8	5,211	48.6	10,962
Marital status					
Never married	2,993	67.8	1,880	43.8	4,410
Married/cohabitating – monogamous	7,728	93.6	4,593	55.9	8,441
Married/cohabitating – polygamous	1,056	85.8	582	48.3	1,303
Divorced or separated	1,287	92.3	739	53.2	1,412
Widowed	1,005	85.6	513	44.6	1,238

Table 7.C Self-reported HIV testing: Women (continued)

Percentage of women aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by result of PHIA survey HIV test and selected demographic characteristics, KENPHIA 2018

Characteristics	Ever received HIV testing and received results		Received HIV testing in the 12 months before the survey and received results[1]		Number (Denominator)
	Numerator	Percentage	Numerator	Percentage	
Education					
No primary	1,507	72.4	794	37.7	2,261
Incomplete primary	7,265	86.1	4,205	49.8	8,425
Complete primary	4,110	83.7	2,532	52.8	4,854
Secondary	1,722	94.5	1,113	61.5	1,820
Wealth quintile					
Lowest	3,534	77.3	2,051	45.1	4,701
Second	3,175	82.6	1,836	48.7	3,800
Middle	3,119	87.2	1,853	52.2	3,555
Fourth	2,772	90.5	1,688	55.0	3,081
Highest	2,013	89.4	1,221	55.9	2,235
Religion					
Roman Catholic	3,086	86.5	1,876	53.7	3,583
Protestant/Other Christian	9,856	86.3	5,885	51.6	11,328
Muslim	1,370	69.9	702	38.5	2,084
No Religion	178	83.7	107	55.4	233
Other	123	87.1	79	53.1	146
Employment status (previous 12 months)					
Employed	5,740	92.9	3,375	54.7	6,199
Not employed	8,873	80.2	5,274	48.9	11,172
Age					
15-19	1,531	56.5	992	37.3	2,690
20-24	2,266	91.8	1,608	66.5	2,514
25-29	2,464	96.8	1,595	62.4	2,584
30-34	2,382	96.1	1,443	56.9	2,523
35-39	1,678	93.7	935	50.3	1,808
40-44	1,355	92.4	708	49.6	1,513
45-49	1,039	87.7	508	42.0	1,197
50-54	801	83.9	354	39.0	999
55-59	605	77.9	278	36.0	813
60-64	494	68.8	229	30.1	735
Total 15-24	3,797	73.2	2,600	51.2	5,204
Total 25-49	8,918	94.3	5,189	54.3	9,625
Total 15-49	12,715	86.0	7,789	53.1	14,829
Total 50-64	1,900	78.1	861	35.8	2,547
Total 15-64	14,615	85.1	8,650	51.1	17,376

[1]Relates to PEPFAR Indicator HTS_TST: Number of individuals who received HIV Testing Services (HTS) and received their test results.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

Table 7.D Self-reported HIV testing by county: Women

Percentage of women aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by county, KENPHIA 2018

Characteristic	Ever received HIV testing and received results		Received HIV testing in the 12 months before the survey and received results		Number (Denominator)
	Numerator	Percentage	Numerator	Percentage	
County					
Baringo	177	80.3	92	39.4	215
Bomet	400	85.9	250	51.2	459
Bungoma	370	77.3	207	44.5	463
Busia	312	84.8	199	53.5	361
Elgeyo-Marakwet	311	81.5	171	44.2	376
Embu	383	88.3	186	43.1	425
Garissa	157	55.0	65	24.6	303
Homa Bay	475	97.0	340	70.4	488
Isiolo	266	78.2	140	42.5	337
Kajiado	251	83.3	146	49.7	301
Kakamega	316	78.0	186	46.0	394
Kericho	348	82.5	172	40.7	421
Kiambu	220	88.0	115	47.5	246
Kilifi	266	74.6	152	40.8	333
Kirinyaga	341	90.3	185	49.9	382
Kisii	335	86.8	217	54.1	377
Kisumu	378	92.6	265	66.6	401
Kitui	478	86.5	283	51.1	548
Kwale	276	86.8	162	51.8	323
Laikipia	276	92.3	158	49.6	301
Lamu	255	82.0	117	37.6	303
Machakos	439	85.8	255	50.8	505
Makueni	287	89.3	190	60.3	322
Mandera	105	41.7	55	22.5	256
Marsabit	163	74.3	86	40.7	222
Meru	428	83.2	201	38.8	517
Migori	541	94.0	369	66.0	570
Mombasa	239	90.5	154	58.6	263
Murang'a	235	86.0	161	60.0	276
Nairobi	725	92.8	472	61.6	782
Nakuru	294	87.7	169	51.9	332
Nandi	393	78.6	211	41.5	484
Narok	305	88.3	198	56.0	343
Nyamira	292	89.4	203	62.0	324
Nyandarua	339	87.6	204	53.7	390
Nyeri	309	88.7	203	57.7	345
Samburu	165	73.7	90	39.3	223
Siaya	403	97.1	310	76.2	415
Taita-Taveta	253	89.9	122	45.3	283

Table 7.D Self-reported HIV testing by county: Women (continued)

Percentage of women aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by county, KENPHIA 2018

Characteristic	Ever received HIV testing and received results		Received HIV testing in the 12 months before the survey and received results		Number (Denominator)
	Numerator	Percentage	Numerator	Percentage	
Tana River	206	71.6	105	35.7	288
Tharaka-Nithi	331	83.4	174	42.5	389
Trans-Nzoia	255	82.7	138	44.6	304
Turkana	369	80.9	261	57.6	455
Uasin Gishu	293	86.0	148	46.1	335
Vihiga	291	80.5	176	49.8	347
Wajir	131	44.7	54	19.2	290
West Pokot	233	61.1	133	33.5	359
Age					
Total 15-64	14,615	85.1	8,650	51.1	17,376

[1] Relates to PEPFAR Indicator HTS_TST: Number of individuals who received HIV Testing Services (HTS) and received their test results.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

Table 7.E Self-reported HIV testing: Total

Percentage of adults aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by result of PHIA survey HIV test and selected demographic characteristics, KENPHIA 2018

Characteristic	Ever received HIV testing and received results		Received HIV testing in the 12 months before the survey and received results[1]		Number (Denominator)
	Numerator	Percentage	Numerator	Percentage	
Result of PHIA survey HIV test					
HIV positive	1,431	94.4	659	43.1	1,514
HIV negative	19,882	76.8	10,997	42.6	26,054
Not tested	2,091	81.2	1,365	53.3	2,610
Residence					
Urban	9,257	83.2	5,275	47.6	11,223
Rural	14,147	74.9	7,746	41.2	18,955
Marital status					
Never married	5,730	62.1	3,340	36.8	9,324
Married/cohabitating – monogamous	12,711	87.2	6,994	47.8	14,885
Married/cohabitating – polygamous	1,395	82.6	766	46.6	1,781
Divorced or separated	1,851	86.2	983	44.7	2,152
Widowed	1,113	84.2	563	43.3	1,388
Education					
No primary	1,852	65.9	937	33.0	2,995
Incomplete primary	11,055	76.4	5,941	40.4	14,306
Complete primary	7,217	77.9	4,141	45.3	9,223
Secondary	3,262	88.8	1,994	54.2	3,626

Table 7.E Self-reported HIV testing: Total (continued)

Percentage of adults aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by result of PHIA survey HIV test and selected demographic characteristics, KENPHIA 2018

Characteristic	Ever received HIV testing and received results		Received HIV testing in the 12 months before the survey and received results[1]		Number (Denominator)
	Numerator	Percentage	Numerator	Percentage	
Wealth quintile					
Lowest	5,311	68.4	2,895	37.5	7,846
Second	5,083	75.1	2,755	40.8	6,630
Middle	5,083	79.3	2,815	43.9	6,332
Fourth	4,652	82.8	2,668	47.2	5,575
Highest	3,273	85.8	1,887	49.9	3,790
Religion					
Roman Catholic	5,186	79.5	2,926	45.1	6,517
Protestant/Other Christian	15,259	79.5	8,606	44.5	18,957
Muslim	2,187	64.6	1,070	34.3	3,587
No Religion	549	67.4	282	36.5	847
Other	220	85.6	135	51.7	262
Employment status (previous 12 months)					
Employed	11,441	83.6	6,238	45.3	13,651
Not employed	11,957	72.5	6,780	42.0	16,518
Age					
15-19	2,578	49.7	1,519	29.4	5,206
20-24	3,469	81.2	2,309	54.4	4,239
25-29	3,621	89.6	2,236	54.2	4,022
30-34	3,669	89.9	2,076	49.1	4,104
35-39	2,737	88.4	1,463	45.9	3,122
40-44	2,318	85.1	1,136	42.0	2,752
45-49	1,750	82.3	822	38.1	2,146
50-54	1,372	79.4	608	36.9	1,802
55-59	1,034	73.7	466	33.1	1,480
60-64	856	67.6	386	29.1	1,305
Total 15-24	6,047	64.4	3,828	41.1	9,445
Total 25-49	14,095	87.9	7,733	47.5	16,146
Total 15-49	20,142	78.5	11,561	44.9	25,591
Total 50-64	3,262	74.6	1,460	33.7	4,587
Total 15-64	23,404	78.0	13,021	43.6	30,178

[1]Relates to PEPFAR Indicator HTS_TST: Number of individuals who received HIV Testing Services (HTS) and received their test results.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

Table 7.F Self-reported HIV testing by county: Total

Percentage of adults aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by county, KENPHIA 2018

Characteristic	Ever received HIV testing and received results		Received HIV testing in the 12 months before the survey and received results[1]		Number (Denominator)
	Numerator	Percentage	Numerator	Percentage	
County					
Baringo	283	66.3	147	33.6	397
Bomet	637	76.9	366	42.5	806
Bungoma	557	66.6	276	33.1	801
Busia	505	78.8	295	45.4	621
Elgeyo-Marakwet	477	69.4	238	33.8	654
Embu	572	75.6	259	34.5	723
Garissa	252	48.3	102	21.4	546
Homa Bay	798	95.1	555	65.6	835
Isiolo	399	70.5	205	37.4	557
Kajiado	429	81.2	226	44.6	548
Kakamega	460	69.8	253	38.4	629
Kericho	575	73.7	284	36.8	767
Kiambu	339	82.0	168	40.0	412
Kilifi	395	67.4	215	35.6	541
Kirinyaga	551	80.2	266	37.8	673
Kisii	549	81.9	337	49.2	662
Kisumu	599	92.3	403	61.6	644
Kitui	740	77.4	395	40.7	941
Kwale	418	78.7	235	46.0	533
Laikipia	449	87.4	252	47.2	517
Lamu	404	76.0	173	32.6	510
Machakos	701	79.1	372	41.9	877
Makueni	456	80.6	278	49.7	560
Mandera	166	39.8	86	20.7	417
Marsabit	243	72.6	120	37.2	343
Meru	700	74.3	308	33.0	933
Migori	876	90.2	593	62.5	956
Mombasa	425	80.8	249	47.2	509
Murang'a	414	77.2	256	48.7	526
Nairobi	1,219	86.5	729	52.0	1,399
Nakuru	480	79.8	270	46.6	590
Nandi	659	71.6	333	35.1	897
Narok	486	79.0	286	45.2	597
Nyamira	473	85.3	316	56.4	550
Nyandarua	510	77.9	289	45.0	652
Nyeri	524	80.1	312	46.7	642
Samburu	261	66.3	142	35.1	380
Siaya	650	94.4	482	70.4	688
Taita-Taveta	426	77.1	188	36.2	542

Table 7.F Self-reported HIV testing by county: Total (continued)

Percentage of adults aged 15-64 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the 12 months before the survey, by county, KENPHIA 2018

Characteristic	Ever received HIV testing and received results		Received HIV testing in the 12 months before the survey and received results[1]		Number (Denominator)
	Numerator	Percentage	Numerator	Percentage	
Tana River	314	60.0	154	28.2	510
Tharaka-Nithi	520	69.5	250	32.7	723
Trans-Nzoia	386	74.9	193	37.5	501
Turkana	608	81.4	401	53.9	766
Uasin Gishu	510	79.5	232	38.5	626
Vihiga	462	75.9	261	43.1	586
Wajir	194	40.1	69	14.1	467
West Pokot	353	52.6	202	29.2	624
Age					
Total 15-64	23,404	78.0	13,021	43.6	30,178

[1]Relates to PEPFAR Indicator HTS_TST: Number of individuals who received HIV Testing Services (HTS) and received their test results.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

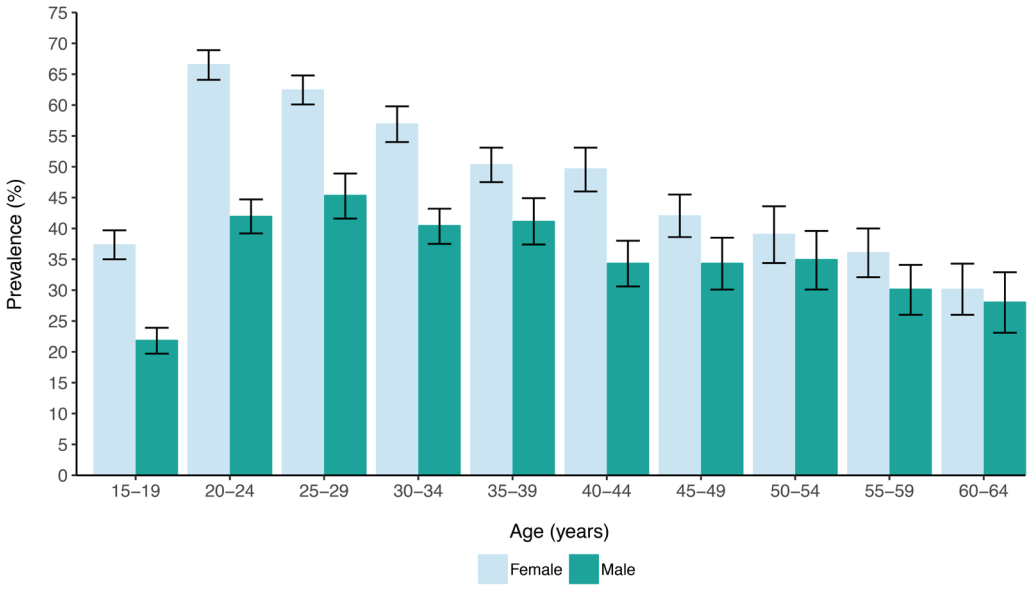


Figure 7.A
Proportion of adults who self-reported having received an HIV test in the 12 months before the survey, by age and sex, KENPHIA

8. HIV DIAGNOSIS AND TREATMENT

Recent studies have proven that treating people living with HIV at higher CD4 counts improves immune recovery; decreases the incidence of non-AIDS events, comorbidities and mortality; and reduces sexual and vertical transmission. This chapter presents data on the proportion of people living with HIV in Kenya who reported that they were aware of their status at the time of the survey, as well as the proportion of those aware of their status who reported that they were on ART

Self-reported HIV diagnosis and treatment status

Percent distribution of HIV-positive men (ages 15-64) by self-reported HIV diagnosis and treatment status

34.3%	4.8%	60.9%
Unaware of their HIV status	Aware of their HIV status, Not on ART	Aware of their HIV status, on ART

Percent distribution of HIV-positive women (ages 15-64) by self-reported HIV diagnosis and treatment status

26.0%	2.9%	71.1%
Unaware of their HIV status	Aware of their HIV status, Not on ART	Aware of their HIV status, on ART

8.1 BACKGROUND

Recent studies have proven that treating people living with HIV at higher CD4 counts improves immune recovery; decreases the incidence of non-AIDS events, comorbidities, and mortality, and reduces sexual and vertical transmission. In 2016, after extensive review of evidence of both the clinical and population-level benefits of expanding ART, the WHO changed its recommendation to support a policy of 'Treatment for All,' regardless of CD4 count.[1,2] By November 2017, almost all countries in sub-Saharan Africa had adopted this policy, despite the challenges in ensuring uptake and implementation.[2] This policy was adopted in Kenya in 2016[3]

This chapter presents data on the proportion of people living with HIV in Kenya who reported that they were aware of their status at the time of the survey, as well as the proportion of those aware of their status who reported that they were on ART. In addition, KENPHIA evaluated the presence of four ARVs (efavirenz, nevirapine, atazanavir and lopinavir) in blood as markers of first- and second-line regimens prescribed in the country at the time of the survey, to determine how closely the self-reported data matched laboratory confirmed evidence of HIV awareness and treatment status.

8.2 RESULTS

The following tables and figures describe the uptake of antiretroviral treatment in Kenya at the time of the KENPHIA survey.

Table 8.A Self-reported HIV diagnosis and treatment status: Men

Percent distribution of HIV-positive men aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, KENPHIA 2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Residence					
Urban	31.3	2.8	65.8	100.0	151
Rural	35.7	5.7	58.6	100.0	269
Counties with at least 25 people living with HIV					
Busia	*	*	*	*	24
Homa Bay	(17.3)	(8.3)	(74.4)	(100.0)	49
Kakamega	*	*	*	*	4
Kericho	*	*	*	*	8
Kisii	*	*	*	*	13
Kisumu	(11.0)	(5.2)	(83.8)	(100.0)	35
Kitui	*	*	*	*	8
Machakos	*	*	*	*	6
Meru	*	*	*	*	7
Migori	(28.9)	(3.4)	(67.7)	(100.0)	33
Mombasa	*	*	*	*	9
Nairobi	*	*	*	*	17
Nandi	*	*	*	*	12
Narok	*	*	*	*	8
Nyamira	*	*	*	*	9
Nyeri	*	*	*	*	11
Siaya	(23.4)	(8.8)	(67.7)	(100.0)	31
Turkana	*	*	*	*	14

Table 8.A Self-reported HIV diagnosis and treatment status: Men (continued)

Percent distribution of HIV-positive men aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, KENPHIA 2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Uasin Gishu	*	*	*	*	7
Vihiga	*	*	*	*	13
Marital status					
Never married	(44.1)	(9.9)	(46.0)	(100.0)	46
Married/cohabitating – monogamous	34.2	3.4	62.4	100.0	273
Married/cohabitating – polygamous	(12.0)	(0.0)	(88.0)	(100.0)	33
Divorced or separated	(42.7)	(8.9)	(48.4)	(100.0)	45
Widowed	*	*	*	*	21
Education					
No primary	(34.5)	(3.8)	(61.7)	(100.0)	25
Incomplete primary	34.3	6.8	58.9	100.0	238
Complete primary	32.4	2.9	64.8	100.0	116
Secondary	(40.3)	(0.0)	(59.7)	(100.0)	41
Wealth quintile					
Lowest	37.2	12.4	50.4	100.0	103
Second	24.4	4.3	71.3	100.0	105
Middle	34.9	3.5	61.5	100.0	101
Fourth	37.1	1.4	61.5	100.0	76
Highest	(41.6)	(0.0)	(58.4)	(100.0)	35
Religion					
Roman Catholic	35.7	8.1	56.2	100.0	104
Protestant/Other Christian	34.7	3.4	61.9	100.0	270
Muslim	*	*	*	*	17
No Religion	*	*	*	*	21
Other	*	*	*	*	8
Employment status (previous 12 months)					
Employed	33.4	3.6	63.0	100.0	270
Not employed	36.1	7.5	56.4	100.0	150
Circumcision status					
Circumcised	40.6	4.1	55.3	100.0	294
Medical circumcision	38.7	5.0	56.3	100.0	159
Nonmedical circumcision	44.5	2.9	52.6	100.0	131
Unknown whether medical or nonmedical	*	*	*	*	4
Uncircumcised	16.1	6.8	77.0	100.0	125
Unknown	*	*	*	*	1
Age					
15-19	*	*	*	*	12
20-24	*	*	*	*	11
25-29	(46.4)	(4.6)	(49.1)	(100.0)	27
30-34	41.4	0.0	58.6	100.0	53

Table 8.A Self-reported HIV diagnosis and treatment status: Men (continued)

Percent distribution of HIV-positive men aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, KENPHIA 2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
35-39	40.0	5.7	54.3	100.0	56
40-44	24.2	8.5	67.3	100.0	75
45-49	34.9	8.4	56.8	100.0	66
50-54	15.5	2.5	82.1	100.0	55
55-59	(29.9)	(0.0)	(70.1)	(100.0)	37
60-64	(10.8)	(0.0)	(89.2)	(100.0)	28
Total 15-24	*	*	*	*	23
Total 25-49	36.4	5.8	57.8	100.0	277
Total 15-49	38.8	5.9	55.3	100.0	300
Total 50-64	18.9	1.1	79.9	100.0	120
Total 15-64	34.3	4.8	60.9	100.0	420

[1]Relates to Global AIDS Monitoring 2020 Indicator 1.2: People living with HIV on antiretroviral therapy and PEPFAR Indicator TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy.
Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 8.B Self-reported HIV diagnosis and treatment status: Women

Percent distribution of HIV-positive women aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, KENPHIA 2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Residence					
Urban	26.6	3.1	70.3	100.0	450
Rural	25.7	2.7	71.6	100.0	646
Counties with at least 25 people living with HIV					
Busia	(15.8)	(0.0)	(84.2)	(100.0)	43
Homa Bay	12.0	0.6	87.5	100.0	121
Kakamega	*	*	*	*	21
Kericho	*	*	*	*	17
Kisii	(28.9)	(0.0)	(71.1)	(100.0)	33
Kisumu	20.4	4.1	75.4	100.0	98
Kitui	(24.4)	(3.2)	(72.4)	(100.0)	36
Machakos	(19.9)	(0.0)	(80.1)	(100.0)	32
Meru	*	*	*	*	20
Migori	20.7	2.7	76.6	100.0	105
Mombasa	*	*	*	*	20
Nairobi	(26.2)	(0.0)	(73.8)	(100.0)	36
Nandi	*	*	*	*	22
Narok	*	*	*	*	21

Table 8.B Self-reported HIV diagnosis and treatment status: Women (continued)

Percent distribution of HIV-positive women aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, KENPHIA 2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Nyamira	*	*	*	*	17
Nyeri	*	*	*	*	16
Siaya	21.3	4.2	74.5	100.0	85
Turkana	(45.1)	(2.6)	(52.3)	(100.0)	25
Uasin Gishu	(24.6)	(6.5)	(68.9)	(100.0)	27
Vihiga	*	*	*	*	20
Marital status					
Never married	33.6	1.7	64.7	100.0	152
Married/cohabitating – monogamous	27.7	2.9	69.3	100.0	369
Married/cohabitating – polygamous	31.1	3.8	65.1	100.0	112
Divorced or separated	20.6	4.1	75.3	100.0	149
Widowed	20.0	1.8	78.3	100.0	264
Education					
No primary	23.6	1.3	75.1	100.0	95
Incomplete primary	23.9	3.2	72.9	100.0	735
Complete primary	30.4	2.9	66.8	100.0	217
Secondary	(37.4)	(1.0)	(61.7)	(100.0)	48
Wealth quintile					
Lowest	22.4	1.9	75.7	100.0	255
Second	22.5	4.8	72.8	100.0	270
Middle	29.8	1.5	68.7	100.0	269
Fourth	25.5	3.0	71.5	100.0	203
Highest	32.0	3.1	64.8	100.0	98
Religion					
Roman Catholic	24.5	4.1	71.4	100.0	218
Protestant/Other Christian	26.3	2.6	71.1	100.0	817
Muslim	(26.6)	(2.7)	(70.7)	(100.0)	36
No Religion	*	*	*	*	10
Other	*	*	*	*	15
Employment status (previous 12 months)					
Employed[1]	24.2	4.1	71.7	100.0	496
Not employed	27.7	1.7	70.6	100.0	600
Age					
15-19	(39.8)	(0.0)	(60.2)	(100.0)	33
20-24	39.1	8.7	52.2	100.0	81
25-29	28.4	3.2	68.4	100.0	148
30-34	27.7	3.0	69.3	100.0	220
35-39	29.7	3.2	67.1	100.0	148
40-44	20.9	1.0	78.1	100.0	150
45-49	22.7	0.7	76.5	100.0	113

Table 8.B Self-reported HIV diagnosis and treatment status: Women (continued)

Percent distribution of HIV-positive women aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, KENPHIA 2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
50-54	14.5	3.2	82.4	100.0	98
55-59	21.2	2.9	75.9	100.0	70
60-64	(11.2)	(0.0)	(88.8)	(100.0)	35
Total 15-24	39.3	6.3	54.5	100.0	114
Total 25-49	26.2	2.4	71.5	100.0	779
Total 15-49	28.0	2.9	69.1	100.0	893
Total 50-64	16.0	2.6	81.4	100.0	203
Total 15-64	26.0	2.9	71.1	100.0	1,096

[1]Relates to Global AIDS Monitoring 2020 Indicator 1.2: People living with HIV on antiretroviral therapy and PEPFAR Indicator TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy.
Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 8.C Self-reported HIV diagnosis and treatment status: Total

Percent distribution of HIV-positive persons aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, KENPHIA 2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Residence					
Urban	27.9	3.0	69.0	100.0	601
Rural	29.0	3.7	67.3	100.0	915
County					
Busia	14.7	1.4	84.0	100.0	67
Homa Bay	13.8	3.3	82.9	100.0	170
Kakamega	(39.6)	(0.0)	(60.4)	(100.0)	25
Kericho	(53.7)	(9.8)	(36.5)	(100.0)	25
Kisii	(32.7)	(8.4)	(58.9)	(100.0)	46
Kisumu	17.2	4.5	78.3	100.0	133
Kitui	(30.8)	(2.6)	(66.6)	(100.0)	44
Machakos	(26.0)	(0.0)	(74.0)	(100.0)	38
Meru	(43.7)	(6.8)	(49.5)	(100.0)	27
Migori	23.0	2.8	74.1	100.0	138
Mombasa	(36.0)	(9.8)	(54.2)	(100.0)	29
Nairobi	27.6	0.0	72.4	100.0	53
Nandi	(46.4)	(5.6)	(47.9)	(100.0)	34
Narok	(48.7)	(2.8)	(48.5)	(100.0)	29
Nyamira	(19.4)	(5.4)	(75.2)	(100.0)	26
Nyeri	(29.3)	(5.1)	(65.5)	(100.0)	27

Table 8.C Self-reported HIV diagnosis and treatment status: Total (continued)

Percent distribution of HIV-positive persons aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, KENPHIA 2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Siaya	21.9	5.7	72.4	100.0	116
Turkana	(43.3)	(6.6)	(50.1)	(100.0)	39
Uasin Gishu	(27.0)	(4.9)	(68.0)	(100.0)	34
Vihiga	(26.0)	(5.6)	(68.5)	(100.0)	33
Marital status					
Never married	36.7	4.1	59.2	100.0	198
Married/cohabitating – monogamous	30.7	3.2	66.1	100.0	642
Married/cohabitating – polygamous	26.3	2.8	70.9	100.0	145
Divorced or separated	26.1	5.3	68.6	100.0	194
Widowed	20.0	1.8	78.2	100.0	285
Education					
No primary	26.1	1.8	72.1	100.0	120
Incomplete primary	26.8	4.2	69.0	100.0	973
Complete primary	31.2	2.9	66.0	100.0	333
Secondary	38.7	0.5	60.7	100.0	89
Wealth quintile					
Lowest	27.3	5.4	67.4	100.0	358
Second	23.1	4.6	72.3	100.0	375
Middle	31.4	2.2	66.4	100.0	370
Fourth	29.2	2.5	68.3	100.0	279
Highest	34.9	2.2	62.9	100.0	133
Religion					
Roman Catholic	28.6	5.6	65.8	100.0	322
Protestant/Other Christian	28.7	2.8	68.5	100.0	1,087
Muslim	23.1	2.1	74.8	100.0	53
No Religion	(36.7)	(4.4)	(58.8)	(100.0)	31
Other	*	*	*	*	23
Employment status (previous 12 months)					
Employed[1]	27.9	3.9	68.2	100.0	766
Not employed	29.5	2.9	67.6	100.0	750
Age					
15-19	(43.1)	(0.0)	(56.9)	(100.0)	45
20-24	45.2	9.4	45.4	100.0	92
25-29	33.1	3.6	63.4	100.0	175
30-34	30.8	2.3	66.8	100.0	273
35-39	32.9	3.9	63.1	100.0	204
40-44	22.0	3.5	74.5	100.0	225
45-49	28.1	4.1	67.8	100.0	179
50-54	14.8	2.9	82.3	100.0	153
55-59	24.6	1.8	73.6	100.0	107
60-64	11.0	0.0	89.0	100.0	63

Table 8.C Self-reported HIV diagnosis and treatment status: Total (continued)

Percent distribution of HIV-positive persons aged 15-64 years by self-reported HIV diagnosis and treatment status, by selected demographic characteristics, KENPHIA 2018

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Total 15-24	44.5	6.4	49.1	100.0	137
Total 25-49	29.3	3.4	67.2	100.0	1,056
Total 15-49	31.2	3.8	65.0	100.0	1,193
Total 50-64	17.1	2.0	80.8	100.0	323
Total 15-64	28.6	3.5	67.9	100.0	1,516

[1]Relates to Global AIDS Monitoring 2020 Indicator 1.2: People living with HIV on antiretroviral therapy and PEPFAR Indicator TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy.
Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

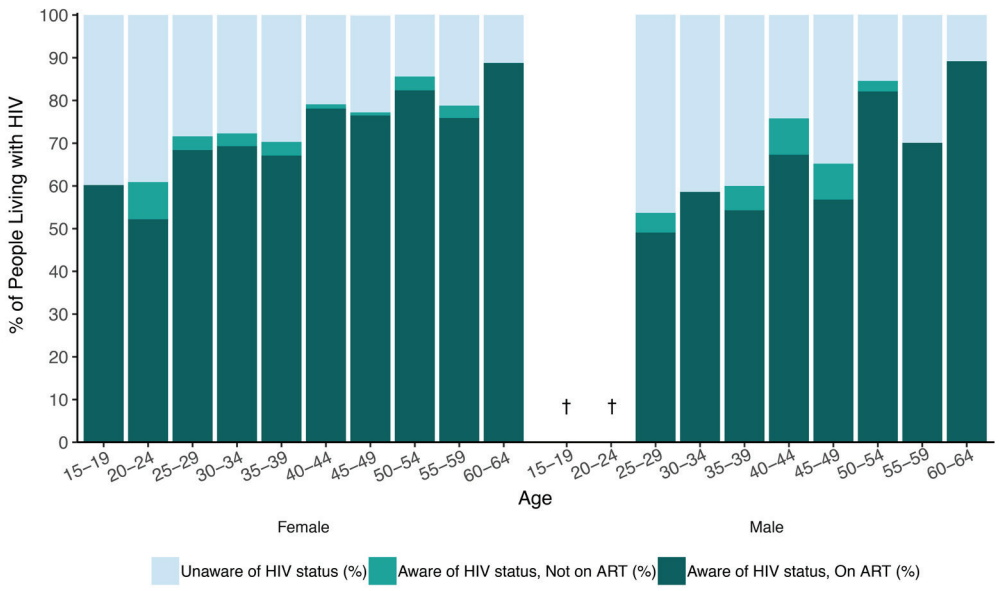


Figure 8.A Proportion of HIV-positive adults reporting awareness of HIV status and antiretroviral therapy status, by age and sex, KENPHIA 2018

† Indicates an estimate that is based on a denominator of 25-49 and should be interpreted with caution.

Table 8.D Concordance of self-reported treatment status versus presence of antiretrovirals (ARVs): Men

Percent distribution of HIV-positive men aged 15-64 years by presence of detectable ARVs versus self-reported HIV treatment status, KENPHIA 2018

Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	80.2	19.8	100.0	123
Previously diagnosed, not on ART	*	*	*	20
Previously diagnosed, on ART	9.5	90.5	100.0	277
Age				
Total 15-24	*	*	*	23
Total 25-49	41.3	58.7	100.0	277
Total 15-49	41.7	58.3	100.0	300
Total 50-64	21.9	78.1	100.0	121
Total 15-64	37.2	62.8	100.0	421

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.

Table 8.E Concordance of self-reported treatment status versus presence of antiretrovirals (ARVs): Women

Percent distribution of HIV-positive women aged 15-64 years by presence of detectable ARVs versus self-reported HIV treatment status, KENPHIA 2018

Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	66.9	33.1	100.0	277
Previously diagnosed, not on ART	(99.1)	(0.9)	(100.0)	33
Previously diagnosed, on ART	10.0	90.0	100.0	786
Age				
Total 15-24	44.0	56.0	100.0	115
Total 25-49	26.1	73.9	100.0	782
Total 15-49	28.6	71.4	100.0	897
Total 50-64	20.2	79.8	100.0	203
Total 15-64	27.2	72.8	100.0	1,100

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 8.F Concordance of self-reported treatment status versus presence of antiretrovirals (ARVs): Total

Percent distribution of HIV-positive persons aged 15-64 years by presence of detectable ARVs versus self-reported HIV treatment status, KENPHIA 2018

Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	71.9	28.1	100.0	400
Previously diagnosed, not on ART	92.2	7.8	100.0	53
Previously diagnosed, on ART	9.8	90.2	100.0	1,063
Age				
Total 15-24	44.4	55.6	100.0	138
Total 25-49	30.8	69.2	100.0	1,059
Total 15-49	32.5	67.5	100.0	1,197
Total 50-64	20.8	79.2	100.0	324
Total 15-64	30.3	69.7	100.0	1,521

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

8.3 REFERENCES

1. World Health Organization. *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection.* Geneva: World Health Organization; 2016. https://www.who.int/hiv/pub/arv/arv-2016/en/. Accessed May 18, 2020.

2. World Health Organization. *Treat all: policy adoption and implementation status in countries.* Geneva: World Health Organization; 2017. http://apps.who.int/iris/bitstream/handle/10665/259532/WHO-HIV-2017.58-eng.pdf;jsessionid=B3857967C208CC9E4093EEA9CEDC3A0C?sequence=1. Accessed May 18, 2020.

3. Ministry of Health, *National AIDS & STI Control Programme. Guidelines on Use of Antiretroviral Drugs for Treating and Preventing HIV Infection in Kenya, 2016.* Nairobi, Kenya: NASCOP, July 2016.

9. VIRAL LOAD SUPPRESSION

One of the key roles of ART for patients with HIV infection is to suppress viral replication and reduce the risk of transmitting HIV infection to others

Viral load suppression

Among HIV-positive adults

(ages 15-64)

percentage with viral load suppression (< 1,000 copies/mL)

65.1%

had achieved viral load suppression

74.6%

had achieved viral load suppression

71.6%

had achieved viral load suppression

9.1 BACKGROUND

One of the key roles of ART for patients with HIV infection is to suppress viral replication and reduce the risk of transmitting HIV infection to others.[1] This preventive benefit of ART, however, depends on early initiation of ART followed with routine monitoring of viral load to ensure that viral load suppression (VLS) is achieved and sustained. It is for these reasons that VLS is considered a key indicator of treatment success in HIV-positive individuals.

VLS monitoring is conducted through laboratory-based HIV viral load (VL) testing protocols that measure the number of HIV particles (HIV RNA copies) in blood. In Kenya, VL is conducted as a routine test in a network of 10 national laboratories equipped with high throughput equipment with a total functional capacity of more than 1,500,000 tests in a year. All the equipment used have detectable linear range of 40-10,000 copies/mL. Specimens (70% plasma and 30% DBS) are collected from the 3,000 ART clinics and transported by a national courier to the laboratories for testing. Results are returned to the requesting clinics through a web-based system owned by the MOH. To further improve access to VLS monitoring, the MOH has in the recent past introduced POC technologies such as GeneXpert in hard to reach areas. KENPHIA offered the first opportunity for population-level VL data to be collected at the national level in Kenya. For this purpose, VLS was defined as VL less than 1,000 HIV RNA copies per mL of plasma.

This chapter describes VLS among the population of HIV-positive adults by age, sex, region, and other demographic characteristics. (Note: The VLS estimates among people living with HIV presented in this chapter were regardless of their knowledge of HIV status or use of antiretroviral therapy).

9.2 RESULTS

The following tables and figures present VLS data of people in Kenya at the time of the KENPHIA survey.

Table 9.A Viral load suppression by demographic characteristics

Among HIV-positive adults aged 15-64 years, percentage with viral load suppression (< 1,000 copies/mL), by sex, self-reported diagnosis and treatment status, and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
Self-reported diagnosis and treatment status						
Not previously diagnosed	24.6	123	37.5	277	32.7	400
Previously diagnosed, not on ART	*	20	(10.9)	33	11.8	53
Previously diagnosed, on ART	92.8	277	90.6	786	91.2	1,063
Missing	*	3	*	4	*	7
Residence						
Urban	70.6	153	71.7	452	71.4	605
Rural	62.4	270	76.3	648	71.7	918
Counties with at least 25 people living with HIV						
Busia	*	24	(83.6)	43	81.2	67
Homa Bay	(76.8)	49	87.6	121	83.8	170
Kakamega	*	4	*	22	(61.4)	26
Kericho	*	8	*	17	(44.7)	25
Kisii	*	13	(73.1)	33	(60.2)	46
Kisumu	(91.1)	35	79.2	99	83.2	134
Kitui	*	9	(62.9)	36	(68.1)	45

Table 9.A Viral load suppression by demographic characteristics (continued)

Among HIV-positive adults aged 15-64 years, percentage with viral load suppression (< 1,000 copies/mL), by sex, self-reported diagnosis and treatment status, and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
Machakos	*	6	(88.4)	32	(84.0)	38
Meru	*	7	*	20	(49.5)	27
Migori	(68.5)	34	80.1	105	76.8	139
Mombasa	*	9	*	20	(69.4)	29
Nairobi	*	17	(62.8)	36	72.8	53
Nandi	*	12	*	22	(52.2)	34
Narok	*	8	*	21	(48.7)	29
Nyamira	*	9	*	17	(68.4)	26
Nyeri	*	11	*	16	(77.4)	27
Siaya	(66.3)	31	84.4	85	78.7	116
Turkana	*	14	(43.3)	25	(39.7)	39
Uasin Gishu	*	8	(72.9)	27	(66.0)	35
Vihiga	*	13	*	20	(81.4)	33
Marital status						
Never married	(59.9)	47	68.8	152	66.1	199
Married/cohabitating-monogamous	65.2	275	72.8	371	69.3	646
Married/cohabitating -polygamous	(89.0)	33	70.3	112	75.0	145
Divorced or separated	(48.0)	45	75.2	150	68.5	195
Widowed	*	21	83.6	265	83.7	286
Education						
No primary	(53.3)	25	80.3	96	74.3	121
Incomplete primary	64.5	239	75.4	737	72.4	976
Complete primary	69.3	118	73.1	217	71.6	335
Secondary	(61.0)	41	(57.8)	49	59.3	90
Wealth quintile						
Lowest	51.2	104	77.4	255	68.7	359
Second	77.8	106	77.8	271	77.8	377
Middle	63.1	101	73.5	270	70.2	371
Fourth	66.5	76	66.8	204	66.7	280
Highest	(68.1)	36	76.8	99	74.1	135
Religion						
Roman Catholic	59.2	105	72.0	219	67.3	324
Protestant/Other Christian	67.4	272	75.1	820	72.9	1,092
Muslim	*	17	(74.6)	36	75.4	53
No Religion	*	21	*	10	(62.0)	31
Other	*	8	*	15	*	23
Employment status (previous 12 months)						
Employed[1]	67.9	271	72.6	497	70.7	768
Not employed	59.0	152	76.3	603	72.6	755

Table 9.A Viral load suppression by demographic characteristics (continued)

Among HIV-positive adults aged 15-64 years, percentage with viral load suppression (< 1,000 copies/mL), by sex, self-reported diagnosis and treatment status, and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
Circumcision status						
Circumcised	61.6	296	NA	NA	NA	NA
Medical circumcision	63.8	160	NA	NA	NA	NA
Nonmedical circumcision	57.6	132	NA	NA	NA	NA
Unknown whether medical or nonmedical	*	4	NA	NA	NA	NA
Uncircumcised	74.3	126	NA	NA	NA	NA
Unknown	*	1	NA	NA	NA	NA
Age						
Total 15-24	*	24	59.0	115	56.4	139
Total 25-49	62.0	278	75.0	782	71.0	1,060
Total 15-49	60.6	302	72.8	897	69.2	1,199
Total 50-64	80.3	121	83.9	203	82.5	324
Total 15-64	65.1	423	74.6	1,100	71.6	1,523

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 9.B Viral load suppression by age (5-year age groups)

Among HIV-positive persons aged 0-64 years, percentage with viral load suppression (< 1,000 copies/mL), by sex and age, KENPHIA 2018

Age	Male		Female		Total	
	Percentage with VLS	Number	Percentage with VLS	Number	Percentage with VLS	Number
0-4	*	9	*	2	*	11
5-9	*	8	*	12	*	20
10-14	*	15	*	11	(50.3)	26
15-19	*	13	(79.3)	33	(77.6)	46
20-24	*	11	51.2	82	46.5	93
25-29	(43.0)	27	70.4	150	63.4	177
30-34	60.3	53	71.1	220	68.6	273
35-39	68.8	56	74.5	148	72.7	204
40-44	61.7	76	79.5	151	73.4	227
45-49	69.3	66	83.2	113	77.0	179
50-54	78.8	55	82.8	98	81.3	153
55-59	(71.6)	37	81.8	70	77.8	107
60-64	(95.4)	29	(91.2)	35	93.2	64
Total 10-19	(52.0)	28	(70.9)	44	61.4	72
Total 15-24	*	24	59.0	115	56.4	139

Table 9.B Viral load suppression by age (5-year age groups) (continued)

Among HIV-positive persons aged 0-64 years, percentage with viral load suppression (< 1,000 copies/mL), by sex and age, KENPHIA 2018

Age	Male		Female		Total	
	Percentage with VLS	Number	Percentage with VLS	Number	Percentage with VLS	Number
Total 25-49	62.0	278	75.0	782	71.0	1,060
Total 15-49	60.6	302	72.8	897	69.2	1,199
Total 50-64	80.3	121	83.9	203	82.5	324
Total 15-64	65.1	423	74.6	1,100	71.6	1,523

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 9.C Viral load suppression by age (10- to 15-year age groups)

Among HIV-positive people aged 0-64 years, percentage with viral load suppression (< 1,000 copies/mL), by sex and age, KENPHIA 2018

Age	Male		Female		Total	
	Percentage with VLS	Number	Percentage with VLS	Number	Percentage with VLS	Number
0-14	(43.8)	32	(53.5)	25	48.3	57
15-24	*	24	59.0	115	56.4	139
25-34	52.6	80	70.8	370	66.4	450
35-44	65.0	132	77.0	299	73.1	431
45-54	72.8	121	83.0	211	78.9	332
55-64	81.6	66	85.1	105	83.6	171
Total 10-19	(52.0)	28	(70.9)	44	61.4	72
Total 25-49	62.0	278	75.0	782	71.0	1,060
Total 15-49	60.6	302	72.8	897	69.2	1,199
Total 50-64	80.3	121	83.9	203	82.5	324
Total 15-64	65.1	423	74.6	1,100	71.6	1,523

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

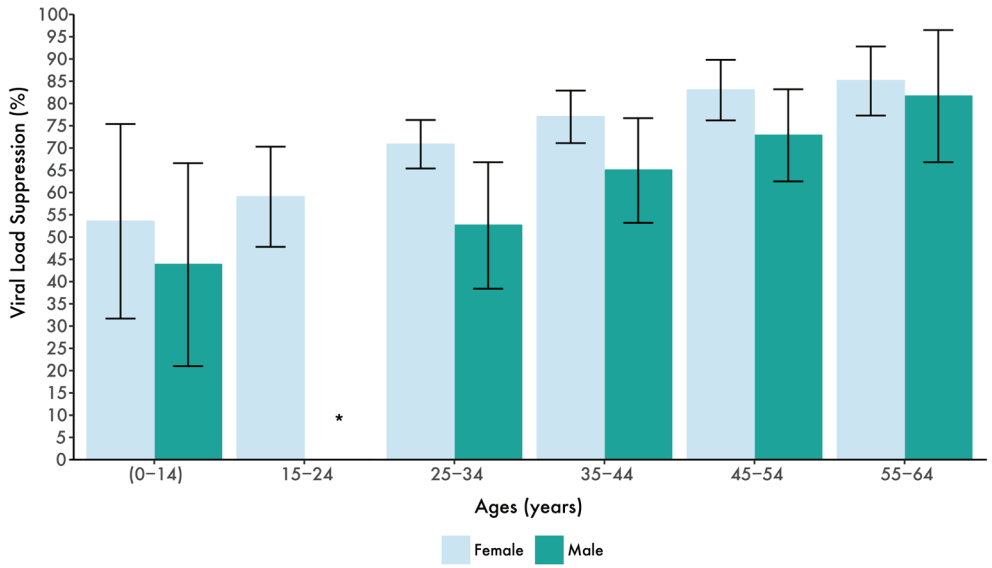


Figure 9.A
Proportion of viral load suppression (<1,000 copies/mL) among people living with HIV, by age and sex, KENPHIA 2018

*An asterisk indicates that an estimate was based upon a very small denominator (less than 25) and has been suppressed.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

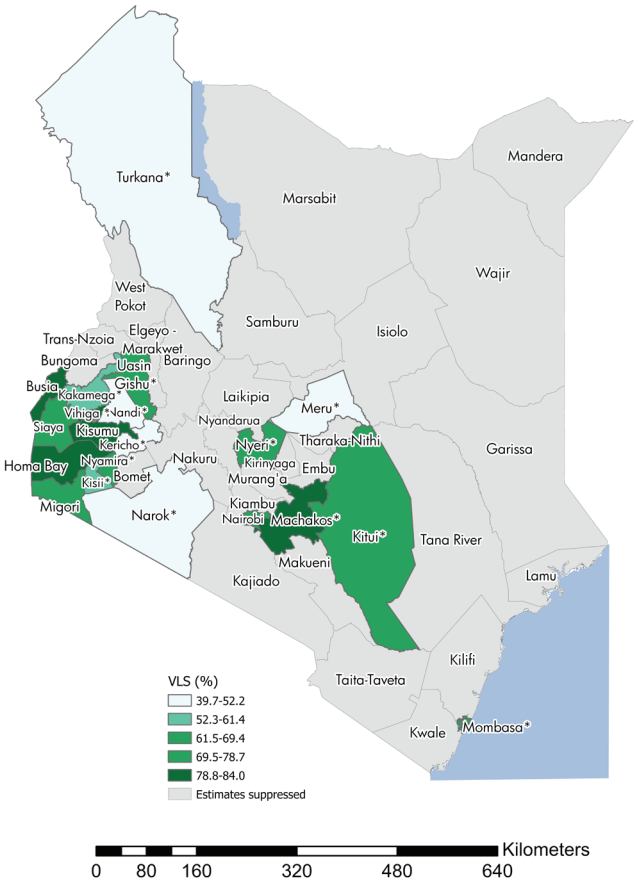
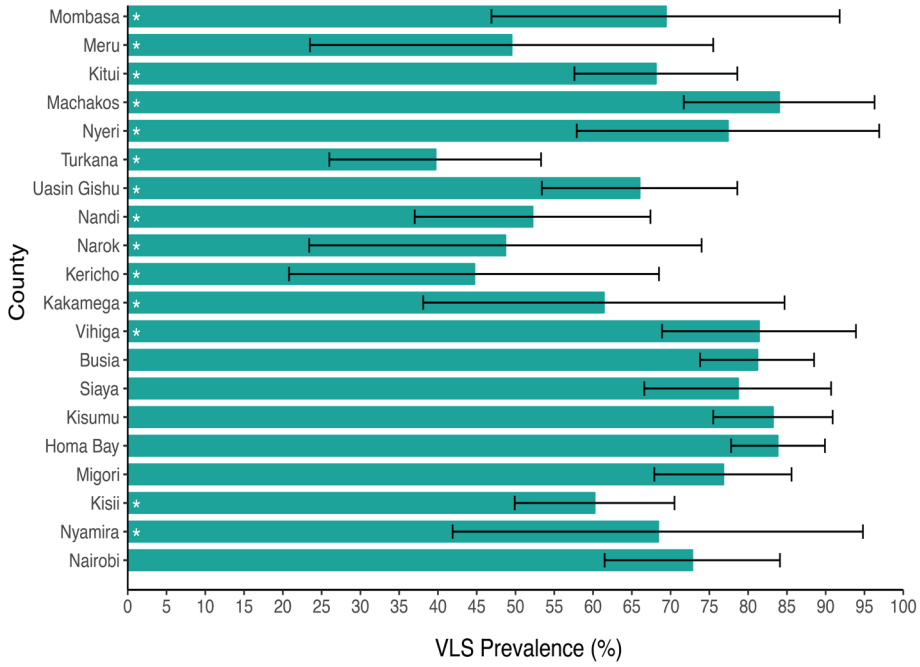


Figure 9.B
Viral load suppression (HIV RNA <1,000 copies/mL) among HIV-positive adults by county, KENPHIA 2018 (map)

Viral load suppression (VLS) estimates presented for counties with at least 25 people living with HIV.
*An asterisk indicates that an estimate was based on a denominator of 25-49 and should be interpreted with caution.

Figure 9.C
Viral load suppression (<1,000 copies/mL) among HIV-positive adults by county, KENPHIA 2018 (bar graph)



Viral load suppression estimates presented for counties, in order of Kenya County Code, with at least 25 people living with HIV.
*An asterisk indicates that an estimate was based on a denominator of 25-49 and should be interpreted with caution.

9.3 REFERENCES

1. Dewing S, Mathews C, Fatti G, Grimwood A, Boulle A. Antiretroviral adherence interventions in Southern Africa: implications for using HIV treatments for prevention. *Curr HIV/AIDS Rep.* 2014;11(1):63-71. doi:10.1007/s11904-013-0193-5.

10. UNAIDS 90-90-90 TARGETS

In order to bring the HIV epidemic under control, UNAIDS has set ambitious targets referred to as 90-90-90: by 2020, 90% of all people living with HIV will know their HIV status; 90% of all people diagnosed with HIV will receive sustained ART; and 90% of all people receiving ART will have viral load suppression

82.7% were aware of their HIV-positive status	**72.6%** were aware of their HIV-positive status	
96.6% of women who were aware of their HIV-positive status were on treatment	**94.5%** of men who were aware of their HIV-positive status were on treatment	**exceeding the conditional target of 90%**
90.4% of women who were aware of their status and on treatment had viral load suppression	**90.9%** of men who were aware of their status and on treatment had viral load suppression	**meeting the conditional target of 90%**

10.1 BACKGROUND

In order to bring the HIV epidemic under control, UNAIDS has set ambitious targets referred to as 90-90-90: by 2020, 90% of all people living with HIV will know their HIV status; 90% of all people diagnosed with HIV will receive sustained ART; and 90% of all people receiving ART will have VLS[1]. These targets have, however recently upgraded to 95% under the 95-95-95 Super-Fast Track framework to be attained by 2025.

While the previous chapters provide results on coverage of HIV testing and treatment services, and on VLS among all HIV-positive individuals irrespective of knowledge of status or ART use, this chapter presents the status of the 90-90-90 indicators, which indicate program performance. Awareness of HIV-positive status among people living with HIV and the on-treatment status among those aware of their HIV-positive status are indicators of access to services. VLS among people living with HIV and are on treatment not only provides an indication of access to and retention in care, but also provides a measure of program success. Full achievement of the UNAIDS targets (90 x 90 x 90) is equal to VLS among 73% of all people living with HIV, the key milestone set by UNAIDS to be achieved by 2020.[1]

KENPHIA measured 90-90-90 indicators using both self-reported and ARV-biomarker data. For instance, individuals were defined as 'aware' of their HIV-positive status if they reported knowing they were HIV positive before testing as part of KENPHIA or if they had an ARV detectable in blood. Individuals were categorized as 'on treatment' if they reported ART use or if they had an ARV detectable in blood.

The tables in this chapter present the 90-90-90 results in two ways, as conditional, and overall percentages. In the conditional 90-90-90 cascade (shown in Table 10.A and 10.C), the denominator of each 90 is the value of the 90 preceding it. In other words, the second 90 is the percentage on ART among those aware of their HIV positive status (diagnosed), and the third 90 is the percentage with VLS among those on treatment.

In the 90-90-90 overall percentages table (shown in Table 10.B), the denominator is the same for each 90: The overall population of adults living with HIV in the country (based on survey participants for whom data on treatment status and viral load were available). Thus, while the first 90 is the same as in the conditional table, the second 90 provides estimates of the prevalence of receiving treatment among the overall population of adults living with HIV in the country, while the third 90 provides the prevalence of achieving VLS on ART among all the adults living with HIV in Kenya.

It is important to note that in each 90-90-90 table, individuals with VLS but who were not aware of their HIV-positive status or were not on ART, were excluded from the numerator for the third 90 (VLS among those on ART). It is for this reason that the prevalence of VLS in the overall 90-90-90 is sometimes slightly lower than the reported VLS prevalence in the preceding chapter, which may include VLS data from people with low viral loads who were not receiving treatment such as individuals who have transiently low viral loads after seroconversion as well as some elite controllers—a small subset of people living with HIV whose immune systems are able to maintain VLS for a period of time without treatment. Thus, the overall 90-90-90 VLS estimates represent the percentage of the adult population living with HIV known to have been reached by the national HIV program and who are benefiting at each step of the cascade.

10.2 RESULTS

The following tables and figure describe progress towards the 90-90-90 targets in adults at the time of the KENPHIA survey.

Table 10.A Adult 90-90-90 (self-reported antiretroviral therapy [ART] status and laboratory antiretroviral [ARV] data; conditional percentages)

Performance against 90-90-90 targets among adults living with HIV aged 15-64 years, by sex and age, KENPHIA 2018

	Male		Female		Total	
	Diagnosed					
Age	Percentage who reported they were HIV positive or with a detectable ARV[1]	Number	Percentage who reported they were HIV positive or with a detectable ARV[1]	Number	Percentage who reported they were HIV positive or with a detectable ARV[1]	Number
15-24	*	23	74.4	115	70.6	138
25-49	69.8	277	82.8	782	78.8	1,059
25-34	61.3	80	81.0	370	76.2	450
35-49	73.9	197	84.4	412	80.7	609
15-49	68.6	300	81.7	897	77.8	1,197
50-64	85.9	121	87.8	203	87.1	324
15-64	72.6	421	82.7	1,100	79.5	1,521
	On Treatment Among Those Diagnosed					
Age	Percentage who reported being on ART or with a detectable ARV[2]	Number	Percentage who reported being on ART or with a detectable ARV[2]	Number	Percentage who reported being on ART or with a detectable ARV[2]	Number
15-24	*	14	91.8	86	93.1	100
25-49	92.4	203	97.2	639	95.9	842
25-34	96.7	53	96.2	297	96.3	350
35-49	90.7	150	97.9	342	95.6	492
15-49	92.9	217	96.5	725	95.6	942
50-64	98.7	106	97.1	177	97.7	283
15-64	94.5	323	96.6	902	96.0	1,225
	Viral Load Suppression (VLS) Among Those on Treatment					
Age	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number
15-24	*	14	81.1	81	79.2	95
25-49	91.9	186	90.5	619	90.9	805
25-34	84.2	51	87.1	284	86.6	335
35-49	95.3	135	93.3	335	93.9	470
15-49	90.4	200	89.4	700	89.6	900
50-64	92.4	105	95.6	171	94.3	276
15-64	90.9	305	90.4	871	90.6	1,176

[1]Relates to Global AIDS Monitoring 2020 Indicator (GAM 2020) 1.1: People living with HIV who know their HIV status and PEPFAR Indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed).
[2]Relates to GAM 2020 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy.
[3]Relates to GAM 2020 1.3: People living with HIV who have suppressed viral loads and PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 10.B Adult 90-90-90 (self-reported antiretroviral therapy [ART] status and/or laboratory antiretroviral [ARV] data; overall percentages)

Performance against 90-90-90 targets among all adults aged 15-64 years living with HIV in Kenya, by sex and age, KENPHIA 2018

	Male		Female		Total	
	Diagnosed					
Age	Percentage who reported they were HIV positive or with a detectable ARV[1]	Number	Percentage who reported they were HIV positive or with a detectable ARV[1]	Number	Percentage who reported they were HIV positive or with a detectable ARV[1]	Number
15-24	*	23	74.4	115	70.6	138
25-49	69.8	277	82.8	782	78.8	1,059
25-34	61.3	80	81.0	370	76.2	450
35-49	73.9	197	84.4	412	80.7	609
15-49	68.6	300	81.7	897	77.8	1,197
50-64	85.9	121	87.8	203	87.1	324
15-64	72.6	421	82.7	1,100	79.5	1,521
	On Treatment					
Age	Percentage who reported being on ART or with a detectable ARV[2]	Number	Percentage who reported being on ART or with a detectable ARV[2]	Number	Percentage who reported being on ART or with a detectable ARV[2]	Number
15-24	*	23	68.3	115	65.7	138
25-49	64.5	277	80.5	782	75.6	1,059
25-34	59.3	80	77.9	370	73.4	450
35-49	67.1	197	82.7	412	77.1	609
15-49	63.8	300	78.8	897	74.3	1,197
50-64	84.8	121	85.3	203	85.1	324
15-64	68.6	421	79.8	1,100	76.3	1,521
	Viral Load Suppression Among Those on Treatment					
Age	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number
15-24	*	23	55.4	115	52.1	138
25-49	59.3	277	72.9	782	68.7	1,059
25-34	49.9	80	67.9	370	63.6	450
35-49	63.9	197	77.1	412	72.4	609
15-49	57.6	300	70.4	897	66.6	1,197
50-64	78.3	121	81.5	203	80.3	324
15-64	62.3	421	72.2	1,100	69.1	1,521

[1]Relates to Global AIDS Monitoring 2020 Indicator (GAM 2020) 1.1: People living with HIV who know their HIV status and PEPFAR Indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed).
[2]Relates to GAM 2020 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy.
[3]Relates to GAM 2020 1.3: People living with HIV who have suppressed viral loads and PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
Weighted figures calculated using btwt0.

Table 10.C Adult 90-90-90 by county (self-reported antiretroviral therapy [ART] status and laboratory antiretroviral [ARV] data; conditional percentages)

90-90-90 targets among people living with HIV aged 15-64 years, by sex and county, KENPHIA 2018

	Diagnosed		On Treatment		Viral Load Suppression (VLS)	
County	Percentage who reported they were HIV positive or with a detectable antiretroviral (ARV)[1]	Number	Percentage who reported being on ART or with a detectable ARV[2]	Number	Percentage with VLS[3]	Number
Busia	85.3	67	98.4	55	95.2	54
Homa Bay	89.7	170	97.5	154	94.0	150
Kakamega	(85.1)	26	*	23	*	23
Kericho	(57.6)	25	*	15	*	13
Kisii	(72.0)	46	(94.4)	34	(86.3)	33
Kisumu	86.0	134	94.8	114	95.7	108
Kitui	(81.2)	44	(96.8)	37	(81.8)	35
Machakos	(86.6)	38	(100.0)	35	(97.0)	35
Meru	(56.9)	27	*	16	*	14
Migori	83.7	139	96.6	119	91.3	115
Mombasa	(79.2)	29	*	24	*	22
Nairobi	81.4	53	(100.0)	45	(86.5)	45
Nandi	(53.6)	34	*	20	*	19
Narok	(57.3)	29	*	19	*	18
Nyamira	(82.2)	26	*	22	*	20
Nyeri	(78.5)	27	*	22	*	21
Siaya	86.3	116	93.4	101	93.3	94
Turkana	(61.6)	39	(89.3)	26	*	24
Uasin Gishu	(73.0)	34	(93.2)	26	*	24
Vihiga	(81.7)	33	(93.2)	27	(97.3)	25

[1]Relates to Global AIDS Monitoring 2020 Indicator (GAM 2020) 1.1: People living with HIV who know their HIV status and PEPFAR Indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed).
[2]Relates to GAM 2020 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy.
[3]Relates to GAM 2020 1.3: People living with HIV who have suppressed viral loads and PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
Results are presented for counties with at least 25 adults living with HIV identified during the survey.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Figure 10.A
Adult 90-90-90: Total (adjusted for laboratory antiretroviral data among adults aged 15-64 years), KENPHIA 2018

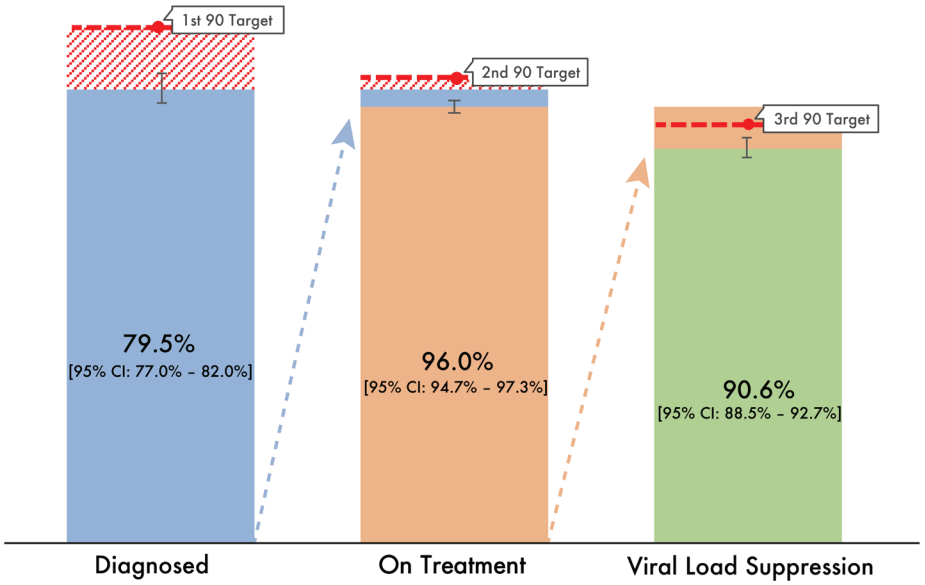
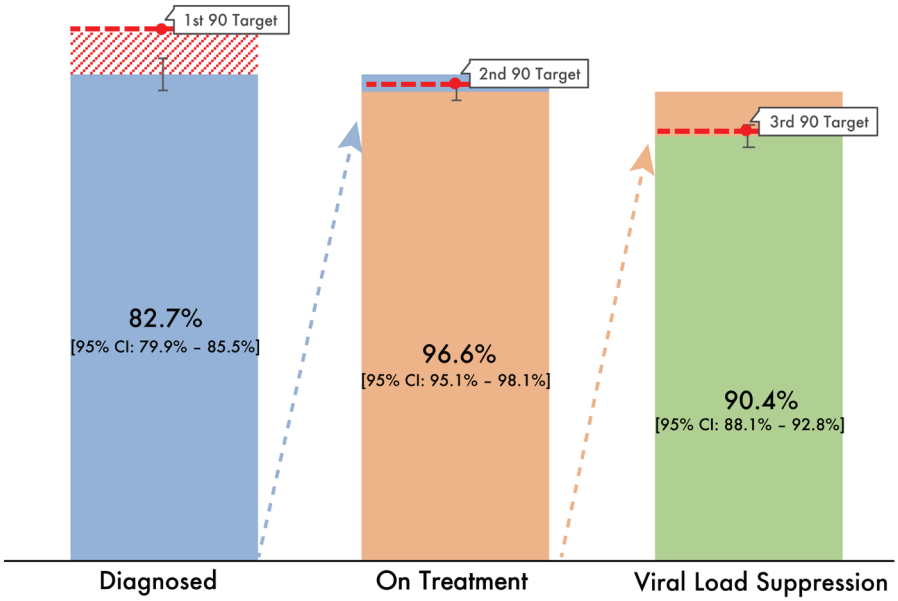


Figure 10.B
Adult 90-90-90: Women (adjusted for laboratory antiretroviral data among women aged 15-64 years), KENPHIA 2018



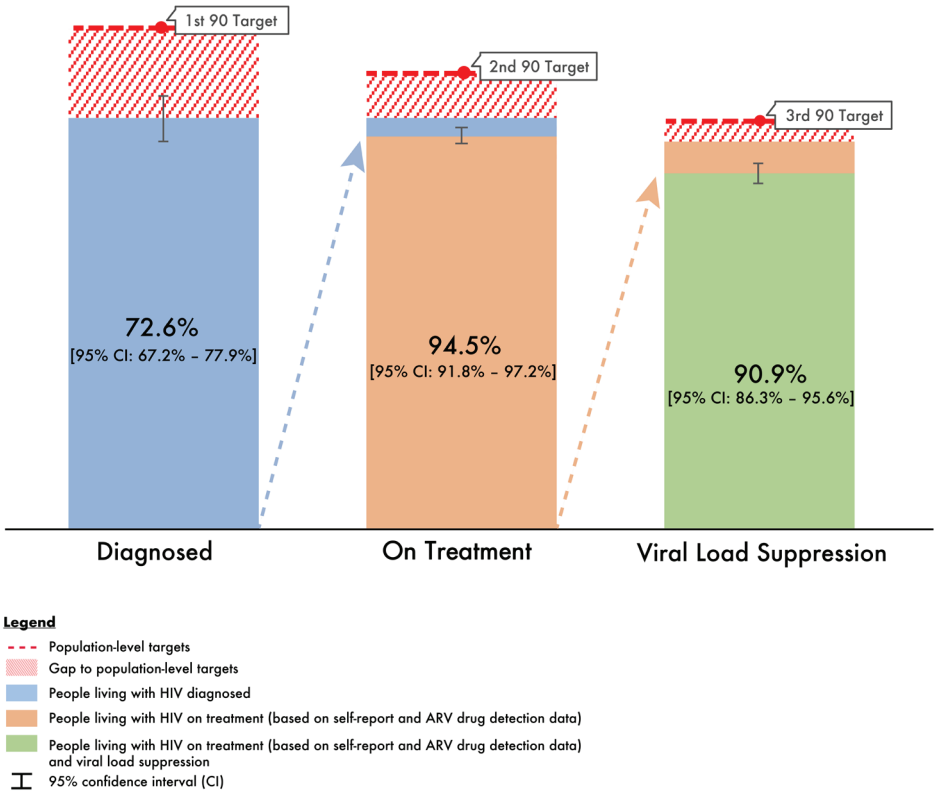


Figure 10.C Adult 90-90-90: Men (adjusted for laboratory antiretroviral data among men aged 15-64 years), KENPHIA 2018

Note: The 90-90-90 targets are that 90% of all people living with HIV should be aware of their status, 90% of those who are aware of their HIV-positive status should be on antiretroviral therapy (ART) (81% of the overall population of people living with HIV) and that 90% of those who are on ART should have viral load suppression (73% of the overall population of people living with HIV). Inset number represent conditional proportions.

