UGANDA POPULATION-BASED HIV IMPACT ASSESSMENT
UPHIA 2016-2017

FINAL REPORT
JULY 2019

UGANDA POPULATION-BASED HIV IMPACT ASSESSMENT (UPHIA) 2016-2017

UPHIA 2016-2017 COLLABORATING INSTITUTIONS

Ministry of Health, Uganda
The United States President's Emergency Plan for AIDS Relief (PEPFAR)
The United States Centers for Disease Control and Prevention (CDC)
Uganda Virus Research Institute (UVRI)
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The Joint United Nations Programme on HIV/AIDS (UNAIDS), Uganda
World Health Organization (WHO), Uganda
WESTAT
ICAP at Columbia University

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GLOSSARY OF TERMS

90-90-90: An ambitious set of targets to help end the AIDS epidemic. By 2020, 90% of all people living with HIV will know their HIV status; 90% of all people diagnosed with HIV will receive antiretroviral therapy (ART); and 90% of all people receiving ART will have viral load (VL) suppression (VLS).

95-95-95: The next stage of the Fast-Track Strategy to end the AIDS epidemic. By 2030, 95% of people living with HIV will know their HIV status; 95% of people diagnosed with HIV will be on ART; and 95% of people on ART will have 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: In this report, young adolescents are children 10-14 years of age, while older adolescents are young people aged 15-19 years.

Adults: Defined in this survey as the population of individuals aged 15-64 years.

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 HIV-positive persons.

CD4+ T-Cells: CD4+ T-cells (CD4) are white blood cells (lymphocytes) 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 0-14 years of age.

De Facto Household Resident: A person who slept in the household the night prior to 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 the head and is aged 18 years or older, or is considered an emancipated minor (below 18 years of age who is married or is free from any legally competent representative as defined by law in Uganda).

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 the HIV-positive person vulnerable to illnesses that would have otherwise been eliminated by a healthy immune system.

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 and the numerator is the number of new cases that occur during a given time period.

HIV Prevalence: The proportion of persons in a population living with HIV at a specific point in time; the denominator is the total population and the numerator is the number of persons living with HIV.

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

HIV Viral Load Suppression (VLS): An HIV VL of less than 1,000 copies per mL of blood.

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 have 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 to reduce a man's risk of acquiring HIV infection through heterosexual intercourse.

Prevention of Mother-To-Child-Transmission (PMTCT) of HIV: Mother-to-child transmission (MTCT) is when an HIV-positive woman passes the HIV virus to her baby during pregnancy, labor, delivery, or while breastfeeding. The United Nations recommends effective PMTCT to include a four-fold approach: (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, their children, and families.

Sexually Transmitted Infections (STI): STIs are infections 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 (TB): TB is a contagious bacterial disease that spreads through the air and is the leading cause of death among people living with HIV in Africa.

Young people: Defined in this survey as the population of individuals aged 15-24 years.

List of Abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
ARV	Antiretroviral
CDC	U.S. Centers for Disease Control and Prevention
CD4	CD4+ T-Cell
CEPHIA	Consortium for the Evaluation and Performance of HIV Incidence Assays
CI	Confidence Interval
DBS	Dried Blood Spot
DNA	Deoxyribonucleic Acid
EA	Enumeration Area
EIA	Enzyme Immunoassay
EID	Early Infant Diagnosis
HBTC	Home-Based Testing and Counseling
HBV	Hepatitis B Virus
HIV	Human Immunodeficiency Virus
ID	Identification Number
ICC	Intra-Cluster Correlation
IPV	Intimate Partner Violence
IQR	Interquartile Range
JHU	Johns Hopkins University
LAg	Limiting Antigen
mL	Milliliter
µL	Microliter
MDRI	Mean Duration of Recent Infection
MOH	Ministry of Health
MOS	Measure of Size
MTCT	Mother-to-Child Transmission
NNRTI	Non-Nucleoside Reverse Transcriptase Inhibitor
NRTI	Nucleoside Reverse Transcriptase Inhibitor
ODn	Normalized Optical Density
PCR	Polymerase Chain Reaction
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PFR	Proportion False Recent
PHIA	Population-based HIV Impact Assessment
PI	Protease Inhibitor
PLHIV	People Living with HIV
PMTCT	Prevention of Mother-to-Child Transmission
POC	Point of Care

PSU	Primary Sampling Units
QA	Quality Assurance
QC	Quality Control
RNA	Ribonucleic Acid
RR	Response Rate
RSE	Relative Standard Error
STI	Sexually Transmitted Infection
TB	Tuberculosis
UAIS	Uganda AIDS Indicator Survey
UBOS	Uganda Bureau of Standards
UVRI	Uganda Virus Research Institute
UNAIDS	Joint United Nations Programme on HIV/AIDS
UPHIA	Uganda Population-based HIV Impact Assessment
VL	Viral Load
VLS	Viral Load Suppression
VMMC	Voluntary Medical Male Circumcision
WHO	World Health Organization

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FOREWORD

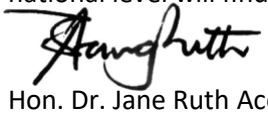
Accurate data on the magnitude and dynamics of HIV as well as service coverage and uptake are needed to inform strategic planning and evaluation of HIV/AIDS programmes, particularly when Uganda is committed to HIV epidemic control by 2020 through ambitious Fast Track targets. Data in Uganda are triangulated from various sources including routine HIV surveillance, programme monitoring, operations research, mathematical modeling, and periodic national and sub-national population-based surveys.

We are pleased to present the results from Uganda Population-based HIV Impact Assessment (UPHIA) 2016-2017, a national population-based survey that provides comprehensive information on important HIV indicators at national and regional levels and measures progress toward the UNAIDS and national 90-90-90 targets. This survey was based on a nationally representative sample of over 12,800 households throughout Uganda. UPHIA described demographic characteristics of respondents, and obtained data on uptake and coverage of services including prevention of mother-to-child-transmission (PMTCT) of HIV, male circumcision, HIV testing and awareness of HIV status, HIV care and treatment, tuberculosis (TB), syphilis, Hepatitis B, and intimate partner violence. UPHIA also collected information about HIV testing and treatment in children. Through blood tests, UPHIA measured indicators of the national impact of the HIV programme including HIV incidence and HIV viral load suppression (VLS) in adults, and HIV burden estimates based on HIV prevalence among adults and children.

The findings of the survey are timely as the national and global HIV prevention and treatment community focuses on epidemic control. These data will facilitate better monitoring of HIV programmes; track disproportionately affected sub-populations still unaware of their HIV status; and measure progress toward population VLS at a sub-national level. The biological and behavioral data from UPHIA will help programmes target the right populations with tailored interventions and policy makers to appropriately improve service delivery models.

UPHIA was led by the Government of Uganda and conducted by the Ministry of Health in collaboration with ICAP at Columbia University. Funding for the survey was provided by the US President's Emergency Plan for AIDS Relief (PEPFAR) with technical assistance provided by the US Centers for Disease Control and Prevention (CDC). Other collaborating partners included the Uganda Virus Research Institute, the Uganda Bureau of Statistics, the World Health Organization (WHO Uganda), UNAIDS and the United States Agency for International Development (USAID).

We acknowledge the efforts of the national and international organizations involved in planning and implementing the survey, and writing this report, in particular, the UPHIA Technical Working Group and Steering Committees. We are especially grateful to our field staff and the respondents who graciously provided their time and data for the nation's benefit. I commend the report to all stakeholders in the country and beyond, and hope partners involved in HIV epidemic control efforts at national and sub-national level will find the report a useful resource for evidence-informed planning and decision making.



Hon. Dr. Jane Ruth Aceng
Minister of Health

EXECUTIVE SUMMARY

The Uganda Population-based HIV Impact Assessment (UPHIA) 2016-2017 was a nationally representative, cross-sectional, population-based survey of households across Uganda. UPHIA focused on measuring key biological endpoints to provide direct estimates of HIV infection, risk, and burden and of the effectiveness and population-level impact of the HIV-related prevention, care, and treatment interventions implemented in the country. Its primary objectives were to estimate the national-level annual HIV incidence among adults (defined as those aged 15-64 years in this survey), and the national and subnational prevalence of HIV and HIV viral load (VL) suppression (VLS) (defined as less than 1,000 copies per milliliter [mL]) among HIV-positive adults. In addition, UPHIA measured CD4 counts, antiretroviral (ARV) drugs in blood, transmitted HIV drug resistance, pediatric HIV and VLS prevalence, prevalence of syphilis and hepatitis B in adults, and progress toward the 90-90-90 targets as defined by the Joint United Nations (UN) Programme on HIV/AIDS (UNAIDS). The survey also collected information on behaviors associated with HIV acquisition and transmission, common HIV co-morbidities, and other health conditions.

The survey used a two-stage, stratified cluster sample design, in which census enumeration areas (EA) (clusters) were selected in the first stage and households in the second stage. The sample was stratified by ten geographical regions: Central 1, Central 2, Kampala, East-Central, Mid-Eastern, North-East, West Nile, Mid-North, Mid-West, and South-West. Data collection began at the end of August 2016 and was completed at the end of March 2017. The survey was administered to 12,386 households. In the households surveyed, 30,581 adults aged 15-64 years and 10,793 children (defined as those aged 0-14 years) were eligible to participate. Altogether, 96% (29,383) of eligible adults were interviewed, and 99% (29,024) of interviewed adults, 96% (9,641) of eligible children aged 0-12 years, and 99% (704) of eligible children aged 13-14 years provided blood for biomarker assessment to determine HIV status.

UPHIA provided home-based testing and counseling (HBTC) with return of results and point-of-care (POC) CD4 counts for those who were HIV positive. HIV VL results were returned to participants through health facilities of their choice. The estimates in UPHIA were weighted for sample selection probabilities and were adjusted for nonresponse and noncoverage. The key findings of UPHIA are:

- Annual incidence of HIV among adults was 0.40%: 0.46% among women and 0.35% among men. This corresponded to approximately 73,000 new cases of HIV during the year among adults in Uganda.
- HIV prevalence among adults was 6.2%: 7.6% among women and 4.7% among men. This corresponds to approximately 1.2 million adults living with HIV. HIV prevalence among adults aged 15-49 years was 6.0%. HIV prevalence varied across the ten regions, ranging from 3.1% in the West Nile region to 8.0% in the Central 1 region. HIV prevalence was higher in those residing in urban areas (7.5%) compared to those living in rural areas (5.8%). HIV prevalence among young women aged 15-24 years (3.3%) was more than four times higher than among young men in the same age bracket (0.8%).
- Nearly one in seven households were HIV-affected (with at least one HIV-positive member). Households headed by women were twice as likely to have an HIV-positive head of household (15.1%) as households headed by men (7.2%).

- Among adults, more than two-thirds of men (68.9%) and 82.1% of women reported ever having been tested for HIV and having received their results. Overall, 41.7% of adults reported receiving an HIV test in the 12 months preceding the survey: 36.7% among men and 46.2% among women. Among HIV-positive men and women, 85.2% and 94.4%, respectively, reported they had ever been tested for HIV and received their results.
- The overall estimates related to the 90-90-90 cascade* indicate that 72.5% of all adults living with HIV reported knowing their HIV-positive status or had ARVs detected in their blood. Among all HIV-positive adults, 65.5% had detectable ARVs and/or reported current ART usage: 69.4% among women and 58.5% among men. Of all adults living with HIV, 54.8% had suppressed viral loads: 58.8% among women and 47.7% of men. Of the estimated 1.2 million HIV-positive adults in Uganda, this corresponds to approximately 867,000 people who were aware of their HIV-positive status, 783,000 who were on treatment, and 655,000 who had suppressed viral loads.
- Adult 90-90-90 results, when combining the self-reported data along with results from laboratory tests showing whether individuals had detectable ARVs in their blood (to determine both knowledge of HIV-positive status and whether they were on treatment), included:
    - **Diagnosed:** In Uganda, 72.5% of HIV-positive adults reported knowing their HIV-positive status or had ARVs detected in their blood:† 75.4 % of HIV-positive women and 67.3% of HIV-positive men.
    - **On Treatment:** Among adults living with HIV who knew their HIV status, 90.4% reported current use of antiretroviral therapy (ART) or had ARVs detected in their blood: 92.1% of women and 86.9% of men.
    - **Viral Load Suppression (VLS):** Among HIV-positive adults who reported current use of ART or had ARVs detected in their blood, 83.7% had VLS: 84.7% of HIV-positive women and 81.5% of HIV-positive men.
- In Uganda, 66.2% of adults living with HIV reported awareness of their HIV status: 68.6% of HIV-positive women and 62.0% of HIV-positive men. However, two-thirds (75.8%) of HIV-positive young men aged 20-24 years and 60.0% of older adolescent girls aged 15-19 years reported being unaware of their HIV status. Lack of reported knowledge of HIV status among HIV-positive men varied geographically, from 31.2% unaware in North-East region to 51.3% unaware in East-Central.
- There was a notable discrepancy between self-reported awareness of HIV status, and awareness as reflected by laboratory detection of ARVs in the blood. Among HIV-positive adults who reported no previous diagnosis, 18.5% had ARVs detected in blood (14.1% men and 21.5% women).
- The UNAIDS target of VLS is 73% of all adults living with HIV. Based upon self-reported data alone, the overall prevalence of VLS among HIV-positive adults was 59.6%: higher in women (62.9%) than among men (53.6%). The prevalence of VLS ranged from 39.6% among HIV-positive adults aged 20-24 years to 74.2% among HIV-positive adults aged 50-54 years. This trend was observed across both sexes. The prevalence of VLS varied geographically across Uganda, ranging from 48.8% in East-Central to 70.0% in the North-East region.

*Further explanation of the methods used to determine conditional and overall percentages of the 90-90-90 cascade can be referenced in Chapter 10.

†Based on self-reported HIV-positive status and/or laboratory ARV data.

- Low CD4 counts (<350 cells per microliter [µL]), especially those <200 cells/µL, are associated with higher likelihood of HIV-related illnesses and death. The median CD4 count among all adults living with HIV was 500 cells/µL. Almost a third (29.6%) of adults who reported being unaware of their status had a CD4 count of < 350 cells/µL, and 10.3% had a CD4 count < 200 cells/µL. When these findings were adjusted on the basis of ARV detection in blood, 9.8% of adults who were unaware of their HIV-positive status had a CD4 cell count less than 200 cells/µL.
- HIV prevalence among children was 0.5%, which corresponded to approximately 96,000 children living with HIV. Based on parent report of their child's HIV-positive status or ARVs detected in the blood, 56.3% of HIV-positive children were previously diagnosed. Of all HIV-positive children, 54.3% were on treatment according to parent report of current ARV use or ARV detection in the blood. VLS among HIV-positive children on ART was 24.9%.
- Among infants born in the last 17 months to HIV-positive women aged 15-49 years, 15.6% were confirmed positive. Among infants born in the last 17 months to HIV-positive women who were already on ART at first antenatal care (ANC) visit, 3.4% were confirmed positive.
- In Uganda, 98.4% of women of childbearing age (those aged 15-49 years) who delivered in the three years preceding the survey attended at least one ANC visit for their most recent birth. Among all women who delivered in the 12 months preceding the survey, 9.1% did not know their HIV status. Among HIV-positive women who gave birth in the 12 months before the survey, 72.9% were already on ART prior to pregnancy. Based upon self-report, 95.3% of HIV-positive women who gave birth in the 12 months preceding the survey used ART during pregnancy, which indicates high coverage of ART provision for prevention of mother-to-child transmission (PMTCT).
- Among young people (defined as those aged 15-24 years), HIV prevalence was lower in older adolescents aged 15-19 years (1.1%; 0.5% in boys and 1.8% in girls) than in young adults aged 20-24 years (3.3%; 1.3% in young men and 5.1% in young women). Early sexual debut (self-report of sex before 15 years of age) was 13.6% overall among young people, and was higher among adolescent boys and young men (17.3%) than adolescent girls and young women (10.2%). The proportion of young people who had sex before 15 years of the age was higher in rural areas compared to urban areas (14.5% and 11.7%, respectively). There were some geographical variations in this regard, ranging from 10.4% in South-West to 19.0% in East-Central and 21.8% in Mid-Eastern regions.
- Among adults who reported having sex in the 12 months before the survey, 36.7% (45.2% among men and 29.0% among women) reported that they had a non-marital, non-cohabitating partner during that period, among whom 33.4% (37.0% among men and 28.3% among women) reported using a condom the last time they had sex with a non-marital, non-cohabitating partner.
- More than half of men (54.6%) reported not being circumcised. There was wide geographical variation in the prevalence of uncircumcised men, ranging from 30.0% in Mid-Eastern to 79.8% in North-East and 85.7% in Mid-North regions.
- Being exposed to physical or sexual violence from an intimate partner in the 12 months before the survey was reported among both HIV-negative and HIV-positive young women aged 15-24 years (11.4% and 7.6%, respectively). There was wide geographical variation in the prevalence of physical or sexual violence among women, ranging from 7.5% in West Nile to 20.1% in Mid-Eastern regions.
- Among adults who reported an HIV-positive status, 30.8% reported they had ever visited a tuberculosis (TB) clinic. Of these, 33.7% reported that they had been diagnosed with TB, of whom 97.9% had been treated for TB.

- The prevalence of having ever had syphilis among adults was 6.0% (6.1% among women and 5.8% among men). The overall prevalence of active syphilis infection was 2.1% (2.2% among women and 2.0% among men). The prevalence of active syphilis increased with age. The prevalence of those who ever had syphilis was higher among HIV-positive (13.6%) than among HIV-negative (5.5%) people. Active syphilis infections were more common among HIV-positive (6.2%) than HIV-negative participants (1.8%).
- The overall prevalence of hepatitis B virus (HBV) infection in adults was 4.1%. The prevalence of HBV infection among HIV-positive adults was 4.7% (6.3% among men and 3.8% among women) compared to 2.4% among HIV-negative adults (3.0% among men and 1.8% among women). The prevalence of HBV was 0.6% in children. HBV prevalence varied geographically from 0.8% in South-West to 4.6% in the Mid-North region.

UPHIA indicates that HIV continues to cause a significant burden of disease in the country. Although there has been remarkable progress toward the achievement of the UNAIDS 90-90-90 targets in adults, progress in the pediatric population is not comparable. The major challenge in both populations remains diagnosis, and a critical priority is to identify and link to care those living with HIV but unaware of their status.

UPHIA incidence estimates indicate that there were approximately 73,000 new HIV infections during the year among adults. The considerable variation in the prevalence of HIV and VLS across regions and population groups, and the low frequency of preventative behaviors such as condom use and medical circumcision, indicate that the country requires an intensified, targeted approach to the delivery of a combination of effective, evidence-based, prevention interventions to further reduce HIV transmission. Increasing coverage of testing, while sustaining high levels of treatment, and maintaining retention and adherence to treatment to ensure VLS, are key to reduce HIV incidence and mortality.

1 INTRODUCTION

1.1 Background

The Population-based HIV Impact Assessment (PHIA) is a multicountry project funded by the United States President's Emergency Plan for AIDS Relief (PEPFAR) to conduct national HIV-focused surveys that describe the status of the HIV epidemic. The surveys measure important national and regional HIV-related parameters, including progress toward the achievement of the UNAIDS 90-90-90 targets, and guide policy and funding priorities.

UPHIA was led by the government of Uganda through the Ministry of Health (MOH) with technical assistance by United States Centers for Disease Control and Prevention (CDC). The survey was implemented by the Uganda MOH and ICAP at Columbia University in collaboration with the Uganda Virus Research Institute (UVRI) and the Uganda Bureau of Standards (UBOS). The survey protocol was approved by the Centers for Disease Control and Prevention Institutional Review Board (IRB), the Columbia University Medical Center IRB, and the local IRBs in Uganda (Uganda National Council for Science and Technology and UVRI).

1.2 Overview of UPHIA 2016-2017

A household-based national survey, UPHIA, was conducted between August 2016 and March 2017 to measure the status of Uganda's national HIV response. UPHIA offered home-based testing and counseling (HBTC) with return of results and collected information about uptake of HIV treatment services. This survey measured HIV prevalence, incidence, VLS prevalence, pediatric HIV prevalence, CD4 count distribution, presence of ARVs in blood, prevalence of syphilis and hepatitis B, and transmitted HIV drug resistance. The survey also collected information on selected behaviors associated with HIV acquisition and transmission, and on common HIV co-morbidities and other health conditions.

While HIV facility-based sentinel surveillance and previously conducted population-based studies provided useful knowledge regarding Uganda's HIV epidemic and HIV-control efforts, current and other critical information was needed to understand the status of the epidemic and guide future interventions. In addition, past available population-based data focused largely on knowledge, attitudes, and self-reported risk behaviors.

With its focus on measuring key biological indicators in a nationally representative sample of the population, UPHIA 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 Uganda's progress toward the achievement of the UNAIDS 90-90-90 targets.

1.3 Specific Objectives

Specific objectives included to estimate incidence and prevalence of HIV in Uganda, 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 and children.

Primary Objectives

- To estimate national-level annualized HIV incidence among adults (defined as those aged 15-64 years).
- To estimate the national and regional prevalence of HIV infection among adults.
- To estimate the national and regional prevalence of VLS among HIV-positive adults.

Secondary Objectives

- To estimate the national HIV prevalence among children (defined as those aged 0-14 years).
- To examine HIV-related risk behaviors and other standard program indicators.
- To determine the distribution of CD4 counts among children and adults living with HIV (ages 0-64 years).
- To estimate the level of transmitted ARV drug resistance among children and adults with recent HIV infections.
- To estimate the prevalence of detectable ARVs in HIV-positive children and adults.
- To estimate syphilis prevalence among adults.
- To examine VLS among HIV-positive children and adults at the subnational level.
- To estimate hepatitis B prevalence among the population aged 0-64 years.
- To estimate the uptake of HIV-related services and exposure to HIV interventions.

2 SURVEY DESIGN, METHODS, AND RESPONSE RATES

UPHIA was a nationally representative, cross-sectional, population-based survey of households across Uganda. Its target population corresponded to children (ages 0-14 years) and adults (ages 15-64 years). The survey population excluded institutionalized children and adults.

2.1 Sample Frame and Design

UPHIA used a two-stage, stratified cluster sample design. The sampling frame comprised all households in the country, based on the 2014 National Housing and Population census, which includes 80,000 EAs, containing an estimated 7,800,000 households (UBOS, 2014).[1] The first stage selected 520 EAs (clusters) using a probability proportional to size method. The EAs were stratified by ten regions: Central 1, Central 2, Kampala, East-Central, Mid-Eastern, North-East, West Nile, Mid-North, Mid-West, and South-West.* During the second stage, a sample of households was randomly selected within each EA, or cluster, using an equal probability method (Table 2.1.A).

The sample size was calculated to provide a representative national estimate of HIV incidence among adults with a relative standard error (RSE) less than or equal to 30%, as well as representative regional estimates of VLS prevalence among HIV-positive adults with 95% CIs with ±9% or less bounds around the point estimates. Slightly over one-half (59.3%) of the households were randomly selected for inclusion of children, which was designed to provide a representative national estimate of pediatric HIV prevalence with an RSE less than or equal to 20.0%. The sample size was 33,243 for adults, and 10,956 for children.

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

	Enumeration Areas			Households		
Region	Urban	Rural	Total	Urban	Rural	Total
Region						
Central 1	20	31	51	526	810	1,336
Central 2	12	28	40	338	715	1,053
Kampala	45	-	45	1,156	-	1,156
East Central	9	45	54	225	1,162	1,387
Mid-Eastern	20	54	74	545	1,354	1,899
North East	6	53	59	176	1,340	1,516
West Nile	7	56	63	180	1,439	1,619
Mid North	6	34	40	147	881	1,028
Mid-West	11	37	48	306	953	1,259
South West	6	40	46	183	999	1,182
Total	142	378	520	3,782	9,653	13,435

Sampling of the two pediatric age groups, ages 0-4 years and ages 5-14 years, was done at different rates to meet specified precision targets. Children aged 0-4 years were sampled at the rate of r_1 and children aged 5-14 years were sampled at a rate of r_2, where $r_1 \geq r_2$. The selection of children was accomplished

*Since the time of the survey, the names of the regions have changed. Central 1 has been renamed to "South Buganda" and Central 2 is now "North Buganda"

by randomly designating sampled households as either a "type 1" household or a "type 2" household. Among the sampled households, 59% were flagged (pre-designated) as type 1 and 33.8% of the type 1 households were also flagged as type 2.

Selection of the children aged 0-4 years: Children aged 0-4 years were included in the study (i.e., tested) if they belonged to a type 1 household (regardless of whether the household was also a type 2 household). Thus, among all eligible children in the rostered households, children aged 0-4 years were selected for testing at a rate of r_1 = 0.59.

Selection of the children aged 5-14 years: Children aged 5-14 years were included in the study if they belonged to a household that was flagged as both type 1 and type 2. Thus, among all eligible children in the rostered households, children aged 5-14 years were selected for testing at a rate of r_2 = 0.59 x 0.338 = 0.1994 = 0.338 r_1.

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

The eligible survey population included:

- Women and men aged 18-64 years living in the selected households (and visitors who slept in the household the night before the survey) who were willing and able to provide verbal consent.
- Children and adolescents aged 8-17 years living in the selected households (and visitors aged 8-17 years who slept in the household the night before the survey) who were willing and able to provide verbal assent, and whose parents or guardians were willing and able to provide verbal permission for their participation.
- Children aged 0-7 years living in the selected households (and visitors aged 0-7 years who slept in the household the night before the survey) whose parents or guardians were willing and able to provide verbal consent for their participation.

An electronic informed consent form was administered using a tablet (Appendix H). A designated head of household provided consent for household members to participate in the survey, after which individual members were rostered during a household interview. Adults and emancipated minors then provided consent for an interview. After completing the interview, they provided consent for participation in the biomarker component of the survey, including HBTC, with return of HIV test results and CD4 counts during the household visit. Receipt of test 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 consent to store their blood samples in a repository to perform additional tests in the future.

Children and adolescents aged 8-17 years were asked for assent to the interview (ages 15-17 years only) and biomarker components (ages 8-17 years) after permission was granted by their parents or guardians. Parents provided consent for biomarker testing for children below the age of assent (ages 0-7 years). If a parent or guardian did not want to receive their 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 hearing or sight disabled or illiterate) was deemed ineligible.

2.3 Survey Implementation

Survey Staff

Fieldwork was conducted by 31 field teams composed of a team leader, two interviewers, two HBTC providers, two lab technicians, and a driver. A total of 256 people, including field coordinators, team leaders, field health workers, HBTC providers, lab technicians, community-mobilization coordinators, and drivers participated in data collection. Survey personnel were selected based on their qualifications and areas of expertise. The interviewers had primary responsibility for obtaining consent and administering the interview. The lab technicians conducted phlebotomy, HIV testing and performed CD4 counts using a point of care (POC) instrument. The HBTC providers were responsible for delivering adult and pediatric counseling and return of test results. The field teams were supervised by four field supervisors and managed by four field coordinators, who guided and oversaw data collection activities, performed quality checks, and provided technical support.

In addition, 48 laboratory technicians processed samples at the 10 satellite labs and performed additional procedures centrally for HIV-1 VL, early infant diagnosis (EID), quality control (QC) and quality assurance (QA). National and international monitors periodically conducted direct supervision and observation of data collection activities in the field and in the laboratories in order to provide technical support and ensure quality.

Training 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 methodology
- 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
- HIV HBTC
- CD4 count measurement using a POC PIMA Analyzer
- 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 QA. Central laboratory staff were trained in VL measurement, EID, HIV confirmatory testing, and HIV recency testing using the limiting antigen (LAg) avidity enzyme immunoassay (EIA).

Community Sensitization and Mobilization

Community mobilization was conducted prior to data collection to maximize community support and participation in the survey. The mobilization began with a high-level national launch meeting that included key national and regional leaders, mass media, and other stakeholders. Community mobilization teams visited each EA and met key gatekeepers/stakeholders in the communities (chiefs, local government officials, and religious and community leaders). The mobilization teams held community sensitization meetings and held discussions with selected households and other community residents.

Supervision

Field-based supervisors oversaw data-collection teams and conducted monitoring visits with national and international teams with representation from the 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 reviewed for completeness. Field-based supervisors also supported teams with organization of supplies and transport of blood samples, provision of technical troubleshooting, coordinating community-mobilization efforts, and checking the quality of household procedures and data collection.

The national and international monitoring teams tracked the quality of survey procedures, including adherence to protocol and standard operation 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 UPHIA Technical Working Group for response to any issues.

Electronic Monitoring System

An electronic dashboard system was established to monitor survey progress. The dashboard summarized data uploaded to the PHIA server daily. The dashboard tracked coverage and completion of EAs, sampled households, household responses, eligible household members providing consent to the interview, biomarker components of the survey, blood draws, response rates (RR), and overall progress towards the achievement of the target sample.

Questionnaire Data Collection

Questionnaire and field laboratory data were collected on mobile electronic tablet devices using an application programmed in Open Data Kit, 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 adults and included modules on demographic characteristics, sexual and reproductive health, marriage, male circumcision, sexual activity, the HIV continuum of care, TB and other diseases, alcohol use, and gender norms. Participants who reported their HIV-positive status were asked questions about their HIV care experience. Parents also answered questions about their children's (ages 0-14 years) health and participation in HBTC services as a part of the adult interview. In each household, one woman and one man were also randomly selected to answer questions about their experiences with violence. Participants

of any age who reported experiencing violence and minors (ages 15-17 years) who reported being victims of sexual exploitation were provided with referrals to social services. Female participants were interviewed by female staff, and males by male staff. The questionnaire was administered in the seven main local languages, namely, Ateso, Karamajong, Luganda, Lugbara, Luo, Runyankole-Rukiga, and Runyoro-Rutoro. The English versions of the questionnaires were reviewed and approved by local Ugandan Institutional Review Boards (the UVRI and the Uganda National Council for Science and Technology) and were tested thoroughly for acceptability, fidelity to English meaning after translation, back-translation, 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 from children aged 2-14 years, and 1 mL of capillary blood from children aged 0-23 months via finger-stick (ages 6-23 months) or heel-stick (infants below 6 months of age).

Blood samples were labeled with a unique barcoded participant identification number (ID) and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for processing into plasma and dried blood spots (DBS) and were frozen within 24 hours of blood collection.

Dried blood spots were prepared from all participants. For participants who provided venous blood, two DBS cards (10 spots total, approximately 75 µL of blood per spot) were prepared in the satellite laboratory. For children below 2 years of age, where blood was drawn from a finger-stick, two DBS cards were prepared in the laboratory. For infants below 6 months of age, where blood was drawn from a heel stick, one DBS card was prepared in the laboratory. The number of spots depended on the amount of left-over blood after field testing was complete with a minimum of five spots. All DBS cards prepared in the laboratory were barcode-labeled with the study ID number and stored in zipper-closure bags with desiccant.

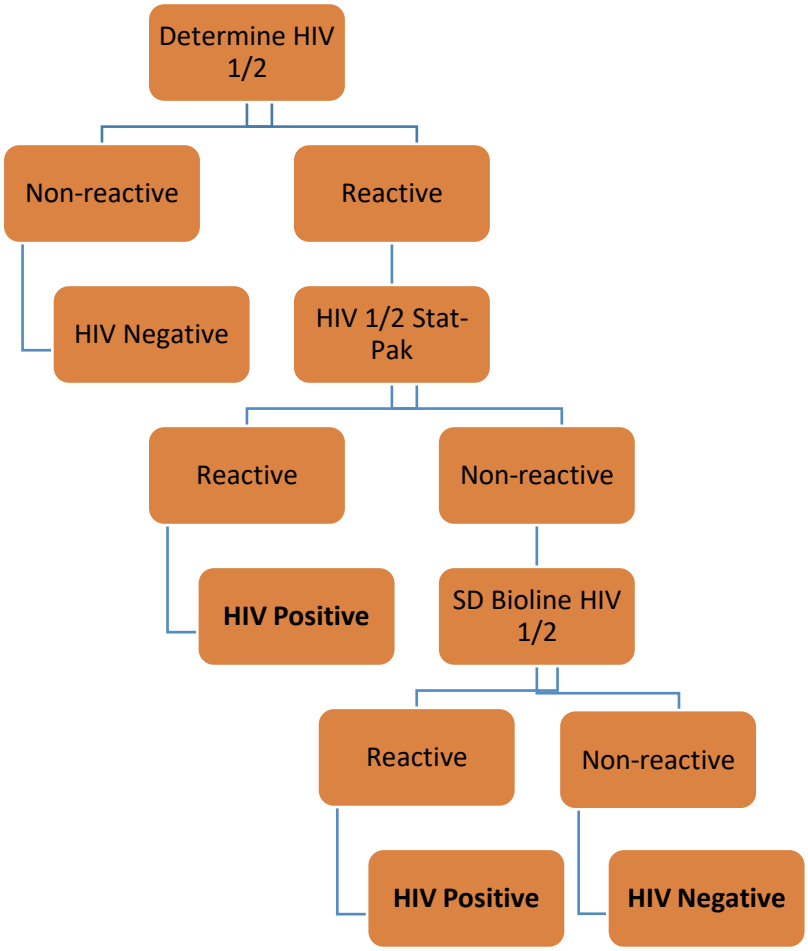
Of collected specimens, less than 0.01% were hemolyzed or otherwise unusable, and 99.9% of specimens deemed to be of excellent/good quality.

HIV Home-Based Testing and Counseling

In accordance with national guidelines, HIV HBTC was conducted in each household (Figure 2.4.A). Participants identified as HIV positive had their CD4 counts measured and were referred to HIV care and treatment services at a health facility of their choice. For children and adolescents under the age of disclosure (below 18 years of age), results were provided to a parent or guardian.

The survey used a sequential rapid-testing algorithm in the field: Determine™ HIV-1/2 (Abbott Molecular Inc., Des Plaines, Illinois, United States) as a screening test, and HIV ½ Stat-Pak™ (Chembio Diagnostic Systems, Medford, New York, United States) as a confirmatory test. Individuals with a nonreactive result on the screening test were reported as HIV negative. Individuals with a reactive screening test underwent confirmatory testing. Those with reactive results on both the screening and confirmatory tests were classified as HIV positive. Individuals with a reactive screening test result, followed by a nonreactive confirmatory test result, were resolved using SD Bioline HIV-1/2 3.0 (Standard Diagnostics, Inc., Kyonggi-do, South Korea) as a tie-breaker, and the SD Bioline result was their reported HIV status.

Figure 2.4.A Household-based HIV-testing algorithm, (ages 18 months and older), UPHIA 2016-2017



For infants under the age of 18 months , only the screening test (Determine) was performed in the field. If the test was reactive, polymerase chain reaction (PCR) for HIV DNA was performed in the reference laboratory, as described below (Section 2.5).

For participants who self-reported an HIV-positive status, but tested HIV negative at the time of the survey, additional laboratory-based testing was conducted using HIV DNA PCR for confirmation of HIV status. In conjunction with MOH, survey staff revisited these participants at their households to provide counseling, interpretation of the laboratory results, and for health providers to provide guidance on next steps to confirm these results, particularly for those on ART.

QC and QA for HIV testing

QC using dried tube specimens, consisting of positive and negative controls, was performed on a weekly basis by field staff performing HIV testing. In addition, QA proficiency testing was conducted twice in the course of the survey, using a panel of masked HIV-positive and negative dried tube specimens. Proficiency in the correct performance and interpretation of the HIV testing algorithm was assessed for each tester.

CD4+ T Cell Count Measurement

All participants, regardless of age, who tested HIV positive during HBTC received a CD4 count measurement in the field by qualified survey staff. The measurement was performed using the Pima™ CD4 Analyzer (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere).

Hepatitis B Testing

Rapid testing for HBV infection was conducted in each household for participants of all ages using a serological hepatitis B surface antigen assay, Determine HBsAg (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere), which is indicative of acute or chronic hepatitis B.

Syphilis Testing

Rapid testing for syphilis infection was conducted in each household for adult participants aged 15-64 years using the Dual Path Platform (DPP®) Syphilis Screen & Confirm Assay (Chembio DPP, Chembio Diagnostic Systems, Inc., Medford, New York, United States) for the simultaneous detection of antibodies against both nontreponemal and treponemal antigens.

2.5 Laboratory-Based Biomarker Testing

Satellite and Central Laboratories

Ten satellite laboratories for the survey were established in existing health facility laboratories. One central referral laboratory was chosen for more specialized tests. At each satellite laboratory, trained technicians performed processing of whole blood into plasma aliquots and DBS samples for temporary storage at -20°C, and QA retesting. For QA of the HIV rapid testing conducted in the field, the first 50 samples tested by each field tester at the start of the survey were retested in the satellite laboratories using the national HIV rapid-testing algorithm. All specimens with available plasma, regardless of the field results, underwent HIV retesting at the central lab using the national HIV rapid-testing algorithm. Central laboratory procedures included HIV VL testing, HIV DNA PCR for infant virological testing and for those who reported an HIV-positive status but tested negative in HBTC, confirmatory HIV testing, HIV recency testing, and long-term storage of samples at -80°C.

If there were discrepancies between the results of testing in the field and in the laboratory, the survey conducted household revisits to investigate. 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 Testing

HIV-1 VL (HIV RNA copies per mL) of confirmed HIV-positive participants was measured using the COBAS® TaqMan® Analyser on the COBAS AmpliPrep/COBAS TaqMan HIV-1 Test, v2.0 instrument (Roche Molecular Diagnostics, South Branchburg, New Jersey, United States) for plasma samples. The COBAS AmpliPrep/COBAS TaqMan HIV-1 Test v2.0 was used to measure VL from DBS specimens from children and adults with insufficient volume of plasma.

Viral load results were returned within six to eight weeks to the health facility chosen by each HIV-positive participant. Additionally, participants were provided with a referral form to the health facility of their choice during HBTC for subsequent retrieval of their results.

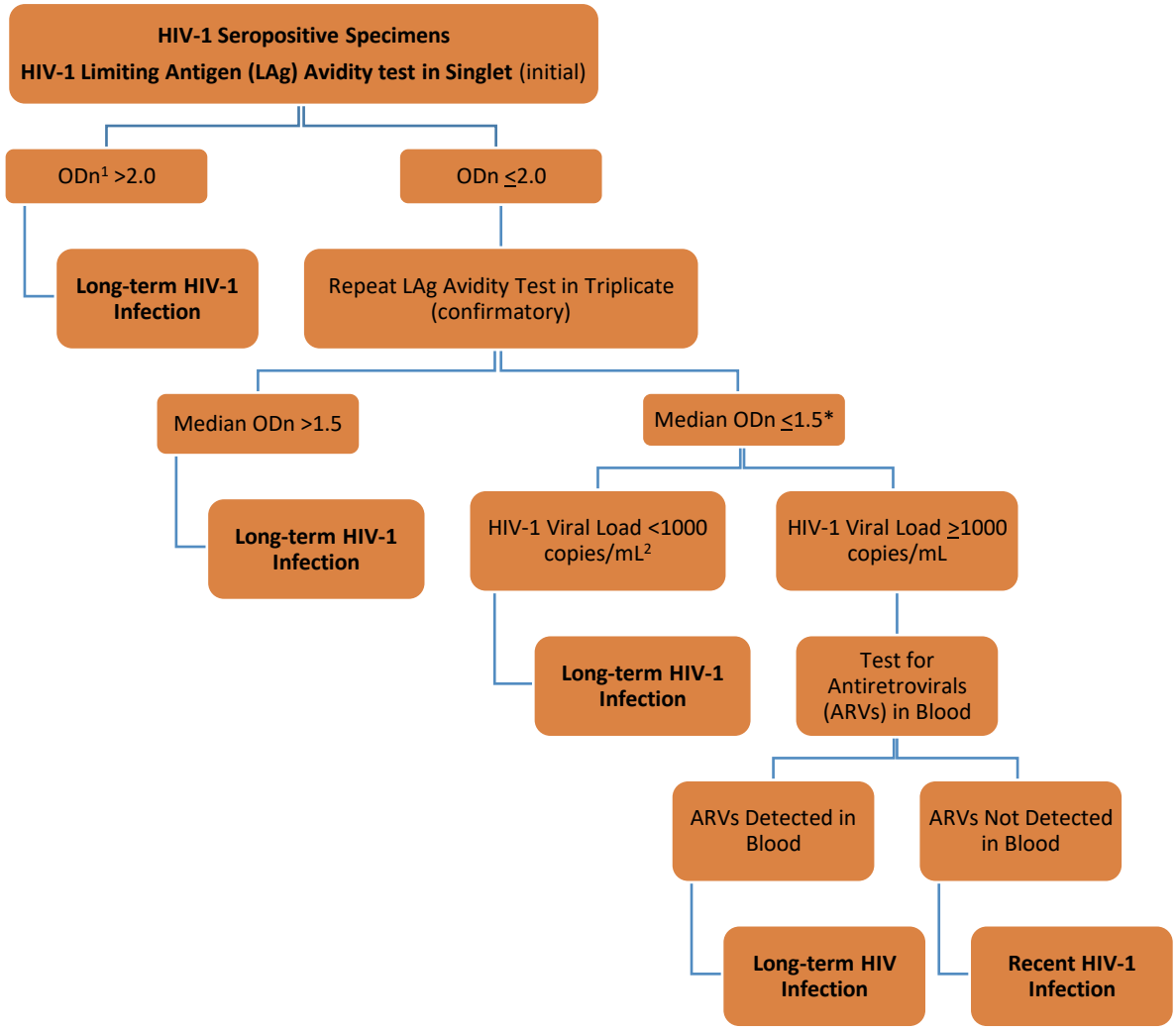
Infant Virological Testing

For infants under the age of 18 months, only those who screened reactive for HIV during HBTC, virological testing was conducted via HIV DNA PCR, using the Abbott Real Time PCR m2000rt system (Abbott Molecular, Wiesbaden Germany) (Note: The limitations of using rapid tests to identify all HIV-exposed infants are described in Appendix B). PCR results were returned to the parents within two to three weeks and infants diagnosed with HIV were linked to a health facility for initiation of treatment.

HIV Recency Algorithm

To distinguish recent from long-term HIV infections among aged 18 months-64 years who tested HIV positive, the survey used two different laboratory-based testing algorithms in order to estimate incidence. Each algorithm employed a combination of assays: 1) HIV-1 LAg-Avidity EIA (Sedia Biosciences Corporation, Portland, Oregon, United States) and VL and 2) HIV-1 LAg-Avidity EIA, VL, and ARV detection (Figure 2.5.A), as described in Appendix B.

Figure 2.5.A HIV-1 recent infection testing algorithm (LAg/VL/ARV algorithm), (ages 18 months and older), UPHIA 2016-2017



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

Detection of Antiretroviral Drug Resistance and Subtyping

Specimens with median normalized optical density (ODn) ≤ 1.5 were classified as LAg-recent infections, and their VL results were assessed. LAg-recent 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, interpretation of those with VL<1,000 copies/mL were unchanged, while specimens with VL ≥ 1,000 copies/mL and with detectable ARVs were classified as long-term infections and specimens with VL ≥ 1,000 copies/mL but without detectable ARVs were classified as recent infections.

HIV resistance to ARVs was assessed for all HIV-positive individuals aged 18 months and older classified as recent HIV infections and a small subset of confirmed long-term infections. In addition, all infants below 18 months of age with confirmed infection were evaluated to determine whether there was vertical transmission of ARV-resistant HIV. Mutations in the HIV protease and reverse transcriptase genes that confer ARV drug resistance (according to the Stanford drug resistance database) were detected simultaneously by use of the CDC in-house multiplex allele-specific drug resistance assay. Drug resistance testing was performed at the central lab at UVRI.

HIV-1 subtyping of each specimen was performed using the REGA HIV-1 & 2 automated subtyping tool. The BioAfrica viral subtyping tool is designed to use phylogenetic methods to identify HIV-1 subtype sequence. The sequences were then analyzed for recombination using bootscanning methods

Detection of Antiretrovirals

Qualitative screening for detectable concentrations of 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.[2] This qualitative assay is highly specific, as it separates the parent compound from the fragments, and highly sensitive, with a limit of detection of 0.02 micrograms/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, three ARVs were selected as markers for the most commonly prescribed backbone medications of the first- and second-line regimens in Uganda at the time of the survey: two non-nucleoside reverse transcriptase inhibitors (NNRTIs), efavirenz and nevirapine, and one protease inhibitor (PI), lopinavir. These ARVs were also selected based on their relatively long half-lives, allowing for a longer period of detection following intake.

Detection of ARVs is considered indicative of participant use of a given drug at the time of blood collection. Results below the limit of detection among individuals who self-reported on ART indicate that there was no recent exposure to the regimen and that adherence to a prescribed regimen is sub-optimal, but cannot be interpreted as “not on ART.” In addition, given the limited number of ARVs selected for detection, their absence cannot 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 in South Africa.

2.6 Data Processing and Analysis

All field data were collected on tablets, transmitted to a central server using a secure virtual private network, and stored in a secure PostgreSQL database. 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 account for sample selection probabilities and are adjusted for nonresponse and noncoverage. Nonresponse adjusted weights were calculated for households, individual interviews, and individual blood draws in a hierarchical form. Adjustments for nonresponse for initial individual and blood-level weights were 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 the Chi-squared Automatic Interaction Detector 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. This final adjustment calibrated the nonresponse-adjusted individual and blood weights to make the sum of each set of weights conform to national population totals by sex and five-year age groups.

Descriptive analyses of RR, characteristics of respondents, HIV prevalence, CD4 count distribution, HIV testing, self-reported HIV status, self-reported ART, VLS, 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, as well as ARV detection in the blood.

Since the mean duration of recent infection (MDRI), a key parameter for incidence estimation, varies by subtype, a Uganda-specific MDRI was calculated for UPHIA. This MDRI is a weighted average of the MDRIs for subtypes A and D:

$$MDRI_{Uganda} = W_A * MDRI_A + W_D * MDRI_D$$

where the *W*s and *MDRI*s are the proportions and MDRIs for each HIV subtype. For subtype A an MDRI of 130 days (95% confidence interval [CI] 118-142 days) was used, consistent with previous PHIA surveys. For subtype D, an MDRI of 244 days (95% CI 166-326 days) was used, based on the mean of estimates from several sources, including the Consortium for the Evaluation and Performance of HIV Incidence Assays (CEPHIA), Johns Hopkins University (JHU), and CDC (unpublished data). The resulting weighted average MDRI for UPHIA incidence estimation is 153 days (95% CI 127-178 days).

2.7 Response Rates

Household RRs 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).[3] Vacant and destroyed households, non-residential 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.

Of the 13,435 households selected for this survey, 12,812 were occupied, and 12,386 (96.5 %) of these completed a household interview. Overall, the household RR (unweighted) was 96.5% (95.6% for urban

and 96.9% for rural areas). After adjusting for differential sampling probability and nonresponse, the overall weighted household RR was 96.7% (Table 2.7.A).

A total of 30,581 adults (13,364 men and 17,217 women) were eligible to participate in the survey. A total of 29,383 adults participated in the individual interview: interview RRs were 94.0% for men and 97.9% for women. Among adults who were interviewed, 98.5% of men and 99.0% of women also had their blood drawn (Table 2.7.B). The total RR was 92.4% among men and 96.8% among women.

In UPHIA, children in half of the selected households were eligible for blood draw. Of the 10,026 eligible children aged 0-12 years, 96.2% of boys and 96.7% of girls had their blood drawn. Of the 767 eligible adolescents aged 13-14 years, 99.2% of the boys and 99.4% of the 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, UPHIA 2016-2017

Result	Residence		Total
	Urban	Rural	
Household interviews			
Households selected	3,782	9,653	13,435
Households occupied	3,616	9,196	12,812
Households interviewed	3,460	8,926	12,386
Household response rate[1] (unweighted)	95.6	96.9	96.5
Household response rate[1] (weighted)	95.8	97.1	96.7

[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 draws response rates

Number of eligible individuals and response rates for individual interviews and blood draws (unweighted and weighted), by residence and sex, UPHIA 2016-2017

Result	Residence				Total	
	Urban		Rural			
	Male	Female	Male	Female	Male	Female
Eligible individuals, age 0-12 years						
Number of eligible individuals	1,085	1,147	3,905	3,889	4,990	5,036
Blood draw response rate (unweighted)	95.3	95.8	96.3	96.4	96.1	96.3
Blood draw response rate (weighted)	95.3	96.0	96.5	96.9	96.2	96.7
Eligible individuals, age 13-14 years						
Number of eligible individuals	76	101	283	307	359	408
Interview response rate (unweighted)	94.7	97.0	92.2	94.5	92.8	95.1
Interview response rate (weighted)	95.9	97.3	91.7	94.9	92.6	95.5
Blood draw response rate (unweighted)	100.0	93.9	98.1	97.9	98.5	96.9
Blood draw response rate (weighted)	100.0	98.9	99.0	99.5	99.2	99.4
Eligible individuals, age 15-24 years						
Number of eligible individuals	1,445	1,976	3,870	4,641	5,315	6,617
Interview response rate (unweighted)	91.9	96.5	94.1	97.1	93.5	96.9
Interview response rate (weighted)	91.7	96.4	94.7	97.2	93.9	97.0
Blood draw response rate (unweighted)	98.3	98.8	98.6	99.0	98.5	99.0
Blood draw response rate (weighted)	98.1	98.8	98.8	99.1	98.6	99.0
Eligible individuals, age 15-49 years						
Number of eligible individuals	3,201	4,441	8,587	10,759	11,788	15,200
Interview response rate (unweighted)	90.6	97.3	94.6	97.9	93.5	97.8
Interview response rate (weighted)	90.5	97.4	94.9	98.1	93.7	97.9
Blood draw response rate (unweighted)	98.2	98.9	98.6	99.1	98.5	99.0
Blood draw response rate (weighted)	98.2	99.0	98.6	99.1	98.5	99.0

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

Number of eligible individuals and response rates for individual interviews and blood draws (unweighted and weighted), by residence and sex, UPHIA 2016-2017

	Residence					
	Urban		Rural		Total	
Result	Male	Female	Male	Female	Male	Female
Eligible individuals, age 15-64 years						
Number of eligible individuals	3,535	4,877	9,829	12,340	13,364	17,217
Interview response rate (unweighted)	90.9	97.3	94.9	98.0	93.9	97.8
Interview response rate (weighted)	90.8	97.4	95.3	98.1	94.0	97.9
Blood draw response rate (unweighted)	98.2	98.9	98.6	99.0	98.5	99.0
Blood draw response rate (weighted)	98.1	98.9	98.6	99.0	98.5	99.0
Eligible individuals, age 50-64 years						
Number of eligible individuals	334	436	1,242	1,581	1,576	2,017
Interview response rate (unweighted)	94.0	96.8	97.3	98.5	96.6	98.1
Interview response rate (weighted)	93.6	96.5	97.5	98.6	96.7	98.1
Blood draw response rate (unweighted)	97.5	98.3	98.8	98.8	98.5	98.7
Blood draw response rate (weighted)	97.6	98.7	98.7	98.9	98.5	98.8

[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

2.8 References

1. Uganda Bureau of Statistics (UBOS). *Uganda National Population and Housing Census 2014.* Kampala, Uganda: UBOS; 2016. https://www.ubos.org/onlinefiles/uploads/ubos/NPHC/NPHC%202014%20FINAL%20RESULTS%20REPORT.pdf. Accessed on October 3, 2018.

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3. The 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 on April 3, 2019.

3 HOUSEHOLD CHARACTERISTICS

3.1 Key Findings

- In Uganda, 13.5% of the households had at least one HIV-positive member (16.6% in urban and 12.3% in rural households).
- In Uganda, 9.9% of the households are headed by an HIV-positive person (15.1% of the female-headed and 7.2% of the male-headed households).

3.2 Background

This chapter describes the characteristics of households surveyed in UPHIA. Household composition is described in terms of sex of the head of household, as well as the size of the household. The age structure of the de facto household population is described by sex as well as urban/rural residence. The chapter also describes the prevalence and composition of households impacted by HIV, defined as households with one or more HIV-positive member.

3.3 Household Composition

Overall, the majority of the households (67.7%) were male-headed, and 32.3% were female-headed. This distribution was similar between urban and rural areas: 64.1% of urban households were male-headed and 35.9% were female-headed, while 69.2% of rural households were male-headed and 30.8% were female-headed. The median household size was five members (interquartile range [IQR] 3-7) and the median number of minors below 18 years of age in households was two (IQR 1-4; Table 3.3A).

Children below 15 years of age comprised 47.6% (23.8% for both boys and girls) of the de facto household population, while adults (defined as those aged 15-64 years) constituted 49.5% (21.5% men and 27.8% women). Adults 65 years of age and older constituted 3.0% of the household population (1.3% men and 1.8% women; Figure 3.3A; Table 3.3.B).

Overall, the de facto population in rural areas was younger than that in urban areas: 49.5% of the rural population was below 15 years of age compared with 41.8% of the urban population. In urban areas, the distribution by age did not differ considerably between sexes, with around half of the population aged 15-49 years (47.7% of men and 53.6% of women), and a quarter aged 5-14 years (27.3% of boys and 23.7% of girls). In contrast, in rural areas larger percentages of boys than of girls were under the age of 15 years (19.3% of boys were aged 0-4 years and 33.5% were aged 5-14 years, while 16.9% of girls were aged 0-4 years and 29.7% were aged 5-14 years). In urban and rural areas, the proportion of men and women above 50 years of age was similar (urban: 6.8% and 7.6%, respectively; rural: 8.6% and 10.2%, respectively; Figure 3.3.B; Table 3.3.C).

Table 3.3.A Household composition

Percent distribution of households by sex of head of household; median (Q1,[1] Q3[2]) size of household and median (Q1, Q3) number of children under 18 years of age, by residence, UPHIA 2016-2017

	Residence					
	Urban		Rural		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Head of household						
Male	64.1	2,190	69.2	6,113	67.7	8,303
Female	35.9	1,270	30.8	2,813	32.3	4,083
Total	100.0	3,460	100.0	8,926	100.0	12,386

	Residence					
	Urban		Rural		Total	
Characteristic	Median	Q1, Q3	Median	Q1, Q3	Median	Q1, Q3
Size of households	4	(2, 6)	5	(3, 7)	5	(3, 7)
Number of children under 18 years of age	2	(0, 3)	3	(1, 5)	2	(1, 4)

[1] Q1: quartile one
[2] Q3: quartile three

Table 3.3.B Distribution of de facto household population by age, sex

Percent distribution of the de facto household population, by five-year age groups and sex, UPHIA 2016-2017

	Male		Female		Total	
Age	Percent	Number	Percent	Number	Percent	Number
0-4	8.9	5,635	8.8	5,592	17.6	11,227
5-9	8.1	5,150	8.2	5,224	16.4	10,374
10-14	6.8	4,359	6.8	4,330	13.6	8,689
15-19	4.7	3,050	5.3	3,433	10.1	6,483
20-24	3.6	2,265	5.1	3,184	8.8	5,449
25-29	3.0	1,794	4.3	2,644	7.3	4,438
30-34	2.4	1,508	3.4	2,072	5.8	3,580
35-39	2.1	1,244	2.7	1,625	4.8	2,869
40-44	1.7	1,016	2.1	1,239	3.8	2,255
45-49	1.5	911	1.6	1,003	3.1	1,914
50-54	1.0	644	1.5	892	2.5	1,536
55-59	0.7	461	0.9	578	1.7	1,039
60-64	0.8	471	0.9	547	1.6	1,018
65-69	0.4	263	0.6	366	1.0	629
70-74	0.3	221	0.5	330	0.9	551
75-79	0.2	135	0.3	180	0.5	315
≥80	0.3	150	0.4	243	0.6	393
Total	46.6	29,277	53.4	33,482	100.0	62,759

Table 3.3.C Distribution of de facto household population by age, sex, and residence

Percent distribution of the household population, by sex, age, and residence, UPHIA 2016-2017

	Urban					
	Male		Female		Total	
Age	Percent	Number	Percent	Number	Percent	Number
0-4	18.2	1,218	15.1	1,289	16.5	2,507
5-14	27.3	1,885	23.7	2,047	25.3	3,932
15-49	47.7	3,201	53.6	4,441	51.0	7,642
≥50	6.8	469	7.6	638	7.2	1,107
Total	100.0	6,773	100.0	8,415	100.0	15,188

	Rural					
	Male		Female		Total	
Age	Percent	Number	Percent	Number	Percent	Number
0-4	19.3	4,417	16.9	4,303	18.0	8,720
5-14	33.5	7,624	29.7	7,507	31.5	15,131
15-49	38.6	8,587	43.2	10,759	41.0	19,346
≥50	8.6	1,876	10.2	2,498	9.5	4,374
Total	100.0	22,504	100.0	25,067	100.0	47,571

Figure 3.3.A Distribution of the de facto population by sex and age, UPHIA 2016-2017

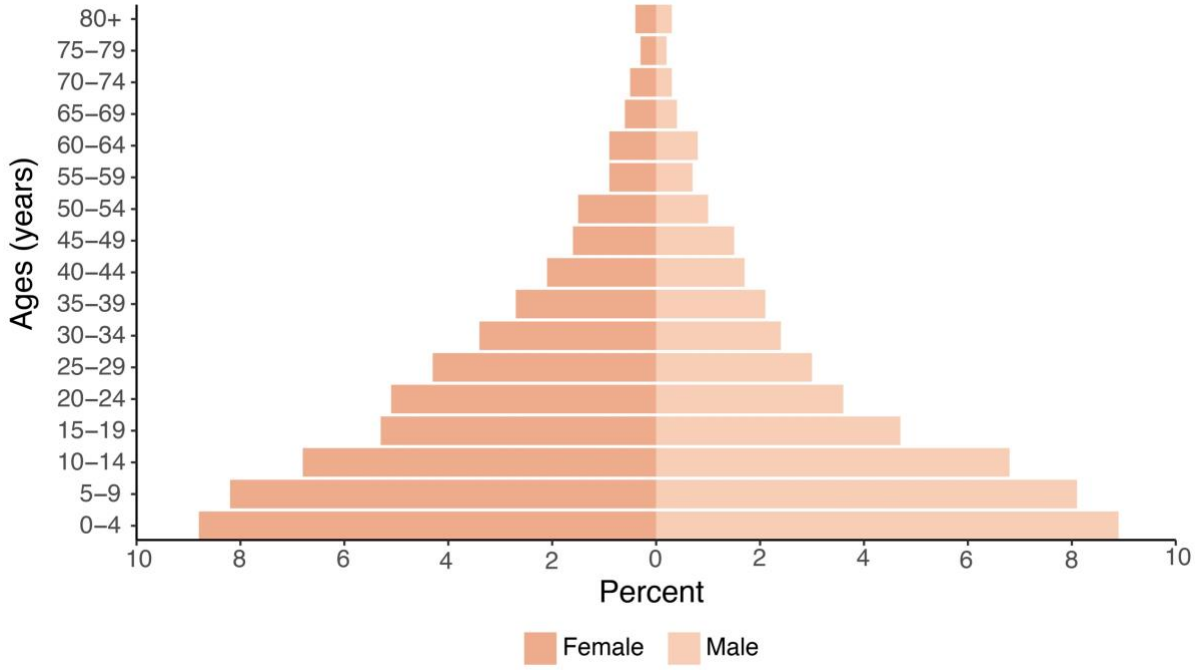
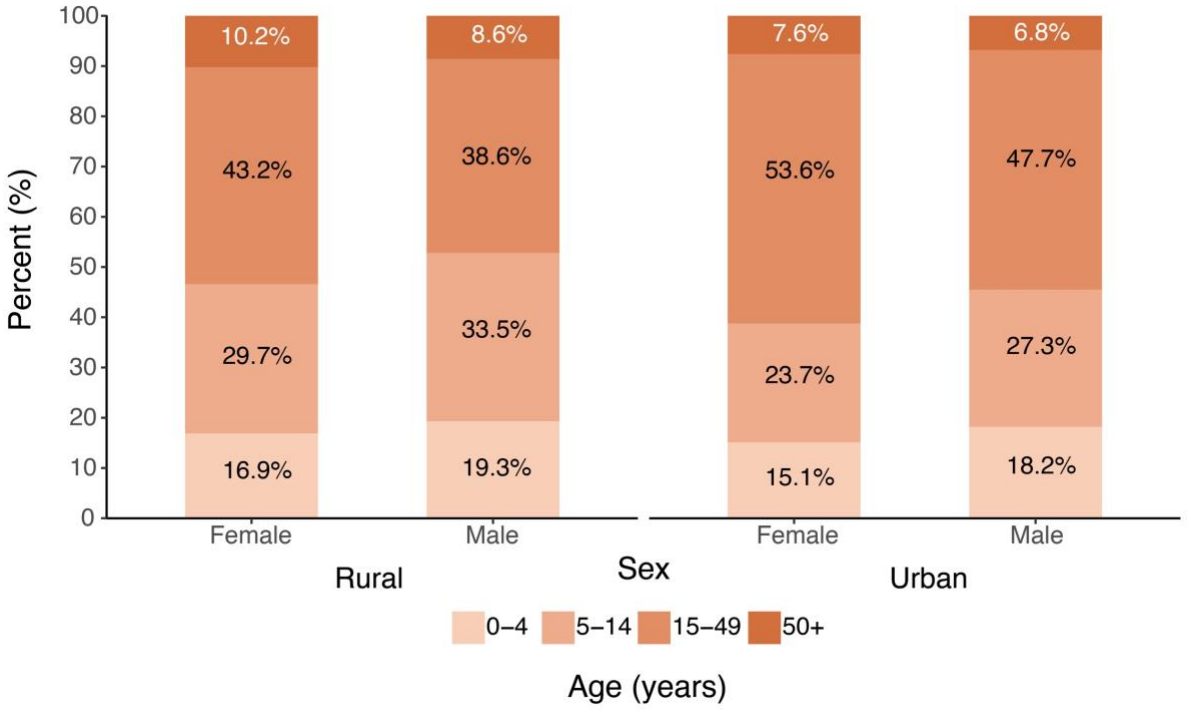


Figure 3.3.B Household population by age, sex, and residence, UPHIA 2016-2017



3.4 Prevalence of HIV-Affected Households

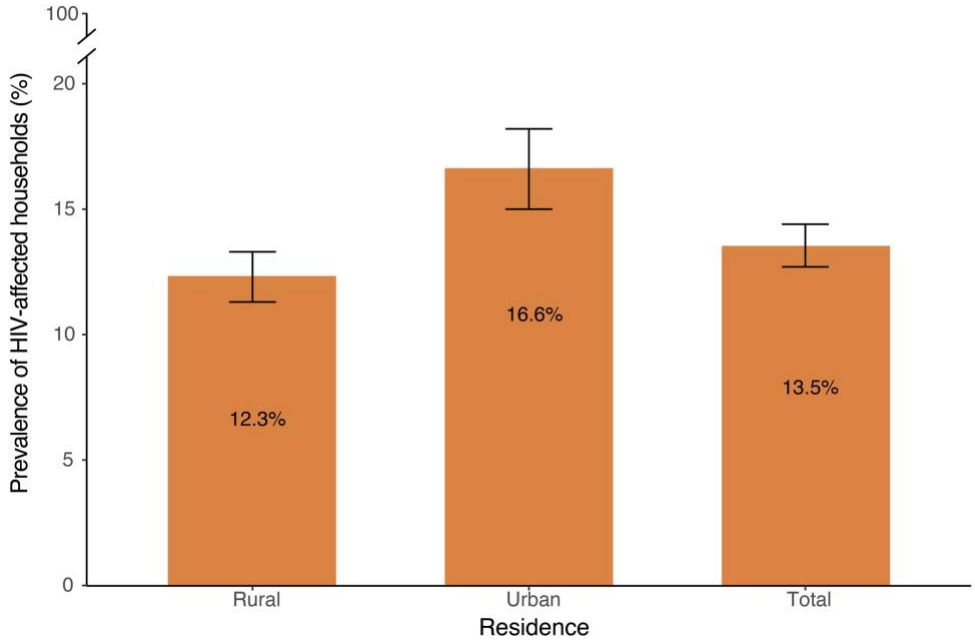
In Uganda, 13.5% of households had at least one HIV-positive household member (16.6% of urban households and 12.3% of rural households) (Table 3.4.A, Figure 3.4.A). (Note, HIV-status of the household members was determined by the HIV test performed in the survey.)

Table 3.4.A Prevalence of HIV-affected households

Percentage of households with at least one HIV-positive household member, by residence, UPHIA 2016-2017

Residence	Percent	Number
Urban	16.6	3,368
Rural	12.3	8,575
Total	13.5	11,943

Figure 3.4.A Prevalence of HIV-affected households by residence, UPHIA 2016-2017



Among those HIV-affected households with any HIV-positive members, 79.8% had one HIV-positive member. In urban households, 84.9% had one HIV-positive member, and in rural households, 77.0% had one HIV-positive household member (Table 3.4.B, Figure 3.4.B).

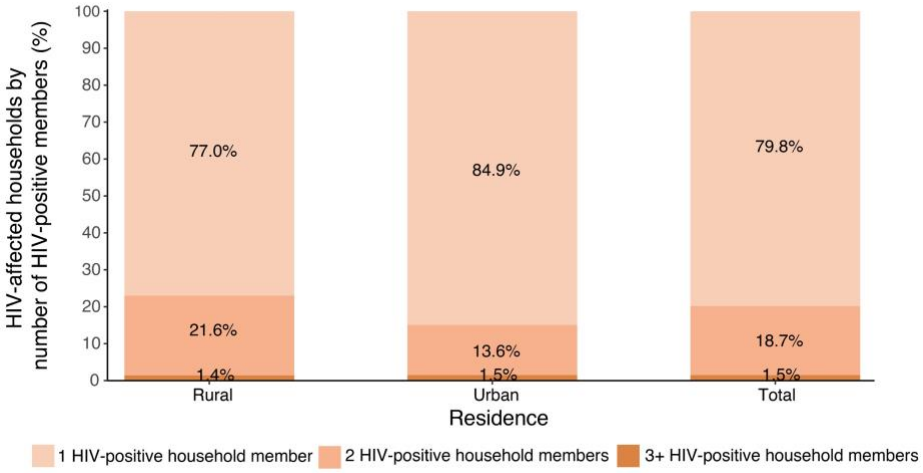
Table 3.4.B HIV-affected households by number of HIV-positive members

Among households with at least one HIV-positive household member, percent distribution of households by number of HIV-positive household members, by residence, UPHIA 2016-2017

	Residence					
	Urban		Rural		Total	
Number of HIV-positive household members	Percent	Number	Percent	Number	Percent	Number
1	84.9	455	77.0	742	79.8	1,197
2	13.6	76	21.6	200	18.7	276
3	*	7	*	11	*	18
4	*	1	*	3	*	4
5	*	0	*	2	*	2
≥6	*	0	*	0	*	0
Total	100.0	539	100.0	958	100.0	1,497

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Figure 3.4.B HIV-affected households by number of HIV-positive members and residence, UPHIA 2016-2017



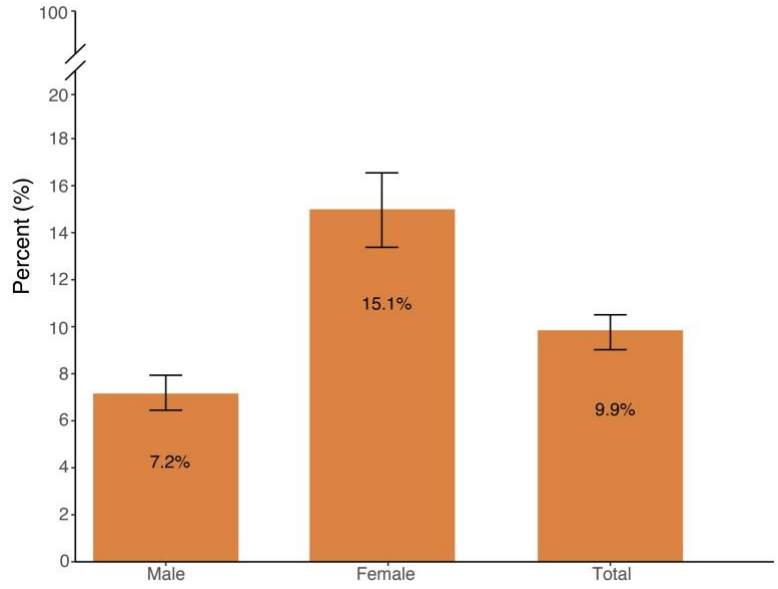
Overall, 9.9% of households in the country had an HIV-positive head of household. Twice as many female-headed households as male-headed households were affected by HIV (15.1% of female household heads were HIV-positive compared to 7.2% of male household heads) (Table 3.4.C).

Table 3.4.C 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, UPHIA 2016-2017

Sex of head of household	Percent	Number
Male	7.2	6,477
Female	15.1	3,342
Total	9.9	9,819

Figure 3.4.C Prevalence of households with an HIV-positive head of household, by sex, UPHIA 2016-2017



4 SURVEY RESPONDENT CHARACTERISTICS

4.1 Key Findings

- Among adult respondents (those aged 15-64 years), 23.4% were aged 15-19 years, 66.8% were aged 20-49 years, and 9.9% were aged 50-64 years.
- About three-quarters of the respondents were residing in rural areas, 71.4% of adults and 76.9% of children (ages 0-14 years).

4.2 Background

Key indicators and outcomes for children, adolescents, and adults were assessed through UPHIA 2016-2017. To provide context for these outcomes, this chapter summarizes the basic demographic and socioeconomic characteristics of survey respondents. In this report, most key indicators are stratified according to these characteristics.

