Uganda Population-based HIV Impact Assessment 2020

(UPHIA 2020-2021)

FINAL REPORT

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Uganda Population-based HIV Impact Assessment **2020-2021** (UPHIA 2020- 2021)

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GLOSSARY OF TERMS

95-95-95: Treatment targets proposed by the Joint United Nations Programme on HIV and AIDS (UNAIDS) to help end the AIDS epidemic. The targets for 2025 were that 95% of all people living with HIV would know their HIV status; 95% of all people with diagnosed HIV would receive sustained antiretroviral therapy (ART); and 95% of all people receiving ART would achieve viral load suppression (VLS).

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

Adults: Unless otherwise noted, adults are defined as the survey population aged 15 years and older for reporting purposes, although this age group includes minors aged 15-17 years. Note that, in Uganda, the age of majority (adulthood) is reached at 18 years.

Antiretroviral (ARV): A type of medication that inhibits the ability of HIV to multiply in the body.

Antiretroviral Therapy (ART): Treatment with a combination of ARV medications that reduces the amount of HIV in the body (viral load), leading to improved health and survival in a person living with HIV.

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

Coronavirus disease 2019 (COVID-19): An infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), a virus that can be spread from person to person. The ongoing pandemic caused by COVID-19 has caused millions of deaths, led to major societal, economic disruptions, and profoundly strained health systems globally.

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

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

Head of Household: The person who is recognized within the household as being the head and is aged 18 years or older or is considered an emancipated minor (an individual aged 15-17 years who is married, pregnant, the parent of a child, or has left home and is self-sufficient) 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 a person living with HIV vulnerable to illnesses that a healthy immune system would eliminate.

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

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

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

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

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

Informed Consent: Informed consent is a legal condition whereby a person can give consent based upon a clear understanding of the facts, implications, and future consequences of an action. To give informed consent, the individual concerned must have adequate reasoning faculties and be in possession of all relevant facts at the time he or she gives consent.

Male Circumcision: Male circumcision is the removal of some or the entire foreskin (prepuce) from the penis. Medically supervised adult male circumcision is a scientifically proven method for reducing a man's risk of acquiring HIV through heterosexual intercourse. Voluntary medical male circumcision is an important part of national HIV prevention programs in most HIV high burden countries.

Older Adolescents: Unless otherwise noted, individuals aged 15-19 years are referred to as older adolescents (older adolescent girls and older adolescent boys). Note that while older adolescents are included as part of the aggregated adult population for reporting purposes, they are distinct from young adults as a population of concern for HIV programs.

Population Viremia: Population viremia is the prevalence of unsuppressed viral load (defined here as ≥ 1,000 copies/mL) measured without regard to HIV status— the numerator is the number of people with unsuppressed viral loads, and the denominator is the entire population tested. Subnational areas with higher population viremia could be at risk of higher incidence.

Prevention of Mother-to-Child Transmission (PMTCT): In order to prevent HIV-positive women from passing HIV to their babies during pregnancy, labor and delivery, or breastfeeding, the World Health Organization (WHO) recommends a four-pronged 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 and their children and families.

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

Young Adults: Unless otherwise noted, individuals aged 20-24 years are defined as young adults, including young women and young men.

Young People: In this report, individuals aged 15-24 years are defined as young people. By sex, this includes older adolescent girls aged 15-19 years and young women aged 20-24 years and older adolescent boys aged 15-19 years and young men aged 20-24 years.

LIST OF ABBREVIATIONS

AGYW	Adolescent Girls and Young Women
AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
ART	Antiretroviral Therapy
ARV	Antiretroviral
CDC	US Centers for Disease Control and Prevention
CD4	CD4+ T cell
CI	Confidence Interval
DBS	Dried Blood Spot
DR	Drug resistance
DTS	Dried Tube Specimens
EA	Enumeration Area
HBTC	Home-Based Testing and Counseling
HIV	Human Immunodeficiency Virus
ID	Identification Number
INSTI	Integrase Inhibitor
LAg	Limiting Antigen
mL	Milliliter
µL	Microliter
MOH	Ministry of Health
MOS	Measure of Size
MTCT	Mother-to-Child Transmission
ODn	(normalized) Optical Density
PCR	Polymerase Chain Reaction
PEPFAR	US President's Emergency Plan for AIDS Relief
PHIA	Population-based HIV Impact Assessment
PMTCT	Prevention of Mother-to-Child Transmission
POC	Point of Care
PSU	Primary Sampling Unit
QA	Quality Assurance
QC	Quality Control
RR	Response Rate
SMS	Short Message Service
STI	Sexually Transmitted Infection
TB	Tuberculosis
TNA	Total Nucleic Acid
TWG	Technical Working Group
UBOS	Uganda Bureau of Statistics
UNAIDS	Joint United Nations Programme on HIV and AIDS
UPHIA 2020-2021	Uganda Population-based HIV Impact Assessment 2020-2021
VLS	Viral Load Suppression
VMMC	Voluntary Medical Male Circumcision
WHO	World Health Organization

FOREWORD

The 2020-2021 Uganda Population-based HIV Impact Survey (UPHIA 2020-2021) is the fourth in a series of household-based surveys to include HIV biomarkers and to assess numerous HIV-related indicators in Uganda. The first was the 2004/2005 Uganda HIV/AIDS Sero-Behavioral Survey (UHSBS), followed by the 2011 Uganda AIDS indicator survey (UAIS), and finally the Uganda Population-based HIV Impact Assessment (UPHIA 2016-2017). All these surveys were designed to provide information on HIV prevention, treatment, and related indicators for Uganda.

UPHIA 2020-2021, which included individuals aged 15 years and older, is the second national HIV survey that was designed to measure both HIV incidence and viral load suppression (VLS). Additional biomarker-based indicators unique to UPHIA are antiretroviral (ARV) drug resistance (DR) and presence of ARV drugs in the blood.

Similar to the UPHIA 2016-2017 survey, UPHIA 2020-2021 collected data on indicators to measure progress toward the Joint United Nations Programme on HIV/AIDS (UNAIDS) targets.

UPHIA 2020-2021 was led by the Government of Uganda under the Ministry of Health (MOH), through the AIDS Control Programme (ACP) and the Uganda Bureau of Statistics (UBOS). The survey was conducted with funding from the United States (US) President's Emergency Plan for AIDS Relief (PEPFAR) and technical assistance through the US Centers for Disease Control and Prevention (CDC). UPHIA 2020-2021 was implemented by the Uganda MOH through ACP and ICAP at Columbia University in collaboration with various Government of Uganda institutions including the Uganda Virus Research Institute (UVRI), hospitals, local government entities, and various partners operating in the health sector. The Government of Uganda and international development partners participated in the Steering Committee and Technical Working Group to provide input on survey planning and implementation.

This report presents detailed survey findings covering all primary and secondary survey objectives of the UPHIA 2020-2021. The descriptive statistics and accompanying analyses furnish governments, stakeholders, and the general public with official statistics for use in planning, policy making, monitoring, and evaluating the HIV program.

I would like to encourage policy makers, planners, program managers, and other stakeholders who work in HIV/AIDS and other communicable and related diseases in the country, to use these findings to make informed policy decisions based on the statistics presented in this report and through further analyses of the rich dataset that resulted from the survey. I would also like to encourage researchers to take advantage of the rich biorepository from this survey to study other diseases that may be prevalent in our country.

Dr. Jane Ruth Aceng Ocero
Minister of Health

PREFACE

The Uganda Population-based HIV Impact Assessment (UPHIA 2020-2021) was a household-based national survey of HIV program indicators among adults (defined as individuals aged 15 years and older*) whose goal was to measure the impact of the national HIV response. UPHIA 2020-2021 offered HIV counseling and testing with return of results and collected information about uptake of HIV care and treatment services. The survey was conducted from February 2020 through March 2021; the original planned dates for data collection were February 2020 to June 2020, but due to the COVID-19 pandemic, the survey had to be paused from March 2020 until October 2020.

This was the second UPHIA to estimate national HIV incidence, and national and subnational prevalence of HIV and viral load suppression (VLS), defined as HIV RNA <1,000 copies per milliliter (mL). The first UPHIA was conducted from August 2016 through the end of March 2017. The results of these surveys provide critical information on national and subnational progress toward HIV epidemic control.

UPHIA 2020-2021 used a two-stage, stratified cluster sample design that first selected census enumeration areas (EAs) and then selected households within each EA. The first stage selected 313 EAs with an average of 35 households per EA (Table 2.1). The overall sample size and allocation by subnational area (region) was calculated to estimate the prevalence of VLS at the regional and national level, the national level HIV incidence among adults aged 15-49 years, and the prevalence of VLS among young women aged 15-24 years† at the national level.

Of 10,527 eligible households, 95.7% completed a household interview (Table 2.6.1). Among the 27,635 eligible adults (15,801 women and 11,834 men), 26,071 participated in the individual interview (15,236 women and 10,835 men). Among those interviewed, 25,479 (14,903 women and 10,576 men) also had their blood drawn (Table 6.2).

HIV testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Uganda's national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. For confirmed HIV-positive samples, laboratory-based testing was conducted for quantitative evaluation of viral load and qualitative detection of ARVs (efavirenz, dolutegravir, atazanavir, and lopinavir). A laboratory-based incidence testing algorithm (HIV-1 limiting antigen-avidity assay with correction for viral load and detectable ARVs as well as the circulating HIV subtypes) was used to distinguish recent from long-term infection. Incidence estimates were obtained using the formula recommended by the World Health Organization Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays. Survey weights were utilized for all estimates.

Survey data collection was initiated on February 20, 2020, and halted on March 24, 2020, before completion due to the COVID-19 pandemic. The pause in data collection occurred from March 24, 2020, to October 26, 2020.

In October 2020, a decision was made to restart UPHIA activities based on initial data indicating relatively low COVID-19 case counts and mortality in Uganda and approval from participating institutions and the Government of Uganda to resume survey activities with added safety precautions. Comprehensive risk-management guidance and standard operating procedures (SOPs) to mitigate severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission were developed by principal investigator institutions in alignment with national guidelines and implemented by survey teams during UPHIA training events, household-based data collection, and laboratory activities. These recommendations prioritized the health and well-being of staff, participants, other members of surveyed households, and the larger communities in which data collection took place.

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* In this document, individuals aged 15-49 years and 15 years and older are referring to as adults for reporting purposes and to allow for tracking PEPFAR and Global AIDS Monitoring indicators, even though this age group includes older adolescents (classified as those aged 15-19 years). In addition, it should be noted that the age of majority (adulthood) in Uganda begins at 18 years of age, and that those aged 15-17 years are minors.

† The term young women includes older adolescent girls aged 15-19 years and young women aged 20-24 years. Older adolescent girls are a distinct population of concern from young women, but when aggregated by sex, this report will use the term young women aged 15-24 years.

EXECUTIVE SUMMARY

TOPLINE FINDINGS

- The annual HIV incidence among adults (defined as individuals aged 15 years and older) in Uganda was 0.29%.
- HIV prevalence among adults was 5.8%. Among adults aged 15 to 49 years, HIV prevalence was 5.5%.
- Prevalence of VLS (HIV RNA < 1,000 copies per mL) among all adults living with HIV was 75.4%.
- Prevalence of VLS among all adults living with HIV ranged from 60.3% in Mid Eastern region to 82.8% in South Western region.
- Among adults living with HIV in Uganda, 80.9% were aware of their HIV status; 96.1% of those who were aware of their status were on ART; while 92.2% of those who were on ART had achieved VLS.

TOPLINE FINDINGS IN FOCUS

- Annual incidence of HIV among adults (individuals aged 15 years and older) in Uganda was 0.29%: 0.38% among women and 0.20% among men (Table 5.3.1).
- HIV prevalence among adults was 5.8%. HIV prevalence was higher among women, at 7.2% (95% CI: 6.6%-7.8%*) than among men, at 4.3% (95% CI: 3.8%-4.7%*). HIV prevalence among adults aged 15-49 years was 5.5%: 7.1% among women (95% CI: 6.4%-7.8%*), and 3.8% among men (95% CI: 3.3%-4.2%*) (Tables 6.3, 6.4.1-2).
- Prevalence of VLS among all adults living with HIV was 75.4%. Women had a higher VLS prevalence, 78.3% (95% CI: 75.5%-81.1%*), than men, 69.8% (95% CI: 65.1%-74.5%*). Note, these estimates of VLS are among all adults living with HIV regardless of their knowledge of HIV status or use of antiretroviral therapy (ART) (Table 8.3).
- At the regional level, prevalence of VLS ranged from 60.3% in Mid Eastern region to 82.8% in South Western region (Table 8.4, Figure 8.4.1, and 8.4.2).

Annual incidence of HIV among adults in Uganda was 0.29%.

UNAIDS 95-95-95 TARGETS

UNAIDS set the 95-95-95 targets with the aim that by 2025, 95% of all people living with HIV would know their status, 95% of those who were diagnosed would be on antiretroviral therapy (ART), and 95% of those who were on ART would have VLS.† Uganda's progress towards achieving these targets is presented in two ways: the conditional 95-95-95 and the overall 95-95-95.

Adult 95-95-95, based on self-report and antiretroviral (ARV) detection in blood:

For the conditional 95-95-95, the denominator for the second and third 95 is the value of the preceding 95 (Figure 1, Table 9.3.B, and Figure 9.3):

- **Diagnosed:** In Uganda, 80.9% of adults living with HIV were aware of their HIV-positive status. Among these, a higher proportion of women than men were aware of their HIV-positive status: 83.5% (95% CI: 81.0%-86.0%*) compared to 76.1% (95% CI: 71.3%-80.9%*).
- **On treatment:** Among those who were aware of their HIV-positive status, 96.1% were on ART: 96.7% of women and 94.7% of men.
- **With viral load suppression:** Among those aware of their status and on treatment, 92.2% had suppressed viral loads: 92.6% of women and 91.3% of men.

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

† Joint United Nations Programme on HIV/AIDS (UNAIDS). *Prevailing against pandemics by putting people at the centre.* Geneva: UNAIDS; 2020. https://www.unaids.org/sites/default/files/media_asset/prevailing-against-pandemics_en.pdf.Accesssed October 2023.

Figure 1
Conditional 95-95-95 achievements among adults aged 15 years and older

HIV prevalence was higher in urban settings than in rural areas.

For the overall 95-95-95, the denominator for all three 95s is the overall population of adults living with HIV in Uganda, regardless of an individual's awareness of HIV-positive status. Note that these estimates are based on the survey population for whom data on treatment status and viral load are available (Table 9.3.A, Figure 9.3):

- **Diagnosed:** 80.9% of adults living with HIV were aware of their HIV-positive status: with a higher proportion in women, 83.5% (95% CI: 81.0%-86.0%*) than in men, 76.1% (95% CI: 71.3%-80.9%*).
- **On treatment:** Among all adults living with HIV in Uganda, 77.7% were on ART: 80.8% among women and 72.1% among men.
- **On treatment with viral load suppression:** Among all adults living with HIV in Uganda, 71.7% had achieved VLS on treatment: 74.8% among women and 65.8% among men.

(Please see chapter 9 for a full explanation of the differences between estimates of VLS among people living with HIV and in the two 95-95-95 cascades).

OTHER KEY FINDINGS

Household characteristics

- In Uganda, 13.2% of households had at least one member who was living with HIV. There was at least one person living with HIV in 12.3% of rural households, and 14.8% of urban households (Table 3.4.1 and Figure 3.4.1).
- Among all households, 8.8% were headed by a person living with HIV, with a higher proportion among female-headed households than in male-headed households: 12.0% (95% CI: 10.5%-13.5%*) compared to 6.4% (95% CI: 5.6%-7.2%*) (Table 3.4.2 and Figure 3.4.2).

Survey population characteristics

- More than a third (39.6%) of the population were young people aged 15-24 years,† while only 14.1% were 50 years and older (Table 4.3).
- Most (67.1%) of the population were residing in rural areas (Table 4.3).

HIV incidence

- Annual incidence of HIV among adults (individuals aged 15 years and older) in Uganda was 0.29%: 0.38% among women and 0.20% among men (Table 5.3.1).

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* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

† The term young people includes older adolescents aged 15-19 years and young adults aged 20-24 years. Older adolescents are a distinct population of concern from young adults, but when aggregated by sex, this report will use the terms young men and women aged 15-24 years.

- HIV incidence among adults aged 15-49 years was 0.32% (95% CI: 0.18-0.45%). HIV incidence was 0.42% (95% CI: 0.22%-0.62%) among women and 0.21% (95% CI: 0.03-0.38%) among men in this age group (Table 5.3.1).
- Annual HIV incidence among young women aged 15-24 years was 0.62% (95% CI: 0.26%-0.97%), although the survey was not powered to estimate incidence in subgroups with confidence (Table 5.3.1).

75% of adults living with HIV had viral load suppression.

HIV prevalence

- By 5-year age group, HIV prevalence ranged from 0.9% among older adolescents aged 15-19 years up to 12.1% among adults aged 45-49 years. HIV prevalence was higher among adults aged 50 years and older, at 7.6% (95% CI: 6.7%-8.6%*) than among adults aged 15-49 years, at 5.5% (95% CI: 5.0%-6.0%*) (Table 6.3).
- HIV prevalence varied considerably across geographical areas in Uganda. It was below 5% among adults aged 15 years and older in East Central, Northeast: Teso, Mid Eastern, West Nile, and Northeast: Karamoja. HIV prevalence peaked at 8.1% in Central 1: South Buganda (Table 6.5).
- HIV prevalence was higher in urban settings, 7.1% (95% CI: 6.1%-8.2%*) than in rural areas 5.2% (95% CI: 4.7%-5.6%*) (Table 6.5).

HIV testing, diagnosis, and treatment status

- Among adults aged 15 years and older, 77.9% reported they had ever received an HIV test, with a higher percentage among women, 82.4% (95% CI: 81.5%-83.2%*) than among men, 72.9% (95% CI: 71.7%-74.2%*) (Tables 7.3.A-C).
- Among adults aged 15-49 years who said they were not HIV positive, 44.1% reported they had been tested in the 12 months before the survey. Among the adults under the age of 50 years, this ranged from a low of 21.9% among older adolescents aged 15-19 years and peaked at 57.5% among adults aged 25-29 years (Table 7.3.C).
- Based upon self-report, adjusted for ARV-detection data, 19.1% of adults aged 15 years and older who tested positive in the survey were unaware of their HIV status: 16.5% among women and 23.9% among men. Among young people aged 15-24 years who tested positive in the survey, 39.8% were unaware of their status (Tables 7.4.A-C).
- By 5-year age group, the proportion unaware of their HIV-positive status peaked at 40.8%† among older adolescent girls aged 15-19 years and 57.9%† among young men aged 20-24 years (Tables 7.4.A-B).
- Among the adults aged 15 and older who tested HIV positive in the survey, 25.7% who said they were not previously diagnosed had ARVs detectable in their blood (Tables 7.5.C).

Viral load suppression among all adults living with HIV

- The proportion with VLS (HIV RNA < 1,000 copies/mL) was greater than 91% for men (91.3%), women (92.6%), and overall (92.2%) among those aware of their HIV-positive status and on ART. However, VLS among those unaware of their HIV-positive status was much lower, at 17.4% (95% CI: 12.0%-22.8%*) (Table 8.3).
- VLS prevalence ranged from 73.5% among adults living with HIV in rural areas to 78.1% in those living in urban settings (Table 8.3).
- At the regional level, prevalence of VLS ranged from 60.3% in Mid Eastern region to 82.8% in South Western region (Table 8.3).

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* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

† This estimate was based on a denominator between 25 and 49 and should be interpreted with caution.

99% of self-reported women living with HIV who delivered in the 12 months before the survey took ART to reduce mother-to-child transmission.

- Among all adults living with HIV, 71.1% had a viral load below 200 copies/mL, which was higher among women, at 75.3% (95% CI: 72.4%-78.2%*) than among men, at 63.1% (95% CI: 58.1%-68.1%*) (Table 8.6).
- Among all adults living with HIV who reported they were receiving HIV care, 86.7% said that they had ever received a viral load test, but among these, only 52.8% said they had received the results of their most recent test (Table 8.7).

Clinical perspectives on people living with HIV

- The median CD4 count among adults living with HIV was 576 cells/microliter (µL): 636 cells/µL among women and 472 cells/µL among men (Table 10.3).
- Among adults living with HIV, the median CD4 count was 468 cells/µL among those who were unaware of their status, 376 cells/µL among those who were aware of their status but not on ART and 611 cells/µL among those who were aware of their status and on ART (Table 10.3 and Figure 10.3).
- Among individuals who tested HIV positive in the survey but had not been previously diagnosed with HIV (based on self-report) and did not have ARVs detected in their blood, 8.9% had advanced HIV disease (less than 200 CD4 cells/µL) and 25.2% had a CD4 count between 200-349 cells cells/µL (Table 10.4).
- The prevalence of VLS among those who had an extended stay away from home was 67.9%, and below targets, possibly a consequence of treatment interruptions due to travel (reported by 13.0%) (Table 10.6).
- Based upon self-report among all adults living with HIV who had started treatment (n=1093), 98.1% were still taking ART: 98.2% among women and 97.7% among men (Table 10.5).
- Among those who screened likely for symptoms of depression, adherence to treatment, based upon self-report, was 66.7% (95% CI: 51.9%-81.4%*) compared to 85.5% (95% CI: 82.8%-88.1%*) among those who did not have symptoms of depression (Table 10.7).

Prevention of mother-to-child transmission of HIV (PMTCT)

- Among women of childbearing age (ages 15-49 years, henceforth referred to as women in this section) who delivered a child in the 3 years before the survey, 98.9% reported attending at least one antenatal care (ANC) visit for their most recent birth (Table 11.3).
- Overall, 86.4% of the women who delivered in the year before the survey reported that they knew their HIV status (Table 11.4.1 and Figure 11.4).
- Among women living with HIV who delivered in the 12 months before the survey, 98.9% reported that they took ART to reduce mother-to-child transmission (Table 11.4.2).
- Among women living with HIV aged 15-49, the proportion with VLS ranged from 65.4% among those who were pregnant at the time of the survey, and 87.7% among those who delivered in the 12 months before the survey (Table 11.5, and Figure 11.5).

HIV risk factors and prevention interventions

- Among young people, 17.0% of the young men aged 15-24 years and 8.3% of the young women aged 15-24 years said they had had an early sexual debut (Table 12.4).
- Among adults aged 15 years and older who reported that they had sex in the 12 months before the survey, 37.0% reported they had sex with a nonmarital, noncohabitating partner, 28.8% among women and 45.4% among men. Among these, 31.8% (24.9% of women and 36.4% of men) reported that they had used a condom the last time they had sex with such a partner (Tables 12.5.A-C and Figure 12.5).