10.3 REFERENCES

1. Joint United Nations Programme on HIV/AIDS (UNAIDS). 90-90-90: *An ambitious treatment target to help end the AIDS epidemic.* Geneva: UNAIDS; 2014. https://files.unaids.org/en/media/unaids/contentassets/documents/unaidspublication/2014/90-90-90_en.pdf. Accessed November 2, 2021.

11. CLINICAL PERSPECTIVES ON PEOPLE LIVING WITH HIV

As countries implement treatment for all people living with HIV, ensuring a sustainable health system that is people-centered and innovative requires diligent monitoring and responsiveness

HIV-positive adults that said they were still taking ART at the time of the survey

99.3%
of those who reported initiating ART less than 12 months before the survey

98.1%
of those who reported initiating ART more than 12 months before the survey

There was a range of HIV subtypes among an unweighted subsample of 98 adults living with HIV who underwent HIV genotyping

65%
subtype A

14%
subtype C

13%
subtype D

7%
recombinant

11.1 BACKGROUND

As countries implement treatment for all people living with HIV, ensuring a sustainable health system that is people-centered and innovative requires diligent monitoring and responsiveness.[1] Assessing whether those started on ART remain on treatment can help identify factors associated with individuals falling out of care and to understand whether there are barriers to retention on ART among certain populations. The data can be used to demonstrate the effectiveness of programs and highlight obstacles to expanding and improving them.

Other factors related to the virus itself can also influence clinical outcomes among people living with HIV. For instance, transmitted HIV drug resistance can prevent individuals on treatment from achieving VLS. The measurement of transmitted drug resistance supports optimization of national ART guidelines, including second- and third-line therapies. It is also important to gather information on the viral diversity of HIV (HIV subtypes) in a population, as some HIV subtypes have been associated with a more rapid progression in the absence of treatment, and potentially, variations in the development of drug resistance on treatment.[2]

KENPHIA provided a unique opportunity to gauge progress in the expansion of HIV clinical services in Kenya, as well as identify gaps and future challenges. For instance, this chapter presents data on retention on ART among those recently placed on treatment (within the previous year), and among those who have been on treatment for more than a year.

KENPHIA also evaluated HIV subtypes and looked for evidence of transmitted resistance to ARVs using samples from HIV-positive participants who were identified as having recent HIV infections using the recent infection testing algorithm. Note that these genotypic studies were in a small number of unweighted specimens and may not be representative of the population as a whole. Given the limited number of specimens available for analysis, other surveillance platforms are needed to monitor transmitted, or primary, drug resistance. This includes periodic DR surveys as well as expanding the coverage and quality of routine viral load and HIV drug resistance testing to inform continuous HIV drug resistance surveillance.

11.2 RESULTS

The following tables present data on the clinical characteristics of people living with HIV.

Table 11.A Retention on antiretroviral therapy (ART): People initiating antiretroviral therapy LESS THAN 12 months before the survey

Among HIV-positive persons aged 15-64 years who reported initiating ART less than 12 months before the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Presence of a detectable ARV						
Detectable	(100.0)	29	100.0	93	100.0	122
Not detectable	*	2	*	13	*	15
Residence						
Urban	*	12	(97.8)	47	98.3	59
Rural	*	19	100.0	59	100.0	78
Marital status						
Never married	*	2	*	20	*	22
Married/cohabitating – monogamous	*	20	(100.0)	28	(100.0)	48
Married/cohabitating – polygamous	*	2	*	10	*	12
Divorced or separated	*	6	(100.0)	26	(100.0)	32
Widowed	*	1	*	19	*	20

Table 11.A Retention on antiretroviral therapy (ART): People initiating antiretroviral therapy LESS THAN 12 months before the survey (continued)

Among HIV-positive persons aged 15-64 years who reported initiating ART less than 12 months before the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Education						
No primary	*	3	*	12	*	15
Incomplete primary	*	18	98.4	65	98.8	83
Complete primary	*	9	*	23	(100.0)	32
Secondary	*	1	*	6	*	7
Wealth quintile						
Lowest	*	6	(100.0)	31	(100.0)	37
Second	*	13	*	24	(97.6)	37
Middle	*	6	*	17	*	23
Fourth	*	2	(100.0)	26	(100.0)	28
Highest	*	4	*	8	*	12
Employment status (previous 12 months)						
Employed	*	23	100.0	53	100.0	76
Not employed	*	8	98.1	53	98.4	61
Circumcision status						
Circumcised	*	20	NA	NA	NA	NA
Medical circumcision	*	11	NA	NA	NA	NA
Nonmedical circumcision	*	8	NA	NA	NA	NA
Unknown whether medical or nonmedical	*	1	NA	NA	NA	NA
Uncircumcised	*	11	NA	NA	NA	NA
Unknown	*	0	NA	NA	NA	NA
Age						
Total 15-24	*	0	*	14	*	14
Total 25-49	*	24	98.7	74	99.0	98
Total 15-49	*	24	98.9	88	99.2	112
Total 50-64	*	7	*	18	(100.0)	25
Total 15-64	(100.0)	31	99.1	106	99.3	137

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 11.B Retention on antiretroviral therapy (ART): People initiating antiretroviral therapy MORE THAN 12 months before the survey

Among HIV-positive persons aged 15-64 years who reported initiating ART 12 months or more prior to the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Presence of detectable ARVs						
Detectable	99.1	213	100.0	607	99.7	820
Not detectable	(79.3)	31	88.3	69	85.5	100
Residence						
Urban	99.5	87	98.3	270	98.6	357
Rural	95.2	157	99.0	406	97.8	563
County with at least 25 people living with HIV						
Busia	*	17	(100.0)	26	(100.0)	43
Homa Bay	(95.7)	34	99.3	92	98.1	126
Kakamega	*	2	*	10	*	12
Kericho	*	2	*	8	*	10
Kisii	*	8	*	21	(86.3)	29
Kisumu	(100.0)	25	96.2	66	97.6	91
Kitui	*	3	*	22	(98.4)	25
Machakos	*	3	*	24	(100.0)	27
Meru	*	3	*	9	*	12
Migori	*	22	98.5	66	98.9	88
Mombasa	*	4	*	13	*	17
Nairobi	*	10	*	24	(100.0)	34
Nandi	*	4	*	13	*	17
Narok	*	1	*	12	*	13
Nyamira	*	6	*	7	*	13
Nyeri	*	6	*	12	*	18
Siaya	*	19	99.2	59	99.4	78
Turkana	*	7	*	11	*	18
Uasin Gishu	*	5	*	15	*	20
Vihiga	*	8	*	13	*	21
Marital status						
Never married	*	24	99.8	79	96.5	103
Married/cohabitating – monogamous	98.3	162	98.0	229	98.1	391
Married/cohabitating – polygamous	(100.0)	26	97.6	66	98.4	92
Divorced or separated	*	17	100.0	84	98.3	101
Widowed	*	14	99.2	189	99.0	203
Education						
No primary	*	14	100.0	53	100.0	67
Incomplete primary	95.0	132	98.7	474	97.8	606
Complete primary	97.7	73	98.1	126	97.9	199
Secondary	100.0	25	*	23	100.0	48

Table 11.B Retention on antiretroviral therapy (ART): People initiating antiretroviral therapy MORE THAN 12 months before the survey (continued)

Among HIV-positive persons aged 15-64 years who reported initiating ART 12 months or more prior to the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage still receiving ART	Number	Percentage still receiving ART	Number	Percentage still receiving ART	Number
Wealth quintile						
Lowest	90.6	59	98.3	155	96.1	214
Second	94.1	62	98.6	177	97.4	239
Middle	100.0	57	99.3	166	99.5	223
Fourth	(100.0)	49	97.6	118	98.4	167
Highest	*	17	100.0	59	100.0	76
Religion						
Roman Catholic	95.1	63	98.9	135	97.6	198
Protestant/Other Christian	97.7	155	98.6	508	98.3	663
Muslim	*	10	*	19	(100.0)	29
No Religion	*	11	*	5	*	16
Other	*	5	*	9	*	14
Employment status (last 12 months)						
Employed	97.5	154	98.3	302	98.0	456
Not employed	94.7	90	99.1	374	98.3	464
Circumcision status						
Circumcised	95.9	160	NA	NA	NA	NA
Medical circumcision	94.2	91	NA	NA	NA	NA
Nonmedical circumcision	98.3	66	NA	NA	NA	NA
Unknown whether medical or nonmedical	*	3	NA	NA	NA	NA
Uncircumcised	98.1	84	NA	NA	NA	NA
Unknown	*	0	NA	NA	NA	NA
Age						
15-19	*	6	*	15	*	21
20-24	*	2	(92.7)	35	(87.6)	37
25-29	*	12	97.6	77	98.1	89
30-34	(100.0)	28	98.3	130	98.6	158
35-39	(100.0)	28	100.0	96	100.0	124
40-44	(95.5)	44	99.4	100	98.2	144
45-49	(89.7)	38	99.0	83	95.7	121
50-54	(100.0)	36	99.4	69	99.6	105
55-59	(100.0)	26	(100.0)	45	100.0	71
60-64	*	24	(100.0)	26	100.0	50
Total 15-24	*	8	95.1	50	92.4	58
Total 25-49	96.2	150	98.9	486	98.2	636
Total 15-49	95.3	158	98.5	536	97.7	694
Total 50-64	100.0	86	99.7	140	99.8	226
Total 15-64	96.7	244	98.7	676	98.1	920

Weighted figures calculated using btwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable. *Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk. ()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 11.C Resistance to antiretrovirals

Among persons aged 15-64 years who were recently infected with HIV, percentage with resistance to ARVs, by class of ARV resistance, KENPHIA 2018

	Number	DR Mutations Detected[1]
Successfully amplified[2]	11	
Any	2	K103N, M41ML
NRTI	1	M41ML
NNRTI	2	K103N
PI	0	
NRTI & NNRTI	1	K103N, M41ML
NRTI, NNRTI & PI	0	

[1]Based on Stanford University Database for HIV Drug Resistance Mutation.
https://cms.hivdb.org/prod/downloads/resistance-mutation-handout/resistance-mutation-handout.pdf, Accessed June 26, 2020.
[2]Unweighted figures, from a total of 14 recent cases of HIV.

Table 11.D HIV subtypes

Percent distribution of HIV-positive persons aged 15-64 years that underwent genotyping, by HIV subtype, KENPHIA 2018

	Total	
	Percent	Number
Subtype A	65.3	64
Subtype B	0.0	0
Subtype C	14.3	14
Subtype D	13.3	13
Subtype G	0.0	0
Recombinant	7.1	7
Total	100.0	98

Unweighted figures.

11.3 REFERENCES

1. World Health Organization. *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection. Geneva:* World Health Organization; 2016. https://www.who.int/publications/i/item/9789241549684. Accessed November 2, 2021.

2. Lessells RJ, Katzenstein DK, de Oliveira T. Are subtype differences important in HIV drug resistance?. *Curr Opin Virol.* 2012;2(5):636-643. doi:10.1016/j.coviro.2012.08.006

12. PREVENTION OF MOTHER-TO-CHILD TRANSMISSION

This chapter presents data among women of childbearing age (ages 15-49) on ANC attendance and uptake of PMTCT services

97.3%
of women who had a delivery in the three years preceding the survey had at least one antenatal care (ANC) visit

96.0%
of women who gave birth in the 12 months before the survey, reported that they had known their HIV status before delivery

92.1%
of the HIV-positive women who delivered within one year before the survey, reported that they received ART during their pregnancy

6.7%
of the 31 infants born to mothers living with HIV who were included in this survey, were found to be HIV infected

(this estimate was based upon a denominator between 25-50 and should be interpreted with caution)

12.1 BACKGROUND

Pregnant women living with HIV are at high risk of transmitting HIV to their infants during pregnancy, during birth, or through breastfeeding. Over 90% of new infections among infants and young children occur through mother-to-child-transmission (MTCT).[1] Without any interventions, between 20% and 45% of infants may become infected with HIV, with an estimated risk of 5% to 10% during pregnancy, 10% to 20% during labor and delivery, and 5% to 20% through breastfeeding.[1] In 2010, global targets were set to decrease new HIV infections in children and reduce mortality among mothers living with HIV, including a 90% reduction in child HIV infections, a 50% reduction in AIDS-related maternal deaths, and virtual elimination of MTCT.[2]

To prevent MTCT, the WHO recommends a comprehensive four-pronged approach including: (1) primary prevention of HIV infection among women of childbearing age (henceforth referred to as women in this chapter); (2) preventing unintended pregnancies among women living with HIV; (3) preventing HIV transmission from women living with HIV to their infants; and (4) providing appropriate treatment, care, and support to mothers living with HIV and their children and families.[2]

The broader health goal is to deliver an integrated package of care for the mothers and infants that includes maternal, newborn and child health (MNCH) and PMTCT services. Antenatal care (ANC) is a critical entry platform where most women access PMTCT; it provides the opportunity to monitor pregnancy, provide the interventions needed for PMTCT, and reduce risk of morbidity for mother and infant. In order to achieve the "Elimination of MTCT" goal, 95% of mothers need to know their status, 95% of HIV-positive women need to be on ART, and 95% need to achieve VLS.[3] With such high targets, the country can ill-afford to miss any woman in need of these services.

In order to sustain and build upon national achievements, multiple ANC visits are needed to deliver the integrated PMTCT-MNCH care package. In addition, Kenya's Framework for Elimination of Mother to Child Transmission of HIV and Syphilis 2016 – 2021 has identified the need to integrate/align PMTCT with other broad population preventive measures, especially enrolment into primary schools and cash transfer programs that have been shown to defer sexual debut and reduce teen pregnancies.[4]

12.2 RESULTS

The following tables present data on ANC attendance, breastfeeding practices, awareness of a woman's HIV status before or during pregnancy, use of ART during pregnancy in women who were aware of their HIV-positive status during pregnancy, and infant HIV testing to confirm HIV infection through self-report by the mother and through biomarker testing during the survey.

Table 12.A Antenatal care

Among women aged 15-49 years who delivered in the three years preceding the survey, percentage who attended at least one antenatal care visit for her most recent birth, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who attended at least one ANC visit	Number
Residence		
Urban	99.0	1,495
Rural	96.4	2,856
Marital status		
Never married	96.7	471
Married/cohabitating – monogamous	97.8	2,962
Married/cohabitating – polygamous	93.6	399
Divorced or separated	95.9	297
Widowed	98.4	69

Table 12.A Antenatal care (continued)

Among women aged 15-49 years who delivered in the three years preceding the survey, percentage who attended at least one antenatal care visit for her most recent birth, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who attended at least one ANC visit	Number
Education		
No primary	89.3	665
Incomplete primary	97.4	2,140
Complete primary	98.7	1,030
Secondary	99.8	514
Wealth quintile		
Lowest	93.9	1,570
Second	97.9	851
Middle	98.5	748
Fourth	98.7	680
Highest	99.6	502
Religion		
Roman Catholic	98.1	831
Protestant/Other Christian	98.0	2,691
Muslim	91.5	709
No Religion	96.3	85
Other	(96.0)	34
Employment status (previous 12 months)		
Employed	98.2	1,442
Not employed	96.8	2,908
Age		
15-19	97.4	320
20-24	97.3	1,089
25-29	98.2	1,232
30-34	97.2	972
35-39	97.4	489
40-44	92.0	197
45-49	91.9	52
Total 15-24	97.4	1,409
Total 25-49	97.3	2,942
Total 15-49	97.3	4,351

Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable. ()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 12.B Antenatal care, by county

Among women aged 15-49 years who delivered in the three years preceding the survey, percentage who attended at least one antenatal care visit for her most recent birth, by county, KENPHIA 2018

County	Percentage who attended at least one ANC visit	Number
Baringo	92.6	70
Bomet	100.0	114
Bungoma	100.0	99
Busia	100.0	101
Elgeyo-Marakwet	98.1	90
Embu	100.0	70
Garissa	82.8	98
Homa Bay	97.9	143
Isiolo	99.3	98
Kajiado	99.1	78
Kakamega	100.0	90
Kericho	98.4	100
Kiambu	97.5	52
Kilifi	98.4	99
Kirinyaga	98.4	75
Kisii	98.0	77
Kisumu	100.0	78
Kitui	99.3	113
Kwale	99.1	98
Laikipia	100.0	91
Lamu	98.6	70
Machakos	98.6	90
Makueni	100.0	52
Mandera	73.6	113
Marsabit	87.4	85
Meru	95.2	114
Migori	96.6	167
Mombasa	98.0	69
Murang'a	100.0	51
Nairobi	99.2	166
Nakuru	97.7	91
Nandi	100.0	114
Narok	95.7	121
Nyamira	100.0	66
Nyandarua	98.1	83
Nyeri	100.0	61
Samburu	87.0	85
Siaya	94.9	100
Taita-Taveta	100.0	55
Tana River	92.2	93
Tharaka-Nithi	100.0	75
Trans-Nzoia	95.9	65

Table 12.B Antenatal care, by county (continued)

Among women aged 15-49 years who delivered in the three years preceding the survey, percentage who attended at least one antenatal care visit for her most recent birth, by county, KENPHIA 2018

County	Percentage who attended at least one ANC visit	Number
Turkana	91.8	133
Uasin Gishu	97.4	86
Vihiga	98.6	78
Wajir	79.5	124
West Pokot	93.9	110

Table 12.C Nutritional status of pregnant women aged 15-49 years

Among pregnant women aged 15-49, nutritional status based on measured mid-upper arm circumference (MUAC)

Characteristic	Percentage with			Number
	Severe Acute Malnutrition	Moderate Acute Malnutrition	No Malnutrition	
Result of PHIA survey HIV test				
HIV positive	(0.0)	(0.0)	(100.0)	39
HIV negative	0.0	0.9	99.1	871
Not tested	(0.0)	(0.0)	(100.0)	34
Residence				
Urban	0.0	0.5	99.5	360
Rural	0.1	1.0	98.9	584
Marital status				
Never married	0.3	0.7	99.0	118
Married/cohabitating – monogamous	0.0	0.8	99.2	672
Married/cohabitating – polygamous	0.0	1.4	98.6	79
Divorced or separated	(0.0)	(0.0)	(100.0)	35
Widowed	*	*	*	11
Education				
No primary	0.4	4.3	95.3	167
Incomplete primary	0.0	0.4	99.6	400
Complete primary	0.0	0.5	99.5	259
Secondary	0.0	0.0	0.0	117
Wealth quintile				
Lowest	0.2	2.1	97.8	315
Second	0.0	0.9	99.1	172
Middle	0.0	0.4	99.6	176
Fourth	0.0	0.0	100.0	148
Highest	0.0	0.3	99.7	133
Religion				
Roman Catholic	0.0	0.4	99.6	178
Protestant/Other Christian	0.0	0.4	99.6	561
Muslim	0.3	3.8	95.9	189

Table 12.C Nutritional status of pregnant women aged 15-49 years (continued)

Among pregnant women aged 15-49, nutritional status based on measured mid-upper arm circumference (MUAC)

Characteristic	Percentage with			Number
	Severe Acute Malnutrition	Moderate Acute Malnutrition	No Malnutrition	
No Religion	*	*	*	9
Other	*	*	*	7
Age				
15-19	0.0	1.3	98.7	99
20-24	0.0	0.5	99.5	282
25-29	0.0	0.9	99.1	252
30-34	0.0	1.1	98.9	201
35-39	0.5	0.2	99.2	79
40-44	(0.0)	(1.1)	(98.9)	29
45-49	*	*	*	2
Total 15-24	0.0	0.7	99.3	381
Total 25-49	0.1	0.9	99.1	563
Total 15-49	0.0	0.8	99.2	944

Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 12.D Breastfeeding status by child's age and mother's HIV status

Percent distribution of last-born children born to women aged 15-49 years in the three years preceding the survey by breastfeeding status, by child's aged and mother's HIV status, KENPHIA 2018

Characteristic	Never breast fed	Ever breast fed, but not currently breast feeding	Currently breast feeding	Total	Number
Child's age (months)					
0-1	0.4	24.2	75.3	100.0	280
2-3	0.0	23.5	76.5	100.0	296
4-5	0.3	23.9	75.8	100.0	278
6-8	0.4	21.7	77.9	100.0	377
9-11	0.1	24.1	75.8	100.0	420
12-17	0.8	30.5	68.7	100.0	832
18-23	1.0	55.1	43.8	100.0	659
24-36	0.3	86.8	12.9	100.0	1,114
Result of mother's PHIA survey HIV test					
HIV positive	1.7	62.0	36.3	100.0	198
HIV negative	0.5	46.5	53.1	100.0	3,834
Not tested	0.2	46.5	53.2	100.0	305
Total	0.5	47.1	52.4	100.0	4,337

Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

Table 12.E Prevention of mother-to-child transmission, known HIV status

Among women aged 15-49 years who gave birth within the 12 months before the survey, percentage who were tested for HIV during antenatal care and received their results or who already knew they were HIV positive, by selected demographic characteristics, KENPHIA 2018

Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status[1]	Number of women who gave birth within the past 12 months
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Residence					
Urban	1.1	94.8	1.7	97.6	597
Rural	0.6	90.9	3.4	94.9	1,014
County					
Baringo	*	*	*	*	23
Bomet	(0.0)	(100.0)	(0.0)	(100.0)	43
Bungoma	(0.0)	(98.8)	(0.0)	(98.8)	41
Busia	(6.2)	(80.7)	(7.7)	(94.7)	47
Elgeyo-Marakwet	(6.5)	(90.7)	(2.8)	(100.0)	32
Embu	*	*	*	*	18
Garissa	(0.0)	(70.4)	(0.0)	(70.4)	34
Homa Bay	0.0	85.1	14.9	100.0	62
Isiolo	(0.0)	(97.8)	(0.0)	(97.8)	38
Kajiado	(0.0)	(89.0)	(8.4)	(97.4)	30
Kakamega	(0.8)	(84.0)	(0.0)	(84.9)	28
Kericho	(0.0)	(93.8)	(0.0)	(93.8)	38
Kiambu	*	*	*	*	20
Kilifi	(0.0)	(90.2)	(2.5)	(92.7)	33
Kirinyaga	(3.2)	(92.9)	(3.9)	(100.0)	28
Kisii	(0.0)	(97.3)	(2.7)	(100.0)	33
Kisumu	(0.0)	(96.4)	(3.6)	(100.0)	27
Kitui	(0.0)	(94.7)	(0.0)	(94.7)	44
Kwale	(0.0)	(95.7)	(0.0)	(95.7)	41
Laikipia	(0.0)	(94.3)	(0.0)	(94.3)	33
Lamu	(0.0)	(100.0)	(0.0)	(100.0)	28
Machakos	(2.1)	(91.0)	(3.2)	(96.3)	31
Makueni	*	*	*	*	20
Mandera	(0.0)	(70.3)	(0.0)	(70.3)	43
Marsabit	(0.0)	(99.1)	(0.0)	(99.1)	25
Meru	(0.0)	(100.0)	(0.0)	(100.0)	38
Migori	2.8	86.8	8.7	98.3	65
Mombasa	(2.5)	(93.0)	(2.5)	(98.0)	33
Murang'a	*	*	*	*	19
Nairobi	0.0	98.5	0.0	98.5	67
Nakuru	(0.0)	(97.2)	(0.0)	(97.2)	27
Nandi	(0.0)	(89.5)	(2.3)	(91.8)	40
Narok	(1.1)	(95.3)	(0.0)	(96.3)	41
Nyamira	*	*	*	*	17

Table 12.E Prevention of mother-to-child transmission, known HIV status (continued)

Among women aged 15-49 years who gave birth within the 12 months before the survey, percentage who were tested for HIV during antenatal care and received their results or who already knew they were HIV positive, by selected demographic characteristics, KENPHIA 2018

Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status[1]	Number of women who gave birth within the past 12 months
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Nyandarua	(0.0)	(96.0)	(4.0)	(100.0)	31
Nyeri	*	*	*	*	20
Samburu	(0.0)	(100.0)	(0.0)	(100.0)	27
Siaya	(2.5)	(78.5)	(19.0)	(100.0)	43
Taita-Taveta	*	*	*	*	19
Tana River	(2.6)	(91.1)	(0.0)	(93.7)	31
Tharaka-Nithi	(0.0)	(100.0)	(0.0)	(100.0)	28
Trans-Nzoia	(2.9)	(88.2)	(3.1)	(94.2)	27
Turkana	0.0	92.5	0.0	92.5	54
Uasin Gishu	(0.0)	(87.0)	(4.7)	(91.7)	35
Vihiga	(3.4)	(92.7)	(0.0)	(96.1)	27
Wajir	(0.0)	(72.4)	(0.0)	(72.4)	45
West Pokot	(0.0)	(94.1)	(0.0)	(94.1)	37
Marital status					
Never married	0.9	93.9	2.6	97.4	218
Married/cohabitating-monogamous	0.6	93.1	2.4	96.1	1,093
Married/cohabitating-polygamous	1.0	86.4	2.5	89.8	150
Divorced or separated	3.9	87.3	3.1	94.3	91
Widowed	*	*	*	*	19
Education					
No primary	0.3	86.7	3.2	90.2	217
Incomplete primary	0.9	90.8	4.5	96.2	779
Complete primary	0.5	94.2	1.3	96.0	415
Secondary	1.5	96.6	0.0	98.2	199
Wealth quintile					
Lowest	0.1	88.5	3.7	92.3	550
Second	1.8	93.4	2.6	97.8	317
Middle	0.9	92.4	4.1	97.4	281
Fourth	0.6	94.0	2.5	97.1	271
Highest	1.0	95.7	0.4	97.2	192
Religion					
Roman Catholic	1.1	92.7	1.5	95.3	306
Protestant/Other Christian	0.8	93.0	3.2	97.0	1,000
Muslim	0.2	87.8	3.0	90.9	265
No Religion	(0.0)	(96.5)	(0.0)	(96.5)	28
Other	*	*	*	*	11
Employment status (previous 12 months)					
Employed	1.0	92.9	3.2	97.2	496
Not employed	0.7	92.1	2.5	95.4	1,114

Table 12.E Prevention of mother-to-child transmission, known HIV status (continued)

Among women aged 15-49 years who gave birth within the 12 months before the survey, percentage who were tested for HIV during antenatal care and received their results or who already knew they were HIV positive, by selected demographic characteristics, KENPHIA 2018

Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status[1]	Number of women who gave birth within the past 12 months
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Age					
15-19	0.0	93.3	0.4	93.7	181
20-24	0.9	92.6	1.3	94.8	424
25-29	0.8	93.0	3.1	96.9	460
30-34	0.8	92.8	4.6	98.2	319
35-39	1.1	88.9	6.2	96.3	169
40-44	(2.6)	(92.3)	(2.1)	(97.0)	44
45-49	*	*	*	*	14
Total 15-24	0.7	92.8	1.0	94.4	605
Total 25-49	0.9	92.1	4.1	97.1	1,006
Total 15-49	0.8	92.4	2.8	96.0	1,611

[1]Relates to PEPFAR Indicator PMTCT_STAT_NAT / SUBNAT: Percentage of pregnant women with known HIV status.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 12.F Prevention of mother-to-child transmission, HIV-positive pregnant women who received antiretrovirals

Among HIV-positive women aged 15-49 years who gave birth within the 12 months before the survey, percentage who received antiretrovirals during pregnancy to reduce the risk of mother-to-child-transmission, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who were already on ARVs prior to pregnancy	Percentage who were newly initiated on ARVs during pregnancy or labor and delivery	Total percentage who received ARVs[1]	Number of HIV-positive women who gave birth within the 12 months before the survey
Residence				
Urban	*	*	*	22
Rural	(78.4)	(11.6)	(90.1)	37
Marital status				
Never married	*	*	*	8
Married/cohabitating – monogamous	(75.0)	(16.3)	(91.3)	33
Married/cohabitating – polygamous	*	*	*	5
Divorced or separated	*	*	*	6
Widowed	*	*	*	6
Education				
No primary	*	*	*	5
Incomplete primary	(78.3)	(14.3)	(92.7)	41
Complete primary	*	*	*	10
Secondary	*	*	*	3

Table 12.F Prevention of mother-to-child transmission, HIV-positive pregnant women who received antiretrovirals (continued)

Among HIV-positive women aged 15-49 years who gave birth within the 12 months before the survey, percentage who received antiretrovirals during pregnancy to reduce the risk of mother-to-child-transmission, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who were already on ARVs prior to pregnancy	Percentage who were newly initiated on ARVs during pregnancy or labor and delivery	Total percentage who received ARVs[1]	Number of HIV-positive women who gave birth within the 12 months before the survey
Wealth quintile				
Lowest	*	*	*	15
Second	*	*	*	14
Middle	*	*	*	15
Fourth	*	*	*	10
Highest	*	*	*	5
Employment status (previous 12 months)				
Employed	*	*	*	24
Not employed	(74.4)	(20.6)	(95.1)	35
Age				
Total 15-24	*	*	*	11
Total 25-49	(78.2)	(15.8)	(94.0)	48
Total 15-49	71.5	20.6	92.1	59

[1]Relates to Global AIDS Monitoring 2020 Indicator 2.3: Preventing the mother-to-child transmission of HIV and PEPFAR Indicator PMTCT_ARV_NAT / SUBNAT: PMTCT_ARV_NAT / SUBNAT: Number and percentage of HIV-positive pregnant women who received antiretroviral medicine (ARV) during pregnancy to reduce the risk of mother-to-child transmission.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 12.G Mother-to-child transmission of HIV

Among infants born in the last 17 months to HIV-positive women aged 15-49 years, percentage exposed to HIV and percentage confirmed positive for HIV infection, by mother's self-reported ARV and breastfeeding status, KENPHIA 2018

Characteristic	Percentage of infants confirmed HIV positive[1]	Number of infants born to HIV-positive women[2]
Mother's self-reported ARV status		
Mother unaware of HIV status during pregnancy	*	3
Already on ARVs at first antenatal visit	*	15
Newly initiated on ARVs during pregnancy or labor and delivery	*	4
Did not receive ARVs during pregnancy	*	2
Missing self-reported ARV status during pregnancy	*	6
Mother's self-reported breastfeeding status		
Ever breastfed the infant	(8.3)	25
Never breastfed the infant	*	1
Missing breastfeeding status	*	5

Table 12.G Mother-to-child transmission of HIV (continued)

Among infants born in the last 17 months to HIV-positive women aged 15-49 years, percentage exposed to HIV and percentage confirmed positive for HIV infection, by mother's self-reported ARV and breastfeeding status, KENPHIA 2018

Characteristic	Percentage of infants confirmed HIV positive[1]	Number of infants born to HIV-positive women[2]
Age		
Total 0-11 months	*	17
Total 0-17 months	(6.7)	31

[1]Relates to Global AIDS Monitoring 2020 Indicator 2.2: Mother-to-child transmission of HIV.
[2]Includes only infants who were tested for HIV during the PHIA survey.
Weighted figures calculated using btwt0.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

12.3 REFERENCES

1. De Cock KM, Fowler MG, Mercier E, et al. Prevention of mother-to-child HIV transmission in resource-poor countries: translating research into policy and practice. *JAMA.* 2000;283(9):1175-1182. doi:10.1001/jama.283.9.1175.

2. World Health Organization. *Towards the elimination of mother-to-child transmission of HIV: report of a WHO technical consultation.* Geneva: World Health Organization; 2011. http://apps.who.int/iris/bitstream/handle/10665/44638/9789241501910_eng.pdf;jsessionid=CD35DAE3C3D00349A9B149BCFF9262C4?sequence=1. Accessed April 30, 2020.

3. World Health Organization. *Global guidance on criteria and processes for validation: elimination of mother-to-child transmission of HIV and syphilis, 2nd edition.* Geneva: World Health Organization; 2017. https://apps.who.int/iris/bitstream/handle/10665/259517/9789241513272-eng.pdf;jsessionid=FC915C7298AF6DD2E2D1AB4BA706B0AF?sequence=1. Accessed May 18, 2020.

4. National AIDS & STI Control Programme. *Framework for Elimination of Mother-to-child Transmission of HIV and Syphilis 2016–2021.* Nairobi, Kenya: National AIDS and STI Control Programme; 2017.

13. CHILDREN

This chapter presents KENPHIA's findings in the pediatric population

(ages 0-14)

78.9%
of children had a known HIV-positive status

93.2%
of children who were known to be HIV positive were on ART at the time of the survey

67.1%
of HIV-positive children who were on ART had viral load suppression

(ages 6-59 months)

98.9%
had appropriate mid-upper arm circumference for their age
There was no difference between children in rural and urban settings

13.1 BACKGROUND

Approximately 90% of pediatric HIV infections are as a result of mother-to-child HIV transmission.[1] HIV incidence and prevalence among children depend upon the effectiveness of prevention of mother to child HIV transmission (PMTCT) and the success of pediatric HIV treatment programs. Kenya's pediatric HIV treatment program began in 2005 and has scaled up consistently over the years. Efforts to close the unmet gap for ART among children were implemented in 2015-2016 through the Accelerated Children Treatment Initiative (ACT); the initiative led to a more than 10% increase in ART coverage during this period.[2] Estimates of HIV prevalence, ART coverage and VLS among children are most commonly derived indirectly from clinic-based data or epidemiologic models. In Kenya, KENPHIA provides direct measurements of the 90-90-90 clinical cascade of care which defines knowledge of HIV status, ART uptake among those with known HIV status and viral suppression among those on ART. These measurements are used to identify the needs of pediatric HIV treatment; plan for HIV prevention, and care and treatment services for children; evaluate PMTCT programs; and address the specific needs of children.

This chapter presents results on the UNAIDS 90-90-90 cascade in children, using both parent/guardian-reported data (on awareness of child's HIV status and ARV use) and data on detectable ARVs. Analyses for the 90-90-90 tables for children were similar to that described for adults in Chapter 10. Parents or guardians were asked about their child's HIV infection status and ART use. Data on detectable ARVs were used in combination with parent/guardian-reported ARV use to define awareness of HIV-positive status and ART use for a child. If the parent/guardian reported that their child was HIV negative, but there were detectable ARVs in the child's blood, the child was classified as previously diagnosed. Similarly, if the parent/guardian reported that their child was not on ARVs, but there were ARVs detectable, the child was categorized as being on ART. Children with VLS, but who were not diagnosed or on ART, were excluded from the numerator of the 90% target on VLS.

Also, to evaluate the nutritional status of young children in Kenya, KENPHIA also included an assessment of nutritional status using mid- upper arm circumference for respondents aged 6-59 months.

13.2 RESULTS

The following tables and figure present KENPHIA's findings in the pediatric population.

Table 13.A Nutritional status of children aged 6 months to 5 years

Among children aged 6 to 59 months, nutritional status[1] based on measured mid-upper arm circumference (MUAC)				
Characteristic	Percentage with Severe Acute Malnutrition	Percentage with Moderate Acute Malnutrition	Percentage with No Acute Malnutrition	Number
Result of PHIA survey HIV test				
HIV positive	*	*	*	10
HIV negative	0.2	0.9	98.9	2,249
Not tested	(0.0)	(1.4)	(98.6)	35
Residence				
Urban	0.3	0.6	99.1	680
Rural	0.1	1.1	98.8	1,614
County				
Baringo	(0.0)	(0.0)	(100.0)	31
Bomet	0.0	0.0	100.0	62
Bungoma	0.0	1.6	98.4	73
Busia	0.0	0.9	99.1	75

Table 13.A Nutritional status of children aged 6 months to 5 years (continued)

Among children aged 6 to 59 months, nutritional status[1] based on measured mid-upper arm circumference (MUAC)				
Characteristic	Percentage with Severe Acute Malnutrition	Percentage with Moderate Acute Malnutrition	Percentage with No Acute Malnutrition	Number
Elgeyo-Marakwet	(0.0)	(2.8)	(97.2)	36
Embu	(0.0)	(2.6)	(97.4)	38
Garissa	0.0	3.6	96.4	58
Homa Bay	0.0	2.6	97.4	71
Isiolo	0.0	1.6	98.4	52
Kajiado	(0.0)	(2.0)	(98.0)	43
Kakamega	0.0	2.0	98.0	51
Kericho	0.0	1.5	98.5	51
Kiambu	(0.0)	(0.0)	(100.0)	29
Kilifi	(0.0)	(0.0)	(100.0)	37
Kirinyaga	(0.0)	(0.0)	(100.0)	36
Kisii	(0.0)	(0.0)	(100.0)	45
Kisumu	0.0	0.0	100.0	52
Kitui	0.0	0.0	100.0	57
Kwale	(0.0)	(0.0)	(100.0)	25
Laikipia	(0.0)	(0.0)	(100.0)	31
Lamu	(0.0)	(0.0)	(100.0)	29
Machakos	(0.0)	(0.0)	(100.0)	44
Makueni	(0.0)	(0.0)	(100.0)	25
Mandera	2.0	6.3	91.7	52
Marsabit	(0.0)	(2.1)	(97.9)	34
Meru	0.0	0.0	100.0	54
Migori	1.0	2.3	96.8	95
Mombasa	*	*	*	18
Murang'a	(0.0)	(2.5)	(97.5)	30
Nairobi	0.0	0.0	100.0	73
Nakuru	(0.0)	(0.0)	(100.0)	34
Nandi	0.0	0.0	100.0	61
Narok	0.0	0.0	100.0	73
Nyamira	(0.0)	(3.7)	(96.3)	36
Nyandarua	(0.0)	(0.0)	(100.0)	32
Nyeri	*	*	*	23
Samburu	0.0	0.0	100.0	63
Siaya	2.7	4.1	93.2	60
Taita-Taveta	(0.0)	(0.0)	(100.0)	36
Tana River	1.6	1.6	96.7	51
Tharaka-Nithi	(0.0)	(0.0)	(100.0)	40
Trans-Nzoia	(0.0)	(0.0)	(100.0)	40
Turkana	0.0	0.8	99.2	104
Uasin Gishu	1.6	1.2	97.2	53
Vihiga	(0.0)	(0.0)	(100.0)	43

Table 13.A Nutritional status of children aged 6 months to 5 years (continued)

Among children aged 6 to 59 months, nutritional status[1] based on measured mid-upper arm circumference (MUAC)				
Characteristic	Percentage with Severe Acute Malnutrition	Percentage with Moderate Acute Malnutrition	Percentage with No Acute Malnutrition	Number
Wajir	1.3	6.4	92.3	65
West Pokot	0.0	0.6	99.4	73
Wealth quintile				
Lowest	0.2	1.0	98.8	887
Second	0.3	0.8	99.0	529
Middle	0.1	2.0	97.9	397
Fourth	0.0	0.2	99.8	312
Highest	0.5	0.3	99.2	169
Total ages 6-59 months	0.2	0.9	98.9	2,294

[1]http://guidelines.health.go.ke:8000/media/IMAM_Guideline_Kenya_June09.pdf
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 13.B Pediatric 90-90-90 (parent-guardian reported and laboratory antiretroviral [ARV] data; conditional percentages)

90-90-90 targets among children living with HIV aged 0-14 years, by age and selected demographic characteristics, KENPHIA 2018		
Age	Diagnosed	
	Percentage reported as HIV positive by their parent or with a detectable ARV[1]	Number
0-9 years	(70.3)	30
10-14 years	(89.6)	26
Total 0-14 years	78.9	56
Age	On Treatment Among Those Diagnosed	
	Percentage reported by their parent to be on antiretroviral therapy (ART) at time of survey or with a detectable ARV[2]	Number
0-9 years	*	21
10-14 years	*	23
Total 0-14 years	(93.2)	44
Age	Viral Load Suppression (VLS) Among Those on Treatment	
	Percentage with VLS[3]	Number
0-9 years	*	18
10-14 years	*	23
Total 0-14 years	(67.1)	41

[1]Relates to Global AIDS Monitoring 2020 Indicator (GAM 2020) 1.1: People living with HIV who know their HIV status and PEPFAR Indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed).
[2]Relates to GAM 2020 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy.
[3]Relates to GAM 2020 1.3: People living with HIV who have suppressed viral loads and PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
Weighted figures calculated using btwt0.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

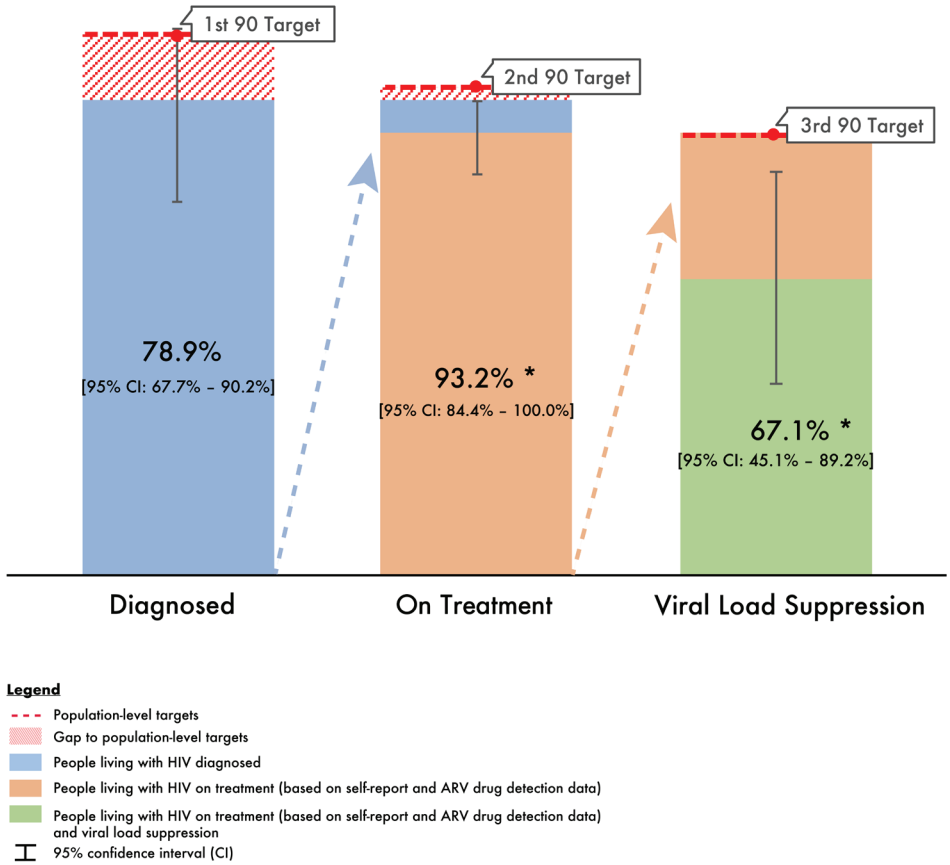
Table 13.C Pediatric 90-90-90 (parent-guardian reported and laboratory antiretroviral [ARV] data; overall percentages)

90-90-90 targets among children living with HIV aged 0-14 years, by age and selected demographic characteristics, KENPHIA 2018

Age	Diagnosed	
	Percentage reported as HIV positive by their parent or with a detectable ARV[1]	Number
0-9 years	(70.3)	30
10-14 years	(89.6)	26
Total 0-14 years	78.9	56
Age	On Treatment	
	Percentage reported by their parent to be on antiretroviral therapy (ART) at time of survey or with a detectable ARV[2]	Number
0-9 years	(60.5)	30
10-14 years	(89.6)	26
Total 0-14 years	73.6	56
Age	Viral Load Suppression (VLS) on Treatment	
	Percentage with VLS[3]	Number
0-9 years	(48.6)	30
10-14 years	(50.3)	26
Total 0-14 years	49.4	56

[1]Relates to Global AIDS Monitoring 2020 Indicator (GAM 2020) 1.1: People living with HIV who know their HIV status and PEPFAR Indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed).
[2]Relates to GAM 2020 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving antiretroviral therapy.
[3]Relates to GAM 2020 1.3: People living with HIV who have suppressed viral loads and PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
Weighted figures calculated using btwt0.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Figure 13.A
Pediatric 90-90-90 (laboratory ARV-adjusted data among children aged 0-14 years), KENPHIA 2018



*An asterisk indicates that an estimate was based upon a very small denominator (less than 25) and has been suppressed.
Note: The 90-90-90 targets are that 90% of all people living with HIV should be aware of their status, 90% of those who are aware of their HIV-positive status should be on antiretroviral therapy (ART) (81% of the overall population of people living with HIV) and that 90% of those who are on ART should have viral load suppression (73% of the overall population of people living with HIV). Inset number represent conditional proportions.

13.2 REFERENCES

1. Joint United Nations Programme on HIV/AIDS. *UNAIDS data tables, 2017.* http://aidsinfo.unaids.org/. Accessed May 18, 2020.

2. National AIDS Control Council (NACC). *Kenya AIDS Response Progress Report 2018.* Nairobi: NACC; 2018.

14. YOUNG PEOPLE

This chapter describes KENPHIA's findings among young people (ages 15-24)

Early sexual debut

(sexual intercourse before the age of 15)

21.5%
reported having sexual intercourse before the age of 15

12.6%
among

30.3%
among

Early sexual debut was also more likely to be reported by young people who did not attend secondary school

24.2%
among those with no education,

27.8%
among those with an incomplete primary education

20.6%
among those who completed only primary school

11.3%
among those who had some secondary school education

Knowledge of HIV by education

Knowledge of HIV transmission and prevention varied by levels of education

62.5%
among those with secondary education correctly answered all five survey questions on HIV knowledge, and

16.1%
among those with no primary school education correctly answered all five survey questions on HIV knowledge

Among HIV-positive young people

70.6%
were aware of their status, and among these,

93.1%
were on treatment, and among those on treatment,

79.2%
had achieved viral load suppression

14.1 BACKGROUND

Kenya developed a fast track plan to end HIV and AIDS among young adolescents (ages 10-14 years) and young people (ages 15-24 years) in 2015.[1] This accelerated plan was geared towards increasing investment in HIV prevention and treatment interventions for young adolescents and young people. The plan has entailed developing policies to foster youth engagement and collect strategic information to ensure that young adolescents and young people have access to services and that outcomes are tracked nationally. Further, the country has also implemented orphans and vulnerable children (OVC) programs and initiatives such as DREAMS (Determined, Resilient, Empowered, Mentored and Safe) to decrease HIV vulnerabilities such as early sexual debut, low knowledge of HIV status, and use of condoms in this age group.[1] In 2018, nearly half of new HIV infections in Kenya occurred among young adolescents and young people; therefore, HIV prevention in this population group is critical in the journey towards epidemic control.[2]

Similarly, Kenya has developed multiple policies and various youth-led initiatives, such as the one2one and Operation Triple Zero, among others, to close HIV treatment gaps.[2] A favorable policy environment and effective young adolescent and young people participation have had a positive impact in promoting access to HIV services, retention in care, adherence to medication, and viral suppression in the last three years. Despite these gains, retention in care and viral suppression in this priority group is suboptimal compared to adults. Therefore, more needs to be done to ensure treatment outcomes among young adolescents and young people to meet the UNAIDS 90-90-90 targets.

This chapter describes the prevalence of sexual debut before age 15 among young people aged 15-24 years by marital status, counties of residence, socio-economic and demographic characteristics. Knowledge of sexual transmission of HIV and misconception about HIV transmission are also described. In addition, the chapter outlines the 90-90-90 cascade among young people: knowledge of HIV status, uptake of ART among those with known status, and viral suppression among those on ART.

14.2 RESULTS

Table 14.A shows the prevalence of early sexual debut before 15 years of age among young men and women, by marital status, region, and socio-demographic characteristics. Tables 14.B, 14.C, and 14.D describe the knowledge of HIV prevention among older adolescent boys and girls (aged 15-19 years) and young men and women aged 20-24 years. These data were measured by asking participants to agree or disagree with both accurate and inaccurate statements about HIV prevention.

Finally, Figure 14.A presents data the 90-90-90 cascade for young people.

Table 14.A Sex before the age of 15 years

Percentage of older adolescents and young adults who have had sexual intercourse before the age of 15 years; by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage who had sex before age 15 years	Number	Percentage who had sex before age 15 years	Number	Percentage who had sex before age 15 years	Number
Residence						
Urban	27.1	935	10.5	1,327	18.5	2,262
Rural	32.3	1,482	14.2	1,929	23.5	3,411
County						
Baringo	(36.2)	44	(20.3)	37	30.7	81
Bomet	31.9	71	13.9	81	23.6	152
Bungoma	31.8	63	9.6	79	20.6	142
Busia	(30.6)	46	15.2	74	21.7	120
Elgeyo-Marakwet	25.5	65	6.2	82	16.1	147

Table 14.A Sex before the age of 15 years (continued)

Percentage of older adolescents and young adults who have had sexual intercourse before the age of 15 years; by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage who had sex before age 15 years	Number	Percentage who had sex before age 15 years	Number	Percentage who had sex before age 15 years	Number
Embu	(35.0)	47	10.2	69	22.4	116
Garissa	*	15	21.7	51	25.9	66
Homa Bay	34.9	101	24.4	115	30.2	216
Isiolo	(29.4)	28	15.4	53	21.1	81
Kajiado	35.7	61	8.0	60	22.8	121
Kakamega	(31.6)	48	9.5	63	21.0	111
Kericho	39.5	68	10.7	93	25.5	161
Kiambu	*	24	(2.9)	41	7.8	65
Kilifi	(19.4)	41	13.6	71	15.9	112
Kirinyaga	(3.2)	39	(6.6)	42	4.8	81
Kisii	26.6	60	29.8	74	28.2	134
Kisumu	50.9	60	8.3	84	28.6	144
Kitui	35.4	77	8.5	88	22.4	165
Kwale	(30.7)	32	8.0	53	17.9	85
Laikipia	(22.1)	26	1.0	54	9.0	80
Lamu	*	21	(9.1)	46	21.5	67
Machakos	33.4	76	11.6	70	24.2	146
Makueni	(22.1)	35	(7.4)	36	15.6	71
Mandera	*	15	15.7	55	20.6	70
Marsabit	*	20	15.0	52	16.6	72
Meru	28.2	96	14.6	101	22.0	197
Migori	30.3	95	29.4	173	29.8	268
Mombasa	28.2	58	11.4	56	21.1	114
Murang'a	(29.7)	41	(18.3)	28	25.9	69
Nairobi	17.8	113	8.1	159	12.5	272
Nakuru	47.2	56	9.1	50	32.1	106
Nandi	40.1	92	8.7	104	24.5	196
Narok	(38.2)	41	22.3	69	29.7	110
Nyamira	(29.2)	38	25.9	70	27.2	108
Nyandarua	(29.1)	45	8.1	50	18.5	95
Nyeri	(25.3)	35	(3.0)	41	15.5	76
Samburu	(39.0)	27	38.8	54	38.9	81
Siaya	41.2	56	17.2	100	27.9	156
Taita-Taveta	(23.7)	42	(1.6)	49	13.5	91
Tana River	(35.6)	36	19.5	55	27.3	91
Tharaka-Nithi	36.6	59	13.3	55	26.9	114
Trans-Nzoia	(32.1)	43	12.7	52	23.0	95
Turkana	34.7	63	14.2	79	24.9	142
Uasin Gishu	24.7	74	6.6	69	17.2	143
Vihiga	(32.0)	38	11.3	63	20.1	101
Wajir	*	8	14.9	51	14.0	59

Table 14.A Sex before the age of 15 years (continued)

Percentage of older adolescents and young adults who have had sexual intercourse before the age of 15 years; by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage who had sex before age 15 years	Number	Percentage who had sex before age 15 years	Number	Percentage who had sex before age 15 years	Number
West Pokot	31.7	78	24.7	105	28.2	183
Marital status						
Never married	30.6	2,077	11.9	1,434	23.8	3,511
Married/cohabitating – monogamous	28.4	268	12.2	1,404	15.7	1,672
Married/cohabitating – polygamous	*	6	21.7	118	23.0	124
Divorced or separated	33.7	57	14.5	202	20.9	259
Widowed	*	2	*	15	*	17
Education						
No primary	(21.1)	49	25.2	253	24.2	302
Incomplete primary	37.8	785	18.8	1,248	27.8	2,033
Complete primary	30.5	1,198	9.7	1,307	20.6	2,505
Secondary	18.1	383	3.7	445	11.3	828
Wealth quintile						
Lowest	39.3	547	20.8	935	29.3	1,482
Second	30.6	576	14.5	689	22.9	1,265
Middle	30.7	535	10.3	625	21.3	1,160
Fourth	27.7	481	8.9	597	18.8	1,078
Highest	22.2	278	7.3	410	14.0	688
Religion						
Roman Catholic	34.2	538	12.4	671	23.4	1,209
Protestant/Other Christian	29.7	1,532	12.3	2,126	20.8	3,658
Muslim	23.0	190	15.9	381	19.2	571
No Religion	34.8	124	13.1	56	29.1	180
Other	(14.7)	32	*	22	15.8	54
Employment status (previous 12 months)						
Employed	27.2	1,271	10.6	974	21.0	2,245
Not employed	34.3	1,145	13.7	2,281	21.8	3,426
Circumcision status						
Circumcised	29.7	2,253	NA	NA	NA	NA
Medical circumcision	29.5	1,462	NA	NA	NA	NA
Nonmedical circumcision	30.1	786	NA	NA	NA	NA
Unknown whether medical or nonmedical	*	5	NA	NA	NA	NA
Uncircumcised	40.7	163	NA	NA	NA	NA
Unknown	*	1	NA	NA	NA	NA
Age						
15-19	44.0	964	21.9	1,014	33.6	1,978
20-24	23.0	1,453	8.6	2,242	15.6	3,695
Total 15-24	30.3	2,417	12.6	3,256	21.5	5,673

Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 14.B Young people, knowledge about HIV prevention: Older adolescent boys and young men

Among older adolescent boys and young men aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who correctly answered the questions:						Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who has HIV?	All five questions	
Residence							
Urban	76.4	77.5	88.2	86.1	90.4	49.0	1,551
Rural	76.1	74.6	80.3	82.9	86.1	42.5	2,721
County							
Baringo	78.5	83.2	83.7	79.9	85.0	59.5	65
Bomet	85.5	75.8	76.3	77.7	86.2	36.5	114
Bungoma	63.3	74.5	78.7	85.4	81.0	37.5	140
Busia	79.2	76.1	67.6	79.5	86.6	38.1	83
Elgeyo-Marakwet	80.8	73.3	73.3	86.9	87.5	41.2	97
Embu	73.9	80.0	88.5	78.6	85.3	44.0	91
Garissa	59.0	56.8	76.7	88.6	88.1	35.7	91
Homa Bay	82.4	84.4	79.0	89.6	88.8	49.4	150
Isiolo	70.4	54.7	71.2	83.0	79.9	35.3	64
Kajiado	77.5	77.7	86.4	90.0	86.8	54.8	88
Kakamega	75.3	80.2	80.7	72.9	83.2	38.0	78
Kericho	77.1	74.7	66.7	81.9	93.2	39.0	112
Kiambu	(73.9)	(70.2)	(90.0)	(80.8)	(83.3)	(33.2)	43
Kilifi	72.9	63.5	88.3	82.0	89.6	35.8	77
Kirinyaga	74.5	82.3	98.1	77.9	81.6	48.2	59
Kisii	70.4	80.9	83.6	88.8	89.3	48.6	89
Kisumu	75.5	80.5	83.2	99.2	97.1	56.5	96
Kitui	81.4	68.9	80.8	79.6	88.1	41.9	167
Kwale	68.0	74.6	72.7	84.6	88.8	39.9	66
Laikipia	88.3	88.0	88.0	89.5	93.3	67.0	52
Lamu	79.8	59.7	86.0	86.9	86.2	35.6	63
Machakos	68.5	76.6	85.3	82.7	87.5	43.9	133
Makueni	74.4	71.5	85.3	82.7	88.6	38.5	78
Mandera	33.8	35.3	55.8	87.6	82.5	9.4	52
Marsabit	(47.5)	(47.5)	(68.3)	(82.8)	(74.2)	(29.2)	32
Meru	73.1	69.4	78.3	89.2	84.5	41.1	129
Migori	80.3	80.1	78.3	83.9	95.3	47.6	162
Mombasa	77.4	71.0	88.1	86.8	91.7	45.5	73
Murang'a	81.0	67.4	81.9	84.0	80.4	38.9	68
Nairobi	74.9	80.8	91.5	86.6	88.6	53.3	182
Nakuru	78.9	83.0	87.3	78.2	92.9	43.1	77
Nandi	76.6	82.6	77.5	83.9	83.3	48.2	149
Narok	74.3	68.3	67.1	85.3	95.1	37.7	69

Table 14.B Young people, knowledge about HIV prevention: Older adolescent boys and young men (continued)

Among older adolescent boys and young men aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who correctly answered the questions:						Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who has HIV?	All five questions	
Nyamira	74.9	86.2	84.0	92.4	90.3	61.0	53
Nyandarua	85.7	86.6	92.3	77.7	90.6	54.4	91
Nyeri	83.2	76.4	83.3	77.9	83.8	42.0	67
Samburu	(81.4)	(72.4)	(65.0)	(72.2)	(76.7)	(33.5)	39
Siaya	92.2	85.4	88.2	81.9	94.5	58.4	108
Taita-Taveta	77.9	67.2	88.9	66.8	89.4	30.2	79
Tana River	59.7	51.3	81.7	84.4	84.6	31.9	72
Tharaka-Nithi	78.2	77.4	83.4	82.7	81.9	49.1	108
Trans-Nzoia	77.5	68.3	90.2	84.1	89.1	38.7	88
Turkana	83.9	81.6	84.2	91.4	69.9	45.4	117
Uasin Gishu	91.2	85.9	91.7	90.3	96.1	66.9	98
Vihiga	79.4	72.8	77.0	85.4	89.3	48.1	74
Wajir	53.1	34.1	54.7	82.1	83.2	17.5	66
West Pokot	73.8	74.1	79.4	85.4	78.1	48.6	123
Marital status							
Never married	75.4	75.5	82.8	84.8	87.8	44.8	3,907
Married/cohabitating – monogamous	85.6	79.8	86.9	78.3	88.5	48.3	285
Married/cohabitating – polygamous	*	*	*	*	*	*	7
Divorced or separated	81.0	66.2	77.9	68.6	77.8	37.6	60
Widowed	*	*	*	*	*	*	2
Education							
No primary	57.1	59.3	52.0	56.6	74.6	19.5	85
Incomplete primary	70.7	67.1	74.4	77.4	82.1	32.6	1,645
Complete primary	78.2	79.5	87.3	87.7	91.3	49.3	2,071
Secondary	85.9	86.3	94.4	91.7	90.5	63.8	468
Wealth quintile							
Lowest	70.9	67.0	76.9	81.3	84.5	35.1	1,115
Second	75.1	74.8	80.2	80.5	85.6	39.2	1,046
Middle	77.0	77.4	83.3	86.1	87.9	45.7	938
Fourth	80.0	81.0	86.1	87.4	91.6	55.6	759
Highest	80.1	80.9	92.7	86.4	90.0	53.3	413
Religion							
Roman Catholic	78.6	76.4	83.9	87.8	90.8	50.8	876
Protestant/Other Christian	76.5	77.7	83.6	83.5	87.3	44.6	2,649
Muslim	66.6	59.4	78.7	81.7	83.4	35.1	522
No Religion	77.4	69.2	79.5	78.7	89.2	35.9	174
Other	(77.8)	(86.3)	(80.0)	(87.4)	(80.9)	(52.5)	49

Table 14.B Young people, knowledge about HIV prevention: Older adolescent boys and young men (continued)

Among older adolescent boys and young men aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who correctly answered the questions:						Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who has HIV?	All five questions	
Employment status (previous 12 months)							
Employed	80.7	81.4	87.2	82.3	88.4	49.2	1,668
Not employed	72.7	71.1	79.8	85.4	87.0	41.3	2,603
Circumcision status							
Circumcised	76.7	76.2	83.8	84.3	88.1	45.8	3,806
Medical circumcision	77.7	77.3	85.6	84.9	88.4	47.0	2,560
Nonmedical circumcision	74.2	73.7	79.7	83.2	87.4	43.1	1,237
Unknown whether medical or nonmedical	*	*	*	*	*	*	9
Uncircumcised	71.8	70.8	75.9	81.0	83.3	34.6	464
Unknown	*	*	*	*	*	*	2
Age							
15-19	70.9	69.8	79.0	83.9	87.1	37.9	2,535
20-24	82.5	82.5	87.9	84.2	88.2	52.8	1,737
Total 15-24	76.2	75.6	83.1	84.0	87.6	44.8	4,272

[1]Relates to Global AIDS Monitoring 2020 Indicator 5.1: Young people: Knowledge about HIV prevention.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 14.C Young people, knowledge about HIV prevention: Older adolescent girls and young women

Among older adolescent girls and young women aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who correctly answered the questions:						Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who has HIV?	All five questions	
Residence							
Urban	76.0	75.2	86.3	85.8	89.3	46.6	2,035
Rural	70.9	65.6	79.0	80.5	86.7	35.4	3,202
County							
Baringo	63.5	63.6	67.3	77.1	91.0	29.2	55
Bomet	80.9	61.3	60.9	84.0	83.3	29.0	130

Table 14.C Young people, knowledge about HIV prevention: Older adolescent girls and young women (continued)

Among older adolescent girls and young women aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who correctly answered the questions:						Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who has HIV?	All five questions	
Bungoma	73.9	73.1	81.1	82.4	83.5	31.7	143
Busia	67.9	72.2	79.1	86.0	89.8	32.2	104
Elgeyo-Marakwet	79.8	70.6	84.2	83.5	95.5	47.5	117
Embu	76.4	74.5	88.1	86.6	87.9	42.6	114
Garissa	47.0	30.7	63.6	65.7	64.0	10.9	107
Homa Bay	81.2	73.6	79.4	79.5	81.9	37.7	169
Isiolo	67.7	60.8	79.5	83.9	71.9	28.1	89
Kajiado	77.6	72.8	91.7	83.8	87.5	46.6	95
Kakamega	74.5	72.1	83.7	79.3	92.4	43.6	125
Kericho	79.6	72.6	66.9	85.7	93.5	37.9	136
Kiambu	76.1	76.7	88.5	82.4	87.9	49.1	67
Kilifi	58.1	53.8	72.2	75.1	82.5	28.2	122
Kirinyaga	68.3	61.9	91.6	90.1	88.2	41.2	67
Kisii	73.8	66.0	79.2	67.8	89.9	33.3	100
Kisumu	80.0	83.6	84.7	93.5	93.2	60.0	131
Kitui	69.1	69.8	84.9	78.6	87.0	34.0	172
Kwale	62.0	52.1	81.3	79.0	86.9	27.9	91
Laikipia	83.8	80.0	87.4	86.2	94.5	55.3	83
Lamu	69.6	59.5	85.7	75.3	79.3	27.7	94
Machakos	66.2	70.5	82.6	84.3	92.1	35.7	142
Makueni	79.5	68.3	81.4	87.5	83.3	41.2	86
Mandera	40.9	21.2	43.5	63.2	75.1	7.0	83
Marsabit	62.7	56.3	68.1	79.6	81.5	41.5	64
Meru	58.6	49.1	85.0	86.8	87.4	30.0	141
Migori	80.5	78.5	84.2	84.7	93.2	48.1	240
Mombasa	71.1	62.8	90.0	82.2	96.9	34.9	88
Murang'a	68.6	70.4	75.7	82.6	82.9	36.5	57
Nairobi	77.1	78.6	89.7	85.7	84.3	45.8	241
Nakuru	76.7	79.0	90.7	83.8	92.1	53.2	86
Nandi	78.7	68.1	70.6	90.0	88.0	43.4	148
Narok	78.1	77.5	70.0	79.5	77.4	33.2	94
Nyamira	82.0	66.0	82.9	87.6	88.0	39.6	87
Nyandarua	68.0	67.2	92.5	74.1	87.9	36.0	102
Nyeri	74.5	68.1	86.9	81.3	89.8	43.8	77
Samburu	61.4	55.4	62.1	68.5	73.3	29.0	66
Siaya	79.6	76.4	80.1	88.3	97.4	48.1	148
Taita-Taveta	85.0	68.3	86.0	81.5	96.8	46.1	79

Table 14.C Young people, knowledge about HIV prevention: Older adolescent girls and young women (continued)

Among older adolescent girls and young women aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who correctly answered the questions:						Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who has HIV?	All five questions	
Tana River	54.7	40.0	70.6	71.5	80.1	15.9	87
Tharaka-Nithi	73.4	68.6	79.4	78.3	84.8	34.2	104
Trans-Nzoia	62.9	70.7	81.4	81.9	92.7	30.0	94
Turkana	77.8	73.6	83.6	76.9	71.5	36.0	133
Uasin Gishu	88.9	84.0	89.1	84.7	92.8	62.4	104
Vihiga	69.3	64.9	73.2	85.6	89.6	36.5	115
Wajir	54.7	31.4	61.9	71.9	83.6	17.5	106
West Pokot	75.4	60.7	80.5	82.7	79.1	42.8	154
Marital status							
Never married	70.8	67.3	81.1	84.3	88.9	38.2	3,362
Married/cohabitating – monogamous	76.1	73.9	83.7	79.4	86.3	43.6	1,438
Married/cohabitating – polygamous	83.7	55.9	79.7	78.0	76.3	26.3	122
Divorced or separated	82.1	74.1	85.5	73.3	81.0	42.4	206
Widowed	*	*	*	*	*	*	16
Education							
No primary	48.5	33.3	61.1	63.9	68.1	14.8	317
Incomplete primary	69.4	65.2	75.8	77.4	83.8	31.8	2,000
Complete primary	74.6	71.1	85.0	85.2	91.1	42.1	2,356
Secondary	84.5	86.7	93.5	92.5	92.2	61.2	560
Wealth quintile							
Lowest	67.6	58.0	72.1	76.8	82.2	29.6	1,463
Second	75.3	70.9	80.4	81.8	88.6	39.1	1,212
Middle	72.0	70.0	84.6	83.9	89.3	38.4	1,018
Fourth	73.2	72.7	86.2	84.0	89.6	44.3	921
Highest	77.0	77.7	88.6	87.5	89.9	50.1	621
Religion							
Roman Catholic	75.3	72.4	84.2	84.8	89.4	42.5	1,031
Protestant/Other Christian	74.0	71.5	82.6	82.7	88.3	40.9	3,405
Muslim	58.4	43.4	71.5	75.7	79.2	24.6	689
No Religion	73.8	73.9	77.2	84.3	88.6	31.4	72
Other	(71.2)	(69.6)	(71.0)	(77.5)	(86.4)	(37.8)	40
Employment status (prior 12 months)							
Employed	80.8	76.9	84.9	83.6	90.2	47.7	1,148
Not employed	70.4	66.9	80.9	82.2	86.9	37.2	4,087