4.3 Demographic Characteristics of the Adult Population

The majority of the respondents (53.7%) were married or living with a partner, while 40.2% men and 25.3% women had never been married. The majority (89.1% of women and 96.2% of men) of adults had had at least some formal education, with 10.9% of women and 3.8% of men having never attended school. Among adults, 40.2% only had some primary education (15.4% completed primary) while one in ten (11%) completed secondary or had more than secondary education.

Overall, almost three-quarters (71.4%) adults lived in rural areas. The most frequently represented ethnic groups among adults were the Baganda (19.1%), the Banyankole (11.3%), the Basoga (8.5%), the Iteso (6.4%), and the Langi (6.4%). One in five (20.2) adults identified their ethnicity as 'other.' Most (82.8%) adults identified their religion as Christian, while 14.2% reported that they follow Islam.

The majority of women (70.2%) and men (72.6%) lived in rural areas. Respondent distribution varied geographically, ranging from 6.4% in Kampala to 13.6 in Central 1 region. Overall, 23.4% of adult respondents were aged 15-19 years and 66.8% were aged 20-49 years, while only 9.8% were aged 50-64 years (Table 4.3.A).

Table 4.3.A Demographic characteristics of the adult population

Percent distribution of the adults aged 15-64 years, by sex and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Age						
15-19	24.4	2,872	22.4	3,316	23.4	6,188
20-24	19.0	2,098	18.8	3,097	18.9	5,195
25-29	14.0	1,670	15.3	2,606	14.7	4,276
30-34	11.2	1,397	12.0	2,040	11.6	3,437
35-39	8.8	1,167	9.0	1,590	8.9	2,757
40-44	7.1	959	7.0	1,225	7.1	2,184
45-49	5.7	858	5.4	986	5.6	1,844
50-54	4.3	616	4.2	874	4.3	1,490
55-59	3.1	449	3.3	566	3.2	1,015
60-64	2.3	458	2.5	539	2.4	997
Residence						
Urban	27.4	3,214	29.8	4,744	28.6	7,958
Rural	72.6	9,330	70.2	12,095	71.4	21,425
Region						
Central 1	13.3	1,115	13.9	1,590	13.6	2,705
Central 2	11.8	953	12.3	1,316	12.1	2,269
Kampala	6.1	931	6.6	1,401	6.4	2,332
East-Central	9.6	1,313	9.8	1,726	9.7	3,039
Mid-Eastern	9.5	1,829	9.6	2,446	9.6	4,275
North-East	7.4	1,536	7.1	2,003	7.2	3,539
West-Nile	6.9	1,670	7.3	2,352	7.1	4,022
Mid North	10.4	1,106	9.0	1,268	9.7	2,374
Mid-West	12.9	1,134	11.9	1,394	12.3	2,528
South-West	12.0	957	12.6	1,343	12.3	2,300
Marital status						
Never married	40.2	4,611	25.3	3,792	32.4	8,403
Married or living together	51.6	6,887	55.6	9,678	53.7	16,565
Divorced or separated	7.6	925	13.5	2,279	10.7	3,204
Widowed	0.6	101	5.6	1,041	3.2	1,142
Education						
No formal education	3.8	551	10.9	2,208	7.5	2,759
Some primary	38.8	5,027	41.4	7,302	40.2	12,329
Completed primary	16.1	1,985	14.8	2,302	15.4	4,287
Some secondary	27.5	3,285	24.5	3,655	25.9	6,940
Completed secondary or more	13.8	1,616	8.4	1,284	11.0	2,900
Wealth quintile						
Lowest	21.2	3,450	19.9	4,484	20.5	7,934
Second	20.4	2,633	19.0	3,259	19.7	5,892
Middle	19.5	2,343	20.1	3,147	19.8	5,490
Fourth	19.5	2,007	20.1	2,783	19.8	4,790
Highest	19.4	2,111	20.9	3,166	20.2	5,277
Religion						
Catholic	38.0	4,898	37.9	6,586	37.9	11,484
Protestant/Anglican	34.0	4,136	31.4	5,066	32.6	9,202
Muslim	13.9	1,834	14.4	2,581	14.2	4,415
Pentecostal	8.8	1,073	11.7	1,900	10.3	2,973
Seventh-Day Adventist	2.0	202	2.0	266	2.0	468
Others	3.3	394	2.7	431	3.0	825
Ethnicity						
Baganda	18.6	1,822	19.7	2,645	19.1	4,467
Banyankole	11.0	935	11.6	1,355	11.3	2,290
Basoga	8.6	1,122	8.5	1,439	8.5	2,561
Bakiga	5.9	500	6.1	690	6.0	1,190
Iteso	6.8	1,296	6.1	1,564	6.4	2,860
Langi	7.2	778	5.7	818	6.4	1,596
Bagisu/Sabiny	6.1	1,048	5.9	1,346	6.0	2,394
Acholi	3.8	402	3.5	512	3.6	914
Lugbara/Madi	5.0	1,146	5.4	1,651	5.2	2,797
Batoro	3.1	275	3.0	368	3.0	643
Banyoro	4.3	390	3.9	466	4.1	856
Others	19.6	2,824	20.8	3,976	20.2	6,800

Table 4.3.A Demographic characteristics of the adult population (continued)						
Percent distribution of the adults aged 15-64 years, by sex and selected demographic characteristics, UPHIA 2016-2017						
	Male		Female		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Total 15-24	43.5	4,970	41.2	6,413	42.3	11,383
Total 15-49	90.4	11,021	90.0	14,860	90.2	25,881
Total 50-64	9.6	1,523	10.0	1,979	9.8	3,502
Total 15-64	100.0	12,544	100.0	16,839	100.0	29,383
Note: Education categories refer to the highest level of education attended, whether or not that level was completed. 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.						

4.4 Demographic Characteristics of the Pediatric Population

Survey participants below 10 years of age accounted for 70.7% of all children. The majority of the children resided in rural areas (76.9%), and the distribution across the five wealth quintiles ranged from 13.7% in the highest wealth quintile to 24.1% in the lowest (Table 4.4.A)

Table 4.4.A Demographic characteristics of the pediatric population						
Percent distribution of children aged 0-14 years, by sex and selected demographic characteristics, UPHIA 2016-2017						
	Male		Female		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Age						
0-17 months	10.8	976	10.3	930	10.6	1,906
18-59 months	27.0	2,398	27.7	2,440	27.4	4,838
5-9 years	33.0	1,038	32.3	1,096	32.7	2,134
10-14 years	29.1	871	29.7	914	29.4	1,785
Residence						
Urban	22.9	1,143	23.2	1,224	23.1	2,367
Rural	77.1	4,140	76.8	4,156	76.9	8,296
Region						
Central 1	10.9	397	12.4	439	11.6	836
Central 2	12.6	405	12.1	414	12.4	819
Kampala	3.8	245	4.3	296	4.0	541
East-Central	11.0	616	10.0	601	10.5	1,217
Mid-Eastern	11.0	832	10.1	799	10.6	1,631
North-East	8.5	746	7.9	741	8.2	1,487
West-Nile	7.9	779	7.3	768	7.6	1,547
Mid North	10.8	445	9.8	444	10.3	889
Mid-West	13.0	489	13.1	478	13.0	967
South-West	10.5	329	13.0	400	11.7	729
Wealth quintile						
Lowest	25.0	1,740	23.1	1,698	24.1	3,438
Second	23.5	1,201	23.1	1,235	23.3	2,436
Middle	21.2	961	22.2	1,006	21.7	1,967
Fourth	17.2	763	17.4	729	17.3	1,492
Highest	13.2	618	14.3	712	13.7	1,330
Total 0-4	37.8	3,374	38.0	3,370	37.9	6,744
Total 5-14	62.2	1,909	62.0	2,010	62.1	3,919
Total 0-14	100.0	5,283	100.0	5,380	100.0	10,663
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.						

5 HIV INCIDENCE

5.1 Key Findings

- Annual incidence of HIV among adults (those aged 15-64 years) in Uganda was 0.40%: 0.46% among women and 0.35% among men.
- This incidence corresponded to approximately 73,000 new cases of HIV annually in 2016-2017 among adults in Uganda.

5.2 Background

HIV incidence is the measure of new HIV infections in a population over time. While HIV prevalence is a measure of the relative burden of disease in a population, it is not optimal for measuring acute changes in an HIV epidemic, including changes in HIV transmission, particularly given the long duration of HIV infection. This survey was designed to estimate national-level HIV incidence for the overall adult population aged 15-64 years. In UPHIA 2016-2017, HIV incidence was expressed as the cumulative incidence or risk of new infections in a 12-month period, which is a close approximation to the direct incidence rate. It was not powered to estimate incidence at the regional level or across different sub-groups. Consequently, point estimates disaggregated by age and sex should be interpreted with caution, and special attention should be given to CIs presented in Table 5.3.A.

To detect recent infections, in addition to use of the LAg avidity assay, the original algorithm incorporated VL results to mitigate misclassification from persons who may be elite controllers* or on ART – both groups characterized by low VL. As ART coverage has increased, it has become apparent that some individuals on ART for long periods of time have the potential to be misclassified by the LAg plus VL algorithm as a recent infection. Although they may have suppressed VL for years, drug resistance or lack of adherence may result in VL ≥ 1000 copies/mL. Based in part on data from multiple PHIA surveys in various sub-Saharan African countries, the updated incidence algorithm includes ARV detection as a second exclusion criteria. The addition of ARV detection is expected to produce more accurate estimates of both HIV incidence and transmitted HIV drug resistance.

5.3 HIV Incidence Among Adults

HIV incidence estimates using LAg avidity, HIV viral load, and ARV detection

Using the LAg avidity/VL/ARV algorithm, the estimated incidence in 2016-2017 was 0.40% (95% CI: 0.25%-0.56%) among adults (0.35% among men and 0.46% among women). Annual incidence peaked among men aged 35-49 years (0.47%) and among women aged 25-34 years (0.63%). HIV incidence for adults aged 15-49 years was estimated at 0.39% (95% CI: 0.24%-0.54%; 0.31% among men and 0.47% among women). The estimates were not statistically significantly different. Estimated incidence among adults aged 15-64 years in urban areas in 2016-2017 was 0.44% (95% CI: 0.20%-0.68%) compared to 0.39% in rural areas (95% CI: 0.21%-0.58%). UPHIA was not designed to compare incidence estimates across demographic sub-groups (Table 5.3.A).

*Elite controllers are a small subset of individuals living with HIV whose immune systems are able to maintain VLS without treatment.

Table 5.3.A Annual HIV incidence using LAg/VL/ARV testing algorithm

Annual incidence of HIV among adults aged 15-49 and 15-64 years, by sex and age, using the limiting antigen (LAg) + viral load (VL) + antiretrovirals (ARVs) algorithm, UPHIA 2016-2017

	Male		Female		Total	
Age	Percentage annual incidence[1]	95% CI[2]	Percentage annual incidence[1]	95% CI[2]	Percentage annual incidence[1]	95% CI[2]
15-24	0.22	(0.01, 0.43)	0.46	(0.17, 0.76)	0.34	(0.16, 0.53)
25-34	0.35	(0.00, 0.70)	0.63	(0.20, 1.05)	0.50	(0.23, 0.76)
35-49	0.47	(0.00, 0.95)	0.26	(0.00, 0.57)	0.36	(0.08, 0.65)
15-49	0.31	(0.12, 0.50)	0.47	(0.27, 0.67)	0.39	(0.24, 0.54)
15-64	0.35	(0.15, 0.55)	0.46	(0.27, 0.64)	0.40	(0.25, 0.56)

[1]Relates to Global AIDS Monitoring Indicator 3.1: HIV incidence.
[2]CI (confidence interval) indicates the interval that is expected to include the true population parameter 95% of the time.

Table 5.3.B Annual HIV incidence for urban/rural areas using LAg/VL/ARV testing algorithm

Annual incidence of HIV among persons adults aged 15-49 and 15-64 years, by sex and urban/rural area, using the limiting antigen (LAg) + viral load (VL) + antiretrovirals (ARVs) algorithm, UPHIA 2016-2017

		Male		Female		Total	
Area	Age	Percentage annual incidence[1]	95% CI[2]	Percentage annual incidence[1]	95% CI[2]	Percentage annual incidence[1]	95% CI[2]
Urban							
	15-49	0.16	(0.00, 0.39)	0.72	(0.29, 1.14)	0.46	(0.20, 0.72)
	15-64	0.15	(0.00, 0.36)	0.69	(0.29, 1.09)	0.44	(0.20, 0.68)
Rural							
	15-49	0.37	(0.13, 0.61)	0.36	(0.15, 0.58)	0.37	(0.19, 0.55)
	15-64	0.43	(0.16, 0.69)	0.36	(0.16, 0.56)	0.39	(0.21, 0.58)

[1]Relates to Global AIDS Monitoring Indicator 3.1: HIV incidence.
[2]CI (confidence interval) indicates the interval that is expected to include the true population parameter 95% of the time.

5.4 Gaps and Unmet Needs

- About 73,000 of new HIV infections occurred annually in Uganda at the time of the survey. The data suggest that there is still a deficit in the effective implementation of strategies to stop transmission and prevent the occurrence of new HIV infections, especially among women.

5.5 References

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6 HIV Prevalence Among Adults

6.1 Key Findings

- HIV prevalence among adults (those aged 15-64 years) in Uganda was 6.2%: 7.6% among women and 4.7% among men. This corresponded to approximately 1.2 million adults living with HIV in Uganda.
- HIV prevalence among adults aged 15-49 years was 6.0%: 4.3% among men and 7.5% among women.
- The burden of HIV infection varied across the country. Among adults, HIV prevalence was 7.5% in urban areas and 5.8% in rural areas. Urban women had the highest prevalence at 9.8%.
- HIV prevalence among young people (those aged 15-24 years) was four times higher among women (3.3%) than among men (0.8%).
- HIV prevalence varied across the ten regions, ranging from 3.1% in the West Nile region to 8.0% in the Central 1 region.

6.2 Background

This chapter presents estimates of the prevalence of HIV infection among adults at the national and regional level by selected demographic and behavioral characteristics. One goal of UPHIA 2016-2017 was to estimate HIV prevalence by region. This is the first survey to include national prevalence estimates among older adults aged 50-64 years. Appendix A describes the sample design and Appendix C provides estimates of sampling errors. Appendix B describes the UPHIA 2016-2017 HIV testing methodology.

Although prior surveys in 2005 and 2011 included HIV prevalence, and current estimates may seem to differ from those of previous surveys, different testing technologies and QA procedures impede a meaningful comparison.

6.3 Adult HIV Prevalence by Age and Sex

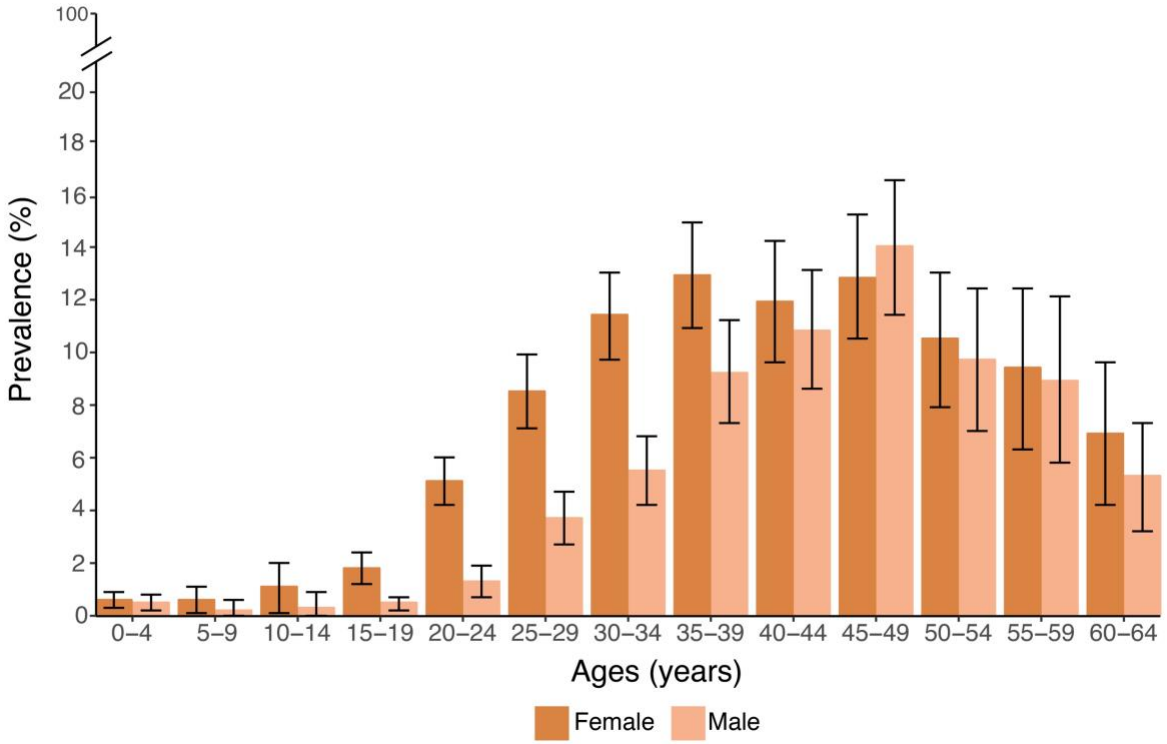
In adults, HIV prevalence ranged from 1.1% in older adolescents aged 15-19 years to 13.4% in adults aged 45-49 years. The peak HIV prevalence in women was 12.9%, observed in those aged 35-39 years, and the peak HIV prevalence in men was 14.0%, observed in those aged 45-49 years (Table 6.3.A).

Differences in prevalence between the female and male population were significant in the age brackets of 15-19 years (1.8% vs. 0.5%), 20-24 years (5.1% vs. 1.3%), 25-29 years (8.5% vs. 3.7%), and 30-34 years (11.4% vs. 5.5%). There were not significant differences by sex in women and men above 35 years of age. Among young people, HIV prevalence was four times higher among older adolescent girls and young women (3.3%) than older adolescent boys and young men (0.8%), and HIV prevalence among those aged 25-29 years was over two times greater in women (8.5%) compared to men (3.7%; Table 6.3.A; Figure 6.3.A).

Table 6.3.A	HIV prevalence by age and sex: Ages 0-64 years					
Prevalence of HIV among persons in Uganda, by sex and age, UPHIA 2016-2017						
	Male		Female		Total	
Age	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
0-17 months[1]	0.8	930	1.1	897	1.0	1,827
18-59 months	0.3	2,331	0.4	2,369	0.4	4,700
5-9	0.2	1,015	0.6	1,072	0.4	2,087
10-14	0.3	845	1.1	886	0.7	1,731
Total 0-4	0.5	3,261	0.6	3,266	0.5	6,527
Total 5-14	0.3	1,860	0.8	1,958	0.5	3,818
Total 0-14	0.4	5,121	0.7	5,224	0.5	10,345
15-19	0.5	2,834	1.8	3,289	1.1	6,123
20-24	1.3	2,063	5.1	3,059	3.3	5,122
25-29	3.7	1,637	8.5	2,574	6.3	4,211
30-34	5.5	1,380	11.4	2,024	8.7	3,404
35-39	9.2	1,143	12.9	1,573	11.2	2,716
40-44	10.8	952	11.9	1,214	11.4	2,166
45-49	14.0	845	12.8	983	13.4	1,828
50-54	9.7	610	10.5	863	10.1	1,473
55-59	8.9	439	9.4	559	9.2	998
60-64	5.3	451	6.9	532	6.2	983
Total 15-24	0.8	4,897	3.3	6,348	2.1	11,245
Total 15-49	4.3	10,854	7.5	14,716	6.0	25,570
Total 50-64	8.4	1,500	9.2	1,954	8.8	3,454
Total 15-64	4.7	12,354	7.6	16,670	6.2	29,024

[1]Virological testing was conducted only among those infants with a reactive rapid test at screening during the survey (which might not have detected all HIV-exposed infants).

Figure 6.3.A HIV prevalence by age and sex, UPHIA 2016-2017



6.4 Adult HIV Prevalence by Other Demographic Characteristics

Overall, HIV prevalence among adults in Uganda was 6.2%: 7.6% among women and 4.7% among men. This corresponds to an estimated 1.2 million adults living with HIV in Uganda. Prevalence among adults aged 15-49 years was 6.0%: 4.3% among men and 7.5% among women. HIV prevalence was higher among those aged 15-64 years old residing in urban areas (7.5%) compared to those living in rural areas (5.8%). The highest prevalence (9.8%) was among women living in urban areas.

Among adults, HIV prevalence was highest among those with no formal education and declined with educational attainment. HIV prevalence was 8.7% among those with no education, compared to 4.0% among those who completed secondary school education or more. HIV prevalence in women with no education was 8.2%, compared to 5.0% in those who completed secondary school or more. HIV prevalence in men with no education was 10.1%, compared to 3.3% among those who completed secondary education or more.

HIV prevalence rose with wealth status, from 4.3% in the lowest quintile to 8.9 % in the fourth quintile, after which it dropped to 6.3% in the highest quintile.

Among adults who never married—a group dominated by younger segments of the population—HIV prevalence was 1.6%. Among those who were married or living with a partner, HIV prevalence was 6.6%. In comparison, HIV prevalence was nearly twice as high (13.1%) among those who were divorced or separated, and almost four times as high (24.0%) among those who were widowed. This is the case among both men and women (Table 6.4.A, Figure 6.4.A).

Among adults, HIV prevalence ranged by ethnic group from the Batoro ethnic group (10.4% total: 8.8% for men and 12.0% for women) to the Lugbara/Madi (2.9% total: 2.3% for men and 3.5% for women).

HIV prevalence among women aged 15-49 years who reported being pregnant at the time of the survey was estimated to be 5.7%, compared to 7.6% among women who were not pregnant (Table 6.4.B).

Table 6.4.A HIV prevalence by other demographic characteristics: Ages 15-64 years

Prevalence of HIV among adults aged 15-64 years, by sex and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	4.6	3,155	9.8	4,691	7.5	7,846
Rural	4.7	9,199	6.7	11,979	5.8	21,178
Region						
Central 1	6.4	1,102	9.3	1,570	8.0	2,672
Central 2	5.8	935	9.1	1,304	7.6	2,239
Kampala	3.5	911	9.7	1,378	6.9	2,289
East-Central	3.3	1,276	5.9	1,703	4.7	2,979
Mid-East	4.1	1,795	6.0	2,419	5.1	4,214
North-East	2.9	1,523	4.5	1,988	3.7	3,511
West-Nile	2.3	1,650	3.8	2,335	3.1	3,985
Mid-North	5.4	1,082	9.1	1,253	7.2	2,335
Mid-West	4.2	1,125	7.3	1,379	5.7	2,504
South-West	6.3	955	9.3	1,341	7.9	2,296
Marital status						
Never married	0.8	4,538	2.8	3,749	1.6	8,287
Married or living together	6.5	6,785	6.6	9,578	6.6	16,363
Divorced/separated	10.4	911	14.5	2,261	13.1	3,172
Widowed	32.7	101	23.1	1,034	24.0	1,135
Education						
No formal education	10.1	539	8.2	2,182	8.7	2,721

Table 6.4.A HIV prevalence by other demographic characteristics: Ages 15-64 years (continued)

Prevalence of HIV among adults aged 15-64 years, by sex and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Education (cont.)						
Some primary	4.9	4,958	8.5	7,234	6.9	12,192
Completed primary	5.3	1,958	8.1	2,284	6.7	4,242
Some secondary	4.1	3,229	6.4	3,621	5.3	6,850
Completed secondary or more	3.3	1,590	5.0	1,261	4.0	2,851
Wealth quintile						
Lowest	3.8	3,399	4.7	4,437	4.3	7,836
Second	3.8	2,601	6.3	3,235	5.1	5,836
Middle	5.0	2,303	8.3	3,114	6.8	5,417
Fourth	6.6	1,979	10.8	2,755	8.9	4,734
Highest	4.3	2,072	7.9	3,129	6.3	5,201
Religion						
Catholic	5.0	4,828	8.0	6,529	6.6	11,357
Protestant/Anglican	4.9	4,078	7.5	5,015	6.2	9,093
Muslim	4.0	1,796	6.5	2,553	5.3	4,349
Pentecostal	4.4	1,062	7.6	1,879	6.3	2,941
Seventh-Day Adventist	3.8	200	8.2	262	6.1	462
Others	3.7	383	10.0	423	6.8	806
Ethnicity						
Baganda	5.5	1,778	9.8	2,607	7.8	4,385
Banyankole	6.0	931	9.7	1,348	8.0	2,279
Basoga	3.4	1,095	4.8	1,423	4.1	2,518
Bakiga	6.5	498	8.5	686	7.6	1,184
Iteso	3.8	1,285	6.2	1,553	5.0	2,838
Langi	4.8	768	7.9	810	6.2	1,578
Bagisu/Sabiny	4.0	1,038	4.9	1,339	4.5	2,377
Acholi	5.9	389	11.6	506	8.8	895
Lugbara/Madi	2.3	1,131	3.5	1,635	2.9	2,766
Batoro	8.8	271	12.0	364	10.4	635
Banyoro	4.8	389	9.0	465	6.9	854
Others	3.6	2,775	6.1	3,925	4.9	6,700
Pregnancy status						
Currently pregnant	N/A	N/A	5.7	1,405	N/A	N/A
Not currently pregnant	N/A	N/A	7.8	15,018	N/A	N/A
Total 15-64	4.7	12,354	7.6	16,670	6.2	29,024

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 in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

Table 6.4.B HIV prevalence by other demographic characteristics: Ages 15-49 years

Prevalence of HIV among adults aged 15-49 years, by sex and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	4.1	2,849	9.7	4,276	7.1	7,125
Rural	4.4	8,005	6.5	10,440	5.5	18,445
Region						
Central 1	5.9	1,005	9.0	1,393	7.6	2,398
Central 2	5.2	793	9.2	1,140	7.4	1,933
Kampala	3.1	827	9.6	1,271	6.6	2,098
East-Central	2.9	1,093	5.6	1,526	4.4	2,619
Mid-East	3.6	1,536	5.8	2,105	4.8	3,641
North-East	2.7	1,370	4.1	1,769	3.4	3,139
West-Nile	1.8	1,437	3.6	2,048	2.8	3,485
Mid-North	5.3	989	8.8	1,115	7.0	2,104
Mid-West	3.9	1,001	7.1	1,227	5.5	2,228
South-West	5.9	803	9.2	1,122	7.7	1,925

Table 6.4.B HIV prevalence by other demographic characteristics: Ages 15-49 years (continued)

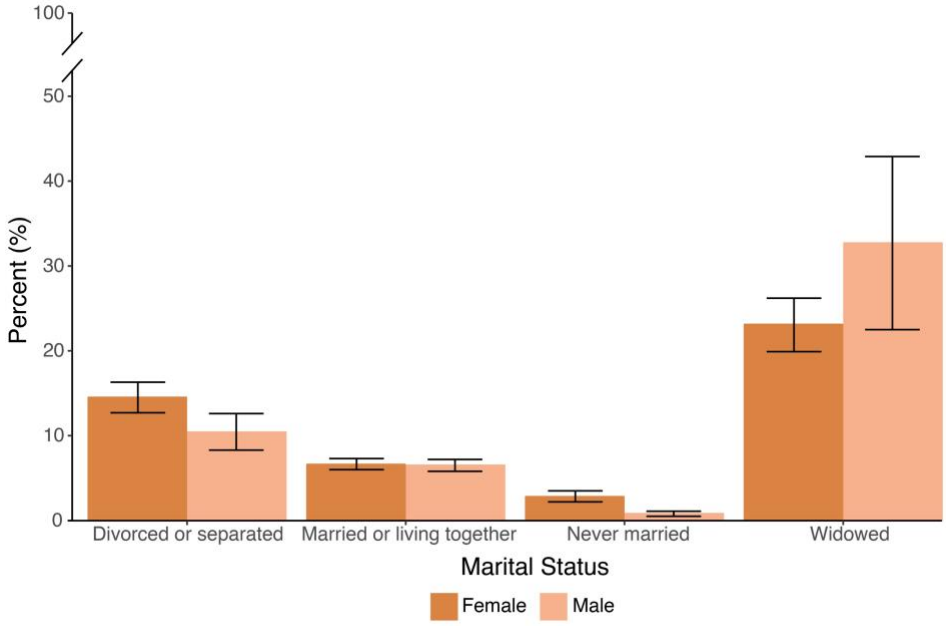
Prevalence of HIV among adults aged 15-49 years, by sex and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Marital status						
Never married	0.8	4,515	2.8	3,709	1.6	8,224
Married or living together	6.3	5,505	6.9	8,610	6.6	14,115
Divorced/separated	10.3	777	14.9	1,887	13.4	2,664
Widowed	(45.3)	39	30.6	463	31.9	502
Education						
No formal education	11.0	387	9.0	1,501	9.5	1,888
Some primary	4.7	4,330	8.3	6,384	6.7	10,714
Completed primary	4.9	1,659	8.0	2,076	6.5	3,735
Some secondary	3.6	2,978	6.1	3,468	4.9	6,446
Completed secondary or more than secondary	2.6	1,433	4.9	1,209	3.5	2,642
Wealth quintile						
Lowest	3.5	3,013	4.3	3,893	3.9	6,906
Second	3.7	2,227	6.1	2,774	4.9	5,001
Middle	5.0	1,970	8.5	2,704	6.9	4,674
Fourth	5.9	1,745	10.5	2,449	8.3	4,194
Highest	3.5	1,899	7.8	2,896	5.9	4,795
Religion						
Catholic	4.6	4,233	8.0	5,690	6.4	9,923
Protestant/Anglican	4.4	3,541	7.2	4,380	5.8	7,921
Muslim	3.9	1,584	6.4	2,338	5.2	3,922
Pentecostal	3.8	972	7.2	1,688	5.8	2,660
Seventh-Day Adventist	4.1	178	7.9	234	6.1	412
Others	2.7	339	10.0	378	6.2	717
Ethnicity						
Baganda	4.8	1,581	9.7	2,303	7.4	3,884
Banyankole	5.9	810	9.8	1,188	8.0	1,998
Basoga	2.8	943	4.5	1,280	3.7	2,223
Bakiga	6.3	419	8.3	576	7.4	995
Iteso	3.7	1,152	5.6	1,415	4.7	2,567
Langi	4.4	701	7.7	726	5.9	1,427
Bagisu/Sabiny	3.9	884	5.2	1,164	4.6	2,048
Acholi	6.1	351	11.2	454	8.7	805
Lugbara/Madi	2.1	964	3.5	1,432	2.8	2,396
Batoro	8.8	251	11.6	320	10.3	571
Banyoro	4.3	352	8.6	422	6.4	774
Others	2.9	2,440	5.8	3,429	4.4	5,869
Pregnancy status						
Currently pregnant	N/A	N/A	5.7	1,401	N/A	N/A
Not currently pregnant	N/A	N/A	7.6	13,074	N/A	N/A
Total 15-49	4.3	10,854	7.5	14,716	6.0	25,570

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 in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

Figure 6.4.A HIV prevalence by marital status: Ages 15-64 years, UPHIA 2016-2017



6.5 Adult HIV Prevalence by Region

The burden of HIV infection varied across the country. Among adults aged 15-64 years, HIV prevalence ranged from 3.1% in West Nile to 8.0% in Central 1 (Figures 6.5.A and 6.5.B, Table 6.4.A). Women had a higher HIV prevalence than among men, and this reached statistical significance in Central 2, Kampala, East Central, Mid-North and Mid-West (Table 6.4.A).

Figure 6.5.A HIV prevalence among adults aged 15-64 years, by region, UPHIA 2016-2017 (Map)

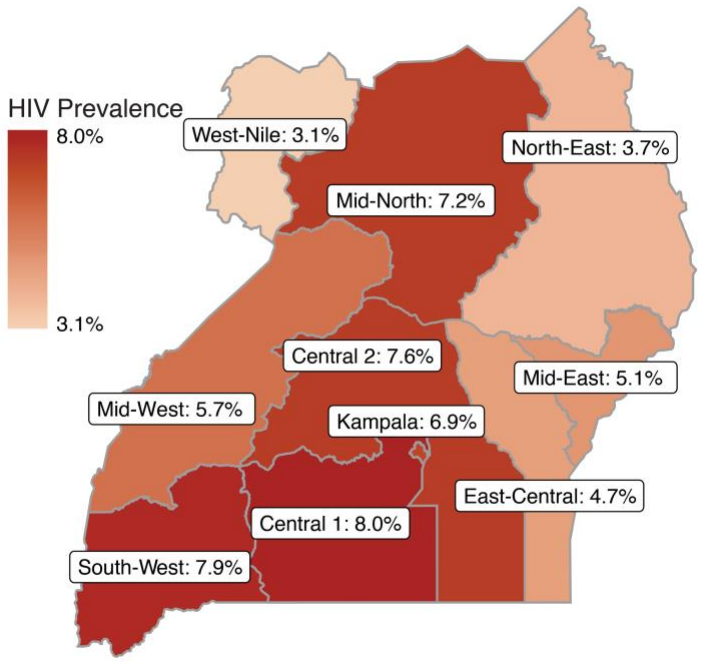
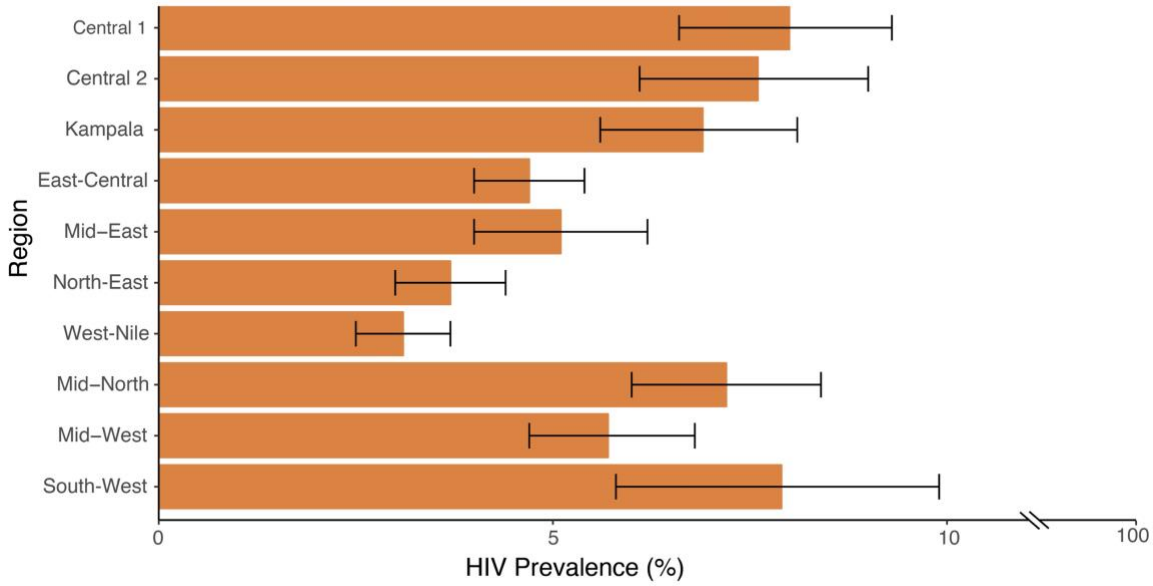


Figure 6.5.B HIV prevalence among adults aged 15-64 years, by region, UPHIA 2016-2017 (Bar graph)



7 SELF-REPORTED HIV TESTING

7.1 Key Findings

- In Uganda, based on self-report, 75.9% of adults (those aged 15-64 years) had ever tested for HIV and received their results—more than two-thirds (68.9%) of men and 82.1% of women.
- Among adults, 41.7% reported receiving an HIV test in the 12 months preceding the survey (36.7% of men and 46.2% of women).
- Among adults, 81.8% of those living in urban areas and 73.5% of those living in rural areas reported ever testing for HIV and receiving their results. Of those, 47.9% of adults in urban areas and 39.2% of adults in rural areas reported testing for HIV in the 12 months prior to the survey.
- Among HIV-positive men and women, 85.2% and 94.4%, respectively, reported they had ever tested for HIV and received the result.

7.2 Background

HIV testing is necessary for awareness of HIV status, a critical link between HIV prevention and HIV care and treatment services, and an integral component of HIV epidemic control targets. Awareness of an 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 co-morbidities. Since the 2011 Uganda AIDS Indicator Survey (UAIS), when 64% of women and less than half (44.9%) of men aged 15-59 years reported ever testing for HIV and receiving results, the country has scaled up its efforts to increase the uptake of HIV testing services (UAIS 2011).

Data presented in this section pertain to men and women who reported ever receiving an HIV test and test results. This section also presents results on HIV testing in the last 12 months and receipt of results to understand recent testing.

7.3 Self-Reported HIV Testing Among Adults

Overall 75.9% of all adults reported that they had ever tested for HIV and received their test results, while 41.7% indicated that they had tested in the 12 months preceding the survey and received their test results. Among men and women, 36.7% and 46.2%, respectively, tested for HIV in the year preceding the survey (Tables 7.3.A, 7.3.B, and 7.3.C).

Among men of most age groups, nearly two-thirds or more reported ever testing for HIV and receiving their results. However, only 39.7% of older adolescents (ages 15-19 years) reported ever testing for HIV and receiving results. The percentage of the male population testing for HIV and receiving results in the year preceding the survey ranged from 18.6% among older adolescent boys to 48.8% among men aged 25-29 years. Among the female population, 53.8% of older adolescent girls had ever been tested for HIV and received results, compared to 95.3% among women aged 25-29 years. Among older women aged 45-64 years, percentages ever tested ranged from 66.5% among women aged 60-64 years to 85.7% among women aged 45-49 years. About one-half of women aged 20-34 years were tested for HIV in the year preceding the survey (Tables 7.3.A and 7.3.B; Figure 7.3.A).

Among adults, 81.8% of those living in urban areas and 73.5% of those living in rural areas reported ever testing for HIV and receiving their results. Of those, 47.9% of adults in urban areas and 39.2% of adults in rural areas reported testing for HIV in the 12 months prior to survey. There was variation in lifetime and recent HIV testing by the level of educational attainment. Overall, among adults, 74.8% of those with no education had ever tested for HIV and received their results and 34.6% tested in the year preceding the survey, while 89.4% of those with secondary or more education reported ever testing for HIV and 54.4% reported testing in the year preceding the survey. Among men with more than secondary education, 87.8% reported having ever tested for HIV and receiving their results, compared to 62.7% of men with no education. Among women, percentages ever tested for HIV, and testing for HIV in the year preceding the survey, were highest among women with more than secondary education, 91.9% and 57.9%, respectively (Tables 7.3.A, 7.3.B, and 7.3.C).

Among men, about three-quarters of those who were married or cohabitating with a partner (81.3%) and divorced or separated (73.9%) reported ever testing for HIV. Percentages of testing were even higher among women, where 91.7% of those who were married or cohabitating, and 89.1% of those who were divorced or separated, reported ever testing for HIV. Among both men and women, about half of those who were never married had ever been tested, 51.9% and 57.7%, respectively (Tables 7.3.A and 7.3.B).

Among adults who tested positive for HIV in UPHIA, 91.1% reported ever testing for HIV and receiving their results (85.2% among men and 94.4% among women). Among those testing negative for HIV in UPHIA, 68.1% of men and 81.1% of women reported ever testing for HIV. Among those who were not tested in UPHIA, 48.5% reported having tested for HIV and receiving their results in the year preceding the survey—45.6% among men and 52.3% among women (Tables 7.3.A, 7.3.B, and 7.3.C).

There was some regional variation in self-reported HIV testing. Among adults aged 15-64 years, 35.4% in Mid-Eastern reported receiving HIV testing in the 12 months preceding the survey and received the results, as compared to 46.2% of the adults in this age group in Kampala.

Table 7.3.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 past 12 months, by result of PHIA HIV test and selected demographic characteristics, UPHIA 2016-2017

Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the past 12 months and received results[1]	Number
Age			
15-19	39.7	18.6	2,862
20-24	73.3	42.6	2,092
25-29	81.6	48.8	1,664
30-34	83.2	46.9	1,393
35-39	82.5	44.9	1,164
40-44	80.9	41.8	958
45-49	79.1	35.0	855
50-54	73.2	33.8	611
55-59	74.6	31.6	448
60-64	65.6	26.1	457
Result of PHIA survey HIV test			
HIV positive	85.2	36.5	569
HIV negative	68.1	36.6	11,748
Not tested/No outcome	70.2	45.6	187
Residence			
Urban	76.9	43.7	3,208
Rural	65.9	34.0	9,296

Table 7.3.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 past 12 months, by result of PHIA HIV test and selected demographic characteristics, UPHIA 2016-2017

Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the past 12 months and received results[1]	Number
Region			
Central 1	76.2	40.6	1,114
Central 2	73.5	40.0	948
Kampala	80.8	43.8	928
East-Central	59.0	29.6	1,308
Mid-Eastern	53.2	27.7	1,823
North-East	72.7	40.3	1,530
West-Nile	67.0	35.7	1,663
Mid North	69.0	36.7	1,101
Mid-West	67.0	36.4	1,133
South-West	71.2	37.0	956
Marital status			
Never married	51.9	27.6	4,595
Married or living together	81.3	43.3	6,866
Divorced or separated	73.9	39.2	923
Widowed	70.8	34.1	100
Education			
No formal education	62.7	28.3	548
Some primary	59.6	30.2	5,006
Completed primary	68.2	35.0	1,980
Some secondary	73.6	40.2	3,278
Completed secondary or more than secondary	87.8	52.0	1,612
Wealth quintile			
Lowest	64.1	33.5	3,434
Second	60.8	31.3	2,626
Middle	67.5	33.9	2,336
Fourth	72.1	39.3	2,002
Highest	80.8	46.1	2,106
Religion			
Catholic	69.5	37.6	4,879
Protestant/Anglican	68.3	36.2	4,127
Muslim	67.7	37.0	1,826
Pentecostal	69.5	33.9	1,069
Seventh-Day Adventist	73.6	41.9	202
Others	68.8	34.1	394
Ethnicity			
Baganda	74.8	40.2	1,816
Banyankole	71.0	38.1	932
Basoga	60.7	30.5	1,118
Bakiga	72.0	38.2	500
Iteso	72.0	38.6	1,292
Langi	63.5	30.8	775
Bagisu/Sabiny	53.0	27.4	1,045
Acholi	80.6	48.5	400
Lugbara/Madi	69.7	37.5	1,142
Batoro	75.7	45.1	275
Banyoro	71.8	42.6	390
Others	66.5	34.2	2,813
Total 15-24	54.4	29.1	4,954
Total 15-49	68.6	37.3	10,988
Total 50-64	71.9	31.3	1,516
Total 15-64	68.9	36.7	12,504

[1]Relates to PEPFAR HTC_TST.

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 7.3.B Self-reported HIV testing: Women

Percentage of women aged 15-64 years who ever received HIV testing and their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA HIV test and selected demographic characteristics, UPHIA 2016-2017

Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the past 12 months and received results[1]	Number
Age			
15-19	53.8	34.1	3,299
20-24	91.9	60.4	3,087
25-29	95.3	56.4	2,598
30-34	95.1	53.8	2,038
35-39	93.2	47.5	1,585
40-44	88.8	41.0	1,221
45-49	85.7	37.3	984
50-54	78.2	30.7	868
55-59	76.8	31.6	563
60-64	66.5	24.5	536
Result of PHIA survey HIV test			
HIV positive	94.4	41.4	1,200
HIV negative	81.1	46.6	15,410
Not tested/No outcome	82.8	52.3	169
Residence			
Urban	85.8	51.4	4,730
Rural	80.6	44.1	12,049
Region			
Central 1	86.7	48.9	1,588
Central 2	83.6	49.6	1,313
Kampala	86.7	48.2	1,397
East-Central	75.5	42.2	1,717
Mid-Eastern	72.6	42.4	2,430
North-East	81.7	46.3	1,990
West-Nile	76.4	39.8	2,348
Mid North	83.6	42.8	1,264
Mid-West	84.7	49.2	1,390
South-West	85.8	48.3	1,342
Marital status			
Never married	57.7	35.0	3,777
Married or living together	91.7	52.2	9,640
Divorced or separated	89.1	47.8	2,275
Widowed	81.0	33.1	1,038
Education			
No formal education	78.6	36.6	2,201
Some primary	79.7	42.8	7,265
Completed primary	83.2	47.0	2,298
Some secondary	83.6	51.6	3,646
Completed secondary or > than secondary	91.9	57.9	1,282
Wealth quintile			
Lowest	79.3	41.9	4,467
Second	77.3	42.9	3,245
Middle	82.0	44.8	3,131
Fourth	85.2	48.7	2,777
Highest	86.5	52.4	3,159
Religion			
Catholic	81.7	46.5	6,561
Protestant/Anglican	82.7	45.1	5,051
Muslim	81.5	47.7	2,575
Pentecostal	82.4	47.4	1,892
Seventh-Day Adventist	88.3	47.8	265
Others	79.1	41.6	428
Ethnicity			
Baganda	86.0	48.0	2,638

Table 7.3.B Self-reported HIV testing: Women (continued)

Percentage of women aged 15-64 years who ever received HIV testing and their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA HIV test and selected demographic characteristics, UPHIA 2016-2017

Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the past 12 months and received results[1]	Number
Ethnicity (cont.)			
Banyankole	86.4	49.7	1,353
Basoga	75.7	42.8	1,431
Bakiga	84.6	45.5	689
Iteso	82.2	49.0	1,557
Langi	80.9	37.9	816
Bagisu/Sabiny	72.2	41.6	1,336
Acholi	88.0	52.1	511
Lugbara/Madi	78.1	41.3	1,648
Batoro	88.5	54.9	368
Banyoro	89.6	57.5	464
Others	79.0	44.0	3,959
Total 15-24	71.2	46.1	6,386
Total 15-49	83.0	48.1	14,812
Total 50-64	74.8	29.5	1,967

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 7.3.C Self-reported HIV testing: Total

Percentage of adults aged 15-64 years who ever received HIV testing and their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA HIV test and selected demographic characteristics, UPHIA 2016-2017

Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the past 12 months and received results[1]	Number
Age			
15-19	46.8	26.4	6,161
20-24	83.1	51.9	5,179
25-29	89.1	53.0	4,262
30-34	89.7	50.6	3,431
35-39	88.2	46.3	2,749
40-44	85.0	41.4	2,179
45-49	82.5	36.2	1,839
50-54	75.8	32.1	1,479
55-59	75.8	31.6	1,011
60-64	66.1	25.2	993
Result of PHIA survey HIV test			
HIV positive	91.1	39.7	1,769
HIV negative	74.8	41.8	27,158
Not tested/No outcome	75.6	48.5	356
Residence			
Urban	81.8	47.9	7,938
Rural	73.5	39.2	21,345
Region			
Central 1	81.8	45.0	2,702
Central 2	78.9	45.2	2,261
Kampala	84.0	46.2	2,325
East-Central	67.8	36.3	3,025
Mid-Eastern	63.5	35.4	4,253
North-East	77.4	43.4	3,520
West-Nile	72.1	37.9	4,011
Mid North	76.1	39.7	2,365
Mid-West	76.0	42.9	2,523
South-West	79.0	43.1	2,298
Marital status			
Never married	54.3	30.7	8,372

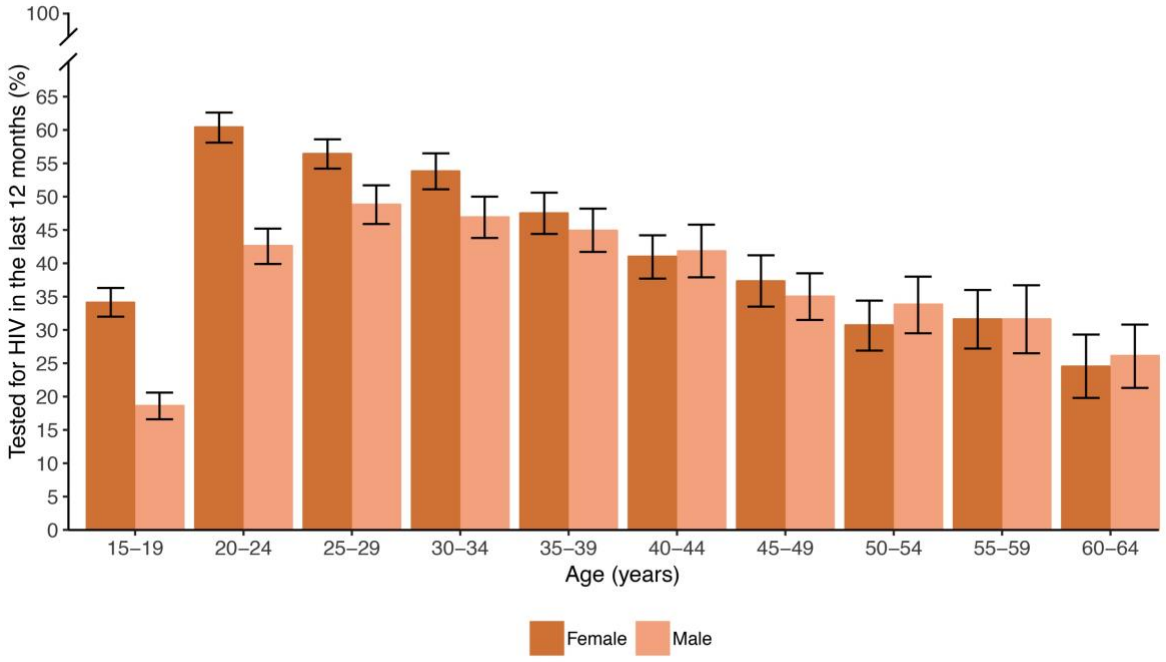
Table 7.3.C Self-reported HIV testing: Total (continued)

Percentage of adults aged 15-64 years who ever received HIV testing and their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA HIV test and selected demographic characteristics, UPHIA 2016-2017

Characteristic	Percentage who ever received HIV testing and received results	Percentage who received HIV testing in the past 12 months and received results[1]	Number
Marital status (cont)			
Married or living together	87.0	48.2	16,506
Divorced or separated	84.0	44.9	3,198
Widowed	80.1	33.2	1,138
Education			
No formal education	74.8	34.6	2,749
Some primary	70.5	37.0	12,271
Completed primary	75.8	41.1	4,278
Some secondary	78.6	45.9	6,924
Completed secondary or > than secondary	89.4	54.4	2,894
Wealth quintile			
Lowest	71.8	37.8	7,901
Second	69.2	37.2	5,871
Middle	75.2	39.7	5,467
Fourth	79.1	44.3	4,779
Highest	83.9	49.5	5,265
Religion			
Catholic	75.9	42.3	11,440
Protestant/Anglican	75.6	40.7	9,178
Muslim	75.1	42.7	4,401
Pentecostal	77.2	41.9	2,961
Seventh-Day Adventist	81.3	45.0	467
Others	73.7	37.7	822
Ethnicity			
Baganda	80.8	44.4	4,454
Banyankole	79.3	44.3	2,285
Basoga	68.6	36.9	2,549
Bakiga	78.7	42.1	1,189
Iteso	77.1	43.8	2,849
Langi	71.6	34.1	1,591
Bagisu/Sabiny	62.9	34.8	2,381
Acholi	84.4	50.3	911
Lugbara/Madi	74.2	39.5	2,790
Batoro	82.3	50.1	643
Banyoro	80.6	50.0	854
Others	73.2	39.5	6,772
Total 15-24	63.0	37.8	11,340
Total 15-49	76.1	43.0	25,800
Total 50-64	73.5	30.3	3,483
Total 15-64	75.9	41.7	29,283

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 7.3.A Proportion of adults who reported having received an HIV test in the prior 12 months, by age and sex, UPHIA 2016-2017



7.4 Gaps and Unmet Needs

- Almost one-third of men reported that they had never tested for HIV and received their results, suggesting a need for increased testing outreach to this group.
- Based on self-report, 41.7% of adults were tested for HIV in the 12 months preceding the survey. Efforts are needed to close gaps in testing, through targeted testing of high-risk populations and screening strategies among those who are low risk.
- There is a disparity that needs to be addressed between levels of testing in the last 12 months among urban (47.9%) and rural (39.2%) areas.

7.5 References

UAIS 2011: *Uganda Ministry of Health, ICF International. Uganda AIDS indicator survey, 2011.* Calverton Maryland, USA: 2011. https://dhsprogram.com/pubs/pdf/AIS10/AIS10.pdf Accessed on November 24, 2018.

8 SELF-REPORTED HIV DIAGNOSIS AND TREATMENT

8.1 Key Findings

- **Diagnosed:** In Uganda, 66.2% of adults (those aged 15-64 years) living with HIV reported awareness of their HIV status: 68.6% of HIV-positive women and 62.0% of HIV-positive men.
- Two-thirds (67.5%) of HIV-positive men aged 25-29 years reported being unaware of their HIV status. Among older adolescent girls (ages 15-19 years), 60.0% reported being unaware of their HIV status.
- Among HIV-positive adults in urban areas, 33.0% of men and 35.4% of women reported being unaware of their HIV status, compared to 39.9% of men and 28.9% of women who reported being unaware in rural areas.
- Self-reported lack of awareness of HIV status among HIV-positive men varied geographically, from 31.2% unaware in North-East region to 51.3% unaware in East-Central region.
- Among adults who reported no previous HIV diagnosis, 18.5% had detectable ARVs in their blood: 14.1% among men and 21.5% among women.
- **On Treatment**: Among adults living with HIV who reported knowledge of their HIV status, 58.5% reported current use of ART: 61.9% of HIV-positive women and 52.4% of HIV-positive men.
- Laboratory ARV testing showed that 60.2% of adults diagnosed as HIV-positive had detectable ARVs in their blood: 64.4% among women and 52.6% among men.
- Among adults living with HIV who reported current ART use, 90.8% had detectable ARVs in their blood.
- Uptake of ART (according to self-report) also varied geographically and peaked in South-West at 64.4%, as compared to 47.0% in East-Central region.

8.2 Background

Recent studies have demonstrated 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 of HIV. In 2016, after extensive review of evidence of both the clinical and population-level benefits of expansion of ART treatment, the World Health Organization (WHO) changed its recommendation to support a policy of 'Treat all' regardless of CD4 count (WHO 2016a, WHO 2017). By November 2017, almost all countries in sub-Saharan Africa had adopted this policy, despite the challenges of ensuring uptake and implementation (WHO 2017). This policy was adopted in Uganda on December 1, 2016 (WHO 2016b). Because of the timing of UPHIA 2016-2017, the HIV treatment coverage coincides with implementation of the 'Treat all' policy, and it is likely that not all persons with higher CD4 counts had yet been initiated onto ART according to the new policy.

In addition, Uganda has committed to the UNAIDS Fast Track Strategy for HIV epidemic control with ambitious targets of having at least 90% of people living with HIV aware of their status, and 90% of those who know their HIV-positive status (81% of all people living with HIV) enrolled on ART by 2020.

8.3 Self-Reported Diagnosis and Treatment Status Among HIV-Positive Adults

Based on self-report, about one-third (33.8%) of adults living with HIV were unaware of their HIV-positive status: 38.0% of the men and 31.4% of the women. Overall, 58.5% of HIV-positive adults reported awareness of their HIV status and that they were taking ART: 52.4% of the men and 61.9% of the women (Tables 8.3.A, 8.3.B, and 8.3.C).

Among HIV-positive men, the percentage of those who reported not knowing their HIV status ranged from 75.8% among those aged 20-24 years to 17.5% among those aged 60-64-years. Among HIV-positive women, the percentage of those who did not know their HIV status ranged from 60.0% among those aged 15-19 years to 12.7% among those aged 40-44 years.

Among urban, HIV-positive men, 33.0% were unaware of their HIV status, compared to 39.9% among those in rural areas. Lack of awareness among HIV-positive men varied from 31.2% in North-East region compared to 51.3% unaware in East-Central region. Some variation in awareness of HIV status by residence was seen among women in urban (35.4%) and rural areas (28.9%). These data suggest that urban HIV-positive men are more aware than rural ones, whereas the opposite seems to be the case for women (Tables 8.3.A, 8.3.B, and 8.3.C).

Overall, 58.5% of adults living with HIV reported ART use: 52.4% the men and 61.9% of the women. Among HIV-positive adults, self-reported ART use also increased steadily with age from just about one-third of older adolescents aged 15-19 years to over three-quarters of adults aged 50 years and older. The percentage of HIV-positive men who reported that they were on ART ranged from 18.0% among those aged 20-24 years to 73.0% among those aged 50-54 years; while the percentage of HIV-positive women who reported ART use ranged from 33.1% among those aged 15-19 years to 85.7% among those aged 55-59 years (Tables 8.3.A and 8.3.B, Figure 8.3.A).

Among married or cohabitating HIV-positive adults, 56.9% were aware of their status and on ART (52.5% of men and 60.6% of women). Among those who had never married, 41.4% were aware of their HIV status and on ART: 35.2% of men and 43.9% of women (Tables 8.3.A, 8.3.B, and 8.3.C).

The proportion of HIV-positive adults who were unaware of their HIV status varied geographically, ranging from 28.2% unaware in North-East region to 48.7% unaware in East-Central. By demographic category, the percentage unaware of their status was notably high among those never married (51.6%), those identifying themselves as Muslim (44.8%), those from Bagisu/Sabiny (53.9%) and those from Basoga (46.9%) ethnicities, and among those aged 15-19 years (62.8%) (Table 8.3.C).

Among HIV-positive adults, 8.1% of those residing in urban areas and 7.5% of those in rural areas reported awareness of their status, but not receiving ART. The percentages of those reporting awareness of their status, but not receiving ART, were highest in the regions of Mid-North (14%) and Mid-East (10.4%), among those divorced or separated (8.9%), those belonging to the Langi ethnicity (12.9%), and among adults aged 35-39 years (10.4%).

Among all HIV-positive adults, the percentage reporting awareness of their HIV status and receiving ART was very similar in rural (59.3%) and urban areas (57.1%). However, this percentage varied more greatly across geographic regions, ranging from 47% in East-Central to 64.4% in South-West.

The lowest ART use was reported among the never married (41.4%), those in the lowest wealth quintile (52.8%), and younger adults (less than 50% for those under the age of 30 years).

Table 8.3.A HIV treatment status: Men

Percent distribution of HIV-positive men aged 15-64 years by self-reported antiretroviral treatment (ART) status, by selected demographic characteristics, UPHIA 2016-2017

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Age					
15-19	*	*	*	*	14
20-24	(75.8)	(6.2)	(18.0)	(100.0)	25
25-29	67.5	10.5	22.0	100.0	56
30-34	37.6	18.1	44.3	100.0	70
35-39	38.9	11.4	49.7	100.0	93
40-44	25.5	9.8	64.7	100.0	92
45-49	26.6	4.5	68.8	100.0	104
50-54	19.3	7.7	73.0	100.0	53
55-59	(37.1)	(6.5)	(56.3)	(100.0)	35
60-64	(17.5)	(11.1)	(71.4)	(100.0)	28
Residence					
Urban	33.0	8.4	58.6	100.0	157
Rural	39.9	10.0	50.1	100.0	413
Region					
Central 1	39.4	7.0	53.6	100.0	76
Central 2	35.6	8.8	55.6	100.0	60
Kampala	(44.4)	-	(55.6)	(100.0)	35
East-Central	(51.3)	(6.3)	(42.4)	(100.0)	49
Mid-East	45.5	11.5	43.0	100.0	80
North-East	31.2	15.2	53.6	100.0	50
West-Nile	(45.3)	(10.1)	(44.6)	(100.0)	43
Mid-North	36.4	24.1	39.5	100.0	64
Mid-West	34.9	7.6	57.5	100.0	50
South-West	31.3	5.0	63.7	100.0	63
Marital status					
Never married	(63.2)	(1.6)	(35.2)	(100.0)	38
Married or living together	37.1	10.5	52.5	100.0	406
Divorced/separated	35.3	8.7	56.0	100.0	96
Widowed	(26.3)	(11.7)	(62.0)	(100.0)	29
Education					
No formal education	(39.9)	(8.2)	(51.9)	(100.0)	46
Some primary	40.3	8.6	51.1	100.0	232
Completed primary	44.9	6.4	48.7	100.0	103
Some secondary	36.6	11.1	52.4	100.0	133
Completed secondary or more than secondary	17.4	17.2	65.3	100.0	56
Wealth quintile					
Lowest	48.7	18.1	33.2	100.0	129
Second	34.6	9.4	56.1	100.0	100
Middle	42.5	9.4	48.1	100.0	113
Fourth	33.6	5.6	60.8	100.0	132
Highest	32.6	8.0	59.4	100.0	96
Religion					
Catholic	38.5	11.2	50.4	100.0	236
Protestant/Anglican	32.7	7.1	60.3	100.0	198
Muslim	55.9	5.5	38.7	100.0	69
Pentecostal	(34.1)	(10.7)	(55.2)	(100.0)	46
Seventh-Day Adventist	*	*	*	*	7
Others	*	*	*	*	14
Ethnicity					
Baganda	38.5	5.2	56.3	100.0	101
Banyankole	34.6	8.3	57.1	100.0	59
Basoga	(54.0)	(6.8)	(39.3)	(100.0)	39
Bakiga	(33.8)	-	(66.2)	(100.0)	32
Iteso	29.0	14.6	56.4	100.0	54
Langi	(39.9)	(18.5)	(41.6)	(100.0)	39
Bagisu/Sabiny	(55.4)	(11.7)	(32.9)	(100.0)	42
Acholi	(25.7)	(33.2)	(41.1)	(100.0)	26
Lugbara/Madi	(34.6)	(22.4)	(43.0)	(100.0)	28
Batoro	(32.9)	(8.2)	(58.9)	(100.0)	26

Table 8.3.A HIV treatment status: Men (continued)

Percent distribution of HIV-positive men aged 15-64 years by self-reported antiretroviral treatment (ART) status, by selected demographic characteristics, UPHIA 2016-2017

		Aware of HIV status			
Characteristic	Unaware of HIV status	Not on ART	On ART[1]	Total	Number
Banyoro	*	*	*	*	20
Others	39.9	8.4	51.8	100.0	104
Total 15-49	40.7	9.9	49.3	100.0	454
Total 50-64	25.1	7.8	67.1	100.0	116
Total 15-64	38.0	9.6	52.4	100.0	570

[1]Relates to Global AIDS Monitoring indicator 1.3: People living with HIV on ART.

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 in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Table 8.3.B HIV treatment status: Women

Percent distribution of HIV-positive women aged 15-64 years by self-reported antiretroviral treatment (ART) status, by selected demographic characteristics, UPHIA 2016-2017

		Aware of HIV status			
Characteristic	Unaware of HIV status	Not on ART	On ART[1]	Total	Number
Age					
15-19	60.0	6.8	33.1	100.0	54
20-24	54.2	4.3	41.5	100.0	138
25-29	44.2	7.5	48.3	100.0	193
30-34	28.3	5.8	66.0	100.0	202
35-39	23.0	9.7	67.3	100.0	185
40-44	12.7	10.2	77.2	100.0	132
45-49	20.0	5.9	74.1	100.0	125
50-54	21.8	4.7	73.6	100.0	83
55-59	(14.3)	-	(85.7)	(100.0)	49
60-64	(14.9)	(1.8)	(83.3)	(100.0)	35
Residence					
Urban	35.4	8.0	56.5	100.0	458
Rural	28.9	5.8	65.3	100.0	738
Region					
Central 1	30.4	5.3	64.3	100.0	150
Central 2	31.4	8.9	59.7	100.0	123
Kampala	30.8	9.2	60.0	100.0	134
East-Central	47.4	3.4	49.2	100.0	103
Mid-East	33.5	9.6	56.8	100.0	150
North-East	26.3	4.1	69.6	100.0	95
West-Nile	29.9	5.4	64.7	100.0	93
Mid-North	25.3	7.6	67.1	100.0	119
Mid-West	28.8	8.9	62.3	100.0	105
South-West	32.0	3.2	64.7	100.0	124
Marital status					
Never married	46.8	9.3	43.9	100.0	103
Married or living together	33.8	5.7	60.6	100.0	566
Divorced/separated	33.7	8.9	57.4	100.0	310
Widowed	13.2	4.6	82.2	100.0	213
Education					
No formal education	25.0	5.6	69.4	100.0	153
Some primary	29.2	6.3	64.5	100.0	558
Completed primary	33.4	3.6	63.0	100.0	176
Some secondary	36.5	9.1	54.4	100.0	238
Completed secondary or more than secondary	38.6	12.2	49.1	100.0	62
Wealth quintile					
Lowest	25.6	6.7	67.7	100.0	204
Second	24.5	6.0	69.6	100.0	195
Middle	35.8	7.1	57.1	100.0	242
Fourth	30.0	6.7	63.3	100.0	298
Highest	37.3	6.6	56.1	100.0	257

Table 8.3.B HIV treatment status: Women (continued)

Percent distribution of HIV-positive women aged 15-64 years by self-reported antiretroviral treatment (ART) status, by selected demographic characteristics, UPHIA 2016-2017

		Aware of HIV status			
Characteristic	Unaware of HIV status	Not on ART	On ART[1]	Total	Number
Religion					
Catholic	28.5	8.7	62.7	100.0	478
Protestant/Anglican	33.6	4.5	61.9	100.0	362
Muslim	38.9	5.2	55.9	100.0	159
Pentecostal	29.6	7.4	63.0	100.0	139
Seventh-Day Adventist	*	*	*	*	21
Others	(25.3)	(3.0)	(71.7)	(100.0)	37
Ethnicity					
Baganda	28.7	8.5	62.7	100.0	262
Banyankole	35.0	2.2	62.8	100.0	134
Basoga	42.3	2.4	55.4	100.0	71
Bakiga	29.1	5.4	65.5	100.0	56
Iteso	27.2	4.0	68.8	100.0	101
Langi	29.9	9.1	61.0	100.0	68
Bagisu/Sabiny	52.8	9.1	38.0	100.0	66
Acholi	19.8	3.6	76.6	100.0	60
Lugbara/Madi	32.9	6.7	60.3	100.0	55
Batoro	(25.5)	(3.0)	(71.5)	(100.0)	46
Banyoro	(28.9)	(16.0)	(55.2)	(100.0)	43
Others	32.6	8.4	59.0	100.0	234
Total 15-49	33.3	7.2	59.5	100.0	1,029
Total 50-64	18.0	2.6	79.5	100.0	167
Total 15-64	31.4	6.6	61.9	100.0	1,196

[1]Relates to Global AIDS Monitoring indicator 1.3: People living with HIV on ART.