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

- Among men aged 15 years and older, 32.4% reported they had a medical circumcision, 21.7% had a nonmedical circumcision, and 45.9% were uncircumcised. Among young men aged 15-24 years, 42.2% had a medical circumcision and 20.8% had a nonmedical circumcision (Table 12.6).

46% of Ugandan men remain uncircumcised.

Tuberculosis and cervical cancer screening

- Among women aged 15 years and older living with HIV in Uganda, only 23.6% reported that they had ever been screened for cervical cancer. Among these, 3.7% reported that they had received an abnormal result (Table 13.3).
- According to adults who reported that they had a tuberculosis (TB)-related visit to a health facility in the 12 months before the survey, 55.8% said they were tested for HIV at the visit, 10.8% already knew they were HIV positive, while 33.5% reported that they did not know their status and were not tested (Table 13.5.1 and Figure 13.5.1).
- Among adults living with HIV in the survey, 60.1% reported that they had been screened for TB at their last health facility visit: 65.1% among men, and 57.7% among women (Table 13.5.3).

GAPS AND UNMET NEEDS

- Women continue to bear a higher burden of HIV than men, particularly during early adulthood. In addition, more than one out of eight of the female-headed households were led by a woman living with HIV. A substantial proportion of women who were divorced or separated and widowed were also living with HIV.
- A higher proportion of men reported early sexual debut than women, and yet women at early sexual debut bear the greater burden in terms of HIV prevalence. Young women aged 15-24 years remain at high risk of acquiring HIV infection, which suggests there is a continued need for HIV prevention options tailored to their needs. Early diagnosis and treatment of their male sex partners is also critical—more than half of young men aged 20-24 years and living with HIV were unaware of their status*.
- Less than half of those who did not self-report an HIV-positive status, but who tested positive for HIV during the survey said that they had been tested in the previous 12 months. This would imply, even with concerns about reluctance to disclose status, that Uganda's targeted testing strategy is not reaching a higher percentage of those most at risk.
- Among those who said that they had not been previously diagnosed when they tested HIV positive in the survey, one in four individuals had detectable ARVs in their blood, suggesting there may be a need for enhancing programs to addressing stigma so that people living with HIV feel more comfortable disclosing their status.
- Nearly two out of five young people aged 15-24 years living with HIV who participated in the survey claimed not to know their HIV-positive status. Less than half of young people living with HIV were currently on ART based upon detectable ARVs in their blood.
- There was considerable regional variation in several programmatic indicators (achievement of the 95-95-95 targets, the self-reported receipt of viral load test results, awareness of HIV status among pregnant women, uptake of male circumcision, and receipt of cervical cancer screening).
- Generally, among adults living with HIV, there were higher rates of VLS in women compared to men, with men lagging behind in all age groups. Among those unaware of their HIV-positive status, the proportion with VLS was much lower than those aware and on ART.
- Over one-third of those who were unaware of their HIV status when they tested positive in the survey had suppressed immune systems or advanced HIV disease. These individuals have a heightened risk of developing life-threatening opportunistic infections and AIDS-related mortality.

Women continue to bear a higher burden of HIV than men, particularly during early adulthood.

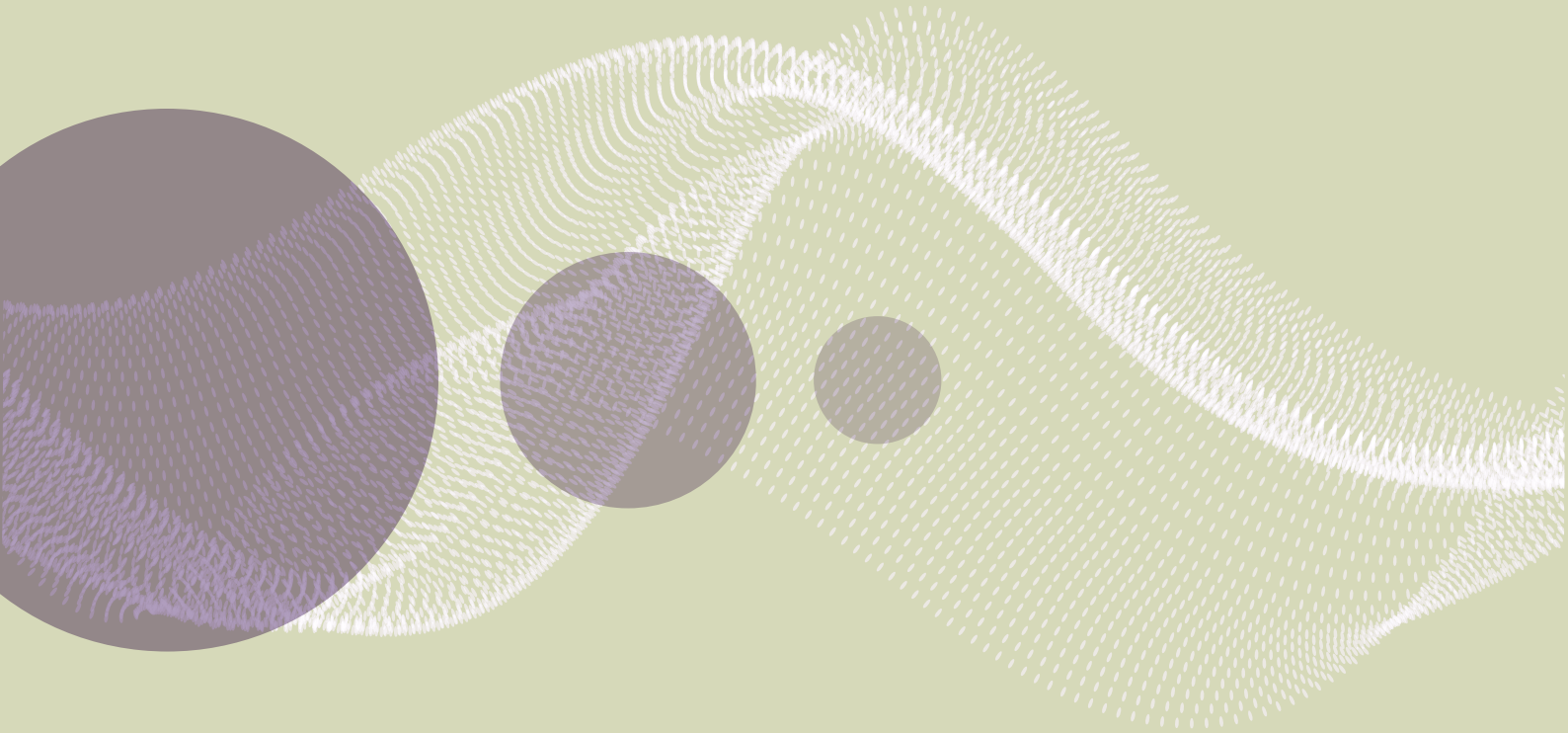
* This estimate was based on a denominator between 25 and 49 and should be interpreted with caution.

The lower self-reported adherence among those who screened positive for depression suggests a potential programmatic weakness in mental health screening.

- Based on self-reporting, treatment retention among women and men differs from programmatic data.
- The lower self-reported adherence among those who screened positive for depression suggests a potential programmatic weakness in mental health screening that could potentially lead to lower rates of VLS, the development of drug resistance, and treatment failure.
- Reported awareness of HIV status at ANC was well below WHO guidance and differs from what is reported in program data and national target of 100%* with considerable regional variation that merits further investigation.
- Viral load suppression among HIV-positive women who reported that they were pregnant at the time of the survey was far below the national target of 95% and differs from programmatic data.
- Although more than 85% of adults aged 15 and older living with HIV had a viral load test, only about half had received the results of their last test. This suggests gaps in return of viral load results back to clients.
- Less than half of adults who had sex within the 12 months before the survey reported using condoms the last time they had sex with a nonmarital, noncohabitating partner. Although only one out of five married men reported sex with a casual partner, little more than a quarter of those who were having sex with a casual partner reported using condoms the last time they had sex with them. This places their married and live-in partners at increased risk of HIV and other sexually transmitted infections.
- Uptake of medical male circumcision remains below national targets, particularly in rural areas and some regions of the country.
- Less than one out of four women aged 15 years and older living with HIV in Uganda had ever received cervical cancer screening. Rates were particularly low in rural settings.
- Self-reported uptake of HIV testing among adults when they were visiting a health facility for TB diagnosis or treatment, and receipt of TB screening reported by adults living with HIV in HIV-related visits to health facilities were below global targets and differs from programmatic data. This is particularly worrisome given the high risk of HIV/TB coinfection in Uganda.

UPHIA 2020-2021 indicates that HIV continues to cause a significant burden of disease in the country. The country's progress toward achievements of the UNAIDS targets in adults is impressive. The country is also beset by numerous challenges—including low awareness of HIV status among people living with HIV—particularly among young people and men. In addition, the country needs to prepare for a population aging with HIV on ART. Key strategies to meeting these challenges are discussed in the Conclusion to this report.

* Ministry of Health (MOH) | Government of Uganda (GoU). *Impact of the National Program for Prevention of Mother - to Child Transmission of HIV in Uganda*, Evaluation Report 2017 – 2019. Kampala: MOH GoU; 2022. https://www.health.go.ug/download-attachment/eL7wRliht3itvit0qW8ktKSbojk8ZuPk1GLO0Hn0dBo, Accessed January 18, 2023.



1. INTRODUCTION

1.1 BACKGROUND

The Population-based HIV Impact Assessment is a multicountry project funded by the United States (US) 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 subnational area HIV-related indicators, including progress toward the achievement of the Joint United Nations Programme on HIV and AIDS (UNAIDS) 95-95-95 targets for 2025* and will guide policy and funding priorities.

UPHIA 2020-2021 was led by the Government of Uganda through the Ministry of Health (MOH). The survey was conducted with funding from the PEPFAR and technical assistance through the US Centers for Disease Control and Prevention (CDC). UPHIA 2020-2021 was implemented by the Uganda Ministry of Health AIDS Control Programme and ICAP at Columbia University in collaboration with other Government of Uganda entities including the Uganda Virus Research Institute (UVRI), the Uganda Bureau of Statistics (UBOS), as well as regional referral hospitals, and local government authorities. The Government of Uganda and international development partners participated in steering committees and technical working groups during the survey planning and implementation.

1.2 OVERVIEW OF UPHIA 2020-2021

UPHIA 2020-2021 was a household-based national survey among adults (defined as individuals aged 15 years and older) that measured the status of Uganda's national HIV response, conducted between February 2020 through March 2021. The original planned dates for data collection were February 2020 to June 2020, but the survey was paused due to the COVID-19 pandemic from March 2020 until October 2020. UPHIA 2020-2021 offered home-based testing and counseling (HBTC) with return of results, and collected information about households and individuals' backgrounds, as well as the uptake of HIV care and treatment services. This was the second UPHIA to estimate the national HIV incidence and prevalence, and the national and regional-level prevalence of viral load suppression (VLS), defined as HIV RNA < 1,000 copies per milliliter (mL) among adults living with HIV. The first UPHIA was conducted from August 2016 to March 2017.

With its focus on measuring key biological endpoints in a nationally representative sample of the population, UPHIA 2020-2021 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 targets.

1.3 SURVEY OBJECTIVES

The goal of the survey was to assess the status of the HIV epidemic in Uganda as well as 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.

Primary Objective:

- To estimate the regional prevalence of VLS among adults living with HIV

Secondary Objectives:

To estimate

- National and regional HIV prevalence
- National HIV incidence
- Prevalence of HIV-related risk behaviors
- Behavioral and demographic determinants of HIV incidence and prevalence in Uganda
- Utilization and barriers to uptake of HIV-related services and exposure to HIV interventions.
- Prevalence of primary and secondary antiretroviral (ARV) drug resistance (DR) in those living with HIV, and
- Progress in Uganda towards achievement of the UNAIDS targets.

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* Joint United Nations Programme on HIV and AIDS. Prevaling against pandemics by putting people at the centre. Geneva: UNAIDS; 2020. https://www.unaids.org/sites/default/files/media_asset/prevailing-against-pandemics_en.pdf.

2. SURVEY DESIGN, METHODS, AND RESPONSE RATES

2.1 SAMPLE FRAME AND DESIGN

UPHIA 2020-2021 was a nationally representative, cross-sectional, two-stage, population-based survey of households across Uganda. Its target population corresponded to individuals aged 15 years and older, defined as adults for the purposes of the survey.

UPHIA 2020-2021 used a two-stage, stratified cluster sample design. The sampling frame was comprised of all households in the country, based upon the 2014 National Population and Housing Census. The sampling frame which included 80,000 enumeration areas (EAs) created for the census, with an average number of households and persons per EA of 102 and 490, respectively, at the time of the 2014 Census.[1] The sampling frame was subsequently updated by UBOS, consisting of 68,282 EAs containing an estimated 7,203,173 households in 2019. The first stage selected 318 EAs using a probability proportional to size method. These EAs were stratified by 11 regions. However, 2 EAs were ineligible (one contained a military base, and the other no longer contained households due to migration) and 3 were inaccessible due to security concerns.

During the second stage, a sample of households was randomly selected within each EA, or cluster, using an equal probability method, where the average number of households selected per cluster was 35 and the actual number of households selected per cluster ranged from 15-70 (Table 2.1).

The sample size was calculated to provide estimates for:

- VLS among adults living with HIV (ages 15-49 years) at the regional level with a 95% confidence interval (CI) ±10% for regions with an HIV prevalence >5%, and a 95% CI ±15% for regions with an HIV prevalence <5%;
- HIV incidence among persons aged 15-49 years at the national level with a relative standard error (RSE) <30%;
- VLS among adults living with HIV (ages 15-49 years) at the national level with a 95% CI±3.2%; and
- VLS among women living with HIV (ages 15-24 years) at the national level with a 95% CI ±8.2%.

To reach the target sample size, the study planned to enroll at least 24,656 adults.

Table 2.1 Distribution of sampled enumeration areas and households by region

Distribution of sampled enumeration areas and households by region, UPHIA 2020-2021

	Enumeration Areas			Households		
Region	Urban	Rural	Total	Urban	Rural	Total
Central 1: South Buganda	18	19	37	678	653	1,331
Central 2: North Buganda	9	19	28	434	615	1,049
East Central	3	19	22	139	631	770
Kampala	28	0	28	980	0	980
Mid Eastern	5	19	24	215	624	839
Mid North	7	21	28	293	686	979
Mid Western	7	26	33	300	890	1,190
Northeast: Karamoja	5	26	31	218	903	1,121
Northeast: Teso	3	17	20	159	542	701
South Western	6	28	34	200	990	1,190
West Nile	5	23	28	212	768	980
Total	96	217	313	3,828	7,302	11,130

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

2.2 ELIGIBILITY CRITERIA, RECRUITMENT, AND CONSENT PROCEDURES

In UPHIA 2020-2021, individuals aged 15 years and older were eligible to participate in the survey. The consent criteria included:

- Adults aged 18 years and older or emancipated minors (an individual aged 15-17 years who is pregnant, married, the parent of a child, or has left home and is self-sufficient) who slept in the household the night before the survey, whether they were usual residents in the selected household or overnight visitors, who were willing and able to provide verbal consent, and
- Minors aged 15-17 years who slept in the household the night before, whether they were usual residents in the selected household or overnight visitors, 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.

A survey interviewer administered the informed consent process using electronic consent forms (see Appendix G) in the following order: A designated head of household provided verbal consent for the household interview, after which individual household members were rostered. Once the household interview was completed, eligible adults and emancipated minors could then provide verbal consent for an individual interview and for participation in the biomarker component of the survey, including HBTC, with return of HIV-testing results during the household visit. Participants had to consent to testing to participate in the biomarker component of the survey. If an individual did not want to receive their HIV test result, this was considered a refusal and the interview was concluded at this stage. The interviewer also asked participants for verbal consent to store their blood samples in a repository to perform additional tests in the future. After the return of HIV rapid test results during the biomarker component of the survey, the interviewer asked all participants who tested HIV positive to provide consent for their viral load and CD4 test results returned with his or her name and age to a health facility of their choice. The interviewer also asked for their consent to share their contact information with a trained healthcare worker or counselor to facilitate active linkage to HIV care.

The interviewer asked minors aged 15-17 years for their verbal assent to the individual interview and biomarker components after permission was granted by their parents or guardians. Although parental consent was required for their participation in the survey, minors aged 15-17 years could receive their HIV testing results without their parents being present. The consent process to share contact information for active linkage to care and return of viral load and CD4 results to a health facility of their choice was the same as for adults.

At each stage of the informed consent process, the interviewer recorded on the electronic consent form whether verbal consent/assent was given, and a printed copy was provided to the participant.

The interviewer assessed the cognitive ability of each potential participant by providing information on survey participation and asking them to summarize their understanding of the survey purpose and process. Standard operating procedures on eligibility determination process and verification of eligibility criteria were used to guide the interviewers on how to assess the respondent's cognitive ability based on the summary they provide. Persons who were unable to give consent or assent due to cognitive impairment or intellectual disability were excluded.

UPHIA survey protocols, consent forms, screening forms, refusal forms, referral forms, recruitment materials, and questionnaires were reviewed and approved by the local institutional review boards of the Uganda National Council of Science and Technology (UNCST), UVRI, Columbia University Medical Center, Westat, and the CDC.

2.3 SURVEY IMPLEMENTATION

The survey was implemented using a two-stage, stratified cluster sample design that first selected census enumeration areas (EAs) and then selected households within each EA. Questionnaire and field laboratory data were collected on mobile tablet devices and HIV testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Uganda's national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. For confirmed

HIV-positive samples, laboratory-based testing was conducted for quantitative evaluation of viral load and qualitative detection of ARVs (efavirenz, dolutegravir, atazanavir, and lopinavir). A laboratory-based incidence testing algorithm (HIV-1 limiting antigen-avidity assay with correction for viral load and detectable ARVs) was used to distinguish recent from long-term infection. In response to the COVID-19 pandemic, survey trainings and data collection procedures were adapted to incorporate strict risk mitigation measures as described below to protect the health and well-being of staff, participants, other members of surveyed households, and the larger communities in which data collection took place.

Training of Field and Laboratory Staff

All survey staff received training on both the contents of the data collection instruments and tablet use. The training curriculum included scientific objectives of the survey, survey design and methods, how to complete survey forms, communication skills, data collection, staff roles and responsibilities topics, recruitment of participants, and reporting of protocol deviations and adverse events. Interviewers and counselors were also trained on informed consent procedures, including human participants' protection, privacy, and confidentiality, home-based HIV testing and counseling, and referral of participants to health and social services. Laboratory technicians participated in practical sessions and competency assessments in blood collection including venipuncture and fingerstick, management and transportation of blood specimens, and biosafety.

After data collection was paused due to the COVID-19 pandemic, staff were provided with refresher and COVID-19 mitigation trainings. Prior to resumption of data collection after COVID-19 lockdown, a 4-day training session for all survey staff was conducted to refresh on survey procedures and COVID-19 mitigation measures. The COVID-19 training component included the general COVID-19 introduction and guidance; staff screening, isolation, and quarantine procedures (see below).

Laboratory staff were trained in specimen management, including sample collection and processing, labeling, and quality assurance (QA). Central laboratory staff were trained in viral load measurement, HIV confirmatory testing, and HIV recency testing using the limiting antigen (LAg) avidity enzyme immunoassay (see below). In addition, after pausing for COVID-19, laboratory staff received trainings on COVID-19 risk mitigation within the laboratory setting.

COVID-19 Mitigation

Survey fieldwork was paused from March 2020 to October 2020 due to the COVID-19 pandemic. During the pause, the project team continually monitored the COVID-19 situation in the country and worked with partners to develop standard operating procedures for mitigating risk of COVID-19 transmission during the survey. Before restarting fieldwork, the project team took precautions to prioritize the health and well-being of the team members, members of surveyed households, and of the greater community where the survey operated. Through collaboration with its partners, the survey team adapted survey-related work to be consistent with rapidly evolving World Health Organization guidance. The decision to restart was based on initial data indicating relatively low COVID-19 case counts and mortality in Uganda and approval from participating institutions and the Government of Uganda to resume survey activities with added safety precautions. Comprehensive risk-management and standard operating procedures (SOPs) to mitigate severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission were developed by principal investigator institutions in alignment with national guidelines and implemented for use by survey teams during UPHIA training events, household-based data collection, and laboratory activities. These standard operating procedures prioritized the health and well-being of staff, participants, members of surveyed households, and the larger communities in which data collection took place. These approaches included COVID-19 mitigation trainings for survey and laboratory staff, updated community sensitization materials in advance of the survey restart (with an emphasis on holding outdoor community meetings of 10 or less people with all COVID-19 protocols observed), adjustments to the household entry procedures, survey team size, and the best practices for interacting with households, including providing personal protective equipment (PPE) to household members. To ensure compliance with health and safety protocols during survey implementation, a COVID-19 coordinator was appointed.

Refresher trainings were conducted which emphasized COVID-19 mitigation strategies trainings for survey and laboratory staff. All staff were tested before gathering for the training and were required to submit a symptom screen each day of the training. Staff testing positive attended the training virtually while in isolation.

Survey staff were required to reduce their own coronavirus risk through application of the infection, prevention, and control measures that were available at the time. Mitigation measures implemented during fieldwork included consistent use of masks for both survey staff and household participants, testing for SARS-COV-2 before training and the start or restart of field work (in case of a pause), and participating in daily symptom screening of all staff using a mobile phone application. The application was developed for symptom screening before they could be cleared for work. The outcome of the screening informed the next course of action which included being cleared for work If screened negative or isolation/quarantine for those who screened positive for symptoms consistent with COVID-19 and submitting to SARS-CoV-2 testing. Survey staff provided close monitoring of isolation and quarantine periods of those infected or that were close contacts of COVID-19 cases and provided virtual training for those in isolation or quarantine. Additionally, the district COVID-19 task force or Ministry of Health were notified if a survey team member tested positive for community contact tracing. Field data collection teams and satellite laboratory shifts operated as cohorts, with all members being considered close contacts of each other. The number of staff interacting with each household was minimized, and staff were encouraged to complete survey procedures outdoors or in well-ventilated rooms when possible. Note that not all team members or laboratory facilities were available for the survey restart, so the project team hired and trained new fieldworkers and laboratory staff.