Table 14.C Young people, knowledge about HIV prevention: Older adolescent girls and young women (continued)

Among older adolescent girls and young women aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who correctly answered the questions:						Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who has HIV?	All five questions	
Age							
15-19	67.3	62.7	77.6	81.9	87.2	32.4	2,714
20-24	79.2	76.8	86.6	83.2	88.3	47.9	2,523
Total 15-24	72.9	69.3	81.8	82.5	87.7	39.7	5,237

[1]Relates to Global AIDS Monitoring 2020 Indicator 5.1: Young people: Knowledge about HIV prevention.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 14.D Young people, knowledge about HIV prevention: Total

Among young people (older adolescents and young adults) aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who correctly answered the questions:						Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who has HIV?	All five questions	
Residence							
Urban	76.2	76.3	87.2	85.9	89.8	47.7	3,586
Rural	73.6	70.2	79.7	81.7	86.4	39.0	5,923
County							
Baringo	73.2	76.2	77.8	78.9	87.1	48.7	120
Bomet	83.3	68.9	68.9	80.7	84.8	32.9	244
Bungoma	68.3	73.8	79.8	84.0	82.1	34.8	283
Busia	73.2	74.1	73.7	82.9	88.3	35.0	187
Elgeyo-Marakwet	80.3	72.0	78.6	85.2	91.4	44.3	214
Embu	75.1	77.4	88.3	82.5	86.5	43.3	205
Garissa	52.6	42.8	69.7	76.3	75.2	22.4	198
Homa Bay	81.9	79.4	79.2	85.0	85.6	44.0	319
Isiolo	69.0	57.8	75.5	83.4	75.8	31.6	153
Kajiado	77.5	75.4	89.0	87.0	87.2	50.9	183
Kakamega	74.9	75.8	82.3	76.3	88.1	41.0	203
Kericho	78.2	73.7	66.8	83.7	93.3	38.5	248
Kiambu	75.1	74.0	89.1	81.7	86.0	42.5	110

Table 14.D Young people, knowledge about HIV prevention: Total (continued)

Among young people (older adolescents and young adults) aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who correctly answered the questions:						Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who has HIV?	All five questions	
Kilifi	64.6	58.1	79.3	78.1	85.6	31.5	199
Kirinyaga	71.8	73.2	95.2	83.3	84.5	45.1	126
Kisii	72.0	73.7	81.5	78.7	89.6	41.3	189
Kisumu	78.0	82.2	84.0	96.0	94.9	58.4	227
Kitui	75.7	69.3	82.7	79.1	87.6	38.2	339
Kwale	64.9	62.8	77.2	81.7	87.8	33.6	157
Laikipia	85.7	83.4	87.6	87.6	94.0	60.2	135
Lamu	74.3	59.6	85.8	80.6	82.5	31.3	157
Machakos	67.5	73.8	84.0	83.4	89.6	40.1	275
Makueni	76.7	70.0	83.5	84.9	86.2	39.7	164
Mandera	37.7	27.6	49.1	74.3	78.4	8.1	135
Marsabit	56.3	52.6	68.2	81.0	78.5	36.3	96
Meru	66.2	59.7	81.5	88.1	85.9	35.8	270
Migori	80.4	79.2	81.5	84.4	94.1	47.9	402
Mombasa	74.4	67.1	89.0	84.6	94.2	40.5	161
Murang'a	75.8	68.7	79.3	83.4	81.4	37.9	125
Nairobi	76.0	79.7	90.5	86.1	86.3	49.3	423
Nakuru	77.9	81.1	88.9	80.8	92.5	47.9	163
Nandi	77.6	75.7	74.2	86.8	85.5	45.9	297
Narok	76.2	72.9	68.6	82.4	86.2	35.5	163
Nyamira	79.1	74.3	83.4	89.6	88.9	48.3	140
Nyandarua	76.9	77.0	92.4	75.9	89.3	45.2	193
Nyeri	79.2	72.5	85.0	79.5	86.6	42.8	144
Samburu	68.7	61.6	63.2	69.8	74.5	30.6	105
Siaya	85.8	80.9	84.1	85.1	96.0	53.2	256
Taita-Taveta	81.0	67.7	87.6	73.2	92.6	37.1	158
Tana River	57.2	45.7	76.2	78.0	82.4	24.0	159
Tharaka-Nithi	76.0	73.4	81.6	80.7	83.2	42.4	212
Trans-Nzoia	70.8	69.4	86.2	83.1	90.7	34.7	182
Turkana	81.1	78.0	83.9	84.8	70.6	41.1	250
Uasin Gishu	90.2	85.1	90.6	87.8	94.6	64.9	202
Vihiga	73.7	68.3	74.8	85.5	89.5	41.5	189
Wajir	54.0	32.6	58.9	76.2	83.5	17.5	172
West Pokot	74.6	67.5	79.9	84.1	78.6	45.8	277

Table 14.D Young people, knowledge about HIV prevention: Total (continued)

Among young people (older adolescents and young adults) aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage who correctly answered the questions:						Number
	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	Can a person reduce the risk of getting HIV by using a condom every time they have sex?	Can a healthy-looking person have HIV?	Can a person get HIV from mosquito bites?	Can a person get HIV by sharing food with someone who has HIV?	All five questions	
Marital status							
Never married	73.5	72.0	82.1	84.6	88.3	42.0	7,269
Married/cohabitating – monogamous	78.2	75.2	84.4	79.2	86.8	44.7	1,723
Married/cohabitating – polygamous	82.6	57.3	81.5	78.5	74.9	26.7	129
Divorced or separated	81.8	71.4	82.9	71.7	79.9	40.8	266
Widowed	*	*	*	*	*	*	18
Education							
No primary	50.8	40.4	58.6	61.9	69.9	16.1	402
Incomplete primary	70.0	66.2	75.1	77.4	82.9	32.2	3,645
Complete primary	76.5	75.3	86.2	86.5	91.2	45.7	4,427
Secondary	85.2	86.5	94.0	92.1	91.3	62.5	1,028
Wealth quintile							
Lowest	69.2	62.4	74.4	79.0	83.3	32.3	2,578
Second	75.2	72.9	80.3	81.1	87.1	39.2	2,258
Middle	74.7	73.9	83.9	85.1	88.6	42.3	1,956
Fourth	76.7	77.0	86.1	85.7	90.6	50.1	1,680
Highest	78.4	79.1	90.4	87.0	89.9	51.5	1,034
Religion							
Roman Catholic	77.0	74.4	84.1	86.3	90.1	46.7	1,907
Protestant/Other Christian	75.2	74.5	83.1	83.1	87.8	42.7	6,054
Muslim	62.5	51.4	75.1	78.7	81.3	29.9	1,211
No Religion	76.5	70.4	79.0	80.0	89.1	34.8	246
Other	75.4	80.3	76.8	83.9	82.9	47.3	89
Employment status (previous 12 months)							
Employed	80.7	79.8	86.4	82.8	89.1	48.6	2,816
Not employed	71.4	68.7	80.4	83.5	87.0	38.9	6,690
Age							
15-19	69.1	66.3	78.3	82.9	87.2	35.2	5,249
20-24	80.8	79.6	87.2	83.7	88.3	50.4	4,260
Total 15-24	74.6	72.5	82.5	83.3	87.7	42.3	9,509

[1]Relates to Global AIDS Monitoring 2020 Indicator 5.1: Young people: Knowledge about HIV prevention.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

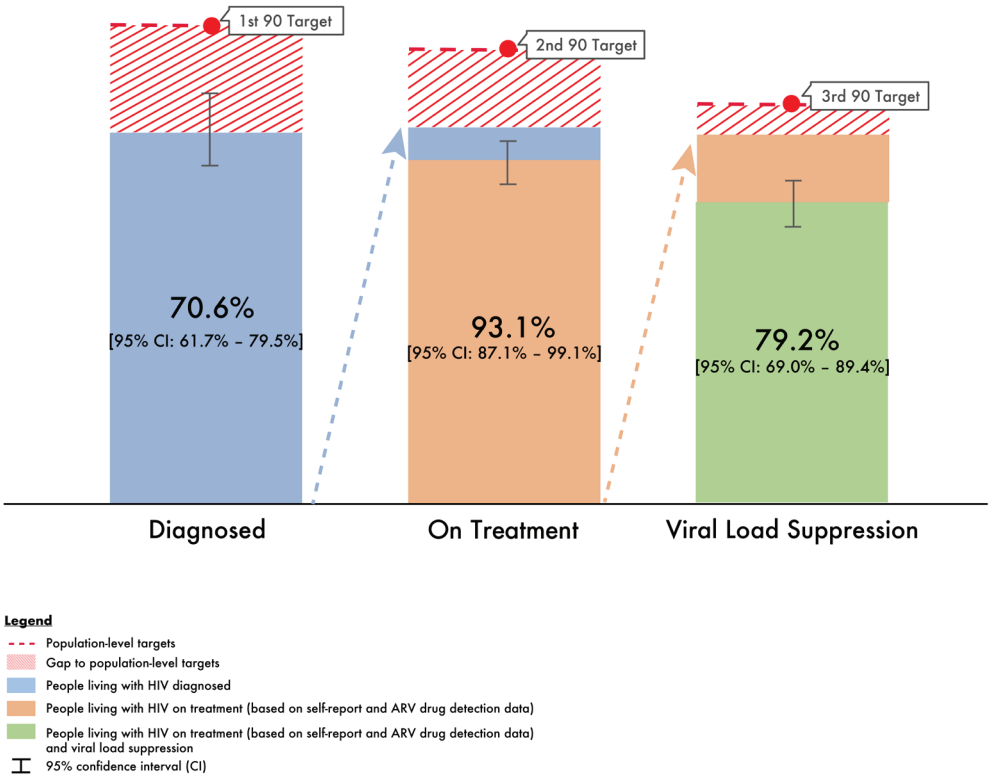


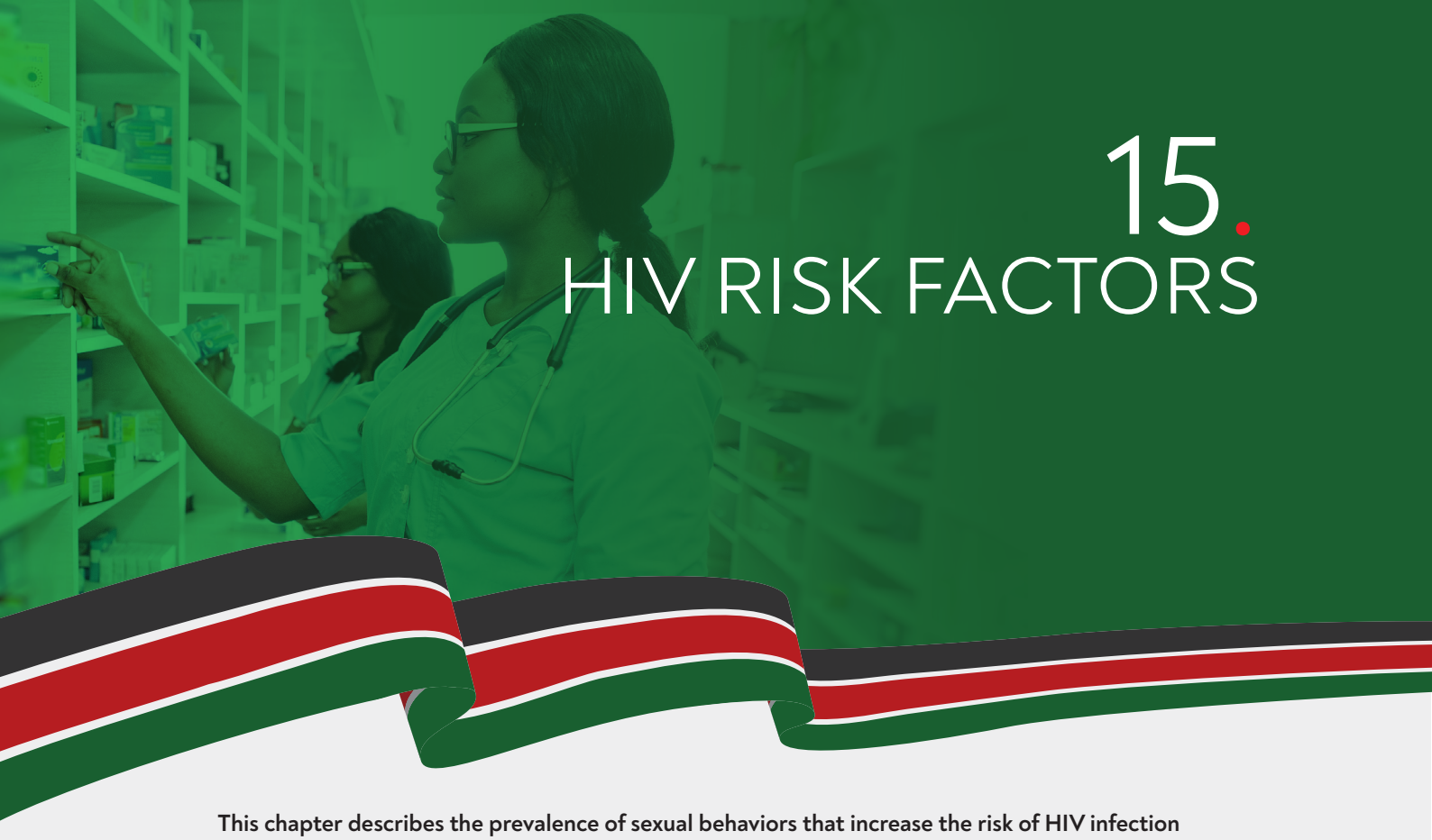
Figure 14.A
Young people 90-90-90 (laboratory ARV-adjusted data among older adolescents and young adults aged 15-24 years), KENPHIA 2018

Note: The 90-90-90 targets are that 90% of all people living with HIV should be aware of their status, 90% of those who are aware of their HIV-positive status should be on antiretroviral therapy (ART) (81% of the overall population of people living with HIV) and that 90% of those who are on ART should have viral load suppression (73% of the overall population of people living with HIV). Inset number represent conditional proportions.

14.3 REFERENCES

1. National AIDS Control Council (NACC). *Kenya's Fast-track Plan to end HIV and AIDS among Adolescents and Young People.* Nairobi: NACC; 2015.

2. National AIDS Control Council (NACC). *Kenya AIDS Response Progress Report 2018.* Nairobi: NACC; 2018.



15. HIV RISK FACTORS

This chapter describes the prevalence of sexual behaviors that increase the risk of HIV infection

Among adults (ages 15-64),

among those who reported having sex in the 12 months before the survey,

30.1% **37.4%** **22.8%**

reported having sex with a nonmarital, noncohabitating partner

Among these

53.8% **59.7%** **45.0%**

reported condom use during last sexual intercourse with a nonmarital, noncohabitating partner in the 12 months before the survey

HIV prevalence was

6.4%

among adults who had sexual intercourse before the age of 15

4.1%

among adults who first had intercourse after the age of 25

12.5%

among women who had sexual intercourse before the age of 15

4.7%

among women who first had sexual intercourse after the age of 25

Among men (ages 15-64)

Self-reported male circumcision (including medical and non-medical)

91.7%

had undergone male circumcision

In 13 voluntary medical male circumcision priority counties

83.2%

had undergone male circumcision

In 5 culturally non-circumcising counties

56.4% in Turkana

53.3% in Kisumu

61.2% in Siaya

59.1% in Homa Bay

66.7% in Migori

Had undergone male circumcision

15.1 BACKGROUND

This chapter describes the prevalence of sexual behaviors that increase the risk of HIV infection. KENPHIA asked questions about high-risk behaviors, including early sexual debut, recent engagement in multiple sexual partnerships, recent engagement in paid sexual intercourse, condom use at last sexual intercourse, and condom use at last sexual intercourse with a nonmarital, noncohabitating partner. With this information, programs can target those individuals most in need of information and most at risk for HIV infection.

Medical circumcision (MC) reduces men's risk of acquiring HIV heterosexually by 60% to 66%.[1,2] Since 2007, WHO and UNAIDS have recommended voluntary medical male circumcision (VMMC) as a cost-effective strategy to reduce male acquisition of HIV. In Kenya, MC is practiced culturally in the counties, with the exception of Turkana, Siaya, Kisumu, Homa Bay, and Migori Counties, the last four of which also have high adult HIV prevalence. In addition to the five culturally non-circumcising counties, the VMMC program also focuses on eight culturally circumcising counties with pockets of non-circumcising subgroups (see Table 15.G). Since 2008, Kenya has provided VMMC as a component of its comprehensive HIV prevention program through approaches designed to achieve and maintain MC prevalence of 80% in men aged 15-64 years. KENPHIA presented and opportunity for updating MC prevalence by counties to guide program planning. To inform VMMC programs, men participating in the KENPHIA survey were asked if they had been medically or traditionally circumcised.

15.2 RESULTS

The following tables present KENPHIA's data on HIV risk factors in Kenya.

Table 15.A HIV prevalence by sexual behavior

Prevalence of HIV among adults aged 15-64 years, by sex and sexual behavior characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Age at first sexual intercourse						
<15	3.0	1,787	12.5	1,483	6.4	3,270
15-19	3.8	5,170	7.4	8,480	5.8	13,650
20-24	2.8	1,892	5.4	3,077	4.3	4,969
≥25	3.6	695	4.7	660	4.1	1,355
Number of sexual partners in the past 12 months						
0	2.9	1,387	12.5	2,768	8.4	4,155
1	3.1	6,329	6.1	10,297	4.7	16,626
≥2	4.6	1,435	11.8	392	5.9	1,827
Condom use at last sexual intercourse in the past 12 months						
Used condom	6.7	1,573	18.4	1,438	11.4	3,011
Did not use condom	2.1	5,710	4.1	9,094	3.2	14,804
No sexual intercourse in the past 12 months	2.9	1,387	12.5	2,776	8.4	4,163
Age						
Total 15-24	0.6	3,943	2.2	4,809	1.4	8,752
Total 25-49	4.3	5,866	8.8	8,837	6.6	14,703
Total 15-49	2.7	9,809	6.2	13,646	4.5	23,455
Total 50-64	6.1	1,917	9.4	2,373	7.8	4,290
Total 15-64	3.1	11,726	6.6	16,019	4.9	27,745

[1]Includes persons who paid or received money for sexual intercourse.
[2]No paid sexual intercourse or no sexual intercourse in the past 12 months.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

Table 15.B Condom use at last sex with a nonmarital, noncohabitating partner: Men

Among men aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, KENPHIA 2018

Characteristic	Among men who reported having sex in the past 12 months		Among men who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner[1]	Number
Residence				
Urban	38.3	3,314	60.6	1,042
Rural	36.8	5,230	59.1	1,499
County				
Baringo	42.0	133	(60.5)	49
Bomet	27.0	232	68.7	60
Bungoma	34.4	212	43.8	66
Busia	36.4	178	52.3	55
Elgeyo-Marakwet	46.3	180	69.8	71
Embu	39.6	203	61.0	60
Garissa	6.7	134	*	7
Homa Bay	47.3	236	78.4	90
Isiolo	28.1	138	(56.8)	31
Kajiado	33.5	176	68.6	50
Kakamega	39.4	153	(40.9)	48
Kericho	31.5	231	55.9	64
Kiambu	41.2	115	(65.8)	34
Kilifi	45.6	127	42.1	55
Kirinyaga	37.0	238	57.9	70
Kisii	37.0	199	72.9	61
Kisumu	43.0	162	65.1	62
Kitui	39.6	196	67.0	65
Kwale	40.2	150	(39.3)	46
Laikipia	29.2	157	(61.5)	41
Lamu	23.2	127	(47.2)	26
Machakos	32.9	256	58.6	68
Makueni	44.0	147	56.0	52
Mandera	3.6	84	*	4
Marsabit	22.4	85	*	13
Meru	36.1	304	62.1	96
Migori	37.5	269	54.7	86
Mombasa	37.9	188	55.7	63
Murang'a	34.2	170	61.4	51
Nairobi	36.0	456	62.8	148
Nakuru	43.4	184	56.0	60
Nandi	44.5	287	63.5	108

Table 15.B Condom use at last sex with a nonmarital, noncohabitating partner: Men (continued)

Among men aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, KENPHIA 2018

Characteristic	Among men who reported having sex in the past 12 months		Among men who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner[1]	Number
Narok	24.3	175	(60.0)	37
Nyamira	31.8	176	(59.0)	39
Nyandarua	34.1	178	50.9	51
Nyeri	36.5	223	67.6	67
Samburu	25.3	117	(51.8)	30
Siaya	44.8	160	60.3	56
Taita-Taveta	37.1	145	(70.2)	47
Tana River	19.4	161	*	19
Tharaka-Nithi	36.0	234	56.8	73
Trans-Nzoia	46.9	101	(57.4)	35
Turkana	38.1	167	(50.5)	48
Uasin Gishu	46.3	203	71.4	72
Vihiga	41.5	148	(65.9)	47
Wajir	8.3	97	*	6
West Pokot	40.0	152	38.0	54
Marital status				
Never married	94.4	1,960	65.9	1,632
Married/cohabitating – monogamous	9.9	5,641	51.2	488
Married/cohabitating – polygamous	16.0	418	40.4	52
Divorced or separated	86.9	418	39.3	311
Widowed	98.5	55	(48.2)	48
Education				
No primary	18.1	507	24.8	62
Incomplete primary	30.1	3,950	50.0	979
Complete primary	43.9	2,700	66.0	1,010
Secondary	46.4	1,381	66.7	488
Wealth quintile				
Lowest	34.7	1,958	52.2	503
Second	38.3	1,809	57.9	573
Middle	38.5	1,868	61.4	580
Fourth	37.0	1,742	59.8	528
Highest	38.1	1,167	65.8	357
Religion				
Roman Catholic	36.9	2,009	62.4	613
Protestant/Other Christian	37.6	5,112	61.3	1,581
Muslim	28.7	912	45.0	154

Table 15.B Condom use at last sex with a nonmarital, noncohabitating partner: Men (continued)

Among men aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, KENPHIA 2018

Characteristic	Among men who reported having sex in the past 12 months		Among men who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner[1]	Number
No Religion	47.4	429	44.8	163
Other	49.2	80	(62.3)	30
Employment status (previous 12 months)				
Employed	35.9	5,689	59.1	1,639
Not employed	41.2	2,851	60.9	902
Had been away from home for more than three days in the six months before the survey				
Yes	46.5	2,389	60.1	852
No	33.8	6,154	59.5	1,689
Circumcision status				
Circumcised	37.7	7,923	60.1	2,369
Medical circumcision	42.1	4,165	64.1	1,446
Nonmedical circumcision	31.8	3,735	53.3	915
Unknown whether medical or nonmedical	*	23	*	8
Uncircumcised	34.5	614	53.9	171
Unknown	*	7	*	1
Age				
15-19	98.0	556	69.6	496
20-24	79.2	1,128	64.2	770
25-29	44.9	1,138	57.7	431
30-34	21.9	1,316	50.9	255
35-39	16.8	1,095	51.4	171
40-44	17.6	1,025	45.7	160
45-49	13.3	752	55.9	95
50-54	13.6	643	50.7	82
55-59	10.4	494	(33.4)	49
60-64	8.0	397	(15.1)	32
Total 15-24	84.7	1,684	66.1	1,266
Total 25-49	25.5	5,326	53.9	1,112
Total 15-49	41.4	7,010	60.6	2,378
Total 50-64	11.3	1,534	39.8	163
Total 15-64	37.4	8,544	59.7	2,541

[1]Relates to Global AIDS Monitoring 2020 Indicator 3.18: Condom use at last high-risk sex.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 15.C Condom use at last sex with a nonmarital, noncohabitating partner: Women

Among women aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, KENPHIA 2018

Characteristic	Among women who reported having sex in the past 12 months		Among women who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner[1]	Number
Residence				
Urban	27.9	4,341	48.5	1,021
Rural	19.7	7,214	41.9	1,184
County				
Baringo	11.5	146	*	20
Bomet	22.3	287	44.1	61
Bungoma	18.8	319	63.3	53
Busia	19.7	262	(42.0)	45
Elgeyo-Marakwet	21.7	236	61.0	54
Embu	27.9	309	33.7	81
Garissa	0.7	201	*	2
Homa Bay	25.5	339	60.9	87
Isiolo	15.4	194	*	23
Kajiado	23.1	202	(60.5)	38
Kakamega	20.4	260	45.7	52
Kericho	20.5	284	43.8	51
Kiambu	32.0	164	(42.6)	42
Kilifi	20.5	207	(35.6)	40
Kirinyaga	29.3	286	34.2	73
Kisii	22.0	271	41.4	56
Kisumu	29.9	250	64.3	70
Kitui	23.3	325	36.9	62
Kwale	19.4	232	(42.8)	38
Laikipia	22.6	209	(51.8)	39
Lamu	19.8	193	(31.5)	33
Machakos	14.9	324	(40.0)	49
Makueni	24.1	207	(38.4)	43
Mandera	0.0	177	*	0
Marsabit	7.8	156	*	11
Meru	20.0	349	29.3	66
Migori	24.8	413	53.3	99
Mombasa	19.0	176	(47.3)	34
Murang'a	20.1	181	(52.7)	34
Nairobi	32.2	552	43.7	162
Nakuru	23.8	236	45.5	53
Nandi	25.8	335	45.8	84

Table 15.C Condom use at last sex with a nonmarital, noncohabitating partner: Women (continued)

Among women aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, KENPHIA 2018

Characteristic	Among women who reported having sex in the past 12 months		Among women who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner[1]	Number
Narok	10.9	243	(50.1)	30
Nyamira	20.8	237	(52.7)	46
Nyandarua	18.1	247	(38.2)	39
Nyeri	24.2	224	37.7	53
Samburu	11.9	143	*	14
Siaya	26.8	260	53.9	59
Taita-Taveta	24.2	182	(27.2)	42
Tana River	9.1	217	*	12
Tharaka-Nithi	20.2	270	28.9	54
Trans-Nzoia	26.5	194	(55.9)	35
Turkana	17.8	226	(30.7)	36
Uasin Gishu	27.3	243	46.4	55
Vihiga	24.6	229	(44.2)	46
Wajir	0.0	152	*	0
West Pokot	13.5	206	(34.9)	29
Marital status				
Never married	87.9	1,515	49.2	1,237
Married/cohabitating – monogamous	2.4	7,506	41.1	159
Married/cohabitating – polygamous	6.8	1,066	27.9	55
Divorced or separated	77.9	708	37.7	500
Widowed	82.1	272	43.9	213
Education				
No primary	10.8	1,388	34.4	84
Incomplete primary	17.1	5,782	38.8	879
Complete primary	29.7	2,979	48.5	809
Secondary	34.8	1,399	50.7	431
Wealth quintile				
Lowest	16.8	2,985	37.9	408
Second	20.5	2,439	44.7	434
Middle	22.2	2,400	46.2	471
Fourth	24.6	2,162	48.9	470
Highest	30.3	1,569	44.8	422
Religion				
Roman Catholic	26.2	2,353	43.6	511
Protestant/Other Christian	23.2	7,642	45.9	1,579
Muslim	9.6	1,318	39.3	71

Table 15.C Condom use at last sex with a nonmarital, noncohabitating partner: Women (continued)

Among women aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, KENPHIA 2018

Characteristic	Among women who reported having sex in the past 12 months		Among women who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner[1]	Number
No Religion	21.8	144	(29.4)	28
Other	18.5	97	*	16
Employment status (previous 12 months)				
Employed	25.3	4,637	43.3	1,004
Not employed	20.9	6,915	46.5	1,201
Had been away from home for more than three days in the six months before the survey				
Yes	33.4	2,215	52.9	618
No	20.2	9,339	41.7	1,587
Age				
15-19	68.4	736	48.7	449
20-24	37.1	1,940	53.7	609
25-29	17.2	2,175	37.9	328
30-34	15.6	2,126	39.6	301
35-39	14.6	1,470	40.4	177
40-44	14.4	1,163	36.5	141
45-49	13.0	823	37.1	105
50-54	12.1	523	28.7	58
55-59	6.7	363	(10.3)	27
60-64	4.6	236	*	10
Total 15-24	45.3	2,676	51.7	1,058
Total 25-49	15.5	7,757	38.6	1,052
Total 15-49	24.0	10,433	45.7	2,110
Total 50-64	9.0	1,122	22.6	95
Total 15-64	22.8	11,555	45.0	2,205

[1]Relates to Global AIDS Monitoring 2020 Indicator 3.18: Condom use at last high-risk sex.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 15.D Condom use at last sex with a nonmarital, noncohabitating partner: Total

Among adults aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, KENPHIA 2018

Characteristic	Among persons who reported having sex in the past 12 months		Among persons who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner[1]	Number
Residence				
Urban	33.2	7,655	55.3	2,063
Rural	28.0	12,444	52.6	2,683
County				
Baringo	28.3	279	57.3	69
Bomet	24.7	519	58.1	121
Bungoma	26.2	531	51.4	119
Busia	27.1	440	48.1	100
Elgeyo-Marakwet	34.2	416	66.9	125
Embu	33.2	512	47.9	141
Garissa	3.3	335	*	9
Homa Bay	35.8	575	71.7	177
Isiolo	21.4	332	53.9	54
Kajiado	28.7	378	65.6	88
Kakamega	28.6	413	43.0	100
Kericho	26.3	515	51.5	115
Kiambu	36.4	279	54.0	76
Kilifi	31.9	334	39.8	95
Kirinyaga	33.1	524	47.0	143
Kisii	29.1	470	59.8	117
Kisumu	36.1	412	64.7	132
Kitui	30.4	521	53.6	127
Kwale	28.9	382	40.7	84
Laikipia	25.9	366	57.1	80
Lamu	21.3	320	39.0	59
Machakos	24.2	580	52.8	117
Makueni	33.4	354	48.8	95
Mandera	1.4	261	*	4
Marsabit	14.1	241	*	24
Meru	28.3	653	50.8	162
Migori	30.6	682	54.0	185
Mombasa	30.2	364	53.4	97
Murang'a	27.5	351	58.3	85
Nairobi	34.2	1,008	54.0	310
Nakuru	34.3	420	52.4	113
Nandi	35.6	622	57.0	192

Table 15.D Condom use at last sex with a nonmarital, noncohabitating partner: Total (continued)

Among adults aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, KENPHIA 2018

Characteristic	Among persons who reported having sex in the past 12 months		Among persons who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner[1]	Number
Narok	17.3	418	56.7	67
Nyamira	26.2	413	56.2	85
Nyandarua	26.0	425	46.6	90
Nyeri	31.1	447	57.2	120
Samburu	18.8	260	(42.0)	44
Siaya	35.4	420	57.8	115
Taita-Taveta	30.7	327	52.6	89
Tana River	13.9	378	(51.6)	31
Tharaka-Nithi	28.4	504	46.5	127
Trans-Nzoia	34.7	295	56.7	70
Turkana	27.6	393	43.5	84
Uasin Gishu	36.9	446	61.5	127
Vihiga	32.3	377	56.7	93
Wajir	3.6	249	*	6
West Pokot	26.6	358	37.2	83
Marital status				
Never married	92.0	3,475	59.7	2,869
Married/cohabitating – monogamous	6.1	13,147	49.2	647
Married/cohabitating – polygamous	9.7	1,484	34.6	107
Divorced or separated	81.7	1,126	38.4	811
Widowed	85.0	327	44.7	261
Education				
No primary	13.1	1,895	30.3	146
Incomplete primary	23.2	9,732	45.5	1,858
Complete primary	37.2	5,679	59.1	1,819
Secondary	41.3	2,780	60.4	919
Wealth quintile				
Lowest	25.1	4,943	47.0	911
Second	29.1	4,248	52.9	1,007
Middle	30.4	4,268	55.6	1,051
Fourth	31.0	3,904	55.4	998
Highest	34.3	2,736	56.1	779
Religion				
Roman Catholic	31.9	4,362	54.7	1,124
Protestant/Other Christian	29.9	12,754	54.7	3,160
Muslim	19.2	2,230	43.5	225

Table 15.D Condom use at last sex with a nonmarital, noncohabitating partner: Total (continued)

Among adults aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a nonmarital, noncohabitating partner in the past 12 months; among those who reported having sex with a nonmarital, noncohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner, by selected demographic characteristics, KENPHIA 2018

Characteristic	Among persons who reported having sex in the past 12 months		Among persons who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a nonmarital, noncohabitating partner[1]	Number
No Religion	42.3	573	43.0	191
Other	36.5	177	(57.7)	46
Employment status (previous 12 months)				
Employed	31.8	10,326	54.0	2,643
Not employed	27.8	9,766	53.5	2,103
Had been away from home for more than three days in the six months before the survey				
Yes	41.0	4,604	57.4	1,470
No	26.5	15,493	52.0	3,276
Age				
15-19	82.8	1,292	60.5	945
20-24	56.1	3,068	60.1	1,379
25-29	30.3	3,313	51.2	759
30-34	18.6	3,442	45.6	556
35-39	15.7	2,565	46.0	348
40-44	16.0	2,188	41.8	301
45-49	13.1	1,575	47.2	200
50-54	13.0	1,166	42.5	140
55-59	9.0	857	26.6	76
60-64	6.8	633	(14.2)	42
Total 15-24	63.5	4,360	60.3	2,324
Total 25-49	20.3	13,083	47.7	2,164
Total 15-49	32.3	17,443	54.6	4,488
Total 50-64	10.4	2,656	34.1	258
Total 15-64	30.1	20,099	53.8	4,746

[1]Relates to Global AIDS Monitoring 2020 Indicator 3.18: Condom use at last high-risk sex.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 15.E Sexual behavior of the adult population

Percent distribution of sexual behavior characteristics among the population aged 15-64 years, by sex and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percent	Number	Percent	Number	Percent	Number
Has ever had anal sex						
Yes	5.7	685	4.4	670	5.0	1,355
No	40.1	4,843	30.6	4,785	35.3	9,628
Never heard of anal sex	54.2	7,224	65.0	11,742	59.7	18,966
Had anal sex in the past 12 months						
Yes	0.4	51	0.5	67	0.5	118
No[1]	45.4	5,475	34.4	5,382	39.8	10,857
Never heard of anal sex	54.2	7,224	65.0	11,742	59.7	18,966
Has ever had vaginal sex						
Yes	85.8	10,798	86.7	15,516	86.3	26,314
No	14.2	1,824	13.3	1,909	13.7	3,733
Has ever had vaginal or anal sex						
Yes	86.6	10,875	87.4	15,576	87.0	26,451
No	4.2	490	3.3	434	3.8	924
Never had vaginal sex and never heard of anal sex	9.2	1,233	9.3	1,375	9.2	2,608
Had vaginal or anal sex in the past 12 months						
Yes	74.6	9,257	71.7	12,288	73.1	21,545
No[2]	8.9	1,060	7.9	1,201	8.4	2,261
Did not have vaginal sex in the past 12 months and never heard of anal sex	16.5	2,194	20.4	3,605	18.5	5,799
Has ever used injection drugs						
Yes	(0.2)	26	*	20	(0.2)	46
No	99.8	12,873	99.9	17,428	99.8	30,301
Used injection drugs in the past 30 days						
Yes	*	4	*	1	*	5
No[3]	100.0	12,895	100.0	17,447	100.0	30,342
In a relationship in the past 12 months where one received gifts/money or other form of support						
Yes	3.4	352	6.8	1,100	5.1	1,452
No	68.8	8,123	63.0	10,403	65.8	18,526
No sex partner in the past 12 months or never had sex	27.8	3,365	30.3	4,952	29.1	8,317
Total ages 15-64 years	100.0	12,908	100.0	17,476	100.0	30,384

[1]Including those who never had anal sex.
[2]Including those who never had vaginal or anal sex.
[3]Including those who never used injection drugs.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 15.F Male circumcision

Percent distribution of men aged 15-64 years by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, KENPHIA 2018

Characteristic	Circumcised[1]			Uncircumcised	Unknown	Total	Number
	Medical circumcision	Nonmedical circumcision	Total				
Result of PHIA survey HIV test							
HIV positive	41.2	30.4	71.7	27.1	1.2	100.0	423
HIV negative	54.4	37.5	91.9	7.7	0.4	100.0	11,303
Not tested	58.6	36.7	95.3	3.8	0.9	100.0	1,182
Residence							
Urban	61.7	31.0	92.7	6.7	0.6	100.0	4,843
Rural	50.0	41.1	91.1	8.6	0.3	100.0	8,065
County							
Baringo	23.9	65.1	89.0	11.0	0.0	100.0	183
Bomet	26.2	69.6	95.8	4.2	0.0	100.0	350
Bungoma	34.0	63.3	97.3	2.7	0.0	100.0	344
Busia	63.3	18.3	81.6	18.4	0.0	100.0	263
Elgeyo-Marakwet	40.3	47.5	87.9	11.5	0.7	100.0	279
Embu	76.3	18.2	94.4	5.6	0.0	100.0	299
Garissa	19.0	79.8	98.9	1.1	0.0	100.0	244
Homa Bay	56.4	2.7	59.1	40.0	0.9	100.0	352
Isiolo	40.5	52.5	92.9	7.1	0.0	100.0	223
Kajiado	58.1	38.0	96.1	3.7	0.2	100.0	247
Kakamega	43.8	55.9	99.7	0.3	0.0	100.0	237
Kericho	42.6	53.5	96.1	3.5	0.4	100.0	349
Kiambu	78.0	18.6	96.7	3.3	0.0	100.0	168
Kilifi	55.6	43.6	99.2	0.0	0.8	100.0	210
Kirinyaga	86.2	10.3	96.4	3.6	0.0	100.0	294
Kisii	49.9	48.6	98.5	1.2	0.3	100.0	290
Kisumu	46.7	6.6	53.3	44.6	2.2	100.0	244
Kitui	74.8	24.1	98.9	0.9	0.2	100.0	395
Kwale	49.2	46.9	96.1	2.1	1.8	100.0	210
Laikipia	79.9	17.8	97.7	2.3	0.0	100.0	218
Lamu	67.4	24.3	91.7	7.8	0.5	100.0	210
Machakos	65.8	32.7	98.5	0.8	0.6	100.0	379
Makueni	87.4	11.4	98.8	0.3	1.0	100.0	238
Mandera	12.8	83.8	96.6	1.3	2.1	100.0	161
Marsabit	48.4	49.3	97.7	2.3	0.0	100.0	124
Meru	45.8	47.2	93.0	6.9	0.1	100.0	420
Migori	42.3	24.4	66.7	32.6	0.7	100.0	387
Mombasa	61.5	34.2	95.8	3.0	1.2	100.0	249
Murang'a	79.3	15.1	94.4	4.6	1.0	100.0	253
Nairobi	67.7	26.4	94.1	4.9	1.0	100.0	622
Nakuru	46.8	45.6	92.5	7.5	0.0	100.0	258
Nandi	16.2	74.4	90.5	9.4	0.1	100.0	417

Table 15.F Male circumcision (continued)

Percent distribution of men aged 15-64 years by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, KENPHIA 2018

Characteristic	Circumcised[1]			Uncircumcised	Unknown	Total	Number
	Medical circumcision	Nonmedical circumcision	Total				
Narok	34.9	51.8	86.8	11.5	1.8	100.0	254
Nyamira	42.1	55.6	97.6	2.3	0.1	100.0	229
Nyandarua	74.4	21.6	96.0	4.0	0.0	100.0	263
Nyeri	80.9	14.4	95.3	4.7	0.0	100.0	299
Samburu	18.8	71.0	89.8	10.2	0.0	100.0	159
Siaya	55.5	5.7	61.2	38.7	0.1	100.0	275
Taita-Taveta	82.4	17.2	99.6	0.0	0.4	100.0	259
Tana River	44.6	53.2	97.8	1.6	0.6	100.0	225
Tharaka-Nithi	37.8	53.7	91.5	8.5	0.0	100.0	337
Trans-Nzoia	48.4	49.4	97.8	2.2	0.0	100.0	200
Turkana	49.5	6.9	56.4	43.6	0.0	100.0	314
Uasin Gishu	38.0	57.5	95.5	4.5	0.0	100.0	292
Vihiga	33.5	64.9	98.4	1.6	0.0	100.0	240
Wajir	13.8	83.8	97.5	0.5	2.0	100.0	177
West Pokot	35.6	57.1	92.7	7.3	0.0	100.0	268
Marital status							
Never married	63.3	27.1	90.4	9.2	0.4	100.0	4,958
Married/cohabitating – monogamous	48.6	44.0	92.6	7.0	0.4	100.0	6,493
Married/cohabitating – polygamous	27.4	60.9	88.3	11.3	0.5	100.0	485
Divorced or separated	54.4	41.0	95.3	3.9	0.8	100.0	746
Widowed	33.1	58.3	91.4	7.0	1.6	100.0	150
Education							
No primary	27.1	59.7	86.7	12.8	0.5	100.0	744
Incomplete primary	46.1	42.7	88.8	10.8	0.4	100.0	5,941
Complete primary	61.8	32.6	94.4	5.1	0.5	100.0	4,397
Secondary	66.4	28.0	94.3	5.2	0.4	100.0	1,814
Wealth quintile							
Lowest	38.3	49.9	88.2	11.3	0.5	100.0	3,184
Second	48.8	41.0	89.8	10.0	0.2	100.0	2,852
Middle	56.2	35.5	91.7	7.9	0.4	100.0	2,798
Fourth	60.5	33.8	94.3	5.1	0.6	100.0	2,507
Highest	70.0	24.8	94.8	4.7	0.5	100.0	1,566
Religion							
Roman Catholic	56.4	34.7	91.1	8.4	0.5	100.0	2,967
Protestant/Other Christian	55.5	35.5	91.0	8.6	0.4	100.0	7,684
Muslim	45.3	52.9	98.2	0.7	1.2	100.0	1,511
No Religion	46.1	49.2	95.2	4.5	0.3	100.0	622
Other	52.1	30.1	82.2	17.8	0.0	100.0	118

Table 15.F Male circumcision (continued)

Percent distribution of men aged 15-64 years by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, KENPHIA 2018

Characteristic	Circumcised[1]			Uncircumcised	Unknown	Total	Number
	Medical circumcision	Nonmedical circumcision	Total				
Employment status (previous 12 months)							
Employed	56.2	36.8	93.0	6.5	0.6	100.0	7,501
Not employed	51.7	37.9	89.6	10.2	0.3	100.0	5,403
Age							
15-19	63.2	22.2	85.4	14.3	0.3	100.0	2,539
20-24	63.2	33.0	96.2	3.5	0.3	100.0	1,739
25-29	58.9	35.0	93.9	5.1	1.1	100.0	1,448
30-34	52.3	39.3	91.6	8.3	0.2	100.0	1,585
35-39	53.2	39.5	92.7	6.8	0.5	100.0	1,325
40-44	47.3	45.2	92.5	7.4	0.0	100.0	1,250
45-49	43.9	48.4	92.4	6.7	1.0	100.0	958
50-54	42.7	50.1	92.8	7.0	0.2	100.0	808
55-59	35.3	54.8	90.1	9.4	0.6	100.0	678
60-64	25.4	65.0	90.4	9.2	0.4	100.0	578
Total 15-24	63.2	27.2	90.4	9.3	0.3	100.0	4,278
Total 25-49	52.5	40.2	92.7	6.8	0.6	100.0	6,566
Total 15-49	56.9	34.9	91.7	7.8	0.5	100.0	10,844
Total 50-64	36.0	55.3	91.3	8.3	0.4	100.0	2,064
Total 15-64	54.5	37.2	91.7	7.9	0.4	100.0	12,908

[1]Relates to Global AIDS Monitoring 2020 Indicator 3.16: Prevalence of male circumcision and PEPFAR Indicator VMMC_TOTALCIRC NAT / SUBNAT: Total number of men ever circumcised.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

Table 15.G Male circumcision in priority counties

Percent distribution of men aged 15-64 years in 13 VMMC priority implementing counties by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, KENPHIA 2018

Characteristic	Circumcised[1]			Uncircumcised	Unknown	Total	Number
	Medical circumcision	Nonmedical circumcision	Total				
Result of PHIA survey HIV test							
HIV positive	35.9	19.5	55.4	43.0	1.6	100.0	243
HIV negative	53.6	30.2	83.8	15.7	0.5	100.0	3,521
Not tested	58.5	32.2	90.7	7.7	1.6	100.0	358
County							
Busia	63.3	18.3	81.6	18.4	0.0	100.0	263
Homa Bay	56.4	2.7	59.1	40.0	0.9	100.0	352
Kericho	42.6	53.5	96.1	3.5	0.4	100.0	349
Kisumu	46.7	6.6	53.3	44.6	2.2	100.0	244

Table 15.G Male circumcision in priority counties (continued)

Percent distribution of men aged 15-64 years in 13 VMMC priority implementing counties by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, KENPHIA 2018

Characteristic	Circumcised[1]			Uncircumcised	Unknown	Total	Number
	Medical circumcision	Nonmedical circumcision	Total				
Marsabit	48.4	49.3	97.7	2.3	0.0	100.0	124
Migori	42.3	24.4	66.7	32.6	0.7	100.0	387
Mombasa	61.5	34.2	95.8	3.0	1.2	100.0	249
Nairobi	67.7	26.4	94.1	4.9	1.0	100.0	622
Nakuru	46.8	45.6	92.5	7.5	0.0	100.0	258
Nandi	16.2	74.4	90.5	9.4	0.1	100.0	417
Siaya	55.5	5.7	61.2	38.7	0.1	100.0	275
Turkana	49.5	6.9	56.4	43.6	0.0	100.0	314
West Pokot	35.6	57.1	92.7	7.3	0.0	100.0	268
Age							
15-19	65.3	15.3	80.5	18.9	0.5	100.0	849
20-24	64.2	27.2	91.4	8.1	0.5	100.0	618
25-29	54.4	33.1	87.5	11.3	1.2	100.0	497
30-34	52.4	29.4	81.8	17.8	0.4	100.0	557
35-39	48.3	32.0	80.3	18.6	1.1	100.0	411
40-44	45.1	36.7	81.8	18.2	0.0	100.0	407
45-49	40.1	38.7	78.8	19.1	2.1	100.0	255
50-54	35.9	41.7	77.6	22.4	0.0	100.0	216
55-59	22.9	47.6	70.5	29.1	0.4	100.0	175
60-64	18.9	50.2	69.1	30.3	0.5	100.0	137
Total 20-29	59.6	30.0	89.6	9.6	0.8	100.0	1,115
Total 30-64	43.8	35.6	79.4	19.9	0.6	100.0	2,158
Total 15-49	55.9	28.2	84.2	15.1	0.7	100.0	3,594
Total 15-64	53.3	29.9	83.2	16.1	0.7	100.0	4,122

[1]Relates to Global AIDS Monitoring 2020 Indicator 3.16: Prevalence of male circumcision and PEPFAR Indicator VMMC_TOTALCIRC NAT / SUBNAT: Total number of men ever circumcised.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

15.3 REFERENCES

1. Bailey RC, Moses S, Parker CB, et al. Male circumcision for HIV prevention in young men in Kisumu, Kenya: a randomised controlled trial. *Lancet.* 2007;369(9562):643-656. doi.org/10.1016/S0140-6736(07)60312-2.

2. Auvert B, Taljaard D, Lagarde E, Sobngwi-Tambekou J, Sitta R, Puren A. Randomized, controlled intervention trial of male circumcision for reduction of HIV infection risk: the ANRS 1265 Trial. *PLoS Med.* 2005;2(11):e298. doi.org/10.1371/journal.pmed.0030226

16. VIOLENCE EXPERIENCED BY WOMEN

Violence experienced by women (ages 15-64)

12.1%
of women had ever experienced physical violence

There was wide geographical variation in the prevalence of both physical and/or sexual violence. Some of the highest percentages, ranging from 17.2% to 21.7% for physical violence and 13.2% to 18.9% for sexual violence, were in HIV high-burden counties Homa Bay, Kisumu, Migori, and Siaya

11.0%
of women had ever experienced sexual violence

21.5%
of the women who had ever experienced sexual violence had also been forced to have sex in the 12 months before the survey

17.7%
of those who had ever experienced sexual violence had ever sought professional help afterwards

Please note that experiences of violence appear to be under-reported across PHIAs compared to other data sources

16.1 BACKGROUND

The WHO has defined violence as "the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment, or deprivation."[1,2] Two forms of violence in particular have been associated with an increased risk of HIV: gender-based violence and intimate partner violence.[3]

Gender-based violence (GBV) is defined as "acts perpetrated against women, men, girls, and boys on the basis of their sex, which cause or could cause them physical, sexual, psychological, emotional, or economic harm, including the threat to take such acts, or to undertake the imposition of arbitrary restrictions on or deprivation of fundamental freedoms in private or public life, in peace time, and during situations of armed and other forms of conflict."[4] Much of this violence targets girls and women, and whether sexual or not, it occurs within the context of their subordinate status in society, and serves to perpetuate gender inequality.[5] Such violence is often associated with an increased risk of psychological and behavioral problems, including depression, alcohol abuse, anxiety, and suicidal behavior. Other common health-related outcomes of GBV and sexual violence include unintended pregnancy, and infection with HIV and/or other sexually transmitted infections.[1]

Exposure to intimate partner violence has been implicated in increased risk of a woman contracting HIV, through mechanisms such as forced sex with an HIV-positive partner, an increase in risky sexual behaviors, and reduced ability to negotiate forms of safe sex (eg, condom use).[6] Data from KENPHIA will fill gaps in information on subnational prevalence estimates and demographic characteristics of women who experienced different forms of violence. The data will also assist in the development of violence prevention programs.

This chapter provides data on women's experience of physical and sexual violence. Physical violence was defined in KENPHIA as punching, kicking, whipping, beating, slapping, pushing, shoving, choking, smothering, drowning, or burning. It also included having an object thrown at the victim or being hurt or threatened with a knife, gun, or other weapon. Sexual violence was defined as unwanted touching, physical force or pressure, including harassment, threats, or tricks to have sex whether or not it leads to sex. Note that KENPHIA asked women about violence perpetrated by anyone so violence estimates were not limited to violence committed by intimate partners.

In Table 16.A, prevalence numbers were broken down by age, education, region, and sociodemographic characteristics. Violence markers were measured against a woman's HIV status, as well as demographic characteristics. Violence questionnaires were administered to one randomly selected woman in each household. Questions were adapted from the KDHS as well as Violence Against Children and Youth Survey, which measures physical, emotional, and sexual violence in childhood, adolescence, and young adulthood (up to the age of 24 years). Women and adolescents reporting violence were offered referral to social services. Physical violence was likely under-reported in this survey; the prevalence estimates observed were low compared to previous data on physical violence among women in Kenya.[7]

16.2 RESULTS

The following table presents KENPHIA survey data on violence experienced by women.

Table 16.A Prevalence of physical and sexual violence among women aged 15-64 years

Among women aged 15-64 years, percentage who ever experienced physical or sexual violence, by woman's HIV status and selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage of women who ever experienced				Number of women	Among women who ever experienced sexual violence, percentage who sought professional help after sexual violence	Number of women who ever experienced sexual violence	Among women who were ever forced to have sex, percentage forced to have sex in the past 12 months	Number of women who were ever forced to have sex
	Physical violence	Sexual violence	Physical and sexual violence	Physical or sexual violence					
Result of PHIA survey HIV test									
HIV positive	17.1	13.3	6.3	24.1	801	18.0	110	18.1	73
HIV negative	12.3	11.0	4.5	18.8	9,924	17.6	926	22.4	491
Not tested	7.1	9.3	2.5	13.9	1,028	19.6	63	(12.1)	30
Residence									
Urban	11.1	12.5	4.3	19.3	4,380	15.4	486	20.8	269
Rural	12.7	10.1	4.5	18.4	7,373	19.5	613	21.9	325
County									
Baringo	14.3	8.9	4.3	19.0	161	*	19	*	12
Bomet	3.0	5.7	0.2	8.5	304	*	12	*	6
Bungoma	16.8	11.7	7.9	20.6	306	(13.7)	35	*	15
Busia	28.3	12.8	9.0	32.1	254	(24.5)	34	*	23
Elgeyo-Marakwet	12.4	9.2	3.7	18.0	205	*	13	*	9
Embu	14.2	13.8	6.3	21.6	281	(18.6)	42	*	23
Garissa	1.5	2.4	1.0	2.9	205	*	9	*	5
Homa Bay	17.2	18.9	6.5	29.6	325	18.1	64	(36.9)	33
Isiolo	3.5	1.9	0.8	4.6	236	*	5	*	4
Kajiado	11.3	11.8	5.0	18.2	212	*	16	*	11
Kakamega	14.6	11.4	6.0	20.0	257	(23.2)	30	*	17
Kericho	9.4	5.4	3.3	11.5	277	*	16	*	8
Kiambu	6.5	10.7	2.4	14.8	174	*	20	*	12
Kilifi	9.5	9.8	3.3	15.9	194	*	16	*	8
Kirinyaga	8.5	12.5	4.5	16.6	277	(21.0)	31	*	20
Kisii	12.2	10.6	5.4	17.4	267	(21.5)	26	*	16
Kisumu	21.5	19.5	7.0	34.0	284	21.1	59	(15.7)	43
Kitui	13.4	8.6	2.7	19.3	334	*	22	*	7
Kwale	10.2	13.8	2.7	21.3	183	*	19	*	8
Laikipia	12.1	12.7	4.3	20.4	216	*	21	*	9
Lamu	7.1	3.2	2.0	8.4	193	*	6	*	4
Machakos	8.6	8.4	1.1	15.9	320	(24.0)	26	*	14
Makueni	9.7	7.4	3.1	14.0	196	*	10	*	3
Mandera	2.6	1.2	1.2	2.6	189	*	1	*	1
Marsabit	1.7	1.4	1.4	1.7	178	*	1	*	1
Meru	15.1	11.1	5.1	21.2	343	(6.7)	32	*	16
Migori	18.4	15.5	5.8	28.1	368	(13.9)	48	(24.0)	28
Mombasa	13.3	12.5	8.1	17.6	183	*	21	*	14

Table 16.A Prevalence of physical and sexual violence among women aged 15-64 years (continued)

Among women aged 15-64 years, percentage who ever experienced physical or sexual violence, by woman's HIV status and selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage of women who ever experienced				Number of women	Among women who ever experienced sexual violence, percentage who sought professional help after sexual violence	Number of women who ever experienced sexual violence	Among women who were ever forced to have sex, percentage forced to have sex in the past 12 months	Number of women who were ever forced to have sex
	Physical violence	Sexual violence	Physical and sexual violence	Physical or sexual violence					
Murang'a	7.6	8.6	3.3	12.9	207	*	17	*	7
Nairobi	11.1	13.2	4.2	20.1	562	20.0	63	(15.1)	28
Nakuru	8.5	7.7	2.7	13.4	257	(12.7)	26	*	16
Nandi	12.8	7.4	4.3	15.9	322	(12.4)	27	*	11
Narok	10.2	4.9	1.9	13.3	264	*	18	*	12
Nyamira	13.0	12.3	4.6	20.7	232	*	22	*	10
Nyandarua	10.9	14.2	3.8	21.3	280	(3.7)	29	*	18
Nyeri	8.8	12.0	3.7	17.1	266	(16.4)	26	*	11
Samburu	1.2	1.7	0.3	2.6	175	*	5	*	4
Siaya	21.7	17.4	8.6	30.4	281	26.2	51	(25.7)	32
Taita-Taveta	10.9	8.9	4.0	15.9	185	*	15	*	7
Tana River	8.1	6.9	2.3	12.8	205	*	14	*	12
Tharaka-Nithi	14.9	16.0	8.2	22.7	263	(16.8)	36	*	10
Trans-Nzoia	18.3	14.7	8.0	25.0	199	(21.1)	25	*	11
Turkana	4.1	1.9	0.9	5.2	265	*	5	*	1
Uasin Gishu	11.6	8.1	3.4	16.3	244	*	18	*	8
Vihiga	11.9	14.1	4.4	21.7	225	(30.1)	32	*	18
Wajir	2.4	3.2	0.5	5.0	192	*	5	*	2
West Pokot	7.1	6.8	1.2	12.6	207	*	11	*	6
Marital status									
Never married	10.7	15.8	4.9	21.6	2,162	18.8	303	24.3	146
Married/ cohabitating – monogamous	10.5	7.7	3.1	15.0	6,417	16.5	466	18.6	254
Married/ cohabitating – polygamous	18.1	7.5	4.4	21.1	967	21.4	71	(38.3)	42
Divorced or separated	22.5	16.7	9.8	29.4	930	13.3	142	22.4	84
Widowed	11.4	8.5	4.6	15.3	844	15.3	61	(11.3)	41
Education									
No primary	7.0	4.2	1.5	9.7	1,574	21.0	55	(25.8)	30
Incomplete primary	15.0	9.8	5.1	19.7	5,769	18.9	503	24.0	294
Complete primary	10.6	13.2	4.6	19.2	3,132	17.4	371	21.6	198
Secondary	9.2	14.1	3.4	19.8	1,268	15.3	168	11.2	71
Wealth quintile									
Lowest	12.1	8.6	4.1	16.6	3,180	21.8	212	37.5	117
Second	13.4	9.8	4.1	19.1	2,454	16.9	211	20.4	117
Middle	14.1	11.2	5.2	20.2	2,365	14.1	224	18.7	122

Table 16.A Prevalence of physical and sexual violence among women aged 15-64 years (continued)

Among women aged 15-64 years, percentage who ever experienced physical or sexual violence, by woman's HIV status and selected demographic characteristics, KENPHIA 2018

Characteristic	Percentage of women who ever experienced				Number of women	Among women who ever experienced sexual violence, percentage who sought professional help after sexual violence	Number of women who ever experienced sexual violence	Among women who were ever forced to have sex, percentage forced to have sex in the past 12 months	Number of women who were ever forced to have sex
	Physical violence	Sexual violence	Physical and sexual violence	Physical or sexual violence					
Fourth	10.8	13.6	4.5	19.9	2,126	23.8	253	20.7	146
Highest	9.6	12.3	4.1	17.9	1,626	12.1	199	11.6	92
Age									
15-19	12.5	15.0	5.7	21.7	1,205	21.3	163	31.8	76
20-24	10.3	14.5	4.5	20.2	1,704	20.5	213	19.4	111
25-29	12.3	9.7	3.5	18.4	2,042	12.4	191	17.6	108
30-34	12.0	11.8	4.4	19.5	1,981	12.8	198	11.6	103
35-39	14.2	10.4	5.2	19.4	1,317	14.5	125	28.5	75
40-44	10.5	6.1	3.3	13.3	1,003	19.0	63	(23.9)	31
45-49	13.4	7.3	3.9	16.8	798	(10.6)	48	(13.4)	30
50-54	12.6	6.4	3.6	15.4	673	(35.1)	41	(22.4)	27
55-59	14.4	6.6	4.8	16.2	531	(25.7)	34	*	18
60-64	10.6	5.7	2.6	13.6	499	*	23	*	15
Total 15-24	11.4	14.7	5.1	21.0	2,909	20.9	376	25.8	187
Total 25-49	12.5	9.6	4.1	17.9	7,141	13.4	625	18.6	347
Total 15-49	12.1	11.6	4.5	19.2	10,050	17.2	1,001	22.0	534
Total 50-64	12.7	6.3	3.7	15.2	1,703	25.5	98	14.6	60
Total 15-64	12.1	11.0	4.4	18.7	11,753	17.7	1,099	21.5	594

*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

16.3 REFERENCES

1. Krug EG, Dahlberg LL, Mercy JA, Zwi AB, Lozano R, eds. *World Report on Violence and Health.* Geneva: World Health Organization; 2002.

2. Rutherford A, Zwi AB, Grove NJ, Butchart A. Violence: a glossary. *J Epidemiol Community Health.* 2007;61(8):676–680. doi:10.1136/jech.2005.043711.

3. Fustos K. *Gender-Based Violence Increases Risk of HIV/AIDS for Women in Sub-Saharan Africa.* Washington, DC: Population Reference Bureau; 2011.

4. South African Development Community (SADC). *Protocol on Gender and Development.* Johannesburg, South Africa: SADC; 2005.

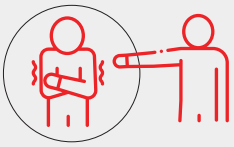
5. Watts C, Zimmerman C. Violence against women: global scope and magnitude. *Lancet.* 2002 Apr 6;359(9313):1232-7. DOI: 10.1016/S0140-6736(02)08221-1.

6. Maman S, Campbell J, Sweat MD, Gielen AC. The intersections of HIV and violence: directions for future research and interventions. *Soc Sci Med.* 2000 Feb;50(4):459-78.

7. Kenya National Bureau of Statistics (KNBS), Ministry of Health/Kenya (MoH), National AIDS Control Council/Kenya (NACC), Kenya Medical Research Institute (KEMRI), National Council for Population and Development/Kenya (NCPD), ICF International. *Kenya Demographic and Health Survey 2014. Nairobi,* Kenya/Rockville, Maryland: KNBS/MOH/NACC/NCPD/ICF International; 2015. http://dhsprogram.com/pubs/pdf/FR308/FR308.pdf. Accessed May 19, 2020.

17. DISCRIMINATORY ATTITUDES TOWARDS PEOPLE LIVING WITH HIV

This chapter focuses on HIV bias and potential stigmatization directed against people living with HIV



Among adults (ages 15-64) who have heard of HIV,

18.3%

held discriminatory attitudes towards people living with HIV

8.3%

of those with secondary education held discriminatory attitudes

42.3%

of those with no education held discriminatory attitudes

17.1 BACKGROUND

Attitudes toward and perceptions of people living with HIV play an important role in the HIV epidemic. Misconceptions about HIV have resulted in people developing a number of false beliefs about how HIV is transmitted, how it can be prevented, and whether it is treatable. Such beliefs are often influenced by prejudices related to socially sensitive issues involving sexuality, disease and death, and drug use.[1] Fears arising from these beliefs can lead to marginalization of particular populations, rendering them more vulnerable. Stigma against people living with HIV, in particular, affects their well-being and can limit their access to education, employment, and freedom of movement. Furthermore, HIV-related discrimination continues to act as a barrier to prevention and treatment, undermines programmatic attempts to help people with HIV/AIDS and may even result in the denial of health services.[2]

This chapter focuses on potential stigmatization directed against HIV and people living with HIV. In KENPHIA, the assessment of discriminatory attitudes towards people living with HIV follows the guidance for global AIDS monitoring by UNAIDS and is based on two questions: 1) Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV, and 2) Do you think that children living with HIV should be able to attend school with children who are HIV negative. Responses of "No" to either question would indicate a discriminatory attitude (UNAIDS 2016). This data can help to explain how HIV-related stigma may be negatively impacting efforts aimed at HIV prevention, HIV testing, and access to HIV treatment and care.

17.2 RESULTS

The following table shares data on HIV bias and discriminatory attitudes in Kenya.