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 in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Table 8.3.C HIV treatment status: Total

Percent distribution of HIV-positive adults aged 15-64 years by self-reported antiretroviral treatment (ART) status, by selected demographic characteristics, UPHIA 2016-2017

		Aware of HIV status			
Characteristic	Unaware of HIV status	Not on ART	On ART[1]	Total	Number
Age					
15-19	62.8	5.5	31.7	100.0	68
20-24	58.4	4.7	37.0	100.0	163
25-29	50.4	8.3	41.3	100.0	249
30-34	31.0	9.3	59.7	100.0	272
35-39	29.1	10.4	60.5	100.0	278
40-44	18.6	10.0	71.5	100.0	224
45-49	23.4	5.2	71.4	100.0	229
50-54	20.6	6.0	73.3	100.0	136
55-59	24.5	2.9	72.6	100.0	84
60-64	15.9	5.4	78.7	100.0	63
Residence					
Urban	34.8	8.1	57.1	100.0	615
Rural	33.3	7.5	59.3	100.0	1,151
Region					
Central 1	33.8	6.0	60.2	100.0	226
Central 2	32.9	8.9	58.2	100.0	183
Kampala	34.0	7.1	59.0	100.0	169
East-Central	48.7	4.4	47.0	100.0	152
Mid-East	38.1	10.4	51.5	100.0	230
North-East	28.2	8.3	63.6	100.0	145
West-Nile	35.2	7.0	57.8	100.0	136
Mid-North	29.6	14.0	56.5	100.0	183
Mid-West	31.0	8.5	60.6	100.0	155
South-West	31.7	3.9	64.4	100.0	187

Table 8.3.C HIV treatment status: Total (continued)

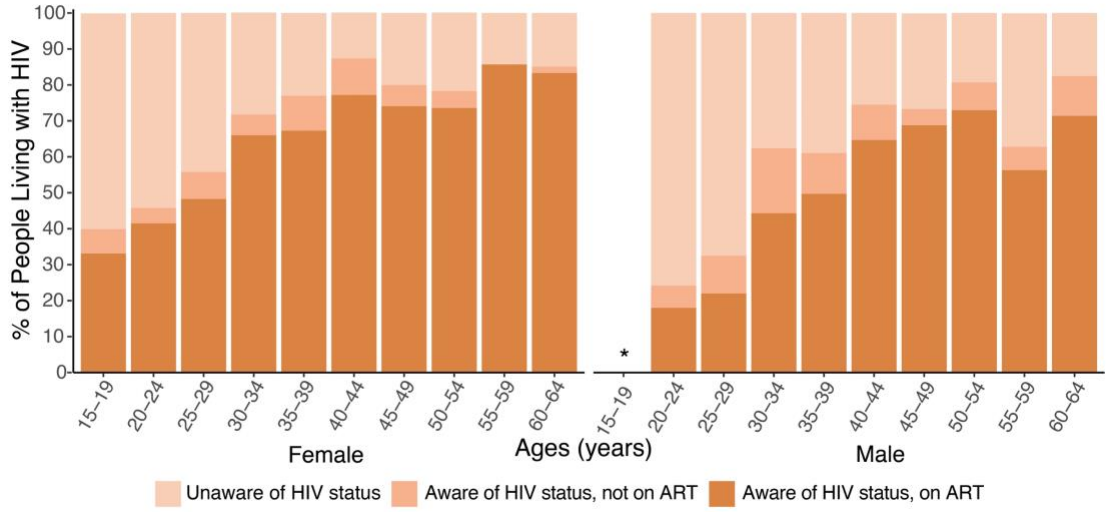
Percent distribution of HIV-positive adults aged 15-64 years by self-reported antiretroviral treatment (ART) status, by selected demographic characteristics, UPHIA 2016-2017

Characteristic	Unaware of HIV status	Aware of HIV status		Total	Number
		Not on ART	On ART[1]		
Marital status					
Never married	51.6	7.0	41.4	100.0	141
Married or living together	35.3	7.8	56.9	100.0	972
Divorced/separated	34.1	8.9	57.0	100.0	406
Widowed	14.9	5.5	79.6	100.0	242
Education					
No formal education	29.1	6.3	64.5	100.0	199
Some primary	32.8	7.0	60.2	100.0	790
Completed primary	38.0	4.7	57.4	100.0	279
Some secondary	36.5	9.9	53.6	100.0	371
Completed secondary or more than secondary	28.1	14.7	57.2	100.0	118
Wealth quintile					
Lowest	35.6	11.7	52.8	100.0	333
Second	28.2	7.2	64.5	100.0	295
Middle	38.1	7.9	54.0	100.0	355
Fourth	31.3	6.3	62.4	100.0	430
Highest	35.8	7.0	57.2	100.0	353
Religion					
Catholic	32.1	9.6	58.2	100.0	714
Protestant/Anglican	33.3	5.5	61.3	100.0	560
Muslim	44.8	5.3	49.9	100.0	228
Pentecostal	30.9	8.4	60.8	100.0	185
Seventh-Day Adventist	(38.1)	(6.4)	(55.5)	(100.0)	28
Others	24.7	13.4	61.9	100.0	51
Ethnicity					
Baganda	31.9	7.4	60.6	100.0	363
Banyankole	34.9	4.3	60.8	100.0	193
Basoga	46.9	4.1	49.0	100.0	110
Bakiga	31.0	3.3	65.8	100.0	88
Iteso	27.9	8.0	64.1	100.0	155
Langi	34.0	12.9	53.1	100.0	107
Bagisu/Sabiny	53.9	10.2	35.8	100.0	108
Acholi	21.7	13.2	65.1	100.0	86
Lugbara/Madi	33.5	12.3	54.2	100.0	83
Batoro	28.5	5.1	66.4	100.0	72
Banyoro	30.9	12.8	56.3	100.0	63
Others	35.0	8.4	56.6	100.0	338
Total 15-49	35.8	8.1	56.0	100.0	1,483
Total 50-64	21.1	4.9	74.0	100.0	283
Total 15-64	33.8	7.7	58.5	100.0	1,766

Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

[1]Relates to Global AIDS Monitoring indicator 1.3: People living with HIV on ART.

Figure 8.3.A Proportion of HIV-positive adults aged 15-64 years reporting awareness of HIV status and antiretroviral therapy status, by age and sex, UPHIA 2016-2017



*Estimates not shown, as they are based on 24 cases or fewer.

8.4 Concordance of Self-Reported Treatment Status Versus Presence of Antiretrovirals

UPHIA determined the presence of three ARVs in blood (efavirenz, lopinavir, and nevirapine) as markers of first- and second-line regimens prescribed in the country at the time of the survey. Overall, ARVs were detected in 60.2% of HIV-positive adults. Among adults living with HIV who reported no previous HIV-positive diagnosis, 18.5% had ARVs detectable in their blood: 14.1% among men and 21.5% among women. ARVs were detected in 90.8% of adults who reported current use of ART: 88.6% of men and 91.8% of women. Among those who reported a previous HIV diagnosis, but no ART use, 9.1 % had ARVs detected in blood: 8.1% of men and 9.9% of women (Tables 8.4.A, 8.4.B, and 8.4.C).

Table 8.4.A Concordance of self-reported treatment status versus presence of detectable antiretrovirals (ARVs): Men

Percent distribution of HIV-positive men aged 15-64 years by presence of detectable ARVs versus self-reported antiretroviral treatment (ART) status, UPHIA 2016-2017

	ARV status[1]			
Characteristic	Not detectable	Detectable	Total	Number
Self-reported treatment status				
Not previously diagnosed	85.9	14.1	100.0	217
Previously diagnosed, not on ART	91.9	8.1	100.0	55
Previously diagnosed, on ART	11.4	88.6	100.0	297
Total 15-24	(82.5)	(17.5)	(100.0)	39
Total 15-49	50.5	49.5	100.0	454
Total 15-64	47.4	52.6	100.0	569

Table 8.4.B Concordance of self-reported treatment status versus presence of detectable antiretrovirals (ARVs): Women

Percent distribution of HIV-positive women aged 15-64 years by presence of detectable ARVs versus self-reported antiretroviral treatment (ART) status, UPHIA 2016-2017

	ARV status[1]			
Characteristic	Not detectable	Detectable	Total	Number
Self-reported treatment status				
Not previously diagnosed	78.5	21.5	100.0	364
Previously diagnosed, not on ART	90.1	9.9	100.0	78
Previously diagnosed, on ART	8.2	91.8	100.0	752
Total 15-24	57.0	43.0	100.0	191
Total 15-49	37.7	62.3	100.0	1,030
Total 15-64	35.6	64.4	100.0	1,197

[1]Antiretroviral detection assay included only efavirenz, lopinavir, and nevirapine.

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 in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution

Table 8.4.C Concordance of self-reported treatment status versus presence of detectable antiretrovirals (ARVs): Total				
Percent distribution of HIV-positive persons aged 15-64 years by presence of detectable ARVs versus self-reported antiretroviral treatment (ART) status, UPHIA 2016-2017				
	ARV status[1]			
Characteristic	Not detectable	Detectable	Total	Number
Self-reported treatment status				
Not previously diagnosed	81.5	18.5	100.0	581
Previously diagnosed, not on ART	90.9	9.1	100.0	133
Previously diagnosed, on ART	9.2	90.8	100.0	1,049
Total 15-24	62.0	38.0	100.0	230
Total 15-49	42.1	57.9	100.0	1,484
Total 15-64	39.8	60.2	100.0	1,766

[1]Antiretroviral detection assay included only efavirenz, lopinavir, and nevirapine.
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 in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution

8.5 Gaps and Unmet Needs

- A major gap was observed in reaching and diagnosing those living with HIV, particularly a substantial proportion of young people and men who are unaware of their status.
- Targeted HIV testing campaigns are needed among young people aged 15-24 years, as well as the less educated and never married.
- Of all adults living with HIV, only about 60% were on ART. This is still a long way from the UNAIDS targets of 81% (UNAIDS 2nd 90 target that 90% of people who are aware of their HIV-positive status should be on ART; 90% x 90%=81%).
- A significant number of people who had been diagnosed with HIV were still not receiving ART.
- The lack of concordance of self-reported HIV awareness and treatment status, versus the presence of detectable ARVs, suggests some patients are reluctant to disclose their HIV status or treatment status.

8.6 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 December 17, 2018.

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 December 20, 2018.

3. Uganda launches HIV/AIDS test and treat guidelines at World AIDS Day commemoration. World Health Organization website, 2016. https://afro.who.int/news/uganda-launches-hivaids-test-and-treat-guidelines-world-aids-day-commemoration. Accessed December 20, 2018.

9 VIRAL LOAD SUPPRESSION

9.1 Key Findings

- Among all HIV positive adults (those aged 15-64 years), 59.6% have VLS: 53.6% of men and 62.9% of women.
- The prevalence of VLS increased with increasing age for those between the ages of 20-54 years, from 39.6% among HIV-positive people aged 20-24 years to 74.2% among those aged 50-54 years. This trajectory was observed across both sexes. Just over a third (39.3%) of children (those aged 0-14-years) had VLS.
- The prevalence of VLS among HIV-positive adults varies geographically across Uganda, ranging from 48.8% in East-Central to 70.0% in North-East region.

9.2 Background

Viral load suppression is a key indicator of treatment success in people living with HIV and constitutes the third 90 in the 90-90-90 HIV testing and treatment cascade. Uganda aims at 73% VLS by 2020 under the triple 90 framework, but recently upgraded to 85% under the 95-95-95 Super-Fast Track framework. For the purposes of UPHIA 2016-2017, VLS is defined as a VL less than 1,000 HIV RNA copies per mL of plasma. This chapter describes VLS among the population of adults living with HIV by age, sex, region, and other demographic characteristics. This survey was the first time population-level VL data were collected at the national level in Uganda.

9.3 Viral Load Suppression by Age and Sex

In general, the prevalence of VLS among people living with HIV ranged from 39.6% among those aged 20-24 years to 74.2% among those aged 50-54 years. Just over a third (39.3%) of children (ages 0-14-years) had VLS. The VLS prevalence generally appears higher among girls and women compared to boys and men, across all the age groups. VLS prevalence was generally low (less than 50%) among the younger population under 24 years of age compared to the population aged 25 years and older (Table 9.4.A; Figure 9.4.A).

Table 9.3.A Viral load suppression by age (5-year age groups)

Prevalence of viral load suppression (VLS) (< 1,000 copies/mL) among HIV-positive persons aged 0-64 years in Uganda, by sex and age, UPHIA 2016-2017

	Male		Female		Total	
Age	Percentage VLS	Number	Percentage VLS	Number	Percentage VLS	Number
0-4	*	14	*	16	(15.4)	30
5-9	*	2	*	8	*	10
10-14	*	2	*	8	*	10
15-19	*	14	51.4	54	49.4	68
20-24	(28.6)	25	42.2	139	39.6	164
25-29	29.4	56	52.3	194	46.2	250
30-34	46.6	70	63.3	203	58.5	273
35-39	50.4	93	65.2	185	59.5	278
40-44	59.1	92	74.7	134	67.6	226
45-49	70.8	104	77.6	125	74.1	229
50-54	69.1	53	78.4	84	74.2	137

Table 9.3.A Viral load suppression by age (5-year age groups) (continued)

Prevalence of viral load suppression (VLS) (< 1,000 copies/mL) among HIV-positive persons aged 0-64 years in Uganda, by sex and age, UPHIA 2016-2017

Age	Male		Female		Total	
	Percentage VLS	Number	Percentage VLS	Number	Percentage VLS	Number
55-59	(61.3)	35	(80.1)	49	71.7	84
60-64	(59.4)	28	(80.5)	35	72.4	63
Total 5-14	*	4	*	16	*	20
Total 0-14	*	18	(45.1)	32	39.3	50
Total 15-24	(32.5)	39	44.9	193	42.5	232
Total 15-49	51.3	454	60.7	1,034	57.4	1,488
Total 50-64	65.0	116	79.4	168	73.0	284
Total 15-64	53.6	570	62.9	1,202	59.6	1,772

[1]Relates to Global AIDS Monitoring indicator 1.4: People living with HIV who have suppressed viral loads.
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.
An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

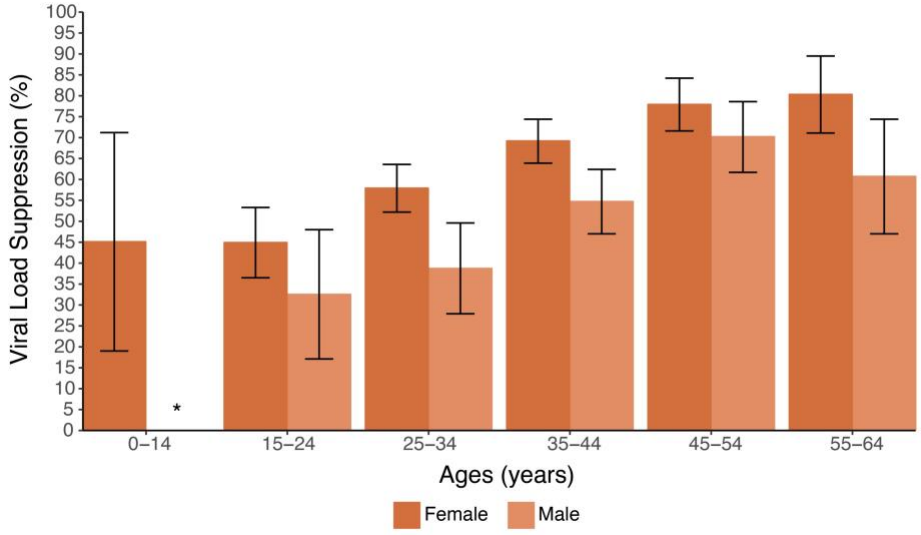
Table 9.3.B Viral load suppression by age: (10-to-15-year age groups)

Among HIV-positive persons, percentage with viral load suppression (VLS) (< 1,000 copies/mL) among HIV-positive persons aged 0-64 years in Uganda, by sex and age, UPHIA 2016-2017

Age	Male		Female		Total	
	Percentage VLS	Number	Percentage VLS	Number	Percentage VLS	Number
0–14	*	18	(45.1)	32	39.3	50
15–24	(32.5)	39	44.9	193	42.5	232
25–34	38.7	126	57.9	397	52.6	523
35–44	54.7	185	69.2	319	63.1	504
45–54	70.2	157	77.9	209	74.1	366
55-64	60.7	63	80.3	84	72.0	147
Total 15-49	51.3	454	60.7	1,034	57.4	1,488
Total 50-64	65.0	116	79.4	168	73.0	284
Total 15-64	53.6	570	62.9	1,202	59.6	1,772

[1]Relates to Global AIDS Monitoring indicator 1.4: People living with HIV who have suppressed viral loads.
[2]VLS: viral load suppression.
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Figure 9.3.A Proportion of viral load suppression (<1000 copies/mL) among people living with HIV, by age and sex, UPHIA 2016-2017



*Estimates not shown, as they are based on 24 cases or fewer.

9.4 Adult Viral Load Suppression by Other Demographic Characteristics

Among adults living with HIV in Uganda, the prevalence of VLS was 59.6% (53.6% of men and 62.9% of women). Of those who reported current use of ART, 83.5% had VLS (82.3% of men and 84.1% of women). Among those who reported being previously diagnosed, but not on ART, the prevalence of VLS was low (13.2%): 6.2% of men, and 18.7% of women. More than a quarter (28.6%) of those who self-reported as not previously diagnosed had VLS: 26.1% of men and 30.2% of women (Table 9.3.A). About one-half (51.7%) of people living with HIV who had never-married had VLS, while the prevalence of VLS was 58.4% of married or cohabitating people, 55.1% among divorced or separated persons, and 79.0% of those who were widowed (Table 9.4.A).

Table 9.4.A Viral load suppression prevalence by demographic characteristics

Prevalence of viral load suppression (VLS) (< 1,000 copies/mL) among HIV-positive persons aged 15-64 years, by sex, self-reported diagnosis and antiretroviral therapy (ART) status, and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage VLS	Number	Percentage VLS	Number	Percentage VLS	Number
Self-reported diagnosis and treatment status						
Not previously diagnosed	26.1	218	30.2	364	28.6	582
Previously diagnosed, not on ART	6.2	55	18.7	79	13.2	134
Previously diagnosed, on ART	82.3	297	84.1	753	83.5	1,050
Missing	*	0	*	6	*	6
Residence						
Urban	59.7	157	60.1	461	60.0	618
Rural	51.4	413	64.7	741	59.4	1,154
Region						
Central 1	59.3	76	67.1	153	64.2	229
Central 2	51.5	60	59.9	123	56.9	183
Kampala	(56.6)	35	63.8	135	62.1	170
East-Central	(57.3)	49	44.7	104	48.8	153
Mid-East	47.3	80	56.5	150	52.9	230
North-East	59.7	50	76.2	95	70.0	145
West-Nile	(54.4)	43	63.7	94	60.5	137
Mid-North	37.9	64	65.0	119	54.6	183
Mid-West	50.4	50	58.1	105	55.3	155
South-West	62.4	63	71.3	124	68.0	187
Marital status						
Never married	(50.7)	38	52.1	103	51.7	141
Married or living together	53.1	406	62.7	569	58.4	975
Divorced/separated	53.6	96	55.6	313	55.1	409
Widowed	(68.7)	29	80.5	213	79.0	242
Education						
No formal education	(60.4)	46	68.6	153	66.3	199
Some primary	52.2	232	65.2	561	61.0	793
Completed primary	50.9	103	63.4	177	58.5	280
Some secondary	53.0	133	55.1	240	54.3	373
Completed secondary or > than secondary	60.6	56	61.0	62	60.8	118
Wealth quintile						
Lowest	39.4	129	63.3	205	53.0	334
Second	53.7	100	67.9	195	62.6	295
Middle	53.0	113	57.8	244	56.1	357
Fourth	58.3	132	65.1	299	62.7	431
Highest	60.6	96	61.5	259	61.2	355
Religion						
Catholic	47.1	236	65.6	480	58.9	716
Protestant/Anglican	62.1	198	62.3	364	62.2	562
Muslim	49.4	69	56.4	160	54.0	229
Pentecostal	(63.4)	46	59.2	140	60.4	186
Seventh-Day Adventist	*	7	*	21	(63.4)	28
Others	*	14	(68.8)	37	59.4	51

Table 9.4.A Viral load suppression prevalence by demographic characteristics (continued)

Prevalence of viral load suppression (VLS) (< 1,000 copies/mL) among HIV-positive persons aged 15-64 years, by sex, self-reported diagnosis and antiretroviral therapy (ART) status, and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage VLS	Number	Percentage VLS	Number	Percentage VLS	Number
Ethnicity						
Baganda	54.7	101	67.3	265	63.3	366
Banyankole	59.9	59	71.0	135	67.2	194
Basoga	(52.1)	39	49.1	71	50.3	110
Bakiga	(62.0)	32	65.7	56	64.2	88
Iteso	59.5	54	74.4	102	68.7	156
Langi	(38.2)	39	53.4	68	47.2	107
Bagisu/Sabiny	(40.5)	42	46.2	66	43.8	108
Acholi	(36.6)	26	81.6	60	66.9	86
Lugbara/Madi	(50.6)	28	64.1	55	59.3	83
Batoro	(41.1)	26	(65.3)	46	55.5	72
Banyoro	*	20	(49.5)	43	54.5	63
Others	60.0	104	52.9	235	55.3	339
Total 15-49	51.3	454	60.7	1,034	57.4	1,488
Total 50-64	65.0	116	79.4	168	73.0	284
Total 15-64	53.6	570	62.9	1,202	59.6	1,772

[1]Relates to Global AIDS Monitoring indicator 1.4: People living with HIV who have suppressed viral loads.

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 in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

9.5 Adult Viral Load Suppression by Region

Among HIV-positive adults, the prevalence of VLS varied geographically across Uganda, ranging from 48.8% in East-Central to 70.0% in North-East region. The prevalence of VLS was above 60% in Kampala, Central 1, West Nile, and South-West regions. Comparatively, in the remaining five regions, prevalence of VLS was less than 60% (Table 9.4.A; Figure 9.5.A and 9.5.B).

Figure 9.5.A Viral load suppression (<1000 copies/mL) among HIV-positive adults aged 15-64 years, by region, UPHIA 2016-2017 (bar graph)

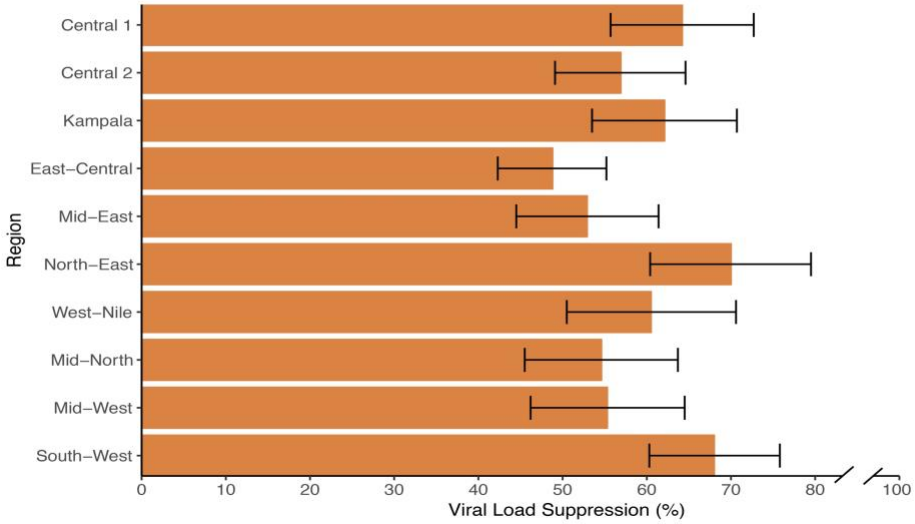
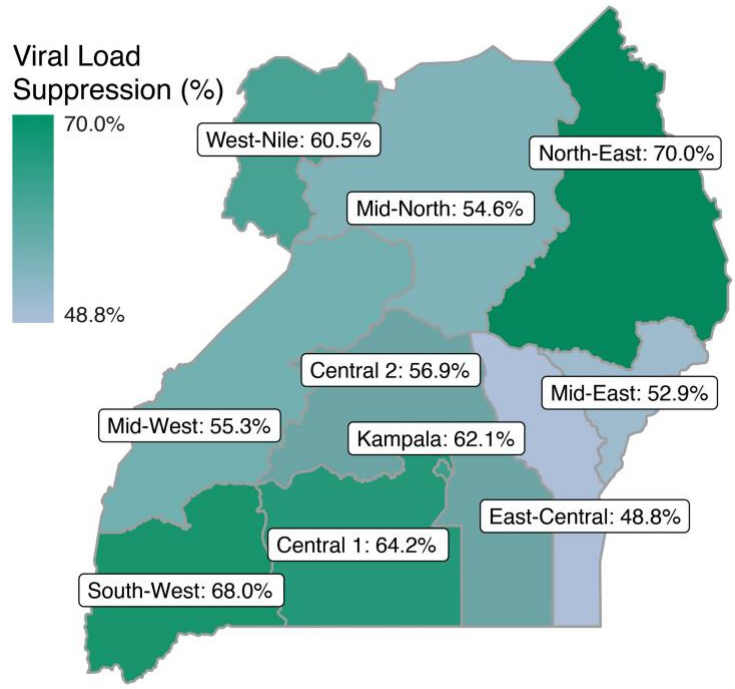


Figure 9.5.B Viral load suppression (<1000 copies/mL) among HIV-positive adults aged 15-64 years, by region, UPHIA 2016-2017 (map)



9.6 Gaps and Unmet Needs

- Viral load suppression was particularly low among children, reflecting a need for effective treatment strategies in this group.
- Viral load suppression in people living with HIV was lower among adults aged 15-49 years (57.4%) than in older adults aged 50-64 years (73.0%). This may reflect the gap in diagnosis and treatment initiation observed in younger age groups.
- There is a clear disparity in regional VLS prevalence that may have programmatic implications.

10 UNAIDS 90-90-90 TARGETS

10.1 Key Findings

- **Diagnosed:** Based on self-report and ARV detection data, it was estimated that in Uganda, 72.5% of the HIV-positive adults (those aged 15-64 years) knew their status: 75.4% of women and 67.3% of men.
- **On treatment:** Based on self-report and ARV detection data, 90.4% of adults living with HIV who knew their status were receiving ART: 92.1**%** of women and 86.9% of men.
- **Viral load suppression:** Among adults living with HIV who reported ART use or had detectable ARVs in their blood, 83.7% had VLS**:** 84.7% of women and 81.5% of men.
- **Overall:** Of all the HIV-positive adults, 72.5% reported knowing their status or had ARVs detected in their blood. Of all HIV-positive adults, 65.5% had detectable ARVs and/or self-reported current ART usage: 69.4% among women and 58.5% among men. Of all the HIV-positive adults, 54.8% had suppressed viral loads: 58.8% among women and 47.7% of men. Of the estimated 1.2 million HIV-positive adults in Uganda, this corresponds to approximately 866,000 people who were aware of their HIV status, 782,000 who were on treatment, and 655,000 who had VLS.

10.2 Background

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 persons with diagnosed HIV infection will receive sustained ART; and 90% of all persons receiving ART will have VLS (UNAIDS 2014). This is often referred to as the 'HIV cascade.' Taken as a product, the first two '90s' indicate that 81% (90%x90%) of all people living with HIV should be on ART, and the product of the three '90s' (90x90x90=73%) can be taken as a threshold for overall VLS irrespective of knowledge of status or being on treatment – at least 73% of all people living with HIV in a country should have VLS by 2020. Uganda has committed to HIV epidemic control under the Fast Track strategy. More recently, this commitment has been upgraded to the Super-Fast Track targets of 95-95-95 by 2020.

The previous chapters on HIV testing and treatment provide results on coverage of HIV testing and treatment services (including suppression of HIV by effective ART regimen provision), while overall VLS among all HIV-positive individuals regardless of knowledge of status and/or being on treatment is a measure of program impact. Awareness of HIV-positive status and treatment status among those aware of their HIV-positive status are indicators of access to services. Viral load suppression, among those aware of their HIV status and on treatment, provides an indication of access to and retention in care. When compared to VLS among all HIV-positive individuals, VLS also provides a biologic measure of overall program success, which can be used to infer likelihood of ongoing transmission of the virus in the community, related to incidence and to efforts at epidemic control. VLS among all HIV-positive individuals of 73% (90 x 90 x 90) or greater is an indication of successful testing and treatment services. The target for 2030 is going to be the more ambitious goals of 95-95-95 (and overall VLS of >86%). This chapter presents the status of the 90-90-90 indicators among adults in Uganda at the time of the UPHIA 2016-2017 survey.

The 90-90-90 results in this chapter have been presented in three ways. First, Table 10.3.A measures the overall percentages for all adults living with HIV of those who were aware of their status, those who were on treatment, and those who achieved VLS. In this table, individuals were classified as 'aware' of their HIV-positive status if they reported their HIV-positive status and/or had detectable ARVs in their blood. Individuals were classified as 'on treatment' if they reported that they were taking ART and/or had detectable ARVs in their blood.

Table 10.3.B uses only self-reported awareness and ARV status. Individuals were defined as 'aware' of their HIV-positive status if they reported their HIV-positive status before testing as part of the UPHIA survey. Individuals were defined as 'on treatment' if they reported ART use. Second, Table 10.3.C measures the 90-90-90 indicators using both self-reported and ARV biomarker data. In this table, 'aware' and 'on treatment' have been adjusted such that individuals in whom ARVs were detected are classified as 'aware' and 'on treatment' even if they did not report either. Individuals were classified as 'aware' of their HIV-positive status if they reported their HIV-positive status and/or had detectable ARVs in their blood. Individuals were classified as 'on treatment' if they reported that they were taking ART and/or had detectable ARVs in their blood.

It is important to note that in both cascades, individuals who had VLS, but 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 who were aware and on ARVs).

10.3 Status of the 90-90-90 Goals at National Level

Overall 90-90-90 cascade based on self-reported awareness of HIV status and ART use and adjusted for detectable ARVs, and VLS (ARV-adjusted awareness of HIV-positive status):
Nearly two-thirds (72.5%) of HIV-positive adults in Uganda were aware of their HIV status: 75.4% of women and 67.3% of men. Among all the HIV-positive adults, 65.5% had detectable ARVs and/or self-reported current ART usage: 69.4% among women and 58.5% among men. Of all the HIV-positive population, only 54.8% had VLS: 58.8% among women and 47.7% of men. Of the estimated 1.2 million HIV-positive adults in Uganda, this corresponds to 866,000 who were aware of their HIV status, 782,000 were on treatment, and 655,000 who had suppressed viral loads (Table 10.3.A).

90-90-90 cascade based on self-reported awareness of HIV status and ART use:
Based on self-reported awareness of HIV status and ARV use, Uganda has nearly achieved the second of the UNAIDS 90-90-90 targets: 88.4% of adults living with HIV who know their status reported ART use. However, achievement in diagnosis was below for the first target; 66.2% of the HIV-positive adults reported awareness of their HIV status. Achievement in VLS was also below the third target, with 83.5% of adults living with HIV reporting ARV use with VLS (Table 10.3.B).

90-90-90 cascade based on self-reported awareness of HIV status and ART use and adjusted for detectable ARVs (ARV-adjusted awareness of HIV-positive status):
Among HIV-positive adults, 72.5% (67.3% of men and 75.4% of women) were classified as aware, according to combined self-reported awareness and detectable ARVs data (ARV-adjusted awareness). Similar or higher levels of ARV-adjusted awareness were observed for all age groups above 35 years of age. However, ARV-adjusted awareness of HIV-positive status was observed in only 48.0% of HIV-positive young people (those aged 15-24 years): 26.5% of men and 53.1% of women. Similarly, ARV-adjusted awareness of HIV-positive status was observed in only 67.6% of adults aged 25-34 years: 54.7% of men and 72.5% of women (Table 10.3.C; Figure 10.3.A).

ARV-adjusted treatment status: Based on either self-reported ART status or detection of ARVs, 90.4% of those with ARV-adjusted awareness status were classified as on ART. This was similar across age groups ranging from 92.5% among young people aged 15-24 years to 88.0% among adults aged 25-34 years. The greatest disparity by sex was seen in adults aged 25-34 years, among whom 77.1% of men and 91.1% of women were on ART (Table 10.3.C; Figure 10.3.A).

Viral suppression: Among adults on ART (ARV-adjusted treatment status), 83.7% had VLS, ranging from 74.7% among young people aged 15-24 years to 85.9% among adults aged 35-49 years. Across all age groups, there was no statistically significant difference in VLS among men and women on ART (Table 10.3.C; Figure 10.3.A).

Table 10.3.A Adult 90-90-90 (based on self-reported antiretroviral therapy (ART) status and laboratory antiretroviral data; overall percentages)

90-90-90 targets among adults living with HIV aged 15-64 years, by sex and age, UPHIA 2016-2017

	Diagnosed					
	Male		Female		Total	
Age	Percentage self-reported HIV positive or with detectable ARVs[1]	Number	Percentage self-reported HIV positive or with detectable ARVs[1]	Number	Percentage self-reported HIV positive or with detectable ARVs[1]	Number
15-24	(26.5)	39	53.1	192	48.0	231
25-34	54.7	126	72.5	397	67.6	523
35-49	74.6	289	85.5	443	80.7	732
15-49	64.3	454	73.8	1,032	70.5	1,486
15-64	67.3	570	75.4	1,199	72.5	1,769

	On Treatment					
	Male		Female		Total	
Age	Percentage who had detectable ARVs or reported current ART usage[2]	Number	Percentage who had detectable ARVs or reported current ART usage[2]	Number	Percentage who had detectable ARVs or reported current ART usage[2]	Number
15-24	(22.2)	39	49.7	192	44.4	231
25-34	42.2	126	66.0	397	59.4	523
35-49	66.3	289	77.6	443	72.6	732
15-49	55.2	454	67.4	1,032	63.2	1,486
15-64	58.5	570	69.4	1,199	65.5	1,769

	Viral Load Suppression (VLS)					
	Male		Female		Total	
Age	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number
15-24	(12.3)	39	38.2	192	33.2	231
25-34	31.4	126	55.2	397	48.6	523
35-49	55.9	289	67.5	443	62.3	732
15-49	44.7	454	56.7	1,032	52.6	1,486
15-64	47.7	570	58.8	1,199	54.8	1,769

[1]Relates to Global AIDS Monitoring indicator (GAM) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT; [2]Relates to GAM 1.2: People living with HIV on antiretroviral (ARV) therapy (ART) and PEPFAR indicator TX_CURR_NAT; [3]Relates to GAM 1.4: People living with HIV who have suppressed viral loads and PEPFAR indicator VL_SUPPRESSION_NAT.
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.
An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Table 10.3.B Adult 90-90-90 (based on self-reported antiretroviral therapy (ART) status; conditional percentages)

90-90-90 targets among adults living with HIV aged 15-64 years, by sex and age, UPHIA 2016-2017

Diagnosed

	Male		Female		Total	
Age	Percentage self-reported HIV positive or with detectable ARVs[1]	Number	Percentage self-reported HIV positive or with detectable ARVs[1]	Number	Percentage self-reported HIV positive or with detectable ARVs[1]	Number
15-24	(24.8)	39	44.0	192	40.3	231
25-34	48.7	126	64.0	395	59.7	521
35-49	69.6	289	81.0	442	75.9	731
15-49	59.3	454	66.7	1,029	64.2	1,483
15-64	62.0	570	68.6	1,196	66.2	1,766

On Treatment Among Those Diagnosed

	Male		Female		Total	
Age	Percentage with detectable ARVs or who reported current ART usage[2]	Number	Percentage with detectable ARVs or who reported current ART usage[2]	Number	Percentage with detectable ARVs or who reported current ART usage[2]	Number
15-24	*	11	88.6	82	87.9	93
25-34	70.0	60	89.6	260	85.2	320
35-49	87.6	197	89.1	356	88.5	553
15-49	83.2	268	89.2	698	87.3	966
15-64	84.6	352	90.3	832	88.4	1,184

Viral Load Suppression (VLS) Among Those on Treatment

	Male		Female		Total	
Age	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number
15-24	*	9	75.8	72	74.0	81
25-34	79.2	39	82.7	231	82.1	270
35-49	84.0	175	86.3	322	85.4	497
15-49	82.1	223	83.5	625	83.1	848
15-64	82.3	297	84.1	753	83.5	1,050

[1]Relates to Global AIDS Monitoring indicator (GAM) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT; [2]Relates to GAM 1.2: People living with HIV on antiretroviral (ART) therapy (ART) and PEPFAR indicator TX_CURR_NAT; [3]Relates to GAM 1.4: People living with HIV who have suppressed viral loads and PEPFAR indicator VL_SUPPRESSION_NAT.

Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Table 10.3.C Adult 90-90-90 (based on self-reported antiretroviral therapy (ART) status and laboratory antiretroviral data; conditional percentages)

90-90-90 targets among adults living with HIV aged 15-64 years, by sex and age, UPHIA 2016-2017

Diagnosed

	Male		Female		Total	
Age	Percentage self-reported HIV positive or with detectable ARVs[1]	Number	Percentage self-reported HIV positive or with detectable ARVs[1]	Number	Percentage self-reported HIV positive or with detectable ARVs[1]	Number
15-24	(26.5)	39	53.1	192	48.0	231
25-34	54.7	126	72.5	397	67.6	523
35-49	74.6	289	85.5	443	80.7	732
15-49	64.3	454	73.8	1,032	70.5	1,486
15-64	67.3	570	75.4	1,199	72.5	1,769

Table 10.3.C Adult 90-90-90 (based on self-reported antiretroviral therapy (ART) status and laboratory antiretroviral data; conditional percentages) (continued)

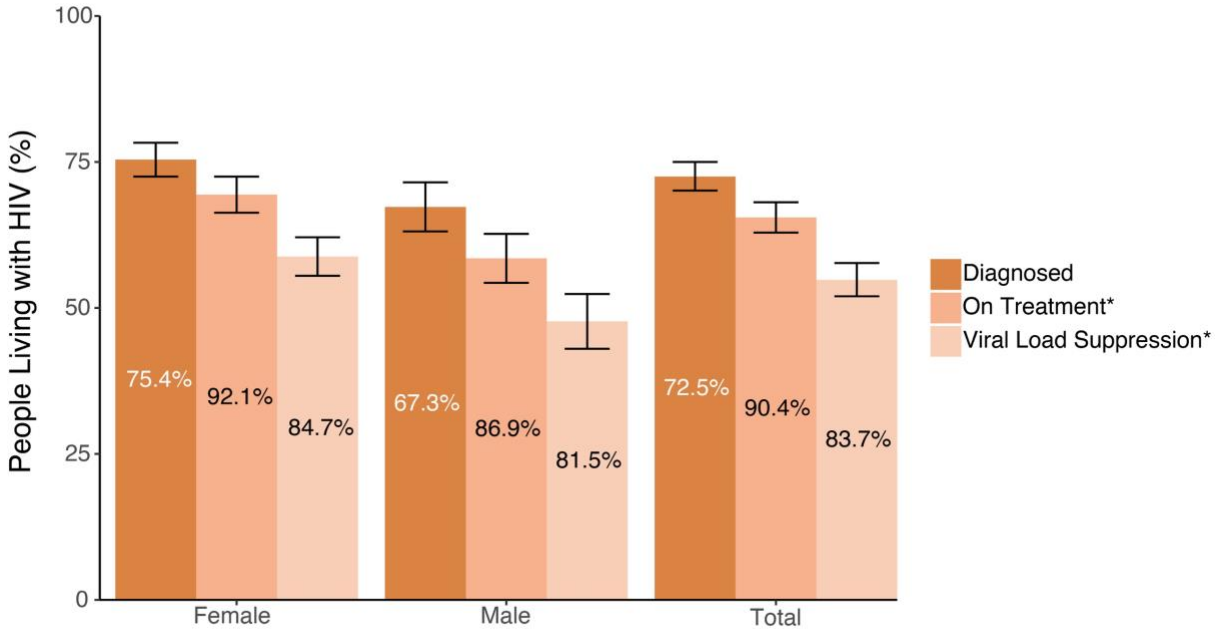
90-90-90 targets among adults living with HIV aged 15-64 years, by sex and age, UPHIA 2016-2017

	On Treatment Among Those Diagnosed					
	Male		Female		Total	
Age	Percentage with detectable ARVs or self-reported current ART usage[2]	Number	Percentage with detectable ARVs or self-reported current ART usage[2]	Number	Percentage with detectable ARVs or who self-reported current ART usage[2]	Number
15-24	*	12	93.6	100	92.5	112
25-34	77.1	68	91.1	294	88.0	362
35-49	88.9	214	90.7	379	90.0	593
15-49	85.8	294	91.3	773	89.6	1,067
15-64	86.9	388	92.1	917	90.4	1,305

	Viral Load Suppression (VLS) Among Those on Treatment					
	Male		Female		Total	
Age	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number
15-24	*	10	76.8	93	74.7	103
25-34	74.4	51	83.6	266	81.8	317
35-49	84.3	193	87.0	349	85.9	542
15-49	81.0	254	84.1	708	83.2	962
15-64	81.5	339	84.7	846	83.7	1,185

[1]Relates to Global AIDS Monitoring indicator (GAM) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT; [2]Relates to GAM 1.2: People living with HIV on antiretroviral (ARV) therapy (ART) and PEPFAR indicator TX_CURR_NAT; [3]Relates to GAM 1.4: People living with HIV who have suppressed viral loads and PEPFAR indicator VL_SUPPRESSION_NAT.
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

Figure 10.3.A Adult 90-90-90 (adjusted for laboratory antiretroviral data among adults aged 15-64 years), UPHIA 2016-2017



Note: In the antiretroviral (ARV)-adjusted 90-90-90 participants, are classified as 'aware' or 'diagnosed' if they reported knowing their HIV positive status before testing positive in UPHIA or had detectable ARVs in their blood. Participants are classified as 'on treatment' if they reported that they were on treatment or if they had detectable ARVs in their blood.
*Inset numbers are conditional proportions.

10.4 Status of the 90-90-90 Goals at Regional Level

90-90-90 cascade at regional level, based on self-reported awareness of HIV-positive status and treatment status, adjusted for detectable ARVs, and VLS (ARV-adjusted awareness of HIV-positive status):

Awareness of ARV status ranged from 62.0% in East-Central to 76.0% in Kampala. The percentage of all HIV-positive adults with detectable ARVs or self-reported current ART usage ranged from 62.6% in Central 2 and Mid-North to 71.0% in North-East. The percentage of all HIV-positive adults who had a suppressed viral load ranged from 42.2% in East-Central to 61.6% in South-West (Table 10.4.A).

ARV-adjusted treatment status at regional level:

Based on either self-reported ARV status or detectable ARVs, the proportion of those classified as on ART among those aware of their status ranged from 82.5% in Mid-North to 95.3% in South-West. Among adults on ART (ARV-adjusted treatment status), 73.2% in East-Central had a suppressed viral load compared to 88.9% in Central 1 (Table 10.4.B).

Table 10.4.A **Adult 90-90-90 at regional level (based on self-reported antiretroviral therapy (ART) status and laboratory antiretroviral data; overall percentages)**

90-90-90 targets among adults living with HIV age 15-64 years, by sex, residence, and region, UPHIA 2016-2017

	Diagnosed					
	Male		Female		Total	
	Percentage self-reported HIV positive or with detectable ARVs[1]	Number	Percentage self-reported HIV positive or with detectable ARVs[1]	Number	Percentage self-reported HIV positive or with detectable ARVs[1]	Number
Residence						
Urban	71.8	157	72.3	459	72.2	616
Rural	65.7	413	77.3	740	72.7	1,153
Region						
Central 1	66.1	76	77.3	152	73.1	228
Central 2	67.0	60	74.0	123	71.5	183
Kampala	(58.4)	35	81.3	134	76.0	169
East Central	(67.4)	49	59.5	103	62.0	152
Mid-Eastern	64.0	80	73.2	150	69.7	230
North East	70.5	50	83.5	95	78.6	145
West Nile	(68.9)	43	75.9	94	73.5	137
Mid North	69.9	64	79.6	119	75.9	183
Mid-West	65.1	50	76.1	105	72.2	155
South West	71.6	63	74.6	124	73.5	187
	On Treatment					
	Male		Female		Total	
	Percentage with detectable ARVs or self-reported current ART usage[2]	Number	Percentage with detectable ARVs or self-reported current ART usage[2]	Number	Percentage with detectable ARVs or self-reported current ART usage[2]	Number
Residence						
Urban	64.0	157	65.2	459	64.9	616
Rural	56.5	413	72.0	740	65.9	1,153
Region						
Central 1	59.1	76	72.6	152	67.6	228
Central 2	58.2	60	65.0	123	62.6	183
Kampala	(58.4)	35	73.0	134	69.6	169
East Central	(61.0)	49	56.1	103	57.7	152
Mid-Eastern	56.9	80	66.0	150	62.5	230
North East	55.4	50	80.5	95	71.0	145
West Nile	(64.1)	43	70.5	94	68.3	137
Mid North	47.6	64	71.9	119	62.6	183
Mid-West	57.5	50	68.5	105	64.5	155
South West	66.6	63	72.1	124	70.1	187

Table 10.4.A **Adult 90-90-90 at regional level (based on self-reported antiretroviral therapy (ART) status and laboratory antiretroviral data; overall percentages) (continued)**

90-90-90 targets among adults living with HIV age 15-64 years, by sex, residence, and region, UPHIA 2016-2017

	Viral Load Suppression (VLS)					
	Male		Female		Total	
	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number
Residence						
Urban	55.2	157	55.4	459	55.3	616
Rural	45.0	413	60.9	740	54.6	1,153
Region						
Central 1	52.6	76	64.5	152	60.1	228
Central 2	50.5	60	57.2	123	54.8	183
Kampala	(50.1)	35	61.4	134	58.8	169
East Central	(50.6)	49	38.1	103	42.2	152
Mid-Eastern	41.1	80	51.6	150	47.6	230
North East	46.4	50	70.7	95	61.5	145
West Nile	(47.7)	43	54.3	94	52.0	137
Mid North	31.5	64	61.7	119	50.1	183
Mid-West	46.0	50	54.2	105	51.2	155
South West	54.9	63	65.4	124	61.6	187

[1]Relates to Global AIDS Monitoring indicator (GAM) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT; [2]Relates to GAM 1.2: People living with HIV on antiretroviral (ARV) therapy (ART) and PEPFAR indicator TX_CURR_NAT; [3]Relates to GAM 1.4: People living with HIV who have suppressed viral loads and PEPFAR indicator VL_SUPPRESSION_NAT.
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

Table 10.4.B **Adult 90-90-90 at regional level (based on self-reported antiretroviral therapy (ART) status and laboratory antiretroviral data; conditional percentages)**

90-90-90 targets among adults living with HIV aged 15-64 years, by sex, residence, and region, UPHIA 2016-2017

	Diagnosed					
	Male		Female		Total	
	Percentage self-reported HIV positive or with detectable ARVs[1]	Number	Percentage self-reported HIV positive or with detectable ARVs[1]	Number	Percentage self-reported HIV positive or with detectable ARVs[1]	Number
Residence						
Urban	71.8	157	72.3	459	72.2	616
Rural	65.7	413	77.3	740	72.7	1,153
Region						
Central 1	66.1	76	77.3	152	73.1	228
Central 2	67.0	60	74.0	123	71.5	183
Kampala	(58.4)	35	81.3	134	76.0	169
East Central	(67.4)	49	59.5	103	62.0	152
Mid-Eastern	64.0	80	73.2	150	69.7	230
North East	70.5	50	83.5	95	78.6	145
West Nile	(68.9)	43	75.9	94	73.5	137
Mid North	69.9	64	79.6	119	75.9	183
Mid-West	65.1	50	76.1	105	72.2	155
South West	71.6	63	74.6	124	73.5	187
	On Treatment Among Those Diagnosed					
	Male		Female		Total	
	Percentage with detectable ARVs or self-reported current ART usage[2]	Number	Percentage with detectable ARVs or self-reported current ART usage[2]	Number	Percentage with detectable ARVs or self-reported current ART usage[2]	Number
Residence						
Urban	89.1	111	90.2	348	89.9	459
Rural	86.1	277	93.2	569	90.6	846
Region						
Central 1	89.4	51	94.0	118	92.4	169
Central 2	(86.9)	40	87.9	92	87.6	132
Kampala	*	21	89.8	109	91.6	130
East Central	(90.6)	34	94.3	64	93.0	98
Mid-Eastern	88.9	52	90.1	112	89.7	164
North East	(78.5)	36	96.4	80	90.3	116

Table 10.4.B	Adult 90-90-90 at regional level (based on self-reported antiretroviral therapy (ART) status and laboratory antiretroviral data; conditional percentages) (continued)					
90-90-90 targets among adults living with HIV aged 15-64 years, by sex, residence, and region, UPHIA 2016-2017						
	On Treatment Among Those Diagnosed (cont.)					
	Male		Female		Total	
	Percentage with detectable ARVs or self-reported current ART usage[2]	Number	Percentage with detectable ARVs or self-reported current ART usage[2]	Number	Percentage with detectable ARVs or self-reported current ART usage[2]	Number
Region (cont.)						
West Nile	(93.1)	30	92.9	72	93.0	102
Mid North	(68.1)	45	90.4	95	82.5	140
Mid-West	(88.3)	34	89.9	81	89.4	115
South West	(93.0)	45	96.6	94	95.3	139
	Viral Load Suppression (VLS) Among Those on Treatment					
	Male		Female		Total	
	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number	Percentage with VLS[3]	Number
Residence						
Urban	86.3	101	84.9	316	85.3	417
Rural	79.6	238	84.5	530	82.8	768
Region						
Central 1	(88.9)	46	88.9	111	88.9	157
Central 2	(86.7)	35	88.0	81	87.5	116
Kampala	*	21	84.1	98	84.5	119
East Central	(83.0)	31	68.0	61	73.2	92
Mid-Eastern	(72.3)	46	78.2	101	76.1	147
North East	(83.9)	29	87.8	77	86.6	106
West Nile	(74.4)	28	77.0	67	76.1	95
Mid North	(66.3)	31	85.7	86	80.0	117
Mid-West	(80.1)	30	79.1	73	79.4	103
South West	(82.4)	42	90.7	91	87.8	133

[1]Relates to Global AIDS Monitoring indicator (GAM) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT; [2]Relates to GAM 1.2: People living with HIV on antiretroviral (ARV) therapy (ART) and PEPFAR indicator TX_CURR_NAT; [3]Relates to GAM 1.4: People living with HIV who have suppressed viral loads and PEPFAR indicator VL_SUPPRESSION_NAT.
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

10.4 Gaps and Unmet Needs

- A major gap is in the diagnosis of those living with HIV, especially among young people and men. Only 54.7% of older adolescent boys and young men (ages 15-24 years) were aware of their HIV-positive status compared to 72.5% of older adolescent girls and young women.
- A gap persists in the initiation of ART, especially among men aged 25-34 years, among whom nearly 23% of those already diagnosed were not receiving ART based on self-report and/or the presence of detectable ARVs.
- Another gap is the lower than expected VLS among those on ART.

10.5 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. http://www.unaids.org/sites/default/files/media_asset/90-90-90_en_0.pdf. Accessed December 20, 2018.

11 CLINICAL CHARACTERISTICS OF PEOPLE LIVING WITH HIV

11.1 Key Findings

- The median CD4 count among all HIV-positive adults (those aged 15-64 years) was 500 (IQR 335-676) cells/µL. The median CD4 count among HIV-positive adults not on ART was 493 (IQR 296-709) cells/µL.
- Among adults who tested HIV-positive in UPHIA but reported that they had not been previously diagnosed, 9.8% had severe immunosuppression—a CD4 count less than 200 cells/µL (11.4% of men and 8.7% of women).
- In an ARV-adjusted analysis of adults newly diagnosed with HIV in UPHIA, 29.6% had a CD4 count less than 350 cells/µL (25.6% of newly diagnosed women and 35.1% of newly diagnosed men) and 10.3% had a CD4 count less than 200 cells/µL (10.7% of men and 10.1% of women).
- Among all HIV-positive adults (including those on treatment), 3.6% had a CD4 count less than 100 cells/µL.

11.2 Background

The quality of HIV care is based on key principles of accessibility, efficiency, and safety. 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 (WHO 2016). Indicators such as CD4 count at diagnosis and during lifelong ART can provide evidence of program coverage, the success in reaching vulnerable populations, and quality of care. The distribution of CD4 counts also reflects population health, and the potential impact of HIV on mortality and healthcare costs, since persons with severe immunosuppression tend to have frequent opportunistic infections, hospitalizations, and a higher likelihood of severe illnesses and death. Uganda has committed to HIV epidemic control under the Fast Track strategy. More recently, this commitment has been upgraded to the Super-Fast Track targets of 95-95-95 by 2020. The higher the median CD4 count, the healthier the population and the better the HIV treatment outcome. Finally, the measurement of transmitted and secondary drug resistance allows optimization of national ART guidelines including second- and third-line therapies. UPHIA provides a unique opportunity to gauge progress in the expansion of HIV clinical services in Uganda, as well as identify gaps and future challenges. In this survey, CD4 enumeration was performed using POC diagnostics. This was also the first time that data on transmitted drug resistance has been collected at a population level in Uganda.

11.3 CD4 Counts and Immunosuppression

The median CD4 count was 500 cells/µL in HIV-positive adults (441 cells/µL among men and 541 cells/µL among women). Among these HIV-positive adults, 9.0% had severe immunosuppression (defined as a CD4 count of less than 200 cells/µL). Among men, 11.2% had immunosuppression as compared to 7.7% of women (Table 11.3.A).

Among HIV-positive adults who reported a previous diagnosis with HIV and current ART use, 8.0% had a CD4 count of less than 200 cells/µL (11.0% of men and 6.6% of women). For those HIV-positive adults who

reported no previous diagnosis, the median CD4 count was 492 cells/µL (460 cells/µL among men and 517 cells/µL among women); 9.8 % of this group had severe immunosuppression (Table 11.3.A; Figure 11.3.A).

By age, the proportion of severe immunosuppression ranged from 3.8% among young adults aged 20-24 years to 14.7% among older adults aged 60-64 years. These results show that the older age groups are three times as likely to have immunosuppression as younger age groups. Geographically, the median CD4 count in HIV-positive adults ranged from 467 cells/µL for those residing in East-Central region to 560 cells/µL among those residing in North-East. The prevalence of severe immunosuppression was highest in the Mid-North region, at 12.7% and lowest in the Central 2 region, at 6.7% (Table 11.3.A).

Table 11.3.A Median CD4 count and prevalence of immunosuppression

Median (Quartile [Q] 1, Q3) CD4 count and prevalence of immunosuppression (< 200 cells/µL) among HIV-positive adults aged 15-64 years, by sex, self-reported diagnosis and antiretroviral therapy (ART) status, and selected demographic characteristics, UPHIA 2016-2017

	Male			Female			Total		
Characteristic	Median (Q1, Q3)	Percentage < 200 cells/µL	Number	Median (Q1, Q3)	Percentage < 200 cells/µL	Number	Median (Q1, Q3)	Percentage < 200 cells/µL	Number
Age									
15-19	*	*	12	717 (488, 893)	4.9	53	669 (482, 879)	5.3	65
20-24	485 (313, 679)	(4.4)	25	586 (431, 761)	3.7	138	558 (418, 756)	3.8	163
25-29	429 (271, 591)	8.7	56	547 (388, 676)	6.1	191	506 (337, 671)	6.8	247
30-34	443 (282, 596)	11.2	68	564 (404, 723)	9.6	202	529 (352, 691)	10.1	270
35-39	466 (255, 629)	13.7	92	502 (336, 674)	12.3	182	490 (304, 663)	12.9	274
40-44	399 (235, 541)	14.3	89	496 (323, 656)	10.2	134	463 (278, 623)	12.0	223
45-49	436 (288, 555)	9.2	103	575 (427, 681)	7.4	123	505 (343, 625)	8.3	226
50-54	398 (263, 525)	5.4	53	458 (364, 617)	6.8	82	442 (308, 583)	6.1	135
55-59	410 (252, 557)	(16.6)	34	535 (408, 701)	(0.0)	49	472 (360, 660)	7.3	83
60-64	422 (197, 684)	(23.4)	28	510 (386, 667)	(9.2)	33	487 (315, 685)	14.7	61
Self-reported diagnosis and treatment status									
Not previously diagnosed	460 (275, 630)	11.4	208	517 (372, 704)	8.7	350	492 (327, 679)	9.8	558
Previously diagnosed, not on ART	459 (274, 598)	10.9	55	523 (320, 734)	14.3	79	493 (296, 709)	12.8	134
Previously diagnosed, on ART	415 (271, 554)	11.0	297	552 (395, 703)	6.6	752	505 (345, 670)	8.0	1,049
Missing	*	*	0	*	*	6	*	*	6
Residence									
Urban	387 (238, 555)	13.0	155	542 (396, 698)	8.4	458	503 (338, 675)	9.7	613
Rural	454 (284, 600)	10.5	405	541 (384, 717)	7.3	729	498 (334, 678)	8.6	1,134
Region									
Central 1	458 (306, 602)	5.6	75	549 (407, 733)	8.5	153	508 (335, 698)	7.4	228
Central 2	465 (277, 565)	8.4	60	538 (393, 741)	5.8	123	511 (364, 654)	6.7	183
Kampala	324 (232, 466)	(16.1)	35	543 (372, 677)	8.9	135	500 (318, 642)	10.5	170
East-Central	426 (265, 602)	(16.5)	49	475 (333, 674)	7.9	103	467 (330, 644)	10.8	152
Mid-East	412 (246, 579)	15.8	79	515 (369, 685)	8.6	148	474 (324, 648)	11.3	227
North-East	460 (291, 674)	(13.8)	47	616 (431, 737)	6.5	93	560 (367, 716)	9.2	140
West-Nile	444 (348, 605)	(15.8)	41	598 (423, 804)	4.5	90	553 (398, 745)	8.3	131
Mid-North	467 (284, 634)	11.1	63	553 (365, 716)	13.6	117	501 (338, 684)	12.7	180
Mid-West	397 (225, 613)	(9.1)	49	518 (362, 683)	8.8	105	471 (326, 678)	8.9	154
South-West	380 (243, 519)	13.9	62	532 (403, 689)	3.8	120	494 (340, 661)	7.5	182
Marital status									
Never married	500 (337, 639)	(11.4)	36	531 (412, 730)	8.8	102	524 (385, 718)	9.5	138
Married or living together	442 (277, 602)	10.2	398	543 (390, 716)	6.4	561	498 (332, 672)	8.1	959
Divorced/separated	399 (274, 566)	13.1	96	551 (374, 712)	10.8	309	507 (319, 676)	11.4	405
Widowed	381 (207, 469)	(19.3)	29	516 (384, 692)	6.6	211	495 (363, 670)	8.2	240

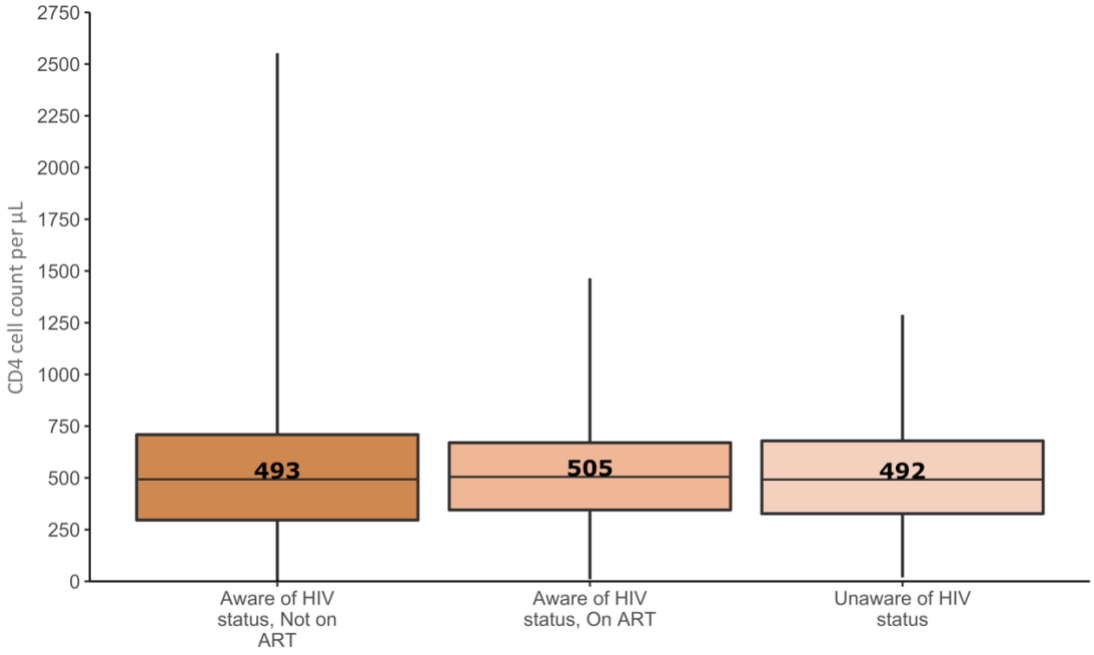
Table 11.3.A Median CD4 count and prevalence of immunosuppression (continued)

Median (Quartile [Q] 1, Q3) CD4 count and prevalence of immunosuppression (< 200 cells/µL) among HIV-positive adults aged 15-64 years, by sex, self-reported diagnosis and antiretroviral therapy (ART) status, and selected demographic characteristics, UPHIA 2016-2017

	Male			Female			Total		
Characteristic	Median (Q1, Q3)	Percentage < 200 cells/µL	Number	Median (Q1, Q3)	Percentage < 200 cells/µL	Number	Median (Q1, Q3)	Percentage < 200 cells/µL	Number
Education									
No formal education	387 (222, 494)	(12.0)	45	529 (323, 735)	11.7	150	471 (292, 694)	11.8	195
Some primary	457 (273, 629)	12.1	228	544 (397, 714)	5.0	553	515 (342, 693)	7.3	781
Completed primary	443 (276, 566)	8.8	102	548 (393, 738)	9.2	176	501 (339, 677)	9.1	278
Some secondary	451 (302, 563)	8.6	130	532 (375, 675)	8.7	238	500 (354, 652)	8.7	368
Completed secondary or more than secondary	389 (221, 548)	17.4	55	493 (335, 643)	11.9	61	453 (279, 603)	14.7	116
Wealth quintile									
Lowest	505 (356, 718)	8.5	125	543 (359, 737)	10.7	201	523 (360, 734)	9.7	326
Second	462 (266, 655)	10.5	98	499 (344, 695)	6.0	189	485 (331, 689)	7.7	287
Middle	466 (276, 585)	8.7	112	570 (397, 734)	7.5	242	525 (346, 690)	7.9	354
Fourth	388 (256, 532)	10.1	131	543 (398, 690)	7.0	297	496 (332, 651)	8.1	428
Highest	375 (242, 538)	18.9	94	528 (385, 702)	8.5	258	484 (324, 676)	11.7	352
Religion									
Catholic	407 (239, 576)	14.5	232	552 (377, 735)	8.3	472	498 (312, 689)	10.6	704
Protestant/Anglican	427 (270, 550)	9.5	194	533 (386, 677)	6.4	360	491 (332, 656)	7.6	554
Muslim	438 (307, 563)	9.4	67	541 (385, 695)	7.6	160	479 (337, 666)	8.2	227
Pentecostal	528 (422, 688)	(4.3)	46	522 (403, 663)	9.1	138	524 (407, 672)	7.7	184
Seventh-Day Adventist	*	*	7	*	*	20	468 (251, 696)	(3.2)	27
Others	*	*	14	536 (414, 723)	(10.4)	37	554 (392, 728)	12.8	51
Ethnicity									
Baganda	448 (286, 601)	8.5	100	569 (412, 730)	7.4	265	528 (339, 697)	7.8	365
Banyankole	404 (264, 517)	13.4	58	524 (395, 703)	4.9	131	487 (337, 661)	7.8	189
Basoga	449 (284, 602)	(13.9)	39	494 (310, 693)	8.9	71	473 (302, 668)	10.8	110
Bakiga	363 (244, 533)	(10.2)	32	538 (434, 698)	4.8	56	500 (346, 635)	7.0	88
Iteso	484 (271, 619)	14.8	53	592 (463, 735)	5.9	101	559 (405, 705)	9.2	154
Langi	467 (338, 624)	(13.2)	38	479 (335, 623)	16.9	68	478 (338, 623)	15.4	106
Bagisu/Sabiny	330 (179, 515)	(26.2)	41	441 (325, 615)	10.0	65	426 (230, 586)	16.8	106
Acholi	467 (260, 604)	(8.1)	26	574 (435, 761)	8.4	57	550 (336, 720)	8.3	83
Lugbara/Madi	369 (171, 563)	(33.7)	27	573 (356, 734)	1.6	52	511 (289, 651)	13.1	79
Batoro	352 (217, 567)	(9.7)	26	445 (308, 645)	(11.8)	46	410 (234, 630)	11.0	72
Banyoro	*	*	20	540 (352, 670)	(8.6)	43	492 (339, 735)	7.3	63
Others	461 (320, 594)	4.8	100	535 (396, 708)	7.5	232	494 (367, 673)	6.6	332
Total 15-24	518 (334, 671)	(5.2)	37	617 (441, 837)	4.1	191	587 (436, 796)	4.3	228
Total 15-49	444 (276, 596)	11.0	445	547 (387, 722)	8.1	1,023	510 (336, 684)	9.1	1,468
Total 50-64	408 (260, 566)	11.8	115	491 (385, 651)	4.9	164	464 (313, 637)	8.0	279
Total 15-64	441 (273, 594)	11.2	560	541 (386, 709)	7.7	1,187	500 (335, 676)	9.0	1,747

Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. 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. The interquartile range is a measure of variability, based on dividing a data set into quartiles. Quartiles divide a rank-ordered data set into four equal parts. The values that divide each part are called the first, second, and third quartiles; and they are denoted by Q1, Q2, and Q3, respectively.

Figure 11.3.A CD4 count distribution among HIV-positive adults aged 15-64 years, by antiretroviral therapy (ART) status, UPHIA 2016-2017



11.4 Late HIV Diagnosis

Late HIV diagnosis can be assessed by considering the CD4 counts among persons diagnosed HIV positive at the time of the survey who had reported themselves as HIV negative during the interview portion of the survey, and who also had no detectable ARVs in their blood (ARV-adjusted). In an ARV adjusted analysis, among adults newly diagnosed with HIV, 29.6% had a CD4 count less than 350 cells/µL, including 25.6% of newly diagnosed women and 35.1% of newly diagnosed men. Among newly diagnosed HIV-positive women and newly diagnosed HIV-positive men, 10.1% of and 10.7%, respectively, had a CD4 count less than 200 cells/µL. HIV diagnosis with severe immunosuppression varied in urban compared to rural participants, from 12.0% in urban areas to 9.5% in rural areas. It also varied across the geographical regions, ranging from 3.3% in East-Central region to 18.0% in Mid-North region (Table 11.4.A).

Among all adults living with HIV, 3.6% had very severe immunosuppression, with CD4 counts less than 100 cells/µL: 2.9% of women and 5.0 % of men. Note, this includes adults aware of their status and on treatment (Table 11.4.B).

Table 11.4.A Late HIV diagnosis

Among adults aged 15-64 years who tested HIV positive in the PHIA survey but self-reported HIV negative (and without antiretrovirals detected in blood), percentage who had a CD4 cell count < 200 cells/ µL and < 350 cells/ µL, by sex and selected demographic characteristics, UPHIA 2016-2017

	Male			Female			Total		
Characteristic	Percentage < 200 cells/µL[1]	Percentage < 350 cells/µL[1]	Number	Percentage < 200 cells/µL[1]	Percentage < 350 cells/µL[1]	Number	Percentage < 200 cells/µL[1]	Percentage < 350 cells/µL[1]	Number
Age									
15-19	*	*	6	(4.7)	(15.6)	25	(3.6)	(12.1)	31
20-24	*	*	19	1.1	14.6	65	0.8	18.2	84
25-29	(9.1)	(43.8)	33	9.7	30.4	58	9.5	35.7	91
30-34	*	*	23	(21.1)	(31.8)	41	19.3	31.8	64
35-39	(14.5)	(36.9)	30	(19.1)	(42.3)	26	16.5	39.2	56
40-44	*	*	19	*	*	14	(14.0)	(39.5)	33
45-49	*	*	21	*	*	19	(12.6)	(25.9)	40
50-54	*	*	10	*	*	10	*	*	20
55-59	*	*	8	*	*	7	*	*	15
60-64	*	*	3	*	*	3	*	*	6
Residence									
Urban	(9.9)	(49.1)	44	12.8	24.3	108	12.0	31.2	152
Rural	11.0	30.8	128	7.9	26.7	160	9.5	28.7	288
Region									
Central 1	*	*	24	(14.0)	(23.3)	34	13.0	31.8	58
Central 2	*	*	20	(13.0)	(36.1)	31	9.7	31.3	51
Kampala	*	*	14	(19.6)	(31.0)	25	(14.0)	(41.0)	39
East-Central	*	*	15	(1.8)	(22.0)	38	3.3	21.4	53
Mid-East	(13.5)	(44.9)	27	(2.2)	(20.7)	36	7.4	31.8	63
North-East	*	*	11	*	*	13	*	*	24
West-Nile	*	*	11	*	*	18	(0.0)	(2.4)	29
Mid-North	*	*	18	*	*	22	(18.0)	(27.7)	40
Mid-West	*	*	15	*	*	24	(4.8)	(33.8)	39
South-West	*	*	17	(9.8)	(19.7)	27	(14.8)	(31.0)	44
Marital status									
Never married	*	*	20	(10.4)	(22.8)	37	12.3	24.3	57
Married or living together	10.4	32.0	120	9.2	24.8	138	9.8	28.4	258
Divorced/separated	(5.1)	(53.7)	29	11.8	28.9	75	9.8	36.4	104
Widowed	*	*	3	*	*	17	*	*	20
Education									
No formal education	*	*	14	(17.1)	(39.3)	26	(16.8)	(41.7)	40
Some primary	11.0	32.0	76	4.4	22.9	116	7.2	26.7	192
Completed primary	(6.0)	(38.1)	36	(12.7)	(22.6)	42	9.4	30.3	78
Some secondary	(10.4)	(30.5)	37	13.0	27.3	71	12.0	28.5	108
Completed secondary or more than secondary	*	*	9	*	*	12	*	*	21

Table 11.4.A Late HIV diagnosis (continued)

Among adults aged 15-64 years who tested HIV positive in the PHIA survey but self-reported HIV negative (and without antiretrovirals detected in blood), percentage who had a CD4 cell count < 200 cells/ μL and < 350 cells/ μL, by sex and selected demographic characteristics, UPHIA 2016-2017

	Male			Female			Total		
Characteristic	Percentage < 200 cells/μL[1]	Percentage < 350 cells/μL[1]	Number	Percentage < 200 cells/μL[1]	Percentage < 350 cells/μL[1]	Number	Percentage < 200 cells/μL[1]	Percentage < 350 cells/μL[1]	Number
Wealth quintile									
Lowest	(7.6)	(17.1)	47	(3.9)	(23.1)	34	6.2	19.3	81
Second	(4.5)	(28.1)	26	(5.2)	(31.7)	40	4.9	30.0	66
Middle	(9.1)	(32.8)	38	8.9	26.5	73	9.0	29.0	111
Fourth	(11.5)	(41.9)	35	6.0	16.6	55	8.3	27.1	90
Highest	(22.8)	(60.1)	26	19.6	31.5	66	20.6	39.9	92
Religion									
Catholic	16.7	40.8	71	10.5	24.9	84	13.6	32.8	155
Protestant/Anglican	8.1	37.3	51	8.0	28.4	89	8.0	31.8	140
Muslim	(4.0)	(29.2)	29	11.7	20.5	51	8.6	24.0	80
Pentecostal	*	*	14	(14.3)	(28.5)	31	(9.4)	(18.7)	45
Seventh-Day Adventist	*	*	4	*	*	5	*	*	9
Others	*	*	3	*	*	8	*	*	11
Ethnicity									
Baganda	(9.7)	(42.3)	33	12.9	30.3	52	11.5	35.7	85
Banyankole	*	*	17	(8.2)	(19.6)	29	(13.2)	(31.4)	46
Basoga	*	*	15	(3.0)	(28.2)	27	(7.1)	(28.6)	42
Bakiga	*	*	10	*	*	13	*	*	23
Iteso	*	*	13	*	*	16	(8.5)	(17.0)	29
Langi	*	*	12	*	*	18	(20.9)	(30.4)	30
Bagisu/Sabiny	*	*	17	*	*	24	(11.9)	(36.3)	41
Acholi	*	*	5	*	*	5	*	*	10
Lugbara/Madi	*	*	5	*	*	10	*	*	15
Batoro	*	*	8	*	*	10	*	*	18
Banyoro	*	*	6	*	*	8	*	*	14
Others	(3.6)	(17.7)	31	10.3	25.6	56	8.0	22.9	87
Total 15-24	(0.0)	(21.4)	25	2.1	14.9	90	1.6	16.6	115
Total 15-49	10.1	34.4	151	10.5	25.8	248	10.3	29.3	399
Total 50-64	*	*	21	*	*	20	(10.9)	(32.9)	41
Total 15-64	10.7	35.1	172	10.1	25.6	268	10.3	29.6	440

[1]Relates to Global AIDS Monitoring indicator 1.5: Late HIV diagnosis.