Survey Staff

Fieldwork started in February 2020 and was completed in March 2021 (with a pause from March until October 2020 due to the COVID-19 pandemic). At survey launch, the fieldwork was conducted by 30 locally hired field teams with nine members each, including a team leader, and eight data collectors (interviewers, counselors, laboratory technicians) who performed interviews, phlebotomy, testing, and counseling. Each team was supported by two drivers. Field teams included both male and female staff and members who spoke the languages used in the areas to which they were deployed.

Overall, a total of 380 field staff comprised of 12 regional coordinators, 180 interviewers and counselors, 60 field lab technicians, 30 team leaders, and 98 drivers participated in data collection. The field teams were supervised by their team leaders, and regional coordinators, and managed by central staff who guided and oversaw data collection activities, performed quality checks, and provided technical support (Appendix D).

The laboratory staff was organized at different levels (central laboratory staff, field laboratory technicians, supervisors, satellite lab technicians and logisticians). Overall, in addition to the field lab technicians, there were 59 laboratory staff technicians, including 53 satellite laboratory technicians, and seven central lab technicians processed samples and performed additional procedures for HIV-1 viral load, CD4 counts, quality control (QC), and QA. Staffing numbers also account for additional staff hired during the COVID-19 pause.

Community Sensitization and Mobilization

The survey also employed community mobilization teams to maximize community support and participation before data collection. The teams consisted of 8 community mobilization coordinators who recruited approximately 625 community mobilizers. The mobilization began before fieldwork commenced with a high-level national launch meeting that included key national and regional leaders, mass media, and other stakeholders. Community mobilization teams visited each EA before initiation of data collection and partnered with community mobilizers to meet key gatekeepers in the communities (local council, local government officials, and religious and community leaders). The mobilization teams held community sensitization meetings, disseminated written informational materials such as brochures and posters, and held discussions with community residents.

After the survey pause for COVID-19, community mobilization activities were implemented with strict adherence to COVID-19 risk mitigation measures. For instance, door-to-door sensitization was used instead of holding large community meetings; as well as radio and community-based public address systems.

Supervision and monitoring

Data collection teams were continuously overseen by field-based supervisors and periodically monitored by national and international teams with representation from collaborating institutions. Monitoring teams visited field and laboratory sites weekly and provided direct supervision as well as verification of results by household revisits. Monitors regularly reviewed

electronic monitoring forms and management forms used by teams for household and individual outcome tracking. Field-based supervisors also supported teams by organizing supplies and transport of blood samples, coordinating community-mobilization efforts, providing technical troubleshooting, and checking the quality of household procedures and data collected.

The national and international monitoring teams observed and assessed the quality of survey procedures, including adherence to protocol and standard operating procedures. They identified and responded to issues with data collection. Additionally, weekly debriefing sessions were held between field-based supervisors and monitoring teams and monitoring reports were circulated to collaborating institutions and the UPHIA 2020-2021 Technical Working Group for response.

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

Questionnaire data collection

Questionnaire and field laboratory data were collected on mobile tablet devices using an application programmed in Census and Survey Processing System (CSPro) software, 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 individual interview was administered to all participants and included modules on demographic characteristics, sexual and reproductive health, marriage, male circumcision, sexual activity, the HIV testing and treatment history, TB and other health issues, and alcohol use (see Appendix F). Participants who self-reported their HIV-positive status were asked questions about their HIV care experience. Women were interviewed by female staff and men by male staff, whenever possible. The questionnaire was administered in English, Ateso, Ng'Karamajong, Luganda, Lugbara, Luo, Runyankole Rukiga, or Runyoro-Rutoro. Versions of the questionnaires in the local languages of the questionnaires were reviewed and tested thoroughly for acceptability, feasibility, and flow of questions.

Before the survey restarted, additional COVID-19 questions and response options were added to the questionnaire.

Blood collection

Qualified survey staff collected blood from consenting participants: approximately 14 mL of venous blood or 1 mL of capillary blood using finger-stick from individuals who either refused to give venous blood or for whom venous blood draw failed.

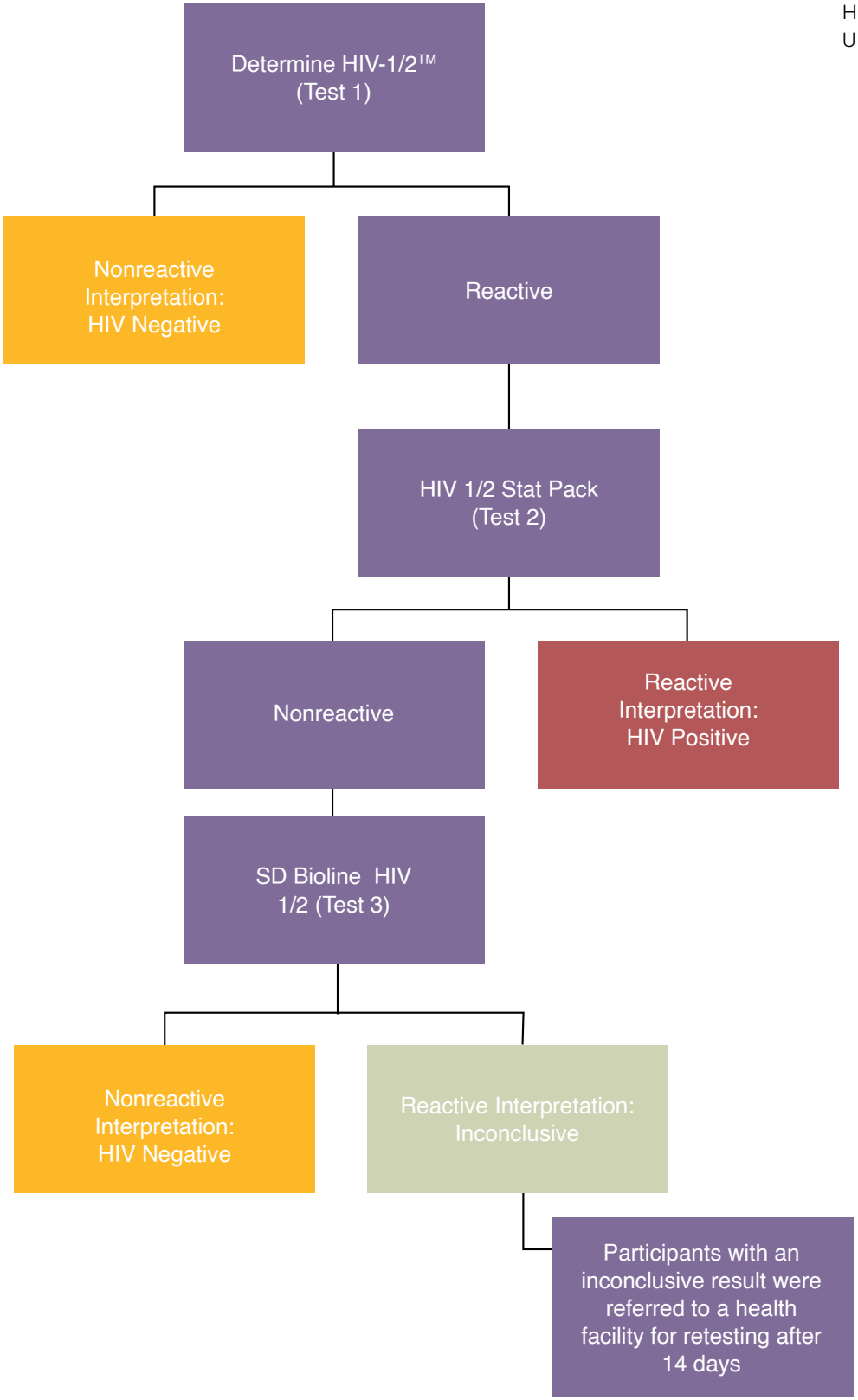
Blood samples were labeled with a unique barcoded participant identification number and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for processing into plasma aliquots and dried blood spots (DBS) and were frozen within 24 hours of blood collection at -20° C. Plasma and DBS samples were transferred weekly to the central laboratory for repository storage at -80° C.

HIV Home-Based Testing and Counseling

HIV HBTC was conducted in each household in accordance with national guidelines (Figure 2.3). As per these guidelines, the survey used a sequential rapid-testing algorithm in the field.

Determine™ HIV-1/2 (Abbott Molecular Inc., Des Plaines, Illinois, United States) was used 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 subjected to a third test using SD Bioline HIV-1/2 3.0 (Standard Diagnostics, Inc., Kyonggido, South Korea) as a tiebreaker. Those who tested negative on the tiebreaker were reported as HIV negative while those who tested positive were reported as inconclusive. Participants with an inconclusive result were referred for retesting after 14 days at a health facility.

Figure 2.3
Household-based HIV testing algorithm, UPHIA 2020-2021



As they were told their HIV test results, each participant received a Field Test Referral form that included their full name or participant identification number and the reason for their referral. Those who tested HIV negative received information on available prevention services in the community. Women who were pregnant at the time of the survey and not attending an ANC clinic were referred to the nearest ANC clinic.

Those who tested HIV positive received a referral form to the health facility of their choice so they could seek HIV treatment and care. If they consented, they could have their names and age added when their viral load and CD4 results were returned to the clinic. They were also counseled on the possibility of receiving facilitated linkage to a clinic for ART, care and support. They were asked to provide verbal consent for their information to be shared with a trained healthcare worker or counselor to facilitate linkage. If the participant consented, the field staff completed the Active Linkage to Care Form. All survey staff, healthcare workers, and counselors participating in linkage to care were trained in confidentiality procedures and detailed procedures on active linkage to care. This included eligibility for linkage to care, how contact information should be shared with the linkage to care coordinator, and documentation of linkage to care.

If a person who self-reported an HIV-positive status tested HIV negative or inconclusive in the survey, additional testing was performed at the satellite laboratory. A discrepancy resolution process was initiated to confirm their status (see below, Section 2.5). Once the participant's status was confirmed, survey staff returned to the household to share the results and provide counseling to these participants.

Field QC and proficiency testing: QC using a panel of known positive and negative dried tube specimens (DTS) was performed on a biweekly basis by field and satellite laboratory staff performing HIV testing. In addition, QA proficiency testing was conducted twice during the survey, using a panel of masked HIV-positive and negative DTS. Proficiency in the correct performance and interpretation of the HIV testing algorithm was assessed for each tester.

2.4 LABORATORY-BASED BIOMARKER TESTING

Satellite and Central Laboratories

Ten satellite laboratories for the survey were established in existing health facility laboratories. One central reference laboratory was chosen for more specialized tests. At each satellite laboratory, trained technicians performed CD4 testing, HIV retesting, QA testing, and processing of whole blood specimens into plasma aliquots and DBS cards for temporary storage at -20°C.

HIV QA and confirmatory testing: For QA of the HIV rapid testing conducted in the field, the first 25 samples tested by each field tester were retested in the satellite laboratory using the national HIV rapid-testing algorithm. All specimens that tested HIV positive or inconclusive during HBTC, and those that had confirmed positive rapid test results during QA, underwent confirmatory testing using the Geenius HIV ½ Supplemental Assay (Bio-Rad, Hercules, California, United States) at the central laboratory. A positive Geenius result defined HIV-positive status for the survey.

Central laboratory procedures included Geenius HIV ½ Supplemental Assay testing, HIV viral load testing, HIV TNA PCR for confirmation of status of those who self-reported an HIV-positive status but tested negative in HBTC, GS HIV-1 Western blot (BioRad, Hercules, California, United States), HIV recency testing, HIV drug resistance (HIVDR) testing, and long-term storage of samples at -80°C.

For participants who self-reported an HIV-positive status but tested HIV negative or inconclusive at the time of the survey, additional HIV rapid tests were conducted at the satellite/mobile lab (following the same national testing algorithm as used in the field). To initiate a discrepancy resolution process A root cause analysis was done to identify possible non-conformities like specimen mix-up, transcription error, or other causes. Further laboratory-based testing was then conducted at the central laboratory using HIV total nucleic acid (TNA) polymerase chain reaction (PCR) or Western Blot for confirmation of the status.

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

CD4 Count Measurement

Blood samples from the participants who tested HIV-positive and inconclusive underwent CD4 count measurement at the satellite laboratory. The measurement was performed using the Pima™ CD4 Analyzer (Abbott Molecular, Inc., Chicago, Illinois, United States, formerly Alere).

Viral Load Testing

The HIV-1 viral load (HIV RNA copies per mL) of confirmed HIV-positive participants was measured on plasma samples using the COBAS AmpliPrep/Taqman 96 assay on the COBAS AmpliPrep/COBAS TaqMan (CAP/CTM) HIV-1, v2.0 Test (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). In cases where plasma samples were not available, HIV-1 viral load was performed on dried blood spot (DBS) samples using the COBAS AmpliPrep/COBAS TaqMan (CAP/CTM) Free Virus Elution (FVE) Protocol (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). The COBAS AmpliPrep/TaqMan HIV-1 is a nucleic acid amplification test for the quantification of HIV Type 1 (HIV-1) RNA in human plasma or dried blood spots. Specimen preparation was automated using COBAS AmpliPrep with amplification and detection using TaqMan.

Return of CD4 and Viral Load Results

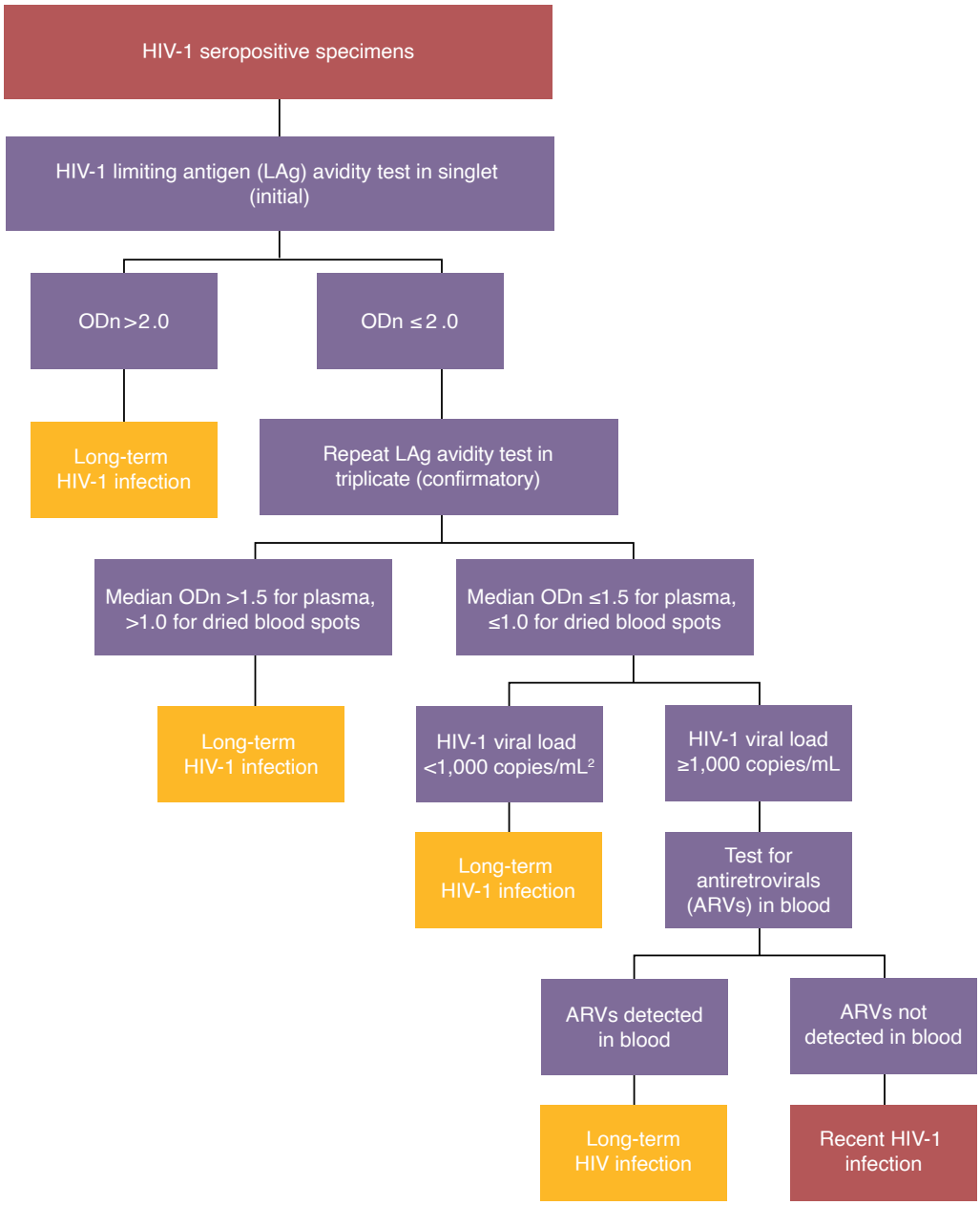
The return of results coordinator delivered CD4 and viral load results within approximately 8 to 12 weeks to the health facility chosen by each HIV-positive participant. HIV-positive participants were provided with a referral form during HBTC for subsequent retrieval of their results. Survey staff also contacted each participant via mobile phones, informing them that their viral load results were available at the chosen facility and further advising them to seek care and treatment.

HIV Recent Infection Testing Algorithm

To distinguish recent from long-term HIV infections, to estimate incidence, the survey used a laboratory-based testing algorithm that employed a combination of assays: an HIV-1 LAg avidity assay, viral load, and ARV detection (Figure 2.4), as described in Appendix B.

The Sedia HIV-1 LAg-Avidity EIA (Sedia Biosciences Corporation, Portland, Oregon, United States) was used on plasma specimens, while the Maxim HIV-1 LAg-Avidity Dried Blood Spot (DBS) EIA (Maxim Biomedical, Bethesda, Maryland, United States) was used on DBS specimens. Using LAg avidity testing, plasma specimens with median normalized optical density (ODn) ≤ 1.5 and DBS specimens with median ODn ≤ 1.0 were classified as potential recent infections and their viral load results were assessed. Specimens with viral load < 1,000 copies/mL were classified as long-term infections, while ARV detection data were assessed for those with viral load ≥ 1,000 copies/mL: those with a detectable ARV were classified as long-term infections and those without were classified as recent infections (Figure 2.4). Afterwards, LAg avidity testing was performed separately on specimens with a viral load <1,000 copies/mL but the long-term infection classification was retained for all.

Figure 2.4
HIV-1 recent infection testing algorithm, UPHIA 2020-2021



Abbreviations: mL: milliliter; ODn: normalized optical density; DBS: dried blood spot; ARV: antiretroviral.

Detection of Antiretroviral Drug Resistance

HIV resistance to ARVs was assessed for HIV-positive participants including recent cases, those without VLS (≥1,000 copies/mL; both on treatment and not on treatment), and those with viral load of 200-999 copies/mL. Drug mutations in the HIV pol gene encoding protease, reverse transcriptase, and integrase that confer resistance (according to the Stanford University HIV Drug Resistance Database) were detected simultaneously by use of the CDC in-house multiplex allele-specific drug resistance assay.

Specimens were tested for drug resistance at the Ugandan Virus Research Institute (UVRI), a World Health Organization (WHO)-accredited laboratory for HIV drug resistance testing.

Detection of Antiretrovirals

Qualitative screening for detectable concentrations of ARVs was conducted on DBS specimens from all HIV-positive participants 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 µg/mL for each drug. The assay has 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, four ARVs: efavirenz, dolutegravir, atazanavir, and lopinavir were selected as markers for the most prescribed first- and second-line regimens in Uganda. These ARVs were also selected based on their relatively long half-lives, allowing for a longer period of detection following intake.

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

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

2.5 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 were adjusted for nonresponse and noncoverage. Nonresponse adjusted weights were calculated for households, individual interviews, and individual blood draws in a hierarchical form. Weighting adjustment cells, defined by a combination of variables that are potential predictors of response, were developed to adjust initial individual and blood-level weights for nonresponse. The nonresponse adjustment cells were constructed using chi-square automatic interaction detection, or the Chi-square Automatic Interaction Detector (CHAID) algorithm. The cells were defined based on data from the household interview for the adjustment of individual-level weights, and from both the household and individual interviews for the adjustment of blood sample-level weights. Post-stratification adjustments were implemented to compensate for noncoverage in the sampling process. 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 5-year age groups. Descriptive analyses of RR, characteristics of respondents, and other indicators 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 viral load and ARV detection algorithm and obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays (CEPHIA) but with adjusted assay performance characteristics.[3]

The relatively high proportion of HIV infections which are of subtype D in Uganda affects HIV incidence estimation. Approximately 10% of HIV positive samples from participants 15+ years were selected for testing to determine the subtype distribution in the study population. This testing found that 23% of infections were subtype D, and 77% were subtype A. Since the mean duration of recent infection (MDRI), a key parameter for incidence estimation, varies by subtype, a survey-specific MDRI was calculated for UPHIA 2020-2021. This MDRI is a weighted average of the MDRIs for subtypes A and D:

$$\text{MDRI}_{\text{Uganda}} = W_A * \text{MDRI}_A + W_D * \text{MDRI}_D$$

where the *W*s and MDRIs 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, Johns Hopkins University, and CDC (unpublished data). The resulting weighted average MDRI for UPHIA 2020-2021 incidence estimation is 156 days (95% CI: 130-182 days), with time cutoff = 1.0 year and residual proportion false recent = 0.00. Note that this differs slightly from the UPHIA 2016-2017 average MDRI of 153 days (95% CI: 127-179 days), derived using a similar procedure, and from the 130-day MDRI (95% CI: 118, 142 days) used in other PHIA countries.

Unless otherwise noted in the report, comparisons between estimates were based upon nonoverlapping 95% Cis. Note that CIs are not shown in most of the report tables. However, the public use data package will provide instructions to calculate the CIs, once it is available on the PHIA website.

Note that the survey disaggregates wealth into quintiles, based on the wealth index, a composite measure of a household's cumulative living standard. The wealth index is calculated using easy-to-collect data on a household's ownership of selected assets, such as televisions and bicycles; materials used for housing construction; and types of water access and sanitation facilities. See https://dhsprogram.com/topics/wealth-index/Wealth-Index-Construction.cfm. Additionally, education categories described in the tables refer to the highest level of education attended, whether or not that level was completed. Note, also, that the denominator for a characteristic may differ from the site total due to nonresponse or missing data. In addition, due to rounding, estimate total sums may not equal 100.0%.