Table 17.A Discriminatory attitudes toward people living with HIV

Among persons aged 15-64 years, percentage who report discriminatory attitudes towards people living with HIV, by selected demographic characteristics, KENPHIA 2018

Characteristic	Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?		Do you think that children living with HIV should be able to attend school with children who are HIV negative?		Both questions	
	Percentage who responded "No"	Number	Percentage who responded "No"	Number	Percentage who responded "No" to either of the two questions[1]	Number
Residence						
Urban	14.0	10,876	7.3	10,876	16.5	10,876
Rural	16.3	18,058	9.4	18,058	19.4	18,058
County						
Baringo	16.1	375	12.6	375	21.5	375
Bomet	18.4	760	7.6	760	21.4	760
Bungoma	16.1	780	9.0	780	21.0	780
Busia	10.3	607	5.1	607	11.9	607
Elgeyo-Marakwet	10.1	650	5.9	650	13.7	650
Embu	16.6	715	5.9	715	18.9	715
Garissa	41.6	510	31.0	510	45.0	510
Homa Bay	8.0	825	4.6	825	10.0	825
Isiolo	24.6	506	19.1	506	30.2	506

Table 17.A Discriminatory attitudes toward people living with HIV (continued)

Among persons aged 15-64 years, percentage who report discriminatory attitudes towards people living with HIV, by selected demographic characteristics, KENPHIA 2018

Characteristic	Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?		Do you think that children living with HIV should be able to attend school with children who are HIV negative?		Both questions	
	Percentage who responded "No"	Number	Percentage who responded "No"	Number	Percentage who responded "No" to either of the two questions[1]	Number
Kajiado	15.2	512	6.0	512	17.1	512
Kakamega	11.4	610	5.4	610	13.5	610
Kericho	14.2	744	6.0	744	17.0	744
Kiambu	13.3	406	7.9	406	15.5	406
Kilifi	27.9	496	18.6	496	31.5	496
Kirinyaga	14.7	669	6.5	669	16.6	669
Kisii	10.8	658	7.4	658	13.7	658
Kisumu	8.7	641	3.8	641	9.8	641
Kitui	15.9	867	8.3	867	19.6	867
Kwale	13.1	503	5.2	503	15.2	503
Laikipia	12.3	504	4.4	504	13.6	504
Lamu	25.3	482	11.9	482	29.2	482
Machakos	20.1	844	10.0	844	25.2	844
Makueni	20.9	520	8.1	520	24.0	520
Mandera	64.5	376	57.9	376	68.4	376
Marsabit	32.6	299	30.9	299	37.7	299
Meru	17.1	897	10.7	897	20.6	897
Migori	9.1	930	6.9	930	13.0	930
Mombasa	20.8	491	6.7	491	22.0	491
Murang'a	15.0	514	8.3	514	17.9	514
Nairobi	14.1	1,352	7.3	1,352	16.2	1,352
Nakuru	12.4	578	6.1	578	14.7	578
Nandi	15.2	885	7.2	885	17.6	885
Narok	23.8	565	13.0	565	26.9	565
Nyamira	6.7	544	4.0	544	9.7	544
Nyandarua	9.8	645	5.4	645	11.8	645
Nyeri	13.1	625	6.3	625	16.0	625
Samburu	31.8	337	26.1	337	39.9	337
Siaya	6.3	677	6.1	677	9.4	677
Taita-Taveta	15.9	504	3.8	504	17.3	504
Tana River	33.0	457	24.4	457	36.6	457
Tharaka-Nithi	15.7	701	10.6	701	20.6	701
Trans-Nzoia	10.5	490	5.8	490	13.5	490
Turkana	21.1	678	14.4	678	25.9	678
Uasin Gishu	8.0	614	2.7	614	8.8	614
Vihiga	11.3	571	4.4	571	12.7	571

Table 17.A Discriminatory attitudes toward people living with HIV (continued)

Among persons aged 15-64 years, percentage who report discriminatory attitudes towards people living with HIV, by selected demographic characteristics, KENPHIA 2018

Characteristic	Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?		Do you think that children living with HIV should be able to attend school with children who are HIV negative?		Both questions	
	Percentage who responded "No"	Number	Percentage who responded "No"	Number	Percentage who responded "No" to either of the two questions[1]	Number
Wajir	61.1	429	55.7	429	67.4	429
West Pokot	20.3	591	12.8	591	22.4	591
Marital status						
Never married	16.8	9,064	8.9	9,064	19.8	9,064
Married/cohabitating – monogamous	14.4	14,291	8.1	14,291	17.2	14,291
Married/cohabitating – polygamous	19.4	1,639	11.7	1,639	21.9	1,639
Divorced or separated	15.6	2,047	8.1	2,047	17.7	2,047
Widowed	14.7	1,279	10.3	1,279	18.1	1,279
Education						
No primary	38.0	2,591	28.7	2,591	42.3	2,591
Incomplete primary	18.8	13,697	10.7	13,697	22.3	13,697
Complete primary	11.2	9,078	4.9	9,078	13.3	9,078
Secondary	6.6	3,543	2.9	3,543	8.3	3,543
Wealth quintile						
Lowest	23.8	7,252	15.5	7,252	27.5	7,252
Second	15.9	6,393	8.2	6,393	19.3	6,393
Middle	13.5	6,168	7.1	6,168	16.1	6,168
Fourth	12.6	5,440	6.9	5,440	15.4	5,440
Highest	11.3	3,678	5.2	3,678	13.0	3,678
Religion						
Roman Catholic	14.0	6,289	7.8	6,289	17.1	6,289
Protestant/Other Christian	13.8	18,308	7.1	18,308	16.5	18,308
Muslim	33.7	3,304	23.4	3,304	36.3	3,304
No Religion	19.8	766	11.9	766	23.6	766
Other	17.3	259	8.7	259	18.9	259
Employment status (previous 12 months)						
Employed	13.2	13,260	6.3	13,260	15.6	13,260
Not employed	17.7	15,665	10.9	15,665	21.0	15,665
Circumcision status						
Circumcised	14.1	11,231	8.1	11,231	17.1	11,231
Medical circumcision	12.7	6,260	6.5	6,260	15.3	6,260
Nonmedical circumcision	16.3	4,940	10.4	4,940	19.9	4,940
Unknown whether medical or nonmedical	(14.6)	31	(12.2)	31	(15.4)	31
Uncircumcised	15.9	1,117	12.3	1,117	20.2	1,117
Unknown	*	11	*	11	*	11

Table 17.A Discriminatory attitudes toward people living with HIV (continued)

Among persons aged 15-64 years, percentage who report discriminatory attitudes towards people living with HIV, by selected demographic characteristics, KENPHIA 2018

Characteristic	Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?		Do you think that children living with HIV should be able to attend school with children who are HIV negative?		Both questions	
	Percentage who responded "No"	Number	Percentage who responded "No"	Number	Percentage who responded "No" to either of the two questions[1]	Number
Age						
15-19	19.7	5,057	10.2	5,057	23.1	5,057
20-24	14.8	4,124	7.6	4,124	17.6	4,124
25-29	14.5	3,855	8.0	3,855	16.7	3,855
30-34	14.3	3,919	8.3	3,919	17.3	3,919
35-39	12.8	2,986	8.3	2,986	15.7	2,986
40-44	14.5	2,638	8.4	2,638	17.3	2,638
45-49	14.8	2,038	7.7	2,038	16.5	2,038
50-54	14.3	1,719	8.5	1,719	16.9	1,719
55-59	15.2	1,391	9.3	1,391	18.8	1,391
60-64	18.3	1,207	10.2	1,207	20.7	1,207
Total 15-24	17.4	9,181	9.0	9,181	20.5	9,181
Total 25-49	14.1	15,436	8.1	15,436	16.7	15,436
Total 15-49	15.4	24,617	8.5	24,617	18.3	24,617
Total 50-64	15.6	4,317	9.2	4,317	18.5	4,317
Total 15-64	15.5	28,934	8.6	28,934	18.3	28,934

[1]Relates to Global AIDS Monitoring 2020 Indicator 4.1 Discriminatory attitudes towards people living with HIV.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

17.3 REFERENCES

1. Joint United Nations Programme on HIV/AIDS (UNAIDS). *HIV-Related Stigma, Discrimination and Human Rights Violations. Case studies of successful programmes.* Geneva: UNAIDS; 2005. https://www.unaids.org/sites/default/files/media_asset/jc999-humrightsviol_en_0.pdf. Accessed September 26, 2020.

2. Joint United Nations Programme on HIV/AIDS. *UNAIDS data tables, 2017.* http://aidsinfo.unaids.org/. Accessed May 18, 2020.

18. TUBERCULOSIS, HEPATITIS B, SYPHILIS, AND SEXUALLY TRANSMITTED INFECTION SYMPTOMS

This chapter reports findings on other diseases associated with HIV

Among HIV-positive adults (ages 15-64)

74.3%
reported they were screened for TB symptoms at their last HIV clinic visit

17.9%
reported they had ever been diagnosed with TB

Of those who reported a TB diagnosis,

94.2%
reported they had initiated TB treatment

65.3%
had ever been initiated on isoniazid therapy to prevent active TB

Among adults (ages 15-64) in Kenya

Overall prevalence of acute or chronic hepatitis B:

- **2.8%** among women
- **3.3%** among men
- **4.2%** among pregnant women
- **4.7%** among adults living with HIV

The prevalence of ever having syphilis was

- **2.3%** among adults
- **2.2%** among women
- **2.4%** among men

No syphilis infections were observed among pregnant women during the survey

The prevalence of active syphilis was

- **0.7%** among HIV-positive adults

The prevalence of ever having syphilis was

- **4.9%** among HIV-positive adults

Which was higher than

- **2.2%** among HIV-negative adults

18.1 BACKGROUND

People living with HIV are at risk for acquiring other diseases, including TB, hepatitis B, syphilis, and other sexually transmitted infections (STIs). TB is the leading cause of death for people living with HIV in Africa. HIV infection increases a person's susceptibility to TB infection and dramatically increases the risk of progression of latent TB to active disease.[1,2] Information regarding health-seeking behavior and access to services among people living with HIV, particularly for TB health services, can help the HIV program decrease the impact of TB on people living with HIV. According to World Health Organization estimates, there were 40,000 (95% CI: 25,000-60,000) incident TB cases among HIV-positive persons and 13,000 (95% CI: 8,100-20,000) TB-related deaths among people living with HIV in Kenya in 2018. Diagnosing and successfully treating active TB as well as providing TB preventive treatment to HIV-positive persons without active TB are critical to reducing the burden of TB among people living with HIV.[1]

HIV and hepatitis B have similar transmission routes and concurrent infection with both viruses often results in more rapid progression of hepatitis B to cirrhosis and higher liver-disease mortality. KENPHIA 2018 provides national population-based HBV prevalence among HIV-positive individuals, which can support actionable policy recommendations for screening and treatment. It may also potentially provide an estimate of the impact of national HBV vaccination programs.

Syphilis is a relatively common STI, and untreated syphilis can result in severe morbidity in adults as well as in infants. Providing a syphilis diagnosis in a timely manner also allows patients to get treated, thereby reducing morbidity and transmission to sexual partners or vertically to newborn infants. As syphilis has been implicated in increasing transmission and acquisition of HIV, describing syphilis in HIV-positive individuals adds to the understanding of the epidemiology of HIV.

This chapter describes the TB clinical care cascade for HIV-positive individuals: the use of a TB symptom screen at last clinic visit, TB diagnosis and treatment among those diagnosed with TB, and the initiation of isoniazid prophylaxis to prevent TB among people living with HIV. In addition, this chapter describes the prevalence of HBV and syphilis in adults by sex, age, HIV status, county distribution, and socioeconomic and demographic characteristics. Further, this chapter also describes prior screening for STIs in both adult men and women.

18.2 RESULTS

The following tables report KENPHIA's findings on other diseases associated with HIV.

Table 18.A Tuberculosis symptom screening in HIV clinics

Among self-reported HIV-positive persons in HIV care aged 15-64 years, percentage who were screened for TB symptoms at last HIV clinic visit, by age and sex, KENPHIA 2018

Characteristic	Percentage who were screened for TB symptoms[1]	Number
Sex		
Male	72.3	267
Female	75.1	777
Had been away from home for more than three days in the six months before the survey		
Yes	78.1	210
No	73.3	834
Age		
Total 15-24	62.3	77
Total 25-49	76.1	717
Total 15-49	74.7	794

Table 18.A Tuberculosis symptom screening in HIV clinics (continued)

Among self-reported HIV-positive persons in HIV care aged 15-64 years, percentage who were screened for TB symptoms at last HIV clinic visit, by age and sex, KENPHIA 2018

Characteristic	Percentage who were screened for TB symptoms[1]	Number
Total 50-64	72.9	250
Total 15-64	74.3	1,044

Weighted figures calculated using intwt0.
[1]TB symptoms included any of the four TB symptoms: cough, fever, night sweats, or weight loss,
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

Table 18.B Tuberculosis services among people living with HIV

Among HIV-positive persons aged 0-64 years, percentage who were ever diagnosed with TB; and among those diagnosed with TB, percentage who were treated for TB, based on self- or parent-report, by age and sex, KENPHIA 2018

Characteristic	Among HIV-positive persons		Among HIV-positive persons who were diagnosed with TB	
	Percentage who were diagnosed with TB	Number	Percentage who initiated TB treatment	Number
Sex				
Male	17.9	335	100.0	75
Female	15.8	870	91.2	138
Had been away from home for more than three days in the six months before the survey (adults 15-64)				
Yes	17.5	237	(95.7)	43
No	18.0	928	93.8	169
Age				
Total 0-14	(2.0)	40	*	1
Total 15-64	17.9	1,165	94.2	212

Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 18.C Use of INH among self-reported or parent-reported HIV positive individuals aged 0-64 years

Among individuals aged 0-64 years who reported or parent-reported HIV positive, percentage that ever used INH, KENPHIA 2018

Age	Male		Female		Total	
	Percentage ever initiated on INH	Number	Percentage ever initiated on INH	Number	Percentage ever initiated on INH	Number
Total 0-14	*	23	*	14	(67.0)	37
Total 10-19	*	22	(55.6)	31	68.2	53
Total 15-24	*	11	47.1	75	48.9	86
Total 25-49	61.7	194	68.7	590	66.8	784
Total 15-49	61.7	205	66.0	665	64.9	870
Total 50-64	65.8	99	67.4	171	66.8	270
Total 15-64	62.8	304	66.3	836	65.3	1,140

Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 18.D Hepatitis B prevalence

Prevalence of Hepatitis B among persons aged 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage HBV Positive	Number	Percentage HBV Positive	Number	Percentage HBV Positive	Number
Result of PHIA survey HIV test						
HIV positive	5.1	423	4.5	1,098	4.7	1,521
HIV negative	3.3	661	2.6	890	3.0	1,551
Not tested	*	0	*	0	*	0
Residence						
Urban	2.2	361	2.6	726	2.4	1,087
Rural	4.0	723	2.8	1,262	3.4	1,985
County						
Baringo	*	9	*	22	(11.9)	31
Bomet	(10.7)	25	(4.2)	31	7.8	56
Bungoma	(0.2)	35	2.7	60	1.4	95
Busia	(14.8)	37	5.6	65	9.5	102
Elgeyo-Marakwet	*	15	(0.0)	28	(0.0)	43
Embu	(9.7)	25	(0.0)	37	5.0	62
Garissa	*	9	*	11	*	20
Homa Bay	6.1	67	0.9	146	3.2	213
Isiolo	*	8	*	13	*	21
Kajiado	*	16	(0.0)	26	(0.0)	42
Kakamega	(0.0)	32	0.0	62	0.0	94
Kericho	*	20	(0.0)	32	0.0	52
Kiambu	(5.8)	30	2.2	53	3.8	83
Kilifi	*	17	(6.9)	45	8.5	62

Table 18.D Hepatitis B prevalence (continued)

Prevalence of Hepatitis B among persons aged 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage HBV Positive	Number	Percentage HBV Positive	Number	Percentage HBV Positive	Number
Kirinyaga	*	14	(0.0)	29	(0.4)	43
Kisii	(0.0)	28	0.3	58	0.2	86
Kisumu	0.4	50	11.0	121	6.3	171
Kitui	*	23	0.3	60	2.7	83
Kwale	*	11	(0.5)	28	(0.3)	39
Laikipia	*	9	*	20	(0.0)	29
Lamu	*	6	*	11	*	17
Machakos	(0.0)	37	0.2	69	0.1	106
Makueni	*	12	(0.0)	39	0.0	51
Mandera	*	5	*	3	*	8
Marsabit	*	6	*	9	*	15
Meru	(2.7)	49	2.4	68	2.6	117
Migori	11.3	53	7.8	118	10.0	171
Mombasa	*	20	(4.2)	37	2.2	57
Murang'a	*	22	(0.2)	33	3.4	55
Nairobi	0.1	65	1.5	94	0.8	159
Nakuru	(2.4)	31	(0.3)	37	1.6	68
Nandi	(0.0)	40	(0.0)	35	0.0	75
Narok	*	14	(0.0)	31	(6.6)	45
Nyamira	*	21	(0.2)	27	(0.1)	48
Nyandarua	*	20	*	22	(2.5)	42
Nyeri	*	24	(0.0)	28	4.8	52
Samburu	*	2	*	7	*	9
Siaya	(11.8)	41	1.0	105	5.3	146
Taita-Taveta	*	12	(0.2)	29	(0.1)	41
Tana River	*	11	*	18	(0.1)	29
Tharaka-Nithi	*	16	*	24	(4.5)	40
Trans-Nzoia	*	17	(0.7)	42	0.7	59
Turkana	*	19	(13.9)	45	16.8	64
Uasin Gishu	(4.0)	29	3.8	55	3.9	84
Vihiga	*	22	(0.6)	38	0.3	60
Wajir	*	1	*	2	*	3
West Pokot	*	9	*	15	*	24
Marital status						
Never married	2.6	313	1.8	403	2.3	716
Married/cohabitating – monogamous	3.5	591	2.8	798	3.1	1,389
Married/cohabitating – polygamous	(5.6)	49	7.2	175	6.8	224
Divorced or separated	3.6	94	1.7	219	2.6	313
Widowed	(20.3)	26	2.8	315	4.5	341

Table 18.D Hepatitis B prevalence (continued)

Prevalence of Hepatitis B among persons aged 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage HBV Positive	Number	Percentage HBV Positive	Number	Percentage HBV Positive	Number
Education						
No primary	12.2	60	9.9	180	10.7	240
Incomplete primary	3.8	545	2.7	1,180	3.2	1,725
Complete primary	2.6	343	1.9	488	2.3	831
Secondary	1.1	136	0.1	139	0.7	275
Wealth quintile						
Lowest	5.0	244	5.5	456	5.3	700
Second	4.6	270	1.8	466	3.3	736
Middle	3.8	252	2.3	464	3.0	716
Fourth	1.4	198	3.1	379	2.3	577
Highest	0.9	120	0.7	222	0.8	342
Religion						
Roman Catholic	3.4	241	2.2	386	2.8	627
Protestant/Other Christian	2.7	712	2.5	1,451	2.6	2,163
Muslim	3.8	67	6.4	107	5.2	174
No Religion	(11.1)	45	*	23	9.2	68
Other	*	18	*	21	(5.8)	39
Employment status (previous 12 months)						
Employed	2.2	676	2.8	809	2.4	1,485
Not employed	5.3	408	2.7	1,179	3.7	1,587
Had been away from home for more than three days in the six months before the survey						
Yes	3.7	247	1.6	373	2.7	620
No	3.2	837	3.1	1,615	3.1	2,452
Circumcision status						
Circumcised	3.4	900	NA	NA	NA	NA
Medical circumcision	3.4	501	NA	NA	NA	NA
Nonmedical circumcision	3.4	393	NA	NA	NA	NA
Unknown whether medical or nonmedical	*	6	NA	NA	NA	NA
Uncircumcised	2.5	182	NA	NA	NA	NA
Unknown	*	2	NA	NA	NA	NA
Pregnancy status						
Currently pregnant	NA	NA	4.2	78	NA	NA
Not currently pregnant	NA	NA	2.7	1,887	NA	NA
Age						
15-19	3.3	156	1.1	192	2.2	348
20-24	2.9	104	0.1	210	1.5	314
25-29	1.6	98	5.1	268	3.4	366
30-34	2.1	135	3.3	346	2.7	481

Table 18.D Hepatitis B prevalence (continued)

Prevalence of Hepatitis B among persons aged 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, KENPHIA 2018

Characteristic	Male		Female		Total	
	Percentage HBV Positive	Number	Percentage HBV Positive	Number	Percentage HBV Positive	Number
35-39	3.0	121	2.3	241	2.6	362
40-44	3.5	132	4.1	227	3.8	359
45-49	10.4	110	6.6	168	8.5	278
50-54	3.9	97	3.3	152	3.6	249
55-59	2.9	79	4.6	115	3.7	194
60-64	4.3	52	0.2	69	2.2	121
Total 15-24	3.1	260	0.7	402	1.9	662
Total 25-49	3.4	596	4.1	1,250	3.8	1,846
Total 15-49	3.3	856	2.7	1,652	3.0	2,508
Total 50-64	3.6	228	2.9	336	3.3	564
Total 15-64	3.3	1,084	2.8	1,988	3.0	3,072

Weighted figures calculated using hepbsyphwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 18.E Syphilis prevalence

Prevalence of syphilis (ever infected[1] and active infection[2]) among persons aged 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, KENPHIA 2018

Characteristic	Male			Female			Total		
	Percentage ever infected	Percentage active infection	Number	Percentage ever infected	Percentage active infection	Number	Percentage ever infected	Percentage active infection	Number
Result of PHIA survey HIV test									
HIV positive	7.7	0.9	413	3.7	0.6	1,079	4.9	0.7	1,492
HIV negative	2.2	0.2	659	2.1	0.4	887	2.2	0.3	1,546
Not tested	*	*	0	*	*	0	*	*	0
Residence									
Urban	2.2	0.0	357	1.2	0.4	717	1.7	0.2	1,074
Rural	2.4	0.4	715	2.8	0.4	1,249	2.6	0.4	1,964
County									
Baringo	*	*	9	*	*	22	(0.0)	(0.0)	31
Bomet	(0.0)	(0.0)	25	(0.0)	(0.0)	31	0.0	0.0	56
Bungoma	(0.0)	(0.0)	35	0.0	0.0	60	0.0	0.0	95
Busia	(0.4)	(0.0)	37	8.3	0.0	63	5.0	0.0	100
Elgeyo-Marakwet	*	*	14	(0.4)	(0.4)	28	(0.5)	(0.5)	42
Embu	*	*	24	(5.0)	(0.2)	36	2.4	0.1	60
Garissa	*	*	9	*	*	11	*	*	20
Homa Bay	8.2	0.4	67	4.7	0.0	144	6.2	0.2	211

Table 18.E Syphilis prevalence (continued)

Prevalence of syphilis (ever infected[1] and active infection[2]) among persons aged 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, KENPHIA 2018

Characteristic	Male			Female			Total		
	Percentage ever infected	Percentage active infection	Number	Percentage ever infected	Percentage active infection	Number	Percentage ever infected	Percentage active infection	Number
Isiolo	*	*	8	*	*	13	*	*	21
Kajiado	*	*	15	(0.2)	(0.0)	26	(0.1)	(0.0)	41
Kakamega	(1.8)	(0.0)	32	2.8	2.8	61	2.4	1.5	93
Kericho	*	*	20	(0.5)	(0.1)	30	0.2	0.1	50
Kiambu	(0.0)	(0.0)	30	1.6	1.6	53	0.9	0.9	83
Kilifi	*	*	17	(0.0)	(0.0)	45	0.0	0.0	62
Kirinyaga	*	*	14	(0.7)	(0.0)	29	(0.6)	(0.0)	43
Kisii	(0.2)	(0.0)	28	0.0	0.0	58	0.1	0.0	86
Kisumu	8.2	0.0	50	0.5	0.2	120	3.9	0.1	170
Kitui	*	*	23	8.2	0.0	60	4.7	0.0	83
Kwale	*	*	11	(13.7)	(0.0)	28	(24.0)	(0.0)	39
Laikipia	*	*	9	*	*	20	(0.0)	(0.0)	29
Lamu	*	*	6	*	*	10	*	*	16
Machakos	(2.5)	(2.1)	37	0.0	0.0	68	1.3	1.1	105
Makueni	*	*	11	(0.2)	(0.0)	38	(0.1)	(0.0)	49
Mandera	*	*	5	*	*	3	*	*	8
Marsabit	*	*	6	*	*	9	*	*	15
Meru	(5.1)	(0.0)	49	5.8	0.3	67	5.4	0.1	116
Migori	9.0	4.9	53	1.6	0.3	118	6.1	3.1	171
Mombasa	*	*	20	(0.2)	(0.0)	37	0.1	0.0	57
Murang'a	*	*	22	(3.9)	(0.0)	33	5.5	0.0	55
Nairobi	2.8	0.0	63	0.1	0.0	93	1.5	0.0	156
Nakuru	(0.1)	(0.0)	31	(5.0)	(0.0)	37	1.9	0.0	68
Nandi	(0.1)	(0.0)	39	(0.0)	(0.0)	33	0.1	0.0	72
Narok	*	*	13	(10.8)	(0.0)	31	(4.3)	(0.0)	44
Nyamira	*	*	21	(6.0)	(5.5)	27	(2.3)	(2.1)	48
Nyandarua	*	*	20	*	*	22	(0.0)	(0.0)	42
Nyeri	*	*	22	(6.3)	(0.0)	28	2.7	0.0	50
Samburu	*	*	2	*	*	7	*	*	9
Siaya	(10.4)	(0.0)	40	3.7	0.0	105	6.4	0.0	145
Taita-Taveta	*	*	11	(0.0)	(0.0)	27	(0.1)	(0.0)	38
Tana River	*	*	11	*	*	18	(0.0)	(0.0)	29
Tharaka-Nithi	*	*	16	*	*	24	(0.1)	(0.0)	40
Trans-Nzoia	*	*	17	(0.0)	(0.0)	40	0.0	0.0	57
Turkana	*	*	19	(0.1)	(0.0)	44	0.1	0.0	63
Uasin Gishu	(0.0)	(0.0)	29	6.4	2.5	54	3.2	1.3	83
Vihiga	*	*	22	(0.1)	(0.0)	38	4.1	0.2	60
Wajir	*	*	1	*	*	2	*	*	3
West Pokot	*	*	9	*	*	15	*	*	24

Table 18.E Syphilis prevalence (continued)

Prevalence of syphilis (ever infected[1] and active infection[2]) among persons aged 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, KENPHIA 2018

Characteristic	Male			Female			Total		
	Percentage ever infected	Percentage active infection	Number	Percentage ever infected	Percentage active infection	Number	Percentage ever infected	Percentage active infection	Number
Marital status									
Never married	0.3	0.0	311	1.8	0.4	398	1.0	0.2	709
Married/cohabitating-monogamous	4.5	0.5	584	1.5	0.2	792	3.0	0.3	1,376
Married/cohabitating – polygamous	(4.5)	(0.0)	48	1.7	0.0	173	2.4	0.0	221
Divorced or separated	0.4	0.1	92	1.6	0.3	216	1.0	0.2	308
Widowed	(0.0)	(0.0)	26	8.0	0.3	309	7.2	0.2	335
Education									
No primary	0.8	0.1	60	3.3	0.0	179	2.4	0.1	239
Incompleteprimary	3.6	0.5	538	3.3	0.5	1,168	3.4	0.5	1,706
Completeprimary	1.4	0.0	339	1.0	0.4	481	1.2	0.2	820
Secondary	1.4	0.0	135	0.0	0.0	137	0.9	0.0	272
Wealth quintile									
Lowest	1.4	0.6	243	1.6	0.3	453	1.5	0.4	696
Second	2.7	0.5	268	2.0	0.1	463	2.4	0.3	731
Middle	4.8	0.0	250	3.8	0.5	457	4.3	0.2	707
Fourth	0.8	0.0	191	2.0	0.4	373	1.5	0.2	564
Highest	1.6	0.0	120	1.5	0.7	219	1.5	0.4	339
Religion									
Roman Catholic	1.2	0.0	239	2.3	0.7	382	1.7	0.4	621
Protestant/Other Christian	2.2	0.4	704	2.0	0.3	1,434	2.1	0.3	2,138
Muslim	5.9	0.0	65	4.5	0.1	106	5.2	0.0	171
No Religion	(4.6)	(0.0)	45	*	*	23	3.2	0.0	68
Other	*	*	18	*	*	21	(1.6)	(0.2)	39
Employment status (previous 12 months)									
Employed	2.6	0.4	671	3.2	0.7	802	2.9	0.5	1,473
Not employed	1.9	0.0	401	1.7	0.2	1,164	1.7	0.1	1,565
Had been away from home for more than three days in the six months before the survey						**13**			
Yes	1.7	0.0	244	3.0	1.1	369	2.3	0.5	613
No	2.6	0.3	828	2.0	0.2	1,597	2.3	0.3	2,425
Circumcision status									
Circumcised	2.1	0.3	888	NA	NA	NA	NA	NA	NA
Medical circumcision	1.8	0.3	494	NA	NA	NA	NA	NA	NA
Nonmedical circumcision	2.5	0.3	388	NA	NA	NA	NA	NA	NA
Unknown whether medical or nonmedical	*	*	6	NA	NA	NA	NA	NA	NA
Uncircumcised	5.5	0.1	182	NA	NA	NA	NA	NA	NA
Unknown	*	*	2	NA	NA	NA	NA	NA	NA

Table 18.E Syphilis prevalence (continued)

Prevalence of syphilis (ever infected[1] and active infection[2]) among persons aged 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, KENPHIA 2018

Characteristic	Male			Female			Total		
	Percentage ever infected	Percentage active infection	Number	Percentage ever infected	Percentage active infection	Number	Percentage ever infected	Percentage active infection	Number
Pregnancy status (ages 15-49)									
Currently pregnant[3]	NA	NA	NA	0.0	0.0	78	NA	NA	NA
Not currently pregnant	NA	NA	NA	2.1	0.3	1,534	NA	NA	NA
Recent birth history									
Gave birth in previous 12 months	NA	NA	NA	1.0	0.0	168	NA	NA	NA
Did not give birth in previous 12 months	NA	NA	NA	1.4	0.5	431	NA	NA	NA
Age									
15-19	0.5	0.0	156	2.1	0.7	191	1.3	0.3	347
20-24	0.0	0.0	103	0.9	0.0	207	0.5	0.0	310
25-29	0.0	0.0	97	0.7	0.0	265	0.4	0.0	362
30-34	5.1	1.0	132	1.0	0.8	341	2.9	0.9	473
35-39	4.8	0.0	119	2.0	0.1	238	3.4	0.1	357
40-44	6.2	0.1	129	5.4	0.0	226	5.8	0.1	355
45-49	3.3	0.1	109	6.0	0.0	166	4.6	0.1	275
50-54	2.6	2.1	96	3.6	1.6	150	3.1	1.9	246
55-59	4.1	0.0	79	4.1	1.4	113	4.1	0.7	192
60-64	4.2	0.0	52	3.0	0.0	69	3.6	0.0	121
Total 15-24	0.3	0.0	259	1.5	0.3	398	0.9	0.2	657
Total 25-49	3.6	0.3	586	2.4	0.2	1,236	3.0	0.3	1,822
Total 15-49	2.2	0.2	845	2.0	0.3	1,634	2.1	0.2	2,479
Total 50-64	3.5	0.9	227	3.6	1.1	332	3.6	1.0	559
Total 15-64	2.4	0.2	1,072	2.2	0.4	1,966	2.3	0.3	3,038

[1]Individuals with both treponemal and non-treponemal antibodies detected.
[2]Individuals with treponemal antibodies detected.
[3]Relates to Global AIDS Monitoring 2020 Indicator 2.4: Syphilis among pregnant women.
Weighted figures calculated using hepbsyphwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 18.F Other sexually transmitted infections: Men

Among men aged 15-64 years, percentage who reported symptoms of a sexually transmitted infection and percentage who reported clinical diagnosis of a sexually transmitted infection in the 12 months preceding the survey; by HIV status and selected demographic characteristics, KENPHIA 2018

Characteristic	Self-reported symptoms in the past 12 months		Number	Among those who reported STI symptoms, percentage diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse	Number
	Percentage who had abnormal discharge from the penis[1]	Percentage who had an ulcer or sore on or near the penis			
Result of PHIA survey HIV test					
HIV positive	8.4	7.9	423	(41.5)	34
HIV negative	3.8	3.6	11,285	38.6	619
Not tested	1.1	1.1	1,179	(38.7)	27
Residence					
Urban	3.3	3.8	4,833	37.7	269
Rural	3.9	3.2	8,054	39.5	411
County					
Baringo	3.2	2.9	183	*	8
Bomet	3.0	2.7	348	*	16
Bungoma	4.5	4.5	344	*	17
Busia	8.5	7.3	263	*	17
Elgeyo-Marakwet	2.2	3.8	279	*	17
Embu	3.5	3.4	299	*	16
Garissa	5.1	1.6	242	(21.1)	40
Homa Bay	6.7	6.6	350	*	22
Isiolo	3.7	2.3	223	*	12
Kajiado	3.5	3.7	244	*	14
Kakamega	4.5	6.5	237	*	12
Kericho	2.7	1.4	349	*	7
Kiambu	1.7	2.5	168	*	4
Kilifi	5.0	6.4	210	*	22
Kirinyaga	4.4	4.5	294	*	16
Kisii	6.2	4.7	289	*	10
Kisumu	5.1	7.1	244	*	20
Kitui	3.4	3.3	395	*	20
Kwale	3.7	2.0	210	(41.8)	25
Laikipia	1.8	1.7	218	*	9
Lamu	3.1	6.1	210	*	12
Machakos	1.9	2.1	378	*	13
Makueni	2.9	0.8	237	*	9
Mandera	2.2	1.1	161	*	5
Marsabit	3.3	1.4	124	*	4
Meru	3.9	2.5	418	*	16
Migori	6.8	7.2	387	(44.8)	33
Mombasa	4.1	6.6	249	*	20
Murang'a	2.4	1.7	253	*	9
Nairobi	2.5	2.4	621	(44.9)	32

Table 18.F Other sexually transmitted infections: Men (continued)

Among men aged 15-64 years, percentage who reported symptoms of a sexually transmitted infection and percentage who reported clinical diagnosis of a sexually transmitted infection in the 12 months preceding the survey; by HIV status and selected demographic characteristics, KENPHIA 2018

Characteristic	Self-reported symptoms in the past 12 months		Number	Among those who reported STI symptoms, percentage diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse	Number
	Percentage who had abnormal discharge from the penis[1]	Percentage who had an ulcer or sore on or near the penis			
Nakuru	4.1	2.9	258	*	11
Nandi	3.1	1.8	416	*	13
Narok	3.7	1.7	254	*	7
Nyamira	2.4	2.7	229	*	8
Nyandarua	0.6	2.3	263	*	12
Nyeri	0.9	1.7	299	*	5
Samburu	1.4	1.2	158	*	3
Siaya	8.3	4.9	275	(63.9)	25
Taita-Taveta	1.9	2.4	259	*	12
Tana River	4.3	3.9	225	*	19
Tharaka-Nithi	4.7	3.8	337	*	15
Trans-Nzoia	2.4	0.9	199	*	4
Turkana	1.2	0.2	314	*	8
Uasin Gishu	2.3	0.9	290	*	8
Vihiga	6.9	5.9	239	*	14
Wajir	8.7	3.1	177	*	20
West Pokot	4.5	4.7	268	*	19
Marital status					
Never married	3.2	3.1	4,947	36.1	201
Married/cohabitating – monogamous	3.7	3.6	6,486	39.1	369
Married/cohabitating – polygamous	8.4	5.0	482	(52.3)	42
Divorced or separated	5.4	3.9	746	39.4	58
Widowed	2.5	5.6	150	*	8
Education					
No primary	2.9	2.9	740	47.6	55
Incomplete primary	4.5	4.4	5,935	37.2	348
Complete primary	3.4	2.6	4,389	42.0	194
Secondary	2.4	3.0	1,811	34.7	81
Wealth quintile					
Lowest	5.0	4.4	3,176	36.2	189
Second	4.1	4.0	2,848	41.0	150
Middle	3.2	2.9	2,793	41.2	130
Fourth	3.8	2.8	2,505	38.5	140
Highest	2.2	3.2	1,564	36.7	71
Religion					
Roman Catholic	3.1	2.7	2,961	41.4	150
Protestant/Other Christian	3.8	3.6	7,673	40.5	358
Muslim	3.7	3.4	1,508	24.4	128

Table 18.F Other sexually transmitted infections: Men (continued)

Among men aged 15-64 years, percentage who reported symptoms of a sexually transmitted infection and percentage who reported clinical diagnosis of a sexually transmitted infection in the 12 months preceding the survey; by HIV status and selected demographic characteristics, KENPHIA 2018

Characteristic	Self-reported symptoms in the past 12 months		Number	Among those who reported STI symptoms, percentage diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse	Number
	Percentage who had abnormal discharge from the penis[1]	Percentage who had an ulcer or sore on or near the penis			
No Religion	4.1	4.0	621	(35.3)	29
Other	7.2	10.4	118	*	15
Employment status (previous 12 months)					
Employed	3.8	3.9	7,489	39.9	423
Not employed	3.5	2.7	5,394	36.3	257
Had been away from home for more than three days in the six months before the survey					
Yes	4.1	4.1	3,377	43.0	231
No	3.5	3.2	9,508	36.8	449
Circumcision status					
Circumcised	3.5	3.3	11,714	39.1	612
Medical circumcision	3.3	3.2	6,455	38.3	307
Nonmedical circumcision	3.8	3.3	5,222	39.4	301
Unknown whether medical or nonmedical	(9.9)	(16.9)	37	*	4
Uncircumcised	5.6	5.0	1,160	38.2	67
Unknown	*	*	13	*	1
Age					
15-19	2.7	2.3	2,531	25.3	78
20-24	4.6	4.0	1,737	40.9	117
25-29	5.2	5.6	1,447	51.2	102
30-34	4.3	4.1	1,585	41.8	107
35-39	4.5	3.2	1,324	43.7	70
40-44	3.0	2.8	1,246	40.8	64
45-49	2.6	2.7	956	(27.3)	43
50-54	1.9	3.2	807	(29.8)	36
55-59	1.7	1.5	677	(14.4)	33
60-64	1.6	1.1	577	(6.1)	30
Total 15-24	3.6	3.1	4,268	36.0	195
Total 25-49	4.2	4.0	6,558	43.7	386
Total 15-49	3.9	3.6	10,826	41.0	581
Total 50-64	1.8	2.1	2,061	18.5	99
Total 15-64	3.7	3.4	12,887	38.8	680

[1]Relates to Global AIDS Monitoring 2020 Indicator 10.4: Men with urethral discharge.
Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 18.G Other sexually transmitted infections: Women

Among women aged 15-64 years, percentage who reported symptoms of a sexually transmitted infection and percentage who reported clinical diagnosis of a sexually transmitted infection in the 12 months preceding the survey; by HIV status and selected demographic characteristics, KENPHIA 2018

Characteristic	Self-reported symptoms in the past 12 months		Number	Among those who reported STI symptoms, percentage who were diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse	Number
	Percentage who had abnormal discharge from the vagina	Percentage who had an ulcer or sore on or near the vagina			
Result of PHIA survey HIV test					
HIV positive	12.5	8.2	1,099	27.0	108
HIV negative	8.7	4.1	14,898	29.4	917
Not tested	2.1	0.7	1,453	(32.0)	35
Residence					
Urban	9.1	4.0	6,440	30.1	444
Rural	7.8	4.0	11,010	28.7	616
County					
Baringo	7.7	4.4	217	*	10
Bomet	3.2	1.6	460	*	13
Bungoma	8.9	5.2	466	(38.2)	26
Busia	10.9	7.4	362	(22.5)	29
Elgeyo-Marakwet	3.1	1.5	379	*	6
Embu	10.8	6.1	426	(41.6)	37
Garissa	9.4	2.4	307	(42.6)	27
Homa Bay	11.2	5.1	490	(34.7)	31
Isiolo	5.5	3.0	336	*	13
Kajiado	6.0	5.2	303	*	12
Kakamega	4.9	5.4	397	*	21
Kericho	5.6	1.0	422	*	17
Kiambu	8.8	2.9	248	*	20
Kilifi	7.1	4.4	333	*	21
Kirinyaga	13.1	2.7	381	(34.9)	40
Kisii	6.8	2.9	377	*	21
Kisumu	11.9	5.5	401	(29.7)	30
Kitui	9.6	3.2	552	(27.7)	42
Kwale	9.0	4.3	324	(20.9)	26
Laikipia	9.0	2.9	302	*	15
Lamu	6.0	4.5	303	*	16
Machakos	6.6	4.1	509	(35.5)	37
Makueni	8.5	5.2	325	*	22
Mandera	5.9	0.7	257	*	10
Marsabit	1.7	0.6	224	*	6
Meru	9.8	6.1	521	(13.8)	41
Migori	11.5	4.5	571	(37.7)	37
Mombasa	11.7	4.7	266	*	19
Murang'a	6.9	1.7	277	*	16
Nairobi	9.1	3.3	781	35.2	56

Table 18.G Other sexually transmitted infections: Women (continued)

Among women aged 15-64 years, percentage who reported symptoms of a sexually transmitted infection and percentage who reported clinical diagnosis of a sexually transmitted infection in the 12 months preceding the survey; by HIV status and selected demographic characteristics, KENPHIA 2018

Characteristic	Self-reported symptoms in the past 12 months		Number	Among those who reported STI symptoms, percentage who were diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse	Number
	Percentage who had abnormal discharge from the vagina	Percentage who had an ulcer or sore on or near the vagina			
Nakuru	6.4	2.1	332	*	21
Nandi	6.5	2.4	484	*	19
Narok	6.3	4.5	344	*	20
Nyamira	8.5	3.7	325	*	16
Nyandarua	10.5	5.6	391	(22.5)	33
Nyeri	7.6	3.5	346	(25.9)	26
Samburu	1.4	0.3	228	*	4
Siaya	13.4	7.7	415	(22.8)	35
Taita-Taveta	4.1	2.1	285	*	11
Tana River	10.0	3.9	295	*	20
Tharaka-Nithi	18.1	11.2	390	28.7	53
Trans-Nzoia	6.1	2.8	303	*	12
Turkana	2.5	1.1	459	*	8
Uasin Gishu	9.2	3.8	336	*	19
Vihiga	5.6	3.2	349	*	19
Wajir	10.7	3.6	290	*	21
West Pokot	3.1	1.5	361	*	6
Marital status					
Never married	6.8	3.3	4,438	24.0	193
Married/cohabitating – monogamous	8.7	3.8	8,471	30.7	570
Married/cohabitating – polygamous	8.4	6.0	1,309	19.8	83
Divorced or separated	11.3	4.9	1,416	41.4	111
Widowed	7.1	4.2	1,242	27.6	57
Education					
No primary	6.6	3.3	2,279	21.8	104
Incomplete primary	8.9	4.9	8,457	27.2	513
Complete primary	7.5	3.3	4,872	34.9	283
Secondary	9.4	3.1	1,826	29.6	159
Wealth quintile					
Lowest	7.5	3.9	4,727	25.4	213
Second	7.6	3.7	3,817	28.4	207
Middle	8.5	4.6	3,564	29.1	232
Fourth	9.6	4.1	3,094	31.3	233
Highest	8.6	3.7	2,244	31.0	175
Religion					
Roman Catholic	8.6	4.2	3,603	25.4	207
Protestant/Other Christian	8.4	4.1	11,367	31.1	720
Muslim	6.4	2.7	2,098	20.0	114

Table 18.G Other sexually transmitted infections: Women (continued)

Among women aged 15-64 years, percentage who reported symptoms of a sexually transmitted infection and percentage who reported clinical diagnosis of a sexually transmitted infection in the 12 months preceding the survey; by HIV status and selected demographic characteristics, KENPHIA 2018

Characteristic	Self-reported symptoms in the past 12 months		Number	Among those who reported STI symptoms, percentage who were diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse	Number
	Percentage who had abnormal discharge from the vagina	Percentage who had an ulcer or sore on or near the vagina			
No Religion	9.4	3.7	234	*	11
Other	8.4	5.2	146	*	8
Employment status (previous 12 months)					
Employed	9.7	4.6	6,215	30.9	468
Not employed	7.4	3.6	11,230	27.9	592
Had been away from home for more than three days in the six months before the survey					
Yes	11.8	5.9	3,316	29.7	304
No	7.4	3.5	14,133	29.2	756
Age					
15-19	5.3	2.3	2,710	37.2	73
20-24	9.8	4.8	2,524	28.9	196
25-29	11.2	4.7	2,595	32.9	216
30-34	11.3	5.0	2,528	25.1	215
35-39	9.1	5.0	1,815	29.4	129
40-44	7.5	3.1	1,517	25.0	87
45-49	6.5	4.4	1,202	27.3	60
50-54	4.3	3.0	1,002	(34.0)	33
55-59	4.3	3.0	818	(20.3)	29
60-64	3.9	2.5	739	*	22
Total 15-24	7.5	3.5	5,234	31.0	269
Total 25-49	9.7	4.6	9,657	28.6	707
Total 15-49	8.8	4.1	14,891	29.3	976
Total 50-64	4.2	2.9	2,559	29.4	84
Total 15-64	8.3	4.0	17,450	29.3	1,060

Weighted figures calculated using intwt0.
The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
*Estimates based on a very small denominator (less than 25) have been suppressed with an asterisk.
()Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

18.3 REFERENCES

1. Pawlowski A, Jansson M, Sköld M, Rottenberg ME, Källenius G. Tuberculosis and HIV co-infection. *PLoS Pathog.* 2012;8(2):e1002464. doi:10.1371/journal.ppat.1002464

2. Bruchfeld J, Correia-Neves M, Källenius G. Tuberculosis and HIV Coinfection. *Cold Spring Harb Perspect Med.* 2015 Feb 26;5(7):a017871. doi: 10.1101/cshperspect.a017871. PMID: 25722472; PMCID: PMC4484961.

3. Joint United Nations Programme on HIV/AIDS. *UNAIDS data tables, 2017.* http://aidsinfo.unaids.org/. Accessed May 18, 2020.

APPENDICES

APPENDIX A SAMPLE DESIGN AND IMPLEMENTATION

Appendix A provides a high-level overview of sampling and weighting procedures for KENPHIA 2018. In-depth details are provided in the *KENPHIA 2018 Sampling and Weighting Technical Report*, which may be found on the PHIA Project website (https://phia-data.icap.columbia.edu/files).

A.1 SAMPLE DESIGN

Overview

The sample design for the KENPHIA 2018 is a stratified multistage probability sample design, with strata defined by the 47 counties of the country, by urban-rural status, first-stage sampling units defined by EAs within strata, second-stage sampling units defined by households within EAs, and finally eligible persons within households. Within each sampling stratum, the first-stage sampling units (also referred to as PSUs) were selected with probabilities proportionate to the number of households in the PSU based on the 2009 Kenya Population and Housing Census. The allocation of PSUs to sampling strata was made in a manner designed to achieve specified precision levels for (1) a national estimate of the HIV incidence rate and (2) county-level estimates of VLS.

The second-stage sampling units were selected from lists of dwelling units/households compiled by trained staff for each of the sampled PSUs. Upon completion of the household listing process, a random systematic sample of households was selected from each PSU at intervals designed to yield 25 sampled households per PSU.

Within the sampled households, all eligible adults aged 15-64 years were included in the study sample for data collection. All eligible children aged 0-14 years in a randomly-selected one-third of the sampled households were included in the study for biomarker data collection. In addition, children aged 10-14 years in these households were asked to complete an adolescent interview.

Population of Inference

The population of inference for the KENPHIA 2018 is comprised of the de facto household population. The de facto population is comprised of individuals who were present in households (ie, slept in the household) on the night prior to the household interview. In contrast, the *de jure* population is comprised of individuals who are usual residents of the household, irrespective of whether or not they slept in the household on the night prior to the household interview.

Precision Specifications and Assumptions

The following specifications were used to develop the sample design for the KENPHIA 2018.

- Relative standard error (RSE) of the national estimate of annual HIV incidence among persons aged 15-49 should be 45% or less.
- 95% confidence interval (CI) bounds around an estimate of VLS rate among all HIV+-positive adults aged 15-49 years should be ±0.11 or less for the five counties with the highest burden in terms of the estimated number of people living with HIV.
- 95% confidence interval (CI) bounds around an estimate of VLS rate among all HIV-positive adults aged 15-49 years should be of ±0.20 or less for the 15 counties with medium burden in terms of the estimated number of people living with HIV.
- Relative standard error (RSE) for county-level estimates of HIV prevalence rates among adults aged 15-49 years should be 35% or less.
- A minimum of 13 sample PSUs (clusters) per county in the 38 counties with an estimated HIV prevalence rate exceeding 2.2%, and a minimum of 12 PSUs per county for the remaining nine counties.
- The allocation of the PSU sample to the urban and rural substrata within each county is made in proportion to the square root of the number of households in each substratum.
- A fixed sample size of 25 dwelling units to be selected from each PSU, which is expected to yield approximately 23 households per PSU.

The following assumptions were used to develop the sample design for the KENPHIA 2018.

- An overall HIV prevalence rate of 0.0591 (5.91%) for adults 15-49 years of age that varies by county. Source: 2015 estimates from the *2016 Kenya AIDS Indicator Survey* (KAIS).
- An annual national HIV incidence rate for adults aged 15-49 years of P_a = 0032 (0.32%). Source: Based on unpublished 2015 Spectrum/UNAIDS estimate projected forward to 2018.
- A mean duration of recent infections (MDRI) of 130 days, yielding an annualization rate of 365/130 = 2.8077. Hence, the estimated incidence rate for MDRI = 130 days is P_m = 0.0032/2.8077 = 0.0011 (0.11%).
- A viral load suppression (VLS) rate among HIV-positive adults aged 15-49 years in each region of P_{vh} = 0.50 (50%). This is a conservative assumption because it will overstate the actual variance of the estimated VLS rate.
- An intra-cluster correlation (ICC) ρ=0.02 for prevalence, incidence, and VLS rates. The ICC provides an average measure of the

homogeneity of responses within the first-stage sampling units.

- An occupancy rate of 92.8% for sampled dwellings. Note that this is not included in the calculation of the overall survey response rate, but does determine the initial numbers of dwelling units to be sampled. Source: *2014 Kenya Demographic and Health Survey* (KDHS).
- An overall household response rate of 99.0% among occupied dwellings. Source: *2014 Kenya Demographic and Health Survey* (KDHS).
- An average of 1.91 persons aged 15 to 49 years per household. Source: *2009 Kenya Population and Housing Census*.
- An overall percentage of persons in households who are 0-14 years of age of 42.9%. Source: *2009 Kenya Population and Housing Census*.
- An overall percentage of persons in households who are 50-64 years of age of 5.9%. Source: *2009 Kenya Population and Housing Census*.
- Among the eligible individuals 15-64 years of age in households completing the household roster, a biomarker response rate of 66.0%. Source: Conservative assumption based on the *2012 Kenya AIDS Indicator Survey* (KAIS).
- Among the eligible children 0-14 years of age in households designated for child data collection, a biomarker response rate of 61.0%. This value is the corresponding biomarker response rate for adults minus 5%.

Selection of the Primary Sampling Units

The PSUs for the KENPHIA 2018 were defined as the EAs created for the 2009 Kenya Population and Housing Census. The sampling frame consisted of approximately 96,000 EAs containing an estimated 10.6 million households. As part of Kenya's National Sample Surveys and Evaluation Programme (NASSEP), a stratified "master sample" of 5,360 EAs had been selected to be used in various ongoing research activities. Within sampling strata defined by county and urban/rural status, the EAs were selected with probabilities proportionate to the number of households in the EA at the time of the 2009 census. The master sample was then divided into four mutually exclusive and statistically equivalent stratified subsamples referred to as "C-samples."

A stratified sample of 800 EAs was selected for KENPHIA from two of the C-samples in the NASSEP master sample. The 92 strata specified for sampling consisted of two urban counties (Nairobi and Mombasa) plus the urban and rural areas (substrata) of the remaining 45 counties. For 77 of the 92 strata, only one C-sample was needed (ie, contained a sufficient number of EAs) to supply the required numbers of EAs for KENPHIA. For the remaining 15 strata, two C-samples were needed to supply the required numbers of EAs. Since the NASSEP EAs had been selected with probabilities proportionate to the number of households in the EA, the samples for the KENPHIA were selected systematically and with equal probabilities from the applicable C-sample(s) to preserve the original probability-proportional-to-size relationships. Prior to sampling, the EAs in the relevant C-samples for the given stratum were sorted by urban/rural status and then by a geographic code developed by KNBS. This sorting of the EAs prior to sample selection induced an implicit geographic stratification within the primary sampling strata.

Of the 800 sampled EAs, 228 were considered to be too large for subsequent sampling and data collection activities. Thus, these 228 EAs underwent another stage of sampling in which (a) the EA was subdivided into a specified number of subareas called segments, and (b) one segment was randomly selected with probability proportionate to a rough measure of size based on a quick count of the households in the segment.

Details regarding EA substitution and segmentation may be found in the *KENPHIA 2018 Sampling and Weighting Technical Report* on the PHIA website (https://phia-data.icap.columbia.edu/files).

Selection of Households

For both sampling and analysis purposes, a household was defined as a group of individuals who reside in a physical structure such as a house, apartment, compound, or homestead, and share in housekeeping arrangements. The physical structure in which people reside was referred to as the dwelling unit, which may have contained more than one household meeting the above definition. Households were eligible for participation in the study if they were located within the sampled EAs.

The selection of households for the KENPHIA 2018, was conducted by KNBS and involved the following steps: (1) listing the dwelling units/households within the sampled EAs; (2) assigning codes to the listed dwelling unit/household records indicating type of structure and occupancy status; (3) identifying those records eligible for selection for KENPHIA; (4) selecting the samples of dwelling units/households; and (5) designating a subsample of households for data collection for children.

A description of the household listing process as well as a summary of household eligibility may be found in the KENPHIA 2018 Sampling and Weighting Technical Report (phia-data.icap.columbia.edu/files).

To maintain uniform workloads within the 800 sample PSUs, a fixed sample size of 25 households was selected per PSU. To preserve the geographical order of the listed households in each PSU, the households were sorted by stratum number, cluster number within stratum, structure number within cluster, sequence number within structure, and household number within sequence number prior to selection. The KENPHIA 2018 Sampling and Weighting Technical Report provides an in-depth description of second-stage sampling, as well as a detailed summary of the results of the household selection.

Selection of Individuals

The selection of individuals for the KENPHIA 2018 involved the following steps: (1) compiling a list of all individuals known to reside in the household or who slept in the household during the night prior to data collection; (2) identifying those rostered individuals who were eligible for data collection; and (3) selecting for the study those individuals who met the age and residency requirements of the study. However, only those individuals who slept in the household the night before the household interview (ie, the de facto population) were retained for subsequent weighting and analysis.

There were two subsamples of individuals selected for the KENPHIA survey. For the first, one woman aged 15-64 years in each household was randomly selected to answer questions about experiences of violence. Young adolescent girls aged 13-14 years were also eligible for this subsample in households selected for child data collection. The second subsample was for hepatitis B and syphilis testing. Adults aged 15-64 years who reached the biomarker module and agreed to be tested, either in the household or in the laboratory, were selected for hepatitis B and syphilis testing at rates depending on their HIV status. All those with HIV-positive results were tested for hepatitis B/syphilis, in addition to a random subsample of 1,500 adults who were HIV negative in order to provide national estimates of the prevalence of HBV infection among both HIV-positive and HIV-negative respondents.

The *KENPHIA 2018 Sampling and Weighting Technical Report* provides a brief description of the process for listing and selecting individuals for participation in the KENPHIA 2018, and also presents detailed summaries of the distributions of eligible individuals and participants in individual interviews and HIV testing by strata and age.

A.2 WEIGHTING

Overview

In general, the purpose of weighting survey data from a complex sample design is to (1) compensate for variable probabilities of selection, (2) account for differential nonresponse rates within relevant subsets of the sample, and (3) adjust for possible undercoverage of certain population groups. Weighting is accomplished by assigning an appropriate sampling weight to each responding sampled unit (eg, a household or person), and using that weight to calculate weighted estimates from the sample. The critical component of the sampling weight is the base weight, which is defined as the reciprocal of the probability of including a household or person in the sample. The base weights are used to inflate the responses of the sampled units to population levels and are generally unbiased (or consistent) if there is no nonresponse or noncoverage in the sample. When nonresponse or noncoverage occurs in the survey, weighting adjustments are applied to the base weights to compensate for both types of sample omissions.

Nonresponse is unavoidable in virtually all surveys of human populations. For KENPHIA 2018, nonresponse could have occurred at different stages of data collection, for example, (1) before the enumeration of individuals in the household, (2) after household enumeration and selection of persons, but before completion of the individual interview, and (3) after completion of the interview, but before collection of a viable blood sample.

Noncoverage arises when some members of the survey population have no chance of being selected for the sample. For example, noncoverage can occur if the field operations fail to enumerate all dwelling units during the listing process, or if certain household members are omitted from the household rosters. Post-stratification adjustments were implemented to compensate for non-coverage in the sampling process. Finally, weights were normalized to sum to the total sample size.

Methods

The overall weighting approach for KENPHIA 2018 included several steps. Methods and results for each of the steps below are detailed in the *KENPHIA 2018 Sampling and Weighting Technical Report*.

- Initial checks: Checks of the data files were carried out as part of the survey and data QC, and the probabilities of selection for PSUs and households were calculated and checked.

Creation of jackknife replicates: The variables needed to create the jackknife replicates for variance estimation were established at this point. This step was implemented immediately after the PSU sample was selected. All of the subsequent weighting steps described below were applied to the full sample and to each of the jackknife replicates.

Calculation of PSU base weights: The weighting process began with the calculation and checking of the sample PSU (EA) base weights as the reciprocals of the overall PSU probabilities of selection.

Calculation of household weights: The next step was to calculate household weights. The household base weights were calculated as the PSU weights times the reciprocal of the within-PSU household selection probabilities. The household base weights were adjusted first to account for dwelling units for which it could not be determined whether the dwelling unit contained an eligible household and then the responding households had their weights adjusted to account for nonresponding eligible households. This adjustment was made based on the EA the households were in, and the resulting weight was the final household weight.

Calculation of person-level interview weights: Once the household weights were determined, they were used to calculate the individual base weights. The individual base weights were then adjusted for nonresponse among the eligible individuals. Post-stratification adjustments were implemented to compensate for non-coverage in the sampling process. Finally, weights were

normalized to sum to the total sample size. For children in households not selected for child blood draws, data was collected from eligible parents or guardians, but the children were not assigned interview weights. For analysis of this full set of children, child module weights were generated after all other weighting was completed.

Calculation of person-level HIV testing weights: The individual weights adjusted for nonresponse were in turn the initial weights for the HIV testing data sample, with a further adjustment for nonresponse to HIV testing. Post-stratification adjustments were implemented to compensate for non-coverage in the sampling process. Finally, weights were normalized to sum to the total sample size.

Application of weighting adjustments to jackknife replicates: All of the adjustment processes were applied to the full sample and the replicate samples so that the final set of full sample and replicate weights could be used for variance estimation that accounted for the complex sample design and every step of the weighting process.

A.3 REFERENCES

1. Kenya National Bureau of Statistics (KNBS). *The 2009 Kenya Population and Housing Census.* Nairobi: KNBS; 2010.

2. National AIDS Control Council (NACC). *Kenya AIDS Response Progress Report 2016.* Nairobi: NACC; 2016.

3. Kenya National Bureau of Statistics (KNBS), Ministry of Health/Kenya, National AIDS Control Council/Kenya, Kenya Medical Research Institute, National Council for Population and Development/Kenya, and ICF International. *Kenya Demographic and Health Survey 2014.* Rockville, Maryland: KNBS, MoH, NACC, KMRI, NCP, and ICF International; 2014.

4. National AIDS and STI Control Programme (NASCOP), Kenya. *Kenya AIDS Indicator Survey 2012: Final Report.* Nairobi: NASCOP; June 2014.

APPENDIX B HIV TESTING METHODOLOGY

B.1 SPECIMEN COLLECTION AND HANDLING

Blood was collected by qualified survey staff from consenting participants: 14 mL of venous blood from adults (those aged 15-64 years); 6 mL from children aged 2-14 years; and 1 mL of capillary blood from children younger than 24 months of age, using finger-stick for children aged 6-24 months and heel-stick for infants younger than 6 months of age.

Blood samples were labeled with a unique barcoded participant identification and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for registration in a laboratory information management system, processing into plasma and DBS, and storage at -20°C within 24 hours of blood collection. On an approximately weekly basis, samples were transported to the National HIV Reference Laboratory (NHRL) for additional testing and long-term storage at -80°C.

B.2 HOUSEHOLD-BASED PROCEDURES

HIV Rapid Testing

HIV rapid testing was conducted in each household in accordance with Kenya's national guidelines (Figure B.2.A). HIV-positive and HIV-indeterminate samples underwent additional testing at a satellite laboratory, as described in section B.3. For participants with a self-reported HIV-positive status but who tested HIV negative during the survey, additional testing was conducted at NHRL, as described in section B.3.

For children younger than the age of 18 months, only the initial rapid test (HIV-1/2 Determine™ rapid test) was performed. If the test was reactive, or if the mother of the minor was HIV positive or of unknown HIV status (eg, if the mother of the child was reported to be deceased, or the child was being raised by a guardian), the sample was flagged for EID POC testing at the satellite laboratory regardless of the rapid screening results (Figure B.2.B). All samples tested on EID POC were also tested at the central laboratory on TNA PCR as a quality assurance measure. Additionally, in cases where the satellite laboratory was a mobile lab or where EID POC testing equipment was not functional, the sample was tested via TNA PCR at the central laboratory (NHRL). Satellite and Central laboratory procedures are described in section B.3.

Counseling, Referral to Care, and Active Linkage to Care

Pre- and post-test counseling were conducted in each household in accordance with Kenya's national guidelines. For adults, results were communicated directly to the participant, while for children (ages 0-14 years), results were communicated to the participant's parent or guardian. All participants who consented to HIV testing were asked to share contact information and to select a referral health facility prior to testing. Participants with an HIV-positive test result were referred to HIV care and treatment at the health facility of their choice, while participants with an HIV-indeterminate test result had their sample sent to the central laboratory for TNA PCR testing. The TNA PCR result was then returned to the survey participant's facility of choice for collection within approximately two days to six weeks, with a follow-up being done by survey staff with the participant via phone call, short message service (SMS), or email to notify and remind them to collect their HIV test result. Further, HIV-positive participants were asked to consent to be contacted by qualified healthcare personnel in order to facilitate active linkage to HIV care and treatment in Kenya's healthcare system.

In rare cases where participants were provided an incorrect HIV test result, reported an HIV-positive status but tested HIV negative during the survey, or required additional collection of blood to complete testing, households were revisited by qualified personnel to provide participants with correct information and guidance on appropriate actions.

Quality Assurance and Control

To control the quality of the performance of HIV rapid tests, field staff conducted testing of a panel of HIV-positive, hepatitis B- and syphilis-positive and HIV-negative DTS every other week. In addition, QA proficiency testing was conducted twice during the course of survey, using a panel of masked HIV-, hepatitis- and syphilis- positive and negative-DTS. Additionally, sample re-testing was conducted at a satellite lab for (1) the first 50 samples tested by each field staff member, (2) a random sample of 5% of HIV-negative specimens, and (3) all HIV-indeterminate specimens.

A limitation of the survey was the limited potential of rapid tests to detect low levels of HIV antibodies among people within the serological window of infection, and in HIV-positive patients on ART. Participants in these two categories were not expected to be a significant source of bias. However, it is possible that this study did not identify all HIV-exposed infants who would need further PCR testing to verify HIV status. Although the survey used the methodology commonly practiced at the time, studies cited in a recent WHO programmatic update suggest that the use of rapid tests to establish HIV-exposure status may be unreliable in some HIV-infected infants.[1,2,3]

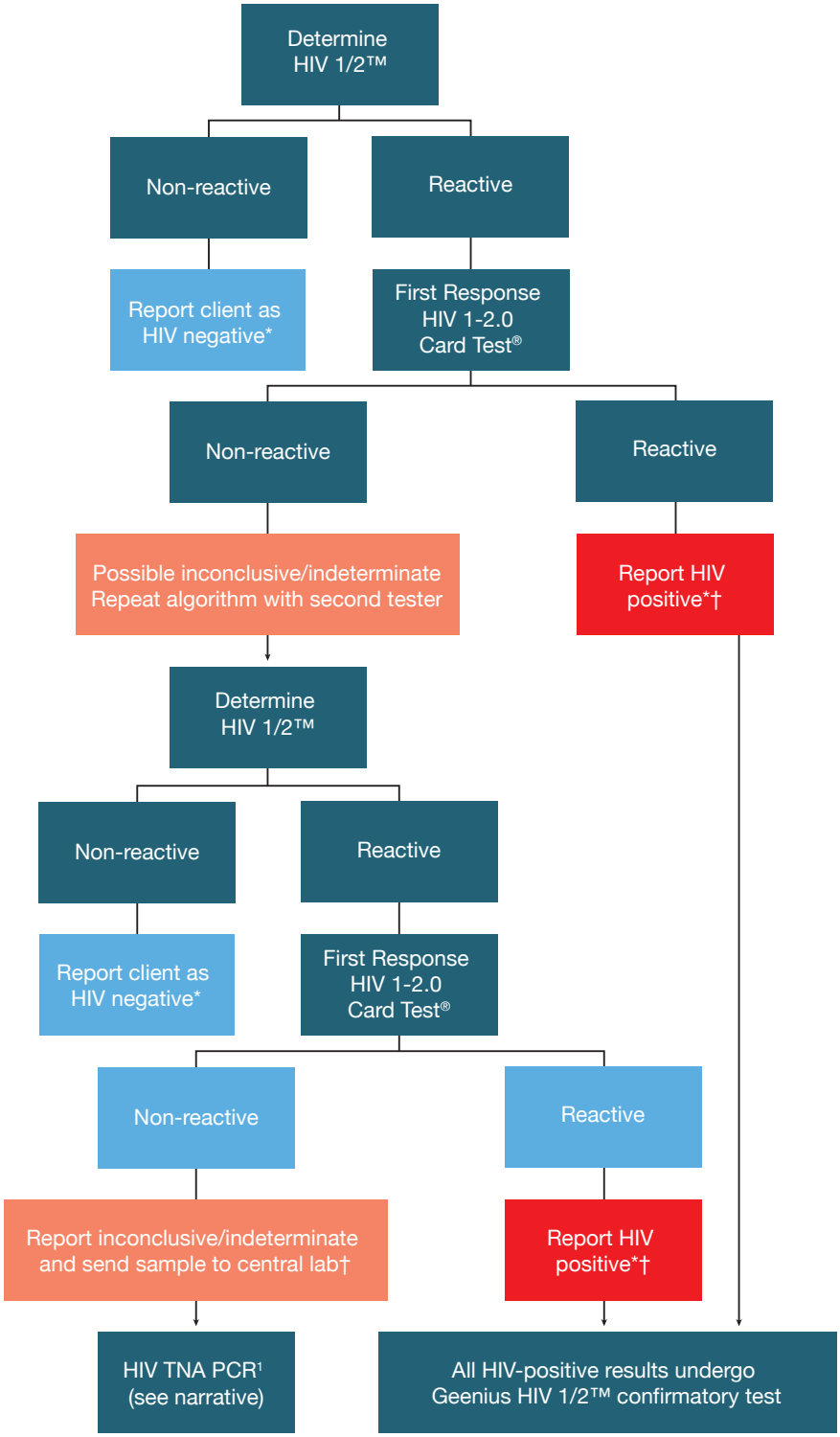
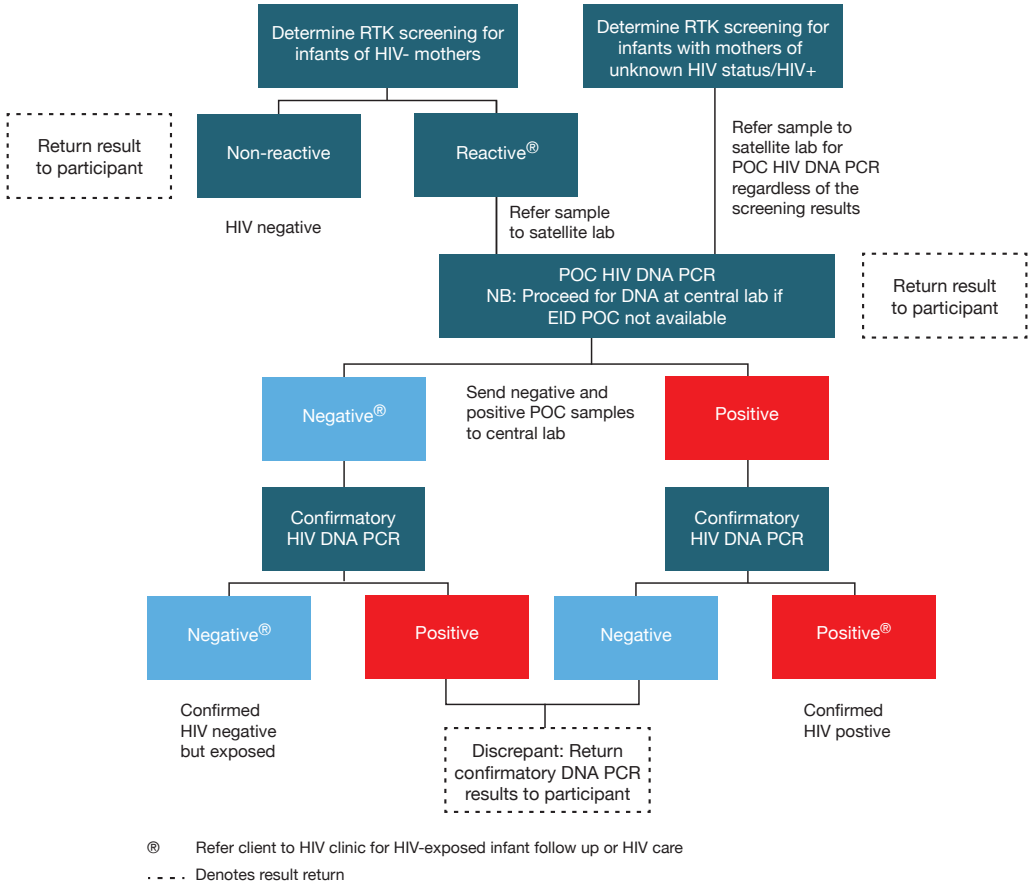


Figure B.2.A
Household-based HIV testing algorithm, ages 18 months and older, KENPHIA, 2018

*Return of Results
†National algorithm: Refer client to clinic for confirmatory testing
[1]TNA PCR = total nucleic acid polymerase chain reaction

Figure B.2.B
Household-based HIV testing algorithm, aged <18 months, KENPHIA, 2018



B.3 LABORATORY-BASED PROCEDURES

There were 36 survey satellite laboratories established in either existing health facility laboratories or at mobile satellite labs transported to smaller health facilities across the country.