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 in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Table 11.4.B Distribution of CD4 count and prevalence of immunosuppression

Prevalence of immunosuppression among HIV-positive adults aged 15-64 years, by sex and selected demographic characteristics, UPHIA 2016-2017

	< 100 cells/µL		100 - 199 cells/µL		200-349 cells/µL		350 - 499 cells/µL		≥500 cells/µL		Total
Characteristic	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Age											
15-19	4	*	0	*	4	*	10	*	47	(71.5)	65
20-24	4	*	3	*	22	*	37	(23.7)	97	57.6	163
25-29	7	*	11	*	46	(18.7)	52	22.4	131	52.1	247
30-34	13	*	16	*	38	(14.6)	52	20.3	151	55.0	270
35-39	9	*	26	(9.2)	46	(17.7)	56	21.5	137	47.9	274
40-44	12	*	14	*	47	(22.5)	55	24.3	95	41.3	223
45-49	6	*	12	*	38	(18.1)	50	22.3	120	51.3	226
50-54	3	*	6	*	30	(25.4)	47	(34.1)	49	(34.4)	135
55-59	2	*	4	*	12	*	28	(31.4)	37	(46.0)	83
60-64	3	*	8	*	8	*	14	*	28	(48.5)	61
Self-reported diagnosis and treatment status											
Not previously diagnosed	16	*	39	(7.1)	97	18.3	126	23.0	280	48.9	558
Previously diagnosed, not on antiretroviral therapy (ART)	5	*	15	*	20	(15.4)	31	(22.5)	63	49.3	134
Previously diagnosed, on ART	42	(4.0)	46	(4.0)	173	17.5	243	23.6	545	50.9	1,049
Missing											
Sex											
Male	30	(5.0)	40	(6.1)	129	25.5	145	25.1	216	38.2	560
Female	33	(2.9)	60	4.9	162	13.2	256	22.3	676	56.8	1,187
Residence											
Urban	23	*	39	(5.4)	95	16.2	139	23.1	317	51.1	613
Rural	40	(3.3)	61	5.3	196	18.3	262	23.4	575	49.7	1,134
Region											
Central 1	8	*	9	*	41	(18.4)	52	22.9	118	51.2	228
Central 2	4	*	8	*	31	(17.2)	45	(24.1)	95	51.9	183
Kampala	5	*	13	*	33	(19.7)	32	(19.7)	87	50.1	170
East-Central	5	*	11	*	26	(17.5)	42	(27.7)	68	44.1	152
Mid-Eastern	12	*	14	*	37	(17.0)	57	25.2	107	46.5	227
North-East	5	*	7	*	18	*	24	*	86	60.8	140
West-Nile	3	*	8	*	15	*	28	(21.8)	77	59.1	131
Mid North	10	*	13	*	22	*	41	(22.8)	94	51.8	180
Mid-West	6	*	8	*	32	(21.9)	36	(22.8)	72	46.4	154
South-West	5	*	9	*	36	(19.6)	44	(24.2)	88	48.7	182
Marital status											
Never married	6	*	7	*	22	*	30	(22.3)	73	55.5	138
Married or living together	34	(3.4)	49	(4.7)	165	19.0	221	23.2	490	49.7	959
Divorced or separated	19	*	29	(6.4)	64	17.0	85	21.1	208	50.5	405
Widowed	4	*	15	*	38	(15.2)	64	28.2	119	48.4	240

Table 11.4.B Distribution of CD4 count and prevalence of immunosuppression (continued)

Prevalence of immunosuppression among HIV-positive adults aged 15-64 years, by sex and selected demographic characteristics, UPHIA 2016-2017

	< 100 cells/µL		100 - 199 cells/µL		200-349 cells/µL		350 - 499 cells/µL		≥500 cells/µL		Total
Characteristic	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Education											
No formal education	6	*	19	*	32	(18.8)	45	(22.3)	93	47.1	195
Some primary	24	*	35	(4.2)	132	18.0	167	22.0	423	52.6	781
Completed primary	11	*	17	*	43	(17.1)	66	23.1	141	50.7	278
Some secondary	14	*	17	*	60	16.1	93	25.2	184	50.1	368
Completed secondary or more than secondary	6	*	11	*	23	*	29	(28.1)	47	(37.9)	116
Wealth quintile											
Lowest	10	*	17	*	49	(14.6)	69	21.7	181	53.9	326
Second	11	*	13	*	58	21.8	67	23.0	138	47.5	287
Middle	14	*	17	*	57	17.3	80	21.5	186	53.3	354
Fourth	15	*	25	(4.5)	70	18.4	102	24.3	216	49.2	428
Highest	13	*	28	(7.3)	57	15.6	83	25.1	171	47.7	352
Religion											
Catholic	28	(4.8)	45	(5.7)	119	17.8	156	22.1	356	49.5	704
Protestant/Anglican	22	*	24	*	101	20.4	129	23.5	278	48.6	554
Muslim	6	*	16	*	39	(17.1)	56	26.3	110	48.4	227
Pentecostal	5	*	11	*	20	*	46	(27.7)	102	54.5	184
Seventh-Day Adventist	0	*	1	*	7	*	5	*	14	*	27
Others	2	*	3	*	5	*	9	*	32	(65.2)	51
Ethnicity											
Baganda	8	*	20	*	65	18.0	70	19.8	202	54.4	365
Banyankole	6	*	9	*	37	(19.5)	47	(25.5)	90	47.2	189
Basoga	4	*	8	*	23	*	25	(22.0)	50	46.0	110
Bakiga	4	*	3	*	15	*	22	*	44	(50.6)	88
Iteso	7	*	7	*	20	*	26	(18.4)	94	60.3	154
Langi	8	*	8	*	11	*	30	(28.6)	49	(45.6)	106
Bagisu/Sabiny	7	*	10	*	22	*	24	*	43	(39.2)	106
Acholi	2	*	5	*	12	*	15	*	49	(58.6)	83
Lugbara/Madi	3	*	6	*	14	*	15	*	41	(51.5)	79
Batoro	3	*	5	*	17	*	17	*	30	(41.5)	72
Banyoro	1	*	4	*	12	*	15	*	31	(49.6)	63
Others	10	*	15	*	43	(14.5)	95	29.6	169	49.3	332
Total 15-24	8	*	3	*	26	(12.7)	47	(21.4)	144	61.6	228
Total 15-49	55	3.9	82	5.3	241	17.3	312	21.9	778	51.7	1,468
Total 50-64	8	*	18	*	50	19.7	89	31.7	114	40.7	279
Total 15-64	63	3.6	100	5.3	291	17.6	401	23.3	892	50.2	1,747

Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

11.5 Self-Reported Retention on Antiretroviral Therapy

Tables 11.5.A and 11.5.B provide the percentages of HIV-positive persons who were still on treatment among those who said they had initiated ART less than 12 months before (Table 11.5.A) and 12 months or longer (Table 11.5.B) before the survey. Among adults living with HIV who initiated ART less than 12 months prior to the survey, 99.0% (98.9% of men and 99.1% of women) reported that they were still taking ART at the time of the survey (Table 11.5.A). Among adults who initiated ART 12 months or more prior to the survey, 97.8% reported that they were still on ART at the time of the survey. This was nearly identical between men and women (97.1% and 98.1% respectively) (Table 11.5.B). There was little variation by sociodemographic characteristics.

Table 11.5.A Retention on antiretroviral therapy (ART): people initiating ART LESS THAN 12 months prior to the survey

Among HIV-positive adults aged 15-64 years who reported initiating ART less than 12 months prior to the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage still receiving ART[1]	Number	Percentage still receiving ART[1]	Number	Percentage still receiving ART[1]	Number
Age						
15-19	*	0	*	4	*	4
20-24	*	0	*	20	*	20
25-29	*	4	*	16	*	20
30-34	*	10	*	16	(100.0)	26
35-39	*	6	*	15	*	21
40-44	*	10	*	6	*	16
45-49	*	7	*	6	*	13
50-54	*	7	*	4	*	11
55-59	*	0	*	4	*	4
60-64	*	2	*	2	*	4
Presence of detectable ARVs						
Detectable	100	40	98.9	75	99.3	115
Not detectable	*	6	*	17	*	23
Residence						
Urban	*	14	(96.9)	32	(96.6)	46
Rural	(100.0)	32	100.0	61	100.0	93
Region						
Central 1	*	6	*	18	*	24
Central 2	*	8	*	10	*	18
Kampala	*	2	*	6	*	8
East-Central	*	2	*	4	*	6
Mid-East	*	6	*	14	*	20
North-East	*	4	*	5	*	9
West-Nile	*	1	*	7	*	8
Mid-North	*	4	*	10	*	14
Mid-West	*	2	*	7	*	9
South-West	*	11	*	12	*	23
Marital status						
Never married	*	1	*	6	*	7
Married or living together	(100.0)	32	(100.0)	48	100.0	80
Divorced/separated	*	12	*	15	(94.2)	27
Widowed	*	1	*	23	*	24
Education						
No formal education	*	4	*	9	*	13
Some primary	*	19	(100.0)	38	100.0	57
Completed primary	*	8	*	21	(97.1)	29
Some secondary	*	14	*	20	(100.0)	34
Completed secondary or more than secondary	*	1	*	4	*	5

Table 11.5.A Retention on antiretroviral therapy (ART): people initiating ART LESS THAN 12 months prior to the survey (continued)

Among HIV-positive adults aged 15-64 years who reported initiating ART less than 12 months prior to the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage still receiving ART[1]	Number	Percentage still receiving ART[1]	Number	Percentage still receiving ART[1]	Number
Wealth quintile						
Lowest	*	6	*	16	*	22
Second	*	10	*	14	*	24
Middle	*	8	*	15	*	23
Fourth	*	14	(100.0)	33	(98.9)	47
Highest	*	8	*	15	*	23
Religion						
Catholic	*	16	(100.0)	41	100.0	57
Protestant/Anglican	*	21	(97.0)	29	97.1	50
Muslim	*	4	*	11	*	15
Pentecostal	*	4	*	9	*	13
Seventh-Day Adventist	*	0	*	2	*	2
Others	*	1	*	1	*	2
Ethnicity						
Baganda	*	9	*	21	(100.0)	30
Banyankole	*	9	*	13	*	22
Basoga	*	3	*	2	*	5
Bakiga	*	5	*	4	*	9
Iteso	*	2	*	7	*	9
Langi	*	4	*	8	*	12
Bagisu/Sabiny	*	1	*	7	*	8
Acholi	*	1	*	3	*	4
Lugbara/Madi	*	1	*	3	*	4
Batoro	*	0	*	3	*	3
Banyoro	*	3	*	2	*	5
Others	*	8	*	20	(97.5)	28
Total 15-24	*	0	*	24	*	24
Total 15-49	(100.0)	37	99.0	83	99.3	120
Total 50-64	*	9	*	10	*	19
Total 15-64	(98.9)	46	99.1	93	99.0	139

[1]Relates to Global AIDS Monitoring indicator 1.3: Retention on ART at 12 months;

[2]Antiretroviral (ARV) detection assay included only nevirapine, efavirenz, and lopinavir. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. 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 11.5.B Retention on antiretroviral therapy (ART): people initiating ART MORE THAN 12 months prior to the survey

Among HIV-positive adults 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, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage still receiving ART[1]	Number	Percentage still receiving ART[1]	Number	Percentage still receiving ART[1]	Number
Age						
15-19	*	5	*	13	*	18
20-24	*	3	(100.0)	34	(100.0)	37
25-29	*	8	98.4	75	97.9	83
30-34	*	20	97.9	113	95.9	133
35-39	(97.8)	37	96.8	107	97.1	144
40-44	(97.2)	45	97.1	92	97.1	137
45-49	100.0	58	100.0	85	100.0	143
50-54	(95.9)	27	(100.0)	47	98.1	74
55-59	*	20	(100.0)	36	100.0	56
60-64	*	18	(97.6)	26	(98.4)	44
Presence of detectable ARVs						
Detectable	99.3	212	99.7	571	99.6	783
Not detectable	(82.4)	29	80.6	57	81.3	86
Residence						
Urban	93.4	79	97.2	228	96.1	307
Rural	98.8	162	98.5	400	98.6	562
Region						
Central 1	(97.4)	34	98.6	74	98.2	108
Central 2	(91.3)	26	100.0	63	97.1	89
Kampala	*	17	95.9	72	96.8	89
East-Central	*	20	(100.0)	47	100.0	67
Mid-East	(94.7)	28	97.4	70	96.5	98
North-East	*	23	100.0	56	100.0	79
West-Nile	*	20	97.7	52	96.6	72
Mid-North	*	20	100.0	67	98.6	87
Mid-West	(100.0)	27	91.0	60	94.1	87
South-West	(100.0)	26	100.0	67	100.0	93
Marital status						
Never married	*	10	(92.0)	40	(93.9)	50
Married or Living together	100.0	170	98.7	278	99.2	448
Divorced/separated	(87.2)	43	96.7	166	94.3	209
Widowed	*	17	100.0	142	99.1	159
Education						
No formal Education	*	19	100.0	84	100.0	103
Some Primary	99.0	90	98.3	307	98.5	397
Completed Primary	(100.0)	45	98.7	92	99.1	137
Some Secondary	95.6	53	96.6	109	96.2	162
Completed Secondary or more than Secondary	(89.3)	34	(93.2)	31	90.9	65
Wealth quintile						
Lowest	(97.9)	39	98.4	121	98.3	160
Second	(100.0)	44	98.0	114	98.6	158
Middle	(95.6)	48	98.6	113	97.7	161
Fourth	98.1	62	97.1	154	97.4	216
Highest	(94.0)	48	98.8	126	97.2	174
Religion						
Catholic	96.3	99	98.9	248	98.1	347
Protestant/Anglican	97.8	91	99.0	190	98.5	281
Muslim	*	23	98.4	77	98.8	100
Pentecostal	*	19	95.1	77	96.3	96
Seventh-Day Adventist	*	3	*	12	*	15
Others	*	6	*	24	(93.4)	30

Table 11.5.B Retention on antiretroviral therapy (ART): people initiating ART MORE THAN 12 months prior to the survey (continued)

Among HIV-positive adults 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, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage still receiving ART[1]	Number	Percentage still receiving ART[1]	Number	Percentage still receiving ART[1]	Number
Ethnicity						
Baganda	(95.4)	47	98.2	137	97.4	184
Banyankole	*	22	100.0	71	100.0	93
Basoga	*	14	(100.0)	34	(100.0)	48
Bakiga	*	15	(100.0)	32	(100.0)	47
Iteso	(100.0)	27	100.0	59	100.0	86
Langi	*	11	(100.0)	34	(100.0)	45
Bagisu/Sabiny	*	15	*	23	(93.8)	38
Acholi	*	11	(100.0)	39	(97.5)	50
Lugbara/Madi	*	14	(96.5)	31	(95.0)	45
Batoro	*	16	(94.9)	27	(97.0)	43
Banyoro	*	8	*	23	(85.4)	31
Others	(100.0)	41	97.3	118	98.2	159
Total 15-24	*	8	(97.0)	47	97.4	55
Total 15-49	96.8	176	97.8	519	97.5	695
Total 50-64	97.9	65	99.5	109	98.8	174
Total 15-64	97.1	241	98.1	628	97.8	869

[1]Relates to Global AIDS Monitoring indicator 1.3: Retention on ART at 12 months;
[2]Antiretroviral (ARV) detection assay included only nevirapine, efavirenz, and lopinavir. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.
An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. 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.

11.6 Transmitted Resistance to Antiretroviral Drugs

As indicated in Section 1.3, one of the objectives of UPHIA 2016-2017 was to estimate the prevalence of transmitted ARV drug resistance, using samples from people living with HIV who were identified as having recent HIV infections using the HIV recency algorithm (Figure 2.5.A).

Among 36 successfully amplified samples from recently infected adults, three (8.3%) had evidence of resistance to ARVs. All three had mutations associated with resistance to NNRTIs; one of them also had mutations associated with resistance to both nucleoside reverse transcriptase inhibitors (NRTIs). None had resistance to PIs or all three classes of ARVs (Table 11.6.A).

Table 11.6.A Resistance to antiretrovirals

Among adults aged 15-64 years who were recently infected with HIV, percentage with resistance to antiretrovirals (ARVs), by class of ARV resistance, UPHIA 2016-2017

	Percent	Number	DR Mutations Detected[1]
Successfully amplified[2]	(85.7)	36	
Any	8.3	3	G190A, K103N, T215S
NRTI[3]	2.8	1	T215S
NNRTI[4]	8.3	3	G190A, K103N
PI[5]	0.0	0	
NRTI & NNRTI	2.8	1	G190A, T215S
NRTI, NNRTI & PI	0.0	0	

[1]Based on Stanford Database for HIV Drug Resistance Mutation
[2]Unweighted figures, from a total of 42 cases.
[3]NRTI=Nucleoside reverse transcriptase inhibitor; [4]NNRTI=Non-nucleoside reverse transcriptase inhibitor [5]PI=Protease Inhibitor
https://hivdb.stanford.edu/assets/media/resistance-mutation-handout-Feb2017.516aee6f.pdf

11.7 HIV Subtype

Table 11.7.A shows the distribution of HIV-subtypes among HIV-positive adults who underwent HIV genotyping. Of the 193 adults living with HIV who underwent HIV genotyping, 145 persons (75.1%) presented with subtype A; 38 persons (19.7%) with subtype D; 5 (2.6%) had subtype C; 3 persons (1.6%) had recombinant subtypes; and 2 (1.0%) had subtype G. Subtype B was not detected in any sample.

Table 11.7.A HIV subtype

Percent distribution of HIV-positive adults aged 15-64 years that that underwent genotyping, by HIV subtype, UPHIA 2016-2017

	Total	
	Percent	Number
Subtype A	75.1	145
Subtype B	0.0	0
Subtype C	2.6	5
Subtype D	19.7	38
Subtype G	1.0	2
Recombinant	1.6	3
Total	100.0	193

Unweighted figures

11.8 Gaps and Unmet Needs

- CD4 cell counts less than 200 cells/µL were more common among older adults (ages 25 and older) than among young people. There is a need to reach undiagnosed individuals before advancing age puts them at increased risk for morbidity and mortality.
- Regional differences in immune suppression rates may indicate regional variations in the proportions of people living with HIV with late diagnosis or undiagnosed HIV.

11.9 References

1. World Health Organization. *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection.* Geneva: World Health Organization; 2016. http://www.who.int/hiv/pub/arv/arv-2016/en/. Accessed December 20, 2018.

12 PREVENTION OF MOTHER-TO-CHILD TRANSMISSION

12.1 Key Findings

- In Uganda, 98.4% of the women of childbearing age (those aged 15-49 years) who delivered in the three years preceding the survey attended at least one ANC visit for their most recent birth.
- Among mothers who gave birth within the 12 months preceding the survey, 90.9% knew their HIV status.
- Among HIV-positive mothers who gave birth in the 12 months before the survey, 72.9% were already on ART prior to pregnancy. Among all HIV-positive women who gave birth in the 12 months preceding the survey, 95.3% reported use of ART during pregnancy, which indicates high coverage of ART provision for PMTCT.
- Among infants born in the 17 months before the survey to HIV-positive women, 15.6% were confirmed HIV positive by the virological testing conducted as part of UPHIA. Among infants born in the same period to HIV-positive women who were already on ART at first ANC visit, 3.4% were confirmed positive by virological testing.

12.2 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). Without any interventions, between 20% and 45% of infants may become infected, with an estimated risk of 5-10% during pregnancy, 10-20% during labor and delivery, and 5-20% through breastfeeding (De Cock et. al. 2000). 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 pediatric HIV infections, a 50% reduction in AIDS-related maternal deaths, and virtual elimination of MTCT (WHO 2010).

To prevent MTCT, 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, their children and families (WHO 2010).

This chapter describes ANC attendance, breastfeeding practices, awareness of a woman's HIV status prior to 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.

12.3 Antenatal Care Attendance

Almost all (98.4 %) women who delivered in the three years preceding the survey had at least one ANC visit for their most recent pregnancy. Attending at least one ANC visit is almost universal, regardless of urban/rural residence, province, marital status, education, and age (Table 12.3.A).

Table 12.3.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 (ANC) visit for her most recent birth, by selected demographic characteristics, UPHIA 2016-2017

Characteristic	Percentage who attended at least one ANC visit	Number
Age		
15-19	97.5	536
20-24	98.1	1,768
25-29	98.8	1,505
30-34	98.8	1,076
35-39	98.4	617
40-44	98.2	240
45-49	97.6	58
Residence		
Urban	98.7	1,351
Rural	98.2	4,449
Region		
Central 1	97.9	447
Central 2	99.2	437
Kampala	98.0	353
East-Central	97.5	670
Mid-Eastern	98.1	866
North-East	99.0	883
West-Nile	98.8	827
Mid North	98.2	482
Mid-West	97.8	448
South-West	98.9	387
Marital status		
Never married	97.2	309
Married or living together	98.6	4,696
Divorced or separated	97.0	695
Widowed	99.2	79
Education		
No formal education	96.8	645
Some primary	98.1	2,757
Completed primary	98.8	866
Some secondary	98.8	1,167
Completed secondary or more than secondary	99.7	341
Wealth quintile		
Lowest	98.4	1,933
Second	97.5	1,194
Middle	98.2	1,027
Fourth	99.0	832
Highest	98.9	814
Religion		
Catholic	98.0	2,291
Protestant/Anglican	98.4	1,701
Muslim	98.6	920
Pentecostal	98.7	645
Seventh-Day Adventist	100.0	89
Others	98.7	153
Ethnicity		
Baganda	98.9	725
Banyankole	98.8	403
Basoga	97.7	531
Bakiga	96.9	220
Iteso	99.1	632
Langi	97.9	311
Bagisu/Sabiny	97.1	440
Acholi	98.5	194
Lugbara/Madi	99.1	538
Batoro	99.0	109
Banyoro	99.3	158
Others	98.3	1,537
Total 15-24	97.9	2,304
Total 15-49	98.4	5,800

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.

12.4 Breastfeeding

More than half (58.4%) of women who gave birth during the three years preceding the survey were breastfeeding their last-born child at the time of the survey. Approximately one-third (37.4%) of HIV-positive women were breastfeeding at the time of the survey, compared to 59.7% of HIV-negative women (Table 12.4.A).

Table 12.4.A 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 age, and mother's HIV status, UPHIA 2016-2017

Characteristic	Never breast fed	Ever breast fed, but not currently breast feeding	Currently breast feeding	Total	Number
Child's age (months)					
0-1	1.1	10.2	88.6	100.0	383
2-3	0.8	9.3	89.8	100.0	355
4-5	0.4	5.5	94.1	100.0	393
6-8	1.0	8.9	90.1	100.0	562
9-11	0.4	13.9	85.7	100.0	602
12-17	0.7	29.7	69.6	100.0	1,149
18-23	1.3	58.5	40.3	100.0	900
24-36	1.5	89.5	9.0	100.0	1,346
Result of mother's PHIA survey HIV test					
HIV positive	2.6	60.0	37.4	100.0	320
HIV negative	0.9	39.4	59.7	100.0	5,372
Not tested	0.9	31.2	67.9	100.0	60
Total 15-49	1.0	40.6	58.4	100.0	5,752

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.

12.5 Awareness of Mother's HIV Status

Among women who delivered within the 12 months preceding the survey, 90.9% reported that they knew their HIV status: 94.6% in urban areas and 89.7% in rural areas.

In urban areas, 3.2% of women who delivered within the 12 months prior the survey already knew that they were HIV positive when they were offered an HIV test in ANC, and 1.2% tested positive during ANC without previous knowledge of their HIV status. In contrast, in rural areas, 3.0% already knew that they were HIV positive, and 0.6% were newly diagnosed as HIV positive during ANC. There was geographical variation in the proportion of women, who knew their HIV status and delivered within the 12 months preceding the survey, ranging from 76.1% in Mid-Eastern to 97.1% in Mid-West (Table 12.5.A).

Table 12.5.A Prevention of mother-to-child transmission, known HIV status

Among women aged 15-49 years who gave birth within the past 12 months, percentage who were tested for HIV during antenatal care (ANC) and received their results or who already knew they were HIV positive, by selected demographic characteristics, UPHIA 2016-2017

	Tested for HIV during ANC and received results				
Characteristic	Percentage who tested HIV positive	Percentage who tested HIV negative	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
Age					
15-19	0.6	82.9	0.5	84.0	307
20-24	1.0	89.5	2.1	92.6	742
25-29	0.5	87.9	3.3	91.8	556
30-34	0.6	85.4	5.7	91.7	399
35-39	1.4	87.2	5.5	94.1	210
40-44	0.0	85.0	2.2	87.2	58
45-49	*	*	*	*	9
Residence					
Urban	1.2	90.2	3.2	94.6	528
Rural	0.6	86.1	3.0	89.7	1,753

Table 12.5.A Prevention of mother-to-child transmission, known HIV status (continued)

Among women aged 15-49 years who gave birth within the past 12 months, percentage who were tested for HIV during antenatal care (ANC) and received their results or who already knew they were HIV positive, by selected demographic characteristics, UPHIA 2016-2017

	Tested for HIV during ANC and received results				
Characteristic	Percentage who tested HIV positive	Percentage who tested HIV negative	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
Region					
Central 1	1.1	88.8	6.0	95.9	175
Central 2	1.8	85.0	3.3	90.2	179
Kampala	2.2	88.1	5.7	96.0	137
East-Central	0.0	79.4	0.7	80.1	261
Mid-Eastern	1.3	74.0	0.8	76.1	339
North-East	0.6	92.4	1.3	94.3	351
West-Nile	0.0	90.4	1.7	92.1	329
Mid North	0.5	89.4	4.7	94.7	183
Mid-West	0.6	92.1	4.5	97.1	174
South-West	0.0	93.5	2.5	96.0	153
Marital status					
Never married	0.0	86.5	1.0	87.5	124
Married or living together	0.7	88.2	2.8	91.7	1,898
Divorced or separated	1.4	79.7	5.7	86.8	225
Widowed	*	*	*	*	24
Education					
No formal education	1.5	82.9	5.2	89.6	250
Some primary	1.0	84.4	2.8	88.2	1,083
Completed primary	0.4	86.2	4.0	90.5	350
Some secondary	0.5	92.1	2.4	95.0	457
Completed secondary or more than secondary	0.0	97.2	1.3	98.5	134
Wealth quintile					
Lowest	0.4	87.1	1.4	89.0	778
Second	0.6	83.1	4.0	87.7	466
Middle	0.9	86.3	4.2	91.3	400
Fourth	1.5	87.3	3.2	91.9	319
Highest	0.6	93.2	3.0	96.8	318
Religion					
Catholic	0.6	89.4	2.3	92.3	912
Protestant/Anglican	0.9	84.5	4.2	89.6	660
Muslim	0.4	88.5	1.7	90.7	351
Pentecostal	1.5	87.5	1.6	90.6	266
Seventh-Day Adventist	(0.0)	(95.6)	(2.3)	(98.0)	29
Others	0.0	70.7	15.3	86.0	63
Ethnicity					
Baganda	0.4	90.3	4.5	95.2	294
Banyankole	1.7	87.4	4.4	93.5	162
Basoga	0.0	80.3	0.3	80.6	192
Bakiga	0.0	87.9	2.8	90.6	85
Iteso	0.7	87.4	1.8	90.0	241
Langi	0.9	85.8	5.8	92.5	117
Bagisu/Sabiny	1.8	80.8	0.0	82.6	168
Acholi	0.0	95.5	2.8	98.3	72
Lugbara/Madi	0.0	94.1	1.3	95.4	206
Batoro	(2.4)	(85.2)	(8.4)	(96.1)	42
Banyoro	0.0	93.6	4.7	98.4	63
Others	1.0	85.2	2.4	88.7	638
Total 15-24	0.9	87.5	1.6	89.9	1,049
Total 15-49	0.8	87.1	3.0	90.9	2,281

[1]Relates to PEPFAR PMTCT_STAT_NAT / SUBNAT.

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. 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.

12.6 Antiretroviral Therapy among HIV-Positive Pregnant Women

Among HIV-positive women who delivered in the 12 months preceding the survey, 95.3% reported receiving ARVs: 72.9% were already taking ARVs at the time of their first ANC visit, while 22.3 % were newly initiated on ARVs during pregnancy, labor, or delivery. ARV use varied between rural and urban areas among HIV-positive women who delivered in the 12 months preceding the survey; 62.3% of women in urban areas were already taking ARVs at their first ANC visit, as compared to 77.4% of women in rural areas. Further, 29.9% of women in urban areas were newly initiated on ART during pregnancy, labor, or delivery, compared to 19.2% of women in rural areas (Table 12.6.A).

Table 12.6.A Prevention of mother-to-child transmission: HIV-positive pregnant women who received antiretrovirals (ARVs)

Among HIV-positive women aged 15-49 years who gave birth within the past 12 months, percentage who received ARVs during pregnancy to reduce the risk of mother-to-child-transmission, by selected demographic characteristics, UPHIA 2016-2017

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 past 12 months
Age				
15-19	*	*	*	2
20-24	*	*	*	19
25-29	*	*	*	18
30-34	*	*	*	21
35-39	*	*	*	15
40-44	*	*	*	2
45-49	*	*	*	0
Residence				
Urban	(62.3)	(29.9)	(92.2)	26
Rural	77.4	19.2	96.6	51
Region				
Central 1	*	*	*	13
Central 2	*	*	*	9
Kampala	*	*	*	11
East-Central	*	*	*	2
Mid-Eastern	*	*	*	7
North-East	*	*	*	7
West-Nile	*	*	*	6
Mid North	*	*	*	10
Mid-West	*	*	*	8
South-West	*	*	*	4
Marital status				
Never married	*	*	*	2
Married or living together	72.0	21.8	93.8	57
Divorced or separated	*	*	*	14
Widowed	*	*	*	4
Education				
No formal education	*	*	*	13
Some primary	(70.3)	(20.8)	(91.1)	34
Completed primary	*	*	*	14
Some secondary	*	*	*	14
Completed secondary or more than Secondary	*	*	*	2
Wealth quintile				
Lowest	*	*	*	13
Second	*	*	*	16
Middle	*	*	*	18
Fourth	*	*	*	17
Highest	*	*	*	13

Table 12.6.A Prevention of mother-to-child transmission: HIV-positive pregnant women who received antiretrovirals (ARVs) (continued)

Among HIV-positive women aged 15-49 years who gave birth within the past 12 months, percentage who received ARVs during pregnancy to reduce the risk of mother-to-child-transmission, by selected demographic characteristics, UPHIA 2016-2017

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 past 12 months
Religion				
Catholic	*	*	*	24
Protestant/Anglican	(70.8)	(19.1)	(89.9)	30
Muslim	*	*	*	7
Pentecostal	*	*	*	8
Seventh-Day Adventist	*	*	*	1
Others	*	*	*	7
Ethnicity				
Baganda	*	*	*	15
Banyankole	*	*	*	10
Basoga	*	*	*	1
Bakiga	*	*	*	3
Iteso	*	*	*	7
Langi	*	*	*	8
Bagisu/Sabiny	*	*	*	3
Acholi	*	*	*	2
Lugbara/Madi	*	*	*	3
Batoro	*	*	*	5
Banyoro	*	*	*	2
Others	*	*	*	18
Total 15-24	*	*	*	21
Total 15-49	72.9	22.3	95.3	77

[1]Relates to Global AIDS Monitoring indicator 2.3: Preventing the mother-to- child transmission of HIV and PMTCT_ARV_NAT / SUBNAT. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.
An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. 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.

12.7 Mother-to-Child Transmission

Among infants born in the 17 months prior the survey to HIV-positive women, 14.8% of those aged 0-11 months and 15.6% of those aged 0-17 months were confirmed positive by virological testing performed as part of UPHIA. Among infants born in the last 17 months to HIV-positive women who were already on ART at first ANC visit, 3.4% were confirmed positive by virological tests (Table 12.7.A) (Note: Virological testing was conducted only among those infants with a reactive rapid test at screening during the survey, which might have missed some HIV-exposed infants).

Table 12.7.A Mother-to-child transmission of HIV

Among infants born in the last 17 months to HIV-positive women aged 15-49 years, percentage confirmed positive for HIV infection, by mother's self-reported ARV and breastfeeding status, UPHIA 2016-2017

Characteristic	Percentage of infants confirmed HIV positive[1,2]	Number of infants born to HIV-positive women[3,4]
Mother's self-reported antiretroviral (ARV) status		
Mother unaware of HIV status during pregnancy	*	19
Already on ARVs at first antenatal visit	(3.4)	39
Newly initiated on ARVs during pregnancy or labor and delivery	*	11
Did not receive ARVs during pregnancy	*	2
Missing self-reported ARV status during pregnancy	*	15
Mother's self-reported breastfeeding status		
Ever breastfed the infant	14.9	81
Never breastfed the infant	*	3
Missing breastfeeding status	*	2
Total 0-11 months	14.8	55
Total 0-17 months	15.6	86

[1]Relates to Global AIDS Monitoring indicator 2.1: Early infant diagnosis and PEPFAR PMTCT_EID;
[2]Infants confirmed as HIV positive by virological testing (virological testing was only conducted among infants who had a reactive screening test).
[3]Includes only infants who were tested for HIV during the UPHIA survey.
[4]Includes only last-born infants.
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. 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.

12.8 Gaps and Unmet Needs

- Among HIV-positive mothers, 22.3% reported newly initiating ART during pregnancy, labor, or delivery. Evidence shows that MTCT rates are lower if women are on ART before pregnancy.
- Despite high ANC attendance and HIV testing and ART use among pregnant women, a relatively high proportion of infants (15.6%) were diagnosed with HIV.
- There is a need to improve the first 90 target (awareness of HIV status among people living with HIV) among women of reproductive age, especially among young women or those experiencing their first pregnancy.

12.9 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, 283:1175–1182. 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 December 17, 2018.

13 ADOLESCENTS AND YOUNG ADULTS

13.1 Key Findings

- Among young people (older adolescents aged 15-19 years and young adults aged 20-24 years), UPHIA estimated an annual HIV incidence of 0.34% (95% CI 0.16-0.53) in 2016 and 2017, after adjusting for detectable ARVs.
- The prevalence of HIV among young people in Uganda was 2.1% (3.3% among older adolescent girls and young women and 0.8% among older adolescent boys and young men). HIV prevalence was lower in older adolescents: 1.1% (0.5% for boys and 1.8% for girls) than in young adults: 3.3%, (1.3% for young men and 5.1% for young women).
- Early sexual debut (self-report of sex before 15 years of age) was 13.6% overall and was higher among older adolescent boys and young men (17.3%) than among older adolescent girls and young women (10.2%). The proportion of young people who had sex before 15 years of age was higher in rural areas compared to urban areas (14.5% and 11.7%, respectively). There were some geographical variations in this regard, ranging from 10.4% in South-West to 19.0% in East-Central and 21.8% in Mid-Eastern.
- Based on self-report and/or detection of ARVs in blood, fewer than half (48.0%) of young people had been diagnosed with HIV. Among this group, 92.5% who had been previously diagnosed were on ART, but only 74.7% of those on ART had VLS. Overall, among all young people living with HIV, 65.5% were on ART and 54.8% had suppressed viral loads.

13.2 Background

One-third of the population of sub-Saharan Africa is aged 10-24 years, a phenomenon often referred to as the youth bulge (Hervish and Clifton 2012). Young people (defined as older adolescents and young adults) are more likely to engage in risky sexual behaviors than older adults and have less frequent contact with the healthcare system. Control of HIV in this demographic is critical for long-term epidemic control but is also particularly challenging.

This chapter presents the prevalence of early sexual debut before 15 years of age among young people, by sex, marital status, region, and sociodemographic characteristics.

This chapter also describes knowledge of HIV prevention among young adolescents aged 13-14 years. These data were collected by asking participants to agree or disagree with both accurate and inaccurate statements about HIV prevention. The chapter also presents views among the same age group about HIV and potential stigmatization directed against people living with HIV.

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: HIV/AIDS always entails death, is associated with depraved and immoral behaviors, results from irresponsibility, and is only spread through sex, to name a few. Fears arising from these beliefs can lead to marginalization of particular populations, rendering them vulnerable to HIV. Furthermore, HIV-related discrimination

continues to act as a barrier to prevention and treatment, undermining programmatic efforts to help people living with HIV, and may even result in the denial of health services (UNAIDS 2016).

The prevalence of discriminatory attitudes among young adolescents aged 13-14 years is reported by region, socio-economic status, and education level. Prevalence was assessed by asking adolescents (only those aged 13-14 years) whether they agree or disagree with common discriminatory statements: "Would you be willing to share food with someone who has HIV?" and "Would you play with someone who has HIV? Table 13.5.A summarizes the response to each question individually and together by reporting the percentage of respondents who replied "No" to either question. This data can help to explain how HIV-related stigma may negatively impact efforts aimed at HIV prevention, HIV testing, and access to HIV treatment and care.

Finally, this chapter describes HIV incidence, prevalence, and the 90-90-90 cascade for young people (older adolescents and young adults).

13.3 Sex Before 15 Years of Age

Among young people, 13.6% (17.3% of older adolescent boys and young men and 10.2% of older adolescent girls and young women) reported having had sexual intercourse before the age of 15 years. Among young people from rural communities, 14.5% had sexual intercourse before 15 years of age, which was higher than those in urban areas (11.7%). By educational level, the prevalence of early sexual intercourse was highest among older adolescents and young adults who had some primary school (18.1 %). Among those with some primary school, a greater proportion of older adolescent boys and young men (20.5 %) than older adolescent girls and young women (15.7 %) had initiated sex before 15 years of age. By marital status, early initiation of sex varied, ranging from 18.9% among those who were divorced or separated, to 12.9% among those never married. The prevalence of sexual debut before 15 years of age ranged from 16.8% in the second wealth quintile to 10.9% in the highest wealth quintile.

The percentage of young people reporting sexual intercourse before 15 years of age was highest in the Mid-East (21.8%) and East-Central (19.0%) regions (Table 13.3.A).

Table 13.3.A Sex before the age of 15 years

Percentage of young people (male and female) aged 15–24 years who have had sexual intercourse before the age of 15 years; by sex and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage who had sex before age of 15 years	Number	Percentage who had sex before age of 15 years	Number	Percentage who had sex before age of 15 years	Number
Age						
15-19	19.0	2,843	10.8	3,297	14.8	6,140
20-24	15.0	2,059	9.6	3,052	12.2	5,111
Residence						
Urban	16.0	1,301	8.2	1,891	11.7	3,192
Rural	17.8	3,601	11.2	4,458	14.5	8,059
Region						
Central 1	13.8	386	7.8	559	10.5	945
Central 2	18.4	353	9.8	490	13.8	843
Kampala	15.0	375	6.6	560	10.5	935
East-Central	23.1	531	15.3	708	19.0	1,239
Mid-Eastern	27.2	746	16.6	937	21.8	1,683
North-East	14.3	624	7.4	795	10.8	1,419
West-Nile	13.4	668	10.8	898	12.0	1,566
Mid North	15.5	491	8.1	500	12.1	991
Mid-West	14.4	441	13.0	519	13.8	960
South-West	16.4	287	4.7	383	10.4	670

Table 13.3.A Sex before the age of 15 years

Percentage of young people (male and female) aged 15–24 years who have had sexual intercourse before the age of 15 years; by sex and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage who had sex before age of 15 years	Number	Percentage who had sex before age of 15 years	Number	Percentage who had sex before age of 15 years	Number
Marital status						
Never married	16.9	3,959	7.2	3,300	12.9	7,259
Married or living together	18.7	738	12.8	2,517	14.4	3,255
Divorced or separated	20.2	192	18.3	499	18.9	691
Widowed	*	1	*	16	*	17
Education						
No formal Education	9.1	68	20.1	232	16.8	300
Some Primary	20.5	2,007	15.7	2,590	18.1	4,597
Completed Primary	19.8	705	10.7	967	15.0	1,672
Some Secondary	14.7	1,613	5.3	2,001	9.8	3,614
Completed Secondary or more	11.9	484	2.1	530	7.3	1,014
Wealth quintile						
Lowest	17.0	1,384	12.0	1,713	14.6	3,097
Second	21.2	1,055	12.1	1,185	16.8	2,240
Middle	16.2	874	12.1	1,115	14.0	1,989
Fourth	15.4	782	8.9	1,047	12.0	1,829
Highest	16.3	807	6.6	1,289	10.9	2,096
Religion						
Catholic	17.7	1,918	8.9	2,449	13.2	4,367
Protestant/Anglican	15.4	1,560	10.7	1,844	13.1	3,404
Muslim	22.4	728	12.1	1,086	16.8	1,814
Pentecostal	14.7	464	10.8	737	12.5	1,201
Seventh-Day Adventist	13.1	86	15.2	84	14.1	170
Others	20.3	143	6.3	148	13.7	291
Ethnicity						
Baganda	15.9	674	7.9	985	11.6	1,659
Banyankole	10.7	318	3.2	430	6.9	748
Basoga	22.9	460	13.9	603	18.2	1,063
Bakiga	23.7	141	9.9	204	16.3	345
Iteso	17.4	561	7.9	635	12.9	1,196
Langi	16.1	359	8.4	343	12.7	702
Bagisu/Sabiny	29.0	394	13.9	520	21.0	914
Acholi	17.4	160	5.9	181	11.9	341
Lugbara/Madi	11.0	444	9.2	634	10.0	1,078
Batoro	12.3	135	14.1	132	13.1	267
Banyoro	18.4	155	10.6	188	14.5	343
Others	17.0	1,099	14.6	1,488	15.7	2,587
Total <18	18.9	1,786	10.7	1,885	14.9	3,671
Total 18-24	16.4	3,116	10.0	4,464	13.0	7,580
Total 15-24	17.3	4,902	10.2	6,349	13.6	11,251

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

13.4 Knowledge about HIV Prevention

Table 13.4.A and 13.4.B report on the knowledge about HIV transmission and prevention among younger adolescent boys and girls aged 13-14 years, respectively, by selected demographic characteristics. Questions asked included:

- Can a person reduce their chance of getting HIV by not having sex?
- Can a person reduce their chance of getting HIV by using condoms when having sex?
- Can a healthy-looking person have HIV or AIDS?
- Can a mother with HIV or AIDS pass HIV to her unborn baby?
- Are there medicines that people with HIV or AIDS can take to help them live longer?

- Can male circumcision help prevent HIV infection?

Overall, 24.8% of the boys and 26.3% of the girls responded correctly to all six questions. Knowledge scores on individual questions among the boys varied, ranging from 57.9 % of participants responding correctly to the question, “Can a healthy-looking person have HIV or AIDS?” to 78.9% responding correctly to the question, “Are there medicines that people with HIV or AIDS can take to help them live longer?” (Tables 13.4.A and 13.4.B).

Among younger adolescent girls, 54.2% responded correctly to the question “Can male circumcision help prevent HIV infection?” as compared to 83.8% of girls who responded correctly to the question, “Are there medicines that people with HIV or AIDS can take to help them live longer?” (Table 13.4.A).

Of those living in urban areas, 37.9% responded correctly to all six questions compared to 21.8% of those living in rural areas. Knowledge about HIV transmission and prevention also varied by education and wealth quintile. Among those not currently attending school, 17.0% correctly responded to all six questions, in contrast to 47.7% among those currently attending secondary school who had correct responses to all six questions. Knowledge scores also ranged from 15.6% of those in the lowest quintile that responded correctly to all questions compared to 38.8% among those in the highest quintile. Similar patterns were observed across both genders (Tables 13.4.A, 13.4.B, and 13.4.C).

Table 13.4.A Young adolescent knowledge about HIV prevention: Boys

Among young adolescent boys aged 13-14 years who have heard of HIV, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, UPHIA 2016-2017

	Percentage who correctly answered the questions:							
Characteristic	Can a person reduce their chance of getting HIV by not having sex?	Can a person reduce their chance of getting HIV by using condoms when having sex?	Can a healthy-looking person have HIV or AIDS?	Can a mother with HIV or AIDS pass HIV to her unborn baby?	Are there medicines that people with HIV or AIDS can take to help them live longer?	Can male circumcision help prevent HIV infection?	All six questions	Number
Residence								
Urban	86.1	68.2	60.9	65.2	89.0	56.2	28.0	54
Rural	74.5	66.1	57.0	71.9	76.1	59.8	23.9	200
Region								
Central 1	*	*	*	*	*	*	*	14
Central 2	*	*	*	*	*	*	*	22
Kampala	*	*	*	*	*	*	*	8
East-Central	(85.6)	(92.4)	(70.3)	(75.0)	(86.4)	(65.3)	(32.1)	30
Mid-Eastern	77.5	61.3	57.3	59.4	81.5	53.0	17.0	53
North-East	(88.9)	(72.3)	(45.9)	(73.6)	(95.2)	(66.8)	(22.6)	28
West-Nile	(58.3)	(50.3)	(62.6)	(61.9)	(61.4)	(32.3)	(17.7)	30
Mid North	(78.6)	(65.2)	(45.6)	(87.3)	(75.6)	(56.5)	(20.7)	28
Mid-West	*	*	*	*	*	*	*	23
South-West	*	*	*	*	*	*	*	18
Wealth quintile								
Lowest	70.5	62.4	49.6	65.5	78.1	53.1	15.5	71
Second	72.2	59.8	42.6	74.8	69.4	64.2	21.8	65
Middle	(71.3)	(64.1)	(64.0)	(72.4)	(85.0)	(57.7)	(29.4)	48
Fourth	(84.8)	(69.3)	(71.1)	(62.6)	(78.0)	(55.3)	(24.7)	40
Highest	(98.3)	(89.3)	(76.4)	(78.7)	(91.8)	(67.1)	(41.8)	30
Education								
Currently attending primary school	77.6	64.2	52.7	70.0	76.8	58.4	21.3	215
Currently attending secondary school	(93.6)	(93.9)	(96.2)	(84.8)	(100.0)	(77.5)	(52.6)	26
Not currently attending school	*	*	*	*	*	*	*	13
Total 13-14	77.0	66.5	57.9	70.4	78.9	59.0	24.8	254

Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.
An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Table 13.4.B Young adolescent knowledge about HIV prevention: Girls

Among young adolescent girls aged 13-14 years who have heard of HIV, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, UPHIA 2016-2017

	Percentage who correctly answered the questions:							
Characteristic	Can a person reduce their chance of getting HIV by not having sex?	Can a person reduce their chance of getting HIV by using condoms when having sex?	Can a healthy-looking person have HIV or AIDS?	Can a mother with HIV or AIDS pass HIV to her unborn baby?	Are there medicines that people with HIV or AIDS can take to help them live longer?	Can male circumcision help prevent HIV infection?	All six questions	Number
Residence								
Urban	86.4	74.8	78.8	78.9	90.5	66.0	45.8	76
Rural	70.0	49.8	57.8	68.6	81.5	50.3	19.8	217
Region								
Central 1	(73.5)	(70.4)	(45.1)	(71.0)	(82.8)	(70.8)	(35.6)	37
Central 2	*	*	*	*	*	*	*	19
Kampala	*	*	*	*	*	*	*	17
East-Central	(81.4)	(52.5)	(61.8)	(74.0)	(82.3)	(38.2)	(21.4)	33
Mid-Eastern	(86.6)	(60.1)	(81.4)	(78.3)	(82.1)	(44.7)	(20.3)	45
North-East	(78.5)	(51.8)	(45.6)	(73.9)	(96.5)	(30.2)	(7.9)	27
West-Nile	(85.1)	(56.8)	(79.7)	(80.4)	(72.8)	(48.4)	(33.8)	35
Mid North	*	*	*	*	*	*	*	23
Mid-West	(59.4)	(45.5)	(62.7)	(55.8)	(82.8)	(58.9)	(27.9)	30
South-West	(71.7)	(52.7)	(72.0)	(81.4)	(88.7)	(61.6)	(37.9)	27
Wealth quintile								
Lowest	76.3	53.9	61.7	72.5	85.7	43.8	15.9	57
Second	73.9	49.0	58.8	70.0	78.7	55.6	19.0	69
Middle	70.8	55.4	63.9	66.7	83.0	52.3	29.2	70
Fourth	71.3	56.4	61.9	73.0	87.6	54.3	31.2	60
Highest	(84.3)	(72.0)	(73.1)	(77.1)	(84.7)	(67.5)	(36.1)	37
Education								
Currently attending primary school	73.4	55.9	63.8	76.7	84.0	54.4	25.9	243
Currently attending secondary school	(95.3)	(82.2)	(74.5)	(65.4)	(91.7)	(68.4)	(42.9)	29
Not currently attending school	*	*	*	*	*	*	*	21
Total 13-14	74.1	56.0	63.1	71.2	83.8	54.2	26.3	293

Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.
An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Table 13.4.C Young people: Knowledge about HIV prevention: Total

Among young adolescents aged 13-14 years who have heard of HIV, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, UPHIA 2016-2017

	Percentage who correctly answered the questions:							
Characteristic	Can a person reduce their chance of getting HIV by not having sex?	Can a person reduce their chance of getting HIV by using condoms when having sex?	Can a healthy-looking person have HIV or AIDS?	Can a mother with HIV or AIDS pass HIV to her unborn baby?	Are there medicines that people with HIV or AIDS can take to help them live longer?	Can male circumcision help prevent HIV infection?	All six questions	Number
Residence								
Urban	86.2	71.9	70.9	72.8	89.8	61.7	37.9	130
Rural	72.2	57.7	57.4	70.2	78.9	54.9	21.8	417
Region								
Central 1	69.9	70.3	50.5	70.4	83.3	70.6	37.2	51
Central 2	(76.9)	(62.0)	(63.1)	(62.1)	(79.0)	(58.9)	(15.3)	41
Kampala	(89.6)	(70.7)	(86.3)	(76.6)	(76.3)	(59.3)	(42.1)	25
East-Central	83.4	71.3	65.8	74.4	84.2	50.9	26.4	63
Mid-Eastern	81.3	60.8	67.3	67.2	81.7	49.5	18.4	98
North-East	83.8	62.3	45.7	73.8	95.9	49.0	15.5	55
West-Nile	70.9	53.3	70.7	70.6	66.8	39.9	25.3	65
Mid North	74.5	57.7	44.2	81.4	79.1	52.0	17.9	51
Mid-West	61.0	51.2	58.6	64.1	83.8	63.6	25.5	53
South-West	(79.4)	(56.5)	(70.3)	(74.6)	(79.5)	(57.3)	(35.4)	45
Wealth quintile								
Lowest	72.9	59.0	54.5	68.3	81.2	49.4	15.6	128
Second	73.0	54.5	50.6	72.5	73.9	60.0	20.5	134
Middle	71.0	59.1	64.0	69.1	83.9	54.6	29.3	118
Fourth	76.7	61.6	65.6	68.8	83.8	54.7	28.6	100
Highest	90.9	80.1	74.7	77.9	88.0	67.3	38.8	67
Education								
Currently attending primary school	75.5	59.9	58.4	73.5	80.5	56.3	23.7	458
Currently attending secondary school	94.5	88.0	85.3	75.0	95.8	72.9	47.7	55
Not currently attending school	(50.7)	(38.0)	(51.2)	(37.0)	(72.3)	(37.3)	(17.0)	34
Total 13-14	75.5	61.1	60.6	70.8	81.4	56.5	25.6	547

Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

13.5 Discriminatory Attitudes Towards People Living with HIV

Among younger adolescents aged 13-14 years, 59.7% of respondents who had heard of HIV said they would not share food with someone who has HIV; 44.9% said that they would not play with HIV-positive children; while 36.3% said they did not have any discriminatory attitudes. Almost a third (31.9%) of those in rural areas held no discriminatory attitudes, compared to half (50.6%) of those in urban areas. Among those who are not currently attending school, only 20.2% held no discriminatory attitudes, in comparison to 63.6% of those who are currently attending secondary school (Table 13.5.A).

Table 13.5.A Discriminatory attitudes towards people living with HIV

Among young adolescents aged 13-14 years who have heard of HIV, percentage who report discriminatory attitudes towards people living with HIV, by selected demographic characteristics, UPHIA 2016-2017

	Would you be willing to share food with someone who has HIV?	Would you play with someone who has HIV?	All questions	
Characteristic	Percentage who responded "No"	Percentage who responded "No"	Percentage who responded "Yes" to both questions	Number
Residence				
Urban	45.5	29.7	50.6	125
Rural	64.1	49.6	31.9	403
Region				
Central 1	(55.1)	(41.3)	(42.8)	48
Central 2	(59.2)	(40.5)	(37.8)	42
Kampala	(43.1)	(4.2)	(56.9)	25
East-Central	57.7	40.5	37.4	62
Mid-Eastern	64.4	56.1	28.9	92
North-East	55.4	49.4	35.2	55
West-Nile	58.7	48.3	37.9	62
Mid North	(64.1)	(47.9)	(30.8)	49
Mid-West	(62.3)	(48.4)	(35.6)	49
South-West	(62.8)	(46.1)	(34.3)	44
Wealth quintile				
Lowest	60.6	44.0	36.6	122
Second	67.1	54.9	28.1	132
Middle	62.9	47.9	31.5	114
Fourth	57.6	44.7	38.5	96
Highest	40.8	20.1	58.5	64
Education				
Currently attending primary school	61.6	48.2	34.2	444
Currently attending secondary school	32.9	11.5	63.6	54
Not currently attending school	(77.5)	(55.8)	(20.2)	30
Total 13-14	59.7	44.9	36.3	528

Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

13.6 HIV Incidence and Prevalence

Among young people aged 15-24 years, ARV-adjusted annual HIV incidence was 0.34% (95% CI 0.16-0.53), 0.22% (95% CI 0.01-0.43) among older adolescent boys and young men and 0.46% (95% CI 0.17-0.76) among older adolescent girls and young women (Table 5.3.A). The prevalence of HIV among young people in Uganda was 2.1% with the prevalence four times higher in older adolescent girls and young women (3.3%) than older adolescent boys and young men (0.8%). The prevalence of HIV among older adolescents, 1.1% (0.5% for boys and 1.8% for girls), was a third of that among young adults, 3.3%, (1.3% for young men and 5.1% for young women). HIV prevalence among young women was three times higher than that of young men: 5.1 % versus 1.3 % (Table 5.3.B).

13.7 HIV Testing, Treatment, and Viral Load Suppression

Among young people, 63.0% reported that they had ever tested for HIV and received their results (54.4% among older adolescent boys and young men and 71.2% among older adolescent girls and young women). However, the percentage ever tested among older adolescents years was half that of young adults (46.8% vs. 83.1%, respectively). Recent testing was even less common, as only 37.8% of young people reported testing in the 12 months preceding the survey; 29.1% among older adolescent boys and young men and 46.1% among older adolescent girls and young women (Tables 7.3.A, 7.3.B, and 7.3.C).

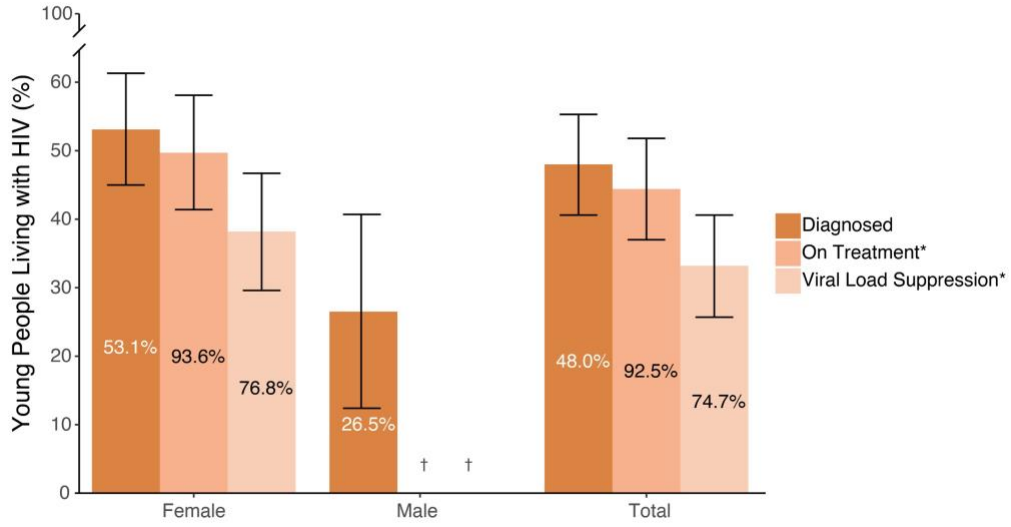
Among HIV-positive older adolescents and young adults, 62.8% and 58.4%, respectively, reported that they were unaware of their HIV status, while 31.7% and 37.0%, respectively, reported that they were on ART. About 5% of young people living with HIV reported that they were aware of their HIV status, but not taking ART. The percentage unaware of their HIV status was higher among young men (75.8%), than among young women (54.2%) (Tables 8.3.A, 8.3.B and 8.3.C).

Viral load suppression was observed in 42.5% of young people living with HIV. Overall, 32.5% of HIV-positive older adolescent boys and young men* and 44.9% of HIV-positive older adolescent girls and young women had suppressed viral loads (Table 9.3.B). (*The estimate in boys and young men was based on a small number (25 to 49) of unweighted cases and should be interpreted with caution).

13.8 Status of the 90-90-90 Goals

Based on self-report and detection of ARVs in blood, it is estimated that 48.0% of young people living with HIV had been diagnosed (26.5% of older adolescent boys and young men and 53.1% of older adolescent girls and young women), and that among those who had been previously diagnosed, 92.5% were on ART. Among those on treatment, 74.7% had VLS (Table 10.3.C and Figure 13.8.A). Among all young people living with HIV (including those not previously diagnosed), 44.4% were on ART, and only 33.2% had suppressed viral loads (Table 10.3.A).

Figure 13.8.A Young people 90-90-90 (laboratory ARV-adjusted data among young people aged 15-24 years), UPHIA 2016-2017



Note: In the antiretroviral (ARV)-adjusted 90-90-90, participants are classified as 'Aware' or 'Diagnosed' if they reported knowing their HIV positive status before testing positive in UPHIA or had detectable ARVs in their blood. Participants are classified as 'On Treatment' if they reported that they were on treatment and/or if they had detectable ARVs in their blood. *Inset numbers are conditional proportions. †Estimates not shown, as they are based on 24 cases or fewer.

13.9 Gaps and Unmet Needs

- UPHIA found that more than half of young people living with HIV had not been diagnosed. Among those on ART, more than a quarter did not have suppressed viral loads. Only 54.4% of older adolescent boys and young men had ever tested for HIV.
- Important knowledge gaps exist, and few young adolescent Ugandans aged 13-14 years have full knowledge of key facts related to HIV.
- Scale up of interventions to delay sexual debut should reach all schooling levels and those out of school.
- Prevention efforts (such as the DREAMS Program*) should be expanded to regions such as Mid-Eastern and East Central, which have high rates of risk behaviors among young people.
- Interventions to reduce discrimination should target venues like schools and youth groups. Age-appropriate sexual and reproductive health education at all levels of schooling would help combat false beliefs and HIV stigma. Open access to sexual and reproductive health services, including HIV prevention in schools, could also help reduce stigma.
- Discriminatory attitudes towards people with HIV may be more common in rural areas. Education and community interventions to decrease stigma could improve the lives of HIV-positive people in these areas. Involvement of local stakeholders and traditional leaders is crucial for effective change.

13.10 References

1. Hervish A, Clifton D. *The Status Report on Adolescents and Young People in Sub-Saharan Africa: Opportunities and Challenges.* Johannesburg and Washington, DC: Population Reference Bureau; 2012.

2. Joint United Nations Programme on HIV/AIDS (UNAIDS). *Global AIDS Monitoring 2017. Indicators for monitoring the 2016 United Nations Political Declaration on HIV and AIDS.* Geneva: UNAIDS; 2016. http://www.unaids.org/sites/default/files/media_asset/2017-Global-AIDS-Monitoring_en.pdf. Accessed December 20, 2018.

*DREAMS is an ambitious partnership to reduce HIV infections among adolescent girls and young women in 10 sub-Saharan African countries. The goal of DREAMS is to help girls develop into Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe women.

14 CHILDREN

14.1 Key Findings

- Less than one percent (0.5%) of Ugandan children (ages 0-14 years) were living with HIV. This corresponded to approximately 96,000 children in Uganda.
- Based on parents' reports, adjusted for ARVs detected in children's blood, only 56.3% of children diagnosed with HIV in UPHIA had been previously diagnosed.
- More than half of children (54.3%) who living with HIV were not on ART.
- The lowest level of VLS (39.3%) found in any subpopulation (by age group) examined in UPHIA 2016-2017 was found among children.

14.2 Background

Estimates of HIV prevalence in children, estimates of the number of children living with HIV, and VLS among children are most commonly derived indirectly from clinic-based data or epidemiologic models. UPHIA 2016-2017 provided direct measurements of these estimates among children, which are critical for meeting the needs of pediatric HIV treatment, planning for HIV prevention, care, and treatment services for children, evaluating PMTCT programs, and addressing specific needs of young adolescents (those aged 10-14 years).

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 from ARV testing. Analyses of the 90-90-90 cascades for children were similar to those described for adults in Chapter 10: overall and conditional cascades were derived using both unadjusted (parent/guardian-reported awareness only) and ARV-adjusted (parent/guardian-report and ARV testing) data. Parents or guardians were asked about a child's HIV infection status and ART use. Data on detectable ARVs were used in combination with parent/guardian-reported ARV use to define the ART status of a child. Presence of detectable ARVs in children, when the parent/guardian reported not being aware of their HIV-positive status, were reclassified as (parental/guardian) awareness of HIV-positive status. Children with suppressed viral loads whose parents reported them as not being previously diagnosed with HIV and without evidence of ARV use (parent/guardian-reported data or based on ARV detection) were not included in the numerator for the third 90 (VLS among those whose parents/guardians are aware of their HIV-positive status and on ART).

14.3 HIV Prevalence

The prevalence of HIV among children in Uganda was 0.5%: 0.7% among girls and 0.4% among boys. In infants and children aged 0-4 years, HIV prevalence was 0.5%: 0.6% in girls and 0.5% in boys. In children aged 5-9 years, HIV prevalence was 0.4%. In young adolescents, HIV prevalence was 0.7%, with the prevalence among young adolescent girls estimated at 1.1% (95% CI 0.1%-2.0%) as compared to younger adolescent boys at 0.3% (95% CI 0.0%-0.9%) (Table 6.3.A).

14.4 HIV Treatment and Viral Load Suppression

Among children UPHIA identified as living with HIV, 56.3% were previously diagnosed, based on parent/guardian report or detectable ARVs in their blood (Table 14.5.B).

Among HIV-positive children in Uganda, the prevalence of VLS was 39.3% (Table 9.3.B).

14.5 Status of the 90-90-90 Goals

Table 14.5.B shows progress towards the 90-90-90 targets among children living with HIV, based on parent-reported ART use and/or detectable ARV. Overall, the combined parent-reported and laboratory data showed that 56.3% of HIV-positive Ugandan children aged 0-14 years had a known HIV status. Of children aged 0-4 years, the HIV status was known for only 39.4% of them (Table 14.5.B) (Note: Since the number of observations was very small (less than 25 unweighted cases), the point estimates for the proportion of the children on treatment and with suppressed viral load were not reported. In addition, the other point estimates are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution).

Table 14.5.A Pediatric 90-90-90 (based on parent-reported antiretroviral therapy (ART) data; conditional percentages)

90-90-90 targets among children living with HIV aged 0-14 years, by age, UPHIA 2016-2017

	Diagnosed		On Treatment		Viral Load Suppression (VLS)	
	Total		Among children reported HIV positive by parent		Among children reported on ART by parent	
Age	Percentage reported HIV positive by parent	Number	Percentage reported on ART by parent	Number	Percentage with VLS	Number
0-17 months[1]	*	12	*	1	*	1
18-59 months	*	18	*	9	*	9
0-4 years	(31.1)	30	*	10	*	10
5-9 years	*	9	*	5	*	4
10-14 years	*	9	*	6	*	6
0-14 years	(52.8)	48	*	21	*	20

[1]Virological testing was conducted only among those infants with a reactive rapid test at screening during the survey (which might not have detected all HIV-exposed infants)
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.
An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Table 14.5.B Pediatric 90-90-90 (based on parent-reported antiretroviral therapy (ART) data and laboratory antiretroviral (ARV) data; conditional percentages)

90-90-90 targets among children living with HIV aged 0-14 years, by age, UPHIA 2016-2017

	Diagnosed		On Treatment		Viral Load Suppression (VLS)	
	Total		Among children reported HIV positive by parent or with detectable ARVs		Among children reported on ART by parent or with detectable ARVs	
Age	Percentage reported HIV positive by parent or with detectable ARVs[1]	Number	Percentage reported on ART by parent or with detectable ARVs[2]	Number	Percentage with VLS[3]	Number
0-17 months	*	11	*	3	*	3
18-59 months	*	18	*	9	*	9
0-4 years	(39.4)	29	*	12	*	12
5-9 years	*	9	*	5	*	4
10-14 years	*	9	*	6	*	6
0-14 years	(56.3)	47	*	23	*	22

[1]Relates to Global AIDS Monitoring indicator (GAM) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT; [2]Relates to GAM 1.2: People living with HIV on antiretroviral therapy, and PEPFAR TX_CURR_NAT / SUBNAT; [3]Relates to GAM 1.4: People living with HIV with suppressed viral loads, and PEPFAR VL_SUPPRESSION_NAT.
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.
An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Table 14.5.C	Pediatric 90-90-90 (based on parent-reported antiretroviral therapy (ART) data and laboratory antiretroviral (ARV) data; overall percentages					
90-90-90 targets among children living with HIV aged 0-14 years, by age UPHIA 2016-2017						
	Diagnosed		On Treatment		Viral Load Suppression (VLS)	
Age	Among children reported HIV positive by parent or with detectable ARVs [1]	Number	Percentage reported on ART by parent or with detectable ARVs[2]	Number	Percentage with VLS[3]	Number
0-17 months	*	11	*	11	*	11
18-59 months	*	18	*	18	*	18
0-4 years	(39.4)	29	(39.4)	29	(10.5)	29
5-9 years	*	9	*	9	*	9
10-14 years	*	9	*	9	*	9
0-14 years	(56.3)	47	(54.3)	47	(24.9)	47

[1]1Relates to Global AIDS Monitoring Indicator (GAM) 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT;
[2]Relates to GAM 1.2: People living with HIV on antiretroviral therapy, and PEPFAR TX_CURR_NAT / SUBNAT.
[3]Relates to GAM 1.4: People living with HIV with suppressed viral loads, and PEPFAR VL_SUPPRESSION_NAT.
Weighted figures calculated using btwt0.
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.
An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

14.6 Gaps and Unmet Needs

- The status of the 90-90-90 goals among Ugandan children with HIV remains poor and needs reinforced focus on testing, linkage to, and retention in ART programs.
- More complete follow up of HIV-exposed infants and early treatment for children who are diagnosed with HIV are needed.
- Strategies to improve adherence (psychosocial support, disclosure support, and more palatable pediatric formulations) are needed.
- Rapid expansion of more efficacious regimens (lopinavir/ritonavir, dolutegravir) is needed to improve viral suppression among children.

15 HIV Risk Factors, Protective Behaviors, and Voluntary Medical Male Circumcision

15.1 Key Findings

- Among adults (those aged 15-64 years) who reported having sex in the past 12 months, 36.7% (45.2% among men and 29.0% among women) reported having a non-marital, non-cohabitating partner in the past 12 months, among whom 33.4% (37.0% among men and 28.3% among women) reported using a condom the last time they had sex with a non-marital, non-cohabitating partner.
- Only one in five (21.2%) men reported having been medically circumcised.
- More than half of men (54.6%) reported not being circumcised.

15.2 Background

This chapter describes the prevalence of sexual behaviors that elevate the risk of HIV acquisition. The UPHIA 2016-2017 asked questions about high-risk behaviors, including early sexual debut, recent engagement in multiple sexual partnerships, condom use at last sexual intercourse, recent engagement in paid sexual intercourse, and condom use at last sexual intercourse with a non-marital, non-cohabitating partner. With this information, programs can target those individuals most in need of information and most at risk for HIV infection.

The Uganda Demographic and Health Survey 2016 had also investigated risk behaviors with similar findings. Overall, 2% of women aged 15-49 years reported that they had two or more partners in the past 12 months. Among women who had two or more partners in the past 12 months, 21% reported using a condom during their last sexual intercourse. Of men aged 15-49 years, 21% reported that they had two or more partners in the past 12 months. Among men who had two or more partners in the past 12 months, 22% of them reported using a condom during their last sexual intercourse.