Where applicable, the UNAIDS and PEPFAR indicators (that were in effect when the survey concluded) corresponding to a given table are specified at the end of the table. The UNAIDS Global Monitoring indicators refer to the 2021 release of the indicators, available at:
https://www.aidsdatahub.org/sites/default/files/resource/unaids-global-aids-monitoring-2021.pdf and the 2021 Monitoring, Evaluation, and Reporting (MER) indicators available at: https://www.state.gov/wp-content/uploads/2019/10/PEPFAR-MER-Indicator-Reference-Guide-Version-2.4-FY20.pdf.

2.6 RESPONSE RATES

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

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

Of the 11,130 selected households, 10,527 were occupied, and of those, 10,164 were interviewed, respectively. The overall household RR (unweighted) was 95.7%. After adjusting for differential sampling probabilities and nonresponse, the overall weighted household RR was 95.9% (Table 2.6.1).

A total of 27,635 individuals (11,834 men and 15,801 women) were eligible to participate in the survey. A total of 26,071 adults answered the questions in the individual interview: interview RRs were 91.5% among men and 96.4% among women. Among those interviewed, 97.5% of men and 97.9% of women also had their blood drawn (Table 2.6.2).

Table 2.6.1 Household response rates

Number of households selected, occupied, and interviewed and household response rates (unweighted and weighted), by residence, UPHIA 2020-2021

Result	Residence		Total
	Urban	Rural	
Household interviews			
Households selected	3,828	7,302	11,130
Households occupied	3,660	6,867	10,527
Households interviewed	3,537	6,627	10,164
Household response rate[1] (unweighted)	96.1	95.5	95.7
Household response rate[1] (weighted)	96.3	95.7	95.9

[1] Household response rate was calculated using the American Association for Public Opinion Research (AAPOR) Response Rate 4 (RR4) method: https://aapor.org/wp-content/uploads/2023/05/Standards-Definitions-10th-edition.pdf

Table 2.6.2 Individual interview and blood draw response rates

Number of eligible individuals and response rates for individual interviews[1] and blood draws[2] (unweighted and weighted), by residence and sex, UPHIA 2020-2021

Result	Residence				Total by sex		Total
	Urban		Rural				
	Men	Women	Men	Women	Men	Women	
Eligible individuals, ages 15-24 years							
Number of eligible individuals	1,315	1,847	2,962	3,607	4,277	5,454	9,731
Interview response rate (unweighted)	90.4	95.3	91.1	95.6	90.9	95.5	93.5
Interview response rate (weighted)	90.2	95.6	91.1	95.8	90.9	95.8	93.6
Blood draw response rate (unweighted)	97.3	97.8	97.4	97.8	97.4	97.8	97.6
Blood draw response rate (weighted)	97.4	98.0	97.4	98.1	97.4	98.1	97.8
Eligible individuals, ages 15-49 years							
Number of eligible individuals	3,196	4,406	6,536	8,599	9,732	13,005	22,737
Interview response rate (unweighted)	88.4	96.0	92.3	96.8	91.0	96.5	94.1
Interview response rate (weighted)	88.2	96.1	92.2	96.8	90.9	96.5	94.1
Blood draw response rate (unweighted)	97.3	97.1	97.7	98.2	97.6	97.8	97.7
Blood draw response rate (weighted)	97.3	97.3	97.7	98.3	97.5	97.9	97.8

Table 2.6.2 Individual interview and blood draw response rates (continued)

Number of eligible individuals and response rates for individual interviews[1] and blood draws[2] (unweighted and weighted), by residence and sex, UPHIA 2020-2021

Result	Residence				Total by sex		Total
	Urban		Rural				
	Men	Women	Men	Women	Men	Women	
Eligible individuals, ages 15+ years							
Number of eligible individuals	3,661	5,040	8,173	10,761	11,834	15,801	27,635
Number of interviewed individuals	3,237	4,830	7,598	10,406	10,835	15,236	26,071
Number of individuals with blood draw	3,148	4,688	7,428	10,215	10,576	14,903	25,479
Interview response rate (unweighted)	88.4	95.8	93.0	96.7	91.6	96.4	94.3
Interview response rate (weighted)	88.3	95.8	92.9	96.7	91.5	96.4	94.2
Blood draw response rate (unweighted)	97.3	97.1	97.8	98.2	97.6	97.8	97.7
Blood draw response rate (weighted)	97.2	97.2	97.7	98.2	97.5	97.9	97.7
Overall response rate (unweighted)[3]	82.6	89.3	86.8	90.6	85.5	90.2	88.2

[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.
[3] Overall response rate = household response rate * interview response rate * blood draw response rate.

2.7 REFERENCES

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3. SURVEY HOUSEHOLD CHARACTERISTICS

3.1 KEY FINDINGS

- In Uganda, 13.2% of households had at least one HIV-positive member. There was at least one HIV-positive member in 12.3% of rural households, and 14.8% of urban households.
- Among all households, 8.8% were headed with a person living with HIV. The proportion of female-headed households headed by a person living with HIV was higher than in male-headed households: 12.0% compared to 6.4%.

3.2 BACKGROUND

This chapter presents characteristics of households surveyed in UPHIA 2020-2021. 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 (i.e., persons who slept in the household the night before) is described by sex as well as urban/rural residence. This chapter also describes the prevalence and composition of households impacted by HIV, which are households with one or more HIV-positive members.

3.3 HOUSEHOLD COMPOSITION

Overall, 60.1% of households were headed by a man, while 39.9% were headed by a woman. Most households, in both urban (56.5%) and rural (62.1%) residences were headed by a man. Households had a median size of five members (IQR: 3-7), with a median of two children under 18 years of age (Table 3.3.1). Among the de facto household population, 53.6% were female and 46.4% were male (Table 3.3.2).

Among urban households, most household members overall were aged 15-49 years (54.0%), as were most women (57.0%) and men (50.4%). In rural households, a similar proportion of the population were aged 15-49 years (44.3%) and below 15 years of age (44.5%) (Table 3.3.3, Figure 3.3.3).

Table 3.3.1 Household composition

Percent distribution of households by sex of head of household; median (quartile 1, quartile 3 [Q1, Q3]) size of household and median (Q1, Q3) number of children under 18 years of age, by residence, UPHIA 2020-2021

Characteristic	Residence				Total	
	Urban		Rural			
	Percent	Number	Percent	Number	Percent	Number
Head of household						
Male	56.5	1,933	62.1	3,936	60.1	5,869
Female	43.5	1,604	37.9	2,691	39.9	4,295
Total	100.0	3,537	100.0	6,627	100.0	10,164

Characteristic	Residence				Total	
	Urban		Rural			
	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	1	0, 3	2	1, 4	2	1, 4

Table 3.3.2 Distribution of de facto household population (population pyramid)

Percent distribution of the de facto household population, by 5-year age groups and sex, UPHIA 2020-2021

Age (years)	Men		Women		Total	
	Percent	Number	Percent	Number	Percent	Number
0-4	7.4	3,650	7.3	3,629	14.7	7,279
5-9	7.5	3,572	7.3	3,557	14.8	7,129
10-14	6.5	3,030	6.5	3,098	13.0	6,128
15-19	5.0	2,359	5.6	2,734	10.7	5,093
20-24	4.0	1,921	5.5	2,724	9.5	4,645
25-29	3.1	1,506	4.5	2,216	7.7	3,722
30-34	2.6	1,257	3.4	1,674	6.0	2,931
35-39	2.2	1,043	3.2	1,567	5.5	2,610
40-44	1.9	900	2.3	1,125	4.3	2,025
45-49	1.6	749	2.0	969	3.7	1,718
50-54	1.4	664	1.5	736	3.0	1,400
55-59	0.9	413	1.2	570	2.1	983
60-64	0.7	336	0.9	455	1.6	791
65-69	0.5	249	0.6	306	1.1	555
70-74	0.3	160	0.5	276	0.9	436
75-79	0.3	126	0.3	160	0.6	286
80+	0.3	154	0.6	293	0.9	447
Total	46.4	22,089	53.6	26,089	100.0	48,178

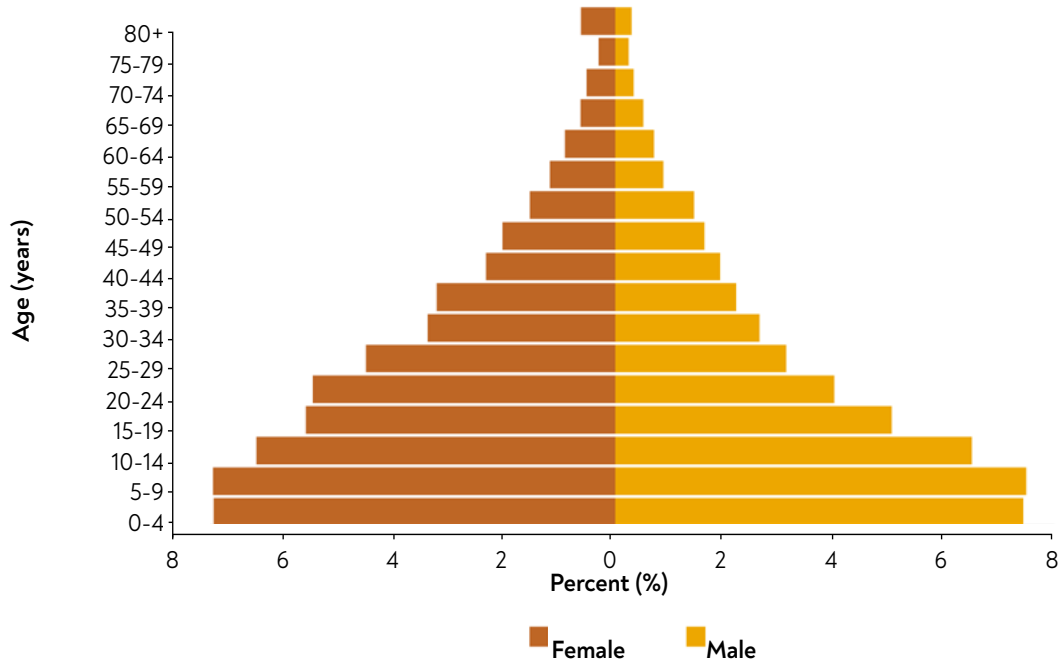


Figure 3.3.2
Distribution of the de facto population by sex and age, UPHIA 2020-2021

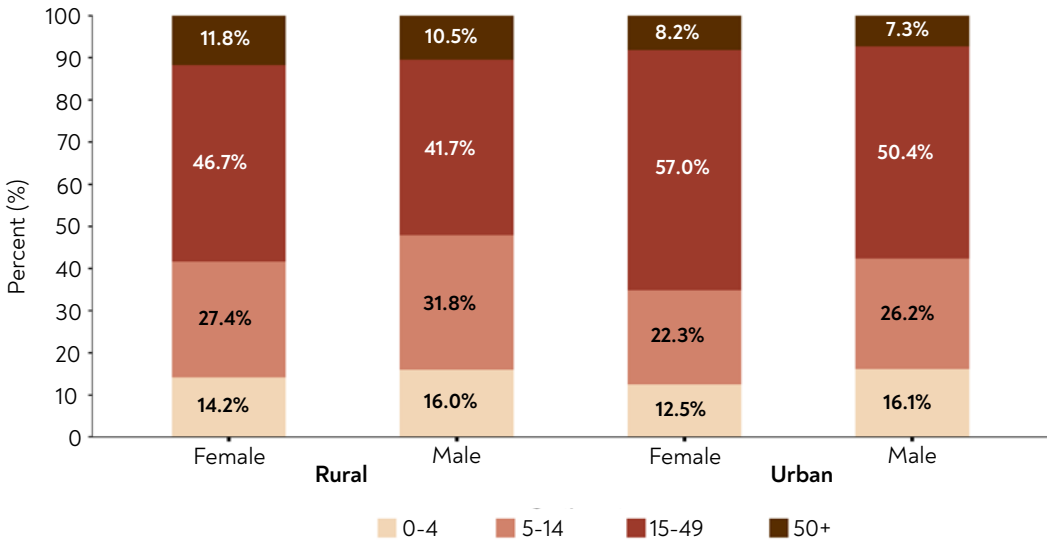
Table 3.3.3 Household population by age, sex, and residence

Percent distribution of the household population by age, sex, and residence, UPHIA 2020-2021

Age	Urban					
	Men		Women		Total	
	Percent	Number	Percent	Number	Percent	Number
0-4	16.1	1,035	12.5	974	14.1	2,009
5-14	26.2	1,615	22.3	1,708	24.1	3,323
15-49	50.4	3,197	57.0	4,407	54.0	7,604
50+	7.3	465	8.2	634	7.8	1,099
Total	100.0	6,312	100.0	7,723	100.0	14,035

Age	Rural					
	Men		Women		Total	
	Percent	Number	Percent	Number	Percent	Number
0-4	16.0	2,615	14.2	2,655	15.0	5,270
5-14	31.8	4,987	27.4	4,947	29.5	9,934
15-49	41.7	6,538	46.7	8,602	44.3	15,140
50+	10.5	1,637	11.8	2,162	11.2	3,799
Total	100.0	15,777	100.0	18,366	100.0	34,143

Figure 3.3.3
Household population by age, sex, and residence, UPHIA 2020-2021



3.4 PREVALENCE OF HIV-AFFECTED HOUSEHOLDS

The prevalence and composition of households impacted by HIV, which are households with one or more HIV-positive member are described by the tables and figures below. (Note, HIV-status of the household members was determined by the HIV test performed in the survey.)

In Uganda, 13.2% of households had at least one HIV-positive member. There was at least one HIV-positive member in 12.3% of rural households, and 14.8% of urban households (Table 3.4.1 and Figure 3.4.1).

Among all households, 8.8% were headed by a person living with HIV. The proportion of female-headed households headed by a person living with HIV was higher than in male-headed households: 12.0% (95% CI: 10.5%-13.5%*) compared to 6.4% (95% CI: 5.6%-7.2%*) (Table 3.4.2 and Figure 3.4.2).

Table 3.4.1 Prevalence of HIV-affected households

Percentage of households with at least one HIV-positive household member, by residence, UPHIA 2020-2021

Residence	Percent	Number
Urban	14.8	3,439
Rural	12.3	6,532
Total	13.2	9,971

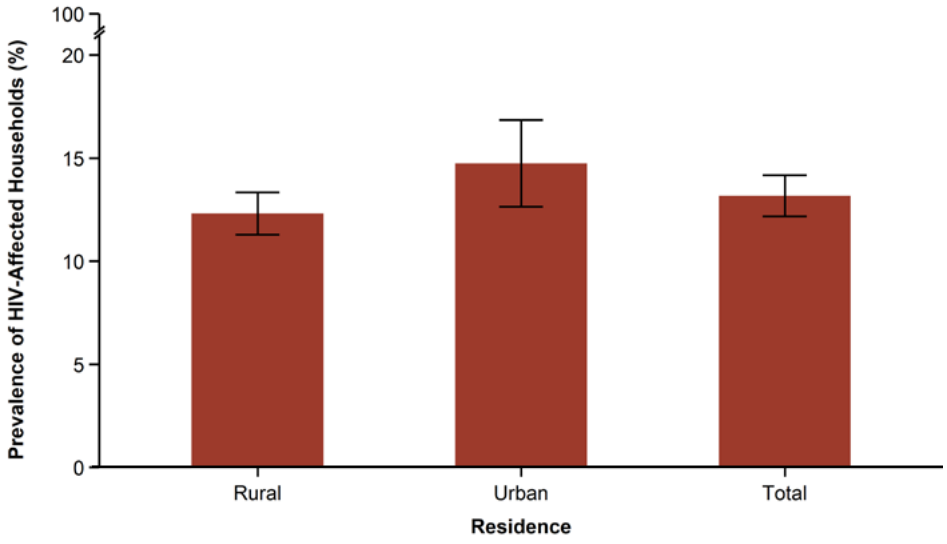


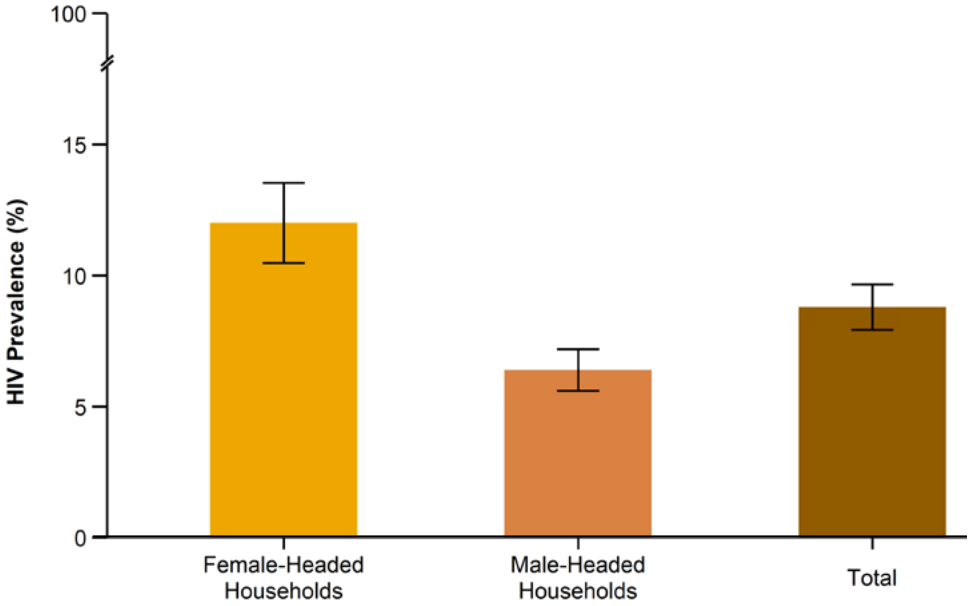
Figure 3.4.1
Prevalence of HIV-affected households by residence, UPHIA 2020-2021

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

Table 3.4.2: 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 2020-2021		
Sex of head of household	Percent	Number
Male	6.4	5,011
Female	12.0	4,091
Total	8.8	9,102

Figure 3.4.2
Prevalence of HIV among heads of households, by sex, UPHIA 2020-2021



3.5 GAPS AND UNMET NEEDS

- A substantial proportion (13.2%) of households in Uganda need of HIV-related services.
- The women living with HIV who head households may be in particular need of HIV-related services and support.

4. SURVEY POPULATION CHARACTERISTICS

4.1 KEY FINDINGS

- More than a third (39.6%) of the survey population were young people aged 15-24 years, while only 14.1% were 50 years and older.
- Most (67.1%) of the survey population were residing in rural areas.

4.2 BACKGROUND

UPHIA 2020-2021 assessed key indicators and outcomes for adults (defined as those aged 15 years and older). To provide context for these outcomes, this chapter summarizes the basic demographic and socioeconomic characteristics of survey population. Most key indicators in this report are stratified according to these characteristics.

4.3 DEMOGRAPHIC CHARACTERISTICS OF THE ADULT POPULATION

More than a third (39.6%) of the survey population were young people aged 15-24 years, while 14.1% were 50 years and older (Table 4.3).

More than two-thirds (67.1%) of the adult population lived in rural areas. Central 1: South Buganda was the most populous region, with 17.3% of the population, followed by South Western at 13.4%; Northeast: Karamoja and Northeast: Teso were the least populous, with 1.6% and 5.4% of the population, respectively (Table 4.3).

Most of the survey population (53.0%) were married or living with a partner, while 38.6% of men and 24.8% of women had never been married. At the time of the survey, 14.0% of the women and 8.2% of the men were divorced or separated, while 7.7% of women were widows and 0.9% of men were widowers (Table 4.3).

Most adults had had at least some formal education: 52.2% only had some primary education, 30.7% had at least attended secondary school, and 8.7% had completed secondary school and had more than secondary education. However, 11.8% of women and 4.7% of men had never attended school (Table 4.3).

Table 4.3 Demographic characteristics of the adult population

Percent distribution of the population aged 15 years and older, by sex and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Men		Women		Total	
	Percent	Number	Percent	Number	Percent	Number
Age (years)						
15-19	23.1	2,141	20.7	2,577	21.9	4,718
20-24	18.3	1,747	17.3	2,632	17.8	4,379
25-29	13.7	1,365	14.7	2,143	14.2	3,508
30-34	10.7	1,124	11.5	1,633	11.1	2,757
35-39	8.4	952	8.9	1,527	8.7	2,479
40-44	6.6	825	6.8	1,095	6.7	1,920
45-49	5.6	701	5.5	942	5.5	1,643
50-54	4.1	618	3.9	710	4.0	1,328
55-59	3.3	387	3.5	558	3.4	945
60-64	2.0	322	2.2	444	2.1	766
65+	4.2	653	5.0	975	4.6	1,628
Residence						
Urban	32.1	3,237	33.7	4,830	32.9	8,067
Rural	67.9	7,598	66.3	10,406	67.1	18,004

Table 4.3 Demographic characteristics of the adult population (continued)

Percent distribution of the population aged 15 years and older, by sex and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Men		Women		Total	
	Percent	Number	Percent	Number	Percent	Number
Region						
Central 1: South Buganda	16.8	1,191	17.8	1,709	17.3	2,900
Central 2: North Buganda	10.1	998	9.1	1,220	9.6	2,218
East Central	10.1	718	9.5	927	9.8	1,645
Kampala	6.6	836	6.8	1,270	6.7	2,106
Mid Eastern	9.7	863	9.8	1,178	9.8	2,041
Mid North	10.1	1,059	9.3	1,340	9.7	2,399
Mid Western	9.5	981	8.6	1,200	9.0	2,181
Northeast: Karamoja	1.3	795	1.9	1,554	1.6	2,349
Northeast: Teso	5.4	936	5.4	1,245	5.4	2,181
South Western	12.8	1,330	14.0	1,935	13.4	3,265
West Nile	7.5	1,128	8.0	1,658	7.8	2,786
Marital status						
Never married	38.6	3,627	24.8	3,242	31.4	6,869
Married or living together	52.3	6,162	53.5	8,444	53.0	14,606
Divorced or separated	8.2	892	14.0	2,100	11.2	2,992
Widowed	0.9	140	7.7	1,429	4.5	1,569
Education						
No education	4.7	774	11.8	2,660	8.4	3,434
Primary	51.4	5,640	53.0	7,943	52.2	13,583
Secondary	33.2	3,274	28.3	3,662	30.7	6,936
More than secondary	10.7	1,143	6.9	955	8.7	2,098
Wealth quintile						
Lowest	21.5	3,112	21.1	4,585	21.3	7,697
Second	21.0	2,172	20.1	2,843	20.5	5,015
Middle	22.0	2,167	21.2	2,798	21.6	4,965
Fourth	18.4	1,750	18.3	2,384	18.4	4,134
Highest	17.1	1,630	19.4	2,622	18.3	4,252
Total 15-24 (years)	41.4	3,888	38.0	5,209	39.6	9,097
Total 15-49 (years)	86.4	8,855	85.4	12,549	85.9	21,404
Total 50+ (years)	13.6	1,980	14.6	2,687	14.1	4,667
Total 15+ (years)	100.0	10,835	100.0	15,236	100.0	26,071

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

5. HIV INCIDENCE

5.1 KEY FINDINGS

- Annual incidence of HIV among adults (individuals aged 15 years and older) in Uganda was 0.29%: 0.38% among women and 0.20% among men.
- HIV incidence among adults aged 15-49 years was 0.32%: 0.42% (95% CI: 0.18%-0.45%) among women and 0.21% (0.03-0.38%) among men in that age group.
- Annual HIV incidence among young women aged 15-24 years was 0.62% (95% CI: 0.26%-0.97%), although the survey was not powered to estimate incidence in subgroups with confidence.