Geenius Testing

All HIV-positive or samples with indeterminate rapid test results were tested using the Geenius™ HIV 1/2 Supplemental Assay (Bio-Rad, Hercules, California, USA) (Figure B.3.A). Testing was conducted at satellite laboratories in accordance with the manufacturer-specified protocol.

GeneXpert® Testing

For all children below the age of 18 months who had a reactive HIV test result during household-based testing, or whose mother was HIV positive or of unknown HIV status (eg, if the mother of the child was reported to be deceased, or the child was being raised by a guardian), HIV TNA PCR was conducted at the satellite laboratory using the GeneXpert® instrument system using the Cepheid® Xpert HIV-1 qualitative assay (Cepheid, Inc., Sunnyvale, California, United States). Results were returned to the child's parent or guardian at the household within two days to six weeks.

HIV Total Nucleic Acid (TNA) Polymerase Chain Reaction (PCR)

Infants who had HIV TNA PCR tested at the satellite laboratory were again tested at the central lab on the Roche COBAS® AmpliPrep Instrument and COBAS® TaqMan® 96 analyzer using the COBAS® AmpliPrep/COBAS® Taqman HIV-1 Qualitative Test, version 2.0 (Roche Molecular Diagnostics, Branchburg, New Jersey, United States) (Figure B.3.A). Additionally, HIV TNA PCR was evaluated for participants who reported an HIV-positive status but tested HIV negative during the survey, as well as for samples that were HIV positive by the rapid testing algorithm, but were HIV negative or indeterminate by Geenius testing (Figure B.3.A). HIV TNA PCR was conducted using the Roche (COBAS® AmpliPrep/COBAS® TaqMan® HIV-1 Test, Roche Diagnostics Indianapolis, United States) and from DBS using Abbott m2000 System (Abbott Molecular Inc., Chicago, Illinois, United States) in accordance with the manufacturer-specified protocol.

Classification of Final HIV Status

For participants aged 18 months or older, the algorithm for classification of final HIV status included results from HIV rapid testing, Geenius testing, and HIV deoxyribonucleic acid (DNA) PCR (Figure B.3.A).

For participants aged younger than 18 months, the algorithm for classification of final HIV status included results from HIV rapid testing, GeneXpert® testing and HIV TNA PCR (Note: WHO currently recommends that virological testing be performed on all infants who are HIV exposed, at 4-6 weeks, at 9 months and repeated at the age of 18 months or three months after last breastfeeding, in order to make a final determination of HIV status).[1] Classification of final HIV status was used to determine estimates for HIV prevalence and to inform estimates for HIV incidence (Figure B.3.B).

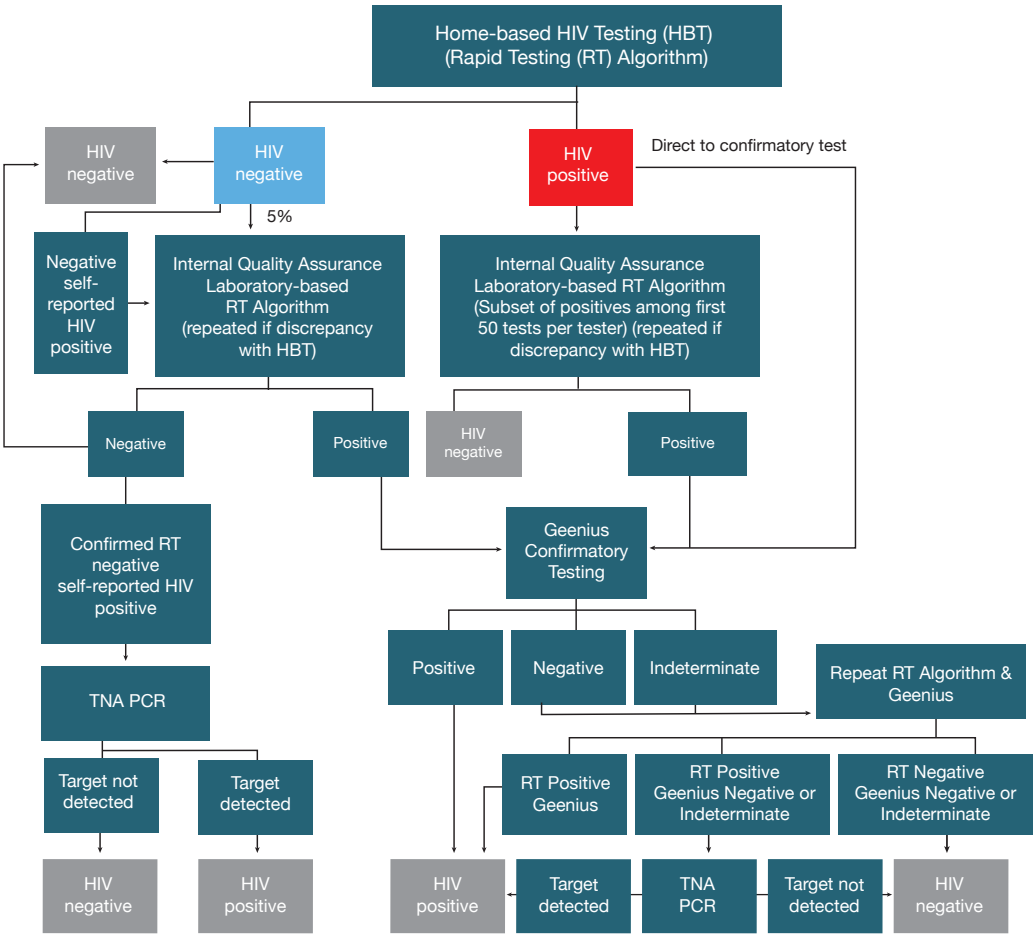
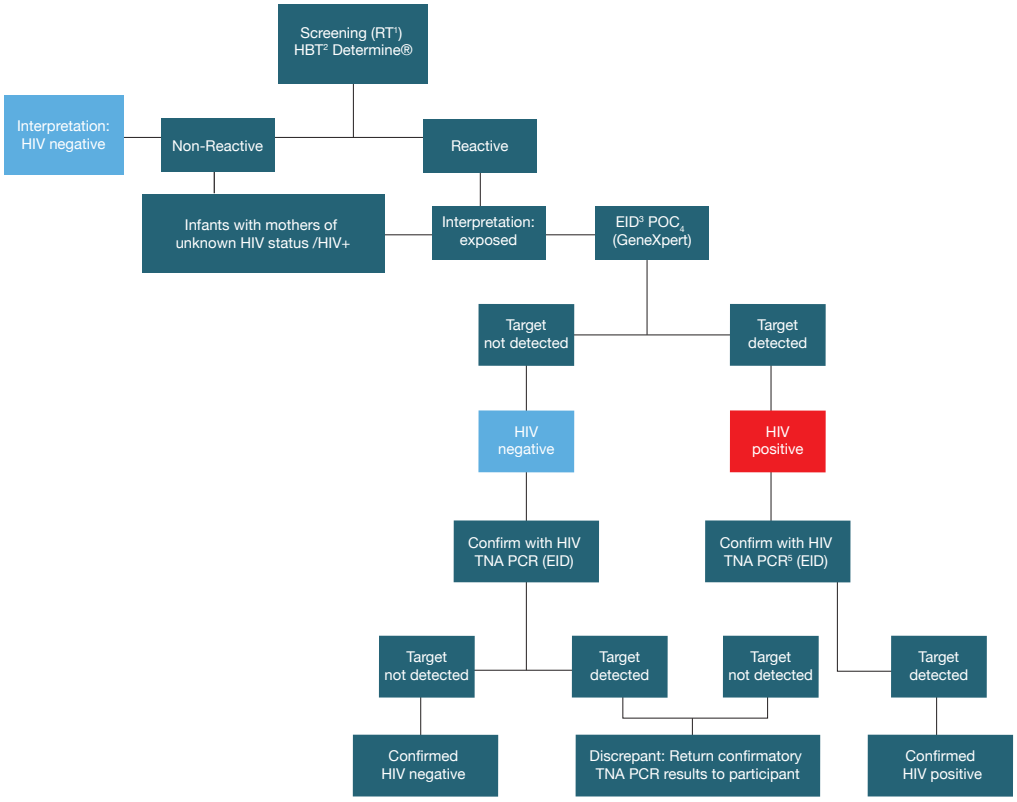


Figure B.3.A
Final HIV Status Classification Algorithm (≥18 months), KENPHIA 2018

[1]TNA PCR: total nucleic acid polymerase chain reaction
Note: Gray boxes indicate the Final HIV status determination

Figure B.3.B Final HIV Status Classification Algorithm (<18 months), KENPHIA 2018



[1]RT: rapid testing; [2]HBT: home-based testing; [3]EID: early infant diagnosis; [4]POC: Point of care testing [5]TNA PCR: total nucleic acid polymerase chain reaction

Viral Load Testing

Determination of HIV-1 VL (HIV RNA copies per mL) of HIV-positive participants with plasma samples was measured using the COBAS AmpliPrep/Taqman 96 assay on the COBAS AmpliPrep/COBAS TaqMan (CAP/CTM) HIV-1, v2.0 (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). Where plasma samples were not available, HIV-1 VL was performed on dried blood spot (DBS) samples using the COBAS AmpliPrep/COBAS TaqMan (CAP/CTM) Free Virus Elution (FVE) Protocol (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). The COBAS AmpliPrep/TaqMan HIV-1 is a nucleic acid amplification test for the quantification of HIV Type 1 (HIV-1) RNA in human plasma or dried blood spots. Specimen preparation is automated using COBAS AmpliPrep with amplification and detection using TaqMan.

Viral load results were returned to the health facility chosen by each HIV-positive participant. Participants were provided with a referral form during HTBC for subsequent retrieval of their results. Survey staff also contacted participants who provided contact information, informing them that their VL results were available at the chosen facility and further advising them to seek care and treatment.

HIV Recency Testing

Estimation of annualized HIV-1 incidence was based on the classification of confirmed HIV-positive cases as recent or long-term HIV infections. The survey used two laboratory-based testing algorithms to estimate incidence. Each algorithm employed a combination of assays: 1) an HIV-1 LAg avidity assay and VL (Figure B.3.C) and 2) an HIV-1 LAg avidity assay, VL, and ARV detection (Figure B.3.D). The Sedia HIV-1 LAg-Avidity EIA (Sedia Biosciences Corporation, Portland, Oregon, United States) was used on plasma specimens, while the Maxim HIV-1 Limiting Antigen-Avidity Dried Blood Spot EIA (Maxim Biomedical, Bethesda, Maryland, United States) was used on DBS specimens. The HIV recent infection testing algorithms were applied to repository specimens from all confirmed HIV-positive participants.

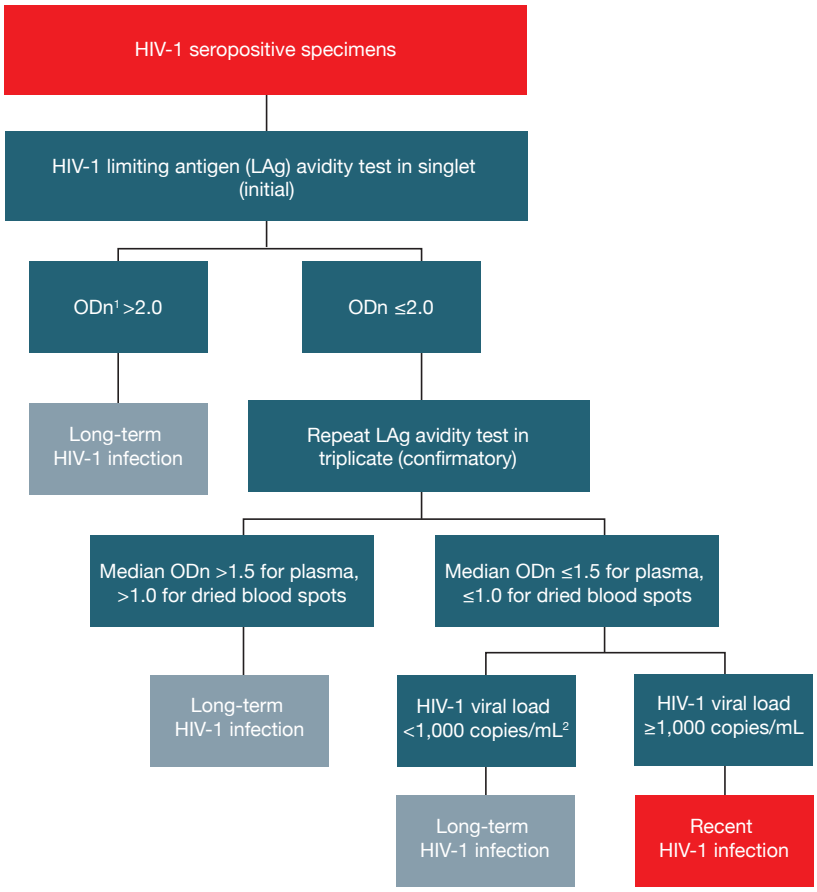


Figure B.3.C
HIV-1 recent infection testing algorithm (LAg/VL algorithm), ages 18 months-64 years, KENPHIA 2018

[1]ODn: normalized optical density; [2]mL: milliliter

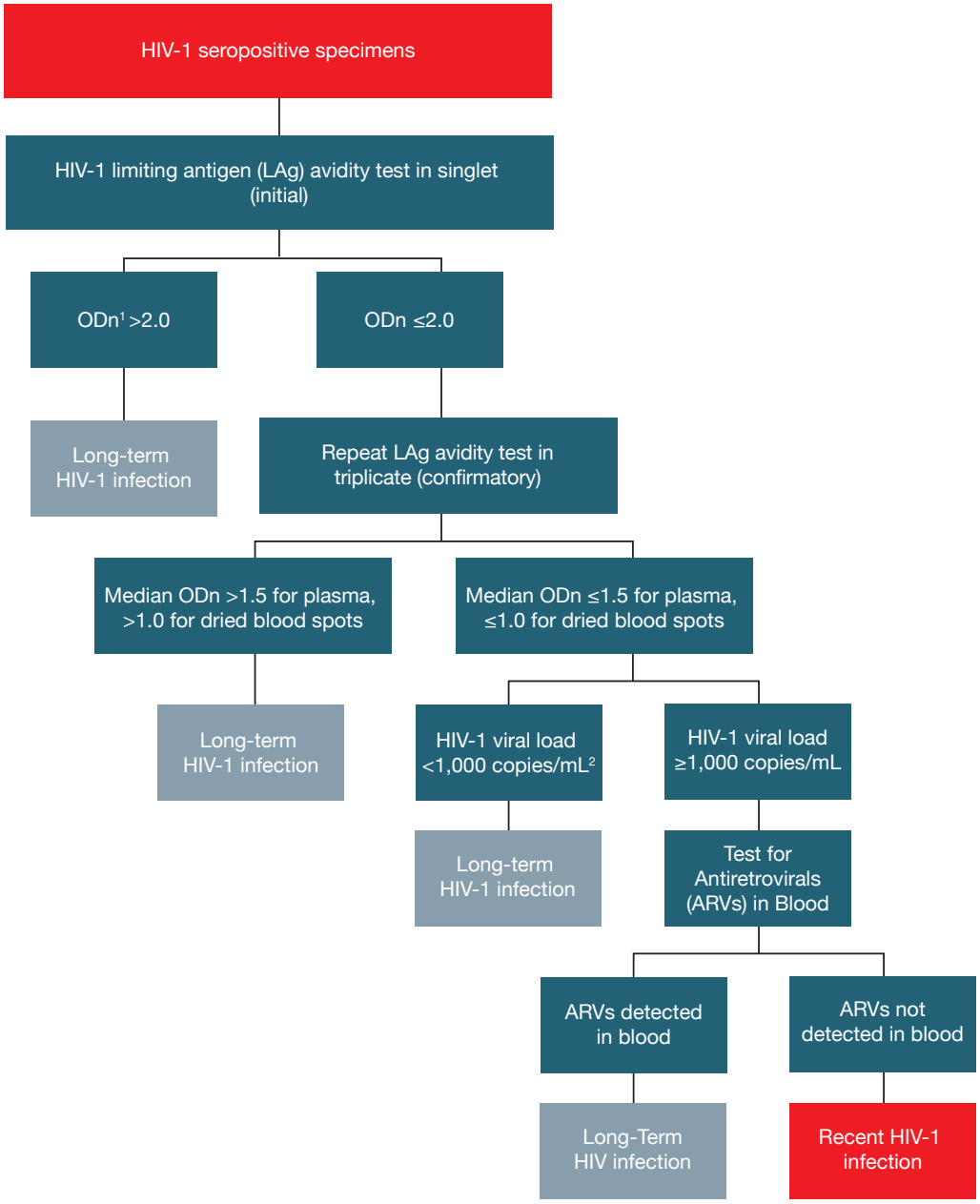
In the case of plasma specimens, LAg avidity testing was performed twice, with an initial screening test followed by a confirmatory test. Samples with a ODn > 2.0 during initial testing were classified as long-term infections, while those with ODn ≤ 2.0 underwent further testing of the specimen in triplicate. Samples with a median ODn > 1.5 during confirmatory testing were classified as long-term infections.

In the case of DBS specimens, LAg avidity testing was performed twice, with an initial screening test followed by a confirmatory test. Samples with ODn > 2.0 during initial testing were classified as long-term infections, while those with ODn ≤ 1.0 underwent further testing of the specimen in triplicate. Samples with a median ODn > 1.0 during confirmatory testing were classified as long-term infections.

Samples with a median ODn ≤ 1.5 for plasma samples and ODn ≤ 1.0 for DBS samples were classified as potential HIV-recent infections, and their VL results were assessed. For the first incidence testing algorithm, specimens with VL <1,000 copies/mL were classified as long-term infections, while those with VL ≥ 1,000 copies/mL were classified as recent infections.

For the second incidence algorithm, those classified as recent infections by the first algorithm were reclassified using ARV detection data. Those specimens in which ARVs were detected were classified as long-term infections and those in which no ARVs were detected remained classified as recent infections. The specific ARVs assayed for adults aged 15-64 years were efavirenz, nevirapine and atazanavir and for children aged 18 months to 14 years, the ARVs were efavirenz, nevirapine and lopinavir.

Figure B.3.D
HIV-1 recent infection testing algorithm (LAg/VL/ARV algorithm), ages 18 months to 64 years, KENPHIA 2018



[1]ODn: normalized optical density; [2]mL: milliliter

HIV Incidence Estimation

Incidence estimates were obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays. Weighted counts for HIV-negative persons (N); HIV-positive persons (P); numbers tested on the LAg assay (Q); and numbers HIV recent (R) were provided for use in incidence calculations or the Joint United Nations Programme on HIV/AIDS Spectrum models (Tables B.3.A, B.3.B). Incidence estimates were calculated using the following parameters: MDRI = 130 days (95% CI: 118-142 days); proportion false recent (PFR) = 0.00; time cutoff (T) = 1 year. In-depth details are provided in the KENPHIA Technical Report, which may be found online on the PHIA Project website.

Table B.1.A Annual HIV incidence auxiliary data: N, P, Q, R, MDRI, PFR, and T

Annual incidence of HIV among persons aged 15-49 and 15-64 years, by sex and age, the limiting antigen (LAg) + viral load recent infection algorithm, KENPHIA 2018

Age	Male				Female				Total			
	Number HIV negative[1] (N)	Number HIV positive[1] (P)	Number tested on LAg assay[1] (Q)	Number HIV recent[1] (R)	Number HIV negative[1] (N)	Number HIV positive[1] (P)	Number tested on LAg assay[1] (Q)	Number HIV recent[1]] (R)	Number HIV negative[1] (N)	Number HIV positive (P)[1]	Number tested on LAg assay[1] (Q)	Number HIV recent[1] (R)
15-24	3921.1	21.9	21.9	1.9	4702.1	106.9	106.9	0.4	8630.7	121.3	121.3	2.5
25-49	5616.3	249.7	249.7	3.1	8057.4	779.6	779.6	8.1	13730.9	972.1	972.1	10.8
25-34	2611.5	71.5	71.5	1.5	4317.0	357.0	357.0	5.0	6970.0	387.0	387.0	6.0
35-49	2992.6	190.4	190.4	1.6	3739.3	423.7	423.7	3.1	6749.8	596.2	596.2	4.7
15-49	9540.6	268.4	268.4	5.1	12796.7	849.3	849.3	8.0	22396.9	1058.1	1058.1	13.0
50-64	1799.2	117.8	117.8	0.0	2149.1	223.9	223.9	1.0	3955.3	334.7	334.7	0.9
15-64	11359.0	367.0	367.0	5.3	14963.9	1055.1	1055.1	9.1	26389.2	1355.8	1355.8	14.2

[1]Weighted number.
Note: mean duration recent infection (MDRI) = 130 days (95% CI: 118-142 days); proportion false recent (PFR) = 0.00; time cutoff (T) = 1 year.

Table B.1.B Annual HIV incidence auxiliary data: N, P, Q, R, MDRI, PFR, and T

Annual incidence of HIV among persons aged 15-49 and 15-64 years, by sex and age, using the limiting antigen (LAg) + viral load and antiretroviral detection recent infection algorithm, KENPHIA 2018

Age	Male				Female				Total			
	Number HIV negative[1] (N)	Number HIV positive[1] (P)	Number tested on LAg assay[1] (Q)	Number HIV recent[1] (R)	Number HIV negative[1] (N)	Number HIV positive[1] (P)	Number tested on LAg assay[1] (Q)	Number HIV recent[1] (R)	Number HIV negative[1] (N)	Number HIV positive[1] (P)	Number tested on LAg assay[1] (Q)	Number HIV recent[1] (R)
15-24	3921.1	21.9	21.9	1.9	4702.1	106.9	106.9	0.0	8630.7	121.3	121.3	2.2
25-49	5616.3	249.7	249.7	3.1	8057.4	779.6	779.6	7.5	13730.9	972.1	972.1	10.2
25-34	2611.5	71.5	71.5	1.5	4317.0	357.0	357.0	4.4	6970.0	387.0	387.0	5.5
35-49	2992.6	190.4	190.4	1.6	3739.3	423.7	423.7	3.1	6749.8	596.2	596.2	4.7
15-49	9540.6	268.4	268.4	5.1	12796.7	849.3	849.3	7.0	22396.9	1058.1	1058.1	12.1
50-64	1799.2	117.8	117.8	0.0	2149.1	223.9	223.9	1.0	3955.3	334.7	334.7	0.9
15-64	11359.0	367.0	367.0	5.3	14963.9	1055.1	1055.1	8.1	26389.2	1355.8	1355.8	13.3

[1]Weighted number.
Note: mean duration recent infection (MDRI) = 130 days (95% CI: 118-142 days); proportion false recent (PFR) = 0.00; time cutoff (T) = 1 year.

Detection of Antiretrovirals

To understand recent exposure to ARVs and hence level of ART coverage, samples from all confirmed HIV-positive participants were evaluated for the presence of selected ARVs, using high-resolution liquid chromatography coupled with tandem mass spectrometry to detect ARVs from DBS specimens.[4] Three ARVs (two non-nucleoside reverse transcriptase inhibitors and one protease inhibitor) were used as markers for both first- and second-line regimens, based on Kenya's national treatment guidelines. The specific ARVs assayed for adults aged 15-64 years were efavirenz, nevirapine and atazanavir and for children aged 18 months to 14 years the ARVs were efavirenz, nevirapine and lopinavir. The ARVs were selected based on their long half-lives, allowing for a longer window period from drug exposure to detection.

To qualitatively detect ARVs, a single DBS was eluted, and chromatographic separation carried out on a Luna 5µm PFP column (110 Å, 50 x 2 mm) (Phenomonex, Torrance, California, United States). Each ARV was detected using an API 4000 LC/MS/MS instrument (Applied Biosystems, Foster City, California, United States). Internal standards and in-house QC cut-off samples, including negative controls, were utilized in each run. This qualitative method used a limit of detection of 0.02 µg/mL for each ARV, with a signal-to-noise ratio of at least 5:1 for all ARVs. Samples with concentrations above 0.02 µg/mL were considered positive for each ARV. ARV testing was performed by the Division of Clinical Pharmacology of the Department of Medicine at the University of Cape Town in South Africa. These results were not returned to the participants.

Genotyping for Detection of Antiretroviral Drug Resistance and HIV Subtyping

To determine the extent of transmitted HIV-1 drug resistance mutations among participants in KENPHIA 2018, samples from confirmed HIV-positive infants below the age of 18 months and HIV-positive participants aged 18 months or older who were classified as recent infections, as well as an equal or greater number of whom were classified as long-term infections, were evaluated using a TaqMan® SNP Genotyping Assay (Applied Biosystems) to identify mutations within the HIV-1 *pol* gene region, which encodes amino acid substitutions known to be responsible for resistance to specific ARVs.

Viral RNA or TNA from plasma or DBS was extracted using the NucliSENS® easyMAG® (bioMerieux) platform. The HIV pol gene was amplified by one-step reverse transcription polymerase chain reaction (RT-PCR), which was followed by nested PCR. Sequencing of the approximately one-kilobase amplicons was performed on the ABI 3730 DNA Analyzer (Applied Biosystems) using the WHO approved Thermo Fisher Scientific HIV-1 drug resistance test kit (Thermo Fisher Scientific, Waltham, Massachusetts, United States).[5,6,7]

The customized ReCALL software program was used to edit raw sequences and generate consensus sequences.[6] Mutations in the protease and reverse transcriptase genes were classified as potentially associated with drug resistance, according to the Stanford University HIV Drug Resistance Database.[8] Sequences with >98% homology were flagged for potential cross-contamination or possible epidemiological links. Internal QA measures and in-house QC standards were included in each run, in order to validate results. The assay's sensitivity was established at 1,000 copies/mL for plasma and DBS.[9] Sequences were also analyzed for potential cross-contamination by phylogenetic analysis from code 6 of the protease gene to code 251 of the reverse transcriptase gene.

Subtyping of each sample was performed using the REGA HIV-1 & 2 Automated Subtyping Tool.[10, 11, 12] This BioAfrica viral subtyping tool was designed to use phylogenetic methods in order to identify the HIV-1 subtype of a specific sequence. The sequence was analyzed for recombination using boot-scanning methods.

B.4 REFERENCES

1. World Health Organization. *HIV diagnosis and ARV use in HIV-exposed infants: a programmatic update.* Geneva, Switzerland: World Health Organization; 2018 (WHO/CDS/HIV/18.17). https://apps.who.int/iris/bitstream/handle/10665/273155/WHO-CDS-HIV-18.17-eng.pdf?ua=1. Accessed April 30, 2019.

2. Urick B, Fong Y, Okiira C, Nabukeera-Barungi N, Nansera D, Ochola E, et al. Rapid Serological Tests Ineffectively Screen for HIV Exposure in HIV-Positive Infants. *JAIDS.* 2018;77(3):331-6.

3. Wagner AD, Njuguna IN, Andere RA, Cranmer LM, Okinyi HM, Benki-Nugent S, et al. Infant/child rapid serology tests fail to reliably assess HIV exposure among sick hospitalized infants. *AIDS.* 2017;31(11):F1-F7.

4. Koal T, Burhenne H, R.mling R, Svoboda M, Resch K, Kaever V. Quantification of antiretroviral drugs in dried blood spot samples by means of liquid chromatography/tandem mass spectrometry. *Rapid Commun Mass Spectrom.* 2005;19(21):2995-3001.

5. Loens K, Bergs K, Ursi D, Goossens H, Ieven M. Evaluation of NucliSens easyMAG for automated nucleic acid extraction from various clinical specimens. *J Clin Microbiol.* 2007 Feb;45(2):421-5. Epub 2006 Dec 13.

6. Perandin F, Pollara PC, Gargiulo F, Bonfanti C, Manca N. Performance evaluation of the automated NucliSens easyMAG nucleic acid extraction platform in comparison with QIAamp Mini kit from clinical specimens. *Diagn Microbiol Infect Dis.* 2009 Jun;64(2):158-65. doi: 10.1016/j.diagmicrobio.2009.02.013.

7. Joint United Nations Programme on HIV/AIDS (UNAIDS). *Global report: UNAIDS report on the global AIDS epidemic 2010.* Geneva, Switzerland: UNAIDS; 2010. http://www.unaids.org/globalreport/documents/20101123_GlobalReport_full_en.pdf. Accessed February 19, 2019.

8. Woods CK, Brumme CJ, Liu TF, et al. Automating HIV drug resistance genotyping with RECall, a freely accessible sequence analysis tool. *J Clin Microbiol.* 2012 Jun;50(6):1936-42. doi: 10.1128/JCM.06689-11. Epub 2012 Mar 7.

9. Stanford University. *HIV Drug Resistance Database.* Stanford, California: Stanford University; 2019. http://hivdb.stanford.edu. Accessed February 19, 2019.

10. Yang C, McNulty A, Diallo K, et al. Development and application of a broadly sensitive dried-bloodspot-based genotyping assay for global surveillance of HIV-1 drug resistance. *J Clin Microbiol.* 2010;48(9):3158-64. doi: 10.1128/JCM.00564-10.

11. Alcantara LC, Cassol S, Libin P, et al. A standardized framework for accurate, high-throughput genotyping of recombinant and non-recombinant viral sequences. *Nucleic Acids Res.* 2009;37 (Web Server issue):W634-42. doi: 10.1093/nar/gkp455.

12. de Oliveira T, Deforche K, Cassol S, et al. An automated genotyping system for analysis of HIV-1 and other microbial sequences. *Bioinformatics.* 2005 Oct 1;21(19):3797-800. doi:10.1093/bioinformatics/bti607.

APPENDIX C ESTIMATES OF SAMPLING ERRORS

Estimates from sample surveys are affected by two types of errors: non-sampling errors and sampling errors. Non-sampling errors result from mistakes made during data collection (eg, misinterpretation of an HIV test result) and data management (eg, transcription errors in data entry). While KENPHIA 2018 implemented numerous QA and QC measures to minimize non-sampling errors, these errors are impossible to avoid and difficult to evaluate statistically.

In contrast, sampling errors can be evaluated statistically. The sample of respondents selected for KENPHIA 2018 is only one of many samples that could have been selected from the same population, using the same design and expected size. Each of these samples would yield results that differ somewhat from the results of the actual sample selected. Sampling errors are a measure of the variability between all possible samples. Although the degree of variability is not known exactly, it can be estimated from the survey results.

The standard error, which is the square root of the variance, is the usual measurement of sampling error for a particular statistic (eg, proportion, mean, rate, count). In turn, the standard error can be used to calculate confidence intervals within which the true value for the population can reasonably be assumed to fall. For example, for any given statistic calculated from a sample survey, the value of that statistic will fall within a range of approximately plus or minus two times the standard error of that statistic in 95% of all possible samples of identical size and design.

KENPHIA 2018 utilized a multi-stage stratified sample design, which required complex calculations to obtain sampling errors. Specifically, a variant of the jackknife replication method was implemented in SAS to estimate variance for proportions (eg, HIV prevalence), rates (eg, annual HIV incidence), and counts (eg, numbers of people living with HIV). Each replication considered all but one cluster in the calculation of the estimates. Pseudo-independent replications were thus created. In KENPHIA 2018, a jackknife replicate was created by randomly deleting one cluster from each variance-estimation stratum and retaining all of the clusters in the remaining strata. A total of 381 variance-estimation strata were created by pairing (or occasionally tripling) the sample clusters in the systematic order in which they had been selected. Hence, 381 replications were created. The variance of a sample-based statistic, y, was calculated as follows:

$$var(y) = \sum_{k=1}^{K} (y_k - y)^2$$

where y is the full-sample estimate, and yk is the corresponding estimate for jackknife replicate k (k = 1, 2, ..., K).

In addition to the standard error, the design effect for each estimate was also calculated. The design effect is defined as the ratio of the variance using the given sample design to the variance that would result if a simple random sample had been used. A design effect of 1.0 indicates that the sample design is as efficient as a simple random sample, while a value greater than 1.0 indicates the increase in the sampling error due to the use of a more complex and less statistically efficient design. Confidence limits for the estimates, which are calculated as

$$y \pm t(0.975; K) \sqrt{var(y)},$$

where $t(0.975; K)$ is the 97.5th percentile of a t-distribution with K degrees of freedom, were also computed.

Sampling errors for selected variables from the KENPHIA 2018 are presented in tables C.1 through C.8, and sampling errors for all survey estimates may be found online on the PHIA website. For each variable, sampling error tables include the weighted estimate, unweighted denominator, standard error, design effect, and lower and upper 95% confidence limits.

Table C.1 Sampling errors: Annual HIV incidence by age, ARV-adjusted, KENPHIA 2018

Age (years)	Weighted estimate (%)	Design effect*	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
		TOTAL			
15-24	0.07	0.00	0.05	0.00	0.16
25-49	0.21	1.54	0.08	0.05	0.37
25-34	0.22	1.63	0.12	0.00	0.46
35-49	0.19	1.42	0.11	0.00	0.40
15-49	0.15	1.18	0.05	0.06	0.24
50-64	0.06	0.86	0.07	0.00	0.19
15-64	0.14	1.20	0.04	0.06	0.23
		MALE			
15-24	0.14	0.00	0.10	0.00	0.33
25-49	0.16	1.17	0.10	0.00	0.34
25-34	0.16	0.84	0.13	0.00	0.41
35-49	0.15	1.63	0.15	0.00	0.45
15-49	0.15	0.70	0.07	0.02	0.28
50-64	0.00	0.00	0.29	0.00	0.57
15-64	0.13	0.74	0.06	0.02	0.24
		FEMALE			
15-24	0.00	0.00	na	0.00	0.22
25-49	0.26	1.89	0.13	0.00	0.52
25-34	0.28	2.34	0.21	0.00	0.69
35-49	0.24	1.26	0.15	0.00	0.53
50-64	0.15	1.77	0.08	0.00	0.31
15-49	0.13	0.95	0.13	0.00	0.37
15-64	0.15	1.74	0.07	0.01	0.29

* Where the design effect was less than 1.0, a value of 1.0 was used to calculate the CI.

Table C.2 Sampling errors: HIV prevalence by age, KENPHIA 2018

Ages	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
		TOTAL			
0-17 months	0.4	600	0.3	0.0	1.0
18-59 months	0.4	1,857	0.1	0.1	0.6
5-9	0.8	2,847	0.3	0.2	1.4
10-14	1.1	2,561	0.3	0.5	1.6
Total 0-4	0.4	2,457	0.1	0.1	0.6
Total 0-14	0.7	7,865	0.1	0.4	1.0
15-19	0.8	4,890	0.2	0.5	1.1
20-24	2.0	3,862	0.2	1.5	2.5
25-29	4.2	3,626	0.4	3.3	5.0
30-34	6.5	3,731	0.5	5.6	7.5
35-39	6.6	2,859	0.6	5.4	7.7
40-44	9.1	2,531	0.7	7.6	10.6
45-49	9.4	1,956	0.8	7.8	11.1
50-54	9.2	1,656	0.9	7.3	11.0

Table C.2 Sampling errors: HIV prevalence by age, KENPHIA 2018 (continued)

Ages	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
55-59	7.5	1,398	0.8	5.7	9.2
60-64	5.9	1,236	0.8	4.2	7.6
Total 10-19	0.9	7,451	0.2	0.6	1.3
Total 15-24	1.4	8,752	0.1	1.1	1.7
Total 25-49	6.6	14,703	0.3	6.0	7.2
Total 15-49	4.5	23,455	0.2	4.1	4.9
Total 50-64	7.8	4,290	0.6	6.6	9.0
Total 15-64	4.9	27,745	0.2	4.5	5.3
MALE					
0-17 months	0.3	326	0.3	0.0	0.8
18-59 months	0.6	994	0.2	0.1	1.1
5-9	0.5	1,469	0.2	0.1	0.8
10-14	1.3	1,301	0.4	0.5	2.2
Total 0-4	0.6	1,320	0.2	0.1	1.0
Total 0-14	0.8	4,090	0.2	0.4	1.1
15-19	0.5	2,386	0.2	0.2	0.8
20-24	0.6	1,557	0.2	0.2	1.1
25-29	2.2	1,256	0.5	1.1	3.3
30-34	3.2	1,427	0.5	2.1	4.3
35-39	4.3	1,186	0.6	3.0	5.6
40-44	6.3	1,141	0.8	4.6	7.9
45-49	8.3	856	1.2	5.8	10.7
50-54	6.6	744	1.1	4.4	8.9
55-59	5.9	632	1.2	3.5	8.3
60-64	5.6	541	1.3	3.0	8.3
Total 10-19	0.9	3,687	0.2	0.5	1.4
Total 15-24	0.6	3,943	0.1	0.3	0.8
Total 25-49	4.3	5,866	0.3	3.7	4.9
Total 15-49	2.7	9,809	0.2	2.4	3.1
Total 50-64	6.1	1,917	0.7	4.7	7.6
Total 15-64	3.1	11,726	0.2	2.7	3.5
FEMALE					
0-17 months	0.5	274	0.5	0.0	1.5
18-59 months	0.1	863	0.1	0.0	0.3
5-9	1.1	1,378	0.6	0.0	2.2
10-14	0.8	1,260	0.3	0.2	1.3
Total 0-4	0.2	1,137	0.1	0.0	0.5
Total 0-14	0.7	3,775	0.2	0.2	1.1
15-19	1.2	2,504	0.3	0.6	1.7
20-24	3.4	2,305	0.5	2.5	4.3
25-29	6.0	2,370	0.5	4.9	7.1
30-34	9.5	2,304	0.7	8.0	11.0
35-39	8.7	1,673	0.9	6.9	10.5
40-44	11.9	1,390	1.1	9.7	14.1
45-49	10.6	1,100	1.1	8.4	12.8
50-54	11.7	912	1.4	8.8	14.5

Table C.2 Sampling errors: HIV prevalence by age, KENPHIA 2018 (continued)

Ages	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
54-59	9.0	766	1.1	6.8	11.3
60-64	6.2	695	1.1	3.9	8.5
Total 10-19	1.0	3,764	0.2	0.6	1.4
Total 15-24	2.2	4,809	0.3	1.7	2.8
Total 25-49	8.8	8,837	0.4	8.0	9.6
Total 15-49	6.2	13,646	0.3	5.7	6.8
Total 50-64	9.4	2,373	0.8	7.8	11.0
Total 15-64	6.6	16,019	0.3	6.0	7.1

Table C.3 Sampling errors: HIV prevalence by residence and region, ages 15-64 years, KENPHIA 2018

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
		TOTAL			
Residence					
Rural	4.7	10,085	0.3	4.1	5.3
Urban	5.0	17,660	0.2	4.5	5.5
County					
Baringo	1.8	368	0.6	0.6	3.0
Bomet	2.8	748	1.1	0.5	5.1
Bungoma	2.5	761	0.6	1.3	3.8
Busia	9.9	605	1.9	5.9	13.9
Elgeyo Marakwet	3.5	644	1.2	1.0	6.1
Embu	2.7	668	1.2	0.4	5.1
Garissa	0.0	490	0.0	-	-
Homa Bay	19.6	805	1.8	15.9	23.3
Isiolo	2.2	502	0.8	0.6	3.9
Kajiado	4.6	482	0.7	3.1	6.0
Kakamega	3.9	595	1.0	1.9	5.9
Kericho	3.4	678	0.8	1.7	5.1
Kiambu	1.1	342	0.5	0.0	2.2
Kilifi	2.3	475	1.0	0.2	4.5
Kirinyaga	3.3	623	0.9	1.4	5.3
Kisii	6.1	643	1.5	3.1	9.1
Kisumu	17.5	607	1.9	13.6	21.3
Kitui	5.7	829	1.4	2.9	8.5
Kwale	4.2	462	0.8	2.4	5.9
Laikipia	2.0	456	1.2	0.0	4.4
Lamu	2.6	427	0.9	0.7	4.5
Machakos	3.7	800	0.6	2.5	4.9
Makueni	3.9	508	0.5	2.8	4.9
Mandera	0.2	377	0.2	0.0	0.7
Marsabit	1.2	312	0.7	0.0	2.7
Meru	3.6	872	0.9	1.7	5.5

Table C.3 Sampling errors: HIV prevalence by residence and region, ages 15-64 years, KENPHIA 2018 (continued)

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
Migori	13.0	924	1.9	9.0	17.0
Mombasa	5.6	435	0.9	3.7	7.5
Muranga	3.0	478	1.0	0.9	5.2
Nairobi	3.8	1,206	0.8	2.2	5.4
Nakuru	3.0	521	1.0	0.9	5.1
Nandi	2.6	847	0.7	1.1	4.1
Narok	5.0	535	1.3	2.3	7.7
Nyamira	3.9	536	0.9	2.0	5.8
Nyandarua	2.2	559	1.0	0.2	4.1
Nyeri	5.1	568	1.1	2.8	7.4
Samburu	1.9	350	0.6	0.7	3.1
Siaya	15.3	632	1.5	12.2	18.3
Taita Taveta	5.2	512	1.6	2.0	8.5
Tana River	1.1	496	0.5	0.1	2.0
Tharaka	2.4	689	0.6	1.2	3.6
Trans-Nzoia	4.0	462	0.6	2.8	5.2
Turkana	6.8	730	1.8	3.2	10.5
Uasin Gishu	5.5	600	1.2	3.1	7.9
Vihiga	5.3	544	1.4	2.3	8.2
Wajir	0.2	424	0.2	0.0	0.6
West Pokot	1.3	618	0.5	0.2	2.4
		MALE			
Residence					
Rural	2.7	4,281	0.3	2.1	3.4
Urban	3.4	7,445	0.2	2.9	3.9
County					
Baringo	0.3	172	0.3	0.0	0.9
Bomet	2.7	324	1.1	0.5	5.0
Bungoma	0.9	323	0.5	0.0	2.0
Busia	8.5	248	1.9	4.6	12.3
Elgeyo Marakwet	1.9	271	0.9	0.1	3.8
Embu	1.5	272	0.9	0.0-	3.3
Garissa	0.0	215	0.0	-	-
Homa Bay	13.9	333	1.5	10.9	17.0
Isiolo	1.3	200	0.7	0.0	2.7
Kajiado	2.7	216	0.4	1.9	3.5
Kakamega	1.7	220	0.7	0.3	3.2
Kericho	2.4	308	1.0	0.3	4.6
Kiambu	0.0	144	0.0	-	-
Kilifi	0.3	176	0.3	0.0	0.9
Kirinyaga	2.0	271	1.1	0.0	4.3
Kisii	4.4	275	1.9	0.4	8.4
Kisumu	12.6	234	1.8	8.9	16.4
Kitui	2.5	336	1.0	0.4	4.6
Kwale	2.0	184	0.7	0.6	3.4
Laikipia	1.3	184	1.2	0.0	3.8

Table C.3 Sampling errors: HIV prevalence by residence and region, ages 15-64 years, KENPHIA 2018 (continued)

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
Lamu	1.5	185	0.8	0.0	3.2
Machakos	1.8	335	0.6	0.4	3.1
Makueni	1.1	213	0.6	0.0	2.2
Mandera	0.5	146	0.5	0.0	1.5
Marsabit	0.7	109	0.9	0.0	2.4
Meru	2.7	389	0.4	1.8	3.5
Migori	7.9	375	1.9	4.0	11.7
Mombasa	2.8	211	0.8	1.1	4.5
Muranga	1.8	231	1.0	0.0	3.9
Nairobi	3.2	515	1.0	1.1	5.3
Nakuru	1.8	229	1.0	0.0	3.8
Nandi	1.9	393	0.5	0.8	2.9
Narok	3.6	230	1.4	0.7	6.5
Nyamira	3.4	223	0.9	1.6	5.1
Nyandarua	2.3	217	1.0	0.2	4.5
Nyeri	4.3	258	1.5	1.2	7.5
Samburu	1.9	142	1.4	0.0	4.8
Siaya	9.8	253	1.7	6.4	13.2
Taita Taveta	2.1	240	0.3	1.4	2.8
Tana River	0.6	216	0.4	0.0	1.4
Tharaka	1.6	316	0.8	0.0	3.2
Trans-Nzoia	1.3	184	0.5	0.2	2.4
Turkana	5.9	296	1.3	3.1	8.6
Uasin Gishu	3.1	275	1.5	0.1	6.1
Vihiga	5.4	219	2.0	1.3	9.4
Wajir	0.5	160	0.5	0.0	1.5
West Pokot	1.9	260	1.1	0.0	4.2
		FEMALE			
Residence					
Rural	6.7	5,804	0.5	5.7	7.6
Urban	6.5	10,215	0.4	5.8	7.3
County					
Baringo	3.6	196	1.2	1.2	6.1
Bomet	2.9	424	1.2	0.5	5.4
Bungoma	4.1	438	0.9	2.2	6.0
Busia	11.1	357	2.3	6.3	15.9
Elgeyo Marakwet	5.0	373	1.8	1.4	8.7
Embu	3.9	396	1.4	1.0	6.8
Garissa	0.0	275	0.0	-	-
Homa Bay	24.9	472	2.9	18.9	30.9
Isiolo	3.1	302	1.5	0.0	6.2
Kajiado	6.7	266	1.3	4.1	9.3
Kakamega	5.7	375	1.7	2.3	9.1
Kericho	4.5	370	1.0	2.4	6.6
Kiambu	2.2	198	1.0	0.1	4.2
Kilifi	4.0	299	1.8	0.2	7.7

Table C.3 Sampling errors: HIV prevalence by residence and region, ages 15-64 years, KENPHIA 2018 (continued)

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
Kirinyaga	4.6	352	1.2	2.2	7.0
Kisii	7.7	368	1.2	5.1	10.2
Kisumu	21.8	373	2.7	16.2	27.4
Kitui	8.4	493	1.7	4.9	12.0
Kwale	6.0	278	1.6	2.8	9.3
Laikipia	2.6	272	1.6	0.0	5.9
Lamu	3.7	242	1.4	0.9	6.6
Machakos	5.6	465	1.1	3.4	7.8
Makueni	6.5	295	1.1	4.1	8.8
Mandera	0.0	231	0.0	-	-
Marsabit	1.7	203	1.1	0.0	3.9
Meru	4.5	483	1.5	1.5	7.5
Migori	17.6	549	2.4	12.6	22.5
Mombasa	9.0	224	1.7	5.4	12.6
Muranga	4.4	247	1.4	1.6	7.2
Nairobi	4.4	691	0.9	2.4	6.3
Nakuru	4.3	292	1.7	0.7	7.9
Nandi	3.4	454	1.2	0.8	6.0
Narok	6.5	305	2.0	2.3	10.6
Nyamira	4.4	313	1.5	1.3	7.4
Nyandarua	2.0	342	1.1	0.0	4.2
Nyeri	5.9	310	1.2	3.4	8.3
Samburu	1.9	208	0.6	0.6	3.2
Siaya	20.6	379	2.0	16.4	24.7
Taita Taveta	8.9	272	3.6	1.6	16.3
Tana River	1.5	280	0.6	0.3	2.7
Tharaka	3.3	373	0.7	1.8	4.8
Trans-Nzoia	6.4	278	1.0	4.4	8.5
Turkana	7.7	434	2.5	2.5	12.8
Uasin Gishu	8.1	325	1.8	4.3	11.8
Vihiga	5.2	325	1.2	2.8	7.6
Wajir	0.0	264	0.0	-	-
West Pokot	0.7	358	0.4	0.0	1.5

Table C.4 Sampling errors: Viral load suppression by age, KENPHIA 2018

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
		TOTAL			
0-14	48.3	57	8.4	30.9	65.7
15-24	56.4	139	5.1	45.9	66.8
25-34	66.4	450	2.6	61.0	71.8
35-44	73.1	431	2.7	67.5	78.6
45-54	78.9	332	2.9	72.9	84.8
55-64	83.6	171	3.8	75.8	91.4
Total 10-19	61.4	72	8.6	43.8	79.1
Total 25-49	71.0	1,060	1.7	67.4	74.5
Total 15-49	69.2	1,199	1.6	65.9	72.4
Total 50-64	82.5	324	2.9	76.6	88.4
Total 15-64	71.6	1,523	1.4	68.8	74.4
		MALE			
0-14	(43.8)	32	11.1	(21.0)	(66.6)
15-24	*	24	11.3	*	*
25-34	52.6	80	6.9	38.4	66.8
35-44	65.0	132	5.7	53.2	76.7
45-54	72.8	121	5.0	62.5	83.2
55-64	81.6	66	7.2	66.8	96.5
Total 10-19	(52.0)	28	14.6	(21.8)	(82.1)
Total 25-49	62.0	278	3.6	54.6	69.4
Total 15-49	60.6	302	3.4	53.6	67.7
Total 50-64	80.3	121	5.2	69.6	91.0
Total 15-64	65.1	423	3.1	58.8	71.4
		FEMALE			
0-14	(53.5)	25	10.6	(31.7)	(75.4)
15-24	59.0	115	5.4	47.8	70.3
25-34	70.8	370	2.6	65.4	76.3
35-44	77.0	299	2.9	71.1	82.9
45-54	83.0	211	3.3	76.2	89.8
55-64	85.1	105	3.7	77.3	92.8
Total 10-19	(70.9)	44	8.6	(53.2)	(88.5)
Total 25-49	75.0	782	1.8	71.3	78.7
Total 15-49	72.8	897	1.7	69.3	76.3
Total 50-64	83.9	203	3.2	77.2	90.5
Total 15-64	74.6	1,100	1.5	71.5	77.6

An asterisk indicates that an estimate is based on a very small number (a denominator of less than 25 of unweighted cases) and has been suppressed. Estimates in parentheses are based on a small number (a denominator of 25 to 49 of unweighted cases) and should be interpreted with caution.

Table C.5 Sampling errors: Viral load suppression by residence and region, ages 15-64 years, KENPHIA 2018

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
			TOTAL		
Residence					
Urban	71.4	605	2.2	66.8	76.0
Rural	71.7	918	1.8	68.0	75.3
Counties with at least 25 people living with HIV					
Busia	81.2	67	3.6	73.8	88.5
Homa Bay	83.8	170	2.9	77.8	89.9
Kakamega	(61.4)	26	11.3	(38.1)	(84.7)
Kericho	(44.7)	25	11.6	(20.8)	(68.5)
Kisii	(60.2)	46	5.0	(49.9)	(70.5)
Kisumu	83.2	134	3.7	75.5	90.9
Kitui	(68.1)	45	5.1	(57.6)	(78.6)
Machakos	(84.0)	38	6.0	(71.7)	(96.3)
Meru	(49.5)	27	12.6	(23.5)	(75.5)
Migori	76.8	139	4.3	67.9	85.6
Mombasa	(69.4)	29	10.9	(46.9)	(91.8)
Nairobi	72.8	53	5.5	61.5	84.1
Nandi	(52.2)	34	7.4	(37.0)	(67.4)
Narok	(48.7)	29	12.3	(23.4)	(74.0)
Nyamira	(68.4)	26	12.8	(41.9)	(94.8)
Nyeri	(77.4)	27	9.5	(57.9)	(96.9)
Siaya	78.7	116	5.8	66.6	90.7
Turkana	(39.7)	39	6.6	(26.0)	(53.3)
Uasin Gishu	(66.0)	35	6.1	(53.4)	(78.6)
Vihiga	(81.4)	33	6.1	(68.9)	(93.9)
			MALE		
Residence					
Urban	70.6	153	6.2	57.7	83.4
Rural	62.4	270	3.3	55.5	69.2
Counties with at least 25 people living with HIV					
Busia	*	24	12.4	*	*
Homa Bay	(76.8)	49	6.0	(64.4)	(89.2)
Kakamega	*	4	24.5	*	*
Kericho	*	8	12.7		
Kisii	*	13	14.9	*	*
Kisumu	(91.1)	35	6.3	(78.1)	(100.0)
Kitui	*	9	11.6	*	*
Meru	*	7	14.8	*	*
Migori	(68.5)	34	8.7	(50.7)	(86.3)
Mombasa	*	9	25.2	*	*
Muranga	*	5	.	*	*
Nairobi	*	17	9.4	*	*
Nandi	*	12	16.2	*	*
Narok	*	8	9.5	*	*

Table C.5 Sampling errors: Viral load suppression by residence and region, ages 15-64 years, KENPHIA 2018 (continued)

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
Nyamira	*	9	9.4	*	*
Nyeri	*	11	13.0	*	*
Siaya	(66.3)	31	10.9	(43.8)	(88.7)
Turkana	*	14	9.4	*	*
Uasin Gishu	*	8	52.9	*	*
Vihiga	*	13	7.4	*	*
		FEMALE			
Residence					
Urban	71.7	452	2.6	66.3	77.2
Rural	76.3	648	1.9	72.4	80.1
Counties with at least 25 people living with HIV					
Busia	(83.6)	43	6.6	(70.1)	(97.1)
Homa Bay	87.6	121	3.6	80.1	95.0
Kakamega	*	22	10.1	*	*
Kericho	*	17	13.1	*	*
Kisii	(73.1)	33	10.4	(51.8)	(94.5)
Kisumu	79.2	99	3.6	71.8	86.5
Kitui	(62.9)	36	5.5	(51.5)	(74.3)
Machakos	(88.4)	32	6.0	(76.0)	(100.0)
Meru	*	20	11.5	*	*
Migori	80.1	105	3.4	73.0	87.1
Mombasa	*	20	7.7	*	*
Muranga	*	13	14.1	*	*
Nairobi	(62.8)	36	8.4	(45.5)	(80.1)
Nandi	*	22	11.7	*	*
Narok	*	21	12.6	*	*
Nyamira	*	17	16.4	*	*
Nyeri	*	16	11.6	*	*
Siaya	84.4	85	4.5	75.1	93.6
Turkana	(43.3)	25	5.6	(31.7)	(54.9)
Uasin Gishu	(72.9)	27	13.5	(45.1)	(100.0)
Vihiga	*	20	10.6	*	*

An asterisk indicates that an estimate is based on a very small number (a denominator of less than 25 of unweighted cases) and has been suppressed. Estimates in parentheses are based on a small number (a denominator of 25 to 49 of unweighted cases) and should be interpreted with caution.

Table C.6 Sampling errors: ARV-adjusted 90-90-90 by age (conditional percentages), KENPHIA 2018

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
Diagnosed					
15-24	70.6	138	4.3	61.7	79.5
25-49	78.8	1,059	1.5	75.8	81.8
25-34	76.2	450	2.4	71.3	81.2
35-49	80.7	609	1.7	77.1	84.2
15-49	77.8	1,197	1.4	74.9	80.7
50-64	87.1	324	2.4	82.1	92.1
15-64	79.5	1,521	1.2	77.0	82.0
On Treatment					
15-24	93.1	100	2.9	87.1	99.1
25-49	95.9	842	0.8	94.3	97.5
25-34	96.3	350	1.3	93.7	98.9
35-49	95.6	492	0.9	93.7	97.4
15-49	95.6	942	0.8	94.0	97.2
50-64	97.7	283	0.9	95.8	99.6
15-64	96.0	1,225	0.6	94.7	97.3
Viral Load Suppression					
15-24	79.2	95	5.0	69.0	89.4
25-49	90.9	805	1.2	88.5	93.4
25-34	86.6	335	2.4	81.6	91.6
35-49	93.9	470	1.2	91.5	96.3
15-49	89.6	900	1.2	87.2	92.0
50-64	94.3	276	1.8	90.7	98.0
15-64	90.6	1,176	1.0	88.5	92.7
MALE					
Diagnosed					
15-24	*	23	9.8	*	*
25-49	69.8	277	3.2	63.2	76.4
25-34	61.3	80	6.8	47.4	75.3
35-49	73.9	197	3.3	67.1	80.8
15-49	68.6	300	3.0	62.4	74.8
50-64	85.9	121	4.7	76.3	95.5
15-64	72.6	421	2.6	67.2	77.9
On Treatment					
15-24	*	14	0.0	*	*
25-49	92.4	203	1.8	88.7	96.2
25-34	96.7	53	2.4	91.8	100.0
35-49	90.7	150	2.2	86.1	95.3
15-49	92.9	217	1.7	89.5	96.4
50-64	98.7	106	1.3	96.0	100.0
15-64	94.5	323	1.3	91.8	97.2

Table C.6 Sampling errors: ARV-adjusted 90-90-90 by age (conditional percentages), KENPHIA 2018 (continued)

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
			Viral Load Suppression		
15-24	*	14	12.6	*	*
25-49	91.9	186	2.8	86.2	97.7
25-34	84.2	51	8.3	67.1	100.0
35-49	95.3	135	1.8	91.6	99.1
15-49	90.4	200	2.8	84.7	96.1
50-64	92.4	105	3.5	85.2	99.5
15-64	90.9	305	2.3	86.3	95.6
			FEMALE		
			Diagnosed		
15-24	74.4	115	4.7	64.8	84.0
25-49	82.8	782	1.6	79.6	86.1
25-34	81.0	370	2.4	76.0	85.9
35-49	84.4	412	1.9	80.4	88.4
15-49	81.7	897	1.5	78.5	84.8
50-64	87.8	203	2.5	82.6	93.1
15-64	82.7	1,100	1.4	79.9	85.5
			On Treatment		
15-24	91.8	86	3.4	84.8	98.9
25-49	97.2	639	0.8	95.5	98.8
25-34	96.2	297	1.5	93.2	99.2
35-49	97.9	342	0.7	96.5	99.4
15-49	96.5	725	0.8	94.8	98.2
50-64	97.1	177	1.3	94.4	99.8
15-64	96.6	902	0.7	95.1	98.1
			Viral Load Suppression		
15-24	81.1	81	5.3	70.2	91.9
25-49	90.5	619	1.3	87.9	93.2
25-34	87.1	284	2.3	82.3	92.0
35-49	93.3	335	1.5	90.2	96.3
15-49	89.4	700	1.3	86.6	92.1
50-64	95.6	171	1.8	91.8	99.4
15-64	90.4	871	1.2	88.1	92.8

An asterisk indicates that an estimate is based on a denominator of less than 25 and has been suppressed.

Table C.7 Sampling errors: ARV-adjusted 90-90-90 by age (unconditional percentages), KENPHIA 2018

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
TOTAL					
Diagnosed					
15-24	70.6	138	4.3	61.7	79.5
25-49	78.8	1,059	1.5	75.8	81.8
25-34	76.2	450	2.4	71.3	81.2
35-49	80.7	609	1.7	77.1	84.2
15-49	77.8	1,197	1.4	74.9	80.7
50-64	87.1	324	2.4	82.1	92.1
15-64	79.5	1,521	1.2	77.0	82.0
On Treatment					
15-24	65.7	138	4.5	56.4	75.0
25-49	75.6	1,059	1.7	72.1	79.0
25-34	73.4	450	2.7	67.9	79.0
35-49	77.1	609	1.8	73.3	80.9
15-49	74.3	1,197	1.6	71.1	77.6
50-64	85.1	324	2.5	79.9	90.3
15-64	76.3	1,521	1.3	73.6	79.0
Viral Load Suppression					
15-24	52.1	138	5.1	41.5	62.6
25-49	68.7	1,059	1.8	65.0	72.4
25-34	63.6	450	2.8	57.8	69.3
35-49	72.4	609	2.0	68.3	76.5
15-49	66.6	1,197	1.6	63.2	70.0
50-64	80.3	324	2.9	74.3	86.3
15-64	69.1	1,521	1.4	66.2	72.0
MALE					
Diagnosed					
15-24	*	23	9.8	*	*
25-49	69.8	277	3.2	63.2	76.4
25-34	61.3	80	6.8	47.4	75.3
35-49	73.9	197	3.3	67.1	80.8
15-49	68.6	300	3.0	62.4	74.8
50-64	85.9	121	4.7	76.3	95.5
15-64	72.6	421	2.6	67.2	77.9
On Treatment					
15-24	*	23	9.8	*	*
25-49	64.5	277	3.4	57.6	71.4
25-34	59.3	80	6.8	45.3	73.3
35-49	67.1	197	3.4	60.0	74.2
15-49	63.8	300	3.2	57.2	70.3
50-64	84.8	121	4.8	75.0	94.6
15-64	68.6	421	2.7	62.9	74.2

Table C.7 Sampling errors: ARV-adjusted 90-90-90 by age (unconditional percentages), KENPHIA 2018 (continued)

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
			Viral Load Suppression		
15-24	*	23	11.1	*	*
25-49	59.3	277	3.4	52.4	66.3
25-34	49.9	80	6.9	35.8	64.0
35-49	63.9	197	3.6	56.6	71.3
15-49	57.6	300	3.2	50.9	64.3
50-64	78.3	121	5.3	67.4	89.2
15-64	62.3	421	3.0	56.3	68.4
			FEMALE		
			Diagnosed		
15-24	74.4	115	4.7	64.8	84.0
25-49	82.8	782	1.6	79.6	86.1
25-34	81.0	370	2.4	76.0	85.9
35-49	84.4	412	1.9	80.4	88.4
15-49	81.7	897	1.5	78.5	84.8
50-64	87.8	203	2.5	82.6	93.1
15-64	82.7	1,100	1.4	79.9	85.5
			On Treatment		
15-24	68.3	115	4.9	58.1	78.5
25-49	80.5	782	1.8	76.9	84.1
25-34	77.9	370	2.7	72.4	83.5
35-49	82.7	412	2.0	78.6	86.8
15-49	78.8	897	1.7	75.3	82.3
50-64	85.3	203	2.7	79.7	90.8
15-64	79.8	1,100	1.5	76.8	82.9
			Viral Load Suppression		
15-24	55.4	115	5.5	44.2	66.6
25-49	72.9	782	1.9	68.9	76.9
25-34	67.9	370	2.9	62.0	73.9
35-49	77.1	412	2.2	72.5	81.7
15-49	70.4	897	1.8	66.7	74.2
50-64	81.5	203	3.3	74.7	88.3
15-64	72.2	1,100	1.6	68.9	75.5

An asterisk indicates that an estimate is based on a very small number (a denominator of less than 25 of unweighted cases) and has been suppressed. Estimates in parentheses are based on a small number (a denominator of 25 to 49 of unweighted cases) and should be interpreted with caution.

Table C.8 Sampling errors: Number of new infections annually and number of people living with HIV (ages 15-64 years), KENPHIA 2018

	Weighted estimate	Standard error	Lower confidence limit	Upper confidence limit
Number of new infections annually (using LAg/VL/ antiretroviral [ARV] algorithm)				
Among men	16,800	7,296	2,500	31,100
Among women	19,100	6,786	5,800	32,400
Total	35,900	10,051	16,200	55,600
Number of adults living with HIV				
Among men	410,600	25,459	360,700	460,500
Among women	892,700	38,622	816,900	968,400
Total	1,303,300	52,755	1,199,800	1,406,700

APPENDIX D SURVEY PERSONNEL

The names in the list below have been arranged by survey participation category and sorted alphabetically. Individuals may fall in several categories below. Therefore, to avoid duplication, survey personnel have been listed only once in the highest ranked category in which they participated during the survey.