Since 2007, WHO and UNAIDS have recommended voluntary medical male circumcision (VMMC) as a cost-effective strategy to reduce male acquisition of HIV. To inform VMMC programs, UPHIA also asked men if they had been medically or traditionally circumcised.

15.3 HIV Prevalence by Sexual Behavior

Among all adults, the prevalence of HIV was 14.3% among women who reported having had two or more sexual partners in the 12 months preceding the survey, compared to 5.5% among men. The prevalence of HIV in those who had one partner during the same period was estimated at 5.6% among men and 7.3% among women. HIV prevalence among men who did not have a sexual partner during the 12 months preceding the survey was lower (4.4%) than that of women reporting the same sexual behavior (13.3%) (Table 15.3.A).

Among participants who reported sexual debut before 15 years of age, the proportion of those who were HIV positive was 7.2% (4.3% of men and 10.1% of women). Among those who reported sexual debut after the age of 25 years, the proportion of those who were HIV positive was 5.9% (6.0% of men and 5.6% of

women). UAIS 2011 had found 9.1% of individuals (10.4% among women and 6.4% among men) aged 15-49 years who reported sexual debut before the age of 15 years were HIV positive.

In UPHIA, among adults living with HIV who reported intercourse in the last 12 months preceding the survey, 7.0% of men and 13.0% of women used a condom at last sexual intercourse.

Table 15.3.A HIV prevalence by sexual behavior

Prevalence of HIV among adults aged 15-64 years, by sex and sexual behavior characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Age at first sexual intercourse						
<15	4.3	1,582	10.1	2,080	7.2	3,662
15-19	5.4	6,204	8.6	10,443	7.3	16,647
20-24	6.3	1,942	7.1	1,734	6.6	3,676
≥25	6.0	598	5.6	259	5.9	857
Number of sexual partners and in the past 12 months						
0	4.4	1,285	13.3	2,650	9.8	3,935
1	5.6	6,184	7.3	11,443	6.6	17,627
≥2	5.5	2,995	14.3	614	6.8	3,609
Condom use at last sexual intercourse in the past 12 months						
Used condom	7.0	1,585	13.0	1,441	9.6	3,026
Did not use condom	5.3	7,516	6.8	10,551	6.1	18,067
No sexual intercourse in the past 12 months	4.4	1,285	13.3	2,650	9.8	3,935
Total 15-24	0.8	4,897	3.3	6,348	2.1	11,245
Total 15-49	4.3	10,854	7.5	14,716	6.0	25,570
Total 50-64	8.4	1,500	9.2	1,954	8.8	3,454
Total 15-64	4.7	12,354	7.6	16,670	6.2	29,024

[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.
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.

15.4 Condom Use at Last Sex with a Non-Marital, Non-Cohabitating Partner

Among all adults who reported having sex in the past 12 months, 36.7% reported having sex with a non-marital, non-cohabitating partner. Among young people (those aged 15-24 years), over 58.6% reported having sex with a non-marital, non-cohabitating partner in the preceding 12 months (Table 15.4.A-C).

Condom use at last intercourse was reported by 33.4% of adults who reported having sex with a non-marital, non-cohabitating partner in the 12 months preceding the survey.

Among men who reported having had sexual intercourse in the 12 months preceding the survey, 45.2% reported having a non-marital, non-cohabitating partner during that time. Of these men, 37.0% used a condom during their last sexual intercourse with a non-marital, non-cohabitating partner. Condom use in urban areas was 44.7%, compared to 33.2% in rural areas in men who reported having sex in the previous 12 months with a non-marital, non-cohabitating partner; and this differed by region; ranging by 25.8% in Mid-West region to 52.2% in Kampala. Almost half (46.4%) of men who had secondary education or more reported condom use the last time they had sex with a non-marital, non-cohabitating partner in the past year, as compared to 14.4% of those with no education (Table 15.4.A). Prevalence of condom use the last time men had sex with a non-marital, non-cohabitating partner ranged by wealth quintile, from 30.2% in the middle quintile to 46.4% in the highest quintile.

Among women who reported having had sexual intercourse in the 12 months preceding the survey, 29.0% reported having a non-marital, non-cohabitating partner during that time. Of these women, 28.3% reported using a condom during their last sexual intercourse with such a partner. Similar to men, the percentage of condom use at last sex with a non-marital, non-cohabitating partner among women in this group was slightly higher in urban than in rural areas (32.5% vs. 25.6%). Condom use among this group of women ranged from 13.1% among those with no education to 38.0% among those with secondary education or more. Prevalence of condom use by women who had sex with a non-marital, non-cohabitating partner in the preceding year ranged by wealth quintile from 21.8% in the second quintile to 32.7% in highest quintile (Table 15.4.B).

Table 15.4.A Condom use at last sex with a non-marital, non-cohabitating partner: Men

Among men aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a non-marital, non-cohabitating partner in the past 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner; by selected demographic characteristics, UPHIA 2016-2017

	Among men who reported having sex in the past 12 months		Among men who reported having sex with a non-marital, non-cohabitating partner in the past 12 months	
Characteristic	Percentage who reported having sex with a non-marital, non-cohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Age				
15-19	94.3	895	44.9	830
20-24	70.5	1,574	43.8	1,059
25-29	44.4	1,491	33.7	624
30-34	34.2	1,289	27.6	410
35-39	29.2	1,082	26.1	302
40-44	24.8	886	25.9	201
45-49	24.6	775	30.9	177
50-54	20.9	555	27.4	114
55-59	16.9	382	24.2	61
60-64	11.9	368	(13.5)	41
Residence				
Urban	54.9	2,363	44.7	1,230
Rural	41.5	6,934	33.2	2,589
Region				
Central 1	55.5	812	34.9	446
Central 2	57.2	704	43.0	382
Kampala	59.2	676	52.2	389
East-Central	47.4	1,025	37.8	438
Mid-Eastern	47.7	1,420	28.7	630
North-East	33.9	1,116	42.2	348
West-Nile	33.3	1,156	45.0	352
Mid North	36.0	789	45.7	259
Mid-West	45.0	861	25.8	357
South-West	32.4	738	27.9	218
Marital status				
Never married	97.0	1,935	46.5	1,839
Married or living together	22.4	6,673	27.6	1,369
Divorced or separated	91.6	649	27.5	575
Widowed	(89.4)	28	(29.6)	25

Table 15.4.A Condom use at last sex with a non-marital, non-cohabitating partner: Men (continued)

Among men aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a non-marital, non-cohabitating partner in the past 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner; by selected demographic characteristics, UPHIA 2016-2017

	Among men who reported having sex in the past 12 months		Among men who reported having sex with a non-marital, non-cohabitating partner in the past 12 months	
Characteristic	Percentage who reported having sex with a non-marital, non-cohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Education				
No formal education	29.9	438	14.4	105
Some primary	41.4	3,656	28.3	1,381
Completed primary	44.2	1,541	36.3	607
Some secondary	51.4	2,285	44.6	1,087
Completed secondary or more than secondary	49.4	1,311	46.4	612
Wealth quintile				
Lowest	34.9	2,540	37.0	794
Second	40.5	1,939	32.4	733
Middle	43.3	1,783	30.2	711
Fourth	50.6	1,460	35.9	699
Highest	57.5	1,575	46.4	882
Religion				
Catholic	44.6	3,583	38.2	1,431
Protestant/Anglican	44.0	3,138	37.9	1,293
Muslim	52.3	1,399	34.8	660
Pentecostal	41.2	736	37.4	276
Seventh-Day Adventist	45.6	140	31.0	57
Others	41.9	297	26.3	99
Ethnicity				
Baganda	57.7	1,317	43.6	748
Banyankole	41.6	691	29.8	274
Basoga	50.6	880	40.4	398
Bakiga	32.0	387	23.1	118
Iteso	42.4	963	39.4	367
Langi	37.6	540	37.2	185
Bagisu/Sabiny	47.8	824	29.5	365
Acholi	34.9	308	61.7	96
Lugbara/Madi	30.2	765	38.3	200
Batoro	56.3	200	18.5	107
Banyoro	54.6	304	39.7	156
Others	41.6	2,116	34.8	804
Total 15-24	78.7	2,469	44.2	1,889
Total 15-49	48.7	7,992	37.6	3,603
Total 50-64	17.7	1,305	24.4	216
Total 15-64	45.2	9,297	37.0	3,819

[1]Relates to Global AIDS Monitoring Indicator 3.18: Condom use at last high-risk sex.

Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. 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 15.4.B Condom use at last sex with a non-marital, non-cohabitating partner: Women

Among women aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a non-marital, non-cohabitating partner in the past 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner; by selected demographic characteristics, UPHIA 2016-2017

	Among women who reported having sex in the past 12 months		Among women who reported having sex with a non-marital, non-cohabitating partner in the past 12 months	
Characteristic	Percentage who reported having sex with a non-marital, non-cohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Age				
15-19	62.2	1,411	41.6	841
20-24	32.3	2,649	32.3	802
25-29	26.3	2,335	21.0	564
30-34	19.7	1,827	20.9	330
35-39	20.3	1,384	17.6	257
40-44	19.5	978	11.8	181
45-49	19.6	682	19.5	130
50-54	14.2	496	6.7	70
55-59	10.5	248	(0.0)	25
60-64	15.1	165	*	22
Residence				
Urban	39.4	3,323	32.5	1,245
Rural	24.8	8,852	25.6	1,977
Region				
Central 1	37.4	1,104	30.2	406
Central 2	35.8	939	26.5	319
Kampala	47.8	973	36.0	452
East-Central	29.6	1,311	35.0	356
Mid-Eastern	27.6	1,896	25.8	489
North-East	21.2	1,441	24.1	291
West-Nile	15.5	1,535	32.4	222
Mid North	24.3	952	32.0	217
Mid-West	29.6	1,047	19.8	294
South-West	19.2	977	22.9	176
Marital status				
Never married	90.8	1,449	42.8	1,281
Married or living together	8.9	9,181	16.4	733
Divorced or separated	81.5	1,284	18.9	1,016
Widowed	74.9	227	18.7	164
Education				
No formal education	14.0	1,497	13.1	199
Some primary	24.7	5,418	23.0	1,210
Completed primary	27.9	1,693	28.3	446
Some secondary	38.6	2,539	32.7	931
Completed secondary or more than secondary	43.8	969	38.0	411
Wealth quintile				
Lowest	18.5	3,249	23.4	546
Second	23.7	2,389	21.8	528
Middle	27.6	2,310	27.0	605
Fourth	33.7	1,997	31.0	642
Highest	41.2	2,230	32.7	901
Religion				
Catholic	28.4	4,682	28.5	1,191
Protestant/Anglican	28.1	3,744	30.3	996
Muslim	31.5	1,873	26.7	526
Pentecostal	29.7	1,353	27.6	363
Seventh-Day Adventist	31.4	200	31.2	60
Others	29.7	316	13.4	84
Ethnicity				
Baganda	40.6	1,816	31.1	738
Banyankole	24.6	983	26.0	243

Table 15.4.B Condom use at last sex with a non-marital, non-cohabitating partner: Women (continued)

Among women aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a non-marital, non-cohabitating partner in the past 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner; by selected demographic characteristics, UPHIA 2016-2017

	Among women who reported having sex in the past 12 months		Among women who reported having sex with a non-marital, non-cohabitating partner in the past 12 months	
Characteristic	Percentage who reported having sex with a non-marital, non-cohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Ethnicity (cont.)				
Basoga	30.9	1,090	36.5	314
Bakiga	21.8	521	16.8	113
Iteso	25.2	1,151	28.9	279
Langi	25.5	623	33.6	149
Bagisu/Sabiny	30.1	1,039	23.9	284
Acholi	24.1	378	34.0	84
Lugbara/Madi	14.1	1,055	27.4	135
Batoro	39.4	262	19.8	99
Banyoro	32.4	356	27.4	113
Others	26.5	2,896	25.7	670
Total 15-24	43.3	4,060	37.2	1,643
Total 15-49	30.1	11,266	29.0	3,105
Total 50-64	13.2	909	3.8	117
Total 15-64	29.0	12,175	28.3	3,222

[1]Relates to Global AIDS Monitoring Indicator 3.18: Condom use at last high-risk sex.

Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. 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 15.4.C Condom use at last sex with a non-marital, non-cohabitating partner: Total

Among adults aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a non-marital, non-cohabitating partner in the past 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner; by selected demographic characteristics, UPHIA 2016-2017

	Among persons who reported having sex in the past 12 months		Among persons who reported having sex with a non-marital, non-cohabitating partner in the past 12 months	
Characteristic	Percentage who reported having sex with a non-marital, non-cohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Age				
15-19	75.5	2,306	43.3	1,671
20-24	49.3	4,223	39.6	1,861
25-29	34.5	3,826	28.3	1,188
30-34	26.4	3,116	24.9	740
35-39	24.6	2,466	22.5	559
40-44	22.2	1,864	19.9	382
45-49	22.4	1,457	26.4	307
50-54	18.2	1,051	20.9	184
55-59	14.5	630	17.6	86
60-64	12.9	533	8.7	63
Residence				
Urban	46.6	5,686	39.2	2,475
Rural	32.8	15,786	30.2	4,566
Region				
Central 1	46.0	1,916	32.9	852
Central 2	45.9	1,643	36.2	701
Kampala	53.1	1,649	44.4	841

Table 15.4.C Condom use at last sex with a non-marital, non-cohabitating partner: Total (continued)

Among adults aged 15-64 years who reported having sex in the past 12 months, percentage who reported having a non-marital, non-cohabitating partner in the past 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner; by selected demographic characteristics, UPHIA 2016-2017

	Among persons who reported having sex in the past 12 months		Among persons who reported having sex with a non-marital, non-cohabitating partner in the past 12 months	
Characteristic	Percentage who reported having sex with a non-marital, non-cohabitating partner in the past 12 months	Number	Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner[1]	Number
Region (cont.)				
East-Central	38.0	2,336	36.6	794
Mid-Eastern	37.1	3,316	27.6	1,119
North-East	27.3	2,557	34.9	639
West-Nile	23.8	2,691	40.6	574
Mid North	30.1	1,741	40.1	476
Mid-West	37.3	1,908	23.4	651
South-West	25.4	1,715	25.9	394
Marital status				
Never married	94.6	3,384	45.1	3,120
Married or living together	15.1	15,854	24.1	2,102
Divorced or separated	85.4	1,933	22.4	1,591
Widowed	76.8	255	20.4	189
Education				
No formal Education	18.2	1,935	13.7	304
Some Primary	32.2	9,074	26.1	2,591
Completed Primary	36.1	3,234	33.3	1,053
Some Secondary	45.1	4,824	39.5	2,018
Completed Secondary or more than Secondary	47.3	2,280	43.4	1,023
Wealth quintile				
Lowest	26.5	5,789	32.1	1,340
Second	31.9	4,328	28.3	1,261
Middle	35.0	4,093	28.9	1,316
Fourth	41.6	3,457	33.8	1,341
Highest	48.9	3,805	40.3	1,783
Religion				
Catholic	36.2	8,265	34.3	2,622
Protestant/Anglican	36.0	6,882	35.0	2,289
Muslim	41.4	3,272	31.5	1,186
Pentecostal	34.2	2,089	32.2	639
Seventh-Day Adventist	37.8	340	31.1	117
Others	36.0	613	21.1	183
Ethnicity				
Baganda	48.6	3,133	38.1	1,486
Banyankole	32.4	1,674	28.3	517
Basoga	40.5	1,970	38.9	712
Bakiga	26.6	908	20.4	231
Iteso	33.8	2,114	35.4	646
Langi	31.6	1,163	35.7	334
Bagisu/Sabiny	38.6	1,863	27.2	649
Acholi	29.5	686	50.3	180
Lugbara/Madi	21.6	1,820	34.5	335
Batoro	47.6	462	19.1	206
Banyoro	43.7	660	35.2	269
Others	33.5	5,012	30.9	1,474
Total 15-24	58.6	6,529	41.3	3,532
Total 15-49	38.7	19,258	34.0	6,708
Total 50-64	16.0	2,214	18.0	333
Total 15-64	36.7	21,472	33.4	7,041

[1]Relates to Global AIDS Monitoring Indicator 3.18: Condom use at last high-risk sex.

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.

15.5 Male Circumcision

Table 15.5.A provides information about the extent of male circumcision in Uganda, differentiating between medical and non-medical circumcision.

Overall, 21.7% of men reported having been medically circumcised and 20.5% reported non-medical circumcision. Over half the men (54.6%) reported not being circumcised. The proportion of overall circumcised men has increased in the past few years, as UAIS 2011 reported only 26% of men aged 15-49 years were circumcised. Reported medical circumcision was higher at younger ages, ranging from 29.8% among men aged 20-24 years to 4.7% among men aged 60-64 years. Coverage of medical circumcision varied by education with 10.9% of those with no education reporting medical circumcision compared to 35.0% of those with secondary education or more. By wealth quintile, coverage of medical circumcision also varied with 16.1% of those in the lowest wealth quintile compared to 32.8% of those in the highest wealth quintile having had a medical circumcision. Coverage of medical circumcision was also higher in urban areas (27.5%) than in rural areas (19.6%). By region, coverage of medical circumcision ranged from 13.1% in Mid-North to 32.2% in Kampala.

Table 15.5.A 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, UPHIA 2016-2017

Characteristic	Circumcised[1]		Uncircumcised	Unknown	Total	Number
	Medical circumcision	Non-medical circumcision				
Age						
15-19	26.8	16.9	53.1	3.2	100.0	2,872
20-24	29.8	19.8	47.3	3.1	100.0	2,098
25-29	24.0	20.6	51.4	4.0	100.0	1,670
30-34	21.1	23.1	53.1	2.8	100.0	1,397
35-39	16.3	21.2	58.9	3.6	100.0	1,167
40-44	14.2	21.6	61.2	3.1	100.0	959
45-49	10.4	24.0	62.1	3.5	100.0	858
50-54	9.0	26.3	62.5	2.2	100.0	616
55-59	7.9	23.3	66.5	2.3	100.0	449
60-64	4.7	22.2	71.3	1.8	100.0	458
Result of PHIA survey HIV test						
HIV positive	12.9	17.1	66.9	3.1	100.0	570
HIV negative	22.1	20.7	54.0	3.1	100.0	11,784
Not tested/ No outcome	23.7	17.5	49.7	9.1	100.0	190
Residence						
Urban	27.5	22.5	44.4	5.6	100.0	3,214
Rural	19.6	19.8	58.4	2.3	100.0	9,330
Region						
Central 1	28.4	18.9	45.5	7.1	100.0	1,115
Central 2	27.4	20.1	48.5	4.0	100.0	953
Kampala	32.2	19.1	40.8	7.8	100.0	931
East-Central	19.8	34.3	41.5	4.4	100.0	1,313
Mid-Eastern	14.6	54.1	30.0	1.4	100.0	1,829
North-East	13.7	5.6	79.8	0.8	100.0	1,536
West-Nile	23.9	23.3	50.9	1.8	100.0	1,670
Mid North	13.1	0.6	85.7	0.6	100.0	1,106
Mid-West	23.4	25.7	48.5	2.4	100.0	1,134
South-West	20.0	4.9	73.6	1.5	100.0	957
Marital status						
Never married	29.3	16.7	50.8	3.2	100.0	4,611
Married or living together	16.6	22.7	57.6	3.1	100.0	6,887
Divorced or separated	17.8	25.3	52.9	3.9	100.0	925
Widowed	6.5	23.0	68.4	2.0	100.0	101
Education						
No formal Education	10.9	21.7	62.4	5.0	100.0	551
Some Primary	16.9	21.7	58.8	2.6	100.0	5,027
Completed Primary	18.2	20.8	58.7	2.3	100.0	1,985

Table 15.5.A 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, UPHIA 2016-2017

Characteristic	Circumcised[1]		Uncircumcised	Unknown	Total	Number
	Medical circumcision	Non-medical circumcision				
Education (continued)						
Some Secondary	25.4	21.5	49.3	3.8	100.0	3,285
Completed Secondary or more than Secondary	35.0	15.1	45.9	4.0	100.0	1,616
Wealth quintile						
Lowest	16.1	10.4	72.8	0.6	100.0	3,450
Second	16.9	25.4	55.9	1.8	100.0	2,633
Middle	19.2	25.1	52.3	3.4	100.0	2,343
Fourth	24.4	20.7	51.4	3.5	100.0	2,007
Highest	32.8	21.5	38.8	6.8	100.0	2,111
Religion						
Catholic	23.8	10.0	65.0	1.3	100.0	4,898
Protestant/Anglican	22.9	13.6	62.2	1.4	100.0	4,136
Muslim	12.1	71.5	2.0	14.4	100.0	1,834
Pentecostal	23.0	12.7	62.9	1.3	100.0	1,073
Seventh-Day Adventist	26.7	17.5	53.5	2.2	100.0	202
Others	21.2	19.9	57.1	1.8	100.0	394
Ethnicity						
Baganda	27.5	19.3	45.5	7.7	100.0	1,822
Banyankole	21.6	6.2	70.5	1.7	100.0	935
Basoga	19.2	34.5	40.7	5.7	100.0	1,122
Bakiga	22.3	7.3	69.0	1.4	100.0	500
Iteso	20.6	6.5	72.1	0.8	100.0	1,296
Langi	11.5	0.7	87.0	0.8	100.0	778
Bagisu/Sabiny	7.7	80.4	11.6	0.3	100.0	1,048
Acholi	15.8	1.4	82.3	0.5	100.0	402
Lugbara/Madi	25.0	25.8	47.3	1.9	100.0	1,146
Batoro	27.4	18.9	50.1	3.6	100.0	275
Banyoro	25.1	13.1	58.9	2.9	100.0	390
Others	24.4	25.3	47.7	2.6	100.0	2,824
Total 15-24	28.1	18.2	50.5	3.1	100.0	4,970
Total 15-49	23.2	20.1	53.4	3.3	100.0	11,021
Total 50-64	7.6	24.4	65.8	2.2	100.0	1,523
Total 15-64	21.7	20.5	54.6	3.2	100.0	12,544

[1]Relates to Global AIDS Monitoring indicator 3.16: Prevalence of male circumcision, and PEPFAR VMMC_TOTALCIRC NAT / SUBNAT.
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.

15.6 Gaps and Unmet Needs

- Among sexually active adults who reported sexual intercourse with a non-marital, non-cohabitating partner in the 12 months preceding the survey, nearly two-thirds reported not using a condom at last sexual intercourse with such a partner.
- Almost six out of ten men in Uganda reported being uncircumcised. Significant scale up is required to ensure saturation of this evidence-based prevention intervention.

15.7 References

1. UAIS 2011: *Uganda Ministry of Health, ICF International. Uganda AIDS Indicator Survey, 2011.* Calverton Maryland, USA: 2011. https://dhsprogram.com/pubs/pdf/AIS10/AIS10.pdf. Accessed on November 24, 2018.

16 INTIMATE PARTNER VIOLENCE

16.1 Key Findings

- Physical or sexual violence among intimate partners in the 12 months preceding the survey was reported by similar proportions of older adolescent girls aged 15-19 years and young women aged 20-24 years (11.5% and 11.0 %, respectively).
- Physical or sexual violence in the last 12 months was more frequently reported by HIV-negative than HIV-positive adolescent girls and young women (11.4% and 7.6%, respectively).
- There was wide geographical variation in the prevalence of physical or sexual violence among women, ranging from 7.5% in West Nile to 20.1% in Mid-Eastern.
- Among adolescent boys and young men, the prevalence of physical or sexual violence from a partner in the last 12 months was 2.0%.

16.2 Background

Intimate partner violence (IPV) includes physical violence, sexual violence, stalking and psychological aggression (including coercive tactics) by a current or former intimate partner (i.e., spouse, boyfriend/girlfriend, dating partner, or ongoing sexual partner [Brieding et al, 2015]). Exposure to IPV has been implicated in the 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 such as condom use (Maman et al, 2000). However, views about the role of women in society can make it difficult to report IPV. For instance, the Uganda Violence against Children Survey (2015) found 62.0% of women and 60.7% of men believed women should tolerate violence to keep their families together.

Data from UPHIA 2016-2017 helps fill gaps in information on subnational prevalence estimates and demographic characteristics of women who experienced different forms of IPV. This chapter provides data on the nature of violence in this population, which can assist in the development of violence prevention programs.

This chapter presents data on the prevalence of partnered women's and men's lifetime and recent (in the 12 months preceding the survey) experience of sexual and physical violence from intimate partners. Prevalence numbers are broken down by gender, age, education, region, and sociodemographic characteristics. Violence markers are measured against a respondent's HIV status, as well as demographic characteristics.

Violence questionnaires were administered to ever-married or partnered female and male young people (defined as older adolescents [boys and girls aged 15-19 years] and young adults [young men and women aged 20-24 years]). Questions were adapted from the Violence Against Children Survey, which measures physical, emotional, and sexual violence against adolescent girls and boys and young women and men (ages 13-24 years). Respondents who reported violence were offered referral to social services.

16.3 Prevalence of Recent Intimate Partner Violence: Older Adolescent Girls and Young Women

Among ever-married or partnered older adolescent girls and young women, 7.8% reported experiencing physical violence, 4.2% reported experiencing sexual violence, and 11.1% reported experiencing either form of IPV in the 12 months preceding the survey. Self-reported sexual violence among older adolescent girls was 5.0%, while physical violence in this age group was reported by 6.9%. Sexual violence was reported by 4% of young women, while the physical violence was reported by 8.2% in this age group (Table 16.3.A).

The prevalence of recent IPV varied greatly by sociodemographic characteristics. Among young women in urban areas, 10.6% reported either form of violence, compared to 11.3% in rural areas. In addition, the highest proportion of women who reported either form of violence was observed in Mid-Eastern region (20.1%) while the lowest proportion was observed in West-Nile region (7.5%). Across educational levels, the lowest rates of having experienced either forms of violence were observed among those with the highest level of education (7.1%), while the highest rates were observed among those with no formal education (19.7%).

There was wide geographical variation in the prevalence of physical or sexual violence among older adolescent girls and women, ranging from 7.5% in West Nile to 20.1% in Mid-Eastern.

Table 16.3.A Prevalence of recent intimate partner violence: Older adolescent girls and young women

Among ever-married or partnered older adolescent girls and young women aged 15-24 years, percentage who experienced physical or sexu violence from an intimate partner in the 12 months prior the survey, by HIV status and selected demographic characteristics, UPHIA 2016-2017

Characteristic	Physical violence[1]	Sexual violence[2]	Physical and sexual violence	Physical or sexual violence[3]	Number of ever-married or partnered women
Age					
15-19	6.9	5.0	0.4	11.5	277
20-24	8.2	4.0	1.2	11.0	902
Result of PHIA survey HIV test					
HIV positive	7.6	0.0	0.0	7.6	61
HIV negative	7.9	4.5	1.0	11.4	1,103
Not tested	*	*	*	*	15
Residence					
Urban	6.3	5.3	1.0	10.6	248
Rural	8.3	3.9	0.9	11.3	931
Region					
Central 1	3.7	5.3	0.0	8.9	95
Central 2	8.3	3.0	0.0	11.2	93
Kampala	9.0	4.1	1.3	11.8	68
East-Central	5.1	4.3	0.0	9.4	139
Mid-Eastern	13.1	13.3	6.3	20.1	154
North-East	4.8	3.8	1.0	7.6	162
West-Nile	6.2	1.3	0.0	7.5	173
Mid North	10.5	3.2	0.7	13.0	111
Mid-West	7.4	1.6	0.0	9.1	106
South-West	11.1	3.9	1.8	13.3	78
Marital status					
Never married	*	*	*	*	0
Married or living together	7.2	4.1	1.0	10.3	1,010
Divorced or separated	12.1	5.1	0.6	16.7	159
Widowed	*	*	*	*	4
Education					
No formal Education	10.7	10.8	1.8	19.7	78
Some Primary	9.9	3.4	1.0	12.3	564
Completed Primary	6.0	6.3	0.9	11.3	208
Some Secondary	6.0	2.9	0.7	8.2	277
Completed Secondary or more than Secondary	3.6	4.4	0.8	7.1	51

Table 16.3.A Prevalence of recent intimate partner violence: Older adolescent girls and young women (continued)

Among ever-married or partnered older adolescent girls and young women aged 15-24 years, percentage who experienced physical or sexual violence from an intimate partner in the 12 months prior the survey, by HIV status and selected demographic characteristics, UPHIA 2016-2017

Characteristic	Physical violence[1]	Sexual violence[2]	Physical and sexual violence	Physical or sexual violence[3]	Number of ever-married or partnered women
Wealth quintile					
Lowest	9.4	4.3	1.6	12.1	413
Second	7.7	3.5	1.3	10.0	251
Middle	7.9	2.7	0.5	10.2	210
Fourth	6.7	6.5	0.6	12.6	154
Highest	6.4	4.4	0.3	10.5	151
Religion					
Catholic	7.3	4.5	0.8	10.9	486
Protestant/Anglican	9.8	3.9	1.6	12.1	342
Muslim	3.2	6.2	0.8	8.6	191
Pentecostal	13.3	2.3	0.4	15.2	126
Seventh-Day Adventist	*	*	*	*	14
Others	*	*	*	*	19
Ethnicity					
Baganda	7.5	4.4	0.0	12.0	144
Banyankole	9.1	4.8	0.5	13.4	82
Basoga	6.0	5.4	0.5	10.9	97
Bakiga	12.8	5.4	2.6	15.6	65
Iteso	5.6	3.3	1.6	7.3	106
Langi	11.3	1.1	1.1	11.3	72
Bagisu/Sabiny	14.1	13.3	5.6	21.9	92
Acholi	(7.5)	(8.2)	(0.0)	(15.7)	37
Lugbara/Madi	6.5	0.0	0.0	6.5	117
Batoro	*	*	*	*	16
Banyoro	(5.2)	(0.0)	(0.0)	(5.2)	38
Others	4.9	3.7	0.8	7.8	310
Total 15-24	7.8	4.2	1.0	11.1	1,179

[1] Physical violence was defined as being punched, kicked, whipped, beaten, slapped, pushed, shoved, choked, smothered, drowned or burned. It also included having an object thrown at oneself or being hurt or threatened with a knife, gun or other weapon.

[2] Sexual violence was defined as being physically forced to have sex.

[3]Relates to Global AIDS Monitoring indicator 4.3: Prevalence of recent intimate partner violence.

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 in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. Estimates with an asterisk are based on a very small number (less than 25) of unweighted cases and have been suppressed.

16.4 Prevalence of Recent Intimate Partner Violence: Older Adolescent Boys and Young Men

Among older adolescent boys and young men, prevalence of physical or sexual violence from a partner in the last 12 months was 2.0%. It varied geographically, ranging from zero percent in East-Central and West Nile to 7.1% in Mid-Eastern, with reported levels of 2.8% in urban and 1.8% in rural areas. By age, the prevalence of self-reported physical or sexual IPV in the last 12 months was 3.6% among older adolescents boys and 1.8% among young men. The experience of physical or sexual violence ranged from 1.9% for older adolescent boys and young men with some education or completed primary education, to 0.5% for those with some secondary education.

Table 16.4.A Prevalence of recent intimate partner violence: Older adolescent boys and young men

Among ever-married or partnered older adolescent boys and young men aged 15-24 years, percentage who experienced physical or sexual violence from an intimate partner in the 12 months prior the survey, by HIV status and selected demographic characteristics, UPHIA 2016-2017

Characteristic	Physical violence[1]	Sexual violence[2]	Physical and sexual violence	Physical or sexual violence[3]	Number of ever-married or partnered men
Age					
15-19	(3.6)	(0.0)	(0.0)	(3.6)	37
20-24	1.4	0.4	0.0	1.8	355
Result of PHIA survey HIV test					
HIV positive	*	*	*	*	5
HIV negative	1.7	0.4	0.0	2.1	380
Not tested	*	*	*	*	7
Residence					
Urban	2.8	0.0	0.0	2.8	81
Rural	1.3	0.5	0.0	1.8	311
Region					
Central 1	*	*	*	*	22
Central 2	*	*	*	*	21
Kampala	*	*	*	*	19
East-Central	(0.0)	(0.0)	(0.0)	(0.0)	48
Mid-Eastern	7.1	0.0	0.0	7.1	58
North-East	2.6	1.3	0.0	3.9	60
West-Nile	(0.0)	(0.0)	(0.0)	(0.0)	45
Mid North	(2.1)	(1.9)	(0.0)	(4.0)	47
Mid-West	1.4	0.0	0.0	1.4	63
South-West	*	*	*	*	9
Marital status					
Never married	*	*	*	*	0
Married or living together	1.4	0.5	0.0	1.9	306
Divorced or separated	0.6	0.0	0.0	0.6	77
Widowed	*	*	*	*	1
Education					
No formal Education	*	*	*	*	9
Some Primary	1.9	0.0	0.0	1.9	188
Completed Primary	0.0	1.9	0.0	1.9	79
Some Secondary	0.5	0.0	0.0	0.5	94
Completed Secondary or more than Secondary	*	*	*	*	21
Wealth quintile					
Lowest	2.1	1.2	0.0	3.3	153
Second	0.7	0.0	0.0	0.7	92
Middle	1.9	0.0	0.0	1.9	57
Fourth	0.0	0.0	0.0	0.0	52
Highest	(4.0)	(0.0)	(0.0)	(4.0)	38
Religion					
Catholic	1.8	1.0	0.0	2.9	152
Protestant/Anglican	0.0	0.0	0.0	0.0	114
Muslim	2.5	0.0	0.0	2.5	68
Pentecostal	(1.2)	(0.0)	(0.0)	(1.2)	42
Seventh-Day Adventist	*	*	*	*	4
Others	*	*	*	*	12
Ethnicity					
Baganda	(0.0)	(0.0)	(0.0)	(0.0)	35
Banyankole	*	*	*	*	9
Basoga	(4.2)	(0.0)	(0.0)	(4.2)	45
Bakiga	*	*	*	*	6
Iteso	(1.9)	(0.0)	(0.0)	(1.9)	40
Langi	(2.5)	(2.4)	(0.0)	(4.9)	40
Bagisu/Sabiny	(2.5)	(0.0)	(0.0)	(2.5)	34
Acholi	*	*	*	*	13
Lugbara/Madi	(0.0)	(0.0)	(0.0)	(0.0)	32
Batoro	*	*	*	*	17
Banyoro	(0.0)	(0.0)	(0.0)	(0.0)	31
Others	1.2	0.6	0.0	1.8	90
Total 15-24	1.6	0.4	0.0	2.0	392

Table 16.4.A Prevalence of recent intimate partner violence: Older adolescent boys and young men (continued)

[1] Physical violence was defined as being punched, kicked, whipped, beaten, slapped, pushed, shoved, choked, smothered, drowned or burned. It also included having an object thrown at oneself or being hurt or threatened with a knife, gun or other weapon.

[2] Sexual violence was defined as being physically forced to have sex

[3]Relates to Global AIDS Monitoring indicator 4.3: Prevalence of recent intimate partner violence.

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 in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. Estimates with an asterisk are based on a very small number (less than 25) of unweighted cases and have been suppressed.

16.5 Gaps and Unmet Needs

- While the prevalence of violence is likely under-reported in a face-to-face interview, more than one in 10 older adolescent girls and young women reported experiencing some form of violence (physical or sexual) by a partner in the last 12 months.
- Efforts are needed to address gender norms that perpetuate high-levels of IPV among older adolescent girls and young women.
- Efforts are also needed to ensure that support services and clinical services are available to victims of IPV.

16.6 References

1. Breiding MJ, Basile KC, Smith SG, Black MC, Mahendra R. Intimate partner violence surveillance: Uniform definitions and recommended data elements. Version 2.0. Atlanta: United States Centers for Disease Control; 2015. https://www.cdc.gov/violenceprevention/pdf/ipv/intimatepartnerviolence.pdf. Accessed June 10, 2019.

2. 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.

3. Ministry of Gender, Labour and Social Development. Violence against children in Uganda: Findings from a National Survey, 2015. Kampala, Uganda: UNICEF; 2015.

17 TUBERCULOSIS, SYPHILIS, AND HBV

17.1 Key Findings

- Among adults (those aged 15-64 years) with a self-reported HIV-positive status, 30.8% had ever visited a TB clinic. Of these, 33.7% were diagnosed with TB, of whom 97.9% were treated for TB.
- The prevalence of having ever had syphilis among adults was 6.0% (6.1% among women and 5.8% among men). The overall prevalence of active syphilis infection was 2.1% (2.2% among women and 2.0% among men). The prevalence of active syphilis increased with age.
- The prevalence of ever having had syphilis was higher among HIV-positive (13.6%) than among HIV-negative (5.5%) adults. Active syphilis infections were more common among HIV-positive (6.2%) than HIV-negative participants (1.8%). The prevalence of active syphilis increased with age with the prevalence highest (5.6%) in older adults aged 60-64 years.
- The overall prevalence of HBV in adults was 4.1% (3.0% among women and 5.4% among men). The prevalence of HBV infection among people living with HIV was 4.7% (6.3% among men and 3.8% among women) compared to 2.4% among HIV-negative people (3.0% among men and 1.8% among women). The prevalence of HBV was 0.6% in children (those aged 0-14 years). HBV infection had geographic variation ranging from 0.8% in South-West to 4.6% in Mid-North region.

17.2 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 among people living with HIV in sub-Saharan Africa. A UNAIDS model estimates there were 5,301 TB-related deaths cases among HIV-positive persons in Uganda in 2016 (UNAIDS 2017). Considering that in sub-Saharan Africa TB is primarily diagnosed by TB clinics, in this survey participants were asked whether they had ever visited a TB clinic to provide some information about the extent of TB screening and health seeking behavior. This chapter describes the TB clinical care cascade for HIV-positive adults: the proportion who received care at a TB clinic, TB diagnoses among those receiving care, and treatment among those diagnosed with TB.

Syphilis is a relatively common STI, and untreated syphilis can result in severe morbidity and death in adults and children. Providing a syphilis diagnosis in a timely manner also allows patients to get treated, thereby reducing morbidity and transmission to sexual partners or 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 syphilis prevalence in adults, by HIV status, age, sex, and sociodemographic characteristics.

HIV and HBV have similar transmission routes and concurrent infection with both viruses often results in more rapid progression of HBV disease to cirrhosis and higher liver disease-related mortality. UPHIA 2016-2017 provided population-based HBV prevalence estimates among HIV-negative and HIV-positive individuals, which can support actionable policy recommendations for screening and treatment and may help gauge the impact of national HBV vaccination programs. This chapter describes the prevalence of HBV by region, sex, age, and sociodemographic characteristics.

17.3 Tuberculosis

Table 18.3.A presents information on the percentage of HIV-positive adults who visited a TB clinic, were diagnosed with TB, and received treatment. Among self-reported HIV-positive adults, 30.8% had ever visited a TB clinic, with 36.7% of men having ever visited a TB clinic compared to 27.8% of women. Among those who had ever visited a TB clinic, 33.7% were diagnosed with TB; and of those, 97.9% were treated for TB. Almost half (46.3%) of men who visited a TB clinic were diagnosed with TB and among those, 98.0% were treated for TB. Among self-reported HIV-positive women who visited a TB clinic, 25.2% were diagnosed with TB, and, of those, 97.9% were treated for TB.

Table 17.3.A Tuberculosis clinic attendance and services among HIV-positive adults

Among self-reported HIV-positive adults aged 15-64 years, percentage who ever visited a tuberculosis (TB) clinic; among those who had ever visited a TB clinic, percentage who were diagnosed for TB; and among those diagnosed with TB, percentage who were treated for TB, by sex, UPHIA 2016-2017

	Among HIV-positive persons		Among HIV-positive persons who ever visited a TB clinic		Among HIV-positive persons who were diagnosed with TB	
Characteristic	Percentage who ever visited a TB clinic	Number	Percentage who were diagnosed with TB	Number	Percentage who were treated for TB	Number
Sex						
Male	36.7	379	46.3	136	98.0	60
Female	27.8	859	25.2	244	97.9	68
Total 15-64	30.8	1,238	33.7	380	97.9	128

17.4 Syphilis

Overall, the prevalence of having ever had syphilis* among adults was 6.0% (6.1% among women and 5.8% among men). The prevalence of ever having had syphilis was lower among HIV-negative (5.5%) than among HIV-positive (13.6%) participants. The overall prevalence of active syphilis infection was 2.1% (2.2% among women and 2.0% among men); and was more than three times higher among HIV-positive (6.2%) than HIV-negative (1.8%) participants.

The prevalence of having ever had syphilis ranged from 4.6% in Mid-North and South-West regions to 8.5% in East-Central region. This prevalence also varied by age category, ranging from 2.4% among older adolescents aged 15-19 years to more than 17.3% among older adults aged 60-64 years. The prevalence of active infection ranged from 1.0% in Mid-East region to 3.2% in Central 1 region. Prevalence of active syphilis ranged from 0.9% among older adolescents aged 15-19 years to 5.6% among older adults aged 60-64 years. The prevalence of having ever had syphilis among women pregnant at the time of survey was 4.0%, while 1.9% of pregnant women had active syphilis.

* The percentage of adults who ever had syphilis includes people with active infection. Participants whose test was reactive only to treponemal antibodies were considered ever infected. Participants whose test was reactive to both treponemal and nontreponemal antibodies were considered to have an active infection.

Table 17.4.A Syphilis prevalence

Prevalence of syphilis (ever infected and active infection)* among adults aged 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, UPHIA 2016-2017

	Male			Female			Total		
Characteristic	Percentage ever infected	Percentage active infection	Number	Percentage ever infected	Percentage active infection	Number	Percentage ever infected	Percentage active infection	Number
Age									
15–19	2.2	0.6	2,834	2.6	1.1	3,289	2.4	0.9	6,123
20–24	3.2	1.3	2,063	3.9	1.7	3,059	3.6	1.5	5,122
25–29	5.5	2.0	1,637	5.3	2.5	2,574	5.4	2.3	4,211
30–34	6.0	2.3	1,380	5.5	1.9	2,024	5.7	2.1	3,404
35–39	7.4	2.9	1,143	6.9	3.3	1,573	7.1	3.1	2,716
40–44	7.3	2.9	952	8.8	2.5	1,214	8.1	2.7	2,166
45–49	10.1	3.2	845	9.8	2.4	983	9.9	2.8	1,828
50–54	12.2	3.6	610	15.2	3.5	863	13.8	3.6	1,473
55–59	16.5	4.0	439	15.2	3.2	559	15.8	3.6	998
60–64	19.5	6.9	451	15.6	4.5	532	17.3	5.6	983
Result of PHIA survey HIV test									
HIV positive	13.6	5.6	570	13.5	6.5	1,202	13.6	6.2	1,772
HIV negative	5.4	1.9	11,784	5.5	1.8	15,468	5.5	1.8	27,252
Not tested/No outcome	*	*	0	*	*	0	*	*	0
Residence									
Urban	5.0	1.6	3,155	5.7	1.7	4,691	5.4	1.6	7,846
Rural	6.1	2.2	9,199	6.3	2.4	11,979	6.2	2.3	21,178
Region									
Central 1	7.5	2.9	1,102	7.6	3.4	1,570	7.6	3.2	2,672
Central 2	6.7	2.3	935	6.3	1.6	1,304	6.5	2.0	2,239
Kampala	4.7	1.1	911	5.9	1.3	1,378	5.3	1.2	2,289
East-Central	7.5	2.3	1,276	9.4	3.3	1,703	8.5	2.8	2,979
Mid-East	6.0	1.0	1,795	5.6	1.1	2,419	5.8	1.0	4,214
North-East	5.6	1.8	1,523	6.0	1.8	1,988	5.8	1.8	3,511
West-Nile	5.7	1.8	1,650	4.3	1.4	2,335	5.0	1.6	3,985
Mid-North	4.5	2.4	1,082	4.8	2.2	1,253	4.6	2.3	2,335
Mid-West	5.2	2.2	1,125	5.3	2.4	1,379	5.2	2.3	2,504
South-West	4.1	1.5	955	5.0	2.1	1,341	4.6	1.8	2,296
Marital status									
Never married	2.8	1.0	4,538	3.1	1.2	3,749	2.9	1.1	8,287
Married or Living together	7.5	2.4	6,785	6.2	2.2	9,578	6.8	2.3	16,363
Divorced/separated	9.6	4.2	911	8.5	2.9	2,261	8.9	3.3	3,172
Widowed	14.8	8.5	101	13.1	4.2	1,034	13.2	4.6	1,135
Education									
No formal Education	10.3	3.6	539	9.9	3.2	2,182	10.0	3.3	2,721
Some Primary	6.9	2.6	4,958	7.0	2.5	7,234	6.9	2.5	12,192
Completed Primary	5.5	1.9	1,958	6.1	2.5	2,284	5.8	2.2	4,242
Some Secondary	5.0	1.6	3,229	4.2	1.4	3,621	4.6	1.5	6,850
Completed Secondary or more than Secondary	3.2	0.8	1,590	2.5	0.7	1,261	2.9	0.7	2,851

Table 17.4.A Syphilis prevalence (continued)

Prevalence of syphilis (ever infected and active infection) among adults aged 15-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, UPHIA 2016-2017

	Male			Female			Total		
Characteristic	Percentage ever infected	Percentage active infection	Number	Percentage ever infected	Percentage active infection	Number	Percentage ever infected	Percentage active infection	Number
Wealth quintile									
Lowest	5.2	1.9	3,399	5.3	1.9	4,437	5.3	1.9	7,836
Second	6.9	2.6	2,601	6.3	2.0	3,235	6.6	2.3	5,836
Middle	5.7	2.1	2,303	6.9	2.5	3,114	6.4	2.3	5,417
Fourth	7.0	2.3	1,979	7.4	2.8	2,755	7.2	2.6	4,734
Highest	4.2	1.3	2,072	4.6	1.6	3,129	4.5	1.5	5,201
Religion									
Catholic	6.5	2.6	4,828	6.7	2.5	6,529	6.6	2.5	11,357
Protestant/Anglican	5.4	1.7	4,078	6.1	2.2	5,015	5.7	1.9	9,093
Muslim	6.0	1.6	1,796	5.7	2.0	2,553	5.9	1.8	4,349
Pentecostal	4.7	1.9	1,062	5.3	1.4	1,879	5.1	1.6	2,941
Seventh-Day Adventist	2.5	0.9	200	4.4	2.0	262	3.5	1.5	462
Others	5.3	2.2	383	5.0	2.2	423	5.2	2.2	806
Ethnicity									
Baganda	6.4	2.2	1,778	7.3	2.5	2,607	6.9	2.3	4,385
Banyankole	4.2	1.6	931	6.3	2.3	1,348	5.3	1.9	2,279
Basoga	8.0	2.5	1,095	7.8	1.8	1,423	7.8	2.2	2,518
Bakiga	6.2	2.5	498	5.1	2.1	686	5.6	2.2	1,184
Iteso	3.7	0.4	1,285	3.3	0.6	1,553	3.5	0.5	2,838
Langi	4.6	2.8	768	4.8	2.3	810	4.7	2.5	1,578
Bagisu/Sabiny	7.5	1.3	1,038	6.4	1.8	1,339	6.9	1.6	2,377
Acholi	5.0	1.8	389	4.7	1.9	506	4.9	1.8	895
Lugbara/Madi	4.5	1.5	1,131	3.7	1.3	1,635	4.1	1.4	2,766
Batoro	7.1	2.4	271	9.7	5.0	364	8.5	3.7	635
Banyoro	5.0	2.3	389	2.9	1.4	465	4.0	1.9	854
Others	6.3	2.4	2,775	6.5	2.5	3,925	6.4	2.5	6,700
Pregnancy Status									
Currently pregnant[1]	N/A	N/A	N/A	4.0	1.9	1,405	N/A	N/A	N/A
Not currently pregnant	N/A	N/A	N/A	6.3	2.2	15,018	N/A	N/A	N/A
Total 15-24	2.6	0.9	4,897	3.2	1.4	6,348	2.9	1.2	11,245
Total 15-49	4.8	1.8	10,854	5.1	2.0	14,716	4.9	1.9	25,570
Total 50-64	15.3	4.5	1,500	15.3	3.7	1,954	15.3	4.1	3,454
Total 15-64	5.8	2.0	12,354	6.1	2.2	16,670	6.0	2.1	29,024

[1]Relates to Global AIDS Monitoring Indicator 2.4: Syphilis among pregnant women.

An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

*The percentage of adults ever infected with syphilis includes people with active infection. Participants whose test was reactive only to treponemal antibodies were considered ever infected. Participants whose test was reactive to both treponemal and nontreponemal antibodies were considered to have an active infection.

17.5 Hepatitis B

The prevalence of hepatitis B was 4.1% among adults (5.4% among men and 3.0% among women) and 0.6% among children (0.7% among boys and 0.6% among girls). The prevalence did not vary between urban and rural areas (2.3% and 2.5%). However, there were differences among geographical regions, with the highest prevalence in the Mid-North (4.6%) and the lowest in the South-West region (0.8%). The prevalence also varied across ethnicities, with the highest among the Acholi (9.2%) and the lowest among the Banyankole and Bakiga (1.5%). It was also highest among the lowest wealth quintile (4.1%). The prevalence of HBV infection among HIV-negative adults was 2.4% (3.0% among men, 1.8% among women), while the prevalence among HIV-positive adults in the same age group was 4.7% (men: 6.3%, women: 3.8%). Among children, the prevalence of HBV infection was similar in boys and girls.

Table 17.5.A Hepatitis B prevalence

Prevalence of Hepatitis B among persons aged 0-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage HBV positive	Number	Percentage HBV positive	Number	Percentage HBV positive	Number
Age						
0-14	0.7	5,121	0.6	5,224	0.6	10,345
15–19	5.0	2,834	2.5	3,289	3.7	6,123
20–24	5.6	2,063	3.5	3,059	4.5	5,122
25–29	6.5	1,637	3.6	2,574	4.9	4,211
30–34	6.3	1,380	3.6	2,024	4.8	3,404
35–39	5.6	1,143	3.3	1,573	4.4	2,716
40–44	5.9	952	2.3	1,214	4.1	2,166
45–49	4.2	845	2.2	983	3.2	1,828
50–54	4.3	610	2.1	863	3.2	1,473
55–59	2.6	439	1.9	559	2.2	998
60–64	2.3	451	1.5	532	1.9	983
Result of PHIA survey HIV test						
HIV positive	6.3	589	3.8	1,235	4.7	1,824
HIV negative	3.0	16,886	1.8	20,659	2.4	37,545
Not tested/No outcome	*	0	*	0	*	0
Residence						
Urban	2.8	4,261	1.9	5,882	2.3	10,143
Rural	3.1	13,214	1.9	16,012	2.5	29,226
Region						
Central 1	2.0	1,491	1.3	1,999	1.6	3,490
Central 2	2.7	1,322	1.4	1,711	2.0	3,033
Kampala	2.3	1,137	1.6	1,661	1.9	2,798
East-Central	3.7	1,878	1.8	2,293	2.7	4,171
Mid-East	2.4	2,604	1.8	3,185	2.1	5,789
North-East	5.7	2,241	3.2	2,703	4.4	4,944
West-Nile	3.7	2,403	3.9	3,083	3.8	5,486
Mid-North	5.4	1,516	3.7	1,679	4.6	3,195
Mid-West	2.3	1,607	1.2	1,846	1.8	3,453
South-West	1.2	1,276	0.4	1,734	0.8	3,010
Marital status						
Never married	5.0	4,538	2.5	3,749	4.0	8,287
Married or Living together	5.7	6,785	3.4	9,578	4.4	16,363
Divorced/separated	5.2	911	2.5	2,261	3.4	3,172
Widowed	6.9	101	2.7	1,034	3.1	1,135
Education						
No formal Education	7.7	539	3.6	2,182	4.6	2,721
Some Primary	5.6	4,958	3.0	7,234	4.2	12,192
Completed Primary	5.2	1,958	3.2	2,284	4.2	4,242
Some Secondary	5.0	3,229	2.7	3,621	3.9	6,850
Completed Secondary or more than Secondary	4.9	1,590	2.3	1,261	3.8	2,851

Table 17.5.A Hepatitis B prevalence (continued)

Prevalence of Hepatitis B among persons aged 0-64 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, UPHIA 2016-2017

	Male		Female		Total	
Characteristic	Percentage HBV positive	Number	Percentage HBV positive	Number	Percentage HBV positive	Number
Wealth quintile						
Lowest	4.7	5,080	3.4	6,065	4.1	11,145
Second	3.3	3,762	1.5	4,449	2.4	8,211
Middle	2.0	3,245	1.4	4,100	1.7	7,345
Fourth	2.4	2,724	1.3	3,468	1.8	6,192
Highest	2.4	2,664	1.5	3,812	1.9	6,476
Religion						
Catholic	6.1	4,828	3.7	6,529	4.9	11,357
Protestant/Anglican	4.7	4,078	2.7	5,015	3.7	9,093
Muslim	5.1	1,796	2.3	2,553	3.6	4,349
Pentecostal	5.1	1,062	2.5	1,879	3.6	2,941
Seventh-Day Adventist	6.3	200	2.6	262	4.4	462
Others	4.3	383	2.3	423	3.4	806
Ethnicity						
Baganda	3.3	1,778	1.5	2,607	2.4	4,385
Banyankole	2.5	931	0.6	1,348	1.5	2,279
Basoga	5.7	1,095	2.3	1,423	3.9	2,518
Bakiga	2.2	498	0.9	686	1.5	1,184
Iteso	8.0	1,285	4.3	1,553	6.1	2,838
Langi	9.7	768	7.6	810	8.7	1,578
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Batoro	1.4	271	1.8	364	1.6	635
Banyoro	2.8	389	1.4	465	2.1	854
Others	7.2	2,775	3.9	3,925	5.4	6,700
Pregnancy Status						
Currently pregnant	N/A	N/A	4.4	1,405	N/A	N/A
Not currently pregnant	N/A	N/A	2.8	15,018	N/A	N/A
Total 0-14	0.7	5,121	0.6	5,224	0.6	10,345
Total 15-24	5.2	4,897	3.0	6,348	4.1	11,245
Total 15-49	5.6	10,854	3.1	14,716	4.3	25,570
Total 50-64	3.3	1,500	1.9	1,954	2.6	3,454
Total 15-64	5.4	12,354	3.0	16,670	4.1	29,024

An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

17.6 Gaps and Unmet Needs

- Hepatitis B prevalence and syphilis rates were higher among people living with HIV compared to HIV-negative individuals. Approaches to joint management of these co-infections should be further strengthened.
- ANC programs need to pay attention to screening and treating pregnant women with active syphilis infection.

17.7 References

1. Joint United Nations Programme on HIV/AIDS. UNAIDS data tables, 2017. http://aidsinfo.unaids.org/. Accessed September 18, 2018.

DISCUSSION AND CONCLUSION

The findings from UPHIA 2016-2017 are subject to some limitations. Many outcomes were measured through participants' self-report and may have been prone to bias, including participants providing socially desirable responses. An example of the potential bias is undisclosed HIV infection and ART use among people in whom ARVs were detected leading to an underestimation of knowledge of positive HIV status. Supplementing self-reported ART status with ARV detection improved these estimates; however, such data were not available for all self-reported outcomes sensitive to bias. Further limitations include indicators with small numbers and missing data due to nonresponse, which may have reduced the precision in the estimates presented and limited the ability to make inferences and draw conclusions about a given factor or outcome. The survey was conducted at one point in time, which limits the ability to evaluate factors over time and attribution of characteristics that occurred prior to the survey. Lastly, this survey design excluded senior citizens aged 65 years or older and did not allow for the estimation of HIV disease among key populations or persons with disabilities in Uganda.

Notwithstanding these limitations, UPHIA provided nationally representative population-based estimates that can be used by program managers and policy makers to inform the HIV prevention care and treatment program.

The following are preliminary recommendations. Further analyses are underway and more detailed recommendations are forthcoming that will address specific priority areas in the HIV program.

HIV burden:

- HIV continues to cause a significant burden of disease in the country, with an estimated 6.2% of adults aged 15-64 years (1.2 million adults) and 0.5% children aged 0-14 years (96,000 children) living with HIV.
- UPHIA estimated that approximately 73,000 new HIV infections occurred over the course of the survey in 2016-2017 among adults (HIV incidence: 0.4% [95% CI: 0.25%-0.56%]). Increasing coverage of diagnosis, while sustaining high levels of treatment and VLS are key interventions to reduce HIV incidence. By quantifying national population-level HIV incidence and VLS for the first time in Uganda, UPHIA has contributed to the understanding of the epidemic. UPHIA's estimates of national HIV incidence were within range of the previous national Spectrum-modeled estimates.
- The high HIV prevalence (11.2%-10.1%) among all five-year age bands of those aged 35-54 years calls for attention to a potential double burden of HIV and non-communicable diseases in an aging patient population. The country has initiated a response with the inclusion of guidance for the screening and treatment of hypertension and screening for mental health conditions in the most recent HIV services guidelines (Uganda MOH, 2016). In the near future, a comprehensive approach for the prevention and early detection of other cardiovascular, metabolic, renal, and neurological conditions as well as cancers will be necessary.
- With a considerable burden of HIV among children (HIV prevalence of 0.5%) and slow progress toward controlling the epidemic in this population (56.3% of children living with HIV diagnosed, 54.3% of all

HIV-positive children receiving ART, and 24.9% of all HIV-positive children with VLS),* Uganda would benefit from reevaluating its programmatic approach to this group. In addition to a major deficit in coverage of diagnosis, the estimates indicated limited VLS among HIV-positive children. This suggests the need for innovative strategies to improve diagnosis, linkage to treatment, ART adherence, treatment monitoring, and the availability and use of optimal ART regimens for the pediatric population.

- In addition to the prevalence of HIV infection among individuals in a population, an important dimension to understanding the burden imposed by HIV on the country is the prevalence of HIV-affected households. Having one or more HIV-positive members per household has the potential to impact not only the health-status, but also the psychosocial and economic well-being of other household members. UPHIA estimated that 16.6% of the urban and 12.3% of the rural households in Uganda had at least one HIV-positive member and that 9.9% of the households had an HIV-positive head. Further analysis is ongoing to determine the level of support needed by HIV-affected households, especially for orphans and vulnerable children.

Challenges in HIV care cascade:

- Diagnosis is a persistent challenge among young adults and men, and a critical priority is to identify those that are HIV-positive but unaware of their status. By the end of March of 2017, approximately 545,000 HIV-positive people did not have suppressed viral loads, of whom 330,000 people apparently were not aware of their seropositive status. A second priority is to ensure all people living with HIV are on treatment. Of the 545,000 without VLS, 80,000 were diagnosed, but not on ART. A third priority is to ensure those on treatment achieve a suppressed viral load. However, 130,000 of those on treatment did not have VLS. Further investigation is needed to find out if the cause of low VLS among those on ART is due to retention, adherence, or ARV drug resistance.
- The achievement of targets is essential, not only to prevent HIV-related illness and AIDS-related deaths, but also to prevent transmission and the occurrence of new HIV infections. With the goal set by UNAIDS to end the AIDS epidemic by 2030, continued expansion of HIV testing and treatment, especially for men and young women, will play a central role.
- Among adults previously diagnosed with HIV, but not on ART, the median CD4 count was 493 cells/µL and 12.8% had severe immunosuppression (a CD4 count less than 200 cells/µL). This finding highlights the need to prioritize treatment initiation for this group. Among HIV-positive adults, who reported no previous HIV diagnosis, 9.8% had severe immunosuppression. These findings provide further support to the appropriateness of the "Test and Treat" policy introduced in Uganda in 2016.
- Uganda has achieved high coverage of key interventions to reduce vertical transmission of HIV, with 95.3% of HIV-positive women aged 15-49 years who gave birth during the 12 months preceding the survey having reported that they received ARVs during pregnancy, labor, or delivery. It is important to follow-up of mother-infant pairs through the end of breastfeeding, to both minimize transmission by ensuring viral suppression of the mothers, and to identify any HIV-exposed infants who may have been missed or seroconverted during the breastfeeding period. UPHIA estimated high rates of transmission among infants born in the 17 months before the survey to HIV-positive mothers (among these infants, 14.8% of those aged 0-11 months and 15.6% of those aged 0-17 months). It should be noted that WHO does not recommend household-survey data for evaluation of PMTCT programs.

* These estimates were based on a small number (47) of unweighted cases and should be interpreted with caution.

Uganda is presently conducting a PMTCT impact evaluation which will provide further understanding of the dynamics of MTCT in the country.

Preventive measures:

- More than one in eight young people (13.6%) (ages 15-24 years) reported having sexual intercourse before 15 years of age. Sexual debut before 15 years of age was especially high among women with no education. Reproductive health and HIV prevention programs could focus on delaying the age of sexual debut, with a special effort to adapt strategies for sections of the female population with low education levels.
- Overall condom use was low. Among sexually active men and women who reported having sex with a non-marital, non-cohabitating partner in the 12 months preceding the survey, with only 37.0% of men and 28.3% of women reporting using a condom the last time they had intercourse with such a partner. It is important to increase uptake of condom use, in addition to other prevention interventions targeting adolescent girls and young women.
- Uganda should further emphasize education about HIV where there are important gaps. Clear gaps exist in adolescents and young people, rural areas, and among people with less education and less wealth: 25.6% of young adolescents aged 13-14 years had correct knowledge about HIV transmission and prevention, with 24.8% of young adolescent boys and 26.3% of young adolescent girls who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission.
- The implementation of VMMC has continued to scale up, with higher coverage (28.1%) observed among the target group, older adolescent boys and young men aged 15-24 years, in comparison with other age groups. With an important proportion uncircumcised in the target groups, further expansion of the program coverage is needed to reach the national target of 80% coverage of medical male circumcision, especially in areas with high HIV prevalence.

APPENDIX A SAMPLE DESIGN AND WEIGHTING

Appendix A provides a high-level overview of sampling and weighting procedures for UPHIA 2016-2017. In-depth details are provided in UPHIA 2016-2017 Sampling and Weighting Technical Report, which may be found online on the PHIA Project website (https://phia.icap.columbia.edu/).

A.1 Sample Design

Overview

The sample design for UPHIA 2016-2017 was a stratified, multistage probability sample design, with strata defined by the 10 regions of the country, first-stage sampling units defined by EA within strata, second-stage sampling units defined by households within EA, and finally eligible persons within households. Within each region, the first-stage sampling units (also referred to as primary sampling units (PSUs)) were selected with probabilities proportionate to the number of households in the PSU based on the 2014 Population and Housing Census. The allocation of the sample PSUs to the 10 regions was made in a manner designed to achieve specified precision levels for (1) a national estimate of the HIV incidence rate and (2) regional 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 listing process, a random systematic sample of dwelling units/households was selected from each PSU at rates designed to yield self-weighting (i.e., equal probability) samples within each region to the extent feasible.

Within the sampled households, all eligible adolescents and adults aged 15-64 years were included in the study sample for data collection. All eligible children aged 0-14 years in randomly designated households were included in the study for data collection, with children aged 0-4 years selected at higher rates than children aged 5-14 years.

Population of Inference

The population of inference for UPHIA 2016-2017 was comprised of the *de facto* household population. The *de facto* population was comprised of individuals who were present in households (i.e., slept in the household) on the night prior to the household interview. In contrast, the *de jure* population was 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 UPHIA 2016-2017:

- The RSE of the national estimate of annual HIV incidence among persons aged 15-49 years should be 30% or less.
- The 95% CIs around the estimated VLS rate among HIV-positive persons ages 15-49 years for each of the 10 geographic regions of the country should be $\pm$ 9% or less.
- The 95% CIs around the estimated HIV prevalence rate among persons aged 15-49 years for each of the 10 geographic regions of the country should be $\pm$ 2.5% or less.

- The RSE of HIV prevalence for children ages 0-4 years and children ages 0-14 years should be 20% or less for both age groups.

The following assumptions were used to develop the sample design for UPHIA 2016-2017:

- An overall HIV prevalence rate of 0.073 (7.3%) that varies by region.[1]
- An annual HIV incidence rate* for adults ages 15-49 years of $P_a = 0.0063$ (0.63%).[2]
- An 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 = 0.0063/2.8077 = 0.0022 (0.22%).
- A VLS rate among HIV-positive adults aged 15-49 years in each region *h* of $P_{vh} = 50\%$. This is a conservative assumption because it will overstate the actual variance of the VLS rate.
- An average of 25 occupied sampled households per sampled cluster (PSU).
- An intra-cluster correlation (ICC) of ρ = 0.05 for prevalence and VLS rates. The ICC provides an average measure of the homogeneity of responses within the first-stage sampling units.
- An occupancy rate of 97.3% for sampled dwellings. Note that this is not included in the calculation of the overall survey RR, but does determine the initial numbers of dwelling units to be sampled.[3]
- An overall household RR of 99.2% among occupied households.
- The average number of persons aged 15-49 years in a household is 1.81.
- The percentage of persons in households who are aged 0-14 years is 52.4%.
- The percentage of persons in households who are aged 50-64 years is 5.0%.
- Among the eligible individuals aged 15 years and older in households completing the household roster, a biomarker RR of 90.5%.
- Among the eligible children aged 0-14 years in the households designated for child data collection, a biomarker RR of 85.5%. This value is the biomarker RR for adults minus 5%.

Selection of the Primary Sampling Units

The PSUs for UPHIA 2016-2017 were defined as the EA created for the 2014 Population and Housing Census. The sampling frame consisted of over 79,000 EA containing an estimated 7,353,000 households and 34,350,000 persons, with an average number of households and persons per EA of 93 and 435, respectively. Prior to selecting the sample, EA with less than 20 households and a small number of EA with missing administrative division codes were deleted from the frame. The excluded EA accounted for less than 0.40% of all households in the country.

A stratified sample of 523 EA was selected from the sampling frame. The 10 strata specified for sampling were the 10 regions of Uganda. The EA samples were selected systematically and with probabilities proportionate to a measure of size (MOS) equal to the number of households in the EA based on the 2014 census. Next, within each stratum, the EA were sorted by district, county, sub-county, and urban/rural status. The sorting of the EA prior to sample selection induced an implicit stratification of the sampling frame designed to ensure that a representative mix of EA with respect to geography and urban/rural status were included in the sample. To select the sample from a particular stratum, the cumulative MOS

* For example, see: http://www.unaids.org/en/resources/documents/2016/HIV_estimates_with_uncertainty_bounds_1990-2015

was determined for each EA in the ordered list of EA, and the sample selections were designated using a sampling interval equal to the total MOS of the EA in the stratum divided by the number of EA to be selected and a random starting point. The resulting sample has the property that the probability of selecting an EA within a particular stratum is proportional to the MOS of the EA in the stratum.

Details regarding EA substitution and segmentation may be found in UPHIA 2016-2017 Sampling and Weighting Technical Report on the PHIA Project website.

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 contain more than one household meeting the above definition. Households were eligible for participation in the study if they were located within the sampled EA.

The selection of households for UPHIA 2016-2017 involved the following steps: (1) listing the dwelling units/households within the sampled EA; (2) assigning eligibility codes to the listed dwelling unit/household records; (3) selecting the samples of dwelling units/households; and (4) 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 UPHIA 2016-2017 Sampling and Weighting Technical Report on the PHIA Project website.

Selection of households utilized an equal probability design. In order to achieve equal probability samples of households within each of the 10 regions of Uganda, the sampling rates required to select dwelling units/households within an EA depends on the difference between the MOS used in sampling and the actual number of dwelling units/households found at the time of listing. Thus, application of these within-EA sampling rates can yield more or less than the desired 13,436 households in EA where the sampling MOS differs from the actual listing count. In UPHIA 2016-2017 Sampling and Weighting Technical Report on the PHIA Project website, there is an in-depth description of the equal probability sample design, as well as a detailed summary of the results of the household selection.

Selection of Individuals

The selection of individuals for UPHIA 2016-2017 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 are eligible for data collection; and (3) selecting for the study those individuals meeting the age and residency requirements of the study. However, only those individuals who slept in the household the night before the household interview (i.e., the *de facto* population) were retained for subsequent weighting and analysis.

In UPHIA 2016-2017 Sampling and Weighting Technical Report on the PHIA Project website, there is a brief description of the process for listing and selecting individuals for participation in UPHIA 2016-2017, 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 under-coverage of certain population groups. Weighting is accomplished by assigning an appropriate sampling weight to each responding sampled unit (e.g., 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 UPHIA 2016-2017, nonresponse 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. To compensate for such omissions, post-stratification procedures are used to calibrate the weighted sample counts to available population projections.

Methods

The overall weighting approach for UPHIA 2016-2017 included several steps. Methods and results for each of the steps below are detailed in UPHIA 2016-2017 Sampling and Weighting Technical Report on the PHIA Project website.

- 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 can be implemented immediately after the PSU sample has been 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, with a final adjustment for the individual weights to compensate for under-coverage in the sampling process by post-stratifying (i.e., weighting up) to 2016-2017 population projections.
- 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, and a final post-stratification adjustment to compensate for under-coverage.
- 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 account for the complex sample design and every step of the weighting process.

A.3 References

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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 persons aged 15 years and older, 6 mL from persons aged 2-14 years, and 1 mL of capillary blood from children aged 0-2 years using finger-stick for children aged 6-24 months and heel-stick for children aged 6 months and under.