5.2 BACKGROUND

HIV incidence, the measure of new HIV infections in a population over a given time, provides important information on the status of the HIV epidemic and the impact of HIV prevention interventions. It can be used for effective targeted HIV prevention planning in groups that are most vulnerable to recent infection and to measure the impact of HIV prevention programs. This chapter presents annual estimates of HIV incidence among adults (ages 15 years and older) at the national level. For the purposes of this analysis, HIV incidence is expressed as the cumulative incidence or risk of new infections in a 12-month period, which is a close approximation to the instantaneous incidence rate. It is important to note that UPHIA 2020-2021 was not powered to estimate HIV incidence at the regional level or across different subgroups.

All HIV-positive participants were tested for recent infection using HIV-1 LAg avidity assay. A laboratory-based incidence testing algorithm (HIV-1 LAg avidity plus viral load and ARV detection) was used to distinguish recent from long-term infection, and incidence estimates were obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays but with adjusted assay performance characteristics.[1,2,3] The algorithm uses viral load testing to exclude specimens with low viral load and limit misclassification of persons as recent infections who are elite controllers* or on effective ART. The algorithm uses ARV detection to exclude specimens with high viral load and limit misclassification as recent infections of persons with longstanding infection who are on ART but have drug resistance or poor treatment adherence.[4]

The HIV incidence estimation in Uganda was affected by the relatively high proportion of HIV infections in Uganda that are subtype D (see Chapter 2, section 2.6: Data Processing and Analysis). The resulting weighted average MDRI for UPHIA 2020-2021 incidence estimation was 156 days (95% CI: 130-182 days), with time cutoff = 1.0 year and residual proportion false recent = 0.00. Note that this differs slightly from the UPHIA 2016-2017 average MDRI of 153 days (95% CI: 127-179 days), derived using a similar procedure, and from the 130-day MDRI (95% CI: 118-142 days) used in other PHIA countries. Survey weights are utilized for all estimates.

5.3 HIV INCIDENCE AMONG ADULTS

Annual incidence of HIV among adults (individuals aged 15 years and older) in Uganda was 0.29%: 0.38% among women and 0.20% among men. HIV incidence among adults aged 15-49 years was 0.32% (95% CI: 0.18%-0.45%). HIV incidence was 0.42% (95% CI: 0.18%-0.45%) among women and 0.21% (0.03-0.38%) among men in that age group (Table 5.3.1).

The annual incidence of HIV among young people aged 15-24 years was 0.31% (95% CI: 0.13%-0.49%). However, the new HIV infections were among young women aged 15-24 years, with an annual HIV incidence of 0.62% (95% CI: 0.26%-0.97%)—there were no recent infections recorded among young men aged 15-24 years, 0.00% (95% CI: 0.00%-0.23%). It should be noted, however, that the denominators are small, and the survey was not powered to provide estimates with confidence among subgroups smaller than the population aged 15-49 years (Table 5.3.1).

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

Table 5.3.1 Annual HIV incidence using the recent infection testing algorithm

Annual incidence of HIV among adults aged 15-49 and 15 years and older, by sex and age, using the recent infection testing algorithm (limiting antigen plus viral load plus antiretroviral biomarker testing), UPHIA 2020-2021

Age (years)	Men		Woman		Total	
	Percentage annual incidence[1]	95% CI	Percentage annual incidence[1]	95% CI	Percentage annual incidence[1]	95% CI
15-24	0.00	(0.00-0.23)	0.62	(0.26-0.97)	0.31	(0.13-0.49)
25-34	0.47	(0.00-0.93)	0.32	(0.00-0.65)	0.39	(0.11-0.68)
35-49	0.33	(0.00-0.80)	0.16	(0.00-0.39)	0.24	(0.00-0.50)
50+	0.17	(0.00-0.46)	0.09	(0.00-0.28)	0.13	(0.00-0.29)
15-49	0.21	(0.03-0.38)	0.42	(0.22-0.62)	0.32	(0.18-0.45)
15+	0.20	(0.05-0.35)	0.38	(0.20-0.55)	0.29	(0.17-0.41)

[1] Relates to Global AIDS Monitoring 2021 indicator 3.1: HIV incidence.

Table 5.3.2 presents the weighted numbers for those who tested HIV negative, HIV positive, those who were tested with the LAg avidity assay, and those determined to be recent infections after the recent infection testing algorithm was applied. Although the numbers are small, among women, close to half of the weighted number of new infections were reported among young women aged 15-24 years (13.1 out of 29.9).

Table 5.3.2 Annual HIV incidence auxiliary data

Annual incidence of HIV among adults aged 15-49 and 15 years and older, by sex and age, using the recent infection testing algorithm (limiting antigen plus viral load plus antiretroviral biomarker testing), UPHIA 2020-2021

Age (years)	Men			
	Number HIV negative[1]	Number HIV positive[1]	Number tested on LAg assay[1]	Number HIV recent[1]
15-24	3,755.3	29.7	29.7	0.0
25-34	2,328.8	98.2	98.2	4.7
35-49	2,201.4	227.6	227.6	3.1
50+	1,790.1	144.9	144.9	1.3
15-49	8,316.4	324.6	324.6	7.3
15+	10,124.9	451.1	451.1	8.7
Age (years)	Women			
	Number HIV negative[1]	Number HIV positive[1]	Number tested on LAg assay[1]	Number HIV recent[1]
15-24	4,949.5	145.5	145.5	13.1
25-34	3,349.4	338.6	338.6	4.6
35-49	3,067.0	425.0	425.0	2.2
50+	2,424.5	203.5	202.6	0.9
15-49	11,402.9	872.1	872.1	20.7
15+	13,830.4	1,072.6	1,071.9	22.3

Table 5.3.2 Annual HIV incidence auxiliary data (continued)

Annual incidence of HIV among adults aged 15-49 and 15 years and older, by sex and age, using the recent infection testing algorithm (limiting antigen plus viral load plus antiretroviral biomarker testing), UPHIA 2020-2021

Age (years)	Total			
	Number HIV negative[1]	Number HIV positive[1]	Number tested on LAg assay[1]	Number HIV recent[1]
15-24	8,717.6	162.4	162.4	11.5
25-34	5,696.8	418.2	418.2	9.6
35-49	5,278.2	642.8	642.8	5.5
50+	4,215.0	348.0	347.2	2.3
15-49	19,764.5	1,151.5	1,151.5	26.9
15+	24,000.0	1,479.0	1,478.4	29.9

[1] Weighted number.
Note: mean duration recent infection (MDRI) = 156 days (95% CI: 130-182 days); proportion false recent (PFR) = 0.00; time cutoff (T) = 1 year.

5.4 GAPS AND UNMET NEEDS

- Uganda still has about 3 in 1,000 new HIV infections each year, which indicates an unmet need for HIV prevention services.
- Young women aged 15-24 years remain at a higher risk of acquiring HIV infection, which suggests there is a continued need for HIV prevention options tailored to their needs.

5.5 REFERENCES

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6. HIV PREVALENCE

6.1 KEY FINDINGS

- Prevalence of HIV among adults aged 15 years and older in Uganda was 5.8%. HIV prevalence was higher among women, at 7.2%, than among men, at 4.3%. Among adults aged 15 to 49 years, HIV prevalence was 5.5%.
- By 5-year age group, HIV prevalence ranged from 0.9% among older adolescents aged 15-19 years and up to 12.1% among adults aged 45-49 years. HIV prevalence was higher among adults aged 50 years and older, at 7.6%, than among adults aged 15-49 years, at 5.5%.
- HIV prevalence varied considerably across geographical areas in Uganda. It was below 5% among adults aged 15 years and older in East Central, Mid Eastern, Northeast: Teso, West Nile and Northeast: Karamoja regions. HIV prevalence peaked at 8.1% in Central 1: South Buganda.
- HIV prevalence was higher in urban settings (7.1%), than in rural areas (5.2%).

6.2 BACKGROUND

This chapter presents representative estimates of HIV prevalence among adults aged 15 years and older at the national and regional level by selected demographic and behavioral characteristics. HIV testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Uganda's national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. Appendix B describes the PHIA HIV testing methodology.

6.3 ADULT HIV PREVALENCE BY AGE AND SEX

Prevalence of HIV among adults was 5.8%, and higher among women, at 7.2% (95% CI: 6.6%-7.8%*) than among men, at 4.3% (95% CI: 3.8%-4.7%*) (Table 6.3). By 5-year age group, HIV prevalence peaked at 12.1% among adults aged 45-49 years (Table 6.3 and Figure 6.3). HIV prevalence was higher among adults aged 50 years and older, at 7.6% (95% CI: 6.7%-8.6%*) than among adults aged 15-49 years, at 5.5% (95% CI: 5.0%-6.0%*) (Table 6.3).

HIV prevalence was at least twice as high in women than in men for the age groups between 15-34 years. For instance, at ages 30-34 years, HIV prevalence was 11.4% (95% CI: 9.0%-13.7%*) among women, and 4.8% (95% CI: 3.5%-6.2%*) among men. By 5-year age group and sex, HIV prevalence peaked at 11.1% among men aged 45-49 years and at 13.6% among women aged 50-54 years (Table 6.3 and Figure 6.3).

HIV prevalence showed a marked increase in early adulthood, particularly among women from 1.7% (95% CI: 1.2%-2.3%*) at ages 15-19 years to 4.2% (95% CI: 3.2%-5.2%*) at ages 20-24 years. This was seen to a lesser extent among men, from 0.2% (95% CI: 0.0%-0.4%*) at ages 15-19 years, up to 1.6% (95% CI: 0.9%-2.2%*) at ages 20-24 years (Table 6.3 and Figure 6.3).

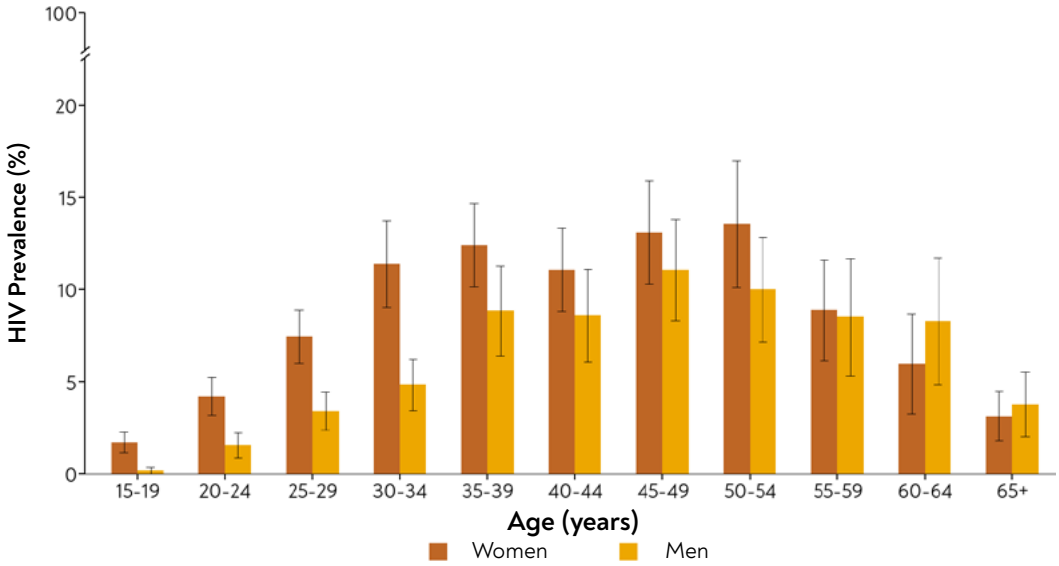
Table 6.3 HIV prevalence by age and sex

Prevalence of HIV among adults aged 15 years and older, by sex and age, UPHIA 2020-2021

Age (years)	Men		Women		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
15-19	0.2	2,086	1.7	2,519	0.9	4,605
20-24	1.6	1,699	4.2	2,576	2.9	4,275
25-29	3.4	1,332	7.5	2,086	5.6	3,418
30-34	4.8	1,095	11.4	1,602	8.4	2,697
35-39	8.9	933	12.4	1,494	10.8	2,427
40-44	8.6	809	11.1	1,072	9.9	1,881
45-49	11.1	687	13.1	926	12.1	1,613
50-54	10.0	606	13.6	697	11.8	1,303
55-59	8.5	378	8.9	551	8.7	929
60-64	8.3	317	6.0	433	7.0	750
65+	3.8	634	3.1	947	3.4	1,581
Total 15-24 (years)	0.8	3,785	2.9	5,095	1.8	8,880
Total 15-49 (years)	3.8	8,641	7.1	12,275	5.5	20,916
Total 50+ (years)	7.5	1,935	7.7	2,628	7.6	4,563
Total 15+ (years)	4.3	10,576	7.2	14,903	5.8	25,479

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

Figure 6.3
HIV prevalence by age and sex, UPHIA 2020-2021



6.4 ADULT HIV PREVALENCE BY DEMOGRAPHIC CHARACTERISTICS AND REGION

HIV prevalence was higher among adults aged 15 years and older residing in urban settings, 7.1% (95% CI: 6.1%-8.2%*) than in rural areas 5.2% (95% CI: 4.7%-5.6%*). This was particularly true among women, with an HIV prevalence of 9.2% (95% CI: 7.9%-10.6%*) among those residing in urban settings and 6.2% (95% CI: 5.5%-6.8%*) among those in rural areas. There appeared to be no differences in HIV prevalence among urban and rural men (Table 6.4.2).

HIV prevalence varied considerably across geographical areas in Uganda. It was below 5% among adults aged 15 years and older in East Central, Mid Eastern, Northeast: Teso, Northeast: Karamoja, and West Nile regions. HIV prevalence peaked at 8.1% in Central 1: South Buganda (Table 6.4.2, Figures 6.4.2.A-B).

HIV prevalence by marital status was higher among men and women who were divorced or separated at the time of the survey, at 12.8% (95% CI: 11.2%-14.3%*) and 14.3% (95% CI: 11.9%-16.6%*) among the widowed than those who were married or living together, at 6.0% (95% CI: 5.3%-6.7%*) (Table 6.4.2). Notably, when restricted to adults aged 15-49 years who were widowed at the time of the survey, HIV prevalence was even higher at 27.5% (95% CI: 21.7%-33.3%*) (Table 6.4.1).

HIV prevalence was highest among adults aged 15 years and older with no formal education or who only attended primary school at 7.3% (95% CI: 6.3%-8.4%*), and 6.7% (95% CI: 6.0%-7.5%*), respectively, compared to those who had attended secondary school or who had more than a secondary school education, at 4.4% (95% CI: 3.9%-4.8%*) and 3.9% (95% CI:3.0%-4.8%*), respectively. Among women, HIV prevalence was similar among those with no formal education at 8.0% (95% CI: 6.8%-9.2%*) and those with primary education, at 8.1% (95% CI: 7.1%-9.0%*) but was higher than among those who had attended secondary school or had more than a secondary education, at 5.8% (95% CI: 5.0%-6.6%*) and 4.9% (95% CI: 3.4%-6.3%*), respectively. The pattern was less marked among men, with an HIV prevalence of 5.5% among men with no formal education, and 5.2% among those who attended primary school, and 3.0 % and 3.2% among those who attended secondary education or more than secondary school, respectively (Table 6.4.2,).

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

By wealth status, HIV prevalence ranged from 4.5% in the lowest quintile to 6.9% in the fourth quintile (Table 6.4.2).

HIV prevalence among women aged 15-49 years who reported being pregnant at the time of the survey was estimated to be 5.4%, while it was 7.3% among women who were not pregnant (Table 6.4.1).

Table 6.4.1 HIV prevalence by demographic characteristics: Adults aged 15-49 years

Prevalence of HIV among adults aged 15-49 years, by sex and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Men		Women		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	4.3	2,749	9.0	4,108	6.8	6,857
Rural	3.5	5,892	6.1	8,167	4.8	14,059
Region						
Central 1: South Buganda	5.5	972	9.6	1,416	7.7	2,388
Central 2: North Buganda	4.1	814	7.3	1,034	5.7	1,848
East Central	2.2	572	5.4	740	3.8	1,312
Kampala	2.4	746	8.3	1,121	5.5	1,867
Mid Eastern	2.5	626	5.8	879	4.2	1,505
Mid North	5.2	850	9.1	1,062	7.1	1,912
Mid Western	3.9	796	6.9	1,012	5.4	1,808
Northeast: Karamoja	1.8	596	2.5	1,181	2.2	1,777
Northeast: Teso	3.3	757	4.2	1,002	3.7	1,759
South Western	4.6	1,005	7.5	1,503	6.2	2,508
West Nile	1.7	907	3.7	1,325	2.7	2,232
Marital status						
Never married	0.9	3,490	2.8	3,059	1.7	6,549
Married or living together	5.3	4,410	6.6	7,227	6.0	11,637
Divorced or separated	10.0	704	14.7	1,639	13.1	2,343
Widowed	22.6	24	27.9	332	27.5	356
Education						
No education	6.2	471	10.6	1,410	9.2	1,881
Primary	4.7	4,382	8.0	6,567	6.5	10,949
Secondary	2.4	2,851	5.4	3,424	3.9	6,275
More than secondary	2.9	934	4.4	869	3.6	1,803
Wealth quintile						
Lowest	3.7	2,438	5.4	3,544	4.6	5,982
Second	3.2	1,661	6.4	2,207	4.8	3,868
Middle	4.6	1,642	7.2	2,181	5.9	3,823
Fourth	4.4	1,472	9.2	1,993	6.9	3,465
Highest	2.8	1,425	7.5	2,347	5.4	3,772
Pregnancy status						
Currently pregnant	NA	NA	5.4	1,059	NA	NA
Not currently pregnant	NA	NA	7.3	11,005	NA	NA
Total 15-49 (years)	3.8	8,641	7.1	12,275	5.5	20,916

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 6.4.2 HIV prevalence by demographic characteristics: Adults aged 15 years and older

Prevalence of HIV among adults aged 15 years and older, by sex and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Men		Women		Total	
	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Residence						
Urban	4.7	3,148	9.2	4,688	7.1	7,836
Rural	4.1	7,428	6.2	10,215	5.2	17,643
Region						
Central 1: South Buganda	6.2	1,158	9.8	1,667	8.1	2,825
Central 2: North Buganda	4.8	977	7.5	1,197	6.2	2,174
East Central	2.8	700	6.1	912	4.5	1,612
Kampala	3.0	808	8.7	1,227	6.0	2,035
Mid Eastern	2.7	829	5.5	1,148	4.2	1,977
Mid North	6.1	1,028	9.2	1,313	7.6	2,341
Mid Western	4.1	962	6.9	1,173	5.5	2,135
Northeast: Karamoja	1.8	769	2.3	1,495	2.1	2,264
Northeast: Teso	3.3	928	5.1	1,234	4.2	2,162
South Western	5.0	1,315	7.3	1,916	6.3	3,231
West Nile	2.0	1,102	3.5	1,621	2.8	2,723
Marital status						
Never married	0.9	3,523	3.0	3,159	1.8	6,682
Married or living together	5.6	6,024	6.3	8,278	6.0	14,302
Divorced or separated	10.4	878	14.0	2,051	12.8	2,929
Widowed	13.4	137	14.4	1,395	14.3	1,532
Education						
No education	5.5	749	8.0	2,585	7.3	3,334
Primary	5.2	5,523	8.1	7,800	6.7	13,323
Secondary	3.0	3,194	5.8	3,585	4.4	6,779
More than secondary	3.2	1,106	4.9	917	3.9	2,023
Wealth quintile						
Lowest	4.3	3,040	5.4	4,477	4.9	7,517
Second	3.8	2,139	6.3	2,792	5.1	4,931
Middle	5.1	2,106	7.2	2,755	6.2	4,861
Fourth	4.9	1,717	9.4	2,324	7.3	4,041
Highest	3.1	1,571	7.9	2,552	5.8	4,123
Pregnancy status						
Currently pregnant	NA	NA	5.4	1,061	NA	NA
Not currently pregnant	NA	NA	7.4	13,630	NA	NA
Total 15+ (years)	4.3	10,576	7.2	14,903	5.8	25,479

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

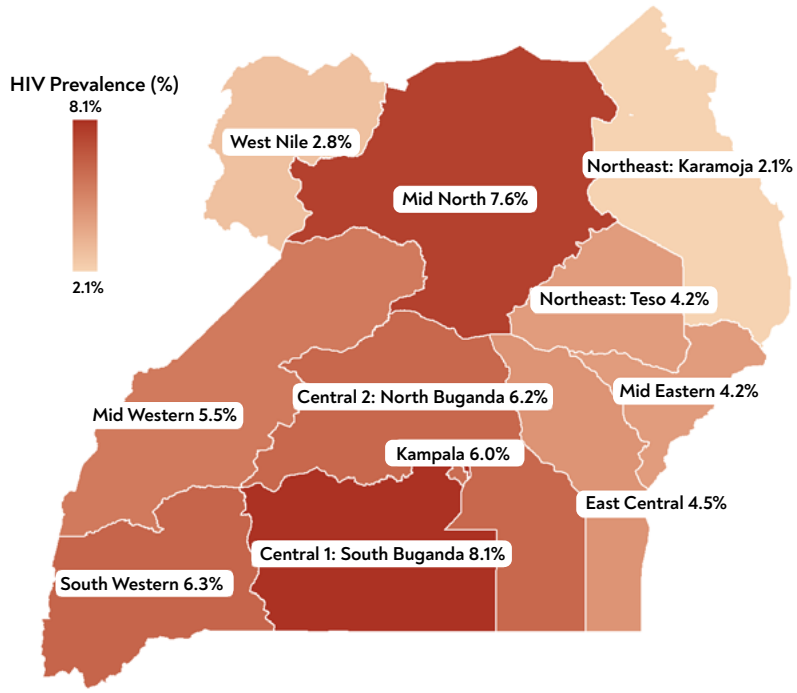


Figure 6.4.2.A
HIV prevalence among adults aged 15 years and older by region, UPHIA 2020-2021

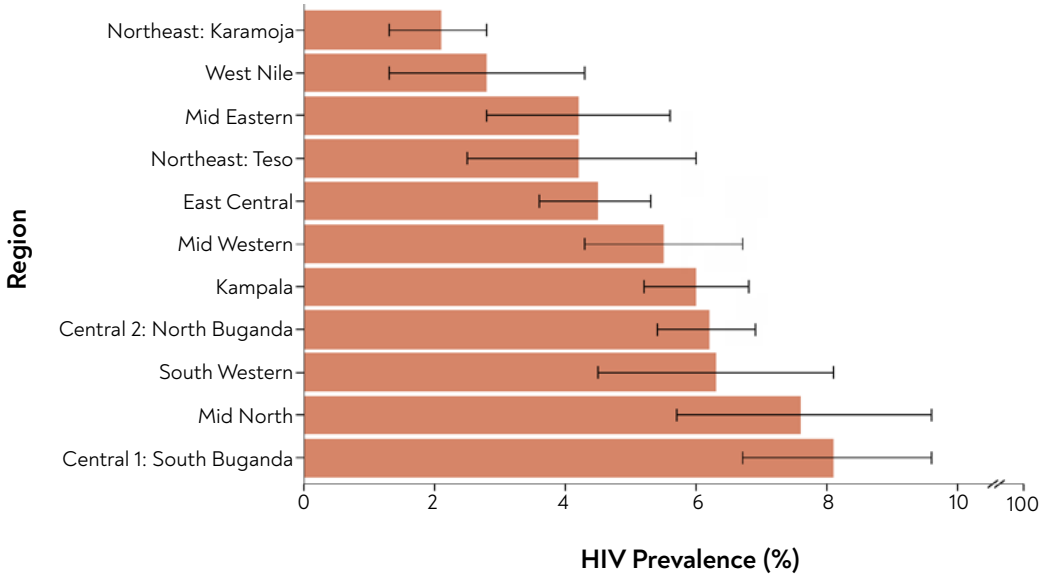


Figure 6.4.2.B
HIV prevalence among adults aged 15 years and older by region, UPHIA 2020-2021

6.5 GAPS AND UNMET NEEDS

- Consistent with data presented in other chapters, women have a higher HIV burden than men, particular in younger age groups.
- Over 14% of women who were divorced or separated and widowed were also living with HIV.
- There was a higher HIV prevalence among those with less education, particularly among women.
- There is a substantial burden of HIV among older adults (aged 50 years and older).