National Executive Steering Committee

Jackline Mogeni
Jackson Kioko
Josephine Kibaru-Mbae
Mark Hawken
Medhin Tsehaiu
Nduku Kilonzo
Nelson Otuoma
Pacifica Onyancha
Patrick Amoth
Tamu Daniels
Wekesa Masasabi
Yeri Kombe
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Principal Investigators

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Lucy Ng'ang'a
Martin Sirengo
Peter Cherutich

Ministry of Health (MoH) through

National AIDS & STI Control Program (NASCOP)

Ahmed Fidhow
Ambrose Juma
Barbara Mambo
Betty Chepkwony
Bob Agwata
Evans Imbuki
Faith Ngare
Faith Njogo
Franklin Songok
George Githuka
Hassan Abdalla
Irene Mukuhi
Janet Nzisa
Japeth Gituku
Joyce Wamicwe
Laura Oyiengo
Leonard Kingwara
Lilly Nyagah
Mary Mugambi
Maureen Kimani
Muthoni Karanja
Patricia Macharia
Rose Ayugi
Rose Wafula
Roseline Warutere
Ruth Musyoki
Stephen Ambune
Violet Oramisi
Violet Otindo

National Public Health Laboratories (NPHLS)

Abdi Roba
Bosley Motaroki
Carolyn Chebet
Franklin Kitheka
Jesicar Atsyaya
Joseph Ombayo
Kennedy Yatich
Mamo Umuro
Nancy Bowen
Sophie Mwanyumba
Stephen Kipkerich

National AIDS Control Council (NACC)

Hannington Onyango
Joshua Gitonga
Kennedy Muttai

Kenya Medical Research Institute (KEMRI)

Damaris Olungae
Harun Mongare
James Gikunda
James Mutunga
Joseph Muriuki
Joseph Mwangi
Josephat Sitienei
Judy Chege
Lucy Kanyara
Missiani Ochwoto
Nancy Langat
Saida Osman
Vincent Okoth
Yvonne Chebet

Ministry of Planning and Devolution (MOPD) through

Kenya National Bureau of Statistics (KNBS)

Alinoor Hapicha
Andrew Imbwaga
George Odipo
Godffrey Otieno
James Nganga
Job Mose
John Bore
John Makau
Macdonald Obudho
Mathew Mburu
Mutua Kakinyi
Robert Buluma
Samuel Ogolah
Samwel Mwenda
Zachary Ochola

National Council for Population and Development (NCPD)

John Anampiu
Lucy Kimodo
Peter Nyakwara

United Nations (UN) Family

Meboh Abuor
Meshack Ndolo
Jantine Jacobi

Associations of People Living with HIV/AIDS in Kenya

James Kamau
Nancy Opiyo
Rose Kaberia

US Centers for Disease Control and Prevention (CDC)

Kenya

Agnes Langat
Alberta Mirambeau,
Anthony Waruru
April Kelley
Cathy Toroitich-Ruto
Elijah Odoyo
Emily Zielinski-Guitierrez
Ernest Makokha
Evelyn Ngugi
Jacques Muthusi
Jane Mwangi
Jonathan Mwangi
Kenneth Masamaro
Lydia Odero
Marc Bulterys
Patricia Oluoch
Paul Musingila
Peter Young
Raphael Ondondo
Samuel Mwalili
Schwitters Amee
Thomas Achia

Atlanta

Bharat Parekh
Drew Voetsch
Greg Chang
Hetal Patel
Katrina Sleeman Kristin Brown
Laura Porter
Linda Fleming
Megan Bronson
Mervi Detorio
Paul Stupp
Rob Domoaol Sehin Birhanu
Stephen McCracken
Steven Kinchen
Trudy Dobbs
William Levine
Wolfgang Hladik

ICAP

Kenya

Alfred Keter
Amos Ndombi
Angellah Khamala
Charles Wachihi
Doris Odera
Duncan Chege
Esther Muigai
Francis Mbingi
Francis Ogollah
Jacob Onyango
Kevin Mwenda
Mark Kilongosi
Meshack Onuonga
Rodgers Odhiambo
Samuel Kamiru
Stanley Njuguna
Susan Mwenda
Vincent Njenga

Regional

Blanche Pitt
Bright Phiri
Charles Wentzel
Erika Fazito
Hazel Dube
Helecks Mutengo
Herbert Longwe
Herman Brou
Julius Manjengwa Oliver Murangandi
Pule Mphohle
Sakhile Sithole
Takura Kupamupindi
Tepa Nkumbula
Terefe Gelibo
Vusumuzi Maliwa
Yvonne Mavengere

New York

Andrea Low
David Hoos
Donna Lopp
Elizabeth Radin Hannah Chung
Karam Sachathep
Katherine Johnson Katherine Yuengling
Kiwon Lee
Leticia Froix
Mansoor Farahani
Melissa Metz
Natasha McLeod
Oren Mayer
Rachel Bray
Sara Winterhalter
Shannon Farley
Stephen Delgado
Suzue Saito
Theo Smart
Yen Pottinger

TWG *(those not listed elsewhere above)*

Angela Silla
Athanasius Ochieng
Bernard Baridi
Brian Onyango
David Bukusi
Elizabeth Ochanda
Gonza Omoro
Isabella Yonga
Justus Dawn
Peter Maingi
Ruth Ndwati
Samson Ndege
Wanjiru Waruiru

Community Mobilization Coordinators

Annete Andunda
Constance Rehema
Cyprian Ondiek
Emily Karanja
Eremon Losinyeno
Geofry Mutinda
Gitonga Abraham
Isaac Wamalwa
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Maryline Bett
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Mercy Kamau
Mercy Moronge
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APPENDIX E HOUSEHOLD QUESTIONNAIRE

ENGLISH **CONFIDENTIAL**	**MINISTRY OF HEALTH** **HIV IMPACT ASSESSMENT** **HOUSEHOLD QUESTIONNAIRE**	TICK IF HOUSEHOLD SELECTED FOR CHILDREN'S SURVEY ☐

Hello. My name is_____and we are here from the Kenya Population-based Impact Assessment Survey (KENPHIA).

The *Ministry of Health, (MoH)* is conducting the Kenya Population–based HIV Impact Assessment Survey (KENPHIA) about health throughout Kenya. You may have already heard of this survey from ads on the radio or TV or local leaders in your community. *This survey will help us learn more about the health of people in Kenya. It will help us learn about HIV in Kenya and about what kind of health services are needed in response.*

Over 20,000 households will be asked to join this survey. Your house is one of the houses randomly selected to be invited to join.

I am here with a team of nurse/Interviewers who will help do the survey. We would like to invite your household to join the survey. Joining the survey is completely voluntary.

I would like to tell you more about the survey to see if you would be interested in your household taking part.

Do you have any questions?

HOUSEHOLD IDENTIFICATION

COUNTY NAME: _____	COUNTY CODE	☐☐
DISTRICT NAME: _____	DISTRICT CODE	☐☐
SUB COUNTY NAME:_____	SUB COUNTY CODE	☐☐
DIVISION NAME: _____	DIVISION CODE	☐☐
LOCATION NAME:_____	LOCATION CODE	☐☐
SUB LOCATION NAME: _____	SUB LOCATION CODE	☐☐
CLUSTER NAME:_____	CLUSTER NUMBER	☐☐
NAME OF HOUSEHOLD HEAD: _____	HH NUMBER	☐☐

TOTAL PERSONS IN HOUSEHOLD:	TOTAL ELIGIBLE WOMEN:	TOTAL ELIGIBLE MEN:	TOTAL ELIGIBLE CHILDREN:	LINE NO. OF RESPONDENT TO HOUSEHOLD QUESTIONNAIRE:
☐☐	☐☐	☐☐	☐☐	☐☐

LANGUAGE OF INTERVIEW:	☐☐	**LANGUAGE CODES:** ENGLISH = 1 KISWAHILI, = 2 LUO = 3 KIKUYU = 4 LUHYA = 5 KALENJIN = 6 KISII = 7 KAMBA = 8 MAASAI = 9 MIJI KENDA = 10 MERU = 11 EMBU = 12 SOMALI = 13 BORANA = 14 TURKANA = 15 POKOT = 16 OTHER = 96 SPECIFY: _____
NATIVE LANGUAGE OF RESPONDENT:	☐☐	
TRANSLATOR USED? (Y/N)	☐	

SUPERVISOR: _____ **SUPERVISOR CODE:** ☐☐ **OFFICE EDITOR:** ☐☐ **KEYED BY:** ☐☐

DATE: ☐☐☐☐☐☐

*** RESULTS 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) PARTLY COMPLETED
(96) OTHER (SPECIFY)

START TIME			
START	Record the start time. USE 24 HOUR TIME. IF START TIME IS 3:12 PM, RECORD 15 HOURS, 12 MINUTES, NOT 03 HOURS, 12MINUTES.	☐☐	HOUR: ☐ MINUTES: ☐

HOUSEHOLD SCHEDULE

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	
	Please give me the names of the persons who usually live in your household or guests of the household who stayed here last night, starting with the head of the household.					IF LESS THAN 2 YEARS, RECORD IN MONTHS.	
	AFTER LISTING THE NAME AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON ASK QUESTIONS 2A-2C BELOW TO BE SURE THAT THE SCHEDULE IS COMPLETE.	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**)?	Is age of (**NAME**) recorded in MONTHS/ YEARS?
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1			M F	Y N	Y N		MONTHS YEARS
2			M F	Y N	Y N		MONTHS YEARS
3			M F	Y N	Y N		MONTHS YEARS
4			M F	Y N	Y N		MONTHS YEARS
5			M F	Y N	Y N		MONTHS YEARS
6			M F	Y N	Y N		MONTHS YEARS
7			M F	Y N	Y N		MONTHS YEARS
8			M F	Y N	Y N		MONTHS YEARS
9			M F	Y N	Y N		MONTHS YEARS
10			M F	Y N	Y N		MONTHS YEARS

HOUSEHOLD SCHEDULE

☐ **TICK HERE IF CONTINUATION SHEET USED**

CODES FOR COLUMN 3: RELATIONSHIP TO HOUSEHOLD HEAD

01 = HEAD
02 = WIFE/HUSBAND/ PARTNER
03 = SON OR DAUGHTER
04 = SON-IN-LAW/ DAUGHTER-IN-LAW
05 = GRANDCHILD
06 = PARENT
07 = PARENT-IN-LAW
08 = BROTHER/SISTER
09 = CO-WIFE
10 = OTHER RELATIVE
11 = ADOPTED/ FOSTER/STEPCHILD
12 = NOT RELATED
98 = DON'T KNOW

2A) Just to make sure I have a complete listing, are there any other persons such as small children or infants that we have not listed? YES ☐ NO ☐

2B) Are there any other people such as domestic servants, lodgers, or friends who may not be members of your household who usually live here? YES ☐ NO ☐

2C) Are there any guests or temporary visitors staying here, or anyone else who stayed here last night who we have not seen? YES ☐ NO ☐

ADD TO SCHEDULE

HOUSEHOLD SCHEDULE (continued)

LINE NO.	IF (**NAME**) IS 0-17 YEARS						IF (**NAME**) IS 0-14 YEARS	
	EMANC STATUS	ORPHAN STATUS/PARENT OR GUARDIAN						
	Is (**NAME**) emancipated? (An emancipated is minor <18 years, and is married, the parent of a child, or has left home and is self-sufficient)	Is (NAME)'s natural mother alive?	Does (**NAME**)'s Biological natural mother usually live in this household or was a guest last night? IF YES: RECORD MOTHER'S LINE NUMBER. IF NO: RECORD **FEMALE** GUARDIAN'S LINE NUMBER OR '00' IF FEMALE PARENT OR GUARDIAN NOT PRESENT IN HH.	Is (**NAME**)'s natural father alive?	Does (NAME)'s natural father usually live in this household or was a guest last night? IF YES: RECORD FATHER'S LINE NUMBER. IF NO: RECORD **MALE** GUARDIAN'S LINE NUMBER OR '00' IF MALE PARENT OR GUARDIAN NOT PRESENT IN HH.	RECORD LINE NUMBER OF PARENT/GUARDIAN WHO WILL FILL OUT CHILDREN'S MODULE FOR (**NAME**)	IS (**NAME**) ELIGIBLE FOR SURVEY?
(1)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	
1	Y N DK	Y N DK → 12		Y N DK → 14			Y N	
2	Y N DK	Y N DK → 12		Y N DK → 14			Y N	
3	Y N DK	Y N DK → 12		Y N DK → 14			Y N	
4	Y N DK	Y N DK → 12		Y N DK → 14			Y N	
5	Y N DK	Y N DK → 12		Y N DK → 14			Y N	
6	Y N DK	Y N DK → 12		Y N DK → 14			Y N	
7	Y N DK	Y N DK → 12		Y N DK → 14			Y N	
8	Y N DK	Y N DK → 12		Y N DK → 14			Y N	
9	Y N DK	Y N DK → 12		Y N DK → 14			Y N	
10	Y N DK	Y N DK → 12		Y N DK → 14			Y N	

HOUSEHOLD SCHEDULE	
TOTAL ELIGIBLE MEN (ADULTS 15+ YEARS AND EMANCIPATED MINORS)	
TOTAL ELIGIBLE WOMEN (ADULTS 15+ YEARS AND EMANCIPATED MINORS)	
TOTAL ELIGIBLE CHILDREN (10 TO 14 YEARS)	
TOTAL ELIGIBLE CHILDREN (0 MONTHS TO 9 YEARS)	

HOUSEHOLD SCHEDULE (continued)

LINE NO.	IF (**NAME**) is 18+	IF (**NAME**) is 0-17 years					
	SICK PERSON	SICKNESS AND DEATH OF BIOLOGICAL PARENTS				MOTHER DEAD OR SICK	FATHER DEAD OR SICK
	CHECK COLUMNS 7 AND 8, IF UNDER 18✳17 IF 18 YEARS OR MORE: 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?	CHECK COLUMN 10, IF COLUMN 10 'N' OR 'DK' ✳21 IF COLUMN 10 'Y': Has (**NAME**)'s natural 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?	IF MOTHER SICK: Does (NAME)'s natural mother have HIV/AIDS?*	CHECK COLUMN 12, IF COLUMN 12 'N' OR 'DK' ✳23 IF COLUMN 12 'Y': Has (**NAME**)'s natural 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?	IF FATHER SICK: Does (**NAME**)'s natural father have HIV/AIDS?*	IF CHILD'S NATURAL MOTHER HAS DIED (COLUMN 10 'N') OR BEEN SICK (COLUMN 18 'Y'), SELECT Y.	IF CHILD'S NATURAL FATHER HAS DIED (COLUMN 12'N') OR BEEN SICK (COLUMN 20 'Y'), SELECT Y.
(1)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
1	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
2	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
3	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
4	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
5	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
6	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
7	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
8	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
9	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
10	Y N DK	Y N DK → 19	Y N DK	Y N DK → 21	Y N DK	Y N	Y N

* OPTIONAL

HOUSEHOLD SCHEDULE (continued)

LINE NO.	SPOUSES AND CO-HABITATING PARTNERS					
	Record the LINE NUMBER (**NAME**)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (**NAME**)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (**NAME**)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (**NAME**)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (**NAME**)'s of spouse or partner. If no spouse or partner leave blank.	Record the LINE NUMBER (**NAME**)'s of spouse or partner. If no spouse or partner leave blank.
(1)	(23a)	(23b)	(23c)	(23d)	(23e)	(23f)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
	SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN		
101	DO NOT READ: CHECK COLUMN 7 IN THE HOUSEHOLD SCHEDULE. **ANY CHILD AGE 0-17 YEARS?**	NUMBER OF CHILDREN 0-17 YRS: ☐☐	NONE✳114
102	DO NOT READ: CHECK COLUMN 16 IN THE HOUSEHOLD SCHEDULE. **ANY SICK ADULT AGE 18+ YEARS?**	YES ..... 1 NO 2	YES✳105
103	DO NOT READ: CHECK COLUMN 21 IN THE HOUSEHOLD SCHEDULE. **ANY CHILD WHOSE MOTHER HAS DIED OR IS VERY SICK?**	YES ..... 1 NO 2	YES✳105
104	DO NOT READ: CHECK COLUMN 22 IN THE HOUSEHOLD SCHEDULE. **ANY CHILD WHOSE FATHER HAS DIED OR IS VERY SICK?**	YES ..... 1 NO 2	NO✳114
105	**Record names, line numbers, and ages of all children 0-17 who are identified in columns 16, 21, and 22 as having a sick adult in their household or having a mother and/or father who has died or has been very sick.**		
		CHILD (1) / CHILD (2) / CHILD (3)	
	NAME	_____ / _____ / _____	
	LINE NUMBER (FROM COLUMN 1)	☐☐ / ☐☐ / ☐☐	
	AGE (FROM COLUMN 7)	☐☐ / ☐☐ / ☐☐	
	INTERVIEWER SAY: "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."		
106	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 DON'T KNOW 8	YES ..... 1 NO ..... 2 DON'T KNOW 8
107	In the last 12 months, has your household received any emotional or psychological support for (**NAME**), such as companionship, counselling from a trained counsellor, or spiritual support, which you received at home and for which you did not have to pay?	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 NO, DK✳109	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 NO, DK✳109
108	Did your household receive any of this emotional or psychological support for (**NAME**) in the past 3 months?	YES ..... 1 NO ..... 2 DON'T KNOW 8	YES ..... 1 NO ..... 2 DON'T KNOW 8
109	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 DON'T KNOW ..... 8 NO, DK✳111	YES ..... 1 NO ..... 2 DON'T KNOW ..... 8 NO, DK✳111

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES		SKIP
	SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN (continued)			
110	Did your household receive any of this material support for (**NAME**) in the past 3 months?	YES....1 NO....2 DON'T KNOW....8	YES....1 NO....2 DON'T KNOW....8	YES....1 NO....2 DON'T KNOW....8
111	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 DON'T KNOW....8 NO, DK✳113	YES....1 NO....2 DON'T KNOW....8 NO, DK✳113	YES....1 NO....2 DON'T KNOW....8 NO, DK✳113
112	Did your household receive any of this social support for (**NAME**) in the past 3 months?	YES....1 NO....2 DON'T KNOW....8	YES....1 NO....2 DON'T KNOW....8	YES....1 NO....2 DON'T KNOW....8
113	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, DID NOT RECEIVE SUPPORT....2 NO, CHILD DOES NOT ATTEND SCHOOL....3 DON'T KNOW....8 SKIP IF CHILD<5 YEARS	YES....1 NO, DID NOT RECEIVE SUPPORT....2 NO, CHILD DOES NOT ATTEND SCHOOL....3 DON'T KNOW....8 SKIP IF CHILD<5 YEARS	YES....1 NO, DID NOT RECEIVE SUPPORT....2 NO, CHILD DOES NOT ATTEND SCHOOL....3 DON'T KNOW....8 SKIP IF CHILD<5 YEARS

CONTINUE TO NEXT CHILD IF OTHER CHILDREN WHOSE MOTHER AND/OR FATHER HAS DIED OR IS VERY SICK.

MATRIX END

INTERVIEWER SAYS: "Thank you for the information regarding (**NAME**)."

IF THERE IS ANOTHER CHILD 0-17 YEARS IN THE HOUSEHOLD WHO HAS BEEN IDENTIFIED IN COLUMN 17 AS HAVING A MOTHER/FATHER WHO HAS DIED OR IS VERY SICK BESIDES (NAME) ✳ CONTINUE TO 106 AND ASK ABOUT THE NEXT CHILD.

INTERVIEWER SAYS: "Next, I would like to ask you about (**NAME**)".

☐ **TICK IF CONTINUATION SHEET REQUIRED.**

IF NO OTHER CHILDREN, CONTINUE HOUSEHOLD INTERVIEW.

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES		SKIP
	HOUSEHOLD DEATHS			
114	Now I would like to ask you more questions about your household. Has any usual resident of your household died since 2016?	YES....1 NO....2 DON'T KNOW....8		NO, DK ✳ 201
115	How many usual household residents died since 2016?	NUMBER OF DEATHS ☐☐ DON'T KNOW....88		
ASK 116-119 AS APPROPRIATE FOR EACH PERSON WHO DIED. IF THERE WERE MORE THAN 3 DEATHS USE ADDITIONAL QUESTIONNAIRES.				
116	What was the name of the person who died (most recently/before him/her)?	NAME 1ST DEATH __________	NAME 2ND DEATH __________	NAME 3RD DEATH __________

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES						SKIP
		HOUSEHOLD DEATHS (continued)						
117	When did (**NAME**) die? Please give your best guess.	DAY		DAY		DAY		
		MONTH		MONTH		MONTH		
		YEAR		YEAR		YEAR		
		DON'T KNOW 88		DON'T KNOW 88		DON'T KNOW 88		
118	Was (**NAME**) male or female?	MALE 1		MALE 1		MALE 1		
		FEMALE 2		FEMALE 2		FEMALE 2		
		DON'T KNOW 8		DON'T KNOW 8		DON'T KNOW 8		
119	How old was (**NAME**) when (he/she) died?	DAYS		DAYS		DAYS		
	RECORD DAYS IF LESS THAN 1 MONTH, MONTHS IF LESS THAN 1 YEAR, AND COMPLETED YEARS IF 1 YEAR OR MORE.	MONTHS		MONTHS		MONTHS		
		YEARS		YEARS		YEARS		
		DON'T KNOW 88		DON'T KNOW 88		DON'T KNOW 88		

CONTINUE TO NEXT DEATH ACCORDING UP TO THE NUMBER REPORTED FROM 115.

☐ **TICK IF CONTINUATION SHEET REQUIRED.**

HOUSEHOLD CHARACTERISTICS

INTERVIEWER SAY: "Now I would like to ask you more questions about your household."

201	What is the <u>main</u> 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 ..... 81 BOTTLED WATER ..... 91 OTHER ..... 96 (SPECIFY) _____

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
		HOUSEHOLD CHARACTERISTICS (continued)	
202	Do you do anything to the water to make it safer to drink?	YES ..... 1 NO ..... 2 DON'T KNOW 8	NO, DK ✳ 204
203	What do you do to make your water safe for drinking?	BOILING ..... 1 FILTRATION (CHARCOAL FILTER) ..... 2 SEDIMENTATION ..... 3 DISINFECTION (WATERGUARD, CHLORINE) ..... 4 USE BOTTLED WATER ..... 5 OTHER ..... 96 (SPECIFY) _____	
204	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 BUCKET ..... 62 OTHER ..... 96 (SPECIFY) _____	NO FACILITY, OTHER ✳ 207
205	Do you share this toilet facility with other households?	YES ..... 1 NO 2	NO ✳ 207
206	How many households use this toilet facility?	NO. OF HOUSEHOLD IF LESS THAN 10 _____ 10 OR MORE HOUSEHOLDS ..... 96 DON'T KNOW 98	
PREFACE BEFORE QUESTIONS 207-211: Does your household have:			
207	Electricity/Solar Lighting?	YES ..... 1 NO 2	
208	A radio	YES ..... 1 NO 2	
209	A television?	YES ..... 1 NO 2	
210	A telephone/mobile telephone	YES ..... 1 NO 2	
211	A refrigerator	YES ..... 1 NO 2	
212	What type of fuel does your household mainly use for cooking?	ELECTRICITY ..... 1 LPG / NATURAL GAS ..... 2 BIOGAS ..... 3 PARAFFIN / KEROSENE ..... 4 COAL, LIGNITE ..... 5 CHARCOAL FROM WOOD ..... 6 FIREWOOD / STRAW ..... 7 DUNG ..... 8 NO FOOD COOKED IN HOUSEHOLD ..... 95 OTHER ..... 96 (SPECIFY) _____	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
		HOUSEHOLD CHARACTERISTICS (continued)	
213	MAIN MATERIAL OF 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 STRIP ..... 32 CERAMIC TILES ..... 33 CEMENT/TERAZO ..... 34 CARPET ..... 35 OTHER ..... 96 (SPECIFY) _____	
214	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) _____	
215	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 ..... 23 CARTON ..... 24 REUSED WOOD ..... 25 **FINISHED WALLS** CEMENT ..... 31 STONE WITH LIME/CEMENT ..... 32 BRICKS ..... 33 CEMENT BLOCKS ..... 34 WOOD PLANKS/SHINGLES ..... 35 OTHER ..... 96 (SPECIFY) _____	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
		HOUSEHOLD CHARACTERISTICS (continued)	
216	How many rooms are used for sleeping?	NUMBER OF ROOMS: ☐☐	
	PREFACE BEFORE QUESTIONS 217-220: Does any member of your household own:		
217	A bicycle?	YES ..... 1 NO 2	
218	A motorcycle or motor scooter?	YES ..... 1 NO 2	
219	A car or truck?	YES ..... 1 NO 2	
220	A boat with a motor?	YES ..... 1 NO 2	
	PREFACE BEFORE QUESTIONS 221-225: Does any member of your household own:		
221	Cows (Cattle)?	YES ..... 1 NO 2	
222	Goats/Sheep?	YES ..... 1 NO 2	
223	Poultry (e.g., ducks, chickens)?	YES ..... 1 NO 2	
224	Dogs/Cats?	YES ..... 1 NO 2	
225	Other animals (camels, horses, donkeys)?	YES ..... 1 NO 2	
226*	In the past 4 weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	YES ..... 1 NO ..... 2 DON'T KNOW 8	NO, DK✳228
227*	How often did this happen in the past 4 weeks?	RARELY (1-2 TIMES) ..... 1 SOMETIMES (3-10 TIMES) ..... 2 OFTEN (MORE THAN 10 TIMES) ..... 3 DON'T KNOW 8	
228*	In the past 4 weeks, did you or any household member go to sleep at night hungry because there was not enough food?	YES ..... 1 NO ..... 2 DON'T KNOW 8	NO, DK✳230
229*	How often did this happen in the past 4 weeks?	RARELY (1-2 TIMES) ..... 1 SOMETIMES (3-10 TIMES) ..... 2 OFTEN (MORE THAN 10 TIMES) ..... 3 DON'T KNOW 8	
230*	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	YES ..... 1 NO ..... 2 DON'T KNOW 8	NO, DK✳301
231*	How often did this happen in the past 4 weeks?	RARELY (1-2 TIMES) ..... 1 SOMETIMES (3-10 TIMES) ..... 2 OFTEN (MORE THAN 10 TIMES) ..... 3 DON'T KNOW 8	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
		ECONOMIC SUPPORT	
Now I will ask you questions on economic support you have received.			
301	Has your household received any of the following forms of external economic support in the last 12 months? SELECT ALL THAT APPLY.	NOTHING ..... A CASH TRANSFER (E.G. PENSIONS, DISABILITY GRANTS, CHILD GRANT) ..... B ASSISTANCE FOR SCHOOL FEES ..... C MATERIAL SUPPORT FOR EDUCATION (E.G. UNIFORMS, SCHOOL BOOKS, EDUCATION, TUITION SUPPORT, BURSARIES) ..... D INCOME GENERATION SUPPORT IN CASH OR KIND (E.G. AGRIGULTURAL INPUTS) ..... E FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD OR EXTERNAL INSTITUTION ..... F MATERIAL OR FINANCIAL SUPPORT FOR SHELTER ..... G SOCIAL PENSION ..... H OTHER ..... X (SPECIFY) _____ DON'T KNOW ..... Z	NOTHING, DON'T KNOW ✳END OF SECTION
302	Has your household received any of the following forms of external economic support in the last 3 months? SELECT ALL THAT APPLY.	NOTHING ..... A CASH TRANSFER (E.G. PENSIONS, DISABILITY GRANTS, CHILD GRANT) ..... B ASSISTANCE FOR SCHOOL FEES ..... C MATERIAL SUPPORT FOR EDUCATION (E.G. UNIFORMS, SCHOOL BOOKS, EDUCATION, TUITION SUPPORT, BURSARIES) ..... D INCOME GENERATION SUPPORT IN CASH OR KIND (E.G. AGRIGULTURAL INPUTS) ..... E FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD OR EXTERNAL INSTITUTION ..... F MATERIAL OR FINANCIAL SUPPORT FOR SHELTER ..... G SOCIAL PENSION ..... H DROP SAME REASON AS ABOVE OTHER ..... X (SPECIFY) _____ DON'T KNOW ..... Z	

END OF HOUSEHOLD INTERVIEW

INTERVIEWER SAY: "This is the end of the household survey. Thank you very much for your time and for your responses."

END TIME

END	RECORD THE END TIME. USE 24 HOUR TIME. IF START TIME IS 3:12 PM, RECORD 15 HOURS, 12 MINUTES, NOT 03 HOURS, 12 MINUTES.	HOUR: MINUTES:	☐☐ ☐☐

INTERVIEWER OBSERVATIONS:

TO BE COMPLETED AFTER THE INTERVIEW:

COMMENTS ABOUT RESPONDENT:

COMMENTS ABOUT SPECIFIC QUESTIONS:

GENERAL QUESTIONS:

APPENDIX F ADULT QUESTIONNAIRE

NO	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 1: RESPONDENT BACKGROUND			
Interviewer says: "Thank you for agreeing to participate in this survey. The first set of questions is about your life in general. Afterwards, we will move on to other topics."			
101	What is your current nationality?	KENYAN=1 UGANDAN=2 TANZANIAN=3 ETHIOPIAN=4 SOMALI=5 SUDANESE=6 CONGOLESE=7 OTHERS=96 (SPECIFY) _____ DON'T KNOW =-8 REFUSED =-9	
102	Have you been away from home for more than 3 days in the last 6 months?	YES=1 NO=2 DON'T KNOW=-8 REFUSED=-9	
103	What was the main reason for your time away from home?	TO JOIN/SEE FAMILY= 1 FOR MARRIAGE = 2 FOR WORK = 3 TO GO TO SCHOOL = 4 TO ESCAPE INSECURITY/CONFLICT = 5 TO ESCAPE DROUGHT, FLOOD, ETC= 6 TO ESCAPE VIOLENCE IN HOUSEHOLD = 7 OTHER = 96 SPECIFY: _____ DON'T KNOW =-8 REFUSED =-9	
104	What is your ethnic group/tribe? (PROBE FOR MAIN ETHNIC GROUP/TRIBE)	EMBU = 1 KALENJIN=2 KAMBA=3 KIKUYU=4 KISII=5 LUHYA=6 LUO=7 MASAI=8 MERU=9 MIJIKENDA=10 SOMALI=11 TAITA TAVETA=12 SWAHILI=13 OTHERS=96 (SPECIFY) _____	
105	What is your religion? IF CHRISTIAN, PROBE FOR IDENTITY CATHOLIC OR PROTESTANT/OTHER CHRISTIAN	ROMAN CATHOLIC=1 PROTESTANT/OTHER CHRISTIAN=2 ISLAM=3 NO RELIGION=4 OTHER=96 (SPECIFY) _____	
106	Have you ever attended school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF AGE >= 20 AND NO, DK, REFUSED ✳ 115 IF AGE < 20 AND NO, DK, REFUSED ✳ 114

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
107	Are you currently enrolled in school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	DK, REFUSED ✳ 111 NO ✳ 111
108	What class/form/year are you in now?	NURSERY PRESCHOOL =1 PRIMARY CLASS 1 =2 PRIMARY CLASS 2 =3 PRIMARY CLASS 3 =4 PRIMARY CLASS 4 =5 PRIMARY CLASS 5 =6 PRIMARY CLASS 6 =7 PRIMARY CLASS 7=8 PRIMARY CLASS 8 =9 SECONDARY FORM 1 =10 SECONDARY FORM 2 =11 SECONDARY FORM 3 =12 SECONDARY FORM 4= 13 A LEVEL FORM 5 =14 A LEVEL FORM 6 =15 CERTIFICATE YEAR 1 =16 DIPLOMA YEAR 1 =17 DIPLOMA YEAR 2 =18 UNIVERSITY 1 ST YEAR= 19 UNIVERSITY 2 ST YEAR = 20 UNIVERSITY 3 ST YEAR =21 UNIVERSITY 4 ST YEAR AND ABOVE= 22 DON'T KNOW = -8 REFUSED = -9	SKIP IF >= 20 YEARS
109	During the last school week, did you miss any school days for any reason?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF >= 20 YEARS NO, DK, REFUSED ✳ 111
110	Why did you miss school?	I HAVE BEEN SICK = 1 I DON'T FEEL SAFE TRAVELING TO SCHOOL = 2 I DON'T FEEL SAFE WHILE IN SCHOOL = 3 I DON'T LIKE SCHOOL = 4 I HAVE TO LOOK AFTER MY FAMILY= 5 THERE'S NOT ENOUGH MONEY TO SEND ME TO SCHOOL = 6 SCHOOL IS TOO FAR AWAY = 7 I HAVE TO WORK = 8 I HAVE A CHILD OR I AM PREGNANT (GIRLS ONLY) = 9 I MISSED TOO MUCH SCHOOL BECAUSE OF MY PERIOD (MENSTRUATION) (GIRLS ONLY) = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF >= 20 YEARS

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
111	What is the highest level of school you attended?	NURSERY PRESCHOOL =1 PRIMARY CLASS 1 =2 PRIMARY CLASS 2 =3 PRIMARY CLASS 3 =4 PRIMARY CLASS 4 =5 PRIMARY CLASS 5 =6 PRIMARY CLASS 6 =7 PRIMARY CLASS 7=8 PRIMARY CLASS 8 =9 SECONDARY FORM 1 =10 SECONDARY FORM 2 =11 SECONDARY FORM 3 =12 SECONDARY FORM 4= 13 A LEVEL FORM 5 =14 A LEVEL FORM 6 =15 CERTIFICATE YEAR 1 =16 DIPLOMA YEAR 1 =17 DIPLOMA YEAR 2 =18 UNIVERSITY 1 ST YEAR= 19 UNIVERSITY 2 ST YEAR = 20 UNIVERSITY 3 ST YEAR =21 UNIVERSITY 4 ST YEAR AND ABOVE= 22 DON'T KNOW = -8 REFUSED = -9	
112	When was the last time you regularly attended school? Would you say it was less than a year ago or more than a year ago?	LESS THAN 1 YEAR = 1 1 YEAR OR LONGER = 2 DON'T KNOW =-8 REFUSED = -9	SKIP IF >= 20 YEARS
113	Why do you NOT go to school?	I HAVE BEEN SICK = 1 I DON'T FEEL SAFE TRAVELING TO SCHOOL = 2 I DON'T FEEL SAFE WHILE IN SCHOOL = 3 I DON'T LIKE SCHOOL = 4 I HAVE TO LOOK AFTER MY FAMILY= 5 THERE'S NOT ENOUGH MONEY TO SEND ME TO SCHOOL = 6 SCHOOL IS TOO FAR AWAY = 7 I HAVE TO WORK = 8 I HAVE A CHILD OR I AM PREGNANT (GIRLS ONLY) = 9 I MISSED TOO MUCH SCHOOL BECAUSE OF MY PERIOD (MENSTRUATION) (GIRLS ONLY) = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF >= 20 YEARS
115	Have you done any work in the last 12 months for which you received cash or a form of nonmonetary payment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ END OF MODULE
116	Have you done any work in the last seven days for which you received cash or a form of nonmonetary payment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
MODULE 2: MARRIAGE			
Interviewer says: "Now I would like to ask you about your current and previous relationships and/or marriages."			
201	Have you ever been married or lived together with a [man/woman] as if married?	YES = 1 NO = 2 DON'T KNOW =-8 REFUSED = -9	NO, DK, REFUSED ✳ END OF MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
202	Have you ever been widowed? That is, did a spouse ever pass away while you were still married or living with them?	YES=1 NO=2 DON'T KNOW= -8 REFUSED= -9	
203	What is your marital status now: are you married, living together with someone as if married, widowed, divorced, or separated?	MARRIED = 1 LIVING TOGETHER = 2 WIDOWED = 3 DIVORCED = 4 SEPARATED = 5 DON'T KNOW = -8 REFUSED = -9	WIDOWED, DIVORCED, SEPARATED, DK, REFUSED ✳ END OF MODULE
Interviewer says: "The next several questions are about your current spouse or partner(s)."			
204	Altogether, how many wives or live-in partners do you have?	NUMBER OF WIVES OR LIVE-IN PARTNERS ____ DON'T KNOW = -8 REFUSED = -9	DK, REFUSED ✳ END OF MODULE SKIP IF FEMALE
205	The Household Schedule listed [INSERT NUMBER OF REPORTED PARTNERS] household members as your wives/partners. Please review the list below. Are all of the listed household members your wives/ partners who live in the household?	YES = 1 NO = 2	NO ✳208 SKIP IF FEMALE
206	Is [NAME] your wife/partner?	YES = 1 NO = 2	SKIP IF FEMALE
207	Does [NAME] live in the household?	YES = 1 NO = 2	SKIP IF FEMALE
208	Do you have additional spouse(s)/ partner(s) that live with you?	YES = 1 NO = 2	SKIP IF FEMALE
209	How many additional spouse(s)/ partners(s) live with you?	NUMBER OF SPOUSES OR LIVE-IN PARTNERS ____	SKIP IF FEMALE
210	Please enter the name of your spouse/ partner that lives with you.	NAME OF SPOUSE/PARTNER _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF FEMALE IF YES NEED TO REPEAT FROM 208
211	How many wives or live-in partners do you have who live elsewhere?	NUMBER OF ADDITIONAL SPOUSE(S)/PARTNERS ___ DON'T KNOW = -8 REFUSED = -9	SKIP IF FEMALE
212	Is your husband or partner living with you now or is he staying elsewhere?	LIVING TOGETHER = 1 STAYING ELSEWHERE = 2 DON'T KNOW = -8 REFUSE TO ANSWER = -9	STAYING ELSEWHERE, DK, REFUSED ✳ 216 STAYING ELSEWHERE & LISTED PARTNER IN HH ROSTER ✳ 213 SKIP IF MALE
213	The household schedule listed [NAME OF HUSBAND/PARTNER] as your husband/partner who is living here. Is that correct?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES DK, REF ✳ 216 SKIP IF MALE
214	What is the name of your spouse/ partner that lives with you?	[LIST OF PERSONS ON HH ROSTER] NOT LISTED IN HOUSEHOLD = 96	LISTED ✳ 216 SKIP IF MALE
215	Please enter the name of your spouse/ partner that lives with you.	NAME OF SPOUSE/PARTNER _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF MALE
216	Does your husband or partner have other wives or does he live with other women as if married?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSE TO ANSWER = -9	NO, DK, REFUSED ✳ END OF MODULE SKIP IF MALE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
217	Including yourself, in total, how many wives or live-in partners does your husband or partner have?	NUMBER OF WIVES OR LIVE-IN PARTNERS ___ DON'T KNOW = -8 REFUSE TO ANSWER = -9	SKIP IF MALE
MODULE 3: REPRODUCTION			
Interviewer says: "Now I would like to ask you questions about your pregnancies and your children."			**MALE ✳ 347**
301	How many times have you been pregnant including a current pregnancy? ENTER '0' IF NONE.	NUMBER OF TIME(S) ___ DON'T KNOW = -8 REFUSED = -9	NONE, DK, REFUSED ✳ 347
302	Have you ever had a pregnancy that resulted in a live birth? A live birth is when the baby shows signs of life, such as breathing, beating of the heart or movement.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 345
303	How many live births have you had since the 1st of January, 2014? ENTER '0' IF NONE.	NUMBER OF CHILDREN ___ DON'T KNOW = -8 REFUSED = -9	NONE, DK, REFUSED ✳ 345 [[YEAR IS SURVEY YEAR – 3 YEARS]]
Interviewer says: "Now I would like to ask you some questions about the last pregnancy that resulted in a live birth since the 1st of January, 2014."			
304	Did your last pregnancy result in birth to twins or more?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REF ✳ 307
305	What is the name of the [INSERT ORDER OF BIRTH] born child from your last pregnancy that resulted in a live birth? IF THE CHILD WAS NOT NAMED BEFORE DEATH, INPUT BIRTH 1	NAME _____	WILL BE REPEATED FOR EACH MULTIPLE BIRTH
306	Was there another multiple born alive?	YES = 1 NO = 2	
307	What is the name of the child from your last pregnancy that resulted in a live birth? A live birth is when the baby shows signs of life, such as breathing, beating of the heart or movement. IF THE CHILD WAS NOT NAMED BEFORE DEATH, INPUT BIRTH 1.	NAME _____	
308	When you were pregnant with [NAME], did you visit a health facility for antenatal care?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO ✳ 310 DK, REFUSED ✳ 323
309	When you were pregnant with [NAME], how many times did you visit a health facility for antenatal care? RECORD THE NUMBER OF VISITS REPORTED	NUMBER OF VISITS ___ DON'T KNOW = -8 REFUSED = -9	ALL ✳ 311

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
310	What is the main reason you did not visit a clinic for antenatal care when you were pregnant with [NAME]?	CLINIC WAS TOO FAR AWAY = 1 COULD NOT TAKE TIME OFF WORK/TOO BUSY = 2 COULD NOT AFFORD TO PAY FOR THE VISIT = 3 DID NOT TRUST THE CLINIC STAFF = 4 RECEIVED CARE AT HOME = 5 DID NOT WANT AN HIV TEST DONE = 6 HUSBAND/FAMILY WOULD NOT LET ME GO = 7 USED TRADITIONAL BIRTH ATTENDANT/HEALER = 8 COST OF TRANSPORT = 9 RELIGIOUS REASONS = 10 DID NOT THINK IT WAS IMPORTANT=11 WAS TOO SICK TO ATTEND ANC=12 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL ✳ 323
Interviewer says: "I will now be asking you questions on HIV testing. Please remember that your responses will be kept confidential and will not be shared with anyone else."			
311	Have you ever tested for HIV before your pregnancy with [NAME]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 314
312	Did you test positive for HIV before your pregnancy with [NAME]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 314
313	At the time of your first antenatal care visit when you were pregnant with [NAME], were you taking ARVs, that is, antiretroviral medications to treat HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES ✳ 323 NO, DK, REFUSED ✳ 321 ELECTRONIC AID IF DON'T KNOW
314	During any of your visits to the antenatal care clinic when you were pregnant with [NAME], were you offered an HIV test?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
315	Were you tested for HIV during any of your antenatal care clinic visits when you were pregnant with [NAME]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF YES ✳ 317 IF DK, REFUSED ✳ 317
316	What is the main reason you were not tested for HIV during antenatal care with [NAME]?	DID NOT WANT AN HIV TEST DONE /DID NOT WANT TO KNOW MY STATUS = 1 DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY = 2 AFRAID OTHERS WOULD KNOW ABOUT TEST RESULTS = 3 DID NOT NEED TEST/LOW RISK = 4 TEST WAS NOT AVAILABLE = 5 DID NOT HAVE MONEY = 6 WAITING TIME TOO LONG = 7 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
317	Were you tested for HIV outside of an antenatal care visit when you were pregnant with [NAME]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF 315 & 317 = NO, DK, REFUSED ✳ 323

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
318	Where were you tested for HIV during your pregnancy with [NAME]? SELECT ALL THAT APPLY.	MATERNITY CLINIC = A CCC/PSC (HIV CLINIC) = B OTHER CLINIC = C LABORATORY = D VCT = E OUTREACH=F MOBILE CLINIC=G COMMUNITY/HOMESTEAD=H OTHER (SPECIFY) = X DON'T KNOW = Y REFUSED = Z	ALL ✳ 320
319	How many times did you test for HIV during your pregnancy with [NAME]?	NUMBER OF TIMES_____ DON'T KNOW = -8 REFUSED = -9	
320	What was the result of your last HIV test during your pregnancy with [NAME]?	POSITIVE = 1 NEGATIVE = 2 INCONCLUSIVE= 3 DID NOT RECEIVE RESULTS = 4 DON'T KNOW = -8 REFUSED = -9	NEGATIVE, UNK, NO RESULTS, DK, REF ✳ 323
321	Did you take ARVs during your pregnancy with [NAME]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES, DK, REFUSED ✳ 323
322	What was the main reason you did not take ARVs while you were pregnant with [NAME]?	WAS NOT PRESCRIBED = 1 I FELT HEALTHY/NOT SICK = 2 COST OF MEDICATIONS = 3 COST OF TRANSPORT = 4 RELIGIOUS REASONS = 5 WAS TAKING TRADITIONAL MEDICATIONS = 6 MEDICATIONS OUT OF STOCK = 7 DID NOT WANT PEOPLE TO KNOW HIV STATUS = 8 DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY = 9 FEAR OF SIDE EFFECTS=10 REFERRED TO ANOTHER FACILITY AND WAS UNABLE TO GO=11 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
323	Where did you give birth to [NAME]?	AT HOME = 1 AT A HEALTH FACILITY = 2 IN TRANSIT = 3 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	HOME, TRANSIT, OTH, DK, REFUSED ✳ 333
324	Were you offered an HIV test during labor?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF HIV POSITIVE
325	Did you test for HIV during labor?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 333 SKIP IF HIV POSITIVE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
326	What was the result of that test?	POSITIVE = 1 NEGATIVE = 2 INCONCLUSIVE=3 DID NOT RECEIVE RESULTS = 4 DON'T KNOW = -8 REFUSED = -9	NEG, UNK/INDET, NO RESULTS, DK, REFUSED ✳ 333 SKIP IF HIV POSITIVE
327	During labor, were you offered ARVs to protect [NAME] against HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF ALREADY ON ARVS.
328	During labor, did you take ARVs to protect [NAME] against HIV?	YES = 1 NO=2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 333 ELECTRONIC AID IF DON'T KNOW. SKIP IF ALREADY ON ARVS.
329	Did you continue to take the ARVs after delivery?	YES = 1 NO= 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF ALREADY ON ARVS.
330	After delivery, did you visit a facility for postnatal care? The post-natal period is six weeks after delivery.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED SKIP 333
331	Were you offered an HIV test during any postnatal visit to facility? Post-natal visits would be those within the first 6 weeks following your delivery.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
332	How many times did you test for HIV after delivery during postnatal care? RECORD THE NUMBER OF TIMES. IF NOT TESTED, RECORD '0'.	NUMBER OF TIMES_____ DON'T KNOW = -8 REFUSED = -9	
333	When did you give birth to [NAME]? PROMPT IF REQUIRED: "Please give your best guess."	DAY _____ DON'T KNOW DAY= -8 REFUSED DAY= -9 MONTH _____ DON'T KNOW MONTH= -8 REFUSED MONTH= -9 YEAR _____ DON'T KNOW YEAR=-8 REFUSED YEAR= -9	
334	Is [NAME] still alive?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES, DK, REFUSED ✳ 337 IF MULTIPLE BIRTH ASK 334-344 FOR EACH CHILD.
335	How old was [NAME] when he/she died? KEY '0' IF CHILD WAS LESS THAN ONE YEAR OLD.	YEARS ____ DON'T KNOW = -8 REFUSED = -9	>0, DK, REF ✳ 340
336	How old was [NAME] in months when he/she died? KEY '0' IF LESS THAN ONE MONTH OLD.	MONTHS _____ DON'T KNOW = -8 REFUSED = -9	ALL ✳ 340

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
337	Is [NAME] living with you?	YES = 1 NO = 2	NO ✳ 340
338	RECORD HOUSEHOLD LINE NUMBER OF CHILD RECORD '0' IF CHILD NOT LISTED IN HOUSEHOLD	HOUSEHOLD LINE NUMBER:____	
339	Did [NAME] take any ARVs to stop [him/her] from getting HIV infection? This would be before [NAME]'s first HIV test.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF MOM DID NOT TEST POSITIVE
340	Did you ever breastfeed [NAME]?	YES = 1 NO, NEVER BREASTFED = 2 NO, CHILD NOT ALIVE = 3 DON'T KNOW = -8 REFUSED = -9	NO, NOT ALIVE, DK, REFUSED ✳ 345
341	For how long did you breastfeed [NAME]? ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN WEEKS OR IN MONTHS. CODE '00' IF LESS THAN 1 WEEK.	WEEKS ___ MONTHS ___ STILL BREASTFEEDING = 96 DON'T KNOW = -8 REFUSED = -9	WEEKS, MONTHS, DK, R ✳
342	How did you feed (NAME) when they were 0-6 months?	EXCLUSIVE BREAST FEEDING= 1 BREAST FEEDING AND SUBSTITUTES= 2 BREAST-MILK SUBSTITUTES= 3 FAMILY DIET= 4 COMPLEMENTARY FEEDS=5 OTHERS = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	EXCLUSIVE, DK, REFUSED ✳ 342
343	What are the reasons (NAME) was given food/drinks other than breast milk? Anything else? RECORD ALL MENTIONED	NOT ENOUGH BREAST MILK=A BABY CRIED TOO MUCH=B CULTURAL REASONS=C WORK RELATED OBLIGATIONS=D WEATHER TOO HOT=E FIRST MILK NOT GOOD FOR BABIES=F I WAS AFRAID OF INFECTING MY BABY WITH HIV=G OTHERS=X (SPECIFY) _____ DON'T KNOW = -8 REFUSED = -9	
344	Thank you for the information regarding [NAME]. RETURN TO CHILDALIVE* FOR EACH VALUE OF PRGTWINNAME		
Interviewer says: "Now I would like to ask you about current pregnancies."			
345	Are you currently pregnant?	YES= 1 NO= 2 DON'T KNOW/UNSURE= -8 REFUSED= -9	YES, DK, REFUSED ✳ END OF MODULE
Interviewer says: "I will now ask you about family planning."			
346	Would you like to have a/another child?	YES= 1 NO= 2 UNDECIDED= 3 DON'T KNOW= -8 REFUSED= -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
347	Are you or your partner currently doing something or using any method to delay or avoid getting pregnant?	YES= 1 NO= 2 NOT SEXUALLY ACTIVE= 3 DON'T KNOW= 8 REFUSED= 9	IF NO, NOT SEXUALLY ACTIVE, DK, REFUSED ✳ NEXT MODULE AS APPROPRIATE
348	Which methods are you or your partner using? SELECT ALL THAT APPLY	FEMALE STERILIZATION=A MALE STERILIZATION=B PILL=C IUC/COIL=D INJECTIONS=E IMPLANT=F CONDOM=G FEMALE CONDOM=H RHYTHM/NATURAL METHODS=I WITHDRAWAL=J NOT HAVING SEX=K OTHERS=X (SPECIFY) _____ DON'T KNOW=Y REFUSED=Z	
MODULE 4: CHILDREN			
THE HOUSEHOLD SCHEDULE NOTED THAT [NAME OF PARTICIPANT] WILL FILL OUT THE CHILDREN'S MODULE FOR [NUMBER OF CHILDREN]. 0-14 YEARS **I am going to ask you a number of questions about your child/children regarding their health and where they get their health services. We will ask you about these children:** **LIST OF HOUSEHOLD MEMBERS FOR DISPLAY ONLY, DO NOT SELECT** **[LIST OF CHILDREN]**			
Interviewer says: "Now I am going to ask you questions for [NAME]." **THE CHILD NAMED [NAME] WAS LISTED WITH LINE NUMBER [INSERT HH LINE NUMBER] IN THE HOUSEHOLD LISTING.**			
401	How old was (NAME) at his/her last birthday? KEY '0' IF CHILD IS LESS THAN ONE YEAR OLD AT PRESENT.	YEARS_____ DON'T KNOW =-8 REFUSED = -9	> DK, REF ✳ 403
402	How old was [NAME] in months?	MONTHS_____ DON'T KNOW =-8 REFUSED = -9	
403	Is [NAME] a boy or girl?	BOY = 1 GIRL = 2 DON'T KNOW = -8 REFUSED = -9	
404	Is [NAME] enrolled in school?	YES = 1 NO, NOT CURRENTLY ENROLLED = 2 NO, TOO YOUNG TO BE IN SCHOOL = 3 DON'T KNOW = -8 REFUSED = -9	YES, YOUNG, DK, REFUSED ✳ 410
405	Why is (NAME) not in school?	CHILD WAS TOO SICK TO ATTEND SCHOOL=A IT IS NOT SAFE TO TRAVEL TO SCHOOL=B IT IS NOT SAFE IN SCHOOL=C CHILD DOES NOT LIKE/WANT TO GO TO SCHOOL=D HELPS TO LOOK AFTER FAMILY=E CHILD HAS TO WORK=F NO MONEY FOR SCHOOL FEES, AND TRANSPORT=G SCHOOL IS TOO FAR AWAY=H HAS A CHILD OR IS PREGNANT (GIRLS ONLY) =I OTHERS=X (SPECIFY) _____ DON'T KNOW = -8 REFUSED = -9	ALL ✳ 408

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
406	What is the highest level of school [NAME] has attended?	PRE-PRIMARY = 1 PRIMARY = 2 SECONDARY=3 DON'T KNOW = -8 REFUSED = -9	DK, REF ✳ 410
407	What CLASS/GRADE is [NAME] in now?	NURSERY PRESCHOOL =1 PRIMARY CLASS 1 =2 PRIMARY CLASS 2 =3 PRIMARY CLASS 3 =4 PRIMARY CLASS 4 =5 PRIMARY CLASS 5 =6 PRIMARY CLASS 6 =7 PRIMARY CLASS 7=8 PRIMARY CLASS 8 =9 SECONDARY FORM 1 =10 SECONDARY FORM 2 =11 SECONDARY FORM 3 =12 SECONDARY FORM 4= 13 DON'T KNOW = -8 REFUSED = -9	ALL ✳ 410
408	Did [NAME] attend school during the previous school year?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REF ✳ 410
409	What class/form was [NAME] during the previous school year?	NURSERY PRESCHOOL =1 PRIMARY CLASS 1 =2 PRIMARY CLASS 2 =3 PRIMARY CLASS 3 =4 PRIMARY CLASS 4 =5 PRIMARY CLASS 5 =6 PRIMARY CLASS 6 =7 PRIMARY CLASS 7=8 PRIMARY CLASS 8 =9 SECONDARY FORM 1 =10 SECONDARY FORM 2 =11 SECONDARY FORM 3 =12 SECONDARY FORM 4= 13 DON'T KNOW = -8 REFUSED = -9	
410	Is [NAME] circumcised? Circumcision is the complete removal of the foreskin from the penis. If you feel comfortable, I can show you a picture of a completely circumcised penis.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF FEMALE CHILD. NO, DK, REF ✳ 412 ELECTRONIC AID IF REQUESTED.
411	Who circumcised [NAME]?	HEALTH CARE WORKER = 1 TRADITIONAL PRACTITIONER / CIRCUMCISER =2 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSE TO ANSWER=-9	SKIP IF FEMALE CHILD.
412	Has [NAME] ever been tested for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES ✳ 414 DK, REFUSED ✳ 436

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
413	Why has [NAME] never been tested for HIV? SELECT ALL THAT APPLY.	DID NOT PERCEIVE NEED = A DON'T KNOW WHERE TO TEST = B TEST COSTS TOO MUCH = C TRANSPORT COSTS TOO MUCH = D TOO FAR AWAY = E AFRAID OTHERS WILL KNOW ABOUT TEST RESULTS = F DON'T NEED TEST/LOW RISK = G DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY = H AFRAID SPOUSE/PARTNER/FAMILY WILL KNOW RESULTS = I DON'T WANT TO KNOW CHILD HAS HIV = J CANNOT GET TREATMENT FOR HIV = K TEST KITS NOT AVAILABLE = L RELIGIOUS REASONS = M NEVER OFFERED=N OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	ALL ✳ 436
414	What month and year was [NAME]'s last HIV test done?	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	DATE RESTRAINTS
415	What was [NAME]'s last HIV test result?	POSITIVE = 1 NEGATIVE = 2 INCONCLUSIVE = 3 DID NOT RECEIVE RESULTS = 4 DON'T KNOW = -8 REFUSED = -9	IF NEG, UNK/INDET, DID NOT RECEIVE, DK, REFUSED ✳ 436
416	What was the month and year of [NAME]'s first HIV positive test result? This will be the very first HIV positive test result that you have received. PROBE TO VERIFY DATE: "Please give your best guess."	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
417	Has [NAME] ever received HIV medical care from a health care worker?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 436
418	Has [NAME] currently linked and enrolled to receive HIV care from a health facility? IF THE PARTICIPANT SAYS YES, ASK TO SEE THE CHILD'S HIV CLINIC CARD (CCC YELLOW CARD) OR BOTTLE OF ARV PILLS	YES-HAS SHOWN PROOF = 1 YES- NO PROOF PROVIDED =2 NO = 3 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 420
419	What is [NAME] current HIV Clinic Number (CCC Yellow Card Number)	SPECIFY: _____ CCC YELLOW CARD NOT SHOWN =96 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
420	What is the main reason why [NAME] has never seen a health care worker for HIV medical care?	FACILITY IS TOO FAR AWAY = 1 I DON'T KNOW WHERE TO GET HIV MEDICAL CARE FOR CHILD = 2 COST OF CARE = 3 COST OF TRANSPORT = 4 I DON'T THINK CHILD NEEDS IT, HE/SHE IS NOT SICK = 5 I FEAR PEOPLE WILL KNOW THAT CHILD HAS HIV IF I TAKE HIM/HER TO A CLINIC = 6 RELIGIOUS REASONS = 7 CHILD IS TAKING TRADITIONAL MEDICINE = 8 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL ✳ 424
421	What month and year did [NAME] first see a health care worker for HIV medical care? PROBE TO VERIFY DATE.	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH= -9 YEAR _____ DON'T KNOW YEAR =-8 REFUSED YEAR = -9	
422	What month and year did [NAME] last see a health care worker for HIV medical care?	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH= -9 YEAR _____ DON'T KNOW YEAR =-8 REFUSED YEAR = -9	IF <7 MONTHS, DK, REFUSED, MISSING DATE ✳ 424
423	What is the main reason for [NAME] not seeing a health care worker for HIV medical care for more than 6 months?	FACILITY IS TOO FAR AWAY = 1 I DON'T KNOW WHERE TO GET HIV MEDICAL CARE FOR CHILD = 2 COST OF CARE = 3 COST OF TRANSPORT = 4 I DON'T THINK CHILD NEEDS IT, HE/SHE IS NOT SICK = 5 I FEAR PEOPLE WILL KNOW THAT CHILD HAS HIV IF I TAKE HIM/HER TO A CLINIC = 6 RELIGIOUS REASONS = 7 CHILD IS TAKING TRADITIONAL MEDICINE = 8 NO APPOINTMENT SCHEDULED/DID NOT MISS MOST RECENT APPOINTMENT= 9 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
424	Has (NAME) ever had a CD4 count test? The CD4 count test tells you how sick you are with HIV.	YES=1 NO=2 DON'T KNOW= -8 REFUSED= -9	NO, DK, REFUSED ✳ 429
425	What month and year was (NAME) last tested for his/her CD4 count?	MONTH_____ DON'T KNOW MONTH= -8 REFUSED= -9 YEAR_____ DON'T KNOW YEAR= -8 REFUSED= -9	NEVER IN CARE ✳ 436

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
426	Did (NAME) ever have a viral load test? This is a test that measures how much HIV is in your blood.	YES=1 NO=2 DON'T KNOW= -8 REFUSED= -9	NO, DK, REFUSED ✳ 429 IN HIV CARE OR TREATMENT ONLY
427	When did (NAME) last have a viral load test?	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	IN HIV CARE OR TREATMENT ONLY
428	Were you told the result of (NAME)'s viral load test?	YES=1 NO=2 DON'T KNOW= -8 REFUSED= -9	IN HIV CARE OR TREATMENT ONLY
429	Has [NAME] ever taken ARVs, that is, antiretroviral medications to treat his/her HIV infection?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES ✳ 431 DK, REFUSED ✳ 435 ELECTRONIC AID IF DON'T KNOW
430	What is the main reason [NAME] has never taken ARVs?	CHILD IS NOT ELIGIBLE FOR TREATMENT=1 HEALTH CARE PROVIDER DID NOT PRESCRIBE = 2 HIV MEDICINES NOT AVAILABLE = 3 DO NOT THINK CHILD NEEDS IT, HE/SHE IS NOT SICK = 4 COST OF MEDICATIONS = 5 COST OF TRANSPORT = 6 RELIGIOUS REASONS = 7 CHILD IS TAKING TRADITIONAL MEDICATIONS = FEAR OF PEOPLE KNOWING=10 CHILD DID NOT LIKE TASTE OF MEDICINE= OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL ✳ 435
431	What month and year did [NAME] first start taking ARVs? PROBE TO VERIFY DATE.	MONTH = _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR = _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
432	Is [NAME] currently taking ARVs, that is, antiretroviral medications? By currently, I mean that [NAME] may have missed some doses but [NAME] is still taking ARVs.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES ✳ 434 DK, REFUSED ✳ 435

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
433	Can you tell me the main reason why [NAME] is not currently taking ARVs?	I HAVE TROUBLE GIVING CHILD A TABLET EVERYDAY = 1 CHILD HAD SIDE EFFECTS/RASH = 2 FACILITY/PHARMACY TOO FAR AWAY TO GET MEDICATION REGULARLY = 3 COST OF MEDICATIONS = 4 COST OF TRANSPORT = 5 CHILD IS HEALTHY/, HE/SHE IS NOT SICK = 6 FACILITY WAS OUT OF STOCK = 7 RELIGIOUS REASONS= 8 CHILD IS TAKING TRADITIONAL MEDICATIONS = 9 MEDICINE BITTER=10 THERE ARE TOO MANY PILLS=11 OTHER =96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL ✳ 435
434	People sometimes forget to take all their ARVs every day. In the last 30 days, how many days has [NAME] missed taking any ARV pills? CODE '00' IF NONE.	DAYS _____ DON'T KNOW = -8 REFUSED = -9	
435	Is [NAME] currently taking Septrin, cotrimoxazole or Dapsone? Septrin, cotrimoxazole, or Dapsone is a medicine recommended for people with HIV, even if they have not started treatment for HIV. It helps prevent certain infections but it is not treatment for HIV. By currently, I mean that [NAME] may have missed some doses but is still taking Septrin, cotrimoxazole or Dapsone	YES = 1 NO = 2 I DON'T KNOW WHAT IT IS = 3 REFUSED = -9	ELECTRONIC AID IF DON'T KNOW
436	Has [NAME] ever visited a clinic for tuberculosis (TB) for diagnosis or treatment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
437	Have you ever been told by a health care worker that [NAME] had TB?	YES = 1 NO=2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 441
438	Was [NAME] ever treated for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 441
439	Is [NAME] currently on treatment for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 444
440	The last time [NAME] was treated for TB, did [NAME] complete at least 6 months of treatment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF 415 = NEG, UNK/INDET, DID NOT RECEIVE, DK, REFUSED ✳ 444

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
441	Has (NAME) ever taken a medicine called Isoniazid, IPT or INH to prevent developing TB? Isoniazid is medication that prevents TB. It is given to people with HIV or people who are in contact with someone with TB.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO DK REFUSED SKIP SKIP IF NOT HIV EXPOSED OR HIV POSITIVE
442	Is (NAME) currently taking INH? By currently, I mean that (NAME) may have missed some doses but is still taking INH.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF NOT EXPOSED OR HIV POSITIVE
443	How many months has (NAME) taken INH?	NUMBER OF MONTHS _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF NOT HIV EXPOSED OR POSITIVE
444	Thank you for the information about [NAME].		IF RESPONDENT HAS ANOTHER CHILD AGED 014 ✳ RETURN TO START OF MODULE 4
MODULE 5: MALE CIRCUMCISION			
Interviewer says: "I will be asking a few questions about circumcision. Circumcision is the complete removal of the foreskin from the penis. If you feel comfortable, I can show you a picture of a completely circumcised penis."			ELECTRONIC AID IF REQUESTED.
501	Some men are uncomfortable talking about circumcision but it is important for us to have this information. Some men are circumcised. Are you circumcised?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED=9	YES ✳ 503 NO ✳ 502 DK, REF ✳ END OF MODULE
502	Are you planning to get circumcised?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED= -9	ALL ✳ END OF MODULE
503	How old were you when you were circumcised? IF LESS THAN ONE YEAR, CODE '0'. PROMPT IF REQUIRED: Please give your best guess.	AGE IN YEARS _____ DON'T KNOW = -8 REFUSED= -9	
504	Who did the circumcision?	HEALTH CARE WORKER = 1 TRADITIONAL PRACTITIONER / CIRCUMCISER =2 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED= -9	
MODULE 6: SEXUAL ACTIVITY			
Interviewer says: "In this part of the interview, I will be asking questions about your sexual relationships and practices. These questions will help us have a better understanding of how they may affect your life and risk for HIV. **Let me assure you again that your answers are completely confidential and will not be shared with anyone. If there are questions that you do not want to answer, we can go to the next question."**			
601	How old were you when you had vaginal sex for the very first time? Vaginal sex is when a penis enters a vagina.	AGE IN YEARS _____ NEVER HAD VAGINAL SEX = -7 DON'T KNOW = -8 REFUSED = -9	NEVER HAD VAGINAL SEX ✳ 604

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
602	Have you had vaginal sex in the last 12 months?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED= -9	
603	Did you or your partner use a condom the last time you had vaginal sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED= -9	
604	People have sex in different ways. Some have vaginal sex. Some have anal sex. Anal sex is when a penis enters a person's anus. Have you heard of anal sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED= -9	NO, DK, REF ✳ 608
605	Have you ever had anal sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED= -9	NO, DK, REFUSED ✳ 608
606	Have you had anal sex in the last 12 months?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED= -9	
607	Did you or your partner use a condom the last time you had anal sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED= -9	
608	People often have sex with different people over their lifetime. In total, with how many different people have you had sex in your lifetime? PROMPT IF REQUIRED: Please give your best guess. IF NUMBER OF PARTNERS IS GREATER THAN 100, WRITE ' 100'.	NUMBER OF SEXUAL PARTNERS IN LIFETIME _____ DON'T KNOW = -8 REFUSED = -9	IF 00 PARTNERS ✳ END OF MODULE
609	In total, with how many different people have you had sex in the last 12 months? IF NONE CODE '0'. IF NUMBER OF PARTNERS IS GREATER THAN 100, WRITE ' 100'.	NUMBER OF SEXUAL PARTNERS IN LAST 12 MONTHS _____ DON'T KNOW = -8 REFUSED = -9	IF 0 PARTNERS IN LAST 12 MONTHS ✳ END OF MODULE

Interviewer says: "Now I would like to ask you some questions about the people you have had sex with in the last 12 months. Let me assure you again that your answers are completely confidential and will not be told to anyone. I will first ask you about the most recent person you had sex with."

ASK ONLY ABOUT THE LAST 3 PERSONS THE PARTICIPANT HAS HAD SEX WITH.