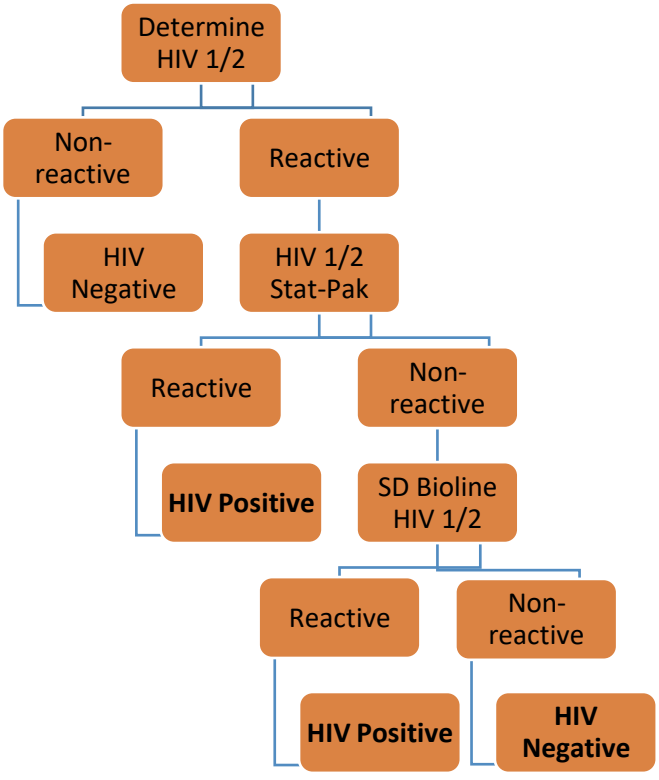
Blood samples were labeled with a unique barcoded participant ID and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for registration in a laboratory information management system, processing into plasma and DBS, and storage at -20°C within 24 hours of blood collection. Approximately weekly, samples were transported to Uganda Virus Research Institute (UVRI) 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 Uganda's national guidelines (Figure B.2.A).

Figure B.2.A Household-based HIV testing algorithm (ages 18 months and older), UPHIA 2016-2017



All samples underwent repeat testing at the central laboratory (UVRI) using the Uganda National HIV testing algorithm, see Section B.3.A. Among children under the age of 18 months, only the initial rapid test was performed at the household. If the initial test was reactive, the sample underwent additional testing at the Central Public Health Lab (CPHL) using qualitative HIV total nucleic acid-polymerase chain reaction (TNA PCR) (see below, Figure B.3.B).

CD4 Testing

All participants, aged 0-64 years, who tested HIV positive and a random sample of 5% of participants who tested HIV negative received a CD4 count measurement in the field by qualified survey staff. The measurement was performed using a Pima™ Analyzer and Pima™ CD4 Cartridge (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere).

Hepatitis B Virus Rapid Testing

Hepatitis B virus rapid testing was conducted in each household for all participants , aged 0-64 years, using the Alere Determine HBsAg test using the Uganda national algorithm for hepatitis B rapid testing. Individuals testing positive were considered as acute or chronically infected and referred to a facility offering HBV services.

Syphilis Rapid Testing

Syphilis rapid testing was conducted in each household for adults aged 15 – 64 years using the Chembio DPP Syphilis Screen and Confirm rapid test (Chembio, Medford, New York). Participants with active syphilis were treated either in the households or at a nearby health facility according to the national STI treatment guidelines

Counseling, Referral to Care, and Active Linkage to Care

Pre- and post-test counseling were conducted in each household in accordance with Uganda's national guidelines. For participants aged 15 years and older, results were communicated directly to the participant, while for participants less than the age of 15 years, results were communicated to the participant's parent or guardian. All participants who consented to HIV testing were asked 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. All participants who consented to HIV, Hepatitis B, and syphilis testing were asked to share contact information and to select a referral health facility prior to testing. Participants with positive results for HIV, HBsAg, and active syphilis were referred to care and treatment as appropriate at the health facility of their choice.

In rare cases where participants were provided an incorrect HIV test result, self-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 rapid tests, field staff conducted testing of a panel of dried tube specimens (positive and negative HIV, syphilis, and hepatitis B) on a weekly basis. To assure the quality of the performance of field staff conducting HIV testing, proficiency testing using a panel of blinded HIV-positive and HIV-negative dried tube specimens was evaluated twice during the course of field work. 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 is the potential limitation of rapid tests to detect HIV antibodies among people in the serological window of infection and in HIV-infected 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, in a recent programmatic update, WHO concluded that the use of rapid tests to establish HIV-exposure status may be unreliable in HIV-infected infants.[1]

B.3 Laboratory-Based Procedures

Ten survey satellite laboratories were established in existing health facility laboratories across the country. One central laboratory was established at UVRI in Entebbe, Uganda.

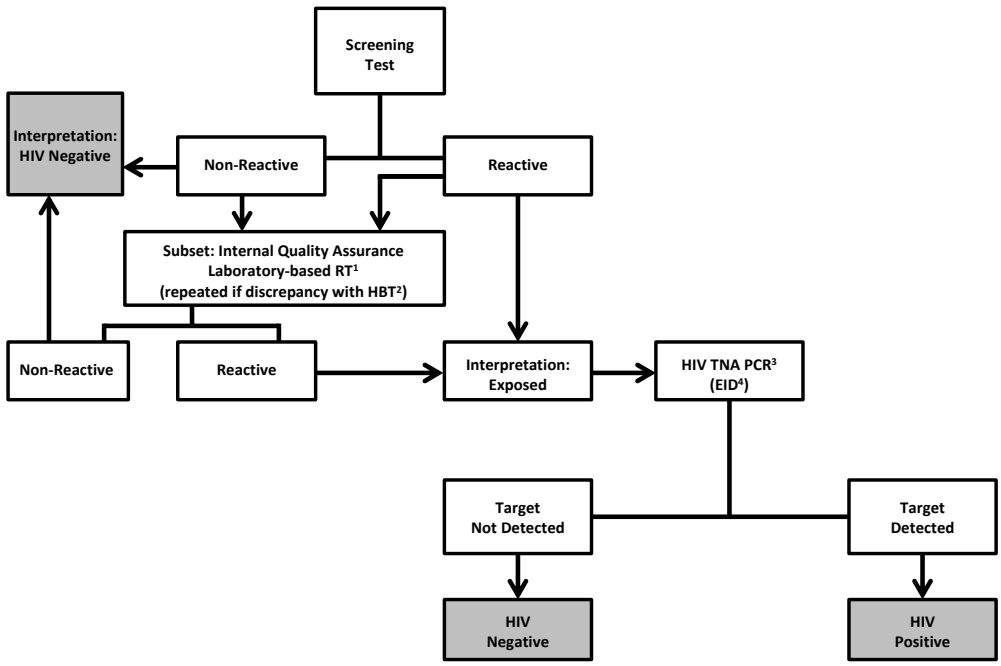
HIV TNA Polymerase Chain Reaction

HIV TNA PCR was conducted for children less than 18 months of age who had a reactive HIV test result during household-based testing (Figure B.3.A). Using COBAS AmpliPrep COBAS Taqman (CAP/CTM) HIV-1 Qualitative Test, HIV TNA PCR was conducted at CPHL 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, and from central lab testing (Figure B.2.A). For participants under the age of 18 months, the algorithm for classification of final HIV status in UPHIA included results from HIV rapid testing and HIV TNA PCR (Figure B.3.A).

Figure B.3.A Final HIV status classification algorithm (ages 0-17 months)



[1]RT: rapid testing; [2]HBT: home-based testing; [3]TNA PCR: total nucleic acid polymerase chain reaction; [4]EID: early infant diagnosis

Note: Grey boxes indicate a final HIV-status determination

Classification of final HIV status was used to determine estimates for HIV prevalence and to inform estimates for HIV incidence (Note: WHO currently recommends that virological testing be performed on all infants who are HIV exposed, as determined by maternal serology, 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]

Viral Load Testing

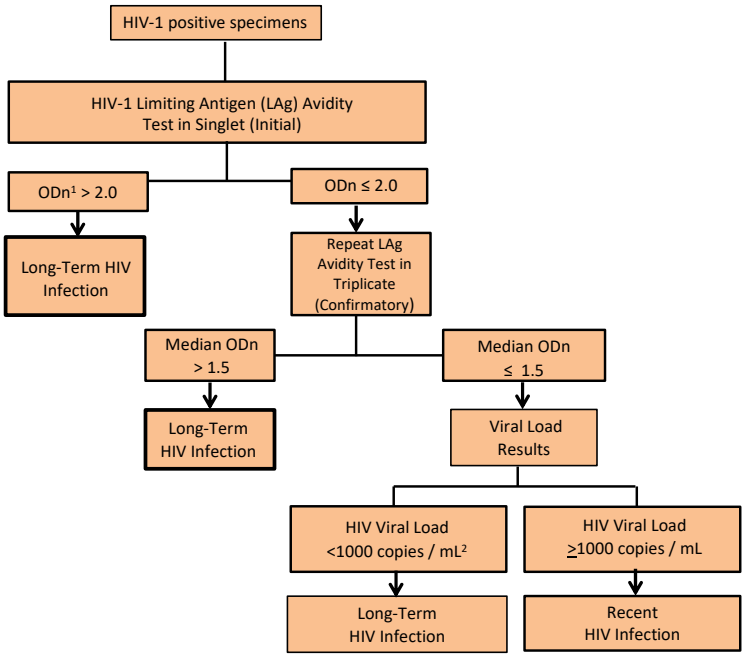
HIV-1 VL (HIV RNA copies per mL) from confirmed HIV-positive participants was measured on the Roche COBAS® AmpliPrep Instrument and COBAS® TaqMan® 96 analyzer using the Roche COBAS® AmpliPrep/COBAS® TaqMan® 96 analyze HIV-1 Test, v2.0 (Roche Molecular Systems, Branchburg, New Jersey, United States). The COBAS® AmpliPrep instrument (Roche Molecular Systems) was used to prepare plasma samples and controls whilst the COBAS® TaqMan® 96 analyzer for nucleic acid amplification and detection of HIV-1 RNA (Roche Molecular Systems, Branchburg, New Jersey, United States). The Roche COBAS® AmpliPrep/COBAS® TaqMan® 96 analyzer HIV-1 Test, v2.0 was also used to measure VL from DBS samples from infants, children, and adults with insufficient volume of plasma.

Viral load results were returned 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.

HIV Recency Testing

Estimation of annualized HIV-1 incidence was based on the classification of confirmed HIV-positive cases as recent or long-term infections. For this purpose, the survey used a laboratory-based testing algorithm that employed a combination of the HIV-1 LAg-Avidity EIA (Sedia Biosciences Corporation), VL results, and ARV detection in the blood (Figure B.3.C).

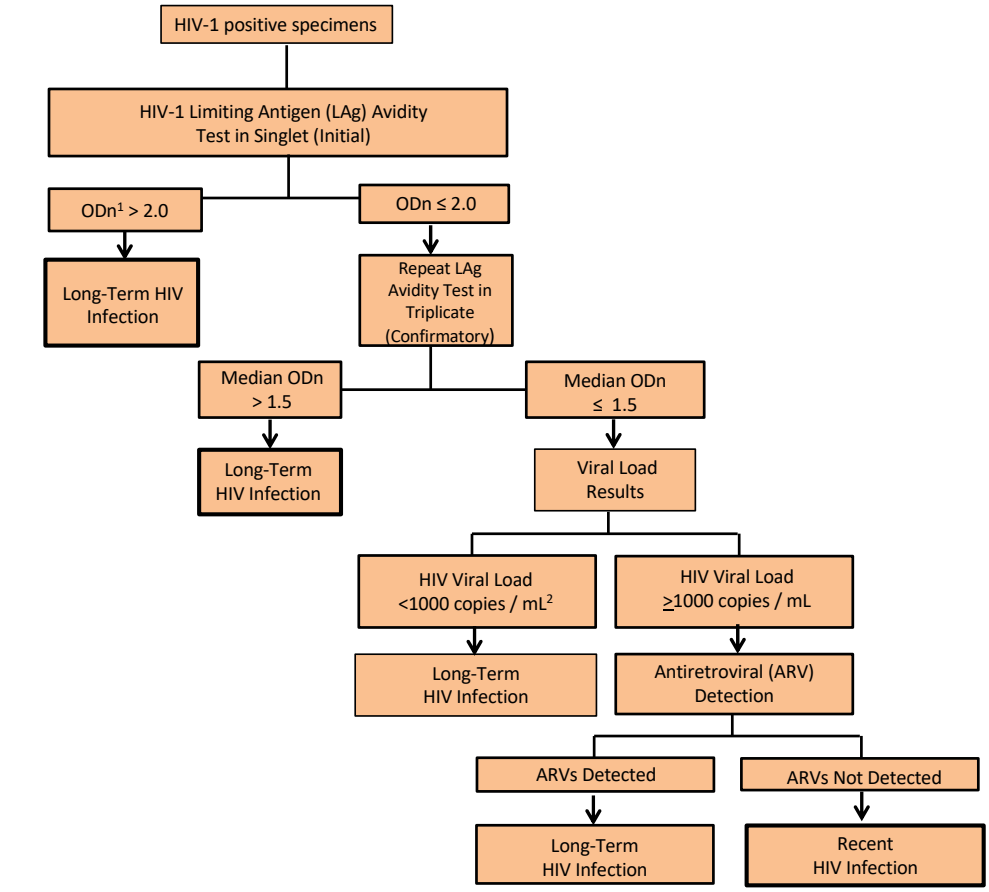
Figure B.3.C HIV-1 recent infection testing algorithm (LAg/VL algorithm), ages 18 months and older, UPHIA 2016-2017



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

In-depth details are provided in the UPHIA Technical Report, which may be found online on the PHIA Project website. Antiretroviral detection results were added to that algorithm for the second estimate (Figure B.3.D).

Figure B.3.D HIV-1 recent infection testing algorithm (LAg/VL/ARV algorithm), ages 18 months and older, UPHIA 2016-2017



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

The HIV recent infection testing algorithms were applied to repository specimens from all confirmed HIV-positive participants aged 18 months and older.

Limiting antigen 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. Samples with a median ODn < 0.4 were retested using the HIV diagnostic testing algorithm to confirm HIV-1 positive classification, and samples identified as HIV-1 negative were excluded from the total number of HIV positives and incorporated into the total number of negative specimens for incidence estimation.

Samples with a median ODn ≤ 1.5 were classified as potential HIV-recent infections, and their VL results were assessed. 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 if ARVs were not detected in their blood

HIV Incidence Estimation

HIV incidence estimation in Uganda has to account for the relatively high prevalence of HIV subtype D infections. Approximately 10% of HIV-positive samples from participants aged 15 years and older were selected for testing to determine the subtype distribution in the study population. This testing found that 20% of infections were subtype D, and 80% were subtype A. Since the MDRI, a key parameter for incidence estimation, varies by subtype, a Uganda-specific MDRI was calculated for UPHIA. This MDRI is a weighted average of the MDRIs for subtypes A and D:

$$MDRI_{Uganda} = W_A * MDRI_A + W_D * MDRI_D$$

where the *W*s and *MDRI*s are the proportions and MDRIs for each HIV subtype. For subtype A an MDRI of 130 days (95% CI 118-142 days) was used, consistent with previous PHIA surveys. For subtype D, an MDRI of 244 days (95% CI 166-326 days) was used, based on the mean of estimates from several sources, including CEPHIA, JHU, and CDC (unpublished data). The resulting weighted average MDRI for UPHIA incidence estimation is 153 days (95% CI 127-178 days).

Table 2.1.X 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, UPHIA 2016-2017

	Males				Females				Total			
Age	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	4855.99	41.01	41.01	4.50	6138.16	209.84	209.84	13.57	11008.37	236.63	236.63	17.37
25-34	2881.11	135.89	135.89	4.84	4149.14	448.86	448.86	12.32	7053.49	561.51	561.51	16.69
35-49	2616.36	323.64	323.64	7.06	3297.23	472.77	472.77	7.80	5917.50	792.50	792.50	14.95
15-49	10387.06	466.94	466.94	15.92	13617.33	1098.67	1098.67	33.63	24045.04	1524.96	1524.96	48.50
15-64	11773.53	580.47	580.47	20.24	15396.23	1273.77	1273.77	38.00	27210.74	1813.26	1813.26	57.35

[1]Weighted number; LAg: limiting antigen

Note: mean duration recent infection (MDRI) = 153 days (95% Confidence Interval [CI]: 127-178 days); proportion false recent (PFR) = 0.00; time cutoff (T) = 1 year

Weighted figures calculated using (normalized) btwt0.

Table 2.1.X Annual HIV incidence auxiliary data incorporating antiretroviral (ARV) detection into the recent infection algorithm: 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 LAg+VL+ARVs algorithm, UPHIA 2016-2017

	Males				Females				Total			
Age	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	4855.99	41.01	41.01	4.50	6138.16	209.84	209.84	11.99	11008.37	236.63	236.63	15.93
25-34	2881.11	135.89	135.89	4.19	4149.14	448.86	448.86	10.98	7053.49	561.51	561.51	14.73
35-49	2616.36	323.64	323.64	5.17	3297.23	472.77	472.77	3.63	5917.50	792.50	792.50	9.00
15-49	10387.06	466.94	466.94	13.58	13617.33	1098.67	1098.67	26.77	24045.04	1524.96	1524.96	39.62
15-64	11773.53	580.47	580.47	17.33	15396.23	1273.77	1273.77	29.45	27210.74	1813.26	1813.26	46.27

[1]Weighted number; LAg: limiting antigen

Note: mean duration recent infection (MDRI) = 153 days (95% Confidence Interval [CI]: 127-178 days); proportion false recent (PFR) = 0.00; time cutoff (T) = 1 year

Weighted figures calculated using (normalized) btwt0.

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.[2] Three ARVs, two NNRTIs, efavirenz and nevirapine, and one protease inhibitors (PI), lopinavir, were used as markers for both first- and second-line regimens, based on Uganda's national treatment guidelines. 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 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 cutoff 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. Testing was conducted at the University of Cape Town in South Africa.

Genotyping for Detection of Antiretroviral Drug Resistance and HIV Subtyping

To determine the extent of transmitted HIV-1 drug resistance mutations among participants in UPHIA 2016-2017, samples from confirmed HIV-positive participants less than the age of 18 months; HIV-positive participants aged 18 months or older who were classified as recent infections; and an equal or greater number of those who were classified as long-term infections, were evaluated using a TaqMan® SNP Single Nucleotide Polymorphisms Genotyping Assay (Applied Biosystems) to identify mutations within the HIV-1 polymerase (*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® (bioMérieux, Marcy-L'Etoile, France) platform. The HIV *pol* gene was amplified by one-step reverse transcription PCR, which was followed by nested PCR. Sequencing of the approximately one-kilobase amplicons was performed on the ABI 3730 DNA Analyzer (Applied Biosystems).[2,3,4]

The customized RECall software program was used to edit raw sequences and generate consensus sequences.[5] 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.[6] 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 has been established at 1000 copies/mL for plasma and DBS.[7] Sequences were also analyzed for potential cross-contamination by phylogenetic analysis from codon 6 of the protease gene to codon 251 of the reverse transcriptase gene.

Subtyping of each sample was performed using the REGA HIV-1 & 2 Automated Subtyping Tool.[8,9,10] This BioAfrica viral subtyping tool is designed to use phylogenetic methods in order to identify the HIV-1 subtype of a specific sequence. The sequence was analyzed for recombination using bootscanning methods.

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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 (e.g., misinterpretation of an HIV test result) and data management (e.g., transcription errors in data entry). While UPHIA 2016-2017 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 UPHIA 2016-2017 was 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 (e.g., proportion, mean, rate, count). In turn, the standard error can be used to calculate CIs, within which it can reasonably be assumed the true value for the population will 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 percent of all possible samples of identical size and design.

UPHIA 2016-2017 utilized a multi-stage stratified sample design, which requires complex calculations to obtain sampling errors. Specifically, a variant of the Jackknife replication method was implemented in SAS to estimate variance for proportions (e.g., HIV prevalence), rates (e.g., annual HIV incidence), and counts (e.g., numbers of PLHIV). Each replication considered all but one cluster in the calculation of the estimates. Pseudo-independent replications were thus created. In UPHIA 2016-2017, 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 258 variance-estimation strata were created by pairing (or occasionally tripling) the sample clusters in the systematic order in which they were selected. Hence, 258 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 y_k 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 standard error using the given sample design to the standard error 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, were 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, are also computed.

Sampling errors for selected variables from UPHIA are presented in Tables C.1 through C.8. For each variable, sampling error tables include the weighted estimate, unweighted denominator, standard error, design effect, and lower and upper 95 percent confidence limits.

Table C.1 Sampling errors: Annual HIV incidence by age, UPHIA 2016-2017

Age (years)	Weighted estimate (%)	Design effect	Lower confidence limit (%)	Upper confidence limit (%)
		TOTAL		
15-24	0.34	1.16	0.17	0.52
25-34	0.50	0.90	0.23	0.76
35-49	0.36	1.37	0.12	0.60
15-49	0.39	1.23	0.26	0.53
15-64	0.40	1.37	0.27	0.54
		MALE		
15-24	0.22	1.16	0.02	0.42
25-34	0.35	1.17	0.01	0.68
35-49	0.47	1.39	0.06	0.88
15-49	0.31	1.21	0.14	0.48
15-64	0.35	1.39	0.18	0.52
		FEMALE		
15-24	0.46	1.22	0.20	0.73
25-34	0.63	1.24	0.25	1.01
35-49	0.26	1.25	0.00	0.53
15-49	0.47	1.10	0.28	0.66
15-64	0.46	1.10	0.28	0.63

Table C.2 Sampling errors: HIV prevalence by age, UPHIA 2016-2017

Age	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
			TOTAL		
0-17 months	1.0	1,827	0.29	0.38	1.55
18-59 months	0.4	4,700	0.09	0.19	0.57
5-9	0.4	2,087	0.15	0.10	0.72
10-14	0.7	1,731	0.26	0.16	1.24
Total 0-4	0.5	6,527	0.11	0.33	0.76
Total 5-14	0.5	3,818	0.16	0.21	0.88
Total 0-14	0.5	10,345	0.11	0.33	0.76
15-19	1.1	6,123	0.17	0.79	1.48
20-24	3.3	5,122	0.30	2.68	3.92
25-29	6.3	4,211	0.45	5.41	7.25
30-34	8.7	3,404	0.52	7.64	9.76
35-39	11.2	2,716	0.68	9.77	12.57
40-44	11.4	2,166	0.85	9.65	13.13
45-49	13.4	1,828	0.82	11.69	15.05
50-54	10.1	1,473	0.95	8.14	12.05
55-59	9.2	998	1.03	7.05	11.29
60-64	6.2	983	0.84	4.44	7.91
Total 15-24	2.1	11,245	0.16	1.78	2.43
Total 15-49	6.0	25,570	0.21	5.52	6.41
Total 50-64	8.8	3,454	0.57	7.67	10.02
Total 15-64	6.2	29,024	0.21	5.83	6.67
			MALE		
0-17 months	0.8	930	0.36	0.08	1.54
18-59 months	0.3	2,331	0.12	0.09	0.60
5-9	0.2	1,015	0.18	0.00	0.60
10-14	0.3	845	0.27	0.00	0.90
Total 0-4	0.5	3,261	0.13	0.20	0.75
Total 5-14	0.3	1,860	0.16	0.00	0.61
Total 0-14	0.4	5,121	0.11	0.13	0.58
15-19	0.5	2,834	0.13	0.20	0.73
20-24	1.3	2,063	0.30	0.71	1.93
25-29	3.7	1,637	0.49	2.68	4.72
30-34	5.5	1,380	0.62	4.24	6.79
35-39	9.2	1,143	0.95	7.27	11.18
40-44	10.8	952	1.11	8.56	13.13
45-49	14.0	845	1.25	11.38	16.54
50-54	9.7	610	1.32	6.98	12.41
55-59	8.9	439	1.54	5.78	12.10
60-64	5.3	451	1.00	3.22	7.34
Total 15-24	0.8	4,897	0.15	0.53	1.15
Total 15-49	4.3	10,854	0.21	3.88	4.72
Total 50-64	8.4	1,500	0.73	6.92	9.93
Total 15-64	4.7	12,354	0.20	4.30	5.10
			FEMALE		
0-17 months	1.1	897	0.46	0.18	2.09
18-59 months	0.4	2,369	0.14	0.13	0.70
5-9	0.6	1,072	0.25	0.08	1.10
10-14	1.1	886	0.45	0.14	2.00
Total 0-4	0.6	3,266	0.16	0.27	0.95
Total 5-14	0.8	1,958	0.29	0.22	1.42
Total 0-14	0.7	5,224	0.19	0.36	1.12
15-19	1.8	3,289	0.30	1.18	2.42
20-24	5.1	3,059	0.45	4.18	6.02
25-29	8.5	2,574	0.66	7.13	9.87

Table C.2 Sampling errors: HIV prevalence by age, UPHIA 2016-2017 (continued)

Age	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
			FEMALE		
30-34	11.4	2,024	0.79	9.75	13.00
35-39	12.9	1,573	0.97	10.90	14.88
40-44	11.9	1,214	1.11	9.61	14.16
45-49	12.8	983	1.14	10.47	15.15
50-54	10.5	863	1.22	7.94	12.97
55-59	9.4	559	1.47	6.33	12.39
60-64	6.9	532	1.30	4.23	9.58
Total 15-24	3.3	6,348	0.25	2.80	3.82
Total 15-49	7.5	14,716	0.30	6.85	8.08
Total 50-64	9.2	1,954	0.77	7.63	10.80
Total 15-64	7.6	16,670	0.28	7.07	8.22

Table C.3 Sampling errors: HIV prevalence by residence and provinces, ages 15-64 years, UPHIA 2016-2017

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
			TOTAL		
Residence					
Urban	7.5	7,846	0.40	6.66	8.30
Rural	5.8	21,178	0.25	5.24	6.26
Region					
Central 1	8.0	2,672	0.67	6.58	9.34
Central 2	7.6	2,239	0.71	6.11	9.02
Kampala	6.9	2,289	0.63	5.56	8.15
East Central	4.7	2,979	0.34	3.98	5.38
Mid-East	5.1	4,214	0.53	4.02	6.21
North East	3.7	3,511	0.34	3.02	4.44
West Nile	3.1	3,985	0.29	2.52	3.73
Mid-North	7.2	2,335	0.58	6.02	8.42
Mid-West	5.7	2,504	0.52	4.67	6.80
South West	7.9	2,296	1.00	5.84	9.95
			MALE		
Residence					
Urban	4.6	3,155	0.40	3.82	5.45
Rural	4.7	9,199	0.24	4.23	5.22
Region					
Central 1	6.4	1,102	0.66	5.07	7.79
Central 2	5.8	935	0.66	4.45	7.17
Kampala	3.5	911	0.58	2.29	4.69
East Central	3.3	1,276	0.39	2.46	4.06
Mid-East	4.1	1,795	0.50	3.11	5.17
North East	2.9	1,523	0.43	2.04	3.81
West Nile	2.3	1,650	0.27	1.78	2.87
Mid-North	5.4	1,082	0.67	4.03	6.81
Mid-West	4.2	1,125	0.51	3.11	5.22
South West	6.3	955	0.95	4.31	8.22
			FEMALE		
Residence					
Urban	9.8	4,691	0.52	8.77	10.91
Rural	6.7	11,979	0.32	6.05	7.38
Region					
Central 1	9.3	1,570	0.90	7.42	11.14
Central 2	9.1	1,304	0.90	7.23	10.95
Kampala	9.7	1,378	0.82	7.99	11.35
East Central	5.9	1,703	0.46	4.98	6.89
Mid-East	6.0	2,419	0.65	4.65	7.32
North East	4.5	1,988	0.54	3.36	5.57
West Nile	3.8	2,335	0.48	2.82	4.78
Mid-North	9.1	1,253	0.96	7.13	11.07

Table C.3 Sampling errors: HIV prevalence by residence and provinces, ages 15-64 years, UPHIA 2016-2017 (continued)					
Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
			FEMALE		
Region					
Mid-West	7.3	1,379	0.71	5.81	8.74
South West	9.3	1,341	1.19	6.84	11.74

Table C.4 Sampling errors: Viral load suppression by age, UPHIA 2016-2017					
Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
			TOTAL		
0-14	39.3	50	10.37	17.95	60.66
15-24	42.5	232	3.71	34.89	50.17
25-34	52.6	523	2.51	47.43	57.77
35-44	63.1	504	2.14	58.73	67.53
45-54	74.1	366	2.58	68.82	79.44
55-64	72.0	147	3.92	63.88	80.03
Total 15-49	57.4	1,488	1.54	54.28	60.62
Total 50-64	73.0	284	2.73	67.43	78.67
Total 15-64	59.6	1,772	1.39	56.77	62.48
			MALE		
0-14	*	18	15.62	0.00	59.80
15-24	32.5	39	7.51	17.07	48.01
25-34	38.7	126	5.25	27.94	49.56
35-44	54.7	185	3.74	46.97	62.37
45-54	70.2	157	4.11	61.74	78.65
55-64	60.7	63	6.67	46.96	74.42
Total 15-24	51.3	454	2.71	45.68	56.85
Total 15-49	65.0	116	4.87	55.00	75.04
Total 15-64	53.6	570	2.35	48.80	58.48
			FEMALE		
0-14	45.1	32	12.69	18.97	71.23
15-24	44.9	193	4.07	36.54	53.32
25-34	57.9	397	2.75	52.25	63.59
35-44	69.2	319	2.56	63.92	74.45
45-54	77.9	209	3.06	71.63	84.21
45-54	80.3	84	4.47	71.06	89.48
Total 15-24	60.7	1,034	1.72	57.13	64.21
Total 15-49	79.4	168	3.04	73.13	85.66
Total 15-64	62.9	1,202	1.54	59.76	66.11

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Table C.5 Sampling errors: Viral load suppression by residence and province, ages 15-64 years, UPHIA 2016-2017

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
			TOTAL		
Residence					
Urban	60.0	618	2.14	55.6	64.4
Rural	59.4	1,154	1.79	55.7	63.1
Region				0.0	0.0
Central 1	64.2	229	4.11	55.7	72.7
Central 2	56.9	183	3.75	49.1	64.6
Kampala	62.1	170	4.19	53.5	70.7
East Central	48.8	153	3.13	42.3	55.2
Mid-East	52.9	230	4.11	44.5	61.4
North East	70.0	145	4.63	60.4	79.5
West Nile	60.5	137	4.87	50.5	70.6
Mid-North	54.6	183	4.43	45.5	63.7
Mid-West	55.3	155	4.44	46.2	64.5
South West	68.0	187	3.76	60.3	75.8
			MALE		
Residence					
Urban	59.7	157	4.38	50.7	68.8
Rural	51.4	413	2.71	45.8	57.0
Region				0.0	0.0
Central 1	59.3	76	5.19	48.6	70.0
Central 2	51.5	60	6.14	38.8	64.1
Kampala	56.6	35	9.74	36.6	76.7
East Central	57.3	49	5.92	45.1	69.5
Mid-East	47.3	80	6.00	34.9	59.6
North East	59.7	50	8.57	42.1	77.4
West Nile	54.4	43	6.48	41.1	67.8
Mid-North	37.9	64	7.74	22.0	53.9
Mid-West	50.4	50	7.56	34.8	65.9
South West	62.4	63	6.61	48.7	76.0
			FEMALE		
Residence					
Urban	60.1	461	2.37	55.3	65.0
Rural	64.7	741	2.04	60.5	68.9
Region				0.0	0.0
Central 1	67.1	153	5.10	56.6	77.6
Central 2	59.9	123	4.03	51.6	68.2
Kampala	63.8	135	3.89	55.8	71.8
East Central	44.7	104	4.04	36.3	53.0
Mid-East	56.5	150	4.63	46.9	66.0
North East	76.2	95	4.91	66.0	86.3
West Nile	63.7	94	5.48	52.4	75.0
Mid-North	65.0	119	4.53	55.7	74.3
Mid-West	58.1	105	5.06	47.7	68.5
South West	71.3	124	3.73	63.6	79.0

Table C.6 Sampling errors: Antiretroviral (ARV)-adjusted 90-90-90 by age (conditional percentages), UPHIA 2016-2017

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
			TOTAL		
			Diagnosed		
15-24	48.0	231	3.58	40.6	55.3
25-34	67.6	523	2.18	63.1	72.1
35-49	80.7	732	1.64	77.3	84.1
15-49	70.5	1,486	1.35	67.8	73.3
15-59	72.5	1,769	1.20	70.1	75.0
			On Treatment		
15-24	92.5	112	2.59	87.2	97.9
25-34	88.0	362	1.74	84.4	91.5
35-49	90.0	593	1.55	86.8	93.1
15-49	89.6	1,067	1.11	87.3	91.8
15-59	90.4	1,305	0.97	88.4	92.4
			Viral Load Suppression		
15-24	74.7	103	4.39	65.7	83.7
25-34	81.8	317	2.50	76.6	86.9
35-49	85.9	542	1.63	82.5	89.2
15-49	83.2	962	1.28	80.6	85.8
15-59	83.7	1,185	1.11	81.4	85.9
			MALE		
			Diagnosed		
15-24	26.5	39	6.87	12.4	40.7
25-34	54.7	126	4.84	44.7	64.6
35-49	74.6	289	2.79	68.9	80.4
15-49	64.3	454	2.31	59.5	69.1
15-59	67.3	570	2.04	63.1	71.5
			On Treatment		
15-24	*	12	12.00	59.1	100.0
25-34	77.1	68	5.89	65.0	89.3
35-49	88.9	214	2.41	83.9	93.9
15-49	85.8	294	2.36	80.9	90.6
15-59	86.9	388	1.92	83.0	90.9
			Viral Load Suppression		
15-24	*	10	16.26	22.0	88.9
25-34	74.4	51	7.31	59.4	89.5
35-49	84.3	193	3.09	77.9	90.7
15-49	81.0	254	2.83	75.2	86.8
15-59	81.5	339	2.40	76.6	86.5
			FEMALE		
			Diagnosed		
15-24	53.1	192	3.96	45.0	61.3
25-34	72.5	397	2.34	67.7	77.3
35-49	85.5	443	1.85	81.7	89.3
15-49	73.8	1,032	1.54	70.6	77.0
15-59	75.4	1,199	1.42	72.5	78.3
			On Treatment		
15-24	93.6	100	2.55	88.4	98.8
25-34	91.1	294	1.62	87.8	94.4
35-49	90.7	379	1.82	86.9	94.4
15-49	91.3	773	1.21	88.8	93.8
15-59	92.1	917	1.07	89.9	94.3
			Viral Load Suppression		
15-24	76.8	93	4.70	67.1	86.5
25-34	83.6	266	2.43	78.6	88.6
35-49	87.0	349	1.79	83.3	90.7
15-49	84.1	708	1.50	81.0	87.2
15-59	84.7	846	1.30	82.0	87.3

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed.

Table C.7 Sampling errors: Antiretroviral (ARV)-adjusted 90-90-90 by age (unconditional percentages), UPHIA 2016-2017

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Lower confidence limit (%)	Upper confidence limit (%)
			TOTAL		
			Diagnosed		
15-24	48.0	231	3.6	40.6	55.3
25-34	67.6	523	2.2	63.1	72.1
35-49	80.7	732	1.6	77.3	84.1
15-49	70.5	1,486	1.4	67.8	73.3
15-59	72.5	1,769	1.2	70.1	75.0
			On Treatment		
15-24	44.4	231	3.6	37.0	51.8
25-34	59.4	523	2.3	54.7	64.2
35-49	72.6	732	1.8	68.8	76.4
15-49	63.2	1,486	1.4	60.2	66.1
15-59	65.5	1,769	1.3	62.9	68.1
			Viral Load Suppression		
15-24	33.2	231	3.6	25.7	40.6
25-34	48.6	523	2.4	43.6	53.6
35-49	62.3	732	2.0	58.3	66.4
15-49	52.6	1,486	1.5	49.4	55.7
15-59	54.8	1,769	1.4	52.0	57.7
			MALE		
			Diagnosed		
15-24	26.5	39	6.9	12.4	40.7
25-34	54.7	126	4.8	44.7	64.6
35-49	74.6	289	2.8	68.9	80.4
15-49	64.3	454	2.3	59.5	69.1
15-59	67.3	570	2.0	63.1	71.5
			On Treatment		
15-24	22.2	39	6.4	41.4	58.1
25-34	42.2	126	5.1	61.1	71.0
35-49	66.3	289	2.8	73.0	82.1
15-49	55.2	454	2.4	64.0	70.7
15-59	58.5	570	2.0	66.3	72.5
			Viral Load Suppression		
15-24	12.3	39	5.3	1.5	23.1
25-34	31.4	126	4.7	21.7	41.1
35-49	55.9	289	3.1	49.6	62.3
15-49	44.7	454	2.5	39.5	49.9
15-59	47.7	570	2.3	43.0	52.4
			Female		
			Diagnosed		
15-24	53.1	192	4.0	45.0	61.3
25-34	72.5	397	2.3	67.7	77.3
35-49	85.5	443	1.8	81.7	89.3
15-49	73.8	1,032	1.5	70.6	77.0
15-59	75.4	1,199	1.4	72.5	78.3
			On Treatment		
15-24	49.7	192	4.0	9.0	35.4
25-34	66.0	397	2.4	31.7	52.6
35-49	77.6	443	2.2	60.5	72.2
15-49	67.4	1,032	1.6	50.3	60.0
15-59	69.4	1,199	1.5	54.3	62.7
			Viral Load Suppression		
15-24	38.2	192	4.1	29.6	46.7
25-34	55.2	397	2.7	49.6	60.8
35-49	67.5	443	2.3	62.6	72.3
15-49	56.7	1,032	1.8	53.0	60.3
15-59	58.8	1,199	1.6	55.5	62.1

Table C.8 Sampling errors: Number of new infections annually and number of people living with HIV, ages 15-64 years, UPHIA 2016-2017

	Weighted estimate	Standard error	Lower confidence limit	Upper confidence limit
Number of new infections annually	72,619	13,818	44,104	101,133
Number of people living with HIV	1,195,299	39,157	1,114,498	1,276,101

APPENDIX D SURVEY PERSONNEL

Ministry of Health

Fred Bateganya
Teddy Chimulwa
Bakunda Kamaranzi
Wilford Kirungi
Noordin Mulumba
Joshua Musinguzi
Emmy B.Muramuzi
Mina Nakawuka
Norah Namuwenge
Michael Muyonga
Alex Opio
Geofrey Taasi

ICAP at Columbia University- New York

Hannah Chung
Stephen Delgado
Noelle Esquire
Mansoor Farahani
Sally Findley
Jessica Justman
David Hoos
Curran Kennedy
Kiwon Lee
Andrea Low
Oren Mayer
Melissa Metz
Natasha McLeod
Jill Pace
Kristina Parkins
Neena Philip
Yen Pottinger
Elizabeth Radin
Suzue Saito
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Dorothy Aibo
Harriet Aryam
Gershim Asiki
Samuel Biraro
Andrew Kabala
Brian Kagurusi
Sophie Nalutaaya
Peter Nkurunziza
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Herbert Mulindwa
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Takura Kupamupindi
Herbert Longwe
Oliver Murangandi
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Robert Domaoal
Wolfgang Hladik
Steve Kinchen
William Levine
Steve McCracken
Carin Molchan
Carole Moore
Edith Nyakaana Nyangoma
Katina Pappas-Deluca
Bharat Parekh
Hetal Patel
Laura Porter
Kat Sleeman
Paul Stupp
Drew Voetsch
Christine West
Daniel Yavo

CDC Uganda

Anna C Awor
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Daisy Duru-Iheoma
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Herbert Kiyingi
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Aminah Nalumansi
Christine Watera

Uganda AIDS Commission

Zepher Karyabakabo
Carol Nakkazi

Ministry of Gender Labour and Social Development

Sayyid Bukenya

UN agencies

Kaggwa Mugagga (WHO)
Elizabeth Mushabe (UN Women)
Jotham Mubangizi (UNAIDS)

APPENDIX E HOUSEHOLD QUESTIONNAIRE

MODULE 1: HOUSEHOLD ROSTER

Interviewer says: "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."

NO.	VARIABLE NAME	QUESTION	CODING CATEGOTIES	SKIP PATTERNS	SKIP TO
1	HHRADD	Add a new "HH MEMBER" group?	Do not add =1 Add group =2	HHRADD=1	HHRINS3
2	HHRNAME*	Name [INSERT SERIAL NUMBER]	text		
3	HHRREL*	What is the relationship of [HHRNAME*] to the head of the household?	HEAD =1 WIFE/HUSBAND/PARTNER =2 SON OR DAUGHTER =3 SON-IN-LAW/DAUGHTER-IN-LAW =4 GRANDCHILD =5 PARENT =6 PARENT-IN-LAW =7 BROTHER/SISTER =8 CO-WIFE =9 OTHER RELATIVE =10 ADOPTED/FOSTER/STEPCHILD =11 NOT RELATED =12 DON'T KNOW =-8		
4	HHRGEND*	Is [HHRNAME*] male or female?	MALE =1 FEMALE =2		
5	HHRRES*	Does [HHRNAME*] usually live here?	YES =1 NO =2		
6	HHRSLEEP*	Did [HHRNAME*] sleep here last night?	YES =1 NO =2		
7	HHRAGEY*	How old is [HHRNAME*] in years? IF [HHRNAME*] IS LESS THAN 1 YEAR OLD, KEY 0 HERE AND KEY AGE IN MONTHS ON NEXT SCREEN.	AGE IN YEARS =integer	IF HHRAGEY*> =1 & HHRAGEY* <7 IF HHRAGEY* >7 & HHRAGEY < [INSERT AGE LEGAL ADULTHOOD] IF HHRAGEY*> [INSERT AGE LEGAL ADULTHOOD]	HHRAGEF* HHREMAN* HHRADD
8	HHRAGEM*	How old is [HHRNAME*] in months?	AGE IN MONTHS =integer	ALL	HHRADD
9	HHRAGEF*	You said that [HHRNAME*] was [HHRAGEY*]. How many months over [HHRAGEY*] is [HHRNAME*]?	MONTHS OVER =integer	ALL	HHRADD
10	HHREMAN*	Is [HHRNAME*] emancipated? Emancipated minors are defined as individuals (aged 15-17 years) who are married, pregnant or parents, or who are guardians of children aged 0-4 years, or whose legal guardian/parents died.	YES =1 NO =2	SKIP IF HHRAGEY* < 15 or HHRAGEY* > 17	
11	HHQSICK*	Has [HHRNAME*] been very sick for at least 3 months during the past 12 months, that is [HHRNAME*] was too sick to work or do normal activities?	YES =1 NO =2 DON'T KNOW =-8	SKIP IF HHRAGEY* < 18 or HHRAGEY* > 64	

NO.	VARIABLE NAME	QUESTION	CODING CATEGOTIES	SKIP PATTERNS	SKIP TO
Interviewer says: "Thank you for completing the Household Roster. The next step will be to ask some confirmation questions."					
12	HHRCONF1	Just to make sure I have complete listing, are there any other persons such as small children or infants that we have not listed? IF NEW PERSONS ARE IDENTIFIED, SWIPE BACK TO THE ROSTER AND ADD THOSE NEW PEOPLE.	No more persons; no more children =button		
13	HHRCONF2	Are there any other people who may not be members of your household such as domestic servants, lodgers, or friends who usually live here? IF NEW PERSONS ARE IDENTIFIED, SWIPE BACK TO THE ROSTER AND ADD THOSE NEW PEOPLE.	No more servants, lodgers or friends =button		
14	HHRCONF3	Are there any guests or temporary visitors staying here, or anyone else who stayed here last night who we have not seen? IF NEW PERSONS ARE IDENTIFIED, SWIPE BACK TO THE ROSTER AND ADD THOSE NEW PEOPLE.	No more guests, visitors, or others who stayed last night =button		
15	HHRINS3	Thank you for confirming the Household Roster is complete. The next step will be to answer some additional questions for the Household Members who are 0-[INSERT LEGAL AGE OF ADULTHOOD] years old. Respondent To Household Questionnaire Who responded to this household questionnaire? Please select from list of people on the roster. If the respondent is not on this list, please go back and add them to the roster.	*SELECT 'NO' ONLY IF THE PARTICIPANT HAS EXPRESSED HE/SHE DOES NOT WISH TO CONTINUE ON WITH THE SURVEY.* *[LIST MALES AND FEMALES FROM HOUSEHOLD]*		
16	HHRCONT	CONTINUE TO THE NEXT ITEM? SELECT 'NO' ONLY IF THE PARTICIPANT HAS EXPRESSED HE/SHE DOES NOT WISH TO CONTINUE ON WITH THE SURVEY.	YES =1 NO =2	IF HHRCONT=2	HH REFUSAL OR WITHDRAWAL FORM

MODULE 2: HOUSEHOLD ROSTER (FOR MINORS)					
Interviewer says: "These questions are regarding [HHRNAME*]"					
17	HHCMALIVE*	Is [HHRNAME*]'s natural mother alive?	YES =1 NO =1 DON'T KNOW =-8	IF HHCMALIVE*= 2,-8	HHCFG*
18	HHCMRES*	Does [HHRNAME*] 's natural mother usually live in this household or was a guest last night?	YES =1 NO =1	IF HHCMRES*=2	HHCFG*
19	HHCMSEL*	PLEASE SELECT [HHRNAME*]'S NATURAL MOTHER FROM THE LIST OF HOUSEHOLD MEMBERS BELOW.	[LIST FEMALES FROM HOUSEHOLD WITH (HHRAGEY*>=18) OR (HHRAGEY*<18 AND HHREMAN*=1)] =list		
20	HHCFG*	Does [HHRNAME*] have a female guardian who usually lives in this household or was a guest last night?	YES =1 NO =1	IF HHCFG*=2	HHCFALIVE*

NO.	VARIABLE NAME	QUESTION	CODING CATEGOTIES	SKIP PATTERNS	SKIP TO
21	HHCFGSEL*	PLEASE SELECT [HHRNAME*]'S FEMALE GUARDIAN FROM THE LIST OF HOUSEHOLD MEMBERS BELOW.	[LIST FEMALES FROM HOUSEHOLD WITH (HHRAGEY*>=18) OR (HHRAGEY*<18 AND HHREMAN*=1)]		
22	HHCFALIVE*	Is [HHRNAME*]'s natural father alive?	YES =1 NO =1 DON'T KNOW =-8	IF HHCFALIVE*=2, -8	HHCMG*
23	HHCFRES*	Does [HHRNAME*] 's natural father usually live in this household or was a guest last night?	YES =1 NO =1	IF HHCFRES*=2	HHCMG*
24	HHCFSEL*	PLEASE SELECT [HHRNAME*]'S NATURAL FATHER FROM THE LIST OF HOUSEHOLD MEMBERS BELOW.	[LIST MALES FROM HOUSEHOLD WITH (HHRAGEY*>=18) OR (HHRAGEY*<18 AND HHREMAN*=1)] =list		
25	HHCMG*	Does [HHRNAME*] have a male guardian who usually lives in this household or was a guest last night?	YES =1 NO =1	IF HHCMG*=2	HHCMODSEL*
26	HHCMGSEL*	PLEASE SELECT [HHRNAME*]'S MALE GUARDIAN FROM THE LIST OF HOUSEHOLD MEMBERS BELOW.	[LIST MALES FROM HOUSEHOLD WITH (HHRAGEY*>=18) OR (HHRAGEY*<18 AND HHREMAN*=1)] =list		
27	HHCMODSEL*	SELECT AN ELIGIBLE ADULT WHO WILL FILL OUT CHILDREN'S MODULE FOR [HHRNAME*]	[LIST MALES AND FEMALES FROM HOUSEHOLD WITH (18<=HHRAGEY*<=64) OR (HHRAGEY*<18 AND HHREMAN*=1)] =list	SKIP IF HHRAGEY*>18 or HHREMAN* = 1	
THE CHILDREN'S MODULE WILL ASK QUESTIONS ABOUT [HHRNAME*] IN THE ADULT QUESTIONNAIRE. THE SELECTED ADULT SHOULD BE SOMEONE WHO KNOWS [HHRNAME*].					
28	HHCCONSEL*	SELECT AN ADULT WHO CAN PROVIDE CONSENT OR GIVE PERMISSION FOR [HHRNAME*] TO PARTICIPATE IN THE SURVEY.	[LIST MALES AND FEMALES FROM HOUSEHOLD WITH (HHRAGEY*>=18) OR (HHRAGEY*<18 AND HHREMAN*=1)] =list	SKIP IF HHRAGEY*>18 or HHREMAN* = 1 IF HHCCONSEL* ! = NONE IF HHCCONSEL* = NONE	 HHQSICK* HHCEMANC*
29	HHCEMANC*	You said that there is no adult in the household who can provide consent or permission for [HHRNAME*]. Is this correct?	YES =1 NO =2	IF HHCEMANC* =1	END OF SURVEY FOR [HHRNAME*]
30	HHQMSICK*	Has [HHRNAME*]'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?	YES =1 NO =2 DON'T KNOW =-8	IF HHQMSICK* = 2, -8	HHQFSICK*
31	HHQMHIV*	Does [HHRNAME*]'s natural mother have HIV/AIDS?	YES =1 NO =2 DON'T KNOW =-8		
32	HHQFSICK*	Has [HHRNAME*]'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?	YES =1 NO =2 DON'T KNOW =-8	IF HHQFSICK* = 2, -8 IF HHQFSICK* = 2, -8 & HHQMSICK*=1	display message before HHCCONT HHQOVCINS1
33	HHQFHIV*	Does [HHRNAME*]'s natural father have HIV/AIDS?	YES =1 NO =2 DON'T KNOW =-8	ALL RESPONSES	HHQOVCINS1

NO.	VARIABLE NAME	QUESTION	CODING CATEGOTIES	SKIP PATTERNS	SKIP TO
MODULE 3: OVC QUESTIONS					
Interviewer says: "I would now 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."					
34	HHQSUPP12	Now I would like to ask you about the support your household received for [HHRNAME*]. In the last 12 months, has your household received any medical support for [HHRNAME*], such as medical care, supplies or medicine, for which you did not have to pay?	YES =1 NO =2 DON'T KNOW =-8		
35	HHQPSYCH12	In the last 12 months, has your household received any emotional or psychological support for [HHRNAME*], such as companionship, counseling from a trained counselor, or spiritual support, which you received at home and for which you did not have to pay?	YES =1 NO =2 DON'T KNOW =-8	IF HHQPSYCH12= 2,-8	HHQMATER12
36	HHQPSYCH3	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		
37	HHQMATER12	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	IF HHQMATER12 =2,-8	HHQSOCIAL12
38	HHQMATER3	Did your household receive any of this material support for (NAME) in the past 3 months?	YES =1 NO =2 DON'T KNOW =-8		
39	HHQSOCIAL12	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	IF HHQSOCIAL12 =2.-8	HHQSCHOOL12
40	HHQSOCIAL3	Did your household receive any of this social support for (NAME) in the past 3 months?	YES =1 NO =2 DON'T KNOW =-8		
41	HHQSCHOOL12	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		
Interviewer says: "Thank you for completing the questions regarding the Household members who are 0-[INSERT AGE OF LEGAL ADULTHOOD] years old. The next step will be to answer some additional questions regarding the men who live in the household."					
42	HHCCONT	*CONTINUE TO THE NEXT ITEM? SELECT 'NO' ONLY IF THE PARTICIPANT HAS EXPRESSED HE/SHE DOES NOT WISH TO CONTINUE ON WITH THE SURVEY.*	YES =1 NO =2	IF HHCCONT=2	HH REFUSAL OR WITHDRAWAL FORM

MODULE 5: HOUSEHOLD SPOUSES/LIVE-IN PARTNERS					
43	HHPM*	Does [HHRNAME*] have a spouse or co-habitating partner who usually lives in the household or was a guest last night?	YES =1 NO =2	SKIP IF HHRGEND* = 2 IF HHPM*=2	
43	HHPMNUM*	How many spouses or co-habitating partners (those who usually live in the household or stayed here last night) does [HHRNAME*] have?	NUMBER OF PARTNERS =integer	SKIP IF HHRGEND* = 2	

NO.	VARIABLE NAME	*QUESTION*	CODING CATEGOTIES	SKIP PATTERNS	SKIP TO
44	HHPMSEL*	*SELECT [HHRNAME*]'S [# SPOUSE] OR PARTNER FROM THE LIST BELOW*	[LIST OF ALL ADULTS AND EMANCIPATED MINORS FROM HOUSEHOLD] =list	SKIP IF HHRGEND* = 2	
Interviewer says: "Thank you for completing the questions for the household's men. The next step will be to complete some additional questions for the women of the household."					
45	HHPF*	Does [HHRNAME*] have a spouse or co-habitating partner who usually lives in the household or was a guest last night?	YES =1 NO =2	SKIP IF HHRGEND* = 1 IF HHPF* = 2	 HHPFINS
46	HHPFSEL*	*SELECT [HHRNAME*]'S [# SPOUSE] OR PARTNER FROM THE LIST BELOW*	[LIST OF ALL ADULTS AND EMANCIPATED MINORS FROM HOUSEHOLD] =list	SKIP IF HHRGEND* = 1	
Interviewer says: "Thank you for completing the questions for the household's women. The next step will be to complete some additional questions regarding the household itself."					
47	HHPCONT	*CONTINUE TO THE NEXT ITEM? SELECT 'NO' ONLY IF THE PARTICIPANT HAS EXPRESSED HE/SHE DOES NOT WISH TO CONTINUE ON WITH THE SURVEY.*	YES =1 NO =2	IF HHPCONT=2	HH REFUSAL OR WITHDRAWAL FORM
MODULE 5: DEATHS IN THE HOUSEHOLD					
Interviewer says: "Now I would like to ask you some more questions about your household."					
48	HHQRESDTH	Has any usual resident of your household died since January 1, [INSERT CURRENT YEAR -2]?	YES =1 NO =2	IF HHQRESDTH = 2	HHQINSHH
49	HHQNUMDTH	How many usual household residents died since January 1, [INSERT CURRENT YEAR -2]?	NUMBER OF DEATHS =integer		
50	HHQDTHNAM*	What was the name of the person who died (most recently/before him/her)?	text		
51	HHQDTHDT*	When did [HHQDTHNAM*] die? Please give your best guess.	YEAR =integer DON'T KNOW YEAR =-8 REFUSED YEAR =-9 MONTH =integer DON'T KNOW MONTH =-8 REFUSED MONTH =-9		
52	HHQDTHGEND*	Was [HHQDTHNAM*] male or female?	MALE =1 FEMALE =2		
53	HHQDTHAGEY*	How old was [HHQDTHNAM*] when (he/she) died? Complete one field below. RECORD DAYS IF LESS THAN 1 MONTH, MONTHS IF LESS THAN 1 YEAR, AND COMPLETE YEARS IF 1 YEAR OR MORE. Swipe forward to log a response of DON'T KNOW	YEARS =integer MONTHS OLD =integer DAYS OLD =integer DON'T KNOW =-8	IF HHQDTHAGEY! =NULL	[NEXT MODULE]
MODULE 6: HOUSEHOLD ASSETS					
Interviewer says: "Now I would like to ask you more questions about your household."					
54	HHQWATER	What is the main source of drinking water for members of your household?	PIPED INTO DWELLING =11 PIPED TO YARD/PLOT =12 PUBLIC TAP/STANDPIPE =13 TUBE WELL OR BOREHOLE =21 PROTECTED WELL =31 UNPROTECTED WELL ==32 PROTECTED SPRING =41 UNPROTECTED SPRING =42 RAINWATER =51 TANKER TRUCK =61 CART WITH SMALL TANK =71 SURFACE WATER (RIVER/DAM/ LAKE/POND/STREAM/CANAL) =81 BOTTLED WATER =91 OTHER =96	IF HHQWATER != 96	HHQSAFE

NO.	VARIABLE NAME	QUESTION	CODING CATEGOTIES	SKIP PATTERNS	SKIP TO
55	HHQWATEROTH	What is the main source of drinking water for members of your household? Please specify.	SPECIFY =text		
56	HHQSAFE	Do you do anything to the water to make it safer to drink?	YES =1 NO =2 DON'T KNOW =-8	IF HHQSAFE=2,-8	HHQTOIL
57	HHQSAFEH	What do you do to make your water safe for drinking? SELECT ONLY ONE RESPONSE.	BOILING =1 FILTRATION (CHARCOAL FILTER) =2 SEDIMENTATION =3 DISINFECTION (WATERGUARD, CHLORINE) =4 USE BOTTLED WATER =5 OTHER =96	HHQSAFEH !=96	HHQTOIL
58	HHQSAFEHOTH	What do you do to make your water safe for drinking? Please specify.	SPECIFY =text		
59	HHQTOIL	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 =22 NO FACILITY/BUSH/FIELD =61 OTHER =96	IF HHQTOIL=61 IF HHQTOIL !=96 IF HHQTOIL=11, 21, 22	HHQITEMS HHQTOILSH HHQTOILSH
60	HHQTOILOTH	What kind of toilet facility do members of your household usually use? Please specify.	SPECIFY =text		
61	HHQTOILSH	Do you share this toilet facility with other households?	YES =1 NO =2	IF HHQTOILSH=2	HHQITEMS
62	HHQTOILUSE	How many households use this facility?	NUMBER OF HOUSEHOLDS IF LESS THAN 10 =integer 10 OR MORE HOUSEHOLDS =96 DON'T KNOW =-8		
63	HHQITEMS	Does your household have: READ ALL RESPONSES ALOUD. SELECT ALL THAT APPLY.	ELECTRICITY? =A A RADIO? =B A TELEVISION? =C A TELEPHONE/MOBILE TELEPHONE? =D A REFRIGERATOR? =E		
64	HHQFUEL	What type of fuel does your household mainly use for cooking? SELECT ONLY ONE RESPONSE.	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	IF HHQFUEL != 96	HHQFLOOR
65	HHQFUELOTH	What type of fuel does your household mainly use for cooking? Please specify.	SPECIFY =text		
66	HHQFLOOR	MAIN MATERIAL OF FLOOR. RECORD OBSERVATION.	EARTH/SAND =11 DUNG =12 WOOD PLANKS =21 PALM/BAMBOO =22 PARQUET OR POLISHED WOOD =31 VINYL OR ASPHALT STRIP =32 CERAMIC TILES =33 CEMENT/TERAZO =34 CARPET =35 OTHER =96	IF HHQFLOOR != 96	HHQROOF
67	HHQFLOOROTH	MAIN MATERIAL OF FLOOR. PLEASE SPECIFY.	SPECIFY =text		

NO.	VARIABLE NAME	QUESTION	CODING CATEGOTIES	SKIP PATTERNS	SKIP TO
68	HHQROOF	MAIN MATERIAL OF THE ROOF RECORD OBSERVATION.	NO ROOF =11 THATCH/PALM LEAF (MAKUTI) =12 DUNG/MUD =13 CORRUGATED IRON (MABATI) =21 TIN CANS =22 ASBESTOS SHEET =31 CONCRETE =32 TILES =33 OTHER =96	IF HHQROOF != 96	HHQWALLS
69	HHQROOFOTH	MAIN MATERIAL OF THE ROOF. PLEASE SPECIFY.	SPECIFY =text		
70	HHQWALLS	MAIN MATERIAL OF THE EXTERIOR WALLS RECORD OBSERVATION.	NO WALLS =11 CANE/PALM/TRUNKS =12 DUNG/MUD =13 BAMBOO WITH MUD =21 STONE WITH MUD =22 PLYWOOD/CARDBOARD =23 CARTON =24 REUSED WOOD =25 CEMENT =31 STONE WITH LIME/CEMENT =32 BRICKS =33 CEMENT BLOCKS =34 WOOD PLANKS/SHINGLES =35 OTHER =96	IF HHQWALLS != 96	HHQROOMS
71	HHQWALLSOTH	*MAIN MATERIAL OF THE EXTERIOR WALLS. PLEASE SPECIFY.*	SPECIFY =text		
72	HHQROOMS	How many rooms are used for sleeping?	NUMBER OF ROOMS =integer		
73	HHQOWN	Does any member of your household own: READ ALL RESPONSES ALOUD. SELECT ALL THAT APPLY.	A BICYCLE? =A A MOTORCYCLE OR MOTOR SCOOTER? =B A CAR OR TRUCK? =C A BOAT WITH A MOTOR? =D COWS? =E GOATS/SHEEP? =F POULTRY (E.G. DUCKS, CHICKEN)? =G DOGS? =H OTHER ANIMALS (CAMELS, HORSES, DONKEYS)? =X		
74	HHQMOSQ	Does your household have any mosquito nets that can be used while sleeping?	YES =1 NO =2 DON'T KNOW =-8		
75	HHQFOOD	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	IF HHQFOOD=2,-8	HHQHUNG
76	HHQFOODFRQ	How often did this happen in the past 4 weeks?	RARELY (1-2 TIMES) =1 SOMETIMES (3-20 TIMES) =2 OFTEN (MORE THAN 10 TIMES) =3 DON'T KNOW =-8		
77	HHQHUNG	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	IF HHQHUNG =2,-8	HHQENOUGH
78	HHQHUNGFRQ	How often did this happen in the past 4 weeks?	RARELY (1-2 TIMES) =1 SOMETIMES (3-20 TIMES) =2 OFTEN (MORE THAN 10 TIMES) =3 DON'T KNOW =-8		
79	HHQENOUGH	In the past 4 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	IF HHQENOUGH =2,-8	HHQECOINS

NO.	VARIABLE NAME	QUESTION	CODING CATEGOTIES	SKIP PATTERNS	SKIP TO
80	HHQENOUGHFRQ	How often did this happen in the past 4 weeks?	RARELY (1-2 TIMES) =1 SOMETIMES (3-20 TIMES) =2 OFTEN (MORE THAN 10 TIMES) =3 DON'T KNOW =-8		
Module 7: ECONOMIC SUPPORT					
Interviewer says: "Now I will ask you questions on the economic support you have received."					
81	HHQECO12	Has your household received any of the following forms of external economic support in the last 12 months? READ THE RESPONSES ALOUD. 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. AGRICULTURAL INPUTS) =E FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD OR EXTERNAL INSTITUTION =F MATERIAL OR FINANCIAL SUPPORT FOR SHELTER =G SOCIAL PENSION =H OTHER =X DON'T KNOW =Z	IF HHQECO12 = A, Z	HHQINSEND
82	HHQECO3	Has your household received any of the following forms of external economic support in the last 3 months? READ THE RESPONSES ALOUD. 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. AGRICULTURAL INPUTS) =E FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD OR EXTERNAL INSTITUTION =F MATERIAL OR FINANCIAL SUPPORT FOR SHELTER =G SOCIAL PENSION =H OTHER DON'T KNOW		
Interviewer says: "This is the end of the household survey. Thank you very much for your time and for your responses. Do you have any questions for me at this time?"					

APPENDIX F ADULT QUESTIONNAIRE

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."