7. HIV DIAGNOSIS AND TREATMENT

7.1 KEY FINDINGS

- Among adults aged 15 years and older, 77.9% reported they had ever received an HIV test, with a higher percentage among women, at 82.4% than among men, at 72.9%.
- Among adults aged 15-49 years who said they were not HIV positive, 44.1% reported they had tested in the 12 months before the survey. This ranged from a low of 21.9% among older adolescents aged 15-19 years and peaked at 57.5% among adults aged 25-29 years.
- Based upon self-report, adjusted for ARV-detection data, 19.1% of adults aged 15 years and older who tested positive in the survey were unaware of their HIV status: 16.5% among women and 23.9% among men. Among young people aged 15-24 years who tested positive in the survey, 39.8% were unaware of their status.
- By 5-year age group, the proportion unaware of their HIV-positive status peaked at 40.8%* among older adolescent girls aged 15-19 years and 57.9%* among young men aged 20-24 years.
- Among the adults aged 15 years and older who tested HIV positive in the survey, 25.7% who said they were not previously diagnosed had ARVs detectable in their blood.

* These estimates were based on a denominator between 25 and 49 and should be interpreted with caution.

7.2 BACKGROUND

HIV testing is necessary for awareness of HIV status and is an essential component of reaching HIV epidemic control targets. For people living with HIV, awareness of HIV status is the first step to engagement with HIV care, treatment, and support services, with access to ART and counselling to prevent onward transmission; while individuals who learn that they are HIV-negative can be provided with prevention counseling and linked to other interventions and services to reduce their risk of HIV acquisition. While many countries have expanded uptake of HIV testing services, making certain that everyone knows their current HIV status remains a challenge. UPHIA 2020-2021 gathered data on HIV testing and awareness to help identify gaps in testing uptake, and whether there were subpopulations in need of expanded or community-based HIV testing service options such as self-testing, mobile testing, partner notification/testing, and index case testing.

Once someone has been diagnosed, current guidelines recommend that they immediately be linked to HIV treatment services to start ART as soon as possible.[1,2] Treating people living with HIV while their CD4 counts are still high improves immune recovery, decreases the incidence of non-AIDS events and comorbidities and mortality, and reduces sexual and vertical transmission. In 2016, after an extensive review of evidence of both the clinical and population-level benefits of expanding ART, WHO changed their ART policy recommendations to "Treat All" regardless of CD4 count. By November 2017, all countries in sub-Saharan Africa had adopted this policy, despite the challenges in ensuring uptake and implementation.[2] Uganda adopted this policy on December 1, 2016.[3]

7.3 SELF-REPORTED HIV TESTING AMONG ADULTS

Estimates in this section describe the self-reported uptake of testing and receipt of results (ever or within the 12 months before the survey) among men, women, and adults aged 15 years and older by survey HIV test result and other selected characteristics.

Among adults aged 15 years and older, 77.9% reported they had ever received an HIV test, with a higher percentage among women, 82.4% (95% CI: 81.5%-83.2%*) than among men, 72.9% (95% CI: 71.7%-74.2%*) (Tables 7.3.A-C).

Testing among the population who did not report being aware of their HIV positive status:†
Among adults aged 15-49 years, 44.1% reported they had tested in the 12 months before the survey. Note the proportion was similar among those who reported an HIV-positive status (42.6%). This ranged from a low of 21.9% among older adolescents aged 15-19 years and peaked at 57.5% among adults aged 25-29 years (Table 7.3.C and Figure 7.3). Among men, testing in the 12 months before the survey peaked in the age groups 25-29 years and 30-34 years, at 53.4% and 53.3%, respectively, but only 15.2% of the older adolescent boys aged 15-19 years, and less than 40% of the men in the age groups above 45 years had tested that recently (Table 7.3.A). Among women, more than half of those in the age groups between 20 and 39 years had tested in the 12 months before the survey, while 28.9% of the older adolescent girls aged 15-19 years, and less than 40% of the women in the age groups above 45 years had tested that recently (Table 7.3.B).

Among adults aged 50 years and older, 29.2% reported they had tested in the 12 months before the survey: 32.7% among men, and 26.0% among women (Tables 7.3.A-C).

Among the adults aged 15 years and older who tested HIV positive in the survey, 81.9% said they had previously been tested for HIV (Table 7.3.C).

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* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

† Those who did not report awareness of their HIV-positive status included those who reported that they were HIV negative, those whose status was unknown/inconclusive, and those who never tested or did not receive their results.

By residence, both ever testing and testing in the 12 months before the survey were more common in urban settings, at 81.5% (95% CI: 79.9%-83.1%*) and 48.0% (95% CI: 45.9%-50.0%*), respectively, compared to rural areas, at 74.6% (95% CI: 73.4%-75.8%*) and 39.4% (95% CI: 37.9%-40.8%*) respectively. By region, ever testing ranged from 65.9% in Mid Eastern to 83.3% in Kampala and testing in the 12 months before the survey ranged from 35.8% in Mid Eastern to 47.3% in Central 1: South Buganda (Table 7.3.C).

Less than one third of those who said that they had never been married (27.3%) and about one quarter (25.4%) of those were widowed at the time of the survey reported testing in the 12 months before the survey.

Recent HIV testing generally increased by the level of education attended, ranging from 33.4% among those with no education up to 56.9% among those who have more than a secondary school education, and with increasing wealth, ranging from 38.1% in the lowest quintile up to 49.0% in the highest quintile (Table 7.3.C).

Table 7.3.A Self-reported HIV testing: Men

Percentage of men aged 15 years and older who reported they had ever received an HIV test, and percentage who reported they had received an HIV test in the 12 months before the survey, by result of UPHIA HIV test and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among all men			Among men who did not report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
Age (years)						
15-19	37.9	15.3	2,070	37.8	15.2	2,064
20-24	77.7	43.3	1,679	77.6	43.2	1,670
25-29	87.5	53.6	1,303	87.3	53.4	1,283
30-34	90.5	53.3	1,067	90.2	53.3	1,037
35-39	89.2	48.0	903	88.5	47.7	849
40-44	88.5	50.2	780	87.7	49.3	727
45-49	87.3	39.9	653	86.0	38.7	592
50-54	85.1	40.2	576	83.7	39.0	533
55-59	79.9	36.0	360	78.1	36.0	331
60-64	73.8	36.7	297	72.1	34.4	279
65+	61.5	24.0	601	59.9	23.4	582
Result of UPHIA HIV test						
HIV positive	92.7	48.6	447	75.8	34.3	127
HIV negative	71.9	37.9	9,598	71.9	37.9	9,580
Not tested	76.6	48.5	244	76.2	48.6	240
Residence						
Urban	78.8	45.1	3,082	78.1	45.0	2,965
Rural	70.2	35.5	7,207	69.2	34.9	6,982

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

Table 7.3.A Self-reported HIV testing: Men (continued)

Percentage of men aged 15 years and older who reported they had ever received an HIV test, and percentage who reported they had received an HIV test in the 12 months before the survey, by result of UPHIA HIV test and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among all men			Among men who did not report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
Region						
Central 1: South Buganda	77.6	44.7	1,137	76.5	43.8	1,074
Central 2: North Buganda	71.1	38.1	955	70.2	37.2	923
East Central	63.5	31.2	668	62.8	30.7	653
Kampala	82.5	43.3	783	82.1	43.5	760
Mid Eastern	58.7	31.7	828	58.1	31.1	814
Mid North	78.0	42.7	1,026	77.0	42.4	976
Mid Western	73.2	38.7	914	72.4	38.8	882
Northeast: Karamoja	64.2	41.8	749	63.6	41.4	737
Northeast: Teso	73.3	39.2	879	72.5	39.2	850
South Western	76.6	36.5	1,263	75.8	36.1	1,210
West Nile	75.2	37.1	1,087	74.9	36.8	1,068
Marital status						
Never married	52.7	24.6	3,496	52.5	24.5	3,473
Married or living together	87.2	48.8	5,805	86.6	48.6	5,559
Divorced or separated	79.6	42.3	845	78.2	40.5	788
Widowed	66.3	25.7	129	61.0	24.7	114
Education						
No education	63.4	31.5	716	62.0	30.7	697
Primary	67.8	33.6	5,331	66.5	32.8	5,117
Secondary	75.6	41.5	3,132	75.1	41.2	3,059
More than secondary	92.9	56.4	1,106	92.8	56.7	1,071
Wealth quintile						
Lowest	69.6	35.4	2,962	68.6	35.1	2,878
Second	68.6	32.4	2,057	67.7	31.6	1,991
Middle	69.8	35.8	2,040	68.6	34.7	1,953
Fourth	75.7	44.3	1,671	74.9	44.2	1,610
Highest	83.4	47.5	1,556	83.1	47.4	1,512
Total 15-24 (years)	55.4	27.6	3,749	55.3	27.5	3,734
Total 15-49 (years)	72.6	39.3	8,455	71.9	38.9	8,222
Total 50+ (years)	75.0	33.7	1,834	73.2	32.7	1,725
Total 15+ (years)	72.9	38.6	10,289	72.1	38.1	9,947

[1] Relates to PEPFAR indicator HTS_TST: Number of individuals who received HIV-testing services and received their test results.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 7.3.B Self-reported HIV testing: Women

Percentage of women aged 15 years and older who reported they had ever received an HIV test, and percentage who reported they had received an HIV test in the 12 months before the survey, by result of UPHIA HIV test and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among all women			Among women who did not report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
Age (years)						
15-19	48.7	29.1	2,456	48.3	28.9	2,439
20-24	93.0	61.4	2,514	92.9	61.5	2,463
25-29	97.3	61.0	2,051	97.1	61.1	1,946
30-34	98.3	56.3	1,569	98.1	56.6	1,437
35-39	95.7	51.6	1,446	95.3	52.7	1,316
40-44	93.3	45.2	1,022	92.6	44.5	931
45-49	90.1	40.3	870	88.7	39.2	771
50-54	86.8	34.7	628	84.9	33.7	556
55-59	82.6	32.4	498	81.0	31.2	458
60-64	73.3	24.1	389	71.6	22.9	369
65+	54.2	18.6	830	52.7	18.0	806
Result of UPHIA HIV test						
HIV positive	96.9	48.3	954	86.4	44.2	202
HIV negative	81.3	45.8	13,006	81.2	45.8	12,986
Not tested	81.4	57.9	313	80.8	57.2	304
Residence						
Urban	85.7	51.0	4,564	84.6	50.6	4,222
Rural	80.6	43.8	9,709	79.7	43.7	9,270
Region						
Central 1: South Buganda	86.1	51.1	1,616	84.9	50.5	1,472
Central 2: North Buganda	85.6	53.2	1,150	84.7	52.4	1,082
East Central	79.4	44.9	858	78.4	44.9	816
Kampala	85.5	48.5	1,167	84.4	47.6	1,081
Mid Eastern	74.2	40.6	1,120	73.1	40.2	1,073
Mid North	83.3	42.6	1,265	82.0	42.9	1,179
Mid Western	83.8	49.5	1,128	82.9	49.6	1,055
Northeast: Karamoja	68.7	40.7	1,400	68.1	40.3	1,371
Northeast: Teso	80.7	46.0	1,174	79.8	46.9	1,118
South Western	83.7	43.5	1,807	82.8	43.9	1,704
West Nile	80.5	41.2	1,588	79.9	40.9	1,541
Marital status						
Never married	54.9	31.7	3,081	54.1	31.2	3,023
Married or living together	93.7	53.9	7,964	93.3	54.0	7,596
Divorced or separated	93.0	52.3	1,961	92.2	52.6	1,751
Widowed	72.7	27.8	1,246	68.5	25.4	1,101

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

Percentage of women aged 15 years and older who reported they had ever received an HIV test, and percentage who reported they had received an HIV test in the 12 months before the survey, by result of UPHIA HIV test and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among all women			Among women who did not report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
Education						
No education	74.9	35.6	2,357	73.1	34.5	2,238
Primary	81.9	45.6	7,478	80.7	45.3	7,033
Secondary	82.9	48.9	3,505	82.0	48.9	3,329
More than secondary	95.7	56.9	920	95.5	57.1	880
Wealth quintile						
Lowest	77.5	41.0	4,251	76.6	40.8	4,100
Second	80.3	43.0	2,687	79.2	43.1	2,551
Middle	81.3	45.5	2,609	80.2	45.4	2,453
Fourth	85.9	51.2	2,244	84.8	51.4	2,076
Highest	87.6	51.2	2,478	86.7	50.4	2,308
Total 15-24 (years)	68.9	43.9	4,970	68.5	43.7	4,902
Total 15-49 (years)	83.8	49.2	11,928	82.9	49.1	11,303
Total 50+ (years)	72.9	27.2	2,345	70.7	26.0	2,189
Total 15+ (years)	82.4	46.2	14,273	81.3	46.0	13,492

[1] Relates to PEPFAR indicator HTS_TST: Number of individuals who received HIV-testing services and received their test results.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 7.3.C Self-reported HIV testing: Total

Percentage of adults aged 15 years and older who reported they had ever received an HIV test, and percentage who reported that they received an HIV test in the 12 months before the survey, by result of UPHIA HIV test and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among all adults			Among adults who did not report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
Age (years)						
15-19	43.2	22.1	4,526	42.9	21.9	4,503
20-24	85.5	52.6	4,193	85.3	52.5	4,133
25-29	92.9	57.6	3,354	92.6	57.5	3,229
30-34	94.8	54.9	2,636	94.4	55.1	2,474
35-39	92.7	50.0	2,349	92.0	50.3	2,165
40-44	91.0	47.6	1,802	90.2	46.8	1,658
45-49	88.8	40.1	1,523	87.4	38.9	1,363
50-54	85.9	37.4	1,204	84.3	36.4	1,089

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

Percentage of adults aged 15 years and older who reported they had ever received an HIV test, and percentage who reported that they received an HIV test in the 12 months before the survey, by result of UPHIA HIV test and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among all adults			Among adults who did not report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
55-59	81.3	34.1	858	79.6	33.5	789
60-64	73.5	30.0	686	71.8	28.3	648
65+	57.5	21.0	1,431	55.9	20.4	1,388
Result of UPHIA HIV test						
HIV positive	95.4	48.4	1,401	81.9	40.0	329
HIV negative	76.8	42.0	22,604	76.7	42.0	22,566
Not tested	78.9	53.1	557	78.4	52.7	544
Residence						
Urban	82.5	48.2	7,646	81.5	48.0	7,187
Rural	75.6	39.8	16,916	74.6	39.4	16,252
Region						
Central 1: South Buganda	82.2	48.1	2,753	80.9	47.3	2,546
Central 2: North Buganda	78.3	45.5	2,105	77.3	44.6	2,005
East Central	71.6	38.1	1,526	70.6	37.8	1,469
Kampala	84.1	46.0	1,950	83.3	45.6	1,841
Mid Eastern	66.8	36.3	1,948	65.9	35.8	1,887
Mid North	80.6	42.7	2,291	79.5	42.7	2,155
Mid Western	78.5	44.1	2,042	77.6	44.1	1,937
Northeast: Karamoja	66.9	41.1	2,149	66.3	40.7	2,108
Northeast: Teso	77.2	42.7	2,053	76.3	43.2	1,968
South Western	80.5	40.3	3,070	79.6	40.3	2,914
West Nile	78.1	39.3	2,675	77.6	39.0	2,609
Marital status						
Never married	53.6	27.5	6,577	53.1	27.3	6,496
Married or living together	90.6	51.5	13,769	90.2	51.5	13,155
Divorced or separated	88.3	48.8	2,806	87.2	48.3	2,539
Widowed	72.0	27.6	1,375	67.7	25.4	1,215
Education						
No education	71.8	34.5	3,073	70.0	33.4	2,935
Primary	75.3	40.0	12,809	74.0	39.4	12,150
Secondary	79.1	45.1	6,637	78.4	44.8	6,388
More than secondary	94.1	56.6	2,026	93.9	56.9	1,951
Wealth quintile						
Lowest	73.7	38.3	7,213	72.7	38.0	6,978
Second	74.6	37.9	4,744	73.6	37.5	4,542
Middle	75.7	40.8	4,649	74.5	40.2	4,406
Fourth	81.0	47.9	3,915	79.9	47.9	3,686

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

Percentage of adults aged 15 years and older who reported they had ever received an HIV test, and percentage who reported that they received an HIV test in the 12 months before the survey, by result of UPHIA HIV test and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among all adults			Among adults who did not report an HIV-positive status		
	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number	Percentage who had ever received an HIV test	Percentage who received an HIV test in the 12 months before the survey[1]	Number
Highest	85.7	49.6	4,034	85.1	49.1	3,820
Total 15-24 (years)	62.2	35.8	8,719	61.9	35.6	8,636
Total 15-49 (years)	78.5	44.5	20,383	77.6	44.1	19,525
Total 50+ (years)	73.9	30.3	4,179	71.9	29.2	3,914
Total 15+ (years)	77.9	42.6	24,562	76.8	42.2	23,439

[1] Relates to PEPFAR indicator HTS_TST: Number of individuals who received HIV testing services and received their test results.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

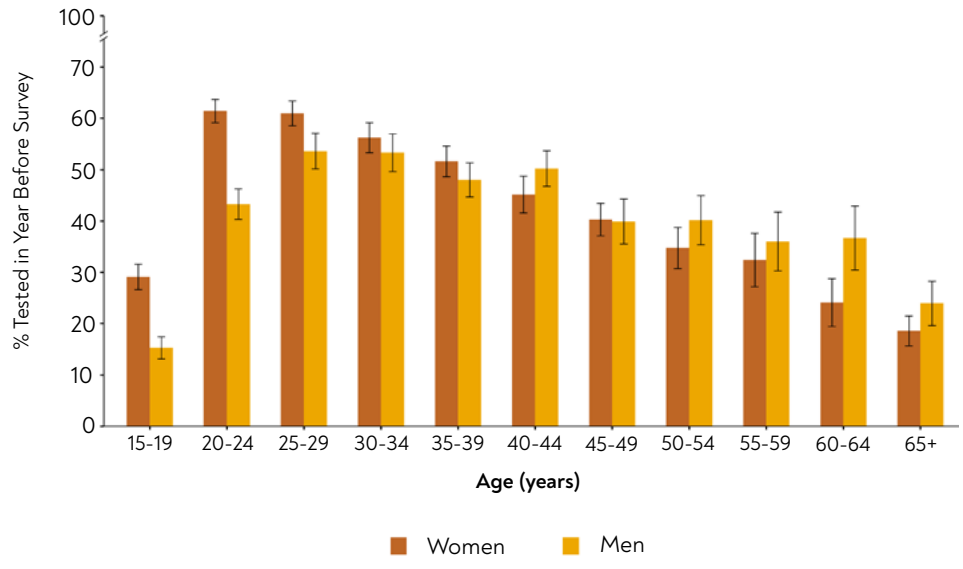


Figure 7.3
Proportion of adults who reported having received an HIV test in the 12 months before the survey, by age and sex, UPHIA 2020-2021

7.4 SELF-REPORTED DIAGNOSIS AND TREATMENT STATUS AMONG ADULTS LIVING WITH HIV

This subsection presents awareness and treatment status among participants who tested positive in UPHIA 2020-2021 (based on self-report and ARV detection data).

Among adults who tested positive in the survey, 19.1% were unaware of their HIV status: 16.5% among women and 23.9% among men. Among young people aged 15-24 years who tested positive in the survey, 39.8% were unaware of their status (Tables 7.4.A-C).

By 5-year age group, the proportion unaware of their HIV-positive status peaked at 40.8%* among older adolescent girls aged 15-19 years and 57.9%* among young men aged 20-24 years (Tables 7.4.A-B and Figure 7.4).

Among adults aged 15 years and older who tested positive in the survey, 77.7% were aware of their status and on ART. Among young adults aged 15-24 years who tested positive in the survey, 57.4% were aware of their HIV status and on ART.