610	Does the person you had sex with live in this household?	YES = 1 NO = 2	NO ✳ 612
611	Please select the name below from the household membership list. Please identify the person you had sex with.	[LIST OF PERSONS FROM HOUSEHOLD]] ✳ PARTRELATION NOT LISTED IN HOUSEHOLD = 96 ✳ PARTINT	LISTED ✳ 613
612	I would like to ask you for the initials of this person so I can keep track. They do not have to be the actual initials of this person.	INITIALS_____	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
613	What is your relationship with (INITIALS)?	HUSBAND/WIFE = 1 LIVE-IN PARTNER = 2 PARTNER, NOT LIVING WITH RESPONDENT = 3 EX-SPOUSE/EX-PARTNER = 4 FRIEND/ACQUAINTANCE = 5 SEX WORKER = 6 SEX WORKER CLIENT =7 STRANGER = 8 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
614	Is (INITIALS) male or female?	MALE = 1 FEMALE = 2 DON'T KNOW = -8 REFUSED = -9	
615	How old is (INITIALS)? PROMPT IF REQUIRED: Please give your best guess.	AGE IN YEARS _____ DON'T KNOW = -8 REFUSED = -9	
616	The last time you had sex with (INITIALS) was a condom used?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
617	Did you enter into a sexual relationship with (INITIALS) because (INITIALS) provided you with or you expected that (INITIALS) would provide you gifts, help you to pay for things, or help you in other ways?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 620 SKIP IF SEX WORKER OR CLIENT
618	In the last 12 months, what have you received from (INITIALS)? READ RESPONSES ALOUD. SELECT ALL THAT APPLY.	DID NOT RECEIVE ANYTHING = A MONEY = B FOOD = C SCHOOL FEES = D EMPLOYMENT = E GIFTS/FAVORS = F TRANSPORT = G SHELTER/RENT = H PROTECTION = I OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	SKIP IF SPOUSE, LIVEIN PARTNER, SEX WORKER OR CLIENT
619	The last time you had sexual intercourse with (INITIALS), did either of you drink alcohol beforehand?	ONLY I WAS DRINKING = 1 ONLY PARTNER WAS DRINKING= 2 BOTH WERE DRINKING= 3 NEITHER WAS DRINKING = 4 DON'T KNOW = -8 REFUSED = -9	
620	Do you expect to have sex with (INITIALS) again?	YES =1 NO =2 DON'T KNOW = -8 REFUSED = -9	
621	Have you ever taken an HIV test with (INITIALS) where you both received the test results together?	YES =1 NO =2 DON'T KNOW = -8 REFUSED = -9	YES, DK, REFUSED ✳ 623

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
622	What is the main reason you have never tested for HIV with (INITIALS) as a couple? READ RESPONSES ALOUD.	NOT A PARTNER OR COUPLE = 1 NEVER DISCUSSED = 2 WE ARE NOT AT RISK FOR HIV = 3 PARTNER REFUSED = 4 I REFUSED = 5 WE KNOW OUR STATUS = 6 FEAR = 7 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
623	Does (INITIALS) know your HIV status? HIV status could mean you are HIV negative or HIV positive.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
624	What is the HIV status of (INITIALS)? READ RESPONSES ALOUD	THINK HE/SHE IS POSITIVE = 1 HE/SHE TOLD ME HE/SHE IS POSITIVE = 2 POSITIVE, TESTED TOGETHER = 3 THINK HE/SHE IS NEGATIVE = 4 HE/SHE TOLD ME HE/SHE IS NEGATIVE = 5 NEGATIVE, TESTED TOGETHER=6 DON'T KNOW STATUS = 7 REFUSED = -9	
625	I will now ask you about the person you have had sex with previous to (INITIALS).		
MODULE 7: SOCIAL NORMS, INTENTION TO ABSTAIN, SELF-EFFICACY AND ASSERTIVENESS			
Interviewer says: "Now I would like to ask you some questions about the future."			SKIP IF AGE >= 20 YEARS
701	Will you have sex before you get married?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF EVER HAD SEX = YES OR 201 = YES
702	Do you think all, many, some, a few or none of your friends are having sex?	ALL = 1 MANY = 2 SOME = 3 A FEW = 4 NONE = 5 DON'T KNOW/DON'T KNOW WHAT SEX IS = -8 REFUSED = -9	
703	Do you feel pressured by your boyfriend/girlfriend to have sex?	YES = 1 NO = 2 DON'T HAVE BOYFRIEND/GIRLFRIEND=3 DON'T KNOW = -8 REFUSED = -9	
704	Do you feel pressured by your friends to have sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
MODULE 8: HIV/AIDS KNOWLEDGE AND ATTITUDES			
Interviewer says: "Now I will ask you questions on your knowledge of HIV."			
801	Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	
802	Can a person get HIV from mosquito bites?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
803	Can a person reduce their risk of getting HIV by using a condom every time they have sex?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	
804	Can a person get HIV by sharing food with someone who has HIV?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	
805	Can a healthy-looking person have HIV?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	
Interviewer says: "Now I would like to ask you some questions about people's attitudes towards people living with HIV."			
806	Would you buy fresh vegetables from a shop keeper or vendor if you knew the person had HIV?	YES = 1 NO = 2 DON'T KNOW/NOT SURE/DEPENDS = -8 REFUSED = -9	
807	Do you think children living with HIV should be allowed to attend school with children who do not have HIV?	YES = 1 NO = 2 DON'T KNOW/NOT SURE/DEPENDS = -8 REFUSED = -9	
MODULE 9: HIV PREVENTION INTERVENTIONS			
			SKIP IF AGE >= 25 YEARS
901	Have you ever heard of HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ MODULE 13
902	From where have you heard about HIV? PROBE: Anywhere else? RECORD ALL MENTIONED	SCHOOLS/TEACHERS = A PARENTS/GUARDIAN/FAMILY = B FRIENDS = C RELIGIOUS LEADERS = D INTERNET = E MOBILE PHONE = F HEALTH CARE WORKERS = G TELEVISION/FILM = H RADIO = I COMMUNITY HEALTH WORKERS = J OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
903	Have you ever taken part in any of the program/activity where HIV prevention programs is taught? SHOW PARTICIPANT LOGO FOR EACH PROGRAM READ RESPONSES ALOUD. SELECT ALL THAT APPLY	NONE = A FAMILIES MATTER PROGRAM = B SISTER TO SISTER = C YOUTH FOR YOU = D YOUTH FOR REAL = E POSITIVE TALK = F AIDS ACTION CLUB = G TUSEME SCHOOL CLUB = H FEMINA-HIP YOUTH CLUBS = I OTHER SCHOOL CLUBS = J SHUGA RADIO LISTENING CLUB = K MABINTI TUSHIKE HATAMU = L RIGHTS OF PASSAGE-ROPS = M HOPES/MENTORSHIL = N DREAMS=O OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	"NONE", "DON'T KNOW', "REFUSED" CANNOT BE SELECTED WITH ANY OTHER CATEGORY. NONE, DK, REFUSED ✳ 904

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
904	Where did you take part in this/these program(s)? SELECT ALL THAT APPLY	SCHOOL = A YOUTH CENTRE = B CLUB = C CAMP = D CHURCH = E MOSQUE = F TEMPLE = G COMMUNITY ACTIVITY = H OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
905	Have you ever discussed HIV with your parents or guardian?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF >=18 YEARS
MODULE 10: HIV TESTING			
Interviewer says: "I would now like to ask you some questions about HIV testing."			
1001	Have you ever tested for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES ✳ 1008 DK, REF ✳ END OF MODULE CONSTRAINT IF REPORTED TESTING
1002	Why have you never been tested for HIV? SELECT ALL THAT APPLY.	DON'T KNOW WHERE TO TEST = A TEST COSTS TOO MUCH = B TRANSPORT COSTS TOO MUCH = C TOO FAR AWAY = D AFRAID OTHERS WILL KNOW ABOUT TEST RESULTS = E DON'T NEED TEST/LOW RISK = F DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY = G AFRAID SPOUSE/PARTNER/FAMILY WILL KNOW RESULTS = H DON'T WANT TO KNOW I HAVE HIV = I CANNOT GET TREATMENT FOR HIV = J TEST KITS NOT AVAILABLE = K RELIGIOUS REASONS = L OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
1003	Have you seen a health care worker in a health facility in the last 12 months?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED AND 1001 = YES ✳ 1008 NO, DK, REFUSED AND 1001 = NO, DK, REFUSED ✳ END OF MODULE
1004	During any of your visits to the health facility in the last 12 months, did a health care worker offer you an HIV test?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED AND 1001 = NO, DK, REFUSED ✳ END OF MODULE
1005	Have you ever tested yourself for HIV in private using a self-test kit? With a self-test kit, you can test yourself for HIV at home. There are instructions on how to interpret the results.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 1009

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1006	What was the result of the last HIV self-test result that you conducted on yourself?	POSITIVE = 1 NEGATIVE = 2 INCONCLUSIVE = 3 DON'T KNOW = -8 REFUSED = -9	NEGATIVE, UNCERTAIN/ IN DETERMINATE, DON'T KNOW, REFUSED ✳ 1009
1007	Did you confirm this HIV-positive self-test result in a facility?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
1008	What month and year was your last HIV test?	MONTH _____ DON'T KNOW MONTH= -8 REFUSED MONTH= -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR= -9	
1009	Where was the last test done?	VCT IN HEALTH FACILITY = 1 MOBILE VCT = 2 AT HOME = 3 HEALTH CLINIC / FACILITY = 4 HOSPITAL OUTPATIENT CLINIC = 5 TB CLINIC = 6 STI CLINIC = 7 HOSPITAL INPATIENT WARD = 8 BLOOD DONATING CENTER = 9 ANC CLINIC = 10 COMPREHENSIVE CARE CENTER = 11 MATERNAL CHILD HEALTH) (MCH) = 12 VMMC=13 VCT STAND ALONE FACILITY = 14 OUTREACH=15 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	VCT FACILITY, HEALTH CLINIC, OUTPATIENT, TB, STI, INPATIENT, ANC, MCH, LAB ✳ 1010 ELSE ✳ 1013
1010	Was the clinic or facility where your last test was done public or private?	PUBLIC = 1 PRIVATE = 2 FAITH-BASED HEALTH FACILITY = 3 DON'T KNOW = -8 REFUSED = -9	
1011	During your last HIV test, were you satisfied with the services?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES, DK, R ✳ 1013
1012	What are the reasons why you were dissatisfied with the services? SELECT ALL THAT APPLY.	DELAY= A PROVIDER DID NOT EXPLAIN = B NO PRIVACY = C NOT COUNSELLED = D NOT GIVEN TIME TO ASK QUESTIONS = E OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
1013	What was the result of your last HIV test?	POSITIVE = 1 NEGATIVE = 2 INCONCLUSIVE = 3 DID NOT RECEIVE THE RESULT = 4 DON'T KNOW = -8 REFUSED = -9	IF NOT POSITIVE ✳ TB MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1014	Are you currently linked and enrolled to receive HIV care from a health facility? IF THE PARTICIPANT SAYS YES, Ask to see the client's HIV clinic card (CCC yellow card) or a bottle of ARV pills.	YES-HAS SHOWN PROOF = 1 YES- NO PROOF PROVIDED =2 NO = 3 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 1016
1015	What is your current HIV Clinic Number (CCC Yellow Card Number)	SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
1016	Where would you prefer to receive HIV testing services in the future?	VCT IN HEALTH FACILITY = 1 MOBILE VCT = 2 AT HOME = 3 HEALTH CLINIC / FACILITY = 4 HOSPITAL OUTPATIENT CLINIC = 5 TB CLINIC = 6 STI CLINIC = 7 HOSPITAL INPATIENT WARDS = 8 BLOOD DONATING CENTER = 9 ANC CLINIC = 10 COMPREHENSIVE CARE CENTER (CCC) = 11 MATERNAL CHILD HEALTH) (MCH) = 12 VMMC=13 VCT STAND ALONE FACILITY = 14 OUTREACH=15 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
1017	Do you think that your chances of getting HIV are no risk, small, moderate or great?	NO RISK AT ALL=1 SMALL=2 MODERATE=3 GREAT=4 DON'T KNOW= -8 REFUSED = -9	
1018	What was the month and year of your first HIV positive test result? This will be the very first HIV positive test result that you have received. PROBE TO VERIFY DATE. PROMPT IF REQUIRED: Please give your best guess.	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
1019	Of the following people, whom have you told that you are HIV positive? READ RESPONSES ALOUD. CHECK ALL THAT APPLY.	NO ONE = A SPOUSE/SEX PARTNER = B HEALTH CARE WORKER = C FRIEND = D FAMILY MEMBER = E OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1020	What is the reason you have not disclosed your HIV status? SELECT ALL THAT APPLY	HAVE DISCLOSED TO EVERYONE=A FEAR OF FAMILY REACTION=B FEARS OF SPOUSE REACTION=C FEAR OF WORK REACTION=D FEAR OF COMMUNITY REACTION=E FEAR OF NOT GETTING A PARTNER/ SPOUSE=F OTHERS = X (SPECIFY) _____ DON'T KNOW= -8 REFUSED= -9	
Interviewer says: "I would now like to ask about discrimination you may have experienced because you are HIV positive."			SKIP TO NEXT MODULE IF HIV NEGATIVE SKIP TO NEXT MODULE IF NO ONE KNOWS STATUS
1021	In the last 12 months have you experienced any of the following because of your HIV status? READ RESPONSES, SELECT ALL THAT APPLY	HEALTH CARE PROVIDER TALKING BADLY ABOUT YOU =A VERBALLY INSULTED HARASSED OR THREATENED=B PHYSICALLY ASSAULTED=C LOST YOUR JOB OR ANOTHER SOURCE OF INCOME=D DISMISSED OR PREVENTED FROM ATTENDING AN EDUCATIONAL INSTITUTION=E CHILD BEEN DISMISSED OR PREVENTED FROM ATTENDING AN EDUCATIONAL INSTITUTION=F BEEN FORCED TO CHANGE PLACE OF RESIDENCE/UNABLE TO RENT=G DON'T KNOW= -8 REFUSED= -9	
Interviewer says: "Now I would like to ask you questions about your experiences with health care providers."			SKIP TO END OF MODULE IF NOT HIV POSITIVE.
1022	In the last 12 months, when you sought health care in a facility where your HIV status is not known, did you feel you needed to hide your HIV status?	YES = 1 NO, NO NEED TO HIDE = 2 NO, DID NOT ATTEND HEALTH FACILITY IN LAST 12 MONTHS =3 DON'T KNOW = -8 REFUSED = -9	
1023	In the last 12 months, have you been denied health services including dental care, because of your HIV status?	YES = 1 NO = 2 NO ONE KNOWS MY STATUS = 3 DON'T KNOW = -8 REFUSED = -9	
Interviewer says: "Now I would like to ask you some questions about prep, or pre-exposure prophylaxis." **FOR HIV POSITIVES, CLARIFY THAT THESE ARE DRUGS THAT MIGHT HAVE BEEN TAKEN BEFORE THEY WERE DIAGNOSED WITH HIV.**			
1024	"PrEP" or pre-exposure prophylaxis, is daily medicine that can reduce your chance of getting HIV. Have you ever heard of PrEP before now?	YES=1 NO=2 DON'T KNOW= -8 REFUSED= -9	NO, DK, REFUSED ✳ 804
1025	Have you ever taken PrEP?	YES=1 NO=2 DON'T KNOW= -8 REFUSED= -9	NO, DK, REFUSED ✳ 804

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1026	Where did you get the PrEP?	PUBLIC HEALTH FACILITY=1 PRIVATE HEALTH FACILITY =2 P HARMACY=3 SEX PARTNER=4 FRIENDS=5 RESEARCH STUDY=6 INCLUDING FAITH-BASED HEALTH FACILITY = 7 OTHERS=96 (SPECIFY) _____ DON'T KNOW= -8 REFUSED= -9	
1027	People sometimes forget to take all of their drugs every day. In the last 30 days that you were on PrEP how many days have you/did you miss taking any of your PrEP pills? ENTER '0' IF NONE	NUMBER OF DAYS_____ STOPPED TAKING=88 DON'T KNOW= -8 REFUSED= -9	
Interviewer says: "Now I would like to ask you some questions about PEP, or post-exposure prophylaxis."			EXCLUDE ALL SELFIDENTIFIED HIV POSITIVES
1028	"PEP" or post-exposure prophylaxis, is daily medicine that can reduce your chance of getting HIV after exposure to someone of unknown HIV status, or exposure with someone who is HIV-infected. Have you ever heard of PEP before now?	YES=1 NO=2 DON'T KNOW= -8 REFUSED= -9	NO, DK, REFUSED ✳ 1101
1029	Have you ever taken PEP?	YES=1 NO=2 DON'T KNOW= -8 REFUSED= -9	NO ✳ 1101
1030	Have you taken PEP within the last 3 months?	YES=1 NO=2 DON'T KNOW= -8 REFUSED= -9	
MODULE 11: ATTITUDES TOWARD HIV DISCLOSURE			
Interviewer says: "Now I would like to ask you how much you agree or disagree with the following questions."			SKIP MODULE IF NOT HIV POSITIVE
1101	In general, disclosing HIV status to other people in my community can be helpful to me. Do you strongly agree, agree, disagree, or strongly disagree?	STRONGLY AGREE = 1 AGREE = 2 DISAGREE = 3 STRONGLY DISAGREE = 4 DON'T KNOW = -8 REFUSED = -9	
1102	Disclosing HIV status to others can be helpful to me for taking my ARVs regularly.	STRONGLY AGREE = 1 AGREE = 2 DISAGREE = 3 STRONGLY DISAGREE = 4 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 12: HIV STATUS, CARE AND TREATMENT			
Interviewer says: "Now I'm going to ask you more about your experience with HIV support, care and treatment."			SKIP TO NEXT MODULE IF NOT HIV POSITIVE
1201	After learning you had HIV, have you ever received HIV medical care from a health care worker? (HIV medical care includes both drugs for OI, INH, and ARVs)	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES ✳ 1203 DK, REFUSED ✳ END OF MODULE
1202	What is the main reason why you have never received HIV medical care from a health care worker?	FACILITY IS TOO FAR AWAY = 1 I DON'T KNOW WHERE TO GET HIV MEDICAL CARE = 2 COST OF CARE = 3 COST OF TRANSPORT = 4 I DO NOT NEED IT/I FEEL HEALTHY/NOT SICK = 5 I FEAR PEOPLE WILL KNOW THAT I HAVE HIV IF I GO TO A CLINIC = 6 RELIGIOUS REASONS = 7 I'M TAKING TRADITIONAL MEDICINE= 8 DO NOT TRUST THE STAFF/QUALITY OF CARE = 9 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	END OF MODULE AFTER THIS QUESTION
1203	What month and year did you first see a health care worker for HIV medical care? PROBE TO VERIFY DATE.	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
1204	What month and year did you last see a health care worker for HIV medical care?	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH= -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED = -9	IF <=3 MONTHS, DK, REFUSED ✳ 1206
1205	What is the main reason for not seeing a health care worker for HIV medical care for more than 3 months?	THE FACILITY IS TOO FAR AWAY = 1 I DON'T KNOW WHERE TO GET HIV MEDICAL CARE = 2 COST OF CARE = 3 COST OF TRANSPORT = 4 I DO NOT NEED IT/I FEEL HEALTHY/NOT SICK = 5 I FEAR PEOPLE WILL KNOW THAT I HAVE HIV IF I GO TO A CLINIC = 6 I'M TAKING TRADITIONAL MEDICINE= 7 RELIGIOUS REASONS = 8 NO APPOINTMENT SCHEDULED/DID NOT MISS MOST RECENT APPOINTMENT = 9 TRAVELING/AWAY FROM MY USUAL CLINIC = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
1206	Have you ever had a CD4 count test? The CD4 count tells you how sick you are with HIV.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 1208 NO, DK, REFUSED & NEVER IN HIV CARE ✳ END OF MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1207	What month and year were you last tested for your CD4 count?	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	NEVER IN HIV CARE ✳ END OF MODULE
1208	Have you ever taken ARVs, that is, antiretroviral medications to treat HIV infection?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	YES ✳ 1210 DK, REFUSED ✳ 1214
1209	What is the main reason you have never taken ARVs?	NOT ELIGIBLE FOR TREATMENT=1 HEALTH CARE PROVIDER DID NOT PRESCRIBE = 2 HIV MEDICINES NOT AVAILABLE = 3 I FEEL HEALTHY/NOT SICK = 3 COST OF MEDICATIONS = 4 COST OF TRANSPORT = 5 RELIGIOUS REASONS = 6 TAKING TRADITIONAL MEDICATIONS = 7 NOT ATTENDING HIV CLINIC = 8 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL ✳ 1214
1210	What month and year did you first start taking ARVs? PROBE TO VERIFY DATE.	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
1211	Are you currently taking ARVs, that is, antiretroviral medications? By currently, I mean that you may have missed some doses but you are still taking ARVs.	YES = 1 NO=2 DON'T KNOW = -8 REFUSED = -9	YES ✳ 1213 DK, REFUSED ✳ 1214
1212	Can you tell me the main reason why you are not currently taking ARVs?	I HAVE TROUBLE TAKING A TABLET EVERYDAY = 1 I HAD SIDE EFFECTS = 2 FACILITY TOO FAR AWAY FOR ME TO GET MEDICINE REGULARLY = 3 COST OF MEDICATIONS = 4 COST OF TRANSPORT = 5 I FEEL HEALTHY/NOT SICK =6 FACILITY WAS OUT OF STOCK = 7 RELIGIOUS REASONS = 8 TAKING TRADITIONAL MEDICATIONS = 9 OTHER=96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ALL ✳ 1214
1213	People sometimes forget to take all of their ARVs every day. In the last 30 days, how many days have you missed taking any of your ARV pills? CODE '00' IF NONE.	NUMBER OF DAYS _____ DON'T KNOW = -8 REFUSED = -9	
1214	Did you ever have a viral load test? This is a test that measures how much HIV is in your blood.	YES= 1 NO= 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 1217 IN HIV CARE OR TREATMENT ONLY.

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1215	When did you last have a viral load test?	MONTH_____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	IN HIV CARE OR TREATMENT ONLY.
1216	Were you told the result of your last viral load test?	YES= 1 NO= 2 DON'T KNOW = -8 REFUSED = -9	IN HIV CARE OR TREATMENT ONLY.
1217	When is your next clinic appointment for your HIV medical care?	1 MONTH = 1 3 MONTHS = 2 6 MONTHS = 3 OTHER = 4 (SPECIFY) _____ DON'T KNOW = -8 REFUSED = -9	IN HIV CARE OR TREATMENT ONLY.
1218	Have you ever attended a support group for people living with HIV?	YES= 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 1221
1219	In the last 12 months, how many times did you attend a support group? CODE '00' IF NONE.	NUMBER OF TIMES ___ DON'T KNOW = -8 REFUSED = -9	NONE, DK, REFUSED ✳ 1221
1220	Which of the following do you receive from the support group related to your HIV infection? READ EACH RESPONSE. SELECT ALL THAT APPLY.	NOTHING = A COUNSELING/HEALTHY LIVING MESSAGES = B REMINDED OF IMPORTANCE OF TAKING ARV REGULARLY = C REMINDED TO KEEP HIV APPOINTMENTS = D REFILLS OR PICKING UP ARV MEDICATIONS = E PSYCHOSOCIAL SUPPORT = F LIVELIHOOD/MATERIAL SUPPORT = G OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
Interviewer says: "Now I will ask you about HIV care and tuberculosis or TB."			NOT IN HIV CARE ✳ NEXT MODULE
1221	At your last HIV medical care visit, were you asked if you had any of the following TB symptoms? READ THE RESPONSES ALOUD. SELECT ALL THAT APPLY.	PERSISTENT COUGH = A FEVER = B NIGHT SWEATS = C WEIGHT LOSS = D I WAS NOT ASKED ANY OF THESE = E DON'T KNOW = Y REFUSED = Z	SKIP IF NOT IN HIV CARE
1222	In the last 12 months, have you experienced any of the following TB symptoms: cough, fever, night sweats and weight loss?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF NOT IN HIV CARE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 13: TUBERCULOSIS AND OTHER HEALTH ISSUES			
Interviewer says: "Now we will ask you about tuberculosis or TB."			
1301	Have you ever taken a medicine called Isoniazid, IPT or INH to prevent developing TB? Isoniazid is medication that prevents TB. It is given to people with HIV or people who are in contact with someone with TB.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 1304 SKIP IF NOT HIV POSITIVE
1302	Are you currently taking INH? By currently, I mean that you may have missed some doses but you are still taking INH.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 1304 SKIP IF NOT HIV POSITIVE
1303	How many months have you taken INH?	NUMBER OF MONTHS _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF NOT HIV POSITIVE
1304	Have you ever visited clinic for TB diagnosis or treatment?	YES = 1 NO=2 DON'T KNOW = -8 REFUSED = -9	
1305	Have you ever been told by a health care worker that you had TB?	YES = 1 NO=2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 1309
1306	Were you ever treated for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 1309
1307	Are you currently on treatment for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	DK, REFUSED ✳ 1309
1308	The last time you were treated for TB, did you complete at least 6 months of treatment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
Interviewer says: "Now I would like to ask you questions about sexual health."			NEVER HAD SEX ✳ NEXT MODULE
1309	During the last 12 months, have you had an abnormal discharge from your vagina or experienced pelvic pain? This may include an unusual smell, color, or texture.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF MALE.
1310	During the last 12 months, have you had an ulcer or sore on or near your vagina?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF MALE
1311	During the last 12 months, have you had an abnormal discharge from your penis?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF FEMALE
1312	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 REFUSED = -9	SKIP IF FEMALE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1313	During the last 12 months, have you had pain on urination?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF FEMALE
1314	Did you see a health care worker because of these problems?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF NO TO 1309-1313
1315	In the last 12 months, did a health care worker tell you that you had a sexually transmitted disease, other than HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
1316	Did you get treatment for these problems?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	DK, REFUSED ✳ END OF MODULE ONLY YES TO SYMPTOMS OR YES TO 1315
1317	Why did you not get treatment for these problems? SELECT ALL THAT APPLY.	SYMPTOMS WENT AWAY ON THEIR OWN = A I WAS EMBARRASSED = B I COULD NOT AFFORD TO PAY= C NO TREATMENT WAS AVAILABLE F OR MY PROBLEM = D HEALTHCARE WORKER REFUSED TO ASSIST ME= E OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	ONLY YES TO SYMPTOMS OR YES TO 1315 AND NO TO TX ALL SKIP TO END OF MODULE
1318	Who prescribed the treatment? SELECT ALL THAT APPLY.	HEALTH CARE WORKER= A PHARMACIST = B SELF-PRESCRIBED = C TRADITIONAL HEALER = D OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	ONLY YES TO SYMPTOMS; YES TO 1315
MODULE 14: GENDER NORMS			
Interviewer says: "Now I would like to ask you question on attitudes and decision-making in your home."			
1401	Who usually makes decisions about health care for yourself: you, your (spouse/partner), you and your (spouse/partner) together, or someone else?	I DO = 1 SPOUSE/PARTNER = 2 WE BOTH DO = 3 SOMEONE ELSE = 4 DON'T KNOW = -8 REFUSED = -9	SKIP IF NOT MARRIED/ LIVING TOGETHER
1402	Who generally decides about how the money you receive is spent: you, your (spouse/partner), you and your (spouse/partner) together, or someone else?	I DO = 1 SPOUSE/PARTNER = 2 WE BOTH DO = 3 SOMEONE ELSE = 4 DON'T KNOW = -8 REFUSED = -9	SKIP IF NOT MARRIED/ LIVING TOGETHER
MODULE 15: ALCOHOL USE/NON-PRESCRIPTION DRUG USE			
Interviewer says: "The next few questions will be on your use of alcohol and non-prescription drugs. Remember, all the answers you provide will be kept confidential."			
1501	In the last 12 months have you had a drink containing alcohol? SHOW ALCOHOL AID IF UNCERTAIN	YES = 1 NO =2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 1507 AID OF COMMON DRINKS FROM COUNTRY.

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1502	How often do you have a drink containing alcohol?	RARELY = 0 MONTHLY OR LESS = 1 2-4 TIMES A MONTH = 2 2-3 TIMES A WEEK = 3 4 OR MORE TIMES A WEEK = 4 DON'T KNOW= -8 REFUSED = -9	NEVER, DK, REFUSED ✳ AID OF COMMON DRINKS FROM COUNTRY.
1503	How many drinks (i.e. glasses) containing alcohol do you have on a typical day?	NONE OR LESS THAN 1 = 0 1 OR 2= 1 3 OR 4= 2 5 OR 6 =3 7 TO 9 = 4 10 OR MORE = 5 DON'T KNOW= -8 REFUSED = -9	
1504	Where have you gotten alcohol from?	HOME = A SOCIAL EVENT = B PARTY = C SCHOOL FUNCTION = D OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	SKIP IF AGE >= 20
1505	Who have you gotten alcohol from?	FRIENDS/PEERS = A RELATIVES/FAMILY = B OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	SKIP IF AGE >= 20
1506	Have you ever used non-prescription drugs for recreation or pleasure purposes?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 1511
1507	In the past 12 months, have you used nonprescription drugs for recreation or pleasure purpose?	YES = 1 NO = 2 DON'T KNOW= -8 REFUSED = -9	
1508	Which non-prescription drug have you ever consumed, even one time?	NONE = A MARIJUANA = B HEROIN = C KHAT = D OTHERS SPECIFY_____ DON'T KNOW = Y REFUSED = Z	
1509	Where have you gotten drugs from?	HOME = A SOCIAL EVENT = B PARTY = C SCHOOL FUNCTION = D OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	SKIP IF AGE >= 20
1510	Who have you gotten drugs from?	FRIENDS/PEERS = A RELATIVES/FAMILY = B OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	SKIP IF AGE >= 20
1511	Some people inject drugs with a needle and syringe for pleasure. Have you ever injected drugs for pleasure?	YES = 1 NO = 2 DON'T KNOW= -8 REFUSED = -9	NO, DK, REFUSED ✳ END OF MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1512	Have you injected drugs with a needle and syringe in the last 30 days?	YES = 1 NO = 2 DON'T KNOW= -8 REFUSED = -9	NO, DK, REFUSED ✳ END OF MODULE
1513	When you have injected drugs during the last 30 days, have you shared the syringe or needle with other people?	YES = 1 NO = 2 DON'T KNOW= -8 REFUSED = -9	
MODULE 16: BLOOD AND INJECTION SAFETY			
1601	Have you ever had a blood transfusion?	YES = 1 NO =2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REF ✳ 1603
1602	When was the last time you had a blood transfusion?	DAY _____ DON'T KNOW DAY= -8 REFUSED DAY= -9 MONTH _____ DON'T KNOW MONTH= -8 REFUSED MONTH= -9 YEAR _____ DON'T KNOW YEAR=-8 REFUSED YEAR= -9 DON'T KNOW = -8 REFUSED = -9	
1603	Have you ever donated blood?	YES = 1 NO =2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REF ✳ 1606
1604	How many times did you donate blood in the last 12 months?	NUMBER OF TIMES _____ DON'T KNOW = -8 REFUSED = -9	
1605	The last time you donated blood, were you asked to donate or did you donate voluntarily?	WAS ASKED TO DONATE FOR FAMILY/FRIEND = 1 DONATED VOLUNTARILY =2 DON'T KNOW = -8 REFUSED = -9	
1606	In the last 12 months, how many injections did you have? IF PARTICIPANT GIVE A NON-NUMERIC ANSWER SUCH AS "I'VE HAD MANY", PROBE TO GET AN ANSWER. IF GREATER THAN 100, THEN RECORD 100. IF NONE CODE "00"	NUMBER OF INJECTIONS _____ DON'T KNOW = -8 REFUSED = -9	00, DK, REF ✳ 1609
1607	Have you received an injection from any of these persons in the last 12 months?" READ EACH OPTION, SELECT ALL THAT APPLY	HEALTH CARE WORKER = A TRADITIONAL PRACTITIONER OR HEALER = B SELF, PRESCRIBED BY HEALTH CARE WORKER = C SELF, NOT PRESCRIBED BY HEALTH CARE WORKER = D DON'T KNOW = Y REFUSED = Z	HEALTH CARE WORKER ✳ 1608 ELSE ✳ 1609

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1608	The last time you received an injection from a health care worker, did the health care worker take the syringe and needle from a new, unopened package?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF DID NOT RECEIVE INJECTION BY HEALTH CARE WORKER
1609	If you had a choice, would you like to receive medication as an injection or tablet/capsule?	INJECTION = 1 TABLET/CAPSULE = 2 DON'T KNOW = -8 REFUSED = -9	
1610	In the last 12 months, have you seen any used needles/syringes near your home or community?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
MODULE 17: VIOLENCE			
	Interviewer says: "You have been selected to be asked questions on other important aspects of a person's life. I know that some of these questions are very personal. However, your answers are important for helping to understand the condition of men and women in Kenya. Let me assure you that your answers are completely confidential and will not be told to anyone and no one in your household will know that you were asked these questions. **By sex, I mean vaginal, anal, oral sex or the insertion of an object into your vagina or anus. Vaginal sex is when a penis enters a vagina. Anal sex is when a penis enters an anus (butt). Oral sex is when a partner puts his/her mouth on his/her partner's penis or vagina."**		ADULT OR ADOLESCENT VIOLENCE MODULE ASKED OF 1 FEMALE PER HOUSEHOLD, 13+ YEARS (CHILD FLAGGED HOUSEHOLDS) OR 15+ YEARS (NONCHILD-FLAGGED HOUSEHOLDS)
1701	Has anyone ever done any of these things to you: - Punched, kicked, whipped, or beat you with an object – Choked smothered, tried to drown you, or burned you intentionally – Used or threatened you with a knife, gun or other weapon?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
1702	How many times has anyone touched you in a sexual way without your permission, but did not try and force you to have sex? Touching in a sexual way without permission, includes fondling, pinching, grabbing or touching you on or around your sexual body parts	NUMBER OF TIMES_____ DON'T KNOW= -8 REFUSED= -9 CODE '00' IF NONE	
1703	How many times in your life has anyone ever tried to make you have sex against your will but did not succeed? This includes someone using harassment, threats, tricks, or physical force. CODE "00" IF NONE	NUMBER OF TIMES_____ DON'T KNOW= -8 REFUSED= -9	
1704	How many times in your life have you been physically forced to have sex? CODE "00" IF NONE	NUMBER OF TIMES_____ DON'T KNOW= -8 REFUSED= -9	NONE, DK, REFUSED ✳ 1711
1705	How old were you the first time someone physically forced you to have sex?	AGE IN YEARS _____ DON'T KNOW= -8 REFUSED= -9	>19

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1706	The first time someone physically forced you to have sex, what was that person's relationship to you?	BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/ SPOUSE=1 EX-BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/SPOUSE=2 RELATIVE/FAMILY MEMBER=3 CLASSMATE/SCHOOLMATE=4 TEACHER=5 POLICE/SECURITY=6 EMPLOYER=7 NEIGHBOR=8 COMMUNITY/RELIGIOUS LEADER=9 FRIEND=10 STRANGER=11 OTHERS=96 _____ (SPECIFY) DON'T KNOW= -8 REFUSED= -9	
1707	Was this person whom you just indicated a male or a female?	MALE=1 FEMALE=2 DON'T KNOW= -8 REFUSED= -9	SKIP IF 1706 = DK, REF
1708	In the last 12 months, did someone physically force you to have sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
1709	How many times in your life has someone pressured you to have sex through harassment, threats, or tricks and did succeed?	NUMBER OF TIMES_____ DON'T KNOW = -8 REFUSED = -9	
1710	After any of these unwanted sexual experiences, did you try to seek professional help or services?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF NO/NONE/DK/ REF TO ALL UNWANTED SEXUAL EXPERIENCES NO ✳ 1712 DK / REF ✳ 1713
1711	From whom did you try to seek professional help or services from any of the following? SELECT ALL THAT APPLY.	HEALTHCARE PROFESSIONAL = A POLICE OR OTHER SECURITY PERSONNEL = B SOCIAL WORKER, COUNSELOR OR NON-GOVERNMENTAL ORGANIZATION = C RELIGIOUS LEADER = D OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	SKIP IF NO/NONE/DK/ REF TO ALL UNWANTED SEXUAL EXPERIENCES ALL ✳ 1713
1712	What was the main reason that you did not try to seek professional help or services?	DID NOT KNOW SERVICES WERE AVAILABLE = 1 SERVICES NOT AVAILABLE = 2 AFRAID OF GETTING IN TROUBLE = 3 ASHAMED FOR SELF/FAMILY = 4 COULD NOT AFFORD SERVICES = 5 DID NOT THINK IT WAS A PROBLEM = 6 FELT IT WAS MY FAULT = 7 AFRAID OF BEING ABANDONED = 8 DID NOT NEED/WANT SERVICES = 9 AFRAID OF MAKING SITUATION WORSE = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF NEVER EXPERIENCED SEXUAL VIOLENCE
1713	After any of these unwanted sexual experiences, did you tell anyone about it?	YES=1 NO=2 DON'T KNOW= -8 REFUSED= -9	SKIP IF NO/NONE/DK/ REF TO ALL UNWANTED SEXUAL EXPERIENCES NO, DK, REFUSED ✳ END

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
1714	Which of the following describes who you told about any of these unwanted sexual experiences? READ OPTIONS OUT ALOUD SELECT ALL THAT APPLY	PARENT/GUARDIAN=A SIBLING=B TEACHER=C FRIEND/CLASSMATE=D OTHER FAMILY MEMBER=E RELIGIOUS LEADER=F OTHER=X _____ (SPECIFY) DON'T KNOW=Y REFUSED=Z	SKIP IF NO/NONE/DK/ REF TO ALL UNWANTED SEXUAL EXPERIENCES
Interviewer says: "Thank you for sharing your personal experiences with me. I know it may have been difficult for you to talk about your experiences with me. If you would like to talk further about these experiences, I can refer you to a place that can provide you with help." **PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS.**			SKIP IF NEVER EXPERIENCED SEXUAL OR PHYSICAL VIOLENCE.
Interviewer says: "You mentioned earlier that you have received money or other goods in exchange for having sex. Thank you for sharing your personal experiences with me. If you want to talk further about these experiences, I can refer you to a place that can provide you with help." **FILL OUT REFERRAL FORM FOR CHILDREN IDENTIFIED AS TRAFFICKED MINORS. FILL OUT SUMMARY OF REFERRED TRAFFICKED MINORS. PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS, IF NOT ALREADY GIVEN.**			SKIP IF >18 YEARS OLD SKIP IF NEVER SOLD SEX

APPENDIX G YOUNG ADOLESCENT QUESTIONNAIRE

THIS QUESTIONNAIRE IS ADMINISTERED TO ELIGIBLE YOUNG ADOLESCENTS AGED BETWEEN 10-14 YEARS AFTER INFORMED PARENTAL/GUARDIAN CONSENT AND MINOR ASSENT.

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS			
Interviewer says: "Thank you for agreeing to participate in this survey. The first set of questions is about your life in general. Afterwards, we will move on to other topics."			
101	Are you currently enrolled in school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 104
102	During the last school week, did you miss any school days for any reason?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 106
103	Why did you miss school?	I HAVE BEEN SICK = 1 I DON'T FEEL SAFE TRAVELING TO SCHOOL = 2 I DON'T FEEL SAFE WHILE IN SCHOOL = 3 I DON'T LIKE SCHOOL = 4 I HAVE TO LOOK AFTER MY FAMILY = 5 THERE'S NOT ENOUGH MONEY TO SEND ME TO SCHOOL = 6 SCHOOL IS TOO FAR AWAY = 7 I HAVE TO WORK = 8 I HAVE A CHILD OR I AM PREGNANT (GIRLS ONLY) = 9 I MISSED TOO MUCH SCHOOL BECAUSE OF MY PERIOD (MENSTRUATION) (GIRLS ONLY) = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	✳ 105
104	Have you ever attended school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 204
105	What is the highest class/form you attended?	NURSERY PRESCHOOL =1 PRIMARY CLASS 1 =2 PRIMARY CLASS 2 =3 PRIMARY CLASS 3 =4 PRIMARY CLASS 4 =5 PRIMARY CLASS 5 =6 PRIMARY CLASS 6 =7 PRIMARY CLASS 7=8 PRIMARY CLASS 8 =9 SECONDARY FORM 1 =10 SECONDARY FORM 2 =11 SECONDARY FORM 3 =12 SECONDARY FORM 4= 13 DON'T KNOW = -8 REFUSED = -9	NO, DK ✳ 108

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
106	What class/form are you in now?	NURSERY PRESCHOOL =1 PRIMARY CLASS 1 =2 PRIMARY CLASS 2 =3 PRIMARY CLASS 3 =4 PRIMARY CLASS 4 =5 PRIMARY CLASS 5 =6 PRIMARY CLASS 6 =7 PRIMARY CLASS 7=8 PRIMARY CLASS 8 =9 SECONDARY FORM 1 =10 SECONDARY FORM 2 =11 SECONDARY FORM 3 =12 SECONDARY FORM 4= 13 DON'T KNOW = -8 REFUSED = -9	
107	When was the last time you regularly attended school? Would you say it was less than a year ago or more than a year ago?	LESS THAN 1 YEAR = 1 1 YEAR OR LONGER = 2 DON'T KNOW =-8 REFUSED = -9	
108	Why do you NOT go to school?	I HAVE BEEN SICK = 1 I DON'T FEEL SAFE TRAVELING TO SCHOOL = 2 I DON'T FEEL SAFE WHILE IN SCHOOL = 3 I DON'T LIKE SCHOOL = 4 I HAVE TO LOOK AFTER MY FAMILY= 5 THERE'S NOT ENOUGH MONEY TO SEND ME TO SCHOOL = 6 SCHOOL IS TOO FAR AWAY = 7 I HAVE TO WORK = 8 I HAVE A CHILD OR I AM PREGNANT (GIRLS ONLY) = 9 I MISSED TOO MUCH SCHOOL BECAUSE OF MY PERIOD (MENSTRUATION) (GIRLS ONLY) = 10 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	ADAPT RESPONSES BASED ON LOCAL CONTEXT
MODULE 2: HIV PREVENTION INTERVENTIONS			
201	Have you ever heard of HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 206
202	From where have you heard about HIV? PROBE: Anywhere else? RECORD ALL MENTIONED	SCHOOLS/TEACHERS = A PARENTS/GUARDIAN/FAMILY = B FRIENDS = C RELIGIOUS LEADERS = D INTERNET = E MOBILE PHONE = F HEALTH CARE PROVIDERS= G TELEVISION/FILM = H RADIO = I COMMUNITY HEALTH WORKERS = J OTHER= X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
203	Have you ever discussed HIV with your parents or guardian?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
204	Have you ever taken part in any of the program/activity where HIV prevention programs is taught? SHOW CHILD LOGO FOR EACH PROGRAM READ RESPONSES ALOUD. SELECT ALL THAT APPLY	NONE = A FAMILIES MATTER PROGRAM = B SISTER TO SISTER = C YOUTH FOR YOU = D YOUTH FOR REAL = E POSITIVE TALK = F AIDS ACTION CLUB = G TUSEME SCHOOL CLUB= H FEMINA-HIP YOUTH CLUBS= I OTHER SCHOOL CLUBS= J SHUGA RADIO LISTENING CLUB= K MABINTI TUSHIKE HATAMU= L RIGHTS OF PASSAGE-ROPS = M HOPES/MENTORSHIL = N DREAMS=O OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	"NONE", "DON'T KNOW', "REFUSED" CANNOT BE SELECTED WITH ANY OTHER CATEGORY. NONE, DK, REFUSED ✳ 206
205	Where did you take part in this/these program(s)? SELECT ALL THAT APPLY	SCHOOL = A YOUTH CENTRE = B CLUB = C CAMP = D CHURCH = E MOSQUE = F TEMPLE = G COMMUNITY ACTIVITY = H OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
206	Do you know what a condom is?	YES = 1 NO = 2 REFUSED = -9	NO, DK, REFUSED ✳ 301
MODULE 3: SEXUAL BEHAVIOR			
Interviewer says: "The next questions ask about sexual behavior. There is no right or wrong answer. Your responses will not be linked to you in any way or shared with anyone, including your parents." **PLEASE LOOK OUT FOR SIGNS OF DISTRESS IN CHILD WHEN ASKING THE FOLLOWING SEXUAL BEHAVIOR QUESTIONS. IF THE CHILD SEEMS DISTRESSED, ASK CHILD IF HE/SHE WANTS TO STOP THE INTERVIEW.**		
301	Do you know what sex is?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF AGE <13 & RESPONSE = NO, DK, REFUSED ✳ 311
302	Have you ever had vaginal, anal or oral sex? Vaginal sex is when a penis enters a vagina. Anal sex is when a penis enters the anus. Oral sex is when someone puts his/her mouth on the penis or vagina of another person. SELECT ALL THAT APPLY.	NEVER HAD SEX=A VAGINAL=B ANAL=C ORAL=D DON'T KNOW= -8 REFUSED= -9	NEVER HAD SEX, DK, REFUSED ✳ 311
303	How old were you when you had sex for the first time?	AGE IN YEARS _____ DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
304	What was the main reason that you had sex for the first time? SELECT ONE	IT JUST HAPPENED = 1 MY FRIENDS PRESSURED ME TO HAVE SEX = 2 TO SHOW MY LOVE/TO FEEL LOVED = 3 I WANTED TO HAVE SEX = 4 MY BOYFRIEND/GIRLFRIEND WANTED TO HAVE SEX = 5 FOR MONEY / GIFTS = 6 I WANTED TO HAVE A BABY = 7 I WAS DRUNK OR TAKING DRUGS = 8 I WAS TRICKED = 9 I WAS THREATENED/FORCED/RAPED = 10 OTHER= 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
305	How old was the person you first had sex with? PROMPT IF REQUIRED: Please give your best guess.	AGE IN YEARS _____ DON'T KNOW = -8 REFUSED = -9	
306	In total, how many different people have you had sex with? PROMPT IF REQUIRED: Please give your best guess.	NUMBER OF PARTNERS _____ DON'T KNOW = -8 REFUSED = -9	CONSTRAINT CANNOT BE '0'
307	The first time you had sex was a condom used?	ALWAYS = 1 SOMETIMES = 2 NEVER = 3 DON'T REMEMBER = 4 DON'T KNOW = -8 REFUSED = -9	SKIP IF DON'T KNOW WHAT CONDOM IS
308	The last time you had sex was a condom used?	ALWAYS = 1 SOMETIMES = 2 NEVER = 3 DON'T REMEMBER = 4 DON'T KNOW = -8 REFUSED = -9	
309	Have you ever had sex with someone because he/she provided you with, or you expected that he/she would provide you with gifts, help you to pay for things or help you in other ways such as giving you food or paying for school fees?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
310	Have you ever been or are you currently pregnant?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF MALE NO, DK, REFUSED ✳ 311
311	Have you ever talked with a parent or guardian about sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 4: SOCIAL NORMS, INTENTION TO ABSTAIN, SELF-EFFICACY AND ASSERTIVENESS			
Interviewer says: "Now I would like to ask you some questions about the future."			SKIP MODULE IF 301 =NO, DK, REFUSED
401	Will you have sex before you get married?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF SEXUALLY ACTIVE
402	Do you think all, many, some, a few or none of your friends are having sex?	ALL = 1 MOST = 2 SOME = 3 A FEW = 4 NONE = 5 DON'T KNOW/DON'T KNOW WHAT SEX IS= -8 REFUSED = -9	
403	Do you feel pressured by your boyfriend/girlfriend to have sex?	YES = 1 NO = 2 DON'T HAVE BOYFRIEND/GIRLFRIEND=3 DON'T KNOW = -8 REFUSED = -9	
404	If you did not want to have sex with someone, could you tell them that you do not want to have sex with them?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
MODULE 5: HIV RISK PERCEPTION			
501	Do you think that your chances of getting HIV are no risk, small, moderate or great?	NO RISK AT ALL=1 SMALL =2 MODERATE = 3 GREAT = 4 I ALREADY HAVE HIV=5 DON'T KNOW= -8 REFUSED= -9	IF NO RISK OR SMALL → 503 IF MODERATE/GREAT RISK → 502 IF DK, REFUSED ✳ 503 IF I ALREADY HAVE HIV ✳ NEXT MODULE SKIP IF 201 = NO, DK, REFUSED
502	Why do you think you have a moderate or great risk of getting HIV?	I HAVE HAD SEX WITHOUT A CONDOM = A I HAVE/HAD MORE THAN ONE SEX PARTNER = B I HAVE HAD BLOOD TRANSFUSIONS=C MY MOTHER/FATHER/CLOSE RELATIVE HAS HIV =D MY SEX PARTNER HAS OTHER PARTNERS = E I AM SICK = F MY BOY/GIRL FRIEND IS SICK OR HAS DIED= G I DESERVE IT/I AM A BAD PERSON = H OTHER = I SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF 201=NO, DK, REFUSED ALL ✳ NEXT MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
503	Why do you think you have no risk/ small chance of getting HIV?	I AM NOT HAVING SEX = A I WILL WAIT UNTIL MARRIAGE TO HAVE SEX = B I USE CONDOMS = C I HAVE ONLY ONE SEX PARTNER= D I HAVE FEW SEX PARTNERS=E MY PARTNER HAS NO OTHER SEX PARTNERS = F I GO TO CHURCH = G I AM A GOOD PERSON = H OTHER (SPECIFY) = I SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF 201 = NO, DK, REFUSED
MODULE 6: HIV KNOWLEDGE			
Interviewer says: "Now I would like to ask you some questions about what you know about some things related to HIV."			SKIP TO NEXT MODULE IF 201 = NO, DK, REF
601	How is HIV transmitted? DO NOT READ RESPONSES, SELECT ALL THAT APPLY	BY HAVING UNPROTECTED SEX = A FROM A MOTHER TO THE CHILD = B UNSAFE BLOOD = C SHARING A NEEDLE WITH SOMEONE WHO HAS HIV=D OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
602	Can a person reduce their chance of getting HIV by not having sex?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	
603	Can a person reduce their chance of getting HIV by using condoms when having sex?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	
604	Can a healthy-looking person have HIV or AIDS?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	
605	Are there medicines that people with HIV or AIDS can take to help them live longer?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	
606	How can one prevent getting HIV? DO NOT READ RESPONSES, SELECT ALL THAT APPLY	ABSTAINING FROM SEX = A BEING FAITHFUL = B CONDOMS = C MEDICAL MALE CIRCUMCISION = D PREP = E OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
607	Are there medicines that people with HIV or AIDS can take to them less likely to spread the virus?	YES = 1 NO = 2 DON'T KNOW = 3 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
MODULE 7: HIV TESTING			
Interviewer says: "I would now like to ask you some questions about HIV testing."			SKIP TO NEXT MODULE IF 201 = NO, DK, REF
701	Have you ever been tested for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ NEXT MODULE
702	When you were tested, were you with your parents or guardian?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 704
703	Do your parents or guardian know the results?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
704	Did you receive the results of any of your HIV tests?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ NEXT MODULE
705	What was the result of that HIV test? SOME PARTICIPANTS MAY REPORT BEING TESTED MORE THAN ONCE. IF THEY REPORT GETTING A POSITIVE RESULT AND ANOTHER RESULT (I.E. A PREVIOUS NEGATIVE RESULT), SELECT POSITIVE.	HIV POSITIVE = 1 HIV NEGATIVE = 2 INCONCLUSIVE=3 UNKNOWN/DON'T KNOW = 4 REFUSED = -9	HIV NEGATIVE, UNKNOWN, REFUSED ✳ NEXT MODULE
706	Are you currently linked and enrolled to receive HIV care from a health facility? Ask to see the client's HIV clinic card (CCC yellow card) or a bottle of ARV pills	YES-HAS SHOWN PROOF = 1 YES- NO PROOF PROVIDED =2 NO = 3 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED → 708
707	What is your current HIV Clinic Number (CCC Yellow Card Number)	SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	
708	Have you ever taken ARVs, that is, medicines to treat your HIV infection?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 711
709	Children sometimes miss taking their medication. For the past one month were there any days when you did not take your medications?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 711
710	Could you tell me why you missed to take your medication?	STIGMA/DON'T WANT PEOPLE TO KNOW MY STATUS =1 HAVE SIDE EFFECTS/RASH = 2 FACILITY/PHARMACY TOO FAR AWAY TO GET MEDICATION REGULARLY = 3 COST OF MEDICATIONS =4 COST OF TRANSPORT =5 I AM HEALTHY/NOT SICK = 6 FACILITY WAS OUT OF STOCK = 7 RELIGIOUS REASONS= 8 I AM TAKING TRADITIONAL MEDICATIONS = 9 TOO MANY PILLS = 10 NO FOOD = 11 OTHER (SPECIFY) =96 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
711	What do you find difficult about living with HIV? SELECT ALL MENTIONED / DO NOT READ OUT CHOICES	I DON'T FIND IT DIFFICULT = A ILLNESS OR MEDICINE SIDE EFFECTS = B ACCESS TO MEDICAL/SOCIAL SERVICES = C FINANCIAL COSTS = D ARV ADHERENCE = E STIGMA = F DISCLOSURE IN GENERAL = G FEAR FOR HEALTH/FUTURE = H OTHER = X SPECIFY_____ DON'T KNOW =Y REFUSED= Z	
MODULE 8: ALCOHOL AND DRUGS			
Interviewer says: "I would like to ask you some questions about alcohol and drugs or substances that you may have taken that were not given to you by doctor. Your answers will not be told to anyone, even your parents."			
801	Have you ever drunk alcohol?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 804 SHOW GRAPHIC OF COMMON ALCOHOLIC BEVERAGES
802	Where have you gotten alcohol from? SELECT ALL THAT APPLY	HOME = A SOCIAL EVENT = B PARTY = C SCHOOL FUNCTION = D OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
803	Who have you gotten alcohol from? SELECT ALL INDICATED	FRIENDS/PEERS = A RELATIVES/FAMILY = B OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
804	It is possible that some people in our communities use non-prescription drugs for recreation or pleasure purposes. Have you ever tried drugs?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ NEXT MODULE ADAPT QUESTION TO LOCAL CONTEXT.
805	What drugs have you ever tried? DO NOT READ RESPONSES. PROBE FOR MULTIPLE RESPONSES.	MIRAA = A BHANG = B GLUE = C KUBER = D MANDRAZ = E COCAINE = F HEROIN = G OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
806	Where have you gotten drugs from? SELECT ALL THAT APPLY	HOME = A SOCIAL EVENT = B PARTY = C SCHOOL FUNCTION = D OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
807	Who have you gotten drugs from? SELECT ALL REPLIED	FRIENDS/PEERS = A RELATIVES/FAMILY = B OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	
MODULE 9: VIOLENCE			
Interviewer says: "Now I would like to ask you questions about some other important aspects of a person's life. I know that some of these questions are very personal. However, your answers are important for helping to understand the condition of children in Kenya. Let me assure you that your answers are completely confidential and will not be told to anyone." **SELECT ONLY ONE FEMALE PER HOUSEHOLD, 13 YEARS OR OLDER FOR THE VIOLENCE MODULE.**			
901	Has anyone ever done any of these things to you: - Punched, kicked, whipped, or beat you with an object – Choked smothered, tried to drown you, or burned you intentionally – Used or threatened you with a knife, gun or other weapon?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
902	Has anyone ever touched you in a sexual way without your permission, but did not try and force you to have sex? Touching in a sexual way without permission includes fondling, pinching, grabbing, or touching you on or around your sexual body parts.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 905
903	How many times has anyone ever touched you in a sexual way without your permission, but did not try and force you to have sex?	NUMBER OF TIMES _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF NEVER TOUCHED
904	The first time this happened, what was your relationship to the person who did this? If it was more than one person, what was your relationship with the person you knew the best?	BOYFRIEND/GIRLFRIEND/SPOUSE = 1 RELATIVE/FAMILY MEMBER = 2 CLASSMATE/SCHOOLMATE = 3 TEACHER = 4 POLICE/SECURITY OFFICER/MILITARY= 5 EMPLOYER = 6 NEIGHBOR = 7 COMMUNITY RELIGIOUS LEADER = 8 FRIEND = 9 STRANGER = 10 HOUSE HELP = 11 WATCHMAN = 12 GARDNER = 13 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF NEVER TOUCHED
905	Has anyone ever tried to make you have sex against your will but did not succeed? This includes someone using harassment, threats, tricks, or physical force.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
906	Has anyone ever pressured you to have sex, through harassment, threats or tricks and did succeed?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
907	Has anyone ever physically forced you to have sex and did succeed?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	NO, DK, REFUSED ✳ 912
908	How old were you the first time someone physically forced you to have sex?	YEARS_____ DON'T KNOW= -8 REFUSED= -9	SKIP IF NEVER PHYSICALLY FORCED
909	The first time you were pressured or forced to have sex, what was your relationship to the person who did this?	BOYFRIEND/GIRLFRIEND/SPOUSE = 1 RELATIVE/FAMILY MEMBER = 2 CLASSMATE/SCHOOLMATE = 3 TEACHER = 4 POLICE/SECURITY OFFICER/MILITARY= 5 EMPLOYER = 6 NEIGHBOR = 7 COMMUNITY RELIGIOUS LEADER = 8 FRIEND = 9 STRANGER = 10 HOUSE HELP = 11 WATCHMAN = 12 GARDNER = 13 OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF NEVER PHYSICALLY FORCED
910	Was this person whom you just indicated a male or a female?	MALE=1 FEMALE=2 DON'T KNOW= -8 REFUSED= -9	SKIP IF NEVER PHYSICALLY FORCED SKIP IF 909 = DK, REF
911	How many times in your life has anyone ever physically forced you to have sex?	NUMBER OF TIMES_____ DON'T KNOW= -8 REFUSED= -9	SKIP IF NEVER PHYSICALLY FORCED
912	After any of these unwanted sexual experiences, did you try to seek professional help or services?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF NO SEXUAL VIOLENCE NO ✳ 914 DK, REFUSED ✳ 915
913	From whom did you try to seek professional help or services? SELECT ALL THAT APPLY.	HEALTHCARE PROFESSIONAL = A POLICE OR OTHER SECURITY PERSONNEL = B SOCIAL WORKER, COUNSELOR OR NGO = C RELIGIOUS LEADER = D OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	SKIP IF NO SEXUAL VIOLENCE ALL ✳ 915
914	What was the main reason that you did not try to seek professional help or services? SELECT ALL THAT APPLY. Prompt "Any other reason?"	DID NOT KNOW SERVICES WERE AVAILABLE = A SERVICES NOT AVAILABLE = B AFRAID OF GETTING IN TROUBLE = C ASHAMED FOR SELF/FAMILY = D COULD NOT AFFORD SERVICES = E DID NOT THINK IT WAS A PROBLEM = F FELT IT WAS MY FAULT = G AFRAID OF BEING ABANDONED = H DID NOT NEED/WANT SERVICES = I OTHER = 96 SPECIFY: _____ DON'T KNOW = -8 REFUSED = -9	SKIP IF NO SEXUAL VIOLENCE

NO.	QUESTIONS	CODING CATEGORIES	SKIPS
915	After any of these unwanted sexual experiences, did you tell anyone about it?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF NO SEXUAL VIOLENCE NO, DK, REFUSED ✳ END
916	Which of the following describes who you told about any of these unwanted sexual experience? READ RESPONSES ALOUD. SELECT ALL THAT APPLY	PARENT/GUARDIAN = A SIBLING = B TEACHER= C FRIEND/CLASSMATE = D OTHER FAMILY MEMBER = E RELIGIOUS LEADER = F OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	SKIP IF NO SEXUAL VIOLENCE
Interviewer says: "Thank you for sharing your personal experiences with me. I know it may have been difficult for you to talk about your experiences with me. If you would like to talk further about these experiences, I can refer you to a place that can provide you with help." **PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS.**			SKIP IF NEVER EXPERIENCED SEXUAL OR PHYSICAL VIOLENCE.

APPENDIX H SURVEY CONSENT FORMS

KENYA POPULATION-BASED HIV IMPACT ASSESSMENT (KENPHIA)

CONSENT FOR HOUSEHOLD INTERVIEW (18 + YEARS AND EMANCIPATED MINORS)

Hello. My name is_____

What language do you prefer for our discussions today?

ENTER A CODE FOR ONE OF THE LANGUAGE CODES BELOW ____

1.	English	7.	Kisii	13.	Somali
2.	Kiswahili	8.	Kamba	14.	Borana
3.	Luo	9.	Maasai	15.	Turkana
4.	Kikuyu	10.	Miji Kenda	16.	Pokot
5.	Luhya	11.	Meru	17.	Other
6.	Kalenjin	12.	Embu		

I would like to invite you to take part in this research study about HIV in Kenya. The Ministry of Health, through the National AIDS and STI Control Programme is leading this survey. The Ministry of Health is conducting the survey in partnership with the National Public Health Laboratory, Kenya National Bureau of Statistics, Kenya Medical Research Institute, the United States Centers for Disease Control and Prevention, and ICAP at Columbia University.

Purpose of survey

This survey will help us know how many people in Kenya are at risk for getting HIV, have HIV, and need health services. We plan to include over 35,000 men, women, and children from about 18,000 households throughout Kenya to take part in this survey. If you join, your taking part will help the Ministry of Health make health services better in Kenya.

This form might have some words in it that are not familiar to you. Please ask us to explain anything that you do not understand.

Survey Procedures

There are three parts to this survey– a household interview, individual interviews, and blood testing. In the household interview, we would like to ask you some questions about the people who live here and some of the things you have or own. The interview will take about 30 minutes.

After the household interview, we may invite you and others living in your household to take part in individual interviews. We may also offer members of your household the chance to get tested for HIV, syphilis, and hepatitis B. We will ask each person to give consent to take part before joining the survey.

Right to refuse or withdraw

You do not have to take part in the survey. If you choose to join the survey, you may change your mind at any time and stop taking part. If you decide not to take part, it will not affect your healthcare in any way.

Risks

The risks of taking part in the household interview are small. You may feel uncomfortable about some of the questions we will ask. You can refuse to answer any question. We will do everything we can to keep your information private. However, we cannot guarantee total confidentiality.

Benefits

If you take part, you and your household members may receive free testing for HIV in your home. The information you provide will also be used to improve the health of people in Kenya. Your responses will help us develop more effective programs to fight HIV and other diseases in Kenya.

Cost

There is no cost to your household for being part of the survey. Household members will not be paid for taking part in this survey.

Confidentiality

What we talk about will be kept private, even from your family, and will not be shown to anyone outside of the survey team. Your answers to the questions will be identified only by a number and not your name. Your name will not appear on any survey results that we share with the Ministry of Health or in data analysis.

The following individuals and/or agencies will be able to look at your research records to help oversee the conduct of this survey:

[INTERVIEWER: INDICATE INFORMATION ON SHEET TO PARTICIPANT—DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your rights as a person in a research study. These are the Institutional Review Boards at Kenya Medical Research Institute (KEMRI), the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center, and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person in this survey
- Study staff and study monitors [INTERVIEWER: READ FROM HERE]

The information we collect during the survey will not be released outside of the survey groups listed unless there is an issue of safety. Your permission to allow us to use and share your personal identifying information with the KENPHIA project team will end three years after the end of the survey.

Who to contact if you have questions

If you want to leave the survey, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the study principal investigator, who is also the head of the National AIDS & STI Control Programme (NASCOP) under the Ministry of Health, or the Director of Population and Social Statistics at the Kenya National Bureau of Statistics (KNBS)

[INTERVIEWER: INDICATE ADDRESSES OF POINTS OF CONTACT—DO NOT READ ALOUD]

Address: Survey Principal Investigator/Head, NASCOP
NASCOP, Afya Annex, Kenyatta National Hospital, Ministry of Health, P.O. Box 19361 00202 Nairobi
Phone: +254 20 263 0867
Email: kenphia.nascop@gmail.com

Address: Director of Population and Social Statistics Kenya National Bureau of Statistics (KNBS)
P.O. Box 30266-00100 Nairobi
Phone: +254 20 331 7588, +254 20 331 7583, +254 797 013 555

If you have any questions about your rights as a person in this survey, you can contact the Secretary Ethical Review Committee at KEMRI.

[INTERVIEWER: INDICATE ADDRESS OF POINT OF CONTACT—DO NOT READ ALOUD]

Address: Head of Scientific and Ethical Review Unit,
Kenya Medical Research Institute (KEMRI)
P. O. Box 54840 Code 00200, Nairobi.
Phone: +254 02 072 2541, +254 722 205 901, +254 733 400 003 Email: seru@kemri.org

At this time, do you want to ask me anything about the survey?

Consent Statement

Any questions that I had have been answered satisfactorily. I have been offered a copy of this consent form. Do you agree to do the household interview?

☐ YES, I agree to do the household interview.

☐ NO, I do not agree to do the household interview.

[IF "NO" THEN STOP – HOUSEHOLD IS NOT ENROLLED IN THE STUDY]

Head of household signature or mark_____ Date: ___/___/___

Printed name of head of household_____

Household survey ID number _____

[For illiterate participants]

Signature of witness_____ Date: ___/___/___

Printed name of witness_____

Signature of person obtaining consent_____ Date: ___/___/___

Printed name of person obtaining consent_____

Survey staff ID number _____

KENYA POPULATION-BASED HIV IMPACT ASSESSMENT (KENPHIA)

CONSENT FOR INTERVIEW FOR ADULTS (18-64 YEARS) AND EMANCIPATED MINORS

[INTERVIEWER: READ FROM HERE IF PARTICIPANT HAS NOT BEEN THROUGH HOUSEHOLD CONSENT]

Hello. My name is _____. I would like to invite you to take part in a survey to learn more about HIV in Kenya. The Ministry of Health, through the National AIDS and STI Control Programme is leading this survey and is conducting it with the National Public Health Laboratory, Kenya National Bureau of Statistics, Kenya Medical Research Institute, the United States Centers for Disease Control, and Prevention and ICAP at Columbia University.

What language do you prefer for our discussion today?

Enter a code for one of the language codes below ____

LANGUAGE CODES:

1.	English	7.	Kisii	13.	Somali
2.	Kiswahili	8.	Kamba	14.	Borana
3.	Luo	9.	Maasai	15.	Turkana
4.	Kikuyu	10.	Miji Kenda	16.	Pokot
5.	Luhya	11.	Meru	17.	Other
6.	Kalenjin	12.	Embu		

Purpose of the survey

This survey will help us know how many people in Kenya are at risk for getting HIV, have HIV, and need health services. We plan to include over 35,000 men, women, and children from about 18,000 households throughout Kenya to take part in this survey. If you join, your taking part will help the Ministry of Health make health services better in Kenya.

This form might have some words in it that are not familiar to you. Please ask us to explain anything that you do not understand.

[INTERVIEWER: READ FROM HERE IF PARTICIPANT HAS BEEN THROUGH HOUSEHOLD CONSENT]

Survey Procedures

If you join this survey, we will ask you questions and your answers will be kept between us. The questions will be about your age, what kind of work you do, whether you have had any experience with health services, and your social and sexual behavior. The interview will take about 60 minutes.

The information is collected on this tablet. The information is stored securely and can only be accessed by selected survey staff. The interview will take place in private here in your house or an area around your house.

After the interview, we will offer you a HIV test and may offer tests for hepatitis B and syphilis. We will ask separately for your consent for the blood draw and talk to you about your results. The testing and counselling session will take about 40 minutes. You may agree to the interview without agreeing to give your blood.

In some individuals, we will also measure the size of your upper arm to assess nutritional status. Depending on this result, you may receive counselling and may receive a referral to a health facility for follow-up.

Lastly, you may be eligible to take part in future studies related to the health of Kenyans. At the end of this form, we will ask for consent to contact you within the next three years if such an opportunity occurs.

Right to refuse or withdraw

You do not have to take part in the survey. If you choose to join the survey, you may change your mind at any time and stop taking part. If you decide not to take part, it will not affect your healthcare in any way. You may agree to the inter-

view without agreeing to give your blood. You may also agree to take part in the interview without agreeing to take part in future studies.

Risks

The risks of being in the survey are small. We will do everything we can to keep your information private. However, we cannot promise complete confidentiality. During the interview, you may feel uncomfortable about some of the questions we will ask. You can refuse to answer any question.

Benefits

Your taking part in this research could help us learn more about HIV in Kenya and how efforts by the Ministry of Health to prevent HIV infection and provide treatment are working.