NO.	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
101	SCHLAT	Have you ever attended school?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF SCHLAT = 2,-8,-9	AWAY12MO
102	SCHLCUR	Are you enrolled in school?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9		
103	SCHCOM	What is the highest class you completed?	P1 =1 P2 =2 P3 =3 P4 =4 P5 =5 P6 =6 P7 =7 S1 =8 S2 =9 S3 =10 S4 =11 S5 =12 S6 =13 TERTIARY =14 DON'T KNOW =-8 REFUSED =-9		
104	AWAY12MO	In the last 12 months, have you been away from home for more than one month at a time?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9		
105	WORK12MO	Have you done any work in the last 12 months for which you received a paycheck, cash or goods as payment?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF WORK12MO=2,-8,-9	ETHNIC
106	OCCUPTN	What is your occupation, that is, what kind of work do?	PROFESSIONAL/TECHNICAL /MANAGERIAL =1 CLERICAL =2 SALES AND SERVICES =3 SKILLED MANUAL =4 UNSKILLED MANUAL =5 DOMESTIC SERVICE =6 AGRICULTURE =7 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF OCCUPTN != 96	ETHNIC

NO.	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
107	ETHNIC	What is your ethnic group/tribe?	BAGANDA =1 BANYANKORE =2 ITESO =3 LUGBARA/MADI =4 BASOGA =5 LANGI =6 BAKIGA =7 KARIMOJONG =8 ACHOLI =9 BAGISU/SABINY =10 ALUR/JOPADHOLA =11 BANYORO =12 BATORO =13 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF ETHNIC != 96	RELIGION
108	RELIGION	What is your religion?	ANGLICAN/PROTESTANT =1 SDA =2 ORTHODOX =3 PENTECOSTAL =4 OTHER CHRISTIAN =5 MOSLEM =6 BAHAI =7 TRADITIONAL =8 HINDU =9 NONE =10 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF RELIGION != 96	M1CONT

MODULE 2: MARRIAGE					
Interviewer says: "Now I would like to ask you about your current and previous relationships and/or marriages."					
201	EVERMAR	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	IF EVERMAR = 2, -8, -9	M2CONT
202	AGEMAR	How old were you the first time you married or started living with a [man/woman] as if married?	AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9		
203	CURMAR	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	IF CURMAR = 3, 4, 5, -8, -9	M2CONT
Interviewer says: "The next several questions are about your current spouse or partner(s)."					
204	NUMWIF	Altogether, how many wives or partners do you have?	NUMBER OF WIVES OR PARTNERS =integer DON'T KNOW =-8 REFUSED =-9	IF NUMWIF = -8, -9 AND QXA1205_List = 0	NPNUM
205	QXA1205	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? [DISPLAY QXA1205_LIST]	YES =1 NO =2	IF QXA1205 = 1	NPYN
206	REVWIFENM*	Is [HHRNAME**] your wife/partner?	YES =1 NO =2		
207	REVWIFEHH*	Does [HHRNAME**] live in the household?	YES =1 NO =2		
208	NPYN	Do you have additional spouse(s)/partner(s) that live with you?	YES =1 NO =2	IF NPYN = 2	WIFLIVEEW

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
209	NPNUM	How many additional spouse(s)/partners(s) live with you?	NUMBER OF ADDITIONAL SPOUSE(S) OR PARTNER(S) =integer	IF NPNUM = 0	WIFLIVEEW
210	NEWWNAME*	Please enter the name of your spouse/partner that lives with you.	NAME OF SPOUSE OR PARTNER =text DON'T KNOW =-8 REFUSED =-9		
211	WIFLIVEEW	How many wives or live-in partners do you have who live elsewhere?	NUMBER OF WIVES OR LIVE-IN PARTNERS =integer DON'T KNOW =-8 REFUSED =-9	ALL	M2CONT
212	HUSLIVEW	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	IF HUSLIVEW = 2, -8, -9 AND COUNT OF QXA1205_LIST = 0	HUSOTWIF
213	HHQXHUS2	The household schedule listed [QXA1205_LIST] as your husband/partner who is living here. Is that correct?	YES =1 NO =2 DON'T KNOW =-8 REFUSE TO ANSWER =-9	IF HHQXHUS2 = 1, -8, -9	HUSOTWIF
214	NEWHSELECT	Please select the spouse/partner that lives with you.	[LIST OF PERSONS on HH ROSTER] NOT LISTED IN HOUSEHOLD =96	IF NEWHSELECT != 96	HUSOTWIF
215	NEWHNAME	Please enter the name of your spouse/partner that lives with you.	NAME OF SPOUSE OR PARTNER =text DON'T KNOW =-8 REFUSED =-9		
216	HUSOTWIF	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	IF HUSOTWIF = 2, -8, -9	M2CONT
217	HUSNWIF	Including yourself, in total, how many wives or live-in partners does your husband or partner have?	NUMBER OF WIVES OR LIVE-IN PARTNERS =integer DON'T KNOW =-8 REFUSE TO ANSWER =-9		

MODULE 3: REPRODUCTION					
Interviewer says: "Now I would like to ask you questions about your pregnancies and your children."					
301	PREGNUM	How many times have you been pregnant including a current pregnancy? CODE '0' IF NONE.	NUMBER OF TIME(S) =integer DON'T KNOW =-8 REFUSED =-9	IF PREGNUM = 0, -8, -9	PREGNANT
302	LIVEB	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 REFUSE TO ANSWER =-9	IF LIVEB = 2, -8, -9	INSTR3C
303	CHILDA2012	How many live births have you had since the 1st of January, I**NSERT CURRENT YEAR- 3**]? DO NOT READ: CODE '0' IF NONE.	NUMBER OF LIVE BIRTHS =integer DON'T KNOW =-8 REFUSED =-9	IF LIVEB = 2, -8, -9	INSTR3C
Interviewer says: "Now I would like to ask you some questions about the <u>last</u> pregnancy that resulted in a live birth since the 1st of January, [INSERT CURRENT YEAR-3]."					
304	PRGTWIN	Did your last pregnancy result in birth to twins or more?	YES =1 NO =2 DON'T KNOW =-8 REFUSE TO ANSWER =-9	IF PRGTWIN = 2, -8, -9	CHILDLAST
305	PREGNM	How many live children were born from your last pregnancy?	NUMBER OF LIVE CHILDREN =integer	IF PREGNM = 0 IF PREGNM = 1	PRGCARE CHILDLAST

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
306	PRGTWINNAME*	What is the name of the [BIRTHORDER*] born 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. DO NOT READ: IF THE CHILD WAS NOT NAMED BEFORE DEATH, INPUT BIRTH AND THE BIRTH ORDER NUMBER. FOR EXAMPLE, "BIRTH 1".	NAME =text		
307	CHILDLAST	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. DO NOT READ: IF THE CHILD WAS NOT NAMED BEFORE DEATH, INPUT BIRTH 1.	NAME =text		
308	PRGCARE	When you were pregnant with [CHILDLAST/PRGTWINNAME*], did you visit a health facility for antenatal care?	YES =1 NO =2 DON'T KNOW =-8 REFUSE TO ANSWER =-9	IF PRGCARE = 1 IF PRGCARE = -8, -9	INSTR3B BRTHWHR
309	PREGNCR	What is the <u>main</u> reason you did not visit a clinic for antenatal care when you were pregnant with [CHILDLAST/PRGTWINNAME*]?	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 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF PREGNCR != 96	BRTHWHR
310	PREGNCROTH	Specify other	text	ALL	BRTHWHR
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	HIVTSBP	Have you ever tested for HIV before your pregnancy with [CHILDLAST/PRGTWINNAME*]?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF HIVTSBP = 2, -8, -9	HIVTOPG
312	HIVPSBP	Did you test positive for HIV before your pregnancy with [CHILDLAST/PRGTWINNAME*]?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF HIVPSBP = 2, -8, -9	HIVTOPG
313	ARVFVST	At the time of your first antenatal care visit when you were pregnant with [CHILDLAST/PRGTWINNAME*], were you taking ARVs, that is, antiretroviral medications, to treat HIV?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF ARVFVST = 1 IF ARVFVST = 2, -8, -9	BRTHWHR ARVTKPG
314	HIVTOPG	During any of your visits to the antenatal care clinic when you were pregnant with [CHILDLAST/PRGTWINNAME*], were you offered an HIV test?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
315	HIVTRPRG	Were you tested for HIV during any of your antenatal care clinic visits when you were pregnant with [CHILDLAST/PRGTWINNAME*]?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF HIVTRPRG = 1 IF HIVTRPRG = -8, -9 IF HIVTRPRG = 2	HIVRTPG BRTHWHR HIVTSNR
316	HIVTSNR	What is the main reason you were not tested for HIV during antenatal care with [CHILDLAST/PRGTWINNAME*]?	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 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	HIVTSNR != 96	BRTHWHR
317	HIVTSNROTHR	Specify other	text	ALL	BTHWHR
318	HIVRTPG	What was the result of your last HIV test during your pregnancy with [CHILDLAST/PRGTWINNAME*]?	POSITIVE =1 NEGATIVE =2 UNKNOWN/INDETERMINATE =3 DID NOT RECEIVE RESULTS =4 DON'T KNOW =-8 REFUSED =-9	IF HIVRTPG = 2, 3, 4, -8, -9	BRTHWHR
319	ARVTKPG	Did you take ARVs during your pregnancy with [NAME] to stop [CHILDLAST/PRGTWINNAME*] from getting HIV?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF ARVTKPG = 1, -8, -9	BRTHWHR
320	ARVNRPG	What was the main reason you did not take ARVs while you were pregnant with [CHILDLAST/PRGTWINNAME*]?	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 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF ARVNRPG !=96	BRTHWHR
321	ARVNRPGOTH	Specify other	text		BRTHWHR
322	BRTHWHR	Where did you give birth to [CHILDLAST/PRGTWINNAME*]?	AT HOME =1 AT A HEALTH FACILITY =2 IN TRANSIT =3 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF BRTHWHR = 1, 3, -8, -9 IF BRTHWHR = 2	CHILDBDATE HIVTOBR
323	BRTHWHROTH	Specify other	text		CHILDBDATE
324	HIVTOBR	Were you offered an HIV test during labor?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9		
325	HIVTTLB	Did you test for HIV during labor?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	SKIP IF HIVPSBP = 1 OR HIVRTPG = 1 IF HIVTTLB = 2, -8, -9	CHILDBDATE
326	HIVRSLR	What was the result of that test?	POSITIVE NEGATIVE UNKNOWN/INDETERMINATE DID NOT RECEIVE RESULTS DON'T KNOW REFUSED	SKIP IF HIVPSBP = 1 OR HIVRTPG = 1 IF HIVRSLR = 2, 3, 4, -8, -9	CHILDBDATE

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
327	ARVOFLB	During labor, were you offered ARVs to protect [NAME] against HIV?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	SKIP IF ARVFVST = 1 AND ARVTKPG = 1	
328	ARVTKLB	During labor, did you take ARVs to protect [CHILDLAST/PRGTWINNAME*] against HIV?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	SKIP IF ARVFVST = 1 AND ARVTKPG = 1 IF ARVTKLB = 2, -8, -9	 CHILDBDATE
329	ARVCNTN	Did you continue to take the ARVs after delivery?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	SKIP IF ARVFVST = 1 AND ARVTKPG = 1	
330	CHILDBDATE	When did you give birth to [CHILDLAST/PRGTWINNAME*]? Please give your best guess.	DAY =integer DON'T KNOW DAY =-8 REFUSED DAY =-8 MONTH =integer DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =integer DON'T KNOW YEAR =-8 REFUSED YEAR =-9		
331	CHILDALIVE*	Is [CHILDLAST/PRGTWINNAME*] still alive?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF CHILDALIVE* = 1, -8, -9	CHILDLIVE
332	CHILDDDATE*	How old was[CHILDLAST/PRGTWINNAME*] when he/she died?	YEARS _____ DON'T KNOW =-8 REFUSED =-9	IF CHILDDATE* > 0, -8, -9	CHILDBF*
333	CHILDDDATE*	How old was [CHILDLAST/PRGTWINNAME*] in months when he/she died?	MONTHS _____ DON'T KNOW =-8 REFUSED =-9	ALL	CHILDBF*
334	CHILDLIVE*	Is [CHILDLAST/PRGTWINNAME*] living with you?	YES =1 NO =2	IF CHILDLIVE* = 2	CHILDBF*
335	CHILDHHNUM*	DO NOT READ: RECORD HOUSEHOLD LINE NUMBER OF CHILD RECORD '0' IF CHILD NOT LISTED IN HOUSEHOLD	HOUSEHOLD LINE NUMBER =integer		
336	CHILDBF*	Did you ever breastfeed [CHILDLAST/PRGTWINNAME*]?	YES =1 NO, NEVER BREASTFED =2 NO, CHILD NOT ALIVE =3 DON'T KNOW =-8 REFUSED =-9	IF CHILDBF* = 2, 3, -8, -9	CHILDBRNTST*
337	CHILDBFLONG*	For how long did you breastfeed [CHILDLAST/PRGTWINNAME*]? DO NOT READ: ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN WEEKS OR IN MONTHS. CODE '0" WEEKS IF LESS THAN 1 WEEK.	WEEKS =1 MONTHS =2 STILL BREASTFEEDING =96 DON'T KNOW =-8 REFUSED =-9	IF CHILDBFLONG = -8, -9	CHILDBFINTRO
338	CHILDBRSTFDDURNUM*	In the previous question you said you breastfed [CHILDLAST/PRGTWINNAME*] for [CHILDBFLONG*]. How many [CHILDBFLONG*]* did you breastfeed [CHILDLAST/PRGTWINNAME*]?	integer		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
339	CHILDBFINTRO*	How old was [CHILDLAST/PRGTWINNAME*] when you started giving [CHILDLAST/PRGTWINNAME*] cow's or goat's milk, powdered milk, water, or any other foods or liquid? ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN MONTHS OR IN YEARS. CODE '0' IF LESS THAN 1 MONTH.	MONTHS =integer YEARS =integer NEVER =96 DON'T KNOW =-8 REFUSED =-9	IF HIVRTPG != 1 AND HIVPSBP != 1 AND HIVRSLR != 1	CHILDMORE*
340	CHILDBFCONT*	Did you continue taking ARVs while you were breastfeeding [CHILDLAST/PRGTWINNAME*]?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	SKIP IF ARVFVST = !1 OR ARVTKPG = !1	
341	CHILDBRNTST	After [CHILDLAST/PRGTWINNAME*] was born, was he/she tested for HIV?	YES =1 NO, NOT TESTED FOR HIV =2 NO, CHILD NOT ALIVE =3 DON'T KNOW =-8 REFUSED =-9	IF CHILDBRNTST = 2, 3, -8, -9	CHILDMORE*
342	CHILDBRNTSTRES	What was the result of [CHILDLAST/PRGTWINNAME*] 's HIV test?	POSITIVE, (NAME) HAS HIV =1 NEGATIVE, (NAME) DOES NOT HAVE HIV =2 UNKNOWN/INDETERMINATE =3 DID NOT RECEIVE RESULTS =4 DON'T KNOW =-8 REFUSED =-9		
343	CHILDMORE*	Thank you for the information regarding [CHILDLAST/PRGTWINNAME*].		IF PRGTWIN = 1	RETURN TO CHILDALIVE* FOR EACH VALUE OF PRGTWINNAME*
	INSTR3C	I will now ask about current pregnancies.			
344	PREGNANT	Are you or your partner pregnant now?	YES =1 NO =2 DON'T KNOW/UNSURE =-8 REFUSED =-9	IF PREGNANT = 1	M3CONT
	INSTR3D	I will now ask you about family planning.			
345	AVOIDPREG	Are you or your partner currently doing something or using any method to delay or avoid getting pregnant?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF AVOIDPREG = -8. -9 IF AVOIDPREG = 2	M3CONT ANOTHERCHILD
346	CMETHOD	Which method are you or your partner using? DO NOT READ: SELECT ALL THAT APPLY.	FEMALE STERILIZATION =A MALE STERILIZATION =B PILL =C IUD/"COIL" =D INJECTIONS =E IMPLANT =F CONDOM =G FEMALE CONDOM =H RHYTHM/NATURAL METHODS =I WITHDRAWAL =J NOT HAVING SEX =K OTHER (SPECIFY) =X DON'T KNOW =Y REFUSED =Z	IF CMETHOD != X	M3CONT
347	CMETHODOTH	Specify other		ALL	M3CONT
348	ANOTHERCHILD	Would you like to have a/another child?	YES =1 NO =2 UNDECIDED/DON'T KNOW =-8 REFUSED =-9	IF ANOTHERCHILD = 1, -8, -9	M3CONT

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
349	NOCONTR	Can you tell me why you are not using a method to prevent pregnancy? SELECT ALL THAT APPLY.	NOT MARRIED/NO PARTNER =A NOT HAVING SEX =B INFREQUENT SEX =C MENOPAUSAL/HYSTERECTOMY =D (PARTNER) CANNOT GET PREGNANT =E NOT MENSTRUATED SINCE LAST BIRTH =F BREASTFEEDING =G UP TO GOD =H RESPONDENT OPPOSED =I HUSBAND/PARTNER OPPOSED =J RELIGION PROHIBITS =K KNOWS NO METHOD =L KNOWS NO SOURCE =M SIDE EFFECTS/HEALTH CONCERNS =N LACK OF ACCESS/TOO FAR =O COSTS TOO MUCH =P PREFERRED METHOD NOT AVAILABLE =Q NO METHOD AVAILABLE =R INCONVENIENT TO USE =S INTERFERES WITH BODY'S NORMAL PROCESSES =T OTHER (SPECIFY) =X DON'T KNOW =Y REFUSED =Z	IF NOCONTR != X	M3CONT
350	NOCONTROTH	Specify other	text		

MODULE 4: CHILDREN					
Interviewer says: "I am going to ask you a number of questions about your child/children regarding their health and where they get their health services. I will begin with your youngest child."					
401	KIDINS1	Now I am going to ask you questions for [CHILD*].			
402	KIDAGEY	How old was [CHILD*] at his/her last birthday? DO NOT READ: ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN YEARS OR IN MONTHS. CODE '0' IF LESS THAN ONE YEAR.	YEARS =integer DON'T KNOW =-8 REFUSED =-9		
403	KIDAGEM	How old was [CHILD*] in months? DO NOT READ: ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN YEARS OR IN MONTHS. CODE '0' IF LESS THAN ONE MONTH.	MONTHS =integer DON'T KNOW =-8 REFUSED =-9		
404	KIDGENDER	Is [CHILD*] a boy or girl?	BOY =1 GIRL =2 DON'T KNOW =-8 REFUSED =-9		
405	KIDENROLL	Is [CHILD*] currently enrolled in school?	YES =1 NO, CURRENTLY NOT IN SCHOOL =2 NO, TOO YOUNG TO BE IN SCHOOL =3 DON'T KNOW =-8 REFUSED =-9	IF KIDENROLL = 2 IF KIDENROLL =3, -8, -9	KIDENRLSTYR KIDCRCM
406	KIDHIGHLVL	What is the highest level of school [CHILD*] has attended: Primary, O-level, A-level, University/Tertiary?	PRIMARY =1 O-LEVEL =2 A-LEVEL =3 UNIVERSITY/TERTIARY =4 DON'T KNOW =-8 REFUSED =-9		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
407	KIDCLASS	What class is [CHILD*] in now?	CLASS =integer DON'T KNOW =-8 REFUSED =-9	ALL	KIDCRCM
408	KIDENRLSTYR	Was [CHILD*] enrolled in school during the previous school year?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF KIDENRLSTYR = 2, -8, -9	KIDCRCM
409	KIDCLASSLSTYR	What class was [CHILD*] during the previous school year?	CLASS =integer DON'T KNOW =-8 REFUSED =-9		
410	KIDCRCM	Is [CHILD*] circumcised? Circumcision is the complete removal of the foreskin from the penis. I have a picture to show you what a completely circumcised penis looks like.	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	SKIP IF KIDGENDER* = 2 IF KIDCRCM = 2, -8, -9	KIDHIVTESTEVR
411	KIDCRCMAGE / KIDCRCMAGEU	How old was [CHILD*] when he was circumcised? Please give your best guess. ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN YEARS OR IN MONTHS. CODE '0' IF LESS THAN ONE MONTH.	MONTHS =integer DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEARS =integer DON'T KNOW YEAR =-8 REFUSED YEAR =-9	SKIP IF KIDGENDER* = 2	
412	KIDCRCMPRT	Who circumcised [CHILD*]?	DOCTOR, CLINICAL OFFICER, OR NURSE =1 TRADITIONAL PRACTITIONER / CIRCUMCISER =2 MIDWIFE =3 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSE TO ANSWER =-9	SKIP IF KIDGENDER* = 2 IF KIDCRCMPRT != 96	KIDHIVTESTEVR
413	KIDCRCMPRTOTH	Specify other	text		
414	KIDHIVTESTEVR	Has [CHILD*] ever been tested for HIV?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF KIDHIVTESTEVR = 1 IF KIDHIVTESTEVR = -8, -9	KIDHIVTESTLASTM/ KIDHIVTESTLASTY KIDVISTTBCLIN
415	KIDHIVTESTNEVERRSN	Why has [CHILD*] never been tested for HIV? DO NOT READ: 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 CHILD HAS HIV =I CANNOT GET TREATMENT FOR HIV =J TEST KITS NOT AVAILABLE =K RELIGIOUS REASONS =L OTHER (SPECIFY) =X DON'T KNOW =Y REFUSED =Z	KIDHIVTESTNEVERRSN != X	KIDVISTTBCLIN
416	KIDHIVTESTNEVERRSNOTH	Specify other	text	ALL	KIDVISTTBCLIN

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
417	KIDHIVTESTLASTM / KIDHIVTESTLASTY	What month and year was [CHILD*]'s most recent HIV test done?	MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEARS =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9		
418	KIDHIVLASTRESULT	What was [CHILD*]'s last HIV test result?	POSITIVE =1 NEGATIVE =2 UNKNOWN/INDETERMINATE =3 DID NOT RECEIVE RESULTS =4 DON'T KNOW =-8 REFUSED =-9	IF KIDHIVLASTRESULT = 2, 3, 4, -8, -9	KIDVISTTBCLIN
419	KIDLPOSM/ KIDLPOSY	What was the month and year of [CHILD*]'s first HIV positive test result? Please give your best guess. This will be the very first HIV positive test result that you have received. DO NOT READ: PROBE TO VERIFY DATE.	MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEARS =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9		
420	KIDHIVCARE	Has [CHILD*] ever received HIV medical care from a doctor, clinical officer or nurse?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF KIDHIVCARE = 1 IF KIDHIVCARE = -8, -9	KIDHIVCAREFIRSTM/KIDHIVCAREFIRSTY KIDCD4
421	KIDHIVCARENVR	What is the main reason why [CHILD*] has never seen a doctor, clinical officer or nurse 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 (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	KIDHIVCARENVR != 96	KIDCD4
422	KIDHIVCARENVROTH	Specify other	text		KIDCD4
423	KIDHIVCAREFIRSTM / KIDHIVCAREFIRSTY	What month and year did [CHILD*] first see a doctor, clinical officer or nurse for HIV medical care? DO NOT READ: PROBE TO VERIFY DATE.	MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED =-9		
424	KIDHIVCARELASTM / KIDHIVCARELASTY	What month and year did [CHILD*] last see a doctor or nurse for HIV medical care?	MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED =-9	IF KIDHIVCARELASTM / KIDHIVCARELASTY = -8, -9	KIDCD4

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
425	KIDHIVNOT6RSN	What is the main reason for [CHILD*] not seeing a doctor, clinical officer or nurse 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 (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF KIDHIVNOT6RSN != 96	KIDCD4
426	KIDHIVNOT6RSNOTH	Specify other	text		
427	KIDCD4	Has [CHILD*] ever had a CD4 count test? The CD4 count tells you how sick you are with HIV and if you need to take ARVs or other HIV medications.	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF KIDCD4 = 2, -8, -9 AND KIDHIVCARE = 1 IF KIDCD4 = 2, -8, -9 AND KIDHIVCARE = 2, -8, -9	KIDARVS KIDVISTTBCLIN
428	KIDCD4LASTM / KIDCD4LASTY	What month and year was [CHILD*] last tested for his/her CD4 count?	MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9		
429	KIDARVS	Has [CHILD*] ever taken ARVs, that is, antiretroviral medications, to treat his/her HIV infection?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF KIDARVS = 1 IF KIDARVS = -8, -9	KIDARVSFIRST7 /KIDARVSFIRSTM KIDSEPTRIN
430	KIDARVSNVRRSN	What is the main reason [CHILD*] has never taken ARVs?	[NAME] IS NOT ELIGIBLE FOR TREATMENT =1 HEALTH CARE PROVIDER DID NOT PRESCRIBE =2 HIV MEDICINES NOT AVAILABLE =3 DO NOT THINK [NAME] NEEDS IT, HE/SHE IS NOT SICK =4 COST OF MEDICATIONS =5 COST OF TRANSPORT =6 RELIGIOUS REASONS =7 [NAME] IS TAKING TRADITIONAL MEDICATIONS =8 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF KIDARVSNVRRSN != 96	KIDSEPTRIN
431	KIDARVSNVRRSNOTH	Specify other	text		KIDSEPTRIN
432	KIDARVSFIRST7 /KIDARVSFIRSTM	What month and year did [CHILD*] first start taking ARVs? DO NOT READ: FOR 'DO NOT KNOW': PROBE TO VERIFY DATE.	MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
433	KIDARVSNOW	Is [CHILD*] currently taking ARVs, that is, antiretroviral medications? By currently, I mean that [CHILD*] may have missed some doses but [CHILD*] is still taking ARVs.	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF KIDARVSNOW = 1 IF KIDARVSNOW = -8, -9	KIDARVMISS30 KIDSEPTRIN
434	KIDARVSNOTRSN	Can you tell me the main reason why [CHILD*] 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 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF KIDARVSNOTRSN != 96	KIDSEPTRIN
435	KIDARVSNOTRSNOTH	Specify other	text		KIDSEPTRIN
436	KIDARVMISS30	People sometimes forget to take all of their ARVs every day. In the past 30 days, how many days has [CHILD*] missed taking any ARV pills? DO NOT READ: FOR 'DO NOT KNOW': CODE '0' FOR NONE.	DAYS =integer DON'T KNOW =-8 REFUSED =-9		
437	KIDSEPTRIN	Is [CHILD*] currently taking Bactrim, Septrin, or cotrimoxazole? Bactrim, Septrin, or cotrimoxazole 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 [CHILD*] may have missed some doses but is still taking Bactrim, Septrin, or cotrimoxazole.	YES =1 NO =2 I DON'T KNOW WHAT IT IS =-8 REFUSED =-9		
438	KIDVISTTBCLIN	Has [CHILD*] ever visited a health facility or TB clinic for TB diagnosis or treatment?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF KIDVISTTBCLIN = 2, -8, -9	KIDMORE
439	KIDDIAGTB	Have you ever been told by a doctor, clinical officer or nurse that [CHILD*] had TB?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF KIDDIAGTB = 2, -8, -9	KIDMORE
440	KIDTRTTB	Was [CHILD*] ever treated for TB?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF KIDTRTTB = 2, -8, -9	KIDMORE
441	KIDTRTTCURR	Is [CHILD*] currently on treatment for TB?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9		
442	KIDTRTTB6MOTRT	The last time [CHILD*] was treated for TB, did [CHILD*] complete at least 6 months of treatment?	YES =1 NO, THE MEDICINE WAS STOPPED IN LESS THAN 6 MONTHS =2 NO, [NAME] IS STILL ON TREATMENT =3 DON'T KNOW =-8 REFUSED =-9		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
443	KIDMORE	Thank you for the information about [CHILD*].	YES =1 NO =2	IF KIDMORE = 1	RETURN TO KIDINS1

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. I have a picture to show you what a completely circumcised penis looks like."

501	MCRISKR	Does male circumcision alone reduce the risk, or chance, of a man getting HIV completely, somewhat or not at all?	PROTECTS COMPLETELY =1 PROTECTS SOMEWHAT =2 NOT AT ALL =3 DON'T KNOW =-8 REFUSED =-9	IF (HHRGEND* = 1 AND INEGEND = 2) OR (INEGEND = 2 AND INEGENDC = 2)	M5CONT
502	MCSTATUS	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	IF MCSTATUS = 1	MCAGE
503	MCPLANS	Are you planning to get circumcised?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	ALL RESPONSES	M5CONT
504	MCAGE	How old were you when you were circumcised? Please give your best guess. DO NOT READ: IF LESS THAN ONE YEAR, CODE '0'	AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9		
505	MCWHO	Who did the circumcision?	DOCTOR, CLINICAL OFFICER, OR NURSE =1 TRADITIONAL PRACTITIONER / CIRCUMCISER =2 MIDWIFE =3 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF MCWHO != 96	M5CONT
506	MCWHOOTH	Specify other	text		

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	FIRSTSXAGE	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 =integer NEVER HAD SEX =96 DON'T KNOW =-8 REFUSED =-9	IF FIRSTSXAGE = 96	M6CONT
602	LIFETIMESEX	People often have sex with different people over their lifetime. In total, with how many different people have you had sex in your lifetime? Please give your best guess. IF NUMBER OF SEXUAL PARTNERS IS GREATER THAN 100, ENTER '100'	NUMBER OF SEXUAL PARTNERS IN LIFETIME =integer DON'T KNOW =-8 REFUSED =-9		
603	PART12MONUM	People often have sex with different partners over their lifetime. In total, with how many different people have you had sex in the last 12 months? IF NUMBER OF SEXUAL PARTNERS IS GREATER THAN 100, ENTER '100'	NUMBER OF SEXUAL PARTNERS IN LAST 12 MONTHS __ __ __ =integer DON'T KNOW =-8 REFUSED =-9	IF PART12MONUM = 0,-8,-9	M6CONT

Interviewer says: "Now I would like to ask you some questions about the partners 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 your most recent partner."

604	PARTLIVEW	Does the person you had sex with live in this household?	YES =1 NO =2	IF PARTLIVEW = 2	PARTINIT
605	PARTHHLINE	Please select the name below from the household membership list. Please identify the person you had sex with.	LINE NO =integer		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
606	PARTINIT	I would like to ask you for the initials of your partner so I can keep track. They do not have to be the actual initials of your partner.	INITIALS =text		
607	PARTRELATION	What is your relationship with [INITIALS]?	HUSBAND/WIFE =1 LIVE-IN PARTNER =2 PARTNER, NOT LIVING WITH RESPONDENT =3 EX-SPOUSE/PARTNER =4 FRIEND/ACQUAINTANCE =5 SEX WORKER =6 SEX WORKER CLIENT =7 STRANGER =8 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF PARTRELATION != 96	PARTGEND
608	PARTRELATIONOTH	Specify other	text		
609	PARTGEND	Is [INITIALS] male or female?	MALE =1 FEMALE =2 DON'T KNOW =-8 REFUSED =-9		
610	PARTLASTSXTIME	How long has it been since you last had sex with (INITIALS)?	Number of DAYS/WEEKS/MONTHS =integer		
611	PARTLASTSXUNITS	DO NOT READ: IF LESS THAN ONE WEEK RECORD IN DAYS, IF LESS THAN ONE MONTH, RECORD IN WEEKS, OTHERWISE RECORD IN MONTHS.	DAYS =1 WEEKS =2 MONTHS =3 DON'T KNOW =-8 REFUSED =-9		
612	PARTFIRSTSXTIME	How long has it been since you first had sex with (INITIALS)?	Number of DAYS/WEEKS/MONTHS =integer DAYS =1 WEEKS =2 MONTHS =3 YEARS =4 DON'T KNOW =-8 REFUSED =-9		
613	PARTAGE	How old is [INITIALS]? Please give your best guess.	AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9		
614	PARTLASTCNDM	The last time you had sex with [INITIALS] was a condom used?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9		
615	PARTLASTETOH	The last time you had sex with (INITIALS), did either of you drink alcohol beforehand?	ONLY I WAS DRINKING ONLY PARTNER WAS DRINKING BOTH WERE DRINKING NEITHER DON'T KNOW REFUSED		
616	PARTLASTSUP	Did you enter into a sexual relationship with [INITIALS] because [INITIALS] provided you with or you expected that [INITIALS] would provide you with material support or help you in other ways? Material support means helping you to pay for things, or giving you gifts or other items you needed or requested.	YES NO DON'T KNOW REFUSED	SKIP IF PARTRELATION = 6, 7 IF PARTLASTSUP = 2, -8, -9	PARTAGAIN

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
617	PARTLASTSUPREC	In the last 12 months, what have you received from (INITIALS)? DO NOT READ: 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 (SPECIFY) =X DON'T KNOW =Y REFUSED =Z	IF PARTLASTSUPREC != X SKIP IF PARTRELATION = 1, 2	PARTAGAIN
618	PARTLASTSUPRECOTH	Specify other	text		
619	PARTAGAIN	Do you expect to have sex with [INITIALS] again?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9		
620	PARTHIVTEST	Have you ever taken an HIV test with (INITIALS)?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9		
621	PARTKNOWHIV	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		
622	PARTHIVSAT	What is the HIV status of [INITIALS]? DO NOT READ: READ RESPONSES ALOUD.	THINK (INITIALS) IS POSITIVE =1 (INTIALS) TOLD ME HE/SHE IS POSITIVE =2 POSITIVE, TESTED TOGETHER =3 THINK (INITIALS) IS NEGATIVE =4 (INITIALS) TOLD ME HE/SHE IS NEGATIVE =5 NEGATIVE, TESTED TOGETHER =6 DON'T KNOW STATUS =7 REFUSED =-9		
623	SXPREPS	I will now ask you about the person you have had sex with previous to (INITIALS).			

MODULE 7: HIV TESTING					
Interviewer says: "I would now like to ask you some questions about HIV testing."					
701	HIVTSTEVER	Have you ever **tested** for HIV?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF HIVTSTEVER = 1 IF HIVTSTEVER = -8, -9	HIVTSLSTM / HIVTSLSTY
702	HIVTSTNVRRSN	Why have you never been tested for HIV? DO NOT READ: 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 (SPECIFY) =X DON'T KNOW =Y REFUSED =Z	IF HIVTSTNVRRSN != X	M7CONT

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
703	HIVTSTNVRRSNOTH	Specify other	text	ALL	M7CONT
704	HIVTSLSTM/ HIVTSLSTY	What month and year was your last HIV test?	MONTH =integer DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEARS =integer DON'T KNOW YEAR =-8 REFUSED YEAR =-9		
705	HIVTSTLOCATION	Where was the last test done?	VCT FACILITY =1 MOBILE VCT =2 AT HOME =3 HOSPITAL OUTPATIENT CLINIC =5 TB CLINIC =6 STI CLINIC =7 HOSPITAL INPATIENT WARDS =8 BLOOD DONATING CENTER =9 ANC CLINIC =10 **PUBLIC SECTOR** GOVERNMENT HOSPITAL =11 GOVT. HEALTH CENTER =12 STAND-ALONE VCT CENTER =13 FAMILY PLANNING CLINIC =14 OUTREACH =15 GOVT COMMUNITY BASED WORKER =16 OTHER PUBLIC =17 **PRIVATE/NGO MEDICAL SECTOR** PRIVATE HOSPITAL/CLINIC =21 STAND-ALONE VCT CENTER =22 PHARMACY/DRUG SHOP =23 PRIVATE DOCTOR/NURSE/ MIDWIFE =24 OUTREACH =25 TASO =26 AIDS INFORMATION CENTER =27 OTHER PRIVATE/NGO MEDICAL SPECIFY: _____ =28 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF HIVTSTLOCATION != 96	HIVTSTRSLT
706	HIVTSTLOCATIONOTH	Specify other	text		
707	HIVTSTRSLT	What was the result of that HIV test?	POSITIVE =1 NEGATIVE =2 UNCERTAIN/INDETERMINATE =3 DID NOT RECEIVE THE RESULT =4 DON'T KNOW =-8 REFUSED =-9	IF HIVTSTRSLT = 2, 3, 4, -8, -9	M7CONT
708	HIVTFPOSM/ HIVTFPOSY	What was the month and year of your first HIV positive test result? Please give your best guess. This will be the very first HIV positive test result that you have received DO NOT READ: PROBE TO VERIFY DATE.	MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9		
709	HIVRETESTPOS	After you tested you positive for HIV, how many times have you taken additional HIV tests?	NUMBER =integer DON'T KNOW =-8 REFUSED =-9		
710	HIVPOSTOLD	Of the following people, who have you told that you are HIV positive? DO NOT READ: CHECK ALL THAT APPLY.	NO ONE =A SPOUSE/SEX PARTNER =B DOCTOR =C FRIEND =D FAMILY MEMBER =E OTHER (SPECIFY) =X DON'T KNOW =Y REFUSED =Z	IF HIVPOSTOLD != X	INSTR7A
711	HIVPOSTOLDOTH	Specify other	text		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
Interviewer says: "Now I would like to ask you questions about your experiences with health care providers."					
712	HIVSTATHIDE	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		
713	HIVSTATDENIEDCARE	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		

MODULE 8: HIV STATUS, CARE AND TREATMENT					
Interviewer says: "Now I'm going to ask you more about your experience with HIV support, care and treatment."					
801	HIVCARE	After learning you had HIV, have you ever received HIV medical care from a doctor, clinical officer or nurse?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF HIVCARE = 1 IF HIVCARE = -8, -9	HIVCFM/HIVCFY CD4TESTEVER
802	HIVCNOTRSN	What is the main reason why you have never received HIV medical care from a doctor, clinical officer or nurse for HIV medical care?	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 (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF HIVCNOTRSN != 96	CD4TESTEVER
803	HIVCNOTRSNOTH	Specify other	text	ALL RESPONSES	CD4TESTEVER
804	HIVCFM/HIVCFY	What month and year did you first see a doctor, clinical officer or nurse for HIV medical care? DO NOT READ: PROBE TO VERIFY DATE.	MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9		
805	HIVCLM/HIVCLY	What month and year did you last see a doctor, clinical officer or nurse for HIV medical care?	MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED =-9	IF [CURRENT DATE] - HIVCLM/HIVCLY < 7 MONTHS OR HIVCLM/HIVCLY = -8, -9	CD4TESTEVER
806	HIVCNOT6MO	What is the main reason for not seeing a doctor, clinical officer or nurse for HIV medical care in the past 6 months?	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 NO APPOINTMENT SCHEDULED/DID NOT MISS MOST RECENT APPOINTMENT =9 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF HIVCNOT6MO != 96	CD4TESTEVER

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
807	HIVCNOT6MOOTH	Specify other	text		
808	CD4TESTEVER	Have you ever had a CD4 count test? The CD4 count tells you how sick you are with HIV and if you need to take ARVs or other HIV medications.	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF CD4TESTEVER = 2, -8, -9 AND HIVCARE = 1 IF HIVCARE = 2, -8, -9	ARVSTAKENEV M8CONT
809	CD4TTM/CD4TTY	What month and year were you last tested for your CD4 count?	MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9		
810	ARVSTAKENEV	Have you ever taken ARVs, that is, antiretroviral medications to treat HIV infection?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF ARVSTAKENEV = 1 IF ARVSTAKENEW = -8, -9	ARVFTM/ARVFTY M8CONT
811	ARVSNOTTAKE	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 =4 COST OF MEDICATIONS =5 COST OF TRANSPORT =6 RELIGIOUS REASONS =7 TAKING TRADITIONAL MEDICATIONS =8 NOT ATTENDING HIV CLINIC =9 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF ARVSNOTTAKE != 96	M8CONT
812	ARVSNOTTAKEOTH	Specify other	text	ALL	M8CONT
813	ARVFTM/ARVFTY	What month and year did you first start taking ARVs? DO NOT READ: PROBE TO VERIFY DATE.	MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9		
814	ARVSCURRENT	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	IF ARVSCURRENT = 1 IF ARVSCURRENT = -8, -9	ARVSMISSDAYS SPTGRGO
815	ARVSNOTCURRSN	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 (SPECIFY) =96 DON' T KNOW =-8 REFUSED =-9	IF ARVSNOTCURRSN != 96	SPTGRGO
816	ARVSNOTCURRSNOTH	Specify other	text	ALL	SPTGRGO
817	ARVSMISSDAYS	People sometimes forget to take all of their ARVs every day. In the past 30 days, how many days have you missed taking any of your ARV pills ? DO NOT READ: CODE '0' IF NONE.	NUMBER OF DAYS =integer DON'T KNOW =-8 REFUSED =-9		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
818	SPTGRGO	Have you ever attended a support group for people living with HIV?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF SPTGRGO = 2, -8, -9	M8CONT
819	SPTGRFREQ	In the last 12 months, how many times did you attend a support group?	NUMBER OF TIMES ____ DON'T KNOW =-8 REFUSED =-9		

MODULE 9: TUBERCULOSIS AND OTHER HEALTH ISSUES					
Interviewer says: "Now I will ask you about tuberculosis or TB."					
901	TBCLINVISIT	Have you ever visited a TB clinic (or health facility) for TB diagnosis or treatment?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF TBCLINVISIT = 2, -8, -9	M9CONT
902	TBDIAGN	Have you ever been told by a doctor, clinical officer or nurse that you had TB?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF TBDIAGN = 2, -8, -9	M9CONT
903	TBTREATED	Were you <u>ever</u> treated for TB?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF TBTREATED = 2, -8, -9	M9CONT
904	TBTTREATCURR	Are you currently on treatment for TB?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9		
905	TBTREAT6MOFULL	The last time you were treated for TB, did you complete at least 6 months of treatment?	YES =1 NO, MEDICINE WAS STOPPED IN LESS THAN 6 MONTHS =2 NO, BUT I AM STILL ON TREATMENT =3 DON'T KNOW =-8 REFUSED =-9		

MODULE 10: GENDER NORMS					
Interviewer says: "Now I would like to ask you question on attitudes and decision-making in your home."					
1001	HEALTHC	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		
1002	MONEY	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	IF RESPONDENT IS NOT SELECTED FOR VIOLENCE MODULE	VIOL_NOSEL

MODULE 11: VIOLENCE					
Interviewer says: "Questions will be administered to females and males 15-24 in designated EAs. 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 Uganda. 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, we 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."					
1101	TOUCHTIMES	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? Touching in a sexual way without permission includes fondling, pinching, grabbing, or touching you on or around your sexual body parts. CODE '0' IF NONE.	0 =0 1 – 5 TIMES =1 5 OR MORE TIMES =2 DON'T KNOW =-8 REFUSED =-9	IF TOUCHTIMES = 0, -8, -9	MPLSXTIMES
1102	TOUCHAGE	How old were you the <u>first</u> time someone has touched you without your permission?	AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
1103	TOUCHFSTREL	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/LIVE-IN PARTNER/SPOUSE =1 EX-BOYFRIEND/GIRLFRIEND/ PARTNER/SPOUSE =2 PARENT/GUARDIAN OTHER =3RELATIVE/FAMILY MEMBER CLASSMATE/SCHOOLMATE =4 TEACHER =5 POLICE/SECURITY OFFICER/ MILITARY =6 EMPLOYER =7 NEIGHBOR =8 COMMUNITY/ RELIGIOUS LEADER =9 FRIEND =10 STRANGER =11 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF TOUCHFSTREL != 96	TOUCH12MO
1104	TOUCHFSTRELOTH	Specify other	text		
1105	TOUCH12MO	In the last 12 months, has anyone touched you in a sexual way without your permission, but did not try and force you to have sex?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF TOUCH12MO = 2, -8, -9	MPLSXTIMES
1106	TOUCHLSTREL	The last 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/LIVE-IN PARTNER/SPOUSE =1 EX-BOYFRIEND/GIRLFRIEND/ PARTNER/SPOUSE =2 PARENT/GUARDIAN OTHER RELATIVE/FAMILY MEMBER =3 CLASSMATE/SCHOOLMATE =4 TEACHER =5 POLICE/SECURITY OFFICER/ MILITARY =6 EMPLOYER =7 NEIGHBOR =8 COMMUNITY/ RELIGIOUS LEADER=9 FRIEND =10 STRANGER =11 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF TOUCHLSTREL != 96	MPLSXTIMES
1107	TOUCHLSTRELOTH	Specify other	text		
1108	MPLSXTIMES	How many times in your life has anyone <u>tried</u> to make you have sex against your will **but did not succeed**? This includes someone using harassment, threats, tricks, or physical force. CODE '0' IF NONE.	0 =0 1 – 5 TIMES =1 5 OR MORE TIMES =2 DON'T KNOW =-8 REFUSED =-9	IF MPLSXTIMES = 0, -8, -9	RCSXTIMES
1109	MPLSXAGE	How old were you the <u>first</u> time someone tried to make you have sex against your will but did not succeed?	AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9		
1110	MPLSXFSTREL	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/LIVE-IN PARTNER/SPOUSE =1 EX-BOYFRIEND/GIRLFRIEND/ PARTNER/SPOUSE =2 PARENT/GUARDIAN OTHER RELATIVE/FAMILY MEMBER =3 CLASSMATE/SCHOOLMATE =4 TEACHER =5 POLICE/SECURITY OFFICER/ MILITARY =6 EMPLOYER =7 NEIGHBOR =8 COMMUNITY/ RELIGIOUS LEADER =9 FRIEND =10 STRANGER =11 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF MPLSXFSTREL != 96	MPLSX12MO

1111	MPLSXFSTRELOTH	Specify other	text		
1112	MPLSX12MO	In the last 12 months, did anyone try 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	IF MPLSX12MO = 2, -8, -9	RCSXTIMES
1113	MPLSXLSTREL	The last 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/LIVE-IN PARTNER/SPOUSE =1 EX-BOYFRIEND/GIRLFRIEND/ PARTNER/SPOUSE =2 PARENT/GUARDIAN OTHER RELATIVE/FAMILY MEMBER =3 CLASSMATE/SCHOOLMATE =4 TEACHER =5 POLICE/SECURITY OFFICER/ MILITARY =6 EMPLOYER =7 NEIGHBOR =8 COMMUNITY/ RELIGIOUS LEADER =9 FRIEND =10 STRANGER =11 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF MPLSXLSTREL != 96	RCSXTIMES
1114	MPLSXLSTRELOTH	Specify other	text		
1115	RCSXTIMES	How many times in your life have you been physically forced to have sex? CODE '0' IF NONE.	0 =0 1 – 5 TIMES =1 5 OR MORE TIMES =2 DON'T KNOW =-8 REFUSED =-9	IF RCSXTIMES = 0, -8, -9	RSSXTIMES
1116	RCSXAGE	How old were you the first time someone physically forced you to have sex?	AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9		
1117	RCSXRELAT	What was this person's relationship to you? If it was more than one person, what was the relationship with the person you knew the best?	BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/SPOUSE =1 EX-BOYFRIEND/GIRLFRIEND/ PARTNER/SPOUSE =2 PARENT/GUARDIAN OTHER RELATIVE/FAMILY MEMBER =3 CLASSMATE/SCHOOLMATE =4 TEACHER =5 POLICE/SECURITY OFFICER/ MILITARY =6 EMPLOYER =7 NEIGHBOR =8 COMMUNITY/ RELIGIOUS LEADER =9 FRIEND =10 STRANGER =11 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF RCSXRELAT != 96	RCSX12MO
1118	RCSXRELATOTH	Specify other			
1119	RCSX12MO	In the last 12 months, did someone physically force you to have sex?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF RCSX12MO = 2, -8, -9	RSSXTIMES
1120	RCSX12MOPT	In the last 12 months, did a partner physically force you to have sex? By partner, I mean a live-in partner whether or not you were married at the time.	YES =1 NO, DID NOT FORCE =2 NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS =3 DON'T KNOW =-8 REFUSED =-9		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
1121	RCSXLSTREL	What was this person's relationship to you? If it was more than one person, what was the relationship with the person you knew the best?	BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/SPOUSE =1 EX-BOYFRIEND/GIRLFRIEND/ PARTNER/SPOUSE =2 PARENT/GUARDIAN OTHER RELATIVE/FAMILY MEMBER =3 CLASSMATE/SCHOOLMATE =4 TEACHER =5 POLICE/SECURITY OFFICER/ MILITARY =6 EMPLOYER =7 NEIGHBOR =8 COMMUNITY/ RELIGIOUS LEADER =9 FRIEND =10 STRANGER =11 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF RCSXLSTREL != 96	RSSXTIMES
1122	RCSXLSTRELOTH	Specify other	text		
1123	RSSXTIMES	How many times in your life has someone <u>pressured</u> you to have sex through harassment, threats and tricks but without force and did succeed? CODE '0' IF NONE. Being pressured can include being worn down by someone who repeatedly asks for sex, feeling pressured by being lied to, being told promises that were untrue, having someone threaten to end a relationship or spread rumors or sexual pressure due to someone using their influence or authority.	0 =0 1 – 5 TIMES =1 5 OR MORE TIMES =2 DON'T KNOW =-8 REFUSED =-9	IF RSSXTIMES = 0, -8, -9	LNC
1124	RSSXAGE	How old were you the <u>first time</u> someone pressured you to have sex and succeeded?	AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9		
1125	RSSXRELAT	What was this person's relationship to you? If it was more than one person, what was your relationship with the person you knew the best?	BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/SPOUSE =1 EX-BOYFRIEND/GIRLFRIEND/ PARTNER/SPOUSE =2 PARENT/GUARDIAN OTHER RELATIVE/FAMILY MEMBER =3 CLASSMATE/SCHOOLMATE =4 TEACHER =5 POLICE/SECURITY OFFICER/ MILITARY =6 EMPLOYER =7 NEIGHBOR =8 COMMUNITY/ RELIGIOUS LEADER =9 FRIEND =10 STRANGER =11 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF RSSXRELAT != 96	RSSX12MO
1126	RSSXRELATOTH	Specify other	text		
1127	RSSX12MO	In the last 12 months, did someone pressure you to have sex and did succeed?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF RSSX12MO = 2, -8, -9	LNC
1128	RSSX12MOPT	In the last 12 months, did a partner pressure you to have sex and did succeed? By partner, I mean a live-in partner whether or not you were married at the time.	YES =1 NO, DID NOT PRESSURE AND SUCCEED =2 NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS =3 DON'T KNOW =-8 REFUSED =-9		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
1129	RSSXLSTREL	What was this person's relationship to you? If it was more than one person, what was your relationship with the person you knew the best?	BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/SPOUSE =1 EX-BOYFRIEND/GIRLFRIEND/ PARTNER/SPOUSE =2 PARENT/GUARDIAN OTHER RELATIVE/FAMILY MEMBER =3 CLASSMATE/SCHOOLMATE =4 TEACHER =5 POLICE/SECURITY OFFICER/ MILITARY =6 EMPLOYER =7 NEIGHBOR =8 COMMUNITY/ RELIGIOUS LEADER =9 FRIEND =10 STRANGER =11 OTHER (SPECIFY). =96 DON'T KNOW =-8 REFUSED =-9	IF RSSXLSTREL != 96	LNC
1130	RSSXLSTRELOTH	Specify other	text		
1131	LNC	Has anyone ever done any of these things to you: - Punched, kicked, whipped, or beat you with an object - Slapped you, threw something at you that could hurt you, pushed you or shoved you - Choked smothered, tried to drown you, or burned you intentionally - Used or or threatened you with a knife, gun or other weapon?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF LNC = 2, -8, -9	INSTR11A
1132	LNCFRSTAGE	How old were you the first time one of these things happened to you?	AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9		
1133	LNC12MOTIMES	In the last 12 months, how many times did someone: - Punched, kicked, whipped, or beat you with an object - Slapped you, threw something at you that could hurt you, pushed you or shoved you - Choked smothered, tried to drown you, or burned you intentionally - Used or or threatened you with a knife, gun or other weapon?	NOT IN LAST 12 MONTHS =1 ONCE =2 FEW =3 MANY =4 DON'T KNOW =-8 REFUSED =-9	IF LNC12MOTIMES = 1, -8, -9	INSTR11A
1134	LNC12MOPTNR	In the last 12 months, did a partner do any of these things to you? By partner, I mean a live-in partner whether or not you were married at the time.	YES =1 NO, PARTNER DID NOT =2 NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS =3 DON'T KNOW =-8 REFUSED =-9		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
1135	LNCLSTREL	The last time any of these things happened, what was this person's relationship to you? If it was more than one person, what was your relationship with the person you knew the best?	BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/SPOUSE =1 EX-BOYFRIEND/GIRLFRIEND/ PARTNER/SPOUSE =2 PARENT/GUARDIAN OTHER RELATIVE/FAMILY MEMBER =3 CLASSMATE/SCHOOLMATE =4 TEACHER =5 POLICE/SECURITY OFFICER/ MILITARY =6 EMPLOYER =7 NEIGHBOR =8 COMMUNITY/ RELIGIOUS LEADER =9 FRIEND =10 STRANGER =11 OTHER =96 DON'T KNOW =-8 REFUSED =-9	IF LNCLSTREL != 96	LNCINJ
1136	LNCLSTRELOTH	Specify other	text		
1137	LNCINJ	For any of the times in the last 12 months that one of these things happened to you, did you receive any injuries?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF LNCINJ = 2, -8, -9	INSTR11A
1138	LNCINJSPEC	Did you experience any of the following? READ EACH RESPONSE. SELECT ALL THAT APPLY	NO =A CUTS, SCRATCHES, BRUISES, ACHES, REDNESS OR SWELLING OR OTHER MINOR MARK =B SPRAINS, DISLOCATIONS, OR BLISTERING =C DEEP WOUNDS, BROKEN BONES, BROKEN TEETH, OR BLACKENED OR CHARRED SKIN =D PERMANENT INJURY OR DISFIGUREMENT =E DON'T KNOW =Y REFUSED =Z		
EMOTIONAL VIOLENCE					
1139	EMNOLOVE	Has anyone ever told you that you were not loved, or did not deserve to be loved?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9		
1138	EMNEVER	Has anyone ever said they wished you had never been born or were dead?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9		
1140	EMSTUPID	Has anyone ever ridiculed you or put you down, for example said that you were stupid or useless?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF EMNOLOVE = 2, -8, -9 AND EMNEVER = 2, -8, -9 AND EMSTUPID = 2, -8, -9	ENDMSG0
1141	EMFREQ	Thinking of all these experiences such as these, how many times has someone ever say these things: once, a few times, or many times?	ONCE =1 FEW =2 MANY =3 DON'T KNOW =-8 REFUSED =-9	IF EMFREQ = -8, -9	ENDMSG0
1142	EMAGE	How old were you the first time one of these happened?	AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
1143	EMFSTREL	What was this person's relationship to you? If it was more than one person, what was your relationship with the person you knew the best?	BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/SPOUSE =1 EX-BOYFRIEND/GIRLFRIEND/ PARTNER/SPOUSE =2 PARENT/GUARDIAN OTHER RELATIVE/FAMILY MEMBER =3 CLASSMATE/SCHOOLMATE =4 TEACHER =5 POLICE/SECURITY OFFICER/ MILITARY =6 EMPLOYER =7 NEIGHBOR =8 COMMUNITY/ RELIGIOUS LEADER =9 FRIEND =10 STRANGER =11 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF EMFSTREL != 96	EM12MO
1144	EMFSTRELOTH	Specify other	text		
1145	EM12MO	Did any of these happen in the last 12 months?	YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9	IF EM12MO = 2, -8, -9	ENDMSG0
1146	EMLSTREL	What was this person's relationship to you? If it was more than one person, what was your relationship with the person you knew the best?	BOYFRIEND/GIRLFRIEND/LIVE-IN PARTNER/SPOUSE =1 EX-BOYFRIEND/GIRLFRIEND/ PARTNER/SPOUSE =2 PARENT/GUARDIAN OTHER RELATIVE/FAMILY MEMBER =3 CLASSMATE/SCHOOLMATE =4 TEACHER =5 POLICE/SECURITY OFFICER/ MILITARY =6 EMPLOYER =7 NEIGHBOR =8 COMMUNITY/ RELIGIOUS LEADER =9 FRIEND =10 STRANGER =11 OTHER (SPECIFY) =96 DON'T KNOW =-8 REFUSED =-9	IF EMLSTREL != 96	ENDADULTQ
1147	EMLSTRELOTH	Specify other	text		
END	ENDADULTQ				
Interviewer says: "Thank you for taking the time to participate in this survey. Your responses will be very helpful to the Ministry of Health to better understand how to improve health programs in the country."					

APPENDIX G ADOLESCENT QUESTIONNAIRE

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
MODULE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS					
101	ADGENDER	Gender was previously given as (Male/Female). If this is not correct, please review previously given answer in the eligibility form and update as needed			
102	ADAGE	Age was previously given as (insert age). If this is not correct, please review previously given answer in the Eligibility Form and update as needed.			
103	ADENSCH	Are you enrolled in school?	YES = 1 NO = 2 DON'T KNOW = 8 REFUSED = 9	IF ADENSCH = 2, -8, -9	ADNOSCHREAS
104	ADMISCH	During the last school week, did you miss any school days for any reason?	YES = 1 NO = 2 DON'T KNOW = 8 REFUSED = 9	IF ADMISCH = 2, -8, -9	ADLVLSCH
105	ADMISCHREAS	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 = 9 I MISSED TOO MUCH SCHOOL BECAUSE OF MY PERIOD (MENSTRUATION) = 10 OTHER (SPECIFY) = 96 DON'T KNOW = -8 REFUSED = -9	IF ADMISCHREAS ! = 96	ADLVLSCH
106	ADMISCHREASOTH	Specify other	text		
107	ADLVLSCH	What is the highest level of school you attended: primary or secondary?	PRIMARY = 1 SECONDARY = 2 DON'T KNOW = -8 REFUSED = -9		
108	ADCURGRD	What grade/form/year are you in now?	GRADE/FORM/YEAR = INTEGER DON'T KNOW = -8 REFUSED = -9		
109	ADLSTYRGRD	What grade/form/year were you in last year?	GRADE/FORM/YEAR = INTEGER DON'T KNOW = -8 REFUSED = -9	ALL	ADHRDHIV
110	ADNOSCHREAS	Why do you NOT go to school?	YES = 1 NO = 2 DON'T KNOW =-8 REFUSED = -9	IF ADNOSCHREAS OTH != 96	ADATNDSCH
111	ADNOSCHREASOTH	Specify other	text		
112	ADATNDSCH	Have you ever attended school?	YES = 1 NO = 2 DON'T KNOW =-8 REFUSED = -9	IF ADATNDSCH = 2, -8, -9	ADHRDHIV

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
113	ADLSTREGSCH	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		
114	ADHIGRD	What is the highest grade/form/year that you have completed?	GRADE/FORM/YEAR = INTEGER DON'T KNOW = -8 REFUSED = -9		
MODULE 2: HIV KNOWLEDGE					
Interviewer says: "Now I would like to ask you some questions about what you know about some things related to health."					
201	ADHRDHIV	Have you ***ever*** heard of HIV?	YES = 1 NO = 2 DON'T KNOW = 8 REFUSED = 9	IF ADHRDHIV = 2, -8, -9	ADYKWCON
202	ADHRDHIVLOC	From where have you heard about HIV? PROBE: Anywhere else? RECORD ALL MENTIONED SELECT ALL THAT APPLY	SCHOOLS/TEACHERS = A PARENTS/GUARDIAN/FAMILY = B FRIENDS = C RELIGIOUS LEADERS = D INTERNET = E MOBILE PHONE = F HEALTH PROVIDERS/DOCTORS/NURSES/CLINICAL OFFICERS = G TELEVISION/FILM = H RADIO = I COMMUNITY HEALTH WORKERS = J OTHER= X DON'T KNOW = 98 REFUSED = 99	IF ADHRDHIVLOC ! = X	ADDISHIV
203	ADHRDHIVLOCOT	Specify other	text		
204	ADDISHIV	Have you <u>ever</u> discussed HIV with your parents or guardian?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9		
205	ADHIVPREV	Have you taken part in any of the following HIV prevention programs? SHOW CHILD LOGO FOR EACH PROGRAM SELECT ALL THAT APPLY	Stepping Stones = A Raising Voices/SASA= B OTHER = X SPECIFY: _____ DON'T KNOW = Y REFUSED = Z	IF ADHIVPREV != X	ADYKWCON
206	ADHIVPREVOTH	Specify other	text		
207	ADYKWCON	Do you know what a condom is?	YES = 1 NO = 2 REFUSED = -9	IF ADYKWCON = 2, -9	ADM3TITLE
208	ADYKWHCON	Do you know where to get a condom?	YES = 1 NO = 2 DON'T KNOW WHAT A CONDOM IS = 3 REFUSED = 9	IF ADYKWHCON = 2, 3, -9	ADM3TITLE
209		Where can a person go to get a condom? SELECT ALL THAT APPLY.	CLINIC/HOSPITAL = A KIOSK/SHOP = B PHARMACY = C LOCAL FREE DISPENSER = D FRIENDS/PEERS = E BOYFRIEND/GIRLFRIEND = F OTHER = X DON'T KNOW = Y REFUSED = Z	IF ADCONLOC != X	ADM3TITLE

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
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." **DO NOT READ: 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	ADKNSX	Do you know what sex is?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF ADKNSX = 2, -8, -9	ADINSTR4
302	ADHDSX	Have you **ever** had vaginal or oral sex? Vaginal sex is when a penis enters a vagina. Oral sex is when a person puts his/her mouth on the penis or vagina of another person. DO NOT READ: SELECT ALL THAT APPLY.	NEVER HAD SEX = A VAGINAL = B ANAL = C DON'T KNOW = Y REFUSED = Z	IF ADHDSX = A, Y, Z	ADINSTR4
303	ADSXAGE	How old were you when you had sex for the ***first*** time?	AGE IN YEARS =integer DON'T KNOW AGE =-8 REFUSED =-9		
304	ADWHYSX	The ***first*** time you had sex, was it because you wanted to or because you were forced?	WANTED TO = 1 FORCED = 2 DON'T KNOW = -8 REFUSED = -9	IF ADWHYSX = 1, -8, -9	ADSXFRSN
305	ADSXFRC	The ***first*** time you had sex, were you physically forced or were you pressured into having sex through harassment, threats or tricks?	PHYSICALLY FORCED = 1 PRESSURED = 2 DON'T KNOW = -8 REFUSED = -9	ALL	ADFPSXAGE
306	ADSXFRSN	What was the ***main*** reason that you had sex for the first time?	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 OTHER (SPECIFY) = 96 DON'T KNOW = -8 REFUSED = -9	IF ADSXFRSN != 96	ADFPSXAGE
307	ADSXFRSNOTH	Specify other	text		
308	ADFPSXAGE	How old was the person you ***first*** had sex with? Please give your best guess.	AGE IN YEARS =integer DON'T KNOW AGE =-8 REFUSED =-9		
310	ADDIFPSX	In total, how many different people have you had sex with? Please give your best guess.	NUMBER OF PARTNERS =integer DON'T KNOW =-8 REFUSED =-9		
311	ADMATSUP	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 thing 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		

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."				
401	ADPRFSXPART	Do you feel pressured by your boy/girl friend to have sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF ADKNSX = 2,-8,-9

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
402	ADPRFSX	Do you feel pressured by your friends to have sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF ADKNSX = 2,-8,-9	
403	ADNOSX	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	SKIP IF ADKNSX = 2,-8,-9	
MODULE 6: HIV KNOWLEDGE					
601	ADREDNOSX	Can a person reduce their chance of getting HIV by not having sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9		
602	ADREDCON	Can a person reduce their chance of getting HIV by using condoms when having sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9		
603	ADLKSHIV	Can a healthy-looking person have HIV or AIDS?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9		
604	ADMHIVUBB	Can a mother with HIV or AIDS pass HIV to her unborn baby?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9		
605	ADMEDLL	Are there medicines that people with HIV or AIDS can take to help them live longer?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9		
606	ADCIRHIV	Can male circumcision help prevent HIV infection? Circumcision is the removal of the foreskin from a penis.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9		
MODULE 7: HIV TESTING					
Interviewer says: "I would now like to ask you some questions about HIV testing."					
701	ADTSHIV	Have you ***ever*** been tested for HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF ADTSHIV = 2, -8, -9	ADM8TITLE
702	ADRCRSHIV	Did you receive the results of any of your HIV tests?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF ADRCRSHIV = 2, -8, -9	ADM8TITLE
703	ADRSHIV	What was the result of that HIV test?	HIV POSITIVE =1 HIV NEGATIVE =2 UNCERTAIN/INDETERMINATE =3 DID NOT RECEIVE THE RESULT =4 DON'T KNOW =-8 REFUSED =-9		
MODULE 8: HIV STIGMA					
801	ADSHFDHIV	Would you be willing to share food with someone who has HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
803	ADPLHIV	Would you play with someone who has HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9		

MODULE 11: 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 Uganda. Let me assure you that your answers are completely confidential and will not be told to anyone."

1101	ADSXNTSCC	Has anyone ***ever*** tried to make you have sex against your will but did not succeed?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9		
1102	ADPRSXSCC	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		
1103	ADFRCSCC	Has anyone ***ever*** physically forced you to have sex and did succeed?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9		
1104	ADFRCREL	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 PARENT/GUARDIAN OTHER 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 OTHER (SPECIFY)= 96 DON'T KNOW = -8 REFUSED = -9	SKIP Q IF (ADPRSXSCC = 2, -8, -9) AND (ADFRCSCC = 2,-8,-9) IF ADFRCREL != 96	 ADSXTELL
1105	ADFRCRELOTH	Specify other	text		
1106	ADSXTELL	After any of these unwanted sexual experiences, did you tell anyone about it?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF ADSXTELL = -8, -9 IF ADSXTELL = 2	ADREFER ADSXNOTTL
1107	ADSXDISC	Which of the following describes who you told about any of these unwanted sexual experience? DO NOT READ: SELECT ALL THAT APPLY	PARENT / GUARDIAN = A SIBLING = B TEACHER = C FRIEND/CLASSMATE = D OTHER FAMILY MEMBER = E RELIGIOUS LEADER = F OTHER (SPECIFY) = X DON'T KNOW = Y REFUSED = Z	IF ADSXDISC != X	ADREFER
1108	ADSXDISCOTH	Specify other	text	ALL	ADREFER

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
1109	ADSXNOTTL	What is the main reason you did not talk to somebody?	AFRAID = 1 ASHAMED FOR SELF/FAMILY = 2 DID NOT THINK IT WAS A PROBLEM = 3 FELT IT WAS MY FAULT = 4 OTHER = 96 DON'T KNOW = -8 REFUSED = -9		

NO	VARIABLE NAME	QUESTION	CODING CATEGORIES	SKIP PATTERNS	SKIP TO
REFER	ADREFER	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. DO NOT READ: PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS.	SKIP IF (ADSXNTSCC = 2, -8, -9) AND ADPRSXSCC = 2, -8, -9) AND (ADFRCSCC = 2, -8, -9)		
Interviewer says: "This is the end of the survey. Thank you very much for your time and for your responses."					

APPENDIX H SURVEY CONSENT FORMS

I. Consent for Household Interview

Uganda Population-Based HIV Impact Assessment:
Consent for Household Interview (18+ Years of Age or Emancipated Minor)

Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT: 6317

[INTERVIEWER: READ FROM HERE]

What language do you prefer for our discussion today?

___English

___Ateso

___Karamajong

___Luganda

___Lugbara

___Luo

___Runyankole-Rukiga

___Runyoro-Rutoro

___Other Language: Specify _____

Hello. My name is_____. I would like to invite you to take part in this research study about HIV in Uganda. The Ministry of Health is leading this survey in collaboration with Uganda Bureau of Statistics (UBOS), the United States Centers for Disease Control and Prevention and ICAP at Columbia University.

This form might have some words in it that are not familiar to you. Please ask me to explain anything that you do not understand.

What is the purpose of this study?
HIV is the virus that causes AIDS. AIDS is a very serious illness. This study will help us know how many people in Uganda have HIV and need health services. It will also tell us about people's risk for getting HIV.

How many people will be in this study?
About 13, 436 households will join this study. We would like your household to join the study too. What you tell us will help the Ministry of Health make HIV services better in the country.

Why have you been chosen for this study?
Your household has been selected purely by chance from your community.

What do you have to do if you agree to take part?
There are three parts to this study. The first part is the household interview. The second part is the individual interviews. The third part is blood testing. If you agree to take part in the household interview, I would ask you some questions about the people living in your household. The household interview will take up to 30 minutes.
After you complete the household interview, we will invite you and others staying in your household to participate in individual interviews. After the individual interviews, we will offer testing for HIV, hepatitis B and syphilis. Like HIV, hepatitis B and syphilis are infections that can cause very serious illnesses if left untreated.
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 participating. If you decide not to take part, it will not affect your healthcare in any way.

What are the potential risks?
You may feel uncomfortable about some of the questions I will ask. If I ask you any questions you don't want to answer, just let me know and I will go to the next question or you can stop the interview at any time.
All the information you share with us will be kept private. However, as whenever you share personal information, there is a chance of loss of privacy. We are doing everything we can to minimize this chance. We do not expect any other risk from taking part in this interview.
What are the potential benefits?
If you participate, you and your household members may get free testing for HIV in your own home. The information you provide will also be used to improve the health of Uganda. Your responses will help us develop more effective programs to fight HIV and other diseases in Uganda.

What are the alternatives to taking part?
You can decide not to take part in this study—your participation in this household interview is entirely voluntary. Your decision to take part or not take part will not affect your health care, but we hope you will agree to answer these questions since your views are important.

Will the information you share with us be kept private?
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 name will not appear when we share study results. Your answers to the questions will be identified only by a number. The information we collect from you will not be released outside of the survey groups listed below unless there is an issue of safety.

[*INTERVIEWER: DO NOT READ ALOUD]*

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a participant. These include the Uganda National Council for Science and Technology (UNSCT), the Ugandan Virus Research Institute (UVRI), and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical study 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 participant in this study
- Study staff and monitors

[READ FROM HERE]

Your permission to allow us to use and share your information with the groups above will expire at the end of the survey.

Who should you contact if you have questions?

If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact one of the Principal Investigators listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

Dr. Alex Opio
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683
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jmusinguzi@infocom.co.ug

Dr. Joshua Musinguzi
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Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ THIS STATEMENT]

If you have any questions about your rights as a participant in this study, you can contact Tom Lutalo at the address and number listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Are there any costs?

There is no cost to you for answering the questions in the household interview. You should also know that you would not be paid to answer these questions.

Do you want to ask me anything about the survey?

Verbal Consent Statement

The information in this consent form has been explained to me. I have been given a chance to ask questions. I feel that all of my questions have been answered. I know that being in this study is my choice. I know that after choosing to be in this study, I may leave the study at any time.

If you agree to take part in the household interview, please state the following statement:
"I agree to take part in the household interview"
____Check this box if participant agrees to participate in the household interview

If you do not agree to take part in the household interview, please state the following statement:
"I do not wish to take part in the household interview"

____Check this box if participant refuses to participate in the household interview

Signature of person obtaining consent_____ _____ Date: ___/___/___
Printed name of person obtaining consent_____
Study staff ID number _____

[For illiterate participants]
Witness Attestation Statement
Please state the following statement:
"I attest that the information in this consent form was accurately explained and the participant's decision was freely given."
____Check this box if the witness attests to the consent procedures

Signature of person obtaining consent_____ Date: ___/___/___
Printed name of person obtaining consent_____

II. Consent for Adult Interview

Uganda Population-Based HIV Impact Assessment:
Consent for Individual Interview (ages 18-64 or Emancipated Minor)

Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT: 6317

[READ FROM HERE IF PARTICIPANT *HAS BEEN* THROUGH HOUSEHOLD CONSENT *AND* CURRENT INTERVIEWER *DID NOT* ADMINISTER HOUSEHOLD CONSENT]
Hello. My name is_____

[READ FROM HERE IF PARTICIPANT *HAS BEEN* THROUGH HOUSEHOLD CONSENT *AND* CURRENT INTERVIEWER *DID* ADMINISTER HOUSEHOLD CONSENT]
What do you have to do if you agree to take part?
If you agree to join this study, we will ask you questions about your age, what kind of work you do, if you had any experience with HIV services, and your sexual behaviors. This interview will take about 50 minutes.

After the interview, I will offer you blood tests for HIV, hepatitis B and syphilis. Like HIV, hepatitis B and syphilis are infections that can cause very serious illnesses if left untreated. This testing and counseling session will take about 40 minutes. You do not have to agree to the blood testing now. We are only asking you about this interview. We will give you a separate opportunity to agree to the blood testing. You can agree to the interview, but not agree to the blood testing.

What are alternatives to taking part?
You can decide not to take part in this interview. Your decision to take part or not take part will not affect your healthcare. However, we hope you will agree to answer these questions since your views are important.

Will the information you share with us be kept private?
All the information you give us will be kept strictly confidential.

Who should you contact if you have questions?
If you want to leave the study, have any questions about the study, or feel that you have been harmed by taking part, you should contact one of the Principal Investigators, who can be reached at the number and address below.

[*INTERVIEWER: DO NOT READ ALOUD*]

Dr. Alex Opio
Address: 6 Lourdel Road
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Office Phone: +256 414 256683
Email: opioalex@infocom.co.ug Email:
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Dr. Wilford Kirungi

Address: 6 Lourdel Road
Kampala, Uganda

Office Phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[READ THIS STATEMENT]
If you have any questions about your rights as a participant in this study, you can contact Tom Lutalo at the address and number listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]
Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

→ GO TO CONSENT STATEMENT

[IF PARTICIPANT *HAS NOT BEEN* THROUGH HOUSEHOLD CONSENT]
What language do you prefer for our discussion today?
___English

___Ateso

___Karamajong

___Luganda

___Lugbara

___Luo

___Runyankole-Rukiga

___Runyoro-Rutoro

___Other Language: Specify _____

Hello. My name is_____. We are doing a research study throughout Uganda to learn more about HIV in the country. The Ministry of Health is leading this study in collaboration with the Ugandan Bureau of Statistics (UBOS), the United States Centers for Disease Control and Prevention and ICAP at Columbia University.

Why are we doing this study?
HIV is the virus that causes AIDS. AIDS is a very serious illness. This study will help us know how many people in Uganda have HIV and need health services. It will also tell us about people's risk for getting HIV. We expect about 33,000 men, women, and children from 13, 436 households throughout Uganda to join this study. We would like to invite you to join this study too. What you tell us will help the Ministry of Health make HIV services better in the country.

What do you have to do if you agree to take part?
If you agree to join this study, we will ask you questions about your age, what kind of work you do, if you had any experience with HIV services, and your sexual behaviors. This interview will take about 50 minutes.

After the interview, I will offer you blood tests for HIV, hepatitis B and syphilis. Like HIV, hepatitis B and syphilis are infections that can cause very serious illnesses if left untreated. This testing and counseling session will take about 40 minutes. You do not have to agree to the blood testing now. We are only asking you about this interview. We will give you a separate opportunity to agree to the blood testing. You can agree to the interview, but not agree to the blood testing.

What are the potential risks?
You may feel uncomfortable about some of the questions I will ask. You can refuse to answer any question. All the information you share with us will be kept private. However, as whenever you share personal information, there is a chance of loss of privacy. We are doing everything we can to minimize this chance. We do not expect any other risk from taking part in this interview.
What are the potential benefits?
If you participate, you will get free testing for HIV in your own home. The information you provide will also be used to improve the health of Uganda. Your responses will help us develop more effective programs to fight HIV and other diseases in Uganda.

What are the alternatives to taking part?
You can decide not to take part in this study—your participation in individual interview is entirely voluntary. Your decision to take part or not take part will not affect your health care, but we hope you will agree to answer these questions since your views are important.

Will the information you share with us be kept private?
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 name will not appear when we share study results. Your answers to the questions will be identified only by a number. The information we collect from you will not be released outside of the survey groups listed below unless there is an issue of safety.

[*INTERVIEWER: DO NOT READ ALOUD]*

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a participant. These include the Uganda National Council for Science and Technology (UNSCT), the Ugandan Virus Research Institute (UVRI), and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical study 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 participant in this study
- Study staff and monitors

[READ FROM HERE]

Your permission to allow us to use and share your information with the groups above will expire at the end of the survey.

Who should you contact if you have questions?

If you want to leave the study, have any questions about the survey, or feel that you have been harmed by taking part, you should contact one of the Principal Investigators listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

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Dr. Wilford Kirungi
Address: 6 Lourdel Road
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Office Phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ THIS STATEMENT]

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[*INTERVIEWER: DO NOT READ ALOUD*]

Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Are there any costs?