By 5-year age group, the proportion aware of their HIV-positive status and on treatment ranged from 56.6% among those aged 20-24 years to 91.3%* among those aged 60-64 years.

Table 7.4.A HIV diagnosis and treatment status: Men

Percent distribution of HIV-positive men, aged 15 years and older, diagnosed and on treatment based on self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral in blood), by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Age (years)					
15-19	*	*	*	*	5
20-24	(57.9)	(0.0)	(42.1)	(100.0)	25
25-29	(52.0)	(2.0)	(46.1)	(100.0)	40
30-34	(31.9)	(6.3)	(61.8)	(100.0)	49
35-39	20.0	5.1	74.9	100.0	77
40-44	16.5	5.4	78.0	100.0	68
45-49	13.5	3.8	82.7	100.0	73
50-54	14.1	3.4	82.5	100.0	54
55-59	(7.5)	(6.0)	(86.4)	(100.0)	31
60-64	*	*	*	*	24
65+	*	*	*	*	21
Residence					
Urban	19.4	5.0	75.5	100.0	157
Rural	26.3	3.5	70.2	100.0	310
Region					
Central 1: South Buganda	20.4	2.6	77.0	100.0	82
Central 2: North Buganda	35.5	3.5	61.1	100.0	52
East Central	*	*	*	*	23
Kampala	(9.0)	(11.1)	(79.9)	(100.0)	28
Mid Eastern	*	*	*	*	24
Mid North	20.1	7.0	72.9	100.0	69
Mid Western	(19.2)	(3.0)	(77.7)	(100.0)	45
Northeast: Karamoja	*	*	*	*	15
Northeast: Teso	(12.4)	(2.9)	(84.7)	(100.0)	33
South Western	27.3	2.9	69.8	100.0	71
West Nile	(21.3)	(4.1)	(74.6)	(100.0)	25

* This estimate was based on a denominator between 25 and 49 and should be interpreted with caution.

Table 7.4.A HIV diagnosis and treatment status: Men (continued)

Percent distribution of HIV-positive men, aged 15 years and older, diagnosed and on treatment based on self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral in blood), by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Marital status					
Never married	(41.7)	(0.0)	(58.3)	(100.0)	34
Married or living together	21.8	4.5	73.8	100.0	326
Divorced or separated	26.4	3.8	69.8	100.0	90
Widowed	*	*	*	*	16
Education					
No education	(13.3)	(0.0)	(86.7)	(100.0)	28
Primary	23.2	4.5	72.3	100.0	290
Secondary	29.6	3.3	67.1	100.0	108
More than secondary	(21.6)	(5.3)	(73.0)	(100.0)	40
Wealth quintile					
Lowest	25.4	4.2	70.4	100.0	116
Second	22.6	0.0	77.4	100.0	86
Middle	19.2	2.8	78.0	100.0	116
Fourth	32.6	8.8	58.6	100.0	94
Highest	18.0	3.8	78.1	100.0	55
Total 15-24 (years)	(52.7)	(0.0)	(47.3)	(100.0)	30
Total 15-49 (years)	27.9	4.2	67.9	100.0	337
Total 50+ (years)	11.1	3.6	85.3	100.0	130
Total 15+ (years)	23.9	4.0	72.1	100.0	467

[1] Relates to Global AIDS Monitoring 2021 Indicator 1.2: People living with HIV on ART; and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children currently receiving ART.

* Estimates based on a denominator less than 25 have been suppressed.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 7.4.B HIV diagnosis and treatment status: Women

Percent distribution of HIV-positive women, aged 15 years and older, diagnosed and on treatment based on self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral in blood), by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Age (years)					
15-19	(40.8)	(2.3)	(56.9)	(100.0)	38
20-24	34.2	4.1	61.7	100.0	96
25-29	21.5	3.6	74.9	100.0	145
30-34	15.2	1.2	83.6	100.0	161
35-39	11.6	3.2	85.3	100.0	166
40-44	11.6	5.5	82.9	100.0	114
45-49	6.5	0.8	92.7	100.0	113
50-54	4.3	2.7	92.9	100.0	83
55-59	(12.6)	(1.7)	(85.7)	(100.0)	47

Table 7.4.B HIV diagnosis and treatment status: Women (continued)

Percent distribution of HIV-positive women, aged 15 years and older, diagnosed and on treatment based on self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral in blood), by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
60-64	*	*	*	*	22
65+	(12.7)	(0.0)	(87.3)	(100.0)	28
Residence					
Urban	14.2	1.9	83.9	100.0	438
Rural	18.2	3.3	78.5	100.0	575
Region					
Central 1: South Buganda	13.5	3.5	83.1	100.0	175
Central 2: North Buganda	20.2	3.1	76.7	100.0	93
East Central	19.0	1.8	79.3	100.0	58
Kampala	15.4	4.4	80.2	100.0	111
Mid Eastern	21.9	0.0	78.1	100.0	66
Mid North	24.5	1.8	73.6	100.0	119
Mid Western	16.3	3.4	80.4	100.0	88
Northeast: Karamoja	(16.7)	(0.0)	(83.3)	(100.0)	37
Northeast: Teso	8.2	4.8	86.9	100.0	65
South Western	11.5	2.8	85.6	100.0	140
West Nile	15.4	0.0	84.6	100.0	61
Marital status					
Never married	28.8	1.8	69.5	100.0	94
Married or living together	16.2	2.6	81.2	100.0	464
Divorced or separated	15.3	3.7	81.0	100.0	281
Widowed	11.4	2.0	86.5	100.0	173
Education					
No education	14.6	4.4	81.0	100.0	152
Primary	18.5	2.1	79.4	100.0	595
Secondary	14.2	2.2	83.7	100.0	220
More than secondary	(8.6)	(8.3)	(83.1)	(100.0)	45
Wealth quintile					
Lowest	23.5	4.2	72.2	100.0	207
Second	16.9	1.1	82.0	100.0	171
Middle	12.7	2.6	84.8	100.0	201
Fourth	16.8	3.5	79.7	100.0	219
Highest	14.4	2.2	83.4	100.0	215
Total 15-24 (years)	36.3	3.5	60.2	100.0	134
Total 15-49 (years)	18.0	2.9	79.1	100.0	833
Total 50+ (years)	8.4	1.7	89.9	100.0	180
Total 15+ (years)	16.5	2.7	80.8	100.0	1,013

[1] Relates to Global AIDS Monitoring 2021 Indicator 1.2: People living with HIV on ART and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children currently receiving ART.

* Estimates based on a denominator less than 25 have been suppressed.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 7.4.C HIV diagnosis and treatment status: Total

Percent distribution of HIV-positive adults, aged 15 years and older, diagnosed and on treatment based on self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral in blood), by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Age (years)					
15-19	(38.6)	(2.1)	(59.4)	(100.0)	43
20-24	40.3	3.0	56.6	100.0	121
25-29	30.0	3.1	66.9	100.0	185
30-34	19.6	2.6	77.8	100.0	210
35-39	14.8	3.9	81.3	100.0	243
40-44	13.6	5.5	80.9	100.0	182
45-49	9.6	2.1	88.3	100.0	186
50-54	8.4	3.0	88.6	100.0	137
55-59	10.3	3.6	86.0	100.0	78
60-64	(7.1)	(1.7)	(91.3)	(100.0)	46
65+	(14.4)	(0.0)	(85.6)	(100.0)	49
Residence					
Urban	15.8	2.9	81.3	100.0	595
Rural	21.3	3.4	75.3	100.0	885
Region					
Central 1: South Buganda	15.9	3.2	80.9	100.0	257
Central 2: North Buganda	26.2	3.2	70.6	100.0	145
East Central	21.5	1.2	77.2	100.0	81
Kampala	13.8	6.0	80.1	100.0	139
Mid Eastern	27.7	2.5	69.7	100.0	90
Mid North	22.8	3.9	73.4	100.0	188
Mid Western	17.4	3.2	79.4	100.0	133
Northeast: Karamoja	19.2	0.0	80.8	100.0	52
Northeast: Teso	9.8	4.1	86.1	100.0	98
South Western	17.3	2.9	79.9	100.0	211
West Nile	17.3	1.3	81.4	100.0	86
Marital status					
Never married	32.7	1.2	66.1	100.0	128
Married or living together	18.6	3.4	78.0	100.0	790
Divorced or separated	18.4	3.7	77.8	100.0	371
Widowed	11.1	2.5	86.4	100.0	189
Education					
No education	14.3	3.6	82.1	100.0	180
Primary	20.2	3.0	76.8	100.0	885
Secondary	19.6	2.6	77.8	100.0	328
More than secondary	14.9	6.9	78.3	100.0	85
Wealth quintile					
Lowest	24.3	4.2	71.4	100.0	323
Second	19.0	0.7	80.3	100.0	257
Middle	15.3	2.7	82.1	100.0	317

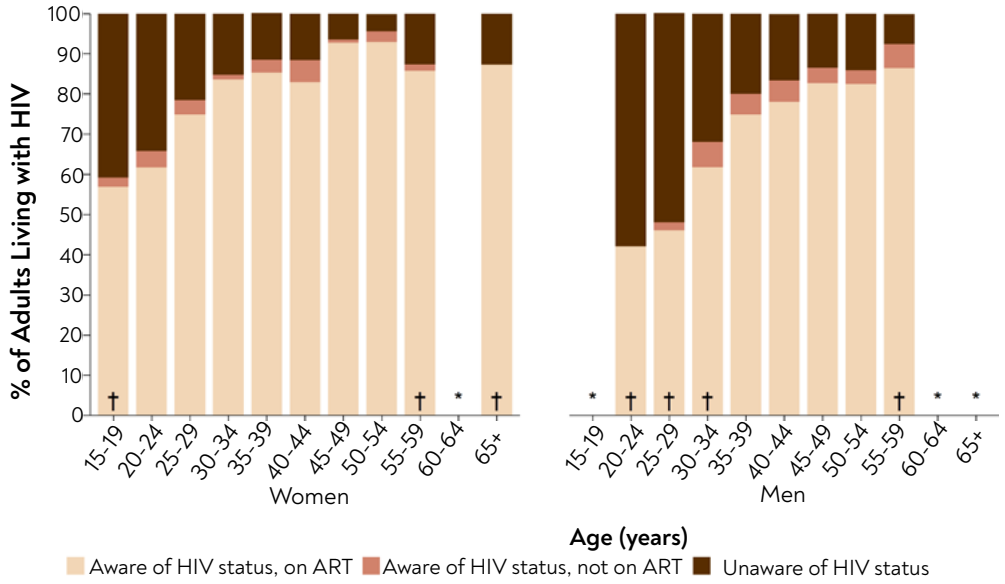
Table 7.4.C HIV diagnosis and treatment status: Total (continued)

Percent distribution of HIV-positive adults, aged 15 years and older, diagnosed and on treatment based on self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral in blood), by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Unaware of HIV status	Aware of HIV status and not on ART	Aware of HIV status and on ART[1]	Total	Number
Fourth	21.9	5.2	72.8	100.0	313
Highest	15.3	2.6	82.2	100.0	270
Total 15-24 (years)	39.8	2.8	57.4	100.0	164
Total 15-49 (years)	21.3	3.3	75.4	100.0	1,170
Total 50+ (years)	9.6	2.6	87.8	100.0	310
Total 15+ (years)	19.1	3.2	77.7	100.0	1,480

[1] Relates to Global AIDS Monitoring 2021 Indicator 1.2: People living with HIV on ART; and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children currently receiving ART.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Figure 7.4
Proportion of adults living with HIV who reported awareness of HIV status and antiretroviral therapy use, by sex and age, UPHIA 2020-2021



† Estimates based on a denominator between 25 and 49 are indicated by a dagger and should be interpreted with caution.
* Estimates based on a denominator less than 25 have been suppressed with an asterisk.
Abbreviation: ART, antiretroviral therapy.

7.5 CONCORDANCE OF SELF-REPORTED TREATMENT STATUS VERSUS LABORATORY ARV DATA

Note that since participants are sometimes reluctant to reveal their HIV and treatment status in a household survey, UPHIA 2020-2021 determined whether they were taking ART, by screening their blood for the presence of selected ARVs (efavirenz, dolutegravir, atazanavir, and lopinavir) used in first- and second-line regimens in the country at the time of the survey. Since many tables in this report describe estimates among self-reported people living with HIV without adjustment for ARV detection, this subsection reports the concordance of self-reported and actual ART use based upon these ARV biomarker data.

Among adults who did not report an HIV-positive status, but tested HIV positive in the survey, 25.7% had ARVs detectable in their blood.

Only 52.4% of young people aged 15-24 years living with HIV (including both those said they were aware and those who said they were unaware of their status) had ARVs detectable in their blood (Table 7.5.C).

Table 7.5.A Concordance of self-reported treatment status versus presence of detectable antiretrovirals: Men

Percent distribution of HIV-positive men aged 15 years and older, by presence of detectable antiretrovirals (ARVs) versus self-reported HIV treatment status, UPHIA 2020-2021

Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	77.4	22.6	100.0	135
Previously diagnosed, not on ART	*	*	*	23
Previously diagnosed, on ART	5.3	94.7	100.0	309
Total 15-24 (years)	(55.5)	(44.5)	(100.0)	30
Total 15-49 (years)	34.8	65.2	100.0	337
Total 50+ (years)	20.5	79.5	100.0	130
Total 15+ (years)	31.4	68.6	100.0	467

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

Table 7.5.B Concordance of self-reported treatment status versus presence of detectable antiretrovirals: Women

Percent distribution of HIV-positive women aged 15 years and older, by presence of detectable antiretrovirals (ARVs) versus self-reported HIV treatment status, UPHIA 2020-2021

Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	72.0	28.0	100.0	220
Previously diagnosed, not on ART	(91.8)	(8.2)	(100.0)	30
Previously diagnosed, on ART	7.0	93.0	100.0	760
Total 15-24 (years)	45.5	54.5	100.0	134
Total 15-49 (years)	26.1	73.9	100.0	833
Total 50+ (years)	15.1	84.9	100.0	179
Total 15+ (years)	24.4	75.6	100.0	1,012

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 7.5.C Concordance of self-reported treatment status versus presence of detectable antiretrovirals: Total

Percent distribution of HIV-positive adults aged 15 years and older, by presence of detectable antiretrovirals (ARVs) versus self-reported HIV treatment status, UPHIA 2020-2021

Characteristic	ARV status		Total	Number
	Not detectable	Detectable		
Self-reported treatment status				
Not previously diagnosed	74.3	25.7	100.0	355
Previously diagnosed, not on ART	92.2	7.8	100.0	53
Previously diagnosed, on ART	6.5	93.5	100.0	1,069
Total 15-24 (years)	47.6	52.4	100.0	164
Total 15-49 (years)	29.0	71.0	100.0	1,170
Total 50+ (years)	17.5	82.5	100.0	309
Total 15+ (years)	26.8	73.2	100.0	1,479

7.6 GAPS AND UNMET NEEDS

- This survey has revealed a testing gap with one out of five adults living with HIV unaware of their HIV-positive status: one out of four among men. Nearly two out of five young people aged 15-24 years living with HIV were unaware of their HIV-positive status.
- Less than half of the adults in the survey had been tested for the virus in the 12 months before the survey.
- Nearly one in four adults living with HIV were not on ART.
- Among those who said that they had not been previously diagnosed when they tested HIV positive in the survey, one in four individuals had detectable ARVs in their blood, suggesting there may be a need for programs to continue addressing stigma so that people living with HIV feel more comfortable disclosing their status.
- Half of young people living with HIV aged 15-24 years were currently on ART based upon detectable ARVs in their blood.

7.7 REFERENCES

1. World Health Organization. *Consolidated Guidelines on HIV Prevention, Testing, Treatment, Service Delivery and Monitoring: Recommendations for a Public Health Approach*. Geneva: World Health Organization; 2021. https://www.who.int/publications/i/item/9789240031593. Accessed February 1, 2022

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 February 1, 2022.

3. World Health Organization. *Uganda launches HIV/AIDS test and treat guidelines at World AIDS Day commemoration*. Uganda, World Health Organization; 2016. https://www.afro.who.int/news/uganda-launches-hivaids-test-and-treat-guidelines-world-aids-day-commemoration#:~:text=AIDS%20Day%20commemoration-,Uganda%20launches%20HIV%2FAIDS%20test%20and%20treat,at%20World%20AIDS%20Day%20commemoration&text=Uganda%20commemorated%20the%20World%20AIDS,for%20HIV%20and%20seek%20treatment. Accessed May 23, 2022.

8. VIRAL LOAD SUPPRESSION

8.1 KEY FINDINGS

- 75.4% of adults living with HIV had viral load suppression. Women had a higher VLS prevalence, at 78.3%, than men, at 69.8%. Note, these estimates of VLS are among all adults living with HIV regardless of their knowledge of HIV status or use of antiretroviral therapy (ART).
- At the regional level, prevalence of VLS ranged from 60.3% in Mid Eastern region to 82.8% in South Western region.
- VLS prevalence ranged from 73.5% among adults living with HIV in rural areas to 78.1% among those living in urban settings.
- Among all adults living with HIV, 71.1% had a viral load below 200 copies/mL, which was higher among women, at 75.3%, than among men, at 63.1%.
- Among all adults living with HIV who reported they were receiving HIV care, 86.7% said that they had ever received a viral load test, but among these only 52.8% said they had received the results of their most recent test.
- Self-reported receipt of viral load testing varied regionally from 58.7% in Mid Eastern to 93.6% in Mid North. In most regions, reported receipt of results was lower, ranging from 46.1% in Mid Eastern to 65.3%* in Northeast Karamoja.

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* The estimate in Northeast Karamoja was based on a denominator between 27 and 49 and should be interpreted with caution.

8.2 BACKGROUND

Viral load suppression (VLS) is a key indicator of treatment efficacy in people living with HIV. Achieving VLS reduces the damage that HIV can do to the immune system, improves health outcomes, and reduces the risk of HIV transmission.

VLS rates among all people living with HIV is also an indicator of HIV programmatic success. In the 2016 *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection,* WHO set a threshold for VLS of less than 1,000 HIV RNA copies/mL.[1] This definition of VLS has been used by UNAIDS, PEPFAR, as well as across PHIAs to compare progress across countries and subnational areas.[2,3] It should be noted that WHO has recently issued new guidance defining three broad categories of viral load: unsuppressed (HIV RNA above 1,000 copies/mL), suppressed (HIV RNA ≤1,000 copies/mL), and undetectable (HIV RNA not detected by the test used).[4] PHIA surveys continue to define VLS as HIV RNA < 1,000 copies/mL.

This chapter describes VLS among the population of HIV-positive adults aged 15 and above by age, sex, region, and other demographic characteristics.

Recent research suggests additional potential programmatic uses of viral load data. This chapter presents estimates, by region, of the proportion of the population with HIV viremia, which may be correlated with HIV incidence.[5] Population viremia is the prevalence of unsuppressed viral load (defined here as ≥ 1,000 copies/mL) measured without regard to HIV status—the numerator is the number of people with HIV viremia, and the denominator is the entire population tested. Subnational areas with higher viremia could be at risk of higher incidence.

UPHIA 2020-2021 also reports on the proportion of people living with HIV with viral load of less than 200 HIV RNA copies/mL. Although the current definition for VLS serves as a benchmark for monitoring global targets over time, using a lower viral load threshold for clinical monitoring may provide several potential benefits. Studies have shown that detectable ongoing viral replication at levels below 1,000 HIV RNA copies/mL is associated with a significant risk of treatment failure and drug resistance.[6,7] In addition, several recent studies of couples in which one partner had HIV and the other did not, found that there was no HIV transmission despite sexual activity when viral load was sustained below 200 copies/mL. These studies serve as the basis of the U=U (Undetectable = Untransmittable) strategy, which encourages people living with HIV on ART to maintain their viral load below the 200 copies/mL for their own health and to eliminate the risk of HIV transmission to their sexual partners.[8]

Given the advantages that viral load monitoring offers people living with HIV, UPHIA 2020-2021 also evaluated access to viral load tests and receipt of results among people in Uganda.

8.3 ADULT VIRAL LOAD SUPPRESSION BY AGE AND SEX

75.4% of adults living with HIV had suppressed viral loads. Women had a higher VLS rate, 78.3% (95% CI: 75.5%-81.1%[*]), than men, 69.8% (95% CI: 65.1%-74.5%[*]). Note, these estimates of VLS are among all adults living with HIV regardless of their knowledge of HIV status or use of antiretroviral therapy (ART).

The proportion with VLS was greater than 91% for men (91.3%), women (92.6%), and overall (92.2%) among those aware of their HIV-positive status and on ART. It is notable that VLS among those who were unaware of their HIV-positive status (based upon self-report and not having an ARV detected in their blood), was 17.4% (95% CI: 12.0%-22.8%[*]).

Comparing ten-year age groups among adults living with HIV, young people aged 15-24 years had a lower prevalence of VLS than adults aged 25-34 years, at 54.7%[†] (95% CI: 45.9%-63.6[*]) and 68.8% (95% CI: 63.7-73.9%[*]), respectively.

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* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

† This estimate was based on a denominator between 25 and 49 and should be interpreted with caution.

Both groups generally had lower rates of VLS than older adults, although the difference was not as marked between those aged 25-34 years and those aged 35-44 years, 77.8% (95% CI: 73.2%-82.3%*), as among those aged 45 years and older. For instance, 87.6% (95% CI: 83.1%-92.1%*) of those aged 45-54 years, 88.2% (95% CI: 82.2%-94.2%*) of those aged 55-64 years, and 92.5%† (95 CI: 85.2%-99.8%*) among those who were 65 years and older had suppressed viral loads.

Although HIV-positive men had lower rates of VLS than HIV-positive women overall, the difference was particularly pronounced among those aged 25-34 years, where 51.9% (95% CI: 40.5%-63.2%*) of the men and 75.0% (95% CI: 70.1-80.0%*) of the women had suppressed viral loads.