Costs

There is no cost to you for being part of the survey. You should also know that you will not be paid for taking part in this survey.

Confidentiality

What we talk about will be kept private, even from your family, and will not be shown to anyone outside of the survey team. Your answers to the questions will be identified only by a number and not your name. Your name will not appear on any survey results that we share with the Ministry of Health, publish or present at scientific meetings.

The following individuals and/or agencies will be able to look at your research records to help oversee the conduct of this survey:

[INTERVIEWER: INDICATE INFORMATION ON SHEET TO PARTICIPANT–DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your rights as a person in this study. These are the Institutional Review Boards at Kenya Medical Research Institute (KEMRI) and the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center, and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person in this survey
- Study staff and study monitors

[INTERVIEWER: READ FROM HERE]

The information we collect during the survey will not be released outside of the survey groups listed unless there is an issue of safety. Your permission to allow us to use and share your personal identifying information with the KENPHIA project team will end three years after the end of the survey.

Who to contact if you have questions

If you want to leave the survey, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the study principal investigator, who is also the head of the National AIDS & STI Control Programme (NASCOP) under the Ministry of Health, or the Director of Population and Social Statistics at the Kenya National Bureau of Statistics (KNBS).

[INTERVIEWER: INDICATE ADDRESSES OF POINTS OF CONTACT–DO NOT READ ALOUD]

Address: Survey Principal Investigator/Head, NASCOP
NASCOP, Afya Annex, Kenyatta National Hospital, Ministry of Health, P.O. Box 19361-00202 Nairobi
Phone: +254 20 263 0867
Email: kenphia.nascop@gmail.com

Address: Director of Population and Social Statistics
Kenya National Bureau of Statistics (KNBS)
P.O. Box 30266-00100 Nairobi
Phone: +254 20 331 7588, +254 20 331 7583, +254 797 013 555

If you have any questions about your rights as a person taking part in this survey, you can contact the Secretary Ethical Review Committee at KEMRI.

[INTERVIEWER: INDICATE ADDRESS OF POINT OF CONTACT–DO NOT READ ALOUD]

Address: Head of Scientific and Ethical Review Unit,
Kenya Medical Research Institute (KEMRI)
P. O. Box 54840 Code 00200, Nairobi.
Phone: +254 02 072 2541, +254 722 205 901, +254 733 400 003
Email: seru@kemri.org

At this time, do you want to ask me anything about taking part in the interview?

Consent Statement

Any questions that I had were answered satisfactorily. I have been offered a copy of this consent form.

1. Do you agree to do the interview?

☐ YES, I agree to do the interview.

☐ NO, I do not agree to do the interview.

[IF "NO" THEN STOP – PARTICIPANT IS NOT ENROLLED IN THE STUDY. PROCEED TO REFUSAL/WITHDRAWAL FORM FOR INTERVIEW].

2. [FUTURERESEARCH:]You may be eligible to take part in future studies related to health in Kenya. We are asking for your permission to contact you in the next three years if such an opportunity occurs. If we contact you, we will give you details about the new study and ask you to sign a separate consent form at that time. You may decide at that time that you do not want to take part in that study. If you do not wish to be contacted about future studies, it does not affect your involvement in this study.

Do you agree to be contacted about future studies?

☐ YES, I agree to be contacted about future studies.

☐ NO, I do not agree to be contacted about future studies

Participant signature or mark_____ Date: __/__/__

Printed name of participant_____

Participant Survey ID (PTID) number _____

[For illiterate participants]

Signature of witness_____ Date: ___/___/___

Printed name of witness_____

Signature of person obtaining consent_____ Date: ___/___/___

Printed name of person obtaining consent_____

Survey staff ID number _____

KENYA POPULATION-BASED HIV IMPACT ASSESSMENT (KENPHIA)

CONSENT FOR INDIVIDUAL BLOOD TESTING FOR ADULTS AGED (18-64 YEARS AND EMANCIPATED MINORS)

What language do you prefer for our discussion today?

Enter a code for one of the language codes below ____

LANGUAGE CODES:

1.	English	7.	Kisii	13.	Somali
2.	Kiswahili	8.	Kamba	14.	Borana
3.	Luo	9.	Maasai	15.	Turkana
4.	Kikuyu	10.	Miji Kenda	16.	Pokot
5.	Luhya	11.	Meru	17.	Other
6.	Kalenjin	12.	Embu		

Study Procedures

We would like your permission to test your blood for HIV in your home and to return the results to you today. If you test positive for HIV, you will get a Hepatitis B and syphilis tests. If you test negative for HIV, you may be randomly selected to receive hepatitis B and syphilis testing.

If you agree to the testing and blood draw, we will take a small amount of blood, or about 1 tablespoon, from your arm. If it is not possible to take blood from your arm, then we will try to take a few drops of blood from your finger. If tested, we will provide you with the results for these tests.

We will also provide counseling and information about HIV, syphilis, and hepatitis B in your home today. The testing and counselling session will take about 50 minutes.

If you test positive for HIV, syphilis, or hepatitis B, we will give you a referral form so that you can seek treatment and learn more about your health. If you test positive for HIV, we will send your blood to a laboratory to measure your viral load. Viral load measures the amount of HIV in your blood. We will send your viral load result to a health facility of your choice in about six to ten weeks. If you agree to share your contact information, we will notify you when the results are ready at the health facility.

There is a chance your HIV test result may be indeterminate. If your HIV test result is indeterminate, it means we are not able to determine your HIV status at this time. If this is the case, we will send your blood sample to a laboratory here in Kenya for additional tests to determine your HIV status. Once available, we will send the results of these tests to a health facility of your choice in about two days to six weeks. If you provide us with your contact information, a health worker will get in contact with you to help ensure you pick up these results.

You may or may not be selected for other additional tests related to HIV. If you are selected, some of your blood sample will shipped out of the country for specialized tests at the Division of Clinical Pharmacology at the University of Cape Town in South Africa or to the Centers for Disease Control and Prevention (CDC) in the United States of America. These tests will help us measure the proportion of people receiving treatment for HIV. If we have test results that might help guide your care or treatment, we will attempt to contact you to notify you when your results are ready for collection from a health facility of your choice.

Lastly, we may measure the size of your upper arm to assess your nutritional status. Depending on this result, you will receive counseling and may receive a referral to a health facility for follow-up.

Storage of specimens

We would also like your consent to have the Ministry of Health store some of your blood in a blood bank at the National HIV Reference Laboratory (NHRL) at Kenyatta National Hospital grounds in Nairobi for future research tests. We are not certain exactly what tests will be done, but they involve testing for infections and chemicals. These tests will help

us learn more about the health of people in Kenya. This sample will be stored for 5 years, but your name will be on it for only three years. This sample will be available to the research team and researchers not involved with this study. During this three-year period, we will return any test results that are important to your health. Your stored blood will not be sold. If you do not agree to future testing, we will destroy your blood sample after survey-related testing has finished. During this three-year period, if you decide you no longer want your blood stored for future research tests, please contact the head of the National AIDS & STI Control Programme (NASCOP) under the Ministry of Health, or the Director of Population and Social Statistics at the Kenya National Bureau of Statistics (KNBS).

Right to refuse or withdraw

You do not have to take part in the survey. If you choose to join the survey, you may change your mind at any time and stop taking part. If you decide not to take part, it will not affect your healthcare in any way. You may agree for your blood to be tested, but not agree for the blood to be stored for future research tests.

Risks

The risks in drawing blood are very small. The needle may hurt when it is put into and taken out of your arm. This will go away after a while. We will do our best to make it hurt as little as possible. Sometimes the needle can leave a bruise or swelling on the skin. You might bleed a little or feel a little dizzy afterwards. Rarely, an infection might occur where the needle enters the skin. Sometimes we may have to stick you with the needle more than once in order to get the right amount of blood. You can say 'no' to what we ask you to do for the study at any time and we will stop. If you have any discomfort, bleeding, or swelling at the site, please contact the study staff.

You may learn that you are infected with HIV, hepatitis B, or syphilis. Learning that you have HIV, hepatitis B, or syphilis may cause some emotional discomfort. You will receive counselling on how to cope with learning that you have HIV, hepatitis B, or syphilis. We will also tell you where you can go for free care and treatment provided by the Ministry of Health.

We will do everything we can to keep your information private. However, we cannot guarantee total confidentiality.

Benefits

The main benefit for you to be in the survey is the chance to learn more about your health today. If you test HIV negative, you will learn about what you can do to stay HIV-negative. If you test HIV positive, you will learn your HIV status and where to go for free treatment. If you already know that you are HIV positive and you are on HIV treatment, the viral load test can help your nurse or doctor judge how well your treatment is working. Your taking part in this research could help us learn more about HIV in Kenya and how efforts by the Ministry of Health to prevent HIV infection and provide treatment are working.

Costs

There is no cost to you for being part of the survey. You should also know that you will not be paid for taking part in this survey.

Confidentiality

The blood we collect from you will be identified by a number and not by your name. This means that besides you, no one else will be able to know your test results except the people working on the survey. Your name will not appear on any survey results that we share with the Ministry of Health, publish or present at scientific meetings.

The following individuals and/or agencies will be able to look at your child's research records to help oversee the conduct of this survey:

[INTERVIEWER: INDICATE INFORMATION ON SHEET TO PARTICIPANT—DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your rights as a person in a study. These are the Institutional Review Boards at Kenya Medical Research Institute (KEMRI) and the Centers for Disease Control and Prevention (CDC; Atlanta,

USA), Columbia University Medical Center, and Westat (a statistical survey research organization)

- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person in this survey
- Study staff and study monitors

[INTERVIEWER: READ FROM HERE]

The information we collect during the survey will not be released outside of the survey groups listed unless there is an issue of safety. Your permission to allow us to use and share your personal identifying information with the KENPHIA project team will end three years after the end of the survey.

Who you should contact if have questions

If you want to leave the survey, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the study principal investigator, who is also the head of the National AIDS & STI Control Programme (NASCOP) under the Ministry of Health, or the Director of Population and Social Statistics at the Kenya National Bureau of Statistics (KNBS)

[INTERVIEWER: INDICATE ADDRESSES OF POINTS OF CONTACT—DO NOT READ ALOUD]

Address: Survey Principal Investigator/Head, NASCOP
NASCOP, Afya Annex, Kenyatta National Hospital,
Ministry of Health, P.O. Box 19361-00202 Nairobi
Phone: +254 20 263 0867
Email: kenphia.nascop@gmail.com

Address: Director of Population and Social Statistics
Kenya National Bureau of Statistics (KNBS)
P.O. Box 30266-00100 Nairobi
Phone: +254 20 331 7588, +254 20 331 7583, +254 797 013 555

If you have any questions about your rights as a person in this survey, you can contact the Secretary Ethical Review Committee at KEMRI.

[INTERVIEWER: INDICATE ADDRESS OF POINT OF CONTACT—DO NOT READ ALOUD]

Address: Head of Scientific and Ethical Review Unit,
Kenya Medical Research Institute (KEMRI)
P. O. Box 54840 Code 00200, Nairobi.
Phone: +254 02 072 2541, +254 722 205 901, +254 733 400 003
Email: seru@kemri.org

At this time, do you want to ask me anything about:

- Taking your blood?
- Testing in your house and the laboratory?
- Storage of blood for future research testing?

Consent Statement

Any questions that I had were answered satisfactorily. I have been offered a copy of this consent form.

[1] Do you agree to give blood for HIV, syphilis, and hepatitis B testing?

☐ YES, I agree to give blood for HIV, syphilis, and hepatitis B testing.

☐ NO, I do not agree to give blood for HIV, syphilis, and hepatitis B testing.

[IF 'NO' STOP. PROCEED TO REFUSAL/WITHDRAWAL FORM FOR HIV TESTING/SPECIMEN STORAGE]

[2a] Do you agree to allow the survey staff to return the results of the tests that are conducted in the household to you immediately after the test?

☐ YES, I agree to allow the survey staff to return the results of the tests that are conducted in the household to me immediately after the test.

☐ NO, I do not agree to allow the survey staff to return the results of the tests that are conducted in the household to me immediately after the test.

[IF "NO", PROCEED [2b], if *"YES", PROCEED TO [3]*

[2b] Do you agree to give blood for HIV, syphilis, and hepatitis B testing and allow the survey staff to send your blood test results, including HIV test results, to a health facility?

☐ YES, I agree to give blood for HIV, syphilis, and hepatitis B testing and allow the survey staff to send my blood test results, including HIV test results, to a health facility.

☐ NO, I do not agree to give blood for HIV, syphilis, and hepatitis B testing and allow the survey staff to send my blood test results, including HIV test results, to a health facility.

[IF "NO" THEN PARTICIPANT IS NOT ENROLLED IN THE BLOOD TESTING PORTION OF THE STUDY. IF "YES" PROCEED TO THE NEXT QUESTION.]

[2c] Do you agree for survey staff to contact you via SMS, email, or phone to notify you when laboratory test results are available?

☐ YES, I agree for survey staff to contact me via SMS, email, or phone to notify me when my laboratory test results are available.

☐ NO, I do not agree for survey staff to contact me via SMS, email, or phone to notify me when my laboratory test results are available.

(IF "NO" THEN PARTICIPANT MAY NOT BE ENROLLED IN THE BLOOD TESTING PORTION OF THE STUDY. IF "YES" PROCEED TO THE NEXT QUESTION.)

[3] Do you agree for your blood sample to be shipped out of the country for additional HIV testing? If we have test results that might help guide your care or treatment, we will attempt to contact you to notify you when your results are ready for collection from a health facility of your choice.

☐ YES, I agree to have my blood sample shipped out of the country for additional testing.

☐ NO, I do not agree to have my blood sample to be shipped out of the country for additional testing.

[4] Do you agree to have some of your blood stored for future research?

☐ YES, I agree to have some of my blood stored for future research.

☐ NO, I do not agree to have some of my blood stored for future research.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: BLOOD TESTING, RECEIPT OF BLOOD RESULTS AT THE HOUSEHOLD, RECEIPT OF BLOOD RESULTS AT A HEALTH FACILITY, NOTIFICATION OF WHEN RESULTS ARE AVAILABLE AT HEALTH FACILITY, BLOOD TESTING OUTSIDE OF THE COUNTRY, BLOOD STORAGE>, is this correct?

☐ YES ☐ NO

Participant signature or mark_____ Date: __/__/__

Printed name of participant_____

Participant Survey ID (PTID) number _____

[For illiterate participants]

Signature of witness_____ Date: __/__/__

Printed name of witness_____

Signature of person obtaining consent_____ Date: __/__/__

Printed name of person obtaining consent_____

Survey staff ID number _____

KENYA POPULATION-BASED HIV IMPACT ASSESSMENT (KENPHIA)

**PERMISSION FROM ADULT PARENT/GUARDIAN
TO INTERVIEW, DRAW BLOOD, TEST & RETURN RESULTS FOR PARTICIPANTS AGED 0-17 YEARS**

What language do you prefer for our discussions today?

Enter a code for one of the language codes below ____

LANGUAGE CODES:

1.	English	7.	Kisii	13.	Somali
2.	Kiswahili	8.	Kamba	14.	Borana
3.	Luo	9.	Maasai	15.	Turkana
4.	Kikuyu	10.	Miji Kenda	16.	Pokot
5.	Luhya	11.	Meru	17.	Other
6.	Kalenjin	12.	Embu		

Now I would like to ask you to let *<INSERT NAME OF CHILD/CHILDREN IF BATCH CONSENT >*

_____

_____

_____

_____ take part in the survey.

Purpose of the survey

This survey will help us learn more about the health of children in Kenya. We plan to ask almost 7,000 children like your child to join this survey. We would like to invite your child to join the survey too, even if his/her HIV status is already known. Your child taking part will help the Ministry of Health make health services better in the country.

This form might have some words in it that are not familiar to you. Please ask us to explain anything that you do not understand.

Survey Procedures

We would like to seek your permission to conduct interviews and then draw blood and conduct several tests and return results. I will begin by explaining the interview procedures.

Interviews

[CHILDREN 10 TO 14 YEARS]

If both you and your child agree for him/her to join the survey, we will ask your child some questions. The interview will be conducted in private with only the child and a survey staff member. The interview will be conducted in an area in or around the household. We will ask questions on HIV and your child's behaviors. The interview will take about 40 minutes. Your child's answers will not be shared with you.

[CHILDREN 15 TO 17 YEARS]

If both you and your child agree for him/her to join the survey, we will ask your child some questions. The interview will be conducted in private with only the child and a survey staff member. The interview questions will be the same as the ones that we ask adults who agree to take part in the survey, as well as additional questions specific for late adolescents. The questions will be about what kind of work they do, whether they have had any experience with health services, and their social and sexual behaviors. It will take about 60 minutes.

Blood draw, testing and results return:

[CHILDREN LESS THAN 18 MONTHS]

We would like to test your child for HIV. We are doing this for all children in the survey regardless of your HIV status. A trained healthcare worker will take a few drops of blood from your child's finger or heel. The test that we perform on your child today will let us know if your child was exposed to HIV. If it is positive, it does not mean your child has the virus in his/her blood. We will send your child's blood to a lab for a special test to determine if he/she has the HIV infection. We will return the results of this test to you at your household in about 2 days to 6 weeks from now.

Lastly, if your child is 6 months or above, we may measure the size of his/her upper arm to assess nutritional status. If this happens, you will receive counselling about your child's nutritional status, and depending on the result you may receive a referral to a health facility for follow-up.

[CHILDREN 18 MONTHS TO 14 YEARS]

We would like to test your child for HIV. We are doing this for all children in the survey regardless of your HIV status. A trained healthcare worker will take less than a half a tablespoon of blood from your child's arm or a smaller amount from his or her finger or heel and test for HIV in your household. We will give you the results and provide counseling about the results on the same day as the test. We will also discuss with you how to share the results with your child if you decide to discuss the results with him/her. The entire testing and counseling session will take about 45 minutes.

There is a chance your child's HIV test result may be indeterminate. If your child's HIV test result is indeterminate, it means we are not able to determine his/her HIV status at this time. If this is the case, we will send your child's blood sample to a laboratory here in Kenya for additional tests to determine his/her HIV status. Once available, we will send the results of these tests to a health facility of your choice in about two days to six weeks. If you provide us with contact information, a health worker will get in contact with you to help ensure you pick up these results.

Lastly, if your child is under five years of age, we may measure the size of his or her upper arm circumference to assess nutritional status. If this happens, you will receive counselling about your child's nutritional status, and depending on the result you may receive a referral to a health facility for follow-up.

[CHILDREN 15 TO 17 YEARS]

If both you and your child agree for him/her to join the survey, we would test your child for HIV. We are doing this for all children in the survey regardless of your HIV status. A trained healthcare worker will take less than a tablespoon of blood from your child's arm or a smaller amount from their finger and test for HIV in your household. If your child test positive for HIV, he/she will get a Hepatitis B and syphilis tests. If your child test negative for HIV, he/she may be randomly selected to receive hepatitis B and syphilis testing.

There is a chance your child's HIV test result may be indeterminate. If your child's HIV test result is indeterminate, it means we are not able to determine his/her HIV status at this time. If this is the case, we will send your child's blood sample to a laboratory here in Kenya for additional tests to determine his/her HIV status. Once available, we will send the results of these tests to a health facility of your child's choice in about two days to six weeks. If your child provides us with contact information, a health worker will get in contact with him/her to help ensure he or she picks up these results.

We will return these test results to your child. We will not tell you their results but will encourage your child to tell you. We will also provide counselling to your child about these results. The testing and counselling session will take about 50 minutes.

[ALL CHILDREN]

If your child tests positive for HIV infection, we will also send his/her blood to a laboratory for more tests. One of these tests will be to measure his/her viral load. Viral load is the amount of HIV in the blood. If you provide us with the name of a health facility, we will send your child's viral load results there in about 6-10 weeks.

Your child may or may not be selected for other additional tests related to HIV. If your child is selected, some of his/

her blood sample will shipped out of the country for specialized tests at the Division of Clinical Pharmacology at the University of Cape Town in South Africa or to the Centers for Disease Control and Prevention (CDC), Atlanta, United States of America. These tests will help us measure the proportion of people receiving treatment for HIV. If we have test results that might guide your child's care or treatment, we will contact you to tell you how you and your child's doctor or nurse may get these results.

Lastly, it is possible that your child may be eligible to take part in future studies related to the health of Kenyans. At the end of this form, we will ask for permission to contact you within the next three years if such an opportunity occurs.

Storage of specimens

We would like to ask your permission to store your child's remaining blood in a blood bank at the National HIV Reference Laboratory (NHRL) at Kenyatta National Hospital grounds in Nairobi for future research tests. These tests may be about HIV or other health issues important for the health of Kenya, such as nutrition or immunization. This sample will be stored for five years, but your child's name will be on the sample for three years. This sample will be available to the research team and researchers not involved with this study. We will attempt to tell you about any test results during the three-year period that are important for your child's health. Your child's remaining blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your child's blood samples, we will destroy your child's blood samples after survey-related testing has been completed. During this three-year period, if you decide you no longer want your child's blood stored for future research test, please contact the head of the National AIDS & STI Control Programme (NASCOP) under the Ministry of Health, or the Director of Population and Social Statistics at the Kenya National Bureau of Statistics (KNBS).

[CHILDREN AGE 10 TO 17 YEARS]

We will also ask your child if he/she agrees to the storage of his or her blood for future research testing. We will only store your child's blood if you both agree to store his/her blood for future research testing.

Right to Refuse and to Withdraw

It is your decision about whether you will allow us to invite your child to join the survey. You or your child may stop taking part at any time. If your child agrees to be interviewed but does not want to answer some of the questions, then he/she may skip them and move to the next question. If your child does not take part, it will not affect your child's health care in any way. If your child is 2 years or above, you may agree for your child's blood to be tested in this survey, but not agree for the blood to be stored for future research tests.

Risks

[CHILDREN AGE 10 TO 17 YEARS]

The risks of being in the survey are small. We will do everything we can to keep your information private. However, we cannot promise complete confidentiality. During the interview, you may feel uncomfortable about some of the questions we will ask. You can refuse to answer any question.

[ALL CHILDREN]

The risks in drawing blood are very small. The needle may hurt your child when it is put into and taken out of his/hers arm. This will go away after a while. We will do our best to make it hurt as little as possible. Sometimes the needle can leave a bruise or swelling on the skin. Your child might bleed a little or feel a little dizzy afterwards. Rarely, an infection might occur where the needle enters the skin. Sometimes we may have to stick your child with the needle more than once in order to get the right amount of blood. You and your child can say 'no' at any time and we will stop. If your child has any discomfort, bleeding, or swelling at the site, please contact the study staff. We will do everything we can to keep your information private. However, we cannot guarantee total confidentiality.

Benefits

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. If your child tests HIV positive you and/or your child will learn where to take your child for life-saving treatment, which is provided

by the Ministry of Health for free. If you already know that your child is HIV positive and he/she is on treatment, the viral load test can help your child's healthcare worker judge how well the treatment is working. Your child's taking part in this research could help us learn more about child's health in Kenya.

Costs

There is no cost to you or your child for being in the survey, apart from time.

Confidentiality

The blood testing of your child will take place in private. Your name and your child's name will not appear when we share survey results with the Ministry of Health or public. The information we collect from your child will be identified by a number and not by your name or your child's name. This means that besides you and your child, no one else will be able to know their test results except the people working on the survey.

The following individuals and/or agencies will be able to look at your child's research records to help oversee the conduct of this survey:

[INTERVIEWER: INDICATE INFORMATION ON SHEET TO PARTICIPANT–DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your rights as a person in a research study. These are the Institutional Review Boards at Kenya Medical Research Institute (KEMRI), the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center, and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person in this survey
- Study staff and study monitors

[INTERVIEWER: READ FROM HERE]

Your permission to allow us to use and share your child's information with the groups above will end three years after the end of the survey.

Who you should contact if you have questions

If you or your child want to leave the survey, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the study principal investigator, who is also the head of the National AIDS & STI Control Programme (NASCOP) under the Ministry of Health, or the Director of Population and Social Statistics at the Kenya National Bureau of Statistics (KNBS)

[INTERVIEWER: INDICATE ADDRESSES OF POINTS OF CONTACT–DO NOT READ ALOUD]

Address: Survey Principal Investigator/Head, NASCOP
NASCOP, Afya Annex, Kenyatta National Hospital, Ministry of Health, P.O. Box 19361-00202 Nairobi
Phone: +254 20 263 0867
Email: kenphia.nascop@gmail.com

Address: Director of Population and Social Statistics
Kenya National Bureau of Statistics (KNBS)
P.O. Box 30266-00100 Nairobi
Phone: +254 20 331 7588, +254 20 331 7583, +254 797 013 555

If you have any questions about your rights as a person taking part in this survey, you can contact the Secretary Ethical Review Committee at KEMRI.

[INTERVIEWER: INDICATE ADDRESS OF POINT OF CONTACT–DO NOT READ ALOUD]

Address: Head of Scientific and Ethical Review Unit,
Kenya Medical Research Institute (KEMRI)
P. O. Box 54840 Code 00202, Nairobi.
Phone: +254 02 072 2541, +254 722 205 901, +254 733 400 003 Email: seru@kemri.org

At this time, do you want to ask me anything about:

- Your child's taking part the interview?
- Taking your child's blood?
- Testing your child in your house and their blood in the laboratory?
- Storage of your child's blood for future research testing?

Permission Statement

Any questions I had have been answered satisfactorily. I have been offered a copy of this form.

[FOR PARENT/GUARDIAN OF CHILDREN 10-17 YEARS OF AGE]

1. [INTERVIEW:] Do you agree for survey team to ask your child to do the interview?

☐ YES, I agree for survey team to ask my child to do the interview.

☐ NO, I do not agree for survey team to ask my child to do the interview.

[IF NO THEN STOP]

[FOR PARENT/GUARDIAN OF CHILDREN 15-17 YEARS OF AGE]

2. [FUTURE RESEARCH:] It is possible that your child may be eligible to take part in future studies related to health in Kenya. We are asking for your permission to contact you in the next three years if such an opportunity occurs. If you and your child agree, we will contact you to give you details about the new study. We will also ask you or your child to sign a separate permission or assent format that time. You may decide at that time that you do not want your child/children to take part in that study. If you or your child choose not to be contacted about future studies, it does not affect your involvement in this study.

Do you agree to be contacted on behalf of your children about future studies?

☐ YES, I agree to be contacted on behalf of my child about future studies.

☐ NO, I do not agree to be contacted on behalf of my child about future studies

[FOR PARENT/GUARDIAN OF CHILDREN 10-17 YEARS OF AGE]

3. [BLOOD DRAW 10-17] Do you agree for survey team to ask your child to give blood for HIV testing and other related testing?

☐ YES, I agree for survey team to ask my child to give blood for HIV testing and other related testing.

☐ NO, I do not agree for survey team to ask my child to give blood for HIV testing and other related testing.

[IF 'NO' THEN STOP.]

[FOR PARENT/GUARDIAN OF CHILDREN 0-9 YEARS OF AGE ONLY]

4. [BLOOD DRAW 0-9] Do you agree for your child to give blood for HIV testing and other related testing?

☐ YES, I agree for my child to give blood for HIV testing and other related testing.

☐ NO, I do not agree for my child to give blood for HIV testing and other related testing.

[IF 'NO' THEN STOP. IF 'YES' GO TO QUESTION 5.]

5. BLOOD TESTING OUTSIDE OF COUNTRY: Do you agree for your child's blood sample to be shipped out of the country for additional HIV testing? If we have test results that might help guide your child's care or treatment, we will attempt to contact you or your child to notify you when the results are ready for collection from a health facility of your choice.

☐ YES, I agree to have my blood sample shipped out of the country for additional testing.

☐ NO, I do not agree to have my blood sample to be shipped out of the country.

6. BLOOD STORAGE: Do you agree to have some of your child's blood stored for future research?

☐ YES, I agree to have some of my child's blood stored for future research.

☐ NO, I do not agree to have some of my child's blood stored for future.

[Tablet summary statement]

To confirm, you have agreed to <ALLOW SURVEY STAFF TO APPROACH CHILD FOR THE INTERVIEW, FUTURE RESEARCH, BLOOD DRAW, BLOOD TESTING OUTSIDE OF THE COUNTRY, BLOOD STORAGE >, is this correct?

☐ YES ☐ NO

Parent/guardian signature or mark_____ Date: ___/___/___

Printed name of parent/guardian_____

[For illiterate parents/guardians]

Signature of witness_____ Date: ___/___/___

Printed name of witness_____

Signature of person obtaining permission_____ Date: ___/___/___

Printed name of person obtaining permission_____

Survey staff ID number _____

Child's name (print) _____

Child's participant ID number _____

KENYA POPULATION-BASED HIV IMPACT ASSESSMENT (KENPHIA)

ASSENT FOR INDIVIDUAL INTERVIEW FOR CHILDREN AND ADOLESCENTS (10-17 YEARS)

Hello. My name is_____.

What language do you prefer for our discussion today?

Enter a code for one of the language codes below ____

LANGUAGE CODES:

1.	English	7.	Kisii	13.	Somali
2.	Kiswahili	8.	Kamba	14.	Borana
3.	Luo	9.	Maasai	15.	Turkana
4.	Kikuyu	10.	Miji Kenda	16.	Pokot
5.	Luhya	11.	Meru	17.	Other
6.	Kalenjin	12.	Embu		

I would like to invite you to take part in a research survey. Surveys help us learn new things. We have talked to your parent/guardian and they said it was okay to ask you if you want to take part in this survey.

This form talks about our survey and the choice that you have to take part in it. We want you to ask us any questions that you have. You can ask questions any time.

Why are we doing this survey?

As a part of this research survey, we are asking people questions about themselves and also giving people a chance to learn if they have HIV. HIV is the virus that causes AIDS. AIDS is a very serious illness. We are inviting people to take part even if they already know they have HIV or they don't. We would very much appreciate your taking part in this survey as your views are important. All the answers you give will be kept private and will not be shown to anyone outside of the study team. We will not share your answers with your family.

What would happen if you join this survey?

If you decide to join the survey, here is what would happen:

- We will ask you questions about your age, what you know about HIV, and whether you have experiences that may put you at risk of HIV.
- The interview will take place in private here in your house or an area around your house.
- The interview will take about 20 to 60 minutes.
- [FOR PARTICIPANTS AGED 10-14]: After we ask you the questions, we will also ask you if it is okay to take some of your blood to test for HIV and to store it for future studies.
- [FOR PARTICIPANTS AGED 15-17]: After we ask you the questions, we will also ask you if it is okay to take some of your blood to test for HIV and in some, syphilis and hepatitis-B. We will also ask you if we can store collected blood for future studies.
- Lastly, in some individuals, we will also measure the size of your upper arm. Depending on the results of this measurement, you or your parent will receive counseling. Your parents may also receive a referral on your behalf to a health facility for follow-up.

Right to Refuse and to stop being in the survey

If you don't want to be in the survey study, you don't have to be. Nobody will get upset with you if you do not want to join the survey.

It is also OK to say 'Yes' and change your mind later. You can stop being in the survey at any time. If you want to stop, please tell us.

Could bad things happen if you join this survey?

You may feel uncomfortable answering some of the questions we will ask. You can refuse to answer any question at any time and we will stop.

Could the survey help me?

You may not get anything yourself by being in the survey. But you may help us figure out ways to help other children and learn more about HIV in Kenya. Your taking part is important, even if you already know that you have HIV or you don't have HIV.

[For participants aged 15-17 years]

Being in the survey may help you by learning whether or not you have hepatitis B or syphilis. If you test negative for any of these infections, you will learn about what you can do to avoid getting these infections. If you test positive for hepatitis B or syphilis, you will learn your status and where to go for care.

Do I have to pay anything?

There is no cost to you for being in the survey other than your time.

What else should you know about this survey?

We will not tell other people that you are in this survey and will not share information about you to anyone who does not work on the survey. Any information about you will have a number on it instead of your name. Your name or any other identifying information will not appear on any survey results that we share. No one else will be able to know your test results except the people working on the survey.

The following individuals and/or agencies will be able to look at your survey records:

- Survey staff and monitors (survey team that makes sure that the survey staff are following the right procedures in doing the survey)
- Staff members from groups that protect your rights to ensure that we are protecting your rights Your permission to allow us to use and share your information with the groups above will end three years after the end of the survey.

Who you should contact if you have questions

If you want to leave the survey, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the study principal investigator, who is also the head of the National AIDS & STI Control Programme (NASCOP) under the Ministry of Health, or the Director of Population and Social Statistics at the Kenya National Bureau of Statistics (KNBS)

[INTERVIEWER: INDICATE ADDRESSES OF POINTS OF CONTACT–DO NOT READ ALOUD]

Address: Survey Principal Investigator/Head, NASCOP
NASCOP, Afya Annex, Kenyatta National Hospital, Ministry of Health,
P.O. Box 19361-00202 Nairobi
Phone: +254 20 263 0867
Email: kenphia.nascop@gmail.com

Address: Director of Population and Social Statistics
Kenya National Bureau of Statistics (KNBS)
P.O. Box 30266-00100 Nairobi
Phone: +254 20 331 7588, +254 20 331 7583, +254 797 013 555

If you have any questions about your rights as a person taking part in this survey, you can contact the Secretary Ethical Review Committee at KEMRI.

[INTERVIEWER: INDICATE ADDRESS OF POINT OF CONTACT–DO NOT READ ALOUD]

Address: Head of Scientific and Ethical Review Unit,
Kenya Medical Research Institute (KEMRI)
P. O. Box 54840 Code 00200, Nairobi.
Phone: +254 02 072 2541, +254 722 205 901, +254 733 400 003
Email: seru@kemri.org

Do you want to ask me anything about the interview?

If you want to take part in the survey after we finish talking now, please write your name below. We will write our name too. This shows we talked about the survey and that you want to take part.

Assent Statement

Any questions that I had were answered satisfactorily. I have been offered a copy of this assent form.

1. Do you agree to do the interview?

☐ YES, I agree to do the interview?

☐ NO, I do not agree to do the interview.

[IF "YES" AND 15 to 17 YEARS OF AGE THEN PROCEED TO THE NEXT QUESTION]

2. CONTACT FOR FUTURE RESEARCH: It is possible that you may be eligible to take part in future studies related to health in Kenya. We would like to contact your parent/guardian in the next three years if such an opportunity occurs. If we contact your parent/guardian, we will give you and your parent/guardian details about the new study and ask you to sign a separate assent form at that time. You may decide at that time that you do not want to take part in that study. If you do not wish to be contacted about future studies, it does not affect your involvement in this study.

Do you agree for your parent/guardian to be contacted about future studies on your behalf?

☐ YES, I agree for my parent/guardian to be contacted about future studies on my behalf.

☐ NO, I do not agree for my parent/guardian to be contacted about future studies on my behalf.

Participant signature or mark_____ Date: ___/___/___

Printed name of participant_____

Participant Survey ID (PTID) number _____

[For illiterate participants]

Signature of witness_____ Date: ___/___/___

Printed name of witness_____

Signature of person obtaining assent_____ Date: ___/___/___

Printed name of person obtaining assent _____

Survey staff ID number _____

KENYA POPULATION-BASED HIV IMPACT ASSESSMENT (KENPHIA)

ASSENT FOR INDIVIDUAL BLOOD TESTING FOR MINORS AGED 10-17 YEARS

Hello. My name is _____. I will give you information about blood testing in this survey.

What language do you prefer for our discussion today?

Enter a code for one of the language codes below ____

LANGUAGE CODES:

1.	English	7.	Kisii	13.	Somali
2.	Kiswahili	8.	Kamba	14.	Borana
3.	Luo	9.	Maasai	15.	Turkana
4.	Kikuyu	10.	Miji Kenda	16.	Pokot
5.	Luhya	11.	Meru	17.	Other
6.	Kalenjin	12.	Embu		

As a part of this survey, we are giving people a chance to learn if they have HIV. We are also asking people if we can keep some of their blood for future testing.

This form might have some words in it that may be new to you. Please ask me to explain anything that you do not understand.

What would happen if you agree to get blood testing?

If you agree to testing, here is what would happen: [FOR PARTICIPANTS AGED 10-14]:

- We will use a needle to take less than a teaspoon of your blood from your arm. If it's not possible to take blood from your arm, then we will try to take a few drops of blood from your finger. Then we will test your blood for HIV here in your home.
- We will inform your parents about the results for all the above tests. It will take about 30-50 minutes to do the test and to talk to you about the results.
- If you test positive for HIV, we will send your blood to a laboratory to measure the amount of HIV in your blood. This result will be available at the health facility of your choice within 6 to 10 weeks.
- You may or may not be selected for other additional tests related to HIV. If you are selected, some of your blood sample will shipped out of the country for specialized tests at the Division of Clinical Pharmacology at the University of Cape Town in South Africa or to the Centers for Disease Control and Prevention (CDC) in the United States of America. If we have test results that might help guide your care or treatment, we will attempt to contact you to notify you when your results are ready for collection from a health facility of your choice.
- We would also like your permission to have the Ministry of Health store some of your blood for future research tests. We are not certain exactly what tests will be done, but they involve testing for infections and chemicals. These tests will help us learn more about the health of people in Kenya. This sample will be stored for 5 years, but your name will be on it for only three years.
- We will tell your parents/guardians about any test results during this period that are important to your health. Your remaining blood will not be sold.
- In some individuals, we will also measure the size of your upper arm. Depending on the results of this measurement, your parent will receive counseling. Your parent may also receive a referral on your behalf to a health facility for follow-up.

[FOR PARTICIPANTS AGED 15-17]:

- We will use a needle to take about one tablespoon of your blood from your arm. If it's not possible to take blood

from your arm, then we will try to take a few drops of blood from your finger. Then we will test your blood for HIV here in your home. In some individuals, we will also test for syphilis and hepatitis B as well. Like HIV, syphilis and hepatitis B are infections that can make someone very sick if left untreated. We will inform you about the results for all the above tests, and we encourage you to share them with your parents/guardian. It will take about 30-50 minutes to do the test and to talk to you about the results.

- If you test positive for HIV, we will send your blood to a laboratory to measure the amount of HIV in your blood. This result will be available at the health facility of your choice within 6 to 10 weeks.
- There is a chance your HIV test result may be indeterminate. If your HIV test result is indeterminate, it means we are not able to determine your HIV status at this time. If this is the case, we will send your blood sample to a laboratory here in Kenya for additional tests to determine your HIV status. Once available, we will send the results of these tests to a health facility of your choice in about two days to six weeks. If you provide us with your contact information, a health worker will get in contact with you to help ensure you pick up these results.
- We would also like your permission to have the Ministry of Health store some of your blood for future research tests. We are not certain exactly what tests will be done, but they involve testing for infections and chemicals. These tests will help us learn more about the health of people in Kenya. This sample will be stored for 5 years, but your name will be on it for only three years.
- You may or may not be selected for other additional tests related to HIV. If you are selected, some of your blood sample will shipped out of the country for specialized tests at the Division of Clinical Pharmacology at the University of Cape Town in South Africa or to the Centers for Disease Control and Prevention (CDC) in the United States of America. If we have test results that might help guide your care or treatment, we will attempt to contact you to notify you when your results are ready for collection from a health facility of your choice.
- In some individuals, we will also measure the size of your upper arm. Depending on the results of this measurement, you will receive counseling. You may also receive a referral to a health facility for follow-up.

Could bad things happen if you agree to blood testing?

There is a very little chance that anything bad will happen to you if you agree to collection and testing of your blood. The needle may hurt when it is put into and taken out of your arm. This will go away quickly. Sometimes the needle can leave a bruise on the skin. You might bleed a little or feel a little dizzy afterwards. Rarely, an infection might occur where the needle enters the skin. Sometimes we may have to stick you with the needle more than one time in order to get the right amount of blood. We will do our best to make it hurt as little as possible.

[FOR PARTICIPANTS 10-14 YEAR OLDS]

You may learn that you are infected with HIV. Learning that you have HIV can cause some emotional distress. If your parent agrees, you and your parent will receive counselling on how to cope with learning that you are HIV positive. We will also tell your parent where you can go for care and treatment, which is provided by the Ministry of Health for free. We will do everything we can to keep your test results private, but we cannot guarantee total confidentiality

[FOR PARTICIPANTS 15-17 YEAR OLDS]:

You may learn that you are infected with HIV. Learning that you have HIV can cause some emotional distress. You will receive counselling on how to cope with learning that you are HIV positive. We will also tell you where you can go for care and treatment, which is provided by the Ministry of Health for free. We will do everything we can to keep your test results private, but we cannot guarantee total confidentiality.

Could the testing help you?

[FOR PARTICIPANTS AGES 10-14 YEARS]

If you do not have HIV, you can learn about what you can do to stay that way. If you have HIV, we will tell your parent/guardian where to get help or treatment. Treatment for HIV is free. If you already know you have HIV and are on HIV treatment, the tests may help your healthcare worker know how well your treatment is working. We also hope to learn something from this survey to help other children in Kenya.

[FOR PARTICIPANTS AGES 15-17 YEARS]

Being in the survey may help you by learning whether or not you have HIV, hepatitis B, or syphilis. If you test negative for any of these infections, you will learn about what you can do to avoid getting these infections. If you test positive for HIV, you will get a Hepatitis B and syphilis tests. If you test negative for HIV, you may be randomly selected to receive hepatitis B and syphilis testing. Treatment for HIV is free.

Will you or your parent/guardian have to pay to receive blood testing?

There is no cost to you for being in the survey except for your time.

What else should you know about the blood testing part of this survey?

If you don't want to be in the survey study, you don't have to be. Nobody will get upset with you if you do not want to join the survey.

It is also OK to say 'Yes' and change your mind later. You can stop being in the survey at any time. If you want to stop, please tell us.

We will not tell other people that you are in this survey and will not share information about you to anyone who does not work on the survey. Any information about you will have a number on it instead of your name. Your name or any other identifying information will not appear on any survey results that we share. No one else will be able to know your test results except the people working on the survey.

The following individuals and/or organizations will be able to look at your survey records:

- Survey staff and survey monitors (survey team that makes sure that the survey staff are following the right procedures in doing the survey).
- Staff members from groups that protect your rights to ensure that we are protecting your rights

Your permission to allow us to use and share your information with the groups above will end three years after the end of the survey.

Who you should contact if you have questions

If you want to leave the survey, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the study principal investigator, who is also the head of the National AIDS & STI Control Programme (NASCOP) under the Ministry of Health, or the Director of Population and Social Statistics at the Kenya National Bureau of Statistics (KNBS)

[INTERVIEWER: INDICATE ADDRESSES OF POINTS OF CONTACT–DO NOT READ ALOUD]

Address: Survey Principal Investigator/Head, NASCOP
NASCOP, Afya Annex, Kenyatta National Hospital, Ministry of Health,
P.O. Box 19361-00202 Nairobi Phone: +254 20 263 0867
Email: kenphia.nascop@gmail.com

Address: Director of Population and Social Statistics
Kenya National Bureau of Statistics (KNBS)
P.O. Box 30266-00100 Nairobi
Phone: +254 20 331 7588, +254 20 331 7583, +254 797 013 555

If you have any questions about your rights as a person taking part in this survey, you can contact the Secretary Ethical Review Committee at KEMRI.

[INTERVIEWER: INDICATE ADDRESS OF POINT OF CONTACT–DO NOT READ ALOUD]

Address: Head of Scientific and Ethical Review Unit,
Kenya Medical Research Institute (KEMRI)
P. O. Box 54840 Code 00200, Nairobi.

Phone: +254 02 072 2541, +254 722 205 901, +254 733 400 003
Email: seru@kemri.org

At this time, do you want to ask me anything about:

- Taking your blood?
- Testing in your house and the laboratory?
- Storage of blood for future research testing?

Assent Statement

Any questions that I had were answered satisfactorily. I have been offered a copy of this consent form

[1] Do you agree to give blood for testing?

☐ YES, I agree to give blood for testing.

☐ NO, I do not agree to give blood for testing.

[IF "NO", END. IF "YES" AND PARTICIPANT IS 15 TO 17 YEARS OF AGE, PROCEED TO STATEMENT 2a. IF "YES" AND PARTICIPANT IS 10-14 YEARS OF AGE, PROCEED TO STATEMENT 3.]

[2a] Do you agree to allow the survey staff to return the HIV, syphilis, and hepatitis B test results to me at your household.?

☐ YES, I agree to allow the survey staff to return the HIV, syphilis, and hepatitis B test results to me at my household.

☐ NO, I do not agree to allow the survey staff to return the HIV, syphilis, and hepatitis B test results to me at my household.

[IF "NO", PROCEED TO 2B. IF "YES", PROCEED TO QUESTION 3.]

[2b] Do you agree to allow the survey staff to send your blood test results, including HIV test results, to a health facility?

☐ YES, I agree to allow the survey staff to send my blood test results, including HIV test results, to a health facility.

☐ NO, I do not agree to allow the survey staff to send my blood test results, including HIV test results, to a health facility.

[IF "NO" THEN PARTICIPANT IS NOT ENROLLED IN THE BLOOD TESTING PORTION OF THE STUDY. IF "YES" PROCEED TO THE NEXT QUESTION.]

[2c] Do you agree for the survey staff to contact you via SMS, email or phone to notify you when your laboratory test results are available?

☐ YES, I agree for the survey staff to contact me via SMS, email or phone to notify me when my laboratory test results are available.

☐ NO, I do not agree that survey staff to contact me via SMS, email or phone to notify me when my laboratory test results are available.

[IF "NO" THEN PARTICIPANT MAY NOT ENROLLED IN THE BLOOD TESTING PORTION OF THE STUDY. IF "YES" PROCEED TO THE NEXT QUESTION.]

[3] Do not agree for your blood sample to be shipped out of the country for additional HIV testing? If we have test results that might help guide your care or treatment, we will attempt to contact you or your parent to notify you when your results are ready for collection from a health facility of you or parent's choice.

☐ YES, I agree to have my blood sample shipped out of the country for additional testing.

☐ NO, I do not agree to have my blood sample to be shipped out of the country.

[4] Do you agree to have your remaining blood stored?

☐ YES, I agree to have my remaining blood stored.

☐ NO, I do not agree to have my remaining blood stored.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: BLOOD TESTING, RECEIPT OF BLOOD RESULTS AT THE HOUSEHOLD, RECEIPT OF BLOOD RESULTS AT A HEALTH FACILITY, NOTIFICATION OF WHEN RESULTS ARE AVAILABLE AT HEALTH FACILITY, BLOOD TESTING OUTSIDE OF THE COUNTRY, BLOOD STORAGE>, is this correct?

☐ YES ☐ NO

Participant signature or mark_____ Date: ___/___/___

Printed name of participant_____

Participant Survey ID (PTID) number _____

[For illiterate participants]

Signature of witness_____ Date: ___/___/___

Printed name of witness_____

Signature of person obtaining assent_____ Date: ___/___/___

Printed name of person obtaining assent_____

Survey staff ID number _____

KENYA POPULATION-BASED HIV IMPACT ASSESSMENT (KENPHIA)

CONSENT [18+ YEARS] /ASSENT [15-17 YEARS] /PARENTAL CONSENT [<14 YEARS] TO SHARE CONTACT INFORMATION OF KENPHIA PARTICIPANTS WITH MINISTRY OF HEALTH OR THEIR PARTNERS

Purpose of consent

[READ ONLY TO PARTICIPANT OR PARENT OF MINOR WHO TESTED HIV POSITIVE AT THE HOUSEHOLD]

You or your child had a positive HIV test, or tests have shown that your child has been exposed to HIV. We have given you a referral form to bring to a health clinic. This will help you seek HIV treatment, care and follow up. We would like to help you or your child to get the health care that you or your child may need.

[BEFORE LEAVING THE HOUSEHOLD, READ ONLY TO PARTICIPANT WHO DECLINED HOME-BASED TESTING BUT AGREED TO LAB TESTING –AGES 15-64]

We see that you have agreed to be tested for HIV in our lab and that you have agreed to pick up your test results from the facility of your choice. Now, we would like to get your consent to let us share your contact information with the Ministry of Health and its partners. This will allow them to contact you and help you link to health care if the results show that you are living with HIV.

[READ TO ALL FROM HERE]

What will happen if you agree to share your contact information?

If you agree, we will provide your contact information (name and phone number, if you provide) and your or your child's HIV test results to the County AIDS and STI Control Officer (CASCO). The results will be delivered securely to the CASCO. The CASCO will identify the person at the health facility to help with linking you or your child to HIV care. The contact person at the facility may be the community health extension worker (CHEW), an HIV peer educator, or a healthcare worker.

The contact person will reach you by SMS, phone, or in person to talk to you about HIV and to help you go or take your child for HIV care. Anyone who is given your or your child's details will have experience in giving support to people living with HIV. The person will be trained in maintaining confidentiality.

Privacy

Your or your child's HIV test results and your contact information will not be shared with any other people aside from those who were already talked about in the other consent forms, and with the support organization connected to the health facility. They will also do their very best to maintain your or your child's confidentiality. However, we cannot guarantee complete confidentiality.

Risks

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to reduce the chance of this happening.

Benefits

A community health worker or a facility healthcare worker will help you or your child to get the care that you or your child need).

The following people or agencies will be able to look at your/your child's survey records:

- Survey staff and the survey team that makes sure that the survey staff are following the right procedures in doing the survey.
- Staff members from groups that protect your rights and ensure that we are protecting your rights.

Who you should contact if you have questions

If you want to leave the survey, or have any questions about the survey, or feel that you have or your child has been harmed by taking part, you should contact the study principal investigator, who is also the head of the National AIDS & STI Control Programme (NASCOP) under the Ministry of Health, or the Director of Population and Social Statistics at the Kenya National Bureau of Statistics (KNBS)

Address: Survey Principal Investigator/Head, NASCOP
NASCOP, Afya Annex, Kenyatta National Hospital, Ministry of Health,
P.O. Box 19361-00202 Nairobi
Phone: +254 20 263 0867
Email: kenphia.nascop@gmail.com

Address: Director of Population and Social Statistics
Kenya National Bureau of Statistics (KNBS)
P.O. Box 30266-00100 Nairobi
Phone: +254 20 331 7588, +254 20 331 7583, +254 797 013 555

If you have any questions about your rights as a person in this survey, you can contact the Secretary Ethical Review Committee at KEMRI.

Address: Head of Scientific and Ethical Review Unit,
Kenya Medical Research Institute (KEMRI)
P. O. Box 54840 Code 00200, Nairobi.
Phone: +254 02 072 2541, +254 722 205 901, +254 733 400 003
Email: seru@kemri.org

At this time, do you want to ask me anything about the survey?

Consent/Assent Statement

Any questions that I had have been answered well. I have been offered a copy of this consent form.

Do you agree to have your contact information and your child's/children's details to be shared with Ministry of Health staff, and with the organization supporting healthcare services?

☐ YES, I agree to have my contact information and my child's/children's details to be shared with Ministry of Health staff, and the organization supporting healthcare services with them.

☐ NO, I do not agree to have my contact information and my child's/children's details to be shared with Ministry of Health staff, and the organization supporting healthcare services with them.

Participants signature or mark_____ Date: ___/___/___

Printed name of head of participant_____

Participant survey ID number _____

[For illiterate participants]

Signature of witness_____ Date: ___/___/___

Printed name of witness_____

Signature of person obtaining consent/assent _____ Date: ___/___/___

Printed name of person obtaining consent/assent _____

Survey staff ID number _____

KENYA POPULATION-BASED HIV IMPACT ASSESSMENT (KENPHIA)

PEC PERMISSION FROM ADULT PARENTS/GUARDIANS TO INTERVIEW, DRAW BLOOD, TEST & RETURN RESULTS FOR ALL CHILDREN AGED 0-17 YEARS

What language do you prefer for our discussions today?

Enter a code for one of the language codes below ____

LANGUAGE CODES:

1.	English	7.	Kisii	13.	Somali
2.	Kiswahili	8.	Kamba	14.	Borana
3.	Luo	9.	Maasai	15.	Turkana
4.	Kikuyu	10.	Miji Kenda	16.	Pokot
5.	Luhya	11.	Meru	17.	Other
6.	Kalenjin	12.	Embu		

Hello. My name is _____. I would like to ask you to let <*INSERT NAME OF CHILDREN* >

_____

_____ take part in the survey. I would like to invite you to take part in this research study about HIV in Kenya. The Ministry of Health, through the National AIDS and STI Control Programme is leading and conducting this survey in partnership with the National Public Health Laboratory, Kenya National Bureau of Statistics, Kenya Medical Research Institute, the United States Centers for Disease Control and Prevention, and ICAP at Columbia University.

Purpose of the survey

This survey will help us learn more about the health of children in Kenya. We plan to ask almost 7,000 children like yours to join this survey. Your children taking part will help the Ministry of Health make health services better in the country, even if they HIV status is already known.

This form might have some words in it that are not familiar to you. Please ask us to explain anything that you do not understand.

Survey Procedures

In order for your children to take part, we would like to seek your permission to conduct interviews, blood draws and give test results. I will begin by explaining the interview procedures.

Interviews

The interviews that we will conduct are different depending on the age of your child. If your child is between the ages of 10 to 17 years, and both of you agree for him/her to join the survey, we will ask your child to take part in an interview. The interviews will be conducted in private with only the child and a survey staff member. The interview will be conducted in an area in or around the household. The interview questions for your child if he/she is between 15 to 17 years, will be the same as the ones that we ask adults who agree to take part in the survey, as well as additional questions specific for late adolescents. These questions will be about what kind of work they do, whether they have had any experience with health services, and their social and sexual behaviors.

If your child is between the ages of 10 to 14 years, we will ask questions on HIV and your child's behaviors.

The interview will take about 40 to 60 minutes. Your child's answers will not be shared with you.

Blood draw, testing and results return:

We would like to test your child for HIV. We are doing this for all children in the survey regardless of your HIV status.

- **If your child is less than 18 months**, a trained healthcare worker will take a few drops of blood from your child's finger or heel and perform a test today will let us know if your child was exposed to HIV. If it is positive, it does not mean your child has the virus in his/her blood. We will send your child's blood to a lab for a special test to determine if they have the HIV infection. We will return the results of this test to you at your household in about 2 days to 6 weeks from now.
- **If your child is 18 months to 14 years**, a trained healthcare worker will take less than a half a tablespoon of blood from your child's arm or smaller amounts from his/her finger or heel and test for HIV in your household. We will give you the results and provide counseling about the results on the same day as the test. We will also discuss with you how to share the results with your child if you decide to discuss the results with him/her. Each testing and counseling session will take about 45 minutes.
- **If your child is 15 to 17 years**, a trained healthcare worker will take less than a tablespoon of blood from your child's arm or smaller amount from his/her finger and test for HIV in your household. If your child tests positive for HIV, he or she will get hepatitis B and syphilis tests. If your child tests negative for HIV, he or she may be randomly selected to receive hepatitis B and syphilis testing. We will return these test results to your child. We will not tell you their results but will encourage them to tell you. We will also provide counselling to your child about these results. The testing and counselling session will take about 50 minutes.
- **If your child is 18 months to 17 years**, there is a chance your child's HIV test result may be indeterminate. If your child's HIV test result is indeterminate, it means we are not able to determine his/her HIV status at this time. If this is the case, we will send your child's blood sample to a laboratory here in Kenya for additional tests to determine his/her HIV status.

Once this result is available, if your child is 18 months to 14 years, we will send the result of these tests to a health facility of your choice in about two days to six weeks. If you provide us with contact information, a health worker will get in contact with you to help ensure you pick up these results.

If your child is 15-17 years we will send the results to a health facility of your child's choice in about two days to six weeks. If your child provides us with contact information, a health worker will get in contact with him/her to help ensure he or she picks up these results.

- If your child tests positive for HIV infection, we will also send his/her blood to a laboratory for more tests. One of these tests will be to measure his/her viral load. Viral load is the amount of HIV in the blood. If you provide us with the name of a health facility, we will send your child's viral load results there in about 6 to 10 weeks.
- Your child may or may not be selected for other additional tests related to HIV. If your child is selected, some of his/her blood will be shipped out of the country for specialized tests at the Division of Clinical Pharmacology at the University of Cape Town in South Africa or to the Centers for Disease Control and Prevention (CDC), Atlanta, United States of America. These tests will help us measure the proportion of people receiving treatment for HIV. If we have test results that might guide your child's care or treatment and your child is 18 months to 14 years, we will contact you to tell you how you and your child's doctor or nurse may get these results.
- If your child is over 6 months, we may measure the upper arm circumference of his or her arm to assess nutritional status. If this happens, and your child is 6 months to 5 years of age, you will receive counselling about your child's nutritional status.. Depending on the result you may receive a referral to a health facility for follow-up. If your child is 15 to 17 years, he/she will receive counselling about his/her nutritional status, and depending on the result you may receive a referral to a health facility for follow-up
- Lastly, it is possible that your child may be eligible to take part in future studies related to the health of Kenyans. At the end of this form, we will ask for permission to contact you within the next three years if such an opportunity occurs.

Storage of specimens

We would like to ask your permission to store your child's remaining blood in a blood bank at the National HIV Reference Laboratory (NHRL) at Kenyatta National Hospital grounds in Nairobi for future research tests. These tests may be

about HIV or other health issues important for the health of Kenya, such as nutrition or immunization. These samples will be stored for at least 5 years, but your child's name will be on the sample for 3 years. This sample will be available to the research team and researchers not involved with this study. During this 3-year period, we will attempt to tell you about any test results that are important for your child's health. Also during this three-year period, if you decide you no longer want your child's blood stored for future research test, please contact the head of the National AIDS & STI Control Programme (NASCOP) under the Ministry of Health, or the Director of Population and Social Statistics at the Kenya National Bureau of Statistics (KNBS). Your child's blood will not be sold or used for commercial reasons. If you do not agree to long-term storage of your child's blood samples, we will destroy your child's blood samples after survey-related testing has been completed.

If your child is between 10 to 17 years, we will also ask your child if he/she agrees to the storage of his or her blood for future research testing. We will only store your child's blood if you both agree to store his/her blood for future research testing.

Right to Refuse and to Withdraw

It is your decision about whether you will allow us to invite your child to join the survey. You or your child may stop taking part at any time. If your child agrees to be interviewed but does not want to answer some of the questions, then he/she may skip them and move to the next question. If your child does not take part, it will not affect your child's healthcare in any way. You may agree for your child's blood to be tested in this survey, but not agree for the blood to be stored for future research tests.

Risks

The risks in drawing blood are very small. The needle may hurt your child when it is put into and taken out of his/her arm. This will go away after a while. We will do our best to make it hurt as little as possible. Sometimes the needle can leave a bruise or swelling on the skin. Your child might bleed a little or feel a little dizzy afterwards. Rarely, an infection might occur where the needle enters the skin. Sometimes we may have to stick your child with the needle more than once in order to get the right amount of blood. You and your child can say 'no' at any time and we will stop. If your child has any discomfort, bleeding, or swelling at the site, please contact the study staff.

If your child is between the ages of 10 to 17 years, we will invite your child to take part in an interview. The risks of taking part in the interview are small. We will do everything we can to keep your information private. However, we cannot promise complete confidentiality. During the interview, you may feel uncomfortable about some of the questions we will ask. You can refuse to answer any question. We will do everything we can to keep your information private. However, we cannot guarantee total confidentiality.

Benefits

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. If your child tests HIV positive you and/or your child will learn where to take your child for life-saving treatment, which is provided by the Ministry of Health for free. If you already know that your child is HIV positive and he/she is on treatment, the viral load test can help your child's healthcare worker judge how well the treatment is working. Your child's taking part in this research could help us learn more about children's health in Kenya.

Costs

There is no cost to you or your child for being in the survey, apart from your time.

Confidentiality

The blood testing of your child will take place in private. Your name and your child's name will not appear when we share survey results with the Ministry of Health or public. The information we collect from your child will be identified by a number and not by your name or your child's name. This means that besides you and your child, no one else will be able to know their test results except the people working on the survey.

The following individuals and/or agencies will be able to look at your child's research records to help oversee the conduct of this survey:

[INTERVIEWER: INDICATE INFORMATION ON SHEET TO PARTICIPANT—DO NOT READ ALOUD]

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your rights as a person in this study. These are the Institutional Review Boards at Kenya Medical Research Institute (KEMRI) and the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center, and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person in this survey
- Study staff and study monitors

[INTERVIEWER: READ FROM HERE]

Your permission to allow us to use and share your child's information with the groups above will end after the end of the survey.

Who to contact if you have questions

If you or your child want to leave the survey, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the study principal investigator, who is also the head of the National AIDS & STI Control Programme (NASCOP) under the Ministry of Health, or the Director of Population and Social Statistics at the Kenya National Bureau of Statistics (KNBS)

[INTERVIEWER: INDICATE ADDRESS OF POINTS OF CONTACT—DO NOT READ ALOUD]

Address: Survey Principal Investigator/Head, NASCOP
NASCOP, Afya Annex, Kenyatta National Hospital, Ministry of Health,
P.O. Box 19361-00202 Nairobi
Phone: +254 20 263 0867
Email: kenphia.nascop@gmail.com

Address: Director of Population and Social Statistics
Kenya National Bureau of Statistics (KNBS)
P.O. Box 30266-00100 Nairobi
Phone: +254 20 331 7588, +254 20 331 7583, +254 797 013 555

If you have any questions about your child's rights as a person in this survey, you can contact the Secretary Ethical Review Committee at KEMRI.

[INTERVIEWER: INDICATE ADDRESS OF POINT OF CONTACT—DO NOT READ ALOUD]

Address: Head of Scientific and Ethical Review Unit,
Kenya Medical Research Institute (KEMRI)
P. O. Box 54840 Code 00200, Nairobi.
Phone: +254 02 072 2541, +254 722 205 901, +254 733 400 003
Email: seru@kemri.org

At this time, do you want to ask me anything about:

- Your child's taking part the interview?
- Taking your child's blood?
- Testing your child in your house and their blood in the laboratory?
- Storage of your child's blood for future research testing?

Consent/Permission Statement

Any questions I had have been answered satisfactorily. I have been offered a copy of this permission form.

1. [INTERVIEW]Do you agree for the survey team to ask ALL your eligible children ages 10 to 17 years to do the interview?

☐ YES, I agree for survey team to ask ALL my eligible children ages 10 to 17 years to do the interview.

☐ NO, I do not agree for survey team to ask ALL my eligible children ages 10 to 17 years to do the interview.

[IF NO THEN STOP]

2. [FUTURE RESEARCH:] It is possible that your eligible children ages 15 to 17 years may be eligible to take part in future studies related to health in Kenya. We are asking for your permission to contact you in the next three years if such an opportunity occurs. If you and your children agree, we will contact you to give you details about the new study. We will also ask you or your children to sign a separate permission or assent form at that time. You may decide at that time that you do not want your children to take part in that study. If you or your children choose not to be contacted about future studies, it does not affect your involvement in this study.

Do you agree to be contacted about future studies on behalf of your eligible children ages 15 to 17 years?

☐ YES, I agree to be contacted about future studies on behalf of my eligible children ages 15 to 17 years.

☐ NO, I do not agree to be contacted future studies on behalf of my eligible children ages 15 to 17 years.

3. PERMISSION FOR BLOOD DRAW: Do you agree for survey team to ask ALL your eligible children ages 10 to 17 years to give blood for HIV testing and other related testing?

☐ YES, I agree for survey team to ask ALL my eligible children 10 to 17 years to give blood for HIV testing and other related testing.

☐ NO, I do not agree for survey team to ask ALL my children 10 to 17 years to give blood for HIV testing and other related testing.

[IF 'NO' THEN STOP.]

4. CONSENT FOR BLOOD DRAW: Do you agree for ALL your eligible children ages 0 to 9 years to give blood for HIV testing and other related testing?

☐ YES, I agree for my ALL children to give blood for HIV testing and other related testing.

☐ NO, I do not agree for ALL my children to give blood for HIV testing and other related testing.

[IF 'NO' THEN STOP.]

5. BLOOD TESTING OUTSIDE OF COUNTRY: Do you agree for your children's blood sample to be shipped out of the country for additional HIV testing? If we have test results that might help guide your child's care or treatment, we will attempt to contact you or your child to notify you when the results are ready for collection from a health facility of your choice.

☐ YES, I agree for the blood sample of ALL my children to be shipped out of the country for additional testing.

☐ NO, I do not agree for the blood sample of ALL my children to be shipped out of the country for additional testing.

6. [BLOOD STORAGE] Do you agree for ALL your eligible children ages 0 to 9 years to have their blood stored for future research and for the survey staff to ask ALL your eligible children 10 to 17 years if they agree to blood storage for future research?

☐ YES, I agree to blood storage for future research for ALL my eligible children ages 0 to 9 years and for the survey staff to ask ALL my eligible children 10 to 17 years if they agree to blood storage for future research.

☐ NO, I do not agree to blood storage for future research for ALL my eligible children ages 0 to 9 years and for the survey staff to ask ALL my eligible children 10 to 17 years if they agree to blood storage for future research.

[Tablet summary statement]

To confirm, you have agreed to <ALLOW SURVEY STAFF TO APPROACH YOUR CHILDREN FOR AN INTERVIEW, CONTACT THEM FOR FUTURE RESEARCH, DRAW BLOOD FOR ELIGIBLE CHILDREN, SHIP THEIR SAMPLES OUT OF COUNTRY FOR ADDITIONAL TESTING, and STORAGE OF THERE BLOOD >, is this correct?

☐ YES ☐ NO

Parent/guardian signature or mark_____ Date: ___/___/___

Printed name of parent/guardian_____

[For illiterate parents/guardians]

Signature of witness_____ Date: ___/___/___

Printed name of witness_____

Signature of person obtaining consent/permission_____ Date: ___/___/___

Printed name of person obtaining consent/permission_____

Survey staff ID number _____

Child's name (print) _____

Child's participant ID number _____

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KENPHIA 2018

This project is supported by the US President's Emergency Plan for AIDS Relief (PEPFAR) through CDC under the terms of cooperative agreement #U2GGH001226. The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the funding agencies.

Ministry of Health

The Council of Governors
48 Governments, 1 Nation

USA Marafiki

PEPFAR

CDC Centers for Disease Control and Prevention

icap Global Health

NASCOP

National Public Health Laboratory Services

KNBS Kenya National Bureau of Statistics *Keeping you informed*

NCPD

maisha! National AIDS Control Council

The Global Fund

Kenya Medical Research Institute KEMRI

Westat

NEPHAK *say yes to life*

UNAIDS

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