There is no cost to you for answering the questions in the individual interview. You should also know that you would not be paid to answer these questions.

Do you want to ask me anything about the survey?

Verbal Consent Statement

1. If you agree to take part in the individual interview, please state the following statement:
   "I agree to take part in the individual interview"
   ____Check this box if participant <u>agrees</u> to participate in the individual interview

   If you do not agree to take part in the individual interview, please state the following statement:
   "I do not wish to take part in the individual interview"
   ____Check this box if participant <u>refuses</u> to participate in the individual interview

[For illiterate participants]
Witness Attestation Statement

Please state the following statement**:**

"I attest that the information in this consent form was accurately explained and the participant's decision was freely given."

____Check this box if the witness attests to the consent procedures

Signature of person obtaining consent_____ Date: ___/___/___

Printed name of person obtaining consent_____

III. Consent from Parents of Children ages 0-7: Blood Draw:

Uganda Population-Based HIV Impact Assessment:
Consent from Parents of Children ages 0-7: Blood Draw
Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT: 6317

Now I would like to ask you to let your sons/daughters take part in the survey. Your child's participation will help the Ministry of Health make HIV services for children and families better.

[IF PARENT/GUARDIAN *HAS BEEN* THROUGH CONSENT PROCESS FOR THE BLOOD DRAW]

What would happen to your child if you agree to allow your child to take part?

If you and your child agree, the following will happen, as described in your own consent:

- **[IF CHILD IS 2 to 7 YEARS OLD]** To do the HIV and hepatitis B tests in your home, a trained health worker will take about 8 mL of blood from your child's arm (about 1.5 teaspoons) from your child's finger.
- **[IF CHILD IS <2 YEARS OLD]** A trained health worker will take a few drops (about 1 mL) from your child's finger or heel for the HIV and hepatitis B tests.
- We will give you the results of these blood tests today. We will not share the results with your child unless you ask us to do so. We will also provide counseling about the results and discuss with you how to share the test results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.
- If your child tests positive HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of the immune system that fights HIV infection and other diseases.
- If your child tests positive for HIV and/or hepatitis B, we will give you referral forms so you can consult with a health worker regarding his/her HIV or hepatitis B tests.
- **[IF CHILD IS >18 MONTHS OLD]** If your child tests positive for HIV, we will also send his/her blood to a laboratory to measure his/her viral load. Viral load is the amount of HIV in the blood. This information may help a doctor or nurse treat your child. Your child's viral load test results will be ready in six to ten weeks. When the results are ready we will send the results to a convenient health facility. This facility will be listed on a referral form we will give you.

[FOR CHILDREN <=18 months ONLY]
The body makes antibodies to fight HIV. Antibodies from a mother with HIV can enter the baby's blood during pregnancy. The test we perform on your child today will let us know if your child has been exposed to HIV. If it is positive, it does not mean your child has the virus in his/her blood. It just confirms that he/she has been exposed to HIV. We will need to send your child's blood to a lab for a special test to confirm if he/she has HIV. Afterwards, we will send the result to the health facility of your choice in about six to ten weeks from now.

What are the potential risks?
The risks of taking part in the survey are small. For the blood draw, the risks include brief pain from the finger prick or needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You may learn that your child has HIV and/or hepatitis B. Learning that your child has HIV and/or hepatitis B may cause emotional discomfort. You will receive counseling on how to disclose the result to your child and how to cope with learning that you have HIV and/or hepatitis B.

All the information you share with us will be kept private. However, there is a chance of loss of privacy. We are doing everything we can to minimize this chance.

We do not expect any other risk from taking part in this study.

What are the potential benefits?
The main benefit for your child to be in the study is the chance to learn more about his/her health today. Some children who participate will test positive for HIV and/or hepatitis B. If this happens to your child, the benefit is that you will learn his/her HIV and hepatitis B status, and will learn where to take your child for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that your child is HIV-positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child taking part in this study could help us learn more about children, HIV and hepatitis B in Uganda. It can help us learn about how HIV prevention and treatment programs are working.

What are alternatives to taking part?
You can decide to allow or not allow your child to take part in this study. Your decision to allow your child to take part or not take part in this study will not affect your child's health care in any way.

Will the information you share with us be kept private?
Your child's test results will be kept private. The information we collect from your child will not be released outside of the study partners we have mentioned during your consent unless there is an issue of safety. Should you have any questions or concerns, you can contact one of the Principal Investigators listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

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Office Phone: +256 414 256683
Email: opioalex@infocom.co.ug

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Email: jmusinguzi@infocom.co.ug

Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683
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[INTERVIEWER: READ THIS STATEMENT]
If you have any questions about your rights as a participant in this study, you can contact Tom Lutalo at the address and number listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

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UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

→ GO TO CONSENT STATEMENT

[IF PARENT/GUARDIAN *HAS NOT BEEN* THROUGH CONSENT PROCESS FOR THE BLOOD DRAW]

Interviewer reads:

What language do you prefer for our discussion today?

___English

___Ateso

___Karamajong

___Luganda

___Lugbara

___Luo

___Runyankole-Rukiga

___Runyoro-Rutoro

___Other Language: Specify _____

What is the purpose of this study?
HIV is the virus that causes AIDS. AIDS is a very serious illness. This study will help us learn more about the health of children in Uganda. We plan to ask thousands of children like yours to join this study. We would like to invite your child to join the study too. Your child's participation will help the Ministry of Health make HIV services better.

What will happen to your child if you agree to allow your child to take part?

- **[FOR CHILDREN 2 to 7 YEARS OLD]** If you agree to allow your child to take part in the study, a trained nurse will take about one teaspoon or about8 mL of blood from your child's arm (about

1.5 teaspoons) to perform HIV and hepatitis B tests here in your home. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.

- **[FOR CHILDREN <2 YEAR OLD]** If you agree to allow your child to take part in the study, a trained nurse will take a few drops of blood (about 1 mL) from your child's finger or heel to perform HIV and hepatitis B tests here in your home. Like HIV, hepatitis B is a serious infection that can cause very serious illnesses if left untreated.
- We will give you the results of these blood tests today. We will not share the results with your child unless you ask us to do so. We will also provide counseling about the results and discuss with you how to share the test results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.
- If your child tests positive for HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of the immune system that fights HIV infection and other diseases.
- If your child tests positive for HIV and/or hepatitis B, we will give you referral forms so you can consult with a nurse regarding his/her HIV or hepatitis B tests.

- If your child tests positive for HIV, we will also send his/her blood to a laboratory to measure his/her viral load. Viral load is the amount of HIV in the blood. This information may help a doctor or nurse treat your child. Your child's viral load test results will be ready in six to ten weeks. When the results are ready we will send the results to a convenient health facility. This facility will be listed on a referral form we will give you.
- **[FOR CHILDREN <=18 months ONLY]** The body makes antibodies to fight HIV. Antibodies from a mother with HIV can enter the baby's blood during pregnancy. The test we perform on your child today will let us know if your child has been exposed to HIV. If it is positive, it does not mean your child has the virus in his/her blood. It just confirms that he/she has been exposed to HIV. We will need to send your child's blood to a lab for a special test to confirm if he/she has HIV. Afterwards, we will send the result to the health facility of your choice in about six to ten weeks from now.

What are the potential risks?

The risks of taking part in the survey are small. For the blood draw, the risks include brief pain from the finger prick or needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You may learn that your child has HIV and/or hepatitis B. Learning that your child has HIV and/or hepatitis B may cause emotional discomfort. You will receive counseling on how to disclose the result to your child and how to cope with learning that you have HIV and/or hepatitis B.

All the information you share with us will be kept private. However, as whenever you share personal information, there is a chance of loss of privacy. We are doing everything we can to minimize this chance.

We do not expect any other risk from taking part in this study.

What are the potential benefits?
The main benefit for your child to be in the study is the chance to learn more about his/her health today. Some children who participate will test positive for HIV and/or hepatitis B. If this happens to your child, the benefit is that you will learn his/her HIV and hepatitis B status, and will learn where to take your child for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that your child is HIV-positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child taking part in this study could help us learn more about children, HIV and hepatitis B in Uganda. It can help us learn about how HIV prevention and treatment programs are working.

What are alternatives to taking part?
You can decide to allow or not allow your child to take part in this study. Your decision to allow your child to take part or not take part in this study will not affect your child's health care in any way.

Will the information you share with us be kept private?
Your child's test results will be kept private and will not be shown to anyone outside of the survey team. Your child's name will not appear when we share study results. When we share results the information we collect from your child will be identified by a number and not by your name or your child's name. Your child's tests results will not be released outside of the survey groups listed below unless there is an issue of safety.

[*INTERVIEWER: DO NOT READ ALOUD]*

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a participant. These include the Uganda National Council for Science and Technology (UNSCT), the Ugandan Virus Research Institute (UVRI), and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical study 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 participant in this study
- Study staff and monitors

[READ FROM HERE]
Your permission to allow us to use and share your child's information with the groups above will expire at the end of the survey.
Who should you contact if you have questions?
If you want your child to leave the study, have any questions about the survey, or feel that you or your child have been harmed by taking part, you should contact one of the Principal Investigators listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

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Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ THIS STATEMENT]
If you have any questions about your child's rights as a participant in this study, you can contact Tom Lutalo at the address and number listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Are there any costs?
There is no cost to you for your child being in the study. You should also know that neither you nor your child will be paid for your child to be in the study.

Do you want to ask me anything about your child's participation in the survey?

Verbal Consent Statement

1. If you agree for your child to give blood for HIV and hepatitis B testing and related testing, please state the following statement:
   "I agree for my child to give blood for HIV and hepatitis B testing and related testing"
   ____Check this box if parent/guardian agrees to allow their child participate in the blood draw

   If you do not agree for us to ask your child to give blood for HIV and hepatitis B testing and, please state the following statement:
   "I do not wish for my child to take part in blood testing today"
   ____Check this box if participant/guardian refuses to allow their child participate in the blood draw

   [INTERVIEWER: IF CONSENT FOR BLOOD TESTING IS GIVEN, PROCEED TO PAPER *CONSENT OR PERMISSION FROM PARENT OF CHILDREN/ADOLESCENTS 0-17 YEARS: BLOOD STORAGE*]
   ↓

[For illiterate participants]
Witness Attestation Statement
Please state the following statement:

"I attest that the information in this consent form was accurately explained and the participant's decision was freely given."

____ Check this box if the witness attests to the consent procedures

Signature of person obtaining consent_____ Date: ___/___/___

Printed name of person obtaining consent_____

IV. Permission from Parents of Children ages 8-14: Interview and/or Blood Draw

Uganda Population-Based HIV Impact Assessment:
Permission from Parents of Children ages 8-14: Interview and/or Blood Draw
Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT: 6317

Now I would like to ask you to give us permission to invite your child to take part in the research study. Your child's participation will help the Ministry of Health make HIV services for children and families better.

[IF PARENT/GUARDIAN *HAS BEEN* THROUGH CONSENT PROCESS FOR THE BLOOD DRAW]

What would happen to your child if you agree to allow your child to take part?
If you agree to allow your child to take part in the study the following will happen:

- **[IF CHILD IS 13 to 14 YEARS OLD]** We will invite your child to do an interview with us and then offer him/her a blood test for HIV and hepatitis B. Like HIV, hepatitis B is an infection that can cause very serious illnesses if left untreated. In the interview we will ask what your child knows about HIV. We will also ask about your child's behaviors that may put him or her at risk for HIV. The interview will take about 40 minutes. Out of respect for your child's privacy, we will not share your child's answers to the interview questions with you. The interview will take place in private here at your house or an area around your house. If you agree, after the interview we will offer your child a blood test for HIV and hepatitis B. A trained health worker will take about two teaspoon of blood (about 8 mL) from your child's arm to perform the tests here in your home. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.
- **[IF CHILD IS 8 to 12 YEARS OLD]** We offer him/her a blood test for HIV and hepatitis B. A trained health worker will take about two teaspoons of blood (about 8 mL) from your child's arm to perform the tests here in your home. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.
- We will give you the results of these blood tests today. We will not share the results with your child unless you ask us to do so. We will also provide counseling about the results and discuss with you how to share the test results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.
- If your child tests positive HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of the immune system that fights HIV infection and other diseases. We will also test the amount of CD4 cells in children without HIV.
- If your child tests positive for HIV and/or hepatitis B, we will give you referral forms so you can consult with a health worker regarding his/her HIV and/or hepatitis B tests. We will also send his/her blood to a laboratory to measure his/her viral load. Viral load is the amount of HIV in the blood. This information may help a doctor or nurse treat your child. Your child's viral load test results will be ready in six to ten weeks. When the results are ready we will send the results to a convenient health facility. This facility will be listed on a referral form we will give you.

What are the potential risks?
The risks of taking part in the survey are small.

[READ ONLY IF CHILD IS 13 to 14 YEARS OLD] Your child may feel uncomfortable about some of the questions I will ask. I do not wish this to happen. Your child does not need to answer any question(s) if they feel the question(s) are too personal or if it makes them uncomfortable.

[READ FOR ALL]
For the blood draw, the risks include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You may learn that your child has HIV and/or hepatitis B. Learning that your child has HIV and/or hepatitis B may cause emotional discomfort. You will receive counseling on how to disclose the result to your child and how to cope with learning that you have HIV and/or hepatitis B.

All the information you share with us will be kept private. However, as whenever you share personal information, there is a chance of loss of privacy. We are doing everything we can to minimize this chance.

We do not expect any other risk from taking part in this study.

What are the potential benefits?
The main benefit for your child to be in the study is the chance to learn more about his/her health today. Some children who participate will test positive for HIV and/or hepatitis B. If this happens to your child, the benefit is that you will learn his/her HIV and hepatitis B status, and will learn where to take your child for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that your child is HIV-positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child taking part in this study could help us learn more about children, HIV and hepatitis B in Uganda. It can help us learn about how HIV prevention and treatment programs are working.

What are alternatives to taking part?
[IF CHILD IS 13 to 14 YEARS OLD] You can decide to allow your child to not take part in any parts of the study. Or you can allow your child to take part in the interview, but not the blood testing. Your decision to allow your child to take part or not take part in this study will not affect your child's health care in any way.

[IF CHILD IS 8 to 12 YEARS OLD] You can decide to allow or not allow your child to take part in this study. Your decision to allow your child to take part or not take part in this study will not affect your child's health care in any way.

Will the information you share with us be kept private?
[IF CHILD IS 13 to 14 YEARS OLD] Your child's interview answers and test results will be kept private. The information we collect from your child will not be released outside of the study partners we have mentioned during your consent unless there is an issue of safety. Should you have any questions or concerns, you can contact one of the Principal Investigators listed below.

[IF CHILD IS 8 to 12 YEARS OLD] Your child's test results will be kept private. The information we collect from your child will not be released outside of the study partners we have mentioned during your consent unless there is an issue of safety. Should you have any questions or concerns, you can contact one of the Principal Investigators listed below.

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[INTERVIEWER: READ THIS STATEMENT]
If you have any questions about your rights as a participant in this study, you can contact Tom Lutalo at the address and number listed below.

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Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

→ GO TO CONSENT STATEMENT

[IF PARENT/GUARDIAN *HAS NOT BEEN* THROUGH CONSENT PROCESS FOR THE BLOOD DRAW]
Interviewer reads:

What language do you prefer for our discussion today?

___English

___Ateso

___Karamajong

___Luganda

___Lugbara

___Luo

___Runyankole-Rukiga

___Runyoro-Rutoro

___Other Language: Specify _____

What is the purpose of this study?
HIV is the virus that causes AIDS. AIDS is a very serious illness. This study will help us learn more about the health of children in Uganda. We plan to ask thousands of children like yours to join this study. We would like to invite your child to join the study too. Your child's participation will help the Ministry of Health make HIV services better.

What would happen to your child if you agree to allow your child to take part?
If you agree to allow your child to take part in the study the following will happen:

- **[IF CHILD IS 13 to 14 YEARS OLD]** We will invite your child to do an interview with us and then offer him/her a blood test for HIV and hepatitis B. Like HIV, hepatitis B is an infection that can cause very serious illnesses if left untreated. In the interview we will ask what your child knows about HIV. We will also ask about your child's behaviors that may put him or her at risk for HIV. The interview will take about 40 minutes. Out of respect for your child's privacy, we will not share your child's answers to the interview questions with you. The interview will take place in private here at your house or an area around your house. If you agree, after the interview we will offer your child a blood test for HIV and hepatitis B. A trained nurse will take about two teaspoon of blood (about 8 mL) from your child's arm to perform the tests here in your home. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.
    - **[IF CHILD IS 8 to 12 YEARS OLD]** We offer him/her a blood test for HIV and hepatitis B. A trained health worker will take about two teaspoons of blood (about 8 mL) from your child's arm to perform the tests here in your home. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.
- We will give you the results of these blood tests today. We will not share the results with your child unless you ask us to do so. We will also provide counseling about the results and discuss with you how to share the test results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.
- If your child tests positive HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of the immune system that fights HIV infection and other diseases.
    - If your child tests positive for HIV and/or hepatitis B, we will give you referral forms so you can consult with a health worker regarding his/her HIV and/or hepatitis B tests. We will also send his/her blood to a laboratory to measure his/her viral load. Viral load is the amount of HIV in the blood. This information may help a doctor or nurse treat your child. Your child's viral load test results will be ready in six to ten weeks. When the results are ready we will send the results to a convenient health facility. This facility will be listed on a referral form we will give you.

What are the potential risks?
The risks of taking part in the survey are small.

[READ ONLY IF CHILD IS 13 to 14 YEARS OLD] Your child may feel uncomfortable about some of the questions I will ask. I do not wish this to happen. Your child does not need to answer any question(s) if they feel the question(s) are too personal or if it makes them uncomfortable.

[READ FOR ALL]
For the blood draw, the risks include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You may learn that your child has HIV and/or hepatitis B. Learning that your child has HIV and/or hepatitis B may cause emotional discomfort. You will receive counseling on how to disclose the result to your child and how to cope with learning that you have HIV and/or hepatitis B.

All the information you share with us will be kept private. However, as whenever you share personal information, there is a chance of loss of privacy. We are doing everything we can to minimize this chance.

We do not expect any other risk from taking part in this study.

What are the potential benefits?
The main benefit for your child to be in the study is the chance to learn more about his/her health today. Some children who participate will test positive for HIV and/or hepatitis B. If this happens to your child, the benefit is that you will learn his/her HIV and hepatitis B status, and will learn where to take your child for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that your child is HIV-positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child taking part in this study could help us learn more about children, HIV and hepatitis B in Uganda. It can help us learn about how HIV prevention and treatment programs are working.

What are alternatives to taking part?

[READ IF CHILD IS 13 to 14 YEARS OLD] You can decide to allow your child to not take part in the study. Or you can allow your child to take part in the interview, but not the blood testing. Your decision to allow your child to take part or not take part in this study will not affect your child's health care in any way.

[READ IF CHILD IS 8 to 12 YEARS OLD] You can decide to allow or not allow your child to take part in this study. Your decision to allow your child to take part or not take part in this study will not affect your child's health care in any way.

Will the information you share with us be kept private?
The information we collect from your child will be kept private. This information will not be shown to anyone outside of the survey team. Your child's name will not appear when we share study results. When we share results the information we collect from your child will be identified by a number and not by your name or your child's name. Your child's information will not be released outside of the survey groups listed below unless there is an issue of safety.

[*INTERVIEWER: DO NOT READ ALOUD]*

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a participant. These include the Uganda National Council for Science and Technology (UNSCT), the Ugandan Virus Research Institute (UVRI), and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical study 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 participant in this study
- Study staff and monitors

[READ FROM HERE]
Your permission to allow us to use and share your child's information with the groups above will expire at the end of the survey.

Who should you contact if you have questions?
If you want your child to leave the study, have any questions about the survey, or feel that you or your child have been harmed by taking part, you should contact one of the Principal Investigators listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

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Dr. Wilford Kirungi
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Office Phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ THIS STATEMENT]
If you have any questions about your child's rights as a participant in this study, you can contact Tom Lutalo at the address and number listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Are there any costs?
There is no cost to you for your child being in the study. You should also know that neither you nor your child will be paid for your child to be in the study.

Do you want to ask me anything about your child's participation in the survey?

Verbal Permission Statement

1. **[READ ONLY IF CHILD IS 13 to 14 YEARS OLD]** If you agree for us to ask your child do the interview, please state the following statement:
   "I give permission to the study team to ask my child to take part in the interview"

   ____Check this box if parent/guardian agrees to allow us to ask his/her child to take part in the interview

   If you do not agree for us to ask your child to do interview, please state the following statement:
   "I do not wish for the study team to ask my child to take part in the interview"
   ____Check this box if parent/guardian refuses to allow the study team to ask his/her child to take part in the interview

   (If permission given proceed to the next question)

2. [**READ IF CHILD IS <=14 YEARS]** If you agree for us to ask your child to give blood for HIV and hepatitis B testing and related testing, please state the following statement:
   "I give permission for the study team to ask my child to give blood for HIV and hepatitis B testing and related testing"
   ____Check this box if parent/guardian gives permission for study team to ask his/her child to take part in the blood draw

   If you do not agree for us to ask your child to give blood for HIV and hepatitis testing and related testing, please state the following statement:
   "I do not wish for the study team to ask my child to take part in blood testing today"
   ____Check this box if parent/guardian refuses to allow the study team to ask his/her to take part in the blood draw

   [INTERVIEWER: IF PERMISSION FOR BLOOD TESTING IS GIVEN, PROCEED TO PAPER *CONSENT OR PERMISSION FROM PARENT OF CHILDREN/ADOLESCENTS 0-17 YEARS: BLOOD STORAGE*]

[For illiterate participants]
Witness Attestation Statement
Please state the following statement:
"I attest that the information in this permission form was accurately explained and the parent / guardian's decision was freely given."
____Check this box if the witness attests to the permission procedures

Signature of person obtaining permission_____ Date: ___/___/___
Printed name of person obtaining permission_____

V. Permission from Parents of Children ages 15-17: Interview and Blood Draw

Uganda Population-Based HIV Impact Assessment:
Permission from Parents of Children ages 15-17: Interview and Blood Draw

Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT: 6317

Now I would like to ask you to give us permission to invite your child to take part in the research study. Your child's participation will help the Ministry of Health make HIV services for children and families better.

[IF PARENT/GUARDIAN *HAS BEEN* THROUGH CONSENT PROCESS FOR THE BLOOD DRAW]

What would happen to your child if you agree to allow your child to take part?
If you agree to allow your child to take part in the study the following will happen:

- We will invite your child to do an interview with us and then offer him/her a blood test for HIV and hepatitis B and syphilis. Like HIV, hepatitis B and syphilis are infections that can cause very serious illnesses if left untreated.
- In the interview we will ask what your child knows about HIV. We will also ask about your child's behaviors that may put him or her at risk for HIV. The questions are the same as the ones we will ask adults who agree to participate in the study. The interview will take about 50 minutes. Out of respect for your child's privacy, we will not share your child's answers to the interview questions with you. The interview will take place in private here in your house or an area around your house.
- If you agree, after the interview we will offer your child a blood test for HIV, hepatitis B and syphilis. A trained health worker will take about three teaspoon of blood (about 14 mL) from your child's arm to perform the tests here in your home. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.
- We will give you the results of these blood tests today. We will not share the results with your child unless you ask us to do so. We will also provide counseling about the results and discuss with you how to share the test results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.
- If your child tests positive HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of the immune system that fights HIV infection and other diseases.
- If your child tests positive for HIV, hepatitis B and/or syphilis, we will give you referral forms so you can consult with a health worker regarding his/her HIV, hepatitis B or syphilis tests. We will also send his/her blood to a laboratory to measure his/her viral load. Viral load is the amount of HIV in the blood. This information may help a doctor or nurse treat your child. Your child's viral load test results will be ready in six to ten weeks. When the results are ready we will send the

results to a convenient health facility. This facility will be listed on a referral form we will give you.

What are the potential risks?
The risks of taking part in the survey are small.

Your child may feel uncomfortable about some of the questions I will ask. I do not wish this to happen. Your child does not need to answer any question(s) if they feel the question(s) are too personal or if it makes them uncomfortable.

For the blood draw, the risks include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You may learn that your child has HIV, hepatitis B and/or syphilis. Learning that your child has HIV, hepatitis B and/or syphilis may cause emotional discomfort. You will receive counseling on how to disclose the result to your child and how to cope with learning that you have HIV, hepatitis B and/or syphilis.

All the information you share with us will be kept private. However, as whenever you share personal information, there is a chance of loss of privacy. We are doing everything we can to minimize this chance.

We do not expect any other risk from taking part in this study.

What are the potential benefits?
The main benefit for your child to be in the study is the chance to learn more about his/her health today. Some children who participate will test positive for HIV, hepatitis B and/or syphilis. If this happens to your child, the benefit is that you will learn his/her HIV, hepatitis B and syphilis status, and will learn where to take your child for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that your child is HIV-positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child taking part in this study could help us learn more about children, HIV and hepatitis B in Uganda. It can help us learn about how HIV prevention and treatment programs are working.

What are alternatives to taking part?
You can decide to allow your child to not take part in the study. Or you can allow your child to take part in the interview, but not the blood testing. Your decision to allow your child to take part or not take part in this study will not affect your child's health care in any way.

Will the information you share with us be kept private?
Your child's information will be kept private. The information we collect from your child will not be released outside of the study partners we have mentioned during your consent unless there is an issue of safety. Should you have any questions or concerns, you can contact one of the Principal Investigators listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

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Email: tlutalo@rhsp.org

→ GO TO CONSENT STATEMENT

[IF PARENT/GUARDIAN *HAS NOT BEEN* THROUGH CONSENT PROCESS FOR THE BLOOD DRAW]
Interviewer reads:

What language do you prefer for our discussion today?

___English

___Ateso

___Karamajong

___Luganda

___Lugbara

___Luo

___Runyankole-Rukiga

___Runyoro-Rutoro

___Other Language: Specify _____

What is the purpose of this study?
HIV is the virus that causes AIDS. AIDS is a very serious illness. This study will help us learn more about the health of children in Uganda. We plan to ask thousands of children like yours to join this study. We would like to invite your child to join the study too. Your child's participation will help the Ministry of Health make HIV services better.

What would happen to your child if you agree to allow your child to take part?
If you agree to allow your child to take part in the study the following will happen:

- We will invite your child to do an interview with us and then offer him/her a blood test for HIV and hepatitis B and syphilis. Like HIV, hepatitis B and syphilis are infections that can cause very serious illnesses if left untreated.
- In the interview we will ask what your child knows about HIV. We will also ask about your child's behaviors that may put him or her at risk for HIV. The questions are the same as the ones we will ask adults who agree to participate in the study. The interview will take about 50 minutes. Out of respect for your child's privacy, we will not share your child's answers to the interview questions with you. The interview will take place in private here in your house or an area around your house.
- If you agree, after the interview we will offer your child a blood test for HIV, hepatitis B and syphilis. A trained health worker will take about three teaspoon of blood (about 14 mL) from your child's arm to perform the tests here in your home. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.
- We will give you the results of these blood tests today. We will not share the results with your child unless you ask us to do so. We will also provide counseling about the results and discuss with you how to share the test results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.
- If your child tests positive HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of the immune system that fights HIV infection and other diseases.
- If your child tests positive for HIV, hepatitis B and/or syphilis, we will give you referral forms so you can consult with a health worker regarding his/her HIV, hepatitis B or syphilis tests. We will also send his/her blood to a laboratory to measure his/her viral load. Viral load is the amount of HIV in the blood. This information may help a doctor or nurse treat your child. Your child's viral load test results will be ready in six to ten weeks. When the results are ready we will send the results to a convenient health facility. This facility will be listed on a referral form we will give you.

What are the potential risks?
The risks of taking part in the survey are small.

Your child may feel uncomfortable about some of the questions I will ask. I do not wish this to happen. Your child does not need to answer any question(s) if they feel the question(s) are too personal or if it makes them uncomfortable.

For the blood draw, the risks include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You may learn that your child has HIV, hepatitis B and/or syphilis. Learning that your child has HIV, hepatitis B and/or syphilis may cause emotional discomfort. You will receive counseling on how to disclose the result to your child and how to cope with learning that you have HIV, hepatitis B and/or syphilis.

All the information you share with us will be kept private. However, as whenever you share personal information, there is a chance of loss of privacy. We are doing everything we can to minimize this chance.

We do not expect any other risk from taking part in this study.

What are the potential benefits?
The main benefit for your child to be in the study is the chance to learn more about his/her health today. Some children who participate will test positive for HIV, hepatitis B and/or syphilis. If this happens to your child, the benefit is that you will learn his/her HIV, hepatitis B and syphilis status, and will learn where to take your child for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that your child is HIV-positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child taking part in this study could help us learn more about children, HIV and hepatitis B in Uganda. It can help us learn about how HIV prevention and treatment programs are working.

What are alternatives to taking part?

You can decide to allow your child to not take part in the study. Or you can allow your child to take part in the interview, but not the blood testing. Your decision to allow your child to take part or not take part in this study will not affect your child's health care in any way.

Will the information you share with us be kept private?
The information we collect from your child will be kept private. This information will not be shown to anyone outside of the survey team. Your child's name will not appear when we share study results. When we share results the information we collect from your child will be identified by a number and not by your name or your child's name. Your child's information will not be released outside of the survey groups listed below unless there is an issue of safety.

[*INTERVIEWER: DO NOT READ ALOUD]*

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your rights as a participant. These include the Uganda National Council for Science and Technology (UNSCT), the Ugandan Virus Research Institute (UVRI), and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical study 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 participant in this study
- Study staff and monitors

[READ FROM HERE]
Your permission to allow us to use and share your child's information with the groups above will expire at the end of the survey.

Who should you contact if you have questions?
If you want your child to leave the study, have any questions about the survey, or feel that you or your child have been harmed by taking part, you should contact one of the Principal Investigators listed below.

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Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ THIS STATEMENT]
If you have any questions about your child's rights as a participant in this study, you can contact Tom Lutalo at the address and number listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Are there any costs?
There is no cost to you for your child being in the study. You should also know that neither you nor your child will be paid for your child to be in the study.

Do you want to ask me anything about your child's participation in the survey?

Verbal Permission Statement

1. If you agree for us to ask your child do the interview, please state the following statement:
   "I give permission to the study team to ask my child to take part in the interview"

   ____Check this box if parent/guardian agrees to allow us to ask his/her child to take part in the interview

   If you do not agree for us to ask your child to do interview, please state the following statement:

"I do not wish for the study team to ask my child to take part in the interview"
____Check this box if parent/guardian refuses to allow the study team to ask his/her child to take part in the interview

(If permission given proceed to the next question)

2. If you agree for us to ask your child to give blood for HIV, hepatitis B and syphilis testing and related testing, please state the following statement:
"I give permission for the study team to ask my child to give blood for HIV, hepatitis B and syphilis testing and related testing"
____Check this box if parent/guardian gives permission for study team to ask his/her child to take part in the blood draw

If you do not agree for us to ask your child to give blood for HIV, hepatitis and syphilis testing and related testing, please state the following statement:
"I do not wish for the study team to ask my child to take part in blood testing today"
____Check this box if parent/guardian refuses to allow the study team to ask his/her to take part in the blood draw

[INTERVIEWER: IF PERMISSION FOR BLOOD TESTING IS GIVEN, PROCEED TO PAPER *CONSENT OR PERMISSION FROM PARENT OF CHILDREN/ADOLESCENTS 0-17 YEARS: BLOOD STORAGE]*

[For illiterate participants]
Witness Attestation Statement
Please state the following statement:
"I attest that the information in this permission form was accurately explained and the parent/guardian's decision was freely given."
____Check this box if the witness attests to the permission procedures
Signature of person obtaining permission_____ Date: ___/___/___
Printed name of person obtaining permission_____

VI. Assent for Interview Children ages 13-17

Uganda Population-Based HIV Impact Assessment:
Assent for Interview: Children ages 13-17
Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT: 6317

[INTERVIEWER: READ FROM HERE]

What language do you prefer for our discussion today?

___English

___Ateso

___Karamajong

___Luganda

___Lugbara

___Luo

___Runyankole-Rukiga

___Runyoro-Rutoro

___Other Language: Specify _____

Hello. My name is_____. I would like to invite you to take part in a study. Studies help us learn new things.
This form talks about our study and the choice that you have to take part in it. I want you to ask me any questions that you have. You can ask questions any time.

Why are we doing this study?
We are doing this study to help us learn more about the health of children in Uganda. We plan to ask thousands of children like you to join this study. We would like to invite you to join this study too. Your parent/guardian said it was okay for us to ask you to join.

What would happen if you joined this study?
If you decide to join the study, here is what would happen:
[IF CHILD IS 13 to 14 YEARS OLD]

- We will ask you questions about your age and some of your activities. We will also ask you what you know about a germ called HIV that makes people very sick. The interview will take place in private here in your home or an area around your home.
- The interview will take about 30 minutes.

- 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 hepatitis B. Like HIV, hepatitis B is a germ that can make people very sick. We will also ask you if we can store your blood for future studies.

[IF CHILD IS 15 to 17 YEARS OLD]

- We will ask you questions about your age and your knowledge about HIV. We will also ask you if you experienced any behaviors that may increase your chance of getting HIV.
- The interview will take about 50 minutes.
- After the interview, we will ask you if it is okay to take some of your blood to test for HIV, hepatitis B and syphilis. Like HIV, hepatitis B and syphilis are infections that can make someone very sick if left untreated. The testing and counseling will take about 40 minutes. You do not have to agree to the blood testing now. We will give you a separate opportunity to agree to the blood testing. You can agree to the interview, but not agree to the blood testing.

Could bad things happen to you if you joined the study?
You may feel uncomfortable about some of the questions I will ask. If I ask you any questions you don't want to answer, just let me know and I will go to the next question. You can stop the interview at any time.

Could this study help you?
Being in this study may not help you. But you may help us figure out ways to help other children and learn more about HIV in Uganda. Taking part in this study is important.

What else should you know about this study?
If you don't want to be in the study, you don't have to be. Nobody will get upset with you if you do not want to join the study. Your decision to take part or not take part will not affect your healthcare, but we hope you will agree to answer these questions since your views are important.

Will you share my answers in the interview with other people?
All the information you share with us during the interview will be kept confidential. You can choose to tell your parent/guardian about the interview. However, we will not share your answers to the questions with your parent or guardian. We will not tell other people that you are in this study. We will not share information about you to anyone who does not work on the study. Any information we share about you will have a number on it instead of your name. Only people working on the study will be allowed to view the information we collect from you.

The following individuals and agencies will be able to look at your interview records to help oversee the conduct of this study:

- Study staff and monitors
- Staff members from groups that protect your rights as a study participant to make sure that we are protecting your rights as a participant

Who should you contact if you have questions?
If you want to leave the study, have any questions about the study, or feel that you have been harmed by taking part, you can talk with your parent, guardian, or doctor. You can also contact one of the Principal Investigators who can be reached at the number and address below.

[*INTERVIEWER: DO NOT READ ALOUD*]

Dr. Alex Opio
Address: 6 Lourdel Road
Kampala, Uganda
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Email: opioalex@infocom.co.ug

Dr. Joshua Musinguzi
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Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ THIS STATEMENT]
If you have any questions about your rights as a participant in this study, you can contact Tom Lutalo at the address and number listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Are there any costs to taking part in the interview?
There is no cost to you for answering the questions in the interview. You should also know that you would not be paid to answer these questions.

You can ask questions any time. Take the time you need to make your choice.
Do you want to ask me anything?

Verbal Assent Statement

1. If you agree to take part in the individual interview, please state the following statement:
   "I agree to take part in the individual interview"
   ____Check this box if participant agreed to participate in the individual interview

   If you do not agree to take part in the individual interview, please state the following statement:
   "I do not wish to take part in the individual interview"
   ____Check this box if participant refuses to participate in the individual interview

[For illiterate participants]
Witness Attestation Statement
Please state the following statement:
"I attest that the information in this assent form was accurately explained and the participant's decision was freely given."
____Check this box if the witness attests to the assent procedures

Signature of person obtaining assent_____ Date: ___/___/___
Printed name of person obtaining assent_____

VII. Assent for Blood Draw for Children 8-17 Years of Age

Uganda Population-Based HIV Impact Assessment:
Assent for Blood Draw: Children ages 8-17

Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT: 6317
[INTERVIEWER: READ ONLY IF CHILD OR ADOLESCENT IS 8-12 YEARS OF AGE]

What language do you prefer for our discussion today?

___English

___Ateso

___Karamajong

___Luganda

___Lugbara

___Luo

___Runyankole-Rukiga

___Runyoro-Rutoro

___Other Language: Specify _____

Hello. My name is_____. I would like to invite you to take part in a study. Studies help us learn new things.
This form talks about our study and the choice that you have to take part in it. I want you to ask me any questions that you have. You can ask questions any time.

[INTERVIEWER: READ FOR ALL]
As a part of this study, we are giving people who take part a chance to learn if they have HIV or hepatitis B. HIV and hepatitis B are germs that can make people very sick. 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 you may not understand. Please ask me to explain anything that you do not understand. You can ask me questions any time.

What would happen if you joined the blood testing part of this study?
If you decide to join the blood testing part of the study, here is what would happen:

- **[IF CHILD IS 8 to 14 YEARS OLD]** We will use a needle to take some of your blood from your arm and then we would test your blood for HIV and hepatitis B today in your home.

- **[IF CHILD IS 15 to 17 YEARS OLD]**We will use a needle to take some of your blood from your arm and then we would test your blood for HIV, hepatitis B and syphilis today in your home.
- It will take about 40 minutes to do the test and to talk to your parents about the results.
- If you test positive for HIV, we will do another test on the blood we have already collected to measure the cells in your blood that fight HIV and other infections. We will also measure these cells from some children without HIV. We will do this test here at your home.
- If you test positive for HIV, we will send your blood to a laboratory to measure the amount of HIV in your blood.
- If you test positive for hepatitis B we will refer you to a health facility for further treatment.
- **[IF CHILD IS 15 to 17 YEARS OLD]** If you test positive for syphilis, we will offer you treatment today or refer you to a health facility for further treatment

Could bad things happen if you take the blood tests?
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 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. And 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. You can say 'no' to what we ask you to do for the study at any time and we will stop.

Could the blood testing help you?
[IF CHILD IS 8 to 14 YEARS OLD] Taking the blood test may help you learn if you have HIV and/or hepatitis B. After the blood test, we would give your tests results to your parent/guardian and they would decide on the best time to tell you the results. If your parent/guardian wants us to tell you about your test results, we would talk with you about any questions or worries you might have about the results. If you have HIV and/or hepatitis B, we will tell your parent/guardian where to they can take you for medical care and treatment. Treatment for HIV and hepatitis B is free. We hope to learn about HIV health care needs in this study. And we hope it will help other children in Uganda in the future.

[IF CHILD IS 15 to 17 YEARS OLD] Taking the blood test may help you learn if you have HIV, hepatitis B and/or syphilis. After the blood test, we would give your tests results to your parent/guardian and they would decide on the best time to tell you the results. If your parent/guardian wants us to tell you about your test results, we would talk with you about any questions or worries you might have about the results. If you have HIV and/or hepatitis B, we will tell your parent/guardian where to they can take you for medical care and treatment. Treatment for HIV and hepatitis B is free. We hope to learn about HIV health care needs in this study. And we hope it will help other children in Uganda in the future.

If you test positive for syphilis, we will offer you treatment today or give your parent/guardianl a referral form for you to the nearest appropirate health facility for treatment.

What else should you know about the blood testing part of this study?
If you don't want to take the blood tests, you don't have to. Nobody will get upset if you do not want to get your blood tested. You can also say 'yes' and change your mind later. You can stop the blood testing at any time. If you want to stop, please tell us.

Your decision to take part or not take part in the blood testing will not affect your health care in any way. However, we hope you will agree to take part as getting tested today can help you.

We will not tell other people that took a blood test today. 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.

[IF CHILD IS 8 to 12 YEARS OLD] The following individuals and agencies will be able to look at your blood testing records:

- Study staff and monitors
- Staff members from groups that protect your rights as a study participant to ensure that we are protecting your rights as a participant

[IF CHILD IS 13 to 17 YEARS OLD] The information we collect from you will not be released outside of the study partners we have mentioned during your interview assent unless there is an issue of safety.

[READ FOR ALL]

Who should you contact if you have questions?

If you have any questions about the study or blood test, feel that you have been harmed by taking part, or no longer want to participate in the study, you can talk with your parent, guardian, or doctor. You can also contact one of the Principal Investigators who can be reached at the number and address below:

[*INTERVIEWER: DO NOT READ ALOUD*]

Dr. Alex Opio
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Kampala, Uganda
Office Phone: +256 414 256683
Email: opioalex@infocom.co.ug

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Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Will you or your parent/guardian have to pay to receive blood testing?

There is no cost to you or your parent/guardian for receiving blood testing today. You should also know that you and your parent/guardian will not be paid for receiving blood testing.

Take the time you need to make your choice.

Do you want to ask me anything?

- Taking your blood for HIV and hepatitis B testing?
- Testing in the laboratory?

If you want to get a blood test and give your blood for research after we talk, please write your name below. We will write our name too. This shows we talked about the blood testing and that you want to take part.

Verbal Assent Statement

1. **[IF CHILD IS 8 to 14 YEARS OLD]** If you agree to give blood for HIV and hepatitis B testing and related testing, please state the following statement:
   "I agree to give blood for HIV and hepatitis B testing and related testing"
   ____Check this box if participant agreed to blood testing and related testing.

   If you do not agree to give blood for HIV and hepatitis B testing and related testing, please state the following statement:
   "I do not wish to take part in blood testing today"
   ____Check this box if participant refuses to participate in blood testing and related testing.

   (If agrees to blood testing and related testing, proceed to question3)

2. **[IF CHILD IS 15 to 17 YEARS OLD]** If you agree to give blood for HIV, hepatitis B and syphilis testing and related testing, please state the following statement:
   "I agree to give blood for HIV, hepatitis B and syphilis testing and related testing"
   ____Check this box if participant agreed to participate in the blood draw

   If you do not agree to give blood for HIV, hepatitis B and syphilis testing and related testing, please state the following statement:
   "I do not wish to take part in blood testing today"
   ____Check this box if participant refuses to participate in blood draw

   [INTERVIEWER: IF ASSENT FOR BLOOD TESTING IS GIVEN, PROCEED TO PAPER *ASSENT FOR BLOOD STORAGE: CHILDREN/ADOLESCENTS AGES 8-17]*

[For illiterate participants]
Witness Attestation Statement
Please state the following statement:
"I attest that the information in this assent form was accurately explained and the participant's decision was freely given."
____Check this box if the witness attests to the assent procedures

Signature of person obtaining assent_____ Date: ___/___/___
Printed name of person obtaining assent_____

VIII. Consent for Blood draw (Adults ages 18-64 and Emancipated minors)

Uganda Population-Based HIV Impact Assessment:
Consent for Blood Draw (Adults ages 18 - 64 and Emancipated Minors)

Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT: 6317

[INTERVIEWER: READ FROM HERE]

[Interviewer/individual obtaining consent introduces Laboratory Technician or Nurse, if not drawing the blood himself/herself]

As a part of this study, we are giving people who take part a chance to learn if they have HIV, hepatitis B and/or syphilis. HIV, hepatitis B and syphilis are infections that can cause very serious illness if left untreated. 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 are not familiar to you. Please ask me to explain anything that you do not understand.

What would happen to you if you agree to take part in the blood testing?

If you agree to the HIV, hepatitis B and syphilis blood testing a trained health worker will take about three teaspoons or about 14 mL of blood 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. We will give you the results of these blood tests today. We will provide counseling about the results. The testing and counseling session will take about 40 minutes.

If you test positive for HIV, we will also test the amount of CD4 cells in your blood and give you the result today. CD4 cells are the part of the immune system that fights HIV infection and other diseases. We will also test the amount of CD4 cells in people without HIV. If you test positive for HIV, we will send your blood to a laboratory to measure your viral load. Viral load is the amount of HIV in the blood. This information will help a doctor or nurse treat you.

After this blood test we will show you a list of the nearest Ministry of Health approved and recommended health facilities for HIV, where you will be able to talk to trained doctors and nurses about the your HIV test results. We will give you a referral form to the health facility you select and information on today's test results so that you can consult with a doctor or nurse to learn more about your HIV test, CD4 count and overall health. Your viral load test results will be ready in six to ten weeks. When the results are ready, we will send the results to your healthy facilitiy of choice.

As I stated before, we will also test your blood for hepatitis B and syphilis. If you test positive for hepatitis B , we will refer you to the nearest appropriate health facility for further testing. If you test positive for syphilis, we will offer you treatment today or refer you to the nearest appropirate health facility for treatment.

What are the potential risks?

The needle may be uncomfortable when it is put into and taken out of your arm. There may be risks involved in drawing blood from a vein and these may include, but are not limited to, momentary discomfort at the site of the blood draw, possible bruising, redness, and swelling around the site, bleeding at the site, feeling of lightheadedness when the blood is drawn, and rarely, an infection at the site of the blood draw.

Experienced staff will do the test under safe and clean conditions in order to protect you against any risk.

In addition, you may learn that you are infected with HIV, hepatitis B and/or syphilis. Learning that you have HIV, hepatitis B and/or syphilis may cause some emotional discomfort. We will provide counseling on how to cope with learning that you have HIV, hepatitis B and/or syphilis. We will also tell you where you may go for care and treatment.

Your test results will be kept private. However, as whenever you share personal information, there is a chance of loss of privacy. We are doing everything we can to minimize this chance.
We do not expect any other risk from taking part in this blood testing.

What are the potential benefits?
The main benefit is the chance to learn more about your health today. Some people who participate will test positive for HIV hepatitis B and/or syphilis. If this happens to you, the benefit is that you will learn your HIV, hepatitis B and syphilis status. You will also learn where to go for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that you are HIV-positive and are on treatment, the CD4 and viral load tests can help your doctor or nurse judge how well the treatment is working. You taking part in this blood testing could help us learn more about HIV, hepatitis B and syphilis in Uganda. It can help us learn about how HIV prevention and treatment programs are working. It can also help improve these programs and services for Ugandans.

What are alternatives to taking part?
You can decide to not take part in the blood testing..

Your decision to take part or not take part in the blood testing will not affect your health care in any way. However, we hope you will agree to take part as getting an HIV, hepatitis B and syphilis tests can help you. If you test positive for HIV, hepatitis B and/or syphilis you can start medication to keep healthy.

What about privacy?
Your blood tests results will be kept strictly confidential. Your name and signed forms will be kept separate from your health information. Your name will not appear when we share study results. When we share study results the information we collect from you will be identified by a number and not by your name. The information we collect from you will not be released outside of the study partners we have mentioned during your interview consent unless there is an issue of safety. Should you have any questions or concerns, you can contact one of the Principal Investigators listed below.

Who should you contact if you have questions?
If you want to leave the study, have any questions about the study, or feel that you have been harmed by taking part, you should contact one of the Principal Investigators, who can be reached at the number and address below.

[*INTERVIEWER: DO NOT READ ALOUD*]
Dr. Alex Opio Email: opioalex@infocom.co.ug
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683

Dr. Joshua Musinguzi
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Email: jmusinguzi@infocom.co.ug

Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ THIS STATEMENT]
If you have any questions about your rights as a participant in this study, you can contact Tom Lutalo at the address and number listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]
Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Are there any costs?
There is no cost to you for receiving the blood tests today. You should also know that you would not be paid to receive the blood tests.

Do you want to ask me anything about:

- Taking your blood for HIV testing?
- Testing in the laboratory?

Verbal Consent Statement

1. If you agree to give blood for HIV, hepatitis B and syphilis testing and related testing, please state the following statement:
   "I agree to give blood for HIV, hepatitis B and syphilis testing and related testing"
   ____Check this box if participant agreed to blood testing and related testing.

   If you do not agree to give blood for HIV, hepatitis B and syphilis testing and related testing, please state the following statement:
   "I do not wish to take part in blood testing today"
   ____Check this box if participant refuses blood testing and related testing.

   [INTERVIEWER: IF CONSENT FOR BLOOD TESTING IS GIVEN, PROCEED TO PAPER CONSENT FOR BLOOD STORAGE FOR FUTURE TESTING (18-64 YEARS AND EMANCIPATED MINORS*]*

[For illiterate participants]
Please state the following statement:
"I attest that the information in the consent form and other written information was accurately explained and the participant's decision to take part or not take part was freely given."
____Check this box if participant agrees to participate in the household interview

Signature of person obtaining consent_____ Date: ___/___/___
Printed name of person obtaining consent_____

IX. Consent for Blood Storage for Future Testing (18-64 Years or Emancipated Minor)

Uganda Population-Based HIV Impact Assessment:
Consent for Blood Storage for Future Testing (18-64 years and Emancipated Minors)
Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT:6317

[INTERVIEWER: READ FROM HERE]
As a part of this study, 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 are not familiar to you. Please ask me to explain anything that you do not understand.

What will happen to your left over blood?
We would like to ask your permission to store your leftover blood for future research tests. These tests may be for HIV or other health issues which are important to the health of Ugandans, such as nutrition or immunization. This sample will be stored for an indefinite amount of time but your name will not be on the sample. Your leftover blood will not be sold or used for commercial reasons. If you do not agree to future research tests to your blood samples, we will destroy your blood samples after study-related testing has been completed.

What are the potential risks and benefits?
There may be no direct benefit to you, but the information you provide will also be used by the Ministry of Health to improve the health of Ugandans.

We do not expect any risk from agreeing to store your blood for future testing.

What are alternatives to taking part?
You can agree or not agree to store your blood for future research. Your decision will not affect your health care in any way.

Who will have access to information from this research?
Only research staff trained to keep the information confidential will have access to the records. The names of individual participants will not appear on any reports on this research. As stated before, after all your samples have been collected, your name will be removed from the records and no-one will be able to find out information about you from our records.

Who should you contact if you have questions?

If you want to leave the study, have any questions about the study, or feel that you have been harmed by taking part, you should contact one of the Principal Investigators, who can be reached at the number and address below.

[*INTERVIEWER: DO NOT READ ALOUD*]
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Office Phone: +256 414 256683
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[INTERVIEWER: READ THIS STATEMENT]
If you have any questions about your rights as a participant in this study, you can contact Tom Lutalo at the address and number listed below.

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Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Are there any costs?
There is no cost to agreeing to blood storage for future testing. You should also know that you would not be paid to receive the blood tests.

Do you want to ask me anything about future blood storage?

Verbal Consent Statement

1. If you agree to have your leftover blood stored for future research, please state the following statement:

"I agree to have my leftover blood stored for future research"
____Check this box if participant agrees to have their leftover blood stored for future research

If you do not agree to have your blood stored for future research, please state the following statement:
"I do not wish to have my leftover blood stored for future research"

____Check this box if participant refuses to have their leftover blood stored for future research

[For illiterate participants]
Please state the following statement:
"I attest that the information in the consent form and other written information was accurately explained and the participant's decision to store blood or not was freely given."
____Check this box if participant agrees to store blood for future research testing.
[INTERVIEWER: AFTER COMPLETING PAPER CONSENT FORM, PLEASE INDICATE THE PARTICIPANT'S RESPONSE IN THE TABLET]

Signature of person obtaining consent_____ Date: ___/___/___
Printed name of person obtaining consent_____

X. Assent for Blood Storage: Children/Adolescents ages 8-17years

Uganda Population-Based HIV Impact Assessment:
Assent for Blood Storage: Children/Adolescents ages 8-17

Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT: 6317
[INTERVIEWER: READ FROM HERE]
As a part of this study, 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 are not familiar to you. Please ask me to explain anything that you do not understand.

What will happen to your left over blood?
We will ask you if we can use some of your blood for future testing. These test will help us learn more about the health of people in Uganda. . This sample will be stored for a long period of time, but your name will not be on it. Your leftover blood will not be sold. If you do not agree to future testing of your blood, we will destroy your blood after study related testing has finished.

What are the potential risks and benefits?There may be no direct benefit to you, but the information you provide will also be used to improve the health of Uganda.

We do not expect any risk from agreeing to store your blood for future testing.

What are alternatives to taking part?

You can agree or not agree to store your blood for future research. Your decision will not affect your health care in any way.

Who should you contact if you have questions?

If you want to leave the study, have any questions about the study, or feel that you have been harmed by taking part, you should contact one of the Principal Investigators, who can be reached at the number and address below.

[*INTERVIEWER: DO NOT READ ALOUD*]

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Office Phone: +256 414 256683 Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ THIS STATEMENT]
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Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Are there any costs?
There is no cost to agreeing to blood storage for future testing... You should also know that you would not be paid to receive the blood tests.

Do you want to ask me anything about future blood storage?

Verbal Assent Statement

1. If you agree have your leftover blood stored for future research, please state the following statement:

"I agree to have my leftover blood stored for future research"
____Check this box if participant agrees to have their leftover blood stored for future research

If you do not agree to have your blood stored for future research, please state the following statement:
"I do not wish to have my leftover blood stored for future research"

____Check this box if participant refuses to have their leftover blood stored for future research

[For illiterate participants]
Please state the following statement:
"I attest that the information in the assent form and other written information was accurately explained and the participant's decision to store blood or not was freely given."
____Check this box if participant agrees to store blood for future research testing
[INTERVIEWER: AFTER COMPLETING PAPER ASSENT FORM, PLEASE INDICATE THE PARTICIPANT'S RESPONSE IN THE TABLET]

Signature of person obtaining consent_____ Date: ___/___/___
Printed name of person obtaining consent_____

XI. Consent or Permission from Parent of Children/Adolescents 0-17 years: Blood Storage

Uganda Population-Based HIV Impact Assessment:
Consent or Permission from Parent of Children/Adolescents 0-17 years: Blood Storage

Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT: 6317

[INTERVIEWER: READ FROM HERE]

As a part of this study, 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 are not familiar to you. Please ask me to explain anything that you do not understand.

What will happen to your child's left over blood?
We would like to ask your permission to store your child's leftover blood for future research tests. These tests may be for HIV or other health issues which are important to the health of Ugandans, such as nutrition or immunization. This sample will be stored for an indefinite amount of time but your child's name will not be on the sample. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to future research tests to your child's blood samples, we will destroy your child's blood samples after study-related testing has been completed.

[READ IF PARTICIPANT IS PARENT/GUARDIAN OF A 8-17 YEARS OLD]
We will ask your child to store his or her blood for future research tests.

What are the potential risks and benefits?
There may be no direct benefit to your or your child, but the information you provide will also be used to improve the health of Uganda.

We do not expect any risk from agreeing to store your child's blood for future testing.

What are alternatives to taking part?
You can decide to allow or not allow your child's blood to be stored for future research. Your decision will not affect your child's health care in any way.

Who will have access to information from this research?
Only research staff trained to keep the information confidential will have access to the records. The names of indivdiual particpants will not appear on any reports on this research. As stated before, after all your child's samples have been collected, your child's name will be removed from the records, so no-one will be able to find out information about you or your child from our records.

Who should you contact if you have questions?
If your child to leave the study, have any questions about the study, or feel that you or your child have been harmed by taking part, you should contact one of the Principal Investigators, who can be reached at the number and address below.

[*INTERVIEWER: DO NOT READ ALOUD*]

Dr. Alex Opio
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683
Email: opioalex@infocom.co.ug

Dr. Joshua Musinguzi
Address: 6 Lourdel Road
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Office Phone: +256 414 256683
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Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ THIS STATEMENT]

If you have any questions about your rights as a participant in this study, you can contact Tom Lutalo at the address and number listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Are there any costs?

There is no cost to agreeing to blood storage for future testing. You should also know that you would not be paid to receive the blood tests.

Do you want to ask me anything about future blood storage?

Verbal Permission Statement

[READ IF PARENT/GUARDIAN OF CHILD 0-7 YEARS OF AGE]

1. If you agree your child to have his/her leftover blood stored for future research, please state the following statement:

   "I agree to have my child's leftover blood stored for future research"

   ____Check here if participant agrees to have their child's leftover blood stored for future research.

   If you do not agree to have your blood stored for future research, please state the following statement:

   "I do not wish to have my child's leftover blood stored for future research"

   ____Check here if participant refuses to have their child's leftover blood stored for future research.

[INTERVIEWER: AFTER COMPLETING PAPER CONSENT/PERMISSION FORM, PLEASE INDICATE THE PARENT/GUARDIAN'S RESPONSE IN THE TABLET]

[READ IF PARENT/GUARDIAN OF 8-17 YEARS OF AGE]

2. If you agree for us to ask your child to have his/her leftover blood stored for future research, please state the following statement:
   "I give permission for the study team to ask my child to have his/her leftover blood stored for future research"
   ____Check this box if parent/guardian gives permission for study team to ask his/her child to have his/her leftover blood stored for future research.

   If you do not agree to have your blood stored for future research, please state the following statement:
   "I do not wish for the study team to ask my child to have his/her leftover blood stored for future research"
   ____Check this box if parent/guardian refuses to have study team ask his/her child to have his/her leftover blood stored for future research.

[INTERVIEWER: AFTER COMPLETING PAPER CONSENT/PERMISSION FORM, PLEASE INDICATE THE PARENT/GUARDIAN'S RESPONSE IN THE TABLET]

[For illiterate participants]
Please state the following statement:
"I attest that the information in the consent/permission form and other written information was accurately explained and the participant's decision to store the child's blood or not was freely given."
____Check this box if participant agrees to participate in the household interview

Signature of person obtaining consent/permission_____ Date: ___/___/___
Printed name of person obtaining consent/permission_____

XII. Consent and/or Permission from Parent for ALL their Children ages 0-17: Interview and Blood Draw

Uganda Population-Based HIV Impact Assessment:
Consent and/or Permission from Parent for ALL their Children ages 0-17: Interview and Blood Draw

Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT: 6317

What language do you prefer for our discussion today?

___English

___Ateso

___Karamajong

___Luganda

___Lugbara

___Luo

___Runyankole-Rukiga

___Runyoro-Rutoro

___Other Language: Specify _____

What is the purpose of this study?
HIV is the virus that causes AIDS. AIDS is a very serious illness. This study will help us learn more about the health of children in Uganda. We plan to ask thousands of children like yours to join this study. We would like to invite your children to join the study too. Your children's participation will help the Ministry of Health make HIV services better.

What will happen to your children if you agree to allow your children to take part?
Interview

- **If your child is between 13-17 years of age,** we will invite your child to do an interview with us. In the interview, we will ask about your child's behaviors that may put him or her at risk for HIV.
- The interview will take between 40 to 50 minutes.
- Out of respect for your child's privacy, we will not share your child's answers to the interview questions with you.
- The interview will take place in private here at your house or in a private area identified by your child.

Blood Draw

- A trained nurse or lab tech will take blood from your child to perform HIV and hepatitis B tests here in your home. Like HIV, hepatitis B is a serious infection that can cause very serious illnesses if left untreated.
    - **If your child is 8-17 years of age,** we will ask your child if he/she agrees to take part in the blood draw. If he/she agrees, we will then draw his or her blood.
    - **If your child is less than 2 years of age**, a nurse or lab tech will take a few drops of blood (about 1 mL) from your child's finger or heel.
    - **If your child is 2 to 14 years of age**, we will take about one teaspoon (about about8 mL) of blood from your child's arm. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.
    - **If your child is 15 to 17 years of age**, we will take about three teaspoon of blood (about 14 mL) from your child's arm. As I stated above, if it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger. In addition, we will also test your child's blood for syphilis. Like HIV and hepatitis B, syphilis is an infection that can cause very serious illnesses if left untreated.
- We will give you the results of these blood tests today. We will not share the results with your child unless you ask us to do so. We will also provide counseling about the results and discuss with you how to share the test results with your child if you decide to share them with him/her.

If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.

- **If your child is greater than 18 months of age** and tests positive for HIV,
    - We will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of the immune system that fights HIV infection and other diseases.
    - We will give you referral forms so you can consult with a doctor or nurse regarding his/her HIV or hepatitis B tests.
    - We will also send his/her blood to a laboratory to measure his/her viral load. Viral load is the amount of HIV in the blood. This information may help a doctor or nurse treat your child. Your child's viral load test results will be ready in six to ten weeks. When the results are ready, we will send the results to a convenient health facility. This facility will be listed on a referral form we will give you.
- **If your child is less than or equal to 18 months of age**, the test we perform on your child today will let us know if your child has been exposed to HIV. If it is positive, it does not mean your child has the virus in his/her blood. It just confirms that he/she has been exposed to HIV. We will need to send your child's blood to a lab for a special test to confirm if he/she has HIV. Afterwards, we will send the result to the health facility of your choice in about six to ten weeks from now. This facility will be listed on a referral form we will give you.
- If your child tests positive for hepatitis B, we will give you a referral form to the nearest appropriate health facility so you can consult with a nurse regarding his/her HIV or hepatitis B tests.
- **If your child is 15 to 17 years of age** and tests positive for syphilis, we will offer him/her treatment today or refer him or her to the nearest appropriate health facility for treatment.

What are the potential risks?

If your child is 13 to 17 years of age, your child may feel uncomfortable about some of the question we will ask during the interview. We do not wish this to happen. Your child does not need to answer any question(s) if they feel the question(s) are too personal or if it makes them uncomfortable.

The risks of taking part in the survey are small. For the blood draw, the risks include brief pain from the finger prick or needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You may learn that your child has HIV, hepatitis B and/or syphilis. Learning that your child has HIV, hepatitis B and/or syphilis may cause emotional discomfort. You will receive counseling on how to disclose the result to your child and how to cope with learning that you have HIV, hepatitis B, and/or syphilis.

All the information you share with us will be kept private. However, as whenever you share personal information, there is a chance of loss of privacy. We are doing everything we can to minimize this chance.

We do not expect any other risk from taking part in this study.

What are the potential benefits?
The main benefit for your children to be in the study is the chance to learn more about their health today. Some children who participate will test positive for HIV, hepatitis B and/or syphilis. If this happens to your child, the benefit is that you will learn his/her HIV, hepatitis B and syphilis status, and will learn where to take your child for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that your child is HIV-positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child taking part in this study could help us learn more about children, HIV, hepatitis B, and/or syphilis in Uganda. It can help us learn about how HIV prevention and treatment programs are working.

What are the alternatives to taking part?
You can decide to allow all your eligible children to not take part in the study. Or you can allow all your eligible children to take part in the interview, but not the blood testing. Or you can decide to allow only some of your eligible children to take part in the study. Your decision to allow all, some, or none of your eligible children to take part or not take part in this study will not affect your children's health care in any way.

Will the information you share with us be kept private?
Your children's test results will be kept private and will not be shown to anyone outside of the survey team. Your children's names will not appear when we share study results. When we share results, the information we collect from each child will be identified by a number and not by your name or your child's name. Your children's tests results will not be released outside of the survey groups listed below unless there is an issue of safety.

[*INTERVIEWER: DO NOT READ ALOUD]*

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this study to ensure that we are protecting your children's rights as participants. These include the Uganda National Council for Science and Technology (UNSCT), the Ugandan Virus Research Institute (UVRI), and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical study 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 children's rights as participants in this study
- Study staff and monitors

[INTERVIEWER: READ FROM HERE]
Your permission to allow us to use and share your children's information with the groups above will expire at the end of the survey.
Who should you contact if you have questions?
If you want any of your children to leave the study, have any questions about the survey, or feel that you or your child have been harmed by taking part, you should contact one of the Principal Investigators listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

Dr. Alex Opio
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683

Dr. Joshua Musinguzi
Address: 6 Lourdel Road
Kampala, Uganda

Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683

[INTERVIEWER: READ THIS STATEMENT]

If you have any questions about your children's rights as participants in this study, you can contact Tom Lutalo at the address and number listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]

Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Are there any costs?

There is no cost to you for your children being in the study. You should also know that neither you nor your children will be paid for your children to be in the study.

Do you want to ask me anything about your children's participation in the survey?

Verbal Consent Statement

1. **<u>CONSENT/PERMISSION FOR INTERVIEW:</u>**

   Do you agree for us to ask your eligible children ages 13-17 to do the interview?

   a. AGREE FOR ALL CHILDREN

   Then please state the following statement:

   "I give permission to the study team to ask my eligible children ages 13-17 to take part in the interview."

   b. DISAGREE FOR ALL CHILDREN

   Then please state the following statement:

   "I do not wish for the study team to ask my eligible children ages 13-17 to take part in the interview."

2. **<u>CONSENT/PERMISSION FOR BLOOD DRAW:</u>**

Do you agree for your eligible children ages 0-7 to give blood for HIV and hepatitis B testing and related testing, and for us to ask your eligible children ages 8-14 to give blood for HIV and hepatitis B testing and related testing, and for us to ask your eligible children ages 15-17 to give blood for HIV, hepatitis B and syphilis testing and related testing?

a. Agree for all children

Then please state the following statement:

"I agree for my eligible children ages 0-7 to give blood for HIV and hepatitis B testing and related testing, and for the study team to ask my eligible children ages 8-14 to give blood for HIV and hepatitis B testing and related testing, and for the study team to ask my eligible children ages 15-17 to give blood for HIV, hepatitis B and syphilis testing and related testing."

b. Disagree for all children

Then please state the following statement:

"I do not wish for my eligible children ages 0-7 to take part in blood testing, or for the study team to ask my eligible children ages 8-14 to take part in blood testing today."

[INTERVIEWER: IF CONSENT AND/OR PERMISSION IS GIVEN FOR BLOOD TESTING, PROCEED TO PAPER *CONSENT AND/OR PERMISSION FROM PARENT FOR ALL THEIR CHILDREN AGES 0-17: BLOOD STORAGE FOR FUTURE TESTING]*

[For illiterate and visually impaired participants]

Interviewer, please state the following statement:

"I attest that the information in the consent and/or permission form and other written information were accurately explained and the participant's decision to give consent/permission or not give consent/permission was freely given."

Signature of person obtaining consent/permission_____ Date: ___/___/___

Printed name of person obtaining consent/permission_____

Survey Staff ID Number:

XIII. Consent and/or Permission from Parent for ALL their Children ages 0-17: Blood Storage for Future Testing

Uganda Population-Based HIV Impact Assessment:
Consent and/or Permission from Parent for ALL their Children ages 0-17: Blood Storage for Future Testing
Study number: UVRI IRB: GC/127/15/07/438; UNSCT: XXX; CDC IRB: 6830; CUMC: AAAQ8408; WESTAT: 6317

As a part of this study, 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 are not familiar to you. Please ask me to explain anything that you do not understand.

What will happen to your child's left over blood?
We would like to ask your permission to store your child's leftover blood for future research tests. These tests may be for HIV or other health issues which are important to the health of Ugandans, such as nutrition or immunization. This sample will be stored for an indefinite amount of time but your child's name will not be on the sample. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to future research tests to your child's blood samples, we will destroy your child's blood samples after study-related testing has been completed.

If you child is 8-17 years of age, we will ask each of your children if it is okay to store his or her blood for future research tests.

What are the potential risks and benefits?
There may be no direct benefit to your or your child, but the information you provide will also be used to improve the health of Uganda.

We do not expect any risk from agreeing to store your child's blood for future testing.

What are alternatives to taking part?
You can decide to allow or not allow all for your child's blood to be stored for future research. Your decision will not affect your child's health care in any way.

Who will have access to information from this research?
Only research staff trained to keep the information confidential will have access to the records. The names of indivdiual particpants will not appear on any reports on this research. As stated before, after all your child's samples have been collected, your child's name will be removed from the records, so no-one will be able to find out information about you or your child from our records.

Who should you contact if you have questions?
If your child to leave the study, have any questions about the study, or feel that you or your child have been harmed by taking part, you should contact one of the Principal Investigators, who can be reached at the number and address below.

[***INTERVIEWER: DO NOT READ ALOUD***]

Dr. Alex Opio
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683
Email: opioalex@infocom.co.ug

Dr. Joshua Musinguzi
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683
Email: jmusinguzi@infocom.co.ug

Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Office Phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ THIS STATEMENT]
If you have any questions about your rights as a participant in this study, you can contact Tom Lutalo at the address and number listed below.

[*INTERVIEWER: DO NOT READ ALOUD*]
Tom Lutalo
UVRI Research Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo road 51-59, Entebbe, Uganda
Office Phone: +256 0414 320272
Email: tlutalo@rhsp.org

Are there any costs?
There is no cost to agreeing to blood storage for future testing. You should also know that you would not be paid to receive the blood tests.

Do you want to ask me anything about future blood storage?

Verbal Permission Statement
[READ IF PARENT/GUARDIAN OF CHILD 0-7 YEARS OF AGE]

1. If you agree for all your children to have their leftover blood stored for future research, please state the following statement:
   Agree for all Children
   I agree for all of my children's leftover blood stored for future research"
   ____Check here if participant agrees to have their child's leftover blood stored for future research.

   Disagree for all Children
   If you do not agree for all of your children to have their left over blood stored for future research, please state the following statement:
   "I do not wish for all my children to have to have their leftover blood stored for future research"
   ____Check here if participant refuses to have their child's leftover blood stored for future research.

[INTERVIEWER: AFTER COMPLETING PAPER CONSENT/PERMISSION FORM, PLEASE INDICATE THE PARENT/GUARDIAN'S RESPONSE IN THE TABLET]

[For illiterate participants]

Please state the following statement:

"I attest that the information in the consent and/or permission form and other written information was accurately explained and the participant's decision to store the child's blood or not was freely given."

____Check this box if participant agrees to participate in the household interview

Signature of person obtaining consent/permission_____ Date: ___/___/___

Printed name of person obtaining consent/permission_____