Table 8.3 Viral load suppression (HIV RNA < 1,000 copies per milliliter) by age and sex

Among HIV-positive adults aged 15 years and older, percentage with viral load suppression (VLS), by sex and age, UPHIA 2020-2021

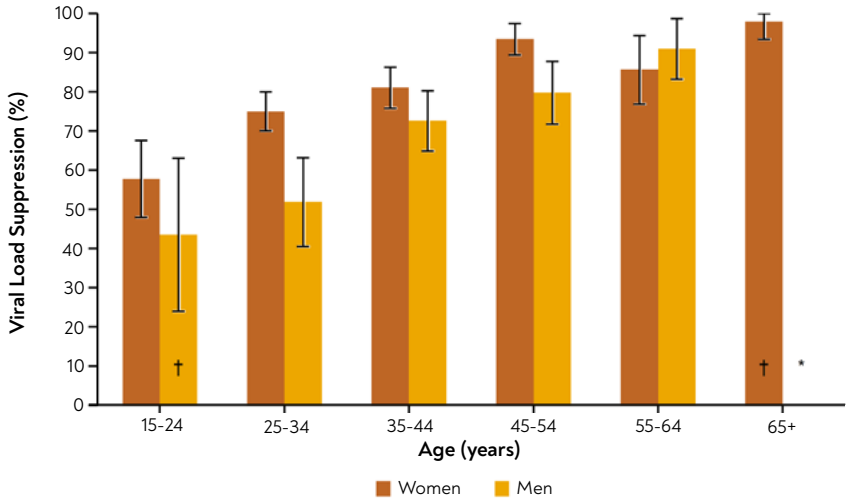
Age (years)	Men		Women		Total	
	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
15-19	*	5	(53.9)	38	(55.8)	43
20-24	(39.1)	25	59.7	96	54.3	121
25-29	(37.9)	40	71.7	145	62.3	185
30-34	(64.5)	49	77.8	162	74.3	211
35-39	71.7	77	81.4	167	77.7	244
40-44	73.8	68	80.6	114	77.9	182
45-49	80.4	73	94.8	114	88.5	187
50-54	78.9	54	91.7	83	86.4	137
55-59	(91.0)	31	(86.2)	47	88.4	78
60-64	*	24	*	22	(87.9)	46
65+	*	21	(97.9)	28	(92.5)	49
15-24	(43.5)	30	57.8	134	54.7	164
25-34	51.9	89	75.0	307	68.8	396
35-44	72.6	145	81.1	281	77.8	426
45-54	79.8	127	93.5	197	87.6	324
55-64	91.0	55	85.7	69	88.2	124
Total 15-49 (years)	64.9	337	76.1	836	72.5	1,173
Total 50+ (years)	85.4	130	90.2	180	88.0	310
Total 15+ (years)	69.8	467	78.3	1,016	75.4	1,483

[1] Relates to Global AIDS Monitoring 2021 indicator 1.3: People living with HIV who have suppressed viral loads.
* Estimates based on a denominator less than 25 have been suppressed.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

† This estimate was based on a denominator between 25 and 49 and should be interpreted with caution.

Figure 8.3
Proportion of viral load suppression among adults living with HIV by age and sex, UPHIA 2020-2021



† Estimates based on a denominator between 25 and 49 are indicated by a dagger and should be interpreted with caution.
* Estimates based on a denominator less than 25 have been suppressed with an asterisk.

8.4 ADULT VIRAL LOAD SUPPRESSION BY DEMOGRAPHIC CHARACTERISTICS AND REGION

The following tables and figures present VLS data of people living with HIV in Uganda, population viremia by province, and other viral load data at the time of the UPHIA 2020-2021 survey.

VLS rates ranged from 73.5% among adults living with HIV rural areas to 78.1% in those living in urban settings. At the regional level, prevalence of VLS ranged from 60.3% in Mid Eastern region to 82.8% in South Western region (Table 8.4)

Table 8.4 Viral load suppression (HIV RNA < 1,000 copies per milliliter) by demographic characteristics

Among HIV-positive adults aged 15 years and older, percentage with viral load suppression (VLS), by sex, self-reported HIV diagnosis and antiretroviral therapy (ART) use (adjusted by antiretroviral [ARV] biomarker testing), and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Men		Women		Total	
	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
HIV diagnosis and treatment status[2]						
Unaware of HIV status	13.6	101	20.4	159	17.4	260
Aware of HIV status and not on ART	*	21	(7.2)	27	(12.2)	48
Aware of HIV status and on ART	91.3	345	92.6	827	92.2	1,172
Residence						
Urban	71.0	157	81.2	439	78.1	596
Rural	69.2	310	76.1	577	73.5	887
Region						
Central 1: South Buganda	75.3	82	80.4	175	78.6	257
Central 2: North Buganda	69.3	52	79.7	93	75.6	145
East Central	*	23	76.6	58	74.1	81
Kampala	(68.0)	28	78.5	112	76.0	140
Mid Eastern	*	24	68.6	67	60.3	91
Mid North	67.4	69	67.4	119	67.4	188

Table 8.4 Viral load suppression (HIV RNA < 1,000 copies per milliliter) by demographic characteristics (continued)

Among HIV-positive adults aged 15 years and older, percentage with viral load suppression (VLS), by sex, self-reported HIV diagnosis and antiretroviral therapy (ART) use (adjusted by antiretroviral [ARV] biomarker testing), and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Men		Women		Total	
	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number	Percentage with VLS[1]	Number
Mid Western	(75.2)	45	76.2	88	75.9	133
Northeast: Karamoja	*	15	(79.4)	37	78.1	52
Northeast: Teso	(76.6)	33	77.6	65	77.2	98
South Western	69.0	71	90.6	141	82.8	212
West Nile	(76.7)	25	77.1	61	77.0	86
Marital status						
Never married	(58.2)	34	76.5	94	71.0	128
Married or living together	72.1	326	77.1	466	74.9	792
Divorced or separated	64.0	90	76.1	282	72.6	372
Widowed	*	16	87.3	173	87.3	189
Education						
No education	(85.5)	28	78.3	152	79.7	180
Primary	71.0	290	76.4	597	74.4	887
Secondary	63.6	108	81.7	221	75.3	329
More than secondary	(68.5)	40	(86.2)	45	77.7	85
Wealth quintile						
Lowest	63.2	116	63.3	207	63.2	323
Second	76.3	86	79.8	173	78.5	259
Middle	75.0	116	83.6	201	80.2	317
Fourth	62.3	94	78.9	219	73.5	313
Highest	73.6	55	82.5	216	80.4	271
Total 15-24 (years)	(43.5)	30	57.8	134	54.7	164
Total 15-49 (years)	64.9	337	76.1	836	72.5	1,173
Total 50+ (years)	85.4	130	90.2	180	88.0	310
Total 15+ (years)	69.8	467	78.3	1,016	75.4	1,483

[1] Relates to Global AIDS Monitoring 2021 indicator 1.3: People living with HIV who have suppressed viral loads.

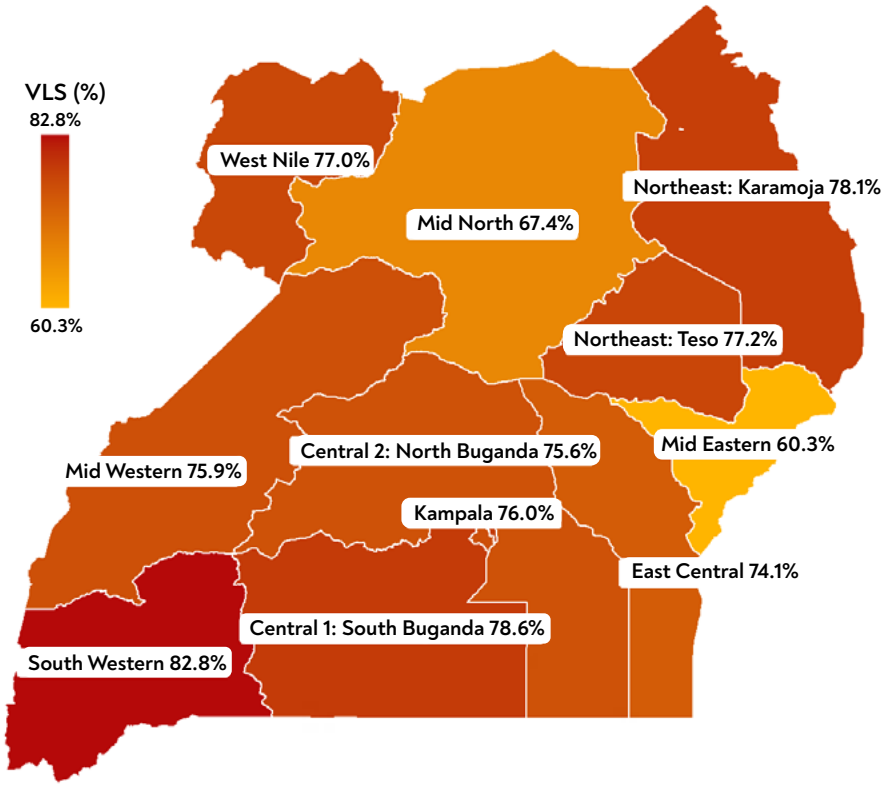
[2] Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.

* Estimates based on a denominator less than 25 have been suppressed.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

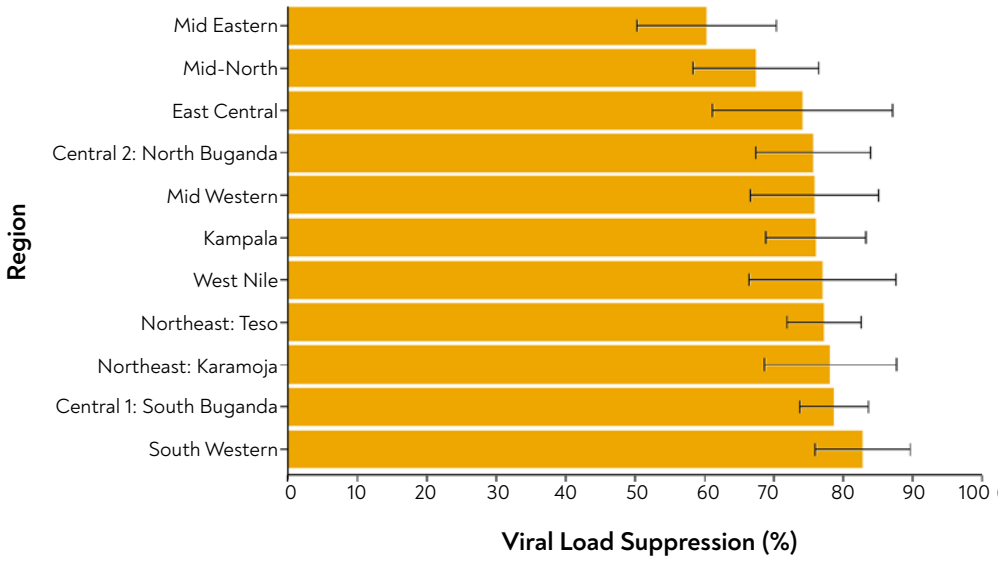
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Figure 8.4.1
Viral load suppression among adults living with HIV (ages 15 years and older) by region, UPHIA 2020-2021



Abbreviation: VLS, viral load suppression.

Figure 8.4.2
Viral load suppression among adults living with HIV (ages 15 years and older) by region, UPHIA 2020-2021



8.5. POPULATION VIREMIA BY REGION

Population viremia (the proportion among all the adults aged 15 years and older with *unsuppressed* viral loads—see chapter 8) in Uganda was 1.4%. Regionally, population viremia ranged from 0.5% in Northeast: Karamoja up to 2.5% in Mid North. Regions with higher population viremia generally correlated with regions with lower VLS (Table 8.5 and Figure 8.5).

Table 8.5 Population viremia among the adult population in Uganda, by region

Population viremia[1] (unsuppressed viral load [VL], defined as HIV RNA >= 1,000 copies/mL) among adults aged 15 years and older, by Region, UPHIA 2020-2021

	Percentage with VL >= 1000 copies/mL[1]	Number of adults tested for HIV	Mean log_{10} VL	Number of HIV-positive individuals with VL results
Region				
Central 1: South Buganda	1.7	2,825	2.0	257
Central 2: North Buganda	1.5	2,174	2.1	145
East Central	1.2	1,612	2.2	81
Kampala	1.4	2,035	2.2	140
Mid Eastern	1.7	1,977	2.8	91
Mid North	2.5	2,341	2.5	188
Mid Western	1.3	2,135	2.2	133
Northeast: Karamoja	0.5	2,264	2.2	52
Northeast: Teso	1.0	2,162	2.1	98
South Western	1.1	3,231	1.8	212
West Nile	0.6	2,723	2.2	86
Total 15+ (years)	1.4	25,479	2.2	1,483

[1] Population viremia is defined with a numerator of those with unsuppressed VL (>=1,000 copies/mL) and denominator of all adults tested (regardless of HIV status).

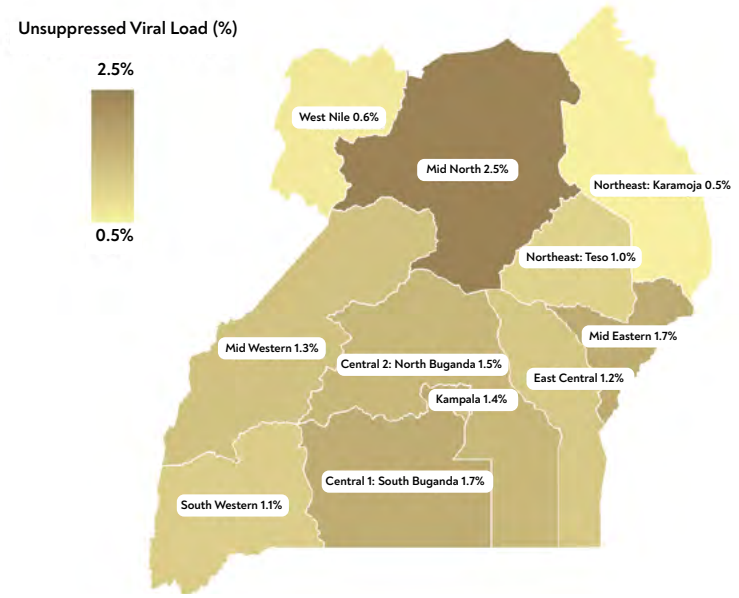


Figure 8.5 Population viremia (proportion of unsuppressed viral load in the adult population aged 15 years and older) by region, UPHIA 2020-2021

Note: Population viremia is defined as unsuppressed viral load (HIV RNA ≥ 1,000 copies per milliliter) among all adults tested in UPHIA 2020-2021 (regardless of HIV status). The numerator is the number of people with unsuppressed viral loads, and the denominator is the entire population tested. Subnational areas with higher population viremia could be at risk of higher incidence.

8.6 VIRAL LOAD < 200 BY DEMOGRAPHIC CHARACTERISTICS

Among all adults living with HIV, 71.1% had a viral load below 200 copies/mL, which was higher among women, at 75.3% (95% CI: 72.4%-78.2%*) than among men at 63.1% (95% CI: 58.1%-68.1%*). Again, these estimates are among all adults living with HIV regardless of their knowledge of HIV status or use of antiretroviral therapy (ART) (Table 8.6).

Among those who were aware of their HIV-positive status and on ART, the proportion with viral loads below 200 copies/mL was 82.2% among men, 89.8% among women, and overall (87.4%). A substantial proportion, 14.5% (95% CI: 9.7%-19.3%), of those who said they were unaware of their HIV-positive status and not on ART (and who had no detectable evidence in their blood of the standard ARVs tested for by the survey) also had viral loads below 200 copies/mL. It should be noted that while small proportions of people living with HIV can have low viral loads transiently or may be elite controllers (a small subset of people living with HIV whose immune systems are able to maintain VLS for a period without treatment), having a viral load below 200 copies/mL in the absence of treatment is so uncommon that some researchers have proposed it be used as an alternative to ARV detection to show that a person is indeed aware of their HIV-positive status and on treatment (see discussion) (Table 8.6).

Table 8.6 Viral load < 200 HIV RNA copies per milliliter by demographic and treatment characteristics

Among HIV-positive adults aged 15 years and older, percentage with viral load (VL) < 200 copies per milliliter, by sex, self-reported diagnosis, and antiretroviral therapy (ART) use (adjusted by antiretroviral [ARV] biomarker testing), and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Men		Women		Total	
	Percentage with VL < 200 copies/mL	Number	Percentage with VL < 200 copies/mL	Number	Percentage with VL < 200 copies/mL	Number
Age (years)						
15-19	*	5	(53.9)	38	(53.9)	43
20-24	(39.1)	25	53.8	96	50.0	121
25-29	(33.0)	40	67.2	145	57.7	185
30-34	(60.6)	49	75.2	162	71.3	211
35-39	63.5	77	80.4	167	73.9	244
40-44	67.6	68	77.4	114	73.4	182
45-49	72.4	73	91.4	114	83.1	187
50-54	71.6	54	89.5	83	82.1	137
55-59	(83.5)	31	(86.2)	47	85.0	78
60-64	*	24	*	22	(74.6)	46
65+	*	21	(89.3)	28	(88.0)	49
HIV diagnosis and treatment status[1]						
Unaware of HIV status	13.0	101	15.6	159	14.5	260
Aware of HIV status and not on ART	*	21	(7.2)	27	(12.2)	48
Aware of HIV status and on ART	82.2	345	89.8	827	87.4	1,172
Number of years since initiating ART						
Less than 12 months	(77.9)	31	85.3	67	82.6	98
12 months or more	80.4	269	89.1	669	86.4	938
1 to less than 5 years	80.7	105	85.4	252	83.9	357
5 to less than 10 years	78.9	68	90.4	208	87.4	276
More than 10 years	78.3	78	92.5	188	87.9	266

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

Table 8.6 Viral load < 200 HIV RNA copies per milliliter by demographic and treatment characteristics (continued)

Among HIV-positive adults aged 15 years and older, percentage with viral load (VL) < 200 copies per milliliter, by sex, self-reported diagnosis, and antiretroviral therapy (ART) use (adjusted by antiretroviral [ARV] biomarker testing), and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Men		Women		Total	
	Percentage with VL < 200 copies/mL	Number	Percentage with VL < 200 copies/mL	Number	Percentage with VL < 200 copies/mL	Number
Residence						
Urban	62.1	157	78.1	439	73.3	596
Rural	63.7	310	73.2	577	69.6	887
Region						
Central 1: South Buganda	66.9	82	79.3	175	75.0	257
Central 2: North Buganda	68.0	52	74.7	93	72.1	145
East Central	*	23	73.1	58	68.3	81
Kampala	(58.7)	28	72.9	112	69.5	140
Mid Eastern	*	24	65.5	67	58.2	91
Mid North	60.0	69	64.6	119	62.8	188
Mid Western	(70.7)	45	70.4	88	70.5	133
Northeast: Karamoja	*	15	(79.4)	37	78.1	52
Northeast: Teso	(61.5)	33	75.1	65	70.0	98
South Western	64.9	71	89.2	141	80.4	212
West Nile	(59.3)	25	72.0	61	67.9	86
Marital status						
Never married	(51.7)	34	71.6	94	65.6	128
Married or living together	65.4	326	73.5	466	70.0	792
Divorced or separated	57.1	90	74.6	282	69.7	372
Widowed	*	16	84.4	173	84.2	189
Education						
No education	(75.9)	28	76.5	152	76.4	180
Primary	65.3	290	72.8	597	70.1	887
Secondary	56.1	108	79.2	221	71.0	329
More than secondary	(58.7)	40	(83.8)	45	71.7	85
Wealth quintile						
Lowest	58.1	116	62.6	207	60.7	323
Second	70.4	86	76.0	173	74.0	259
Middle	66.2	116	80.5	201	74.8	317
Fourth	57.1	94	75.7	219	69.6	313
Highest	65.0	55	78.7	216	75.4	271
Total 15-24 (years)	(41.0)	30	53.8	134	51.1	164
Total 15-49 (years)	58.8	337	73.0	836	68.4	1,173
Total 50+ (years)	76.9	130	87.5	180	82.7	310
Total 15+ (years)	63.1	467	75.3	1,016	71.1	1,483

[1] Both awareness of HIV-positive status and on-treatment status were based upon self-report or having a detectable ARV in the blood.

* Estimates based on a denominator less than 25 have been suppressed.

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

8.7 VIRAL LOAD TESTING AMONG PEOPLE LIVING WITH HIV

Among all adults living with HIV who reported they were receiving HIV care, 86.7% said that they had ever received a viral load test, but among these only 52.8% said they had received the results of their most recent test. Little variation was observed by age group.

Access to viral load testing varied regionally. It was lowest, at 58.7%* (95% CI: 43.7%-73.8%*) in Mid Eastern and peaked at 93.6% (95% CI: 89.1%-90.0%*) in Mid North. In most regions, reported receipt of results was lower, ranging from 46.1%* in Mid Eastern to 65.3%* in Northeast: Karamoja.

Table 8.7 Self-reported viral load testing

Percentage of HIV-positive adults aged 15 years and older who reported they had ever had a viral load (VL) test, and among those who had a VL test, percentage who reported that they received VL results from their last test, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among all HIV-positive adults receiving HIV care		Among adults who had ever had a VL test	
	Percentage who had ever had a VL test	Number	Percentage who received VL results from their last test	Number
Age (years)				
15-19	*	20	*	14
20-24	76.9	50	(48.4)	38
25-29	82.1	113	55.9	90
30-34	84.3	151	50.6	130
35-39	84.3	180	57.6	153
40-44	88.9	130	54.8	116
45-49	94.0	144	47.0	135
50-54	91.5	109	51.7	100
55-59	94.1	62	49.6	59
60-64	(92.0)	29	(57.8)	26
65+	(91.9)	36	(49.1)	33
Sex				
Men	86.5	303	49.0	264
Women	86.8	721	54.7	630
Residence				
Urban	88.5	425	56.4	374
Rural	85.4	599	50.1	520
Region				
Central 1: South Buganda	90.0	199	51.5	181
Central 2: North Buganda	86.1	88	56.1	76
East Central	77.1	52	(48.5)	41
Kampala	84.8	102	52.9	87
Mid Eastern	(58.7)	43	(46.1)	26
Mid North	93.6	124	58.0	117
Mid Western	89.5	97	54.4	86
Northeast: Karamoja	(87.3)	38	(65.3)	33
Northeast: Teso	89.8	79	46.3	71
South Western	87.4	138	50.7	121
West Nile	85.6	64	58.7	55

* This estimate was based on a denominator between 25 and 49 and should be interpreted with caution.

Table 8.7 Self-reported viral load testing (continued)

Percentage of HIV-positive adults aged 15 years and older who reported they had ever had a viral load (VL) test, and among those who had a VL test, percentage who reported that they received VL results from their last test, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among all HIV-positive adults receiving HIV care		Among adults who had ever had a VL test	
	Percentage who had ever had a VL test	Number	Percentage who received VL results from their last test	Number
Marital status				
Never married	87.5	71	59.9	62
Married or living together	87.8	562	53.2	496
Divorced or separated	79.7	243	49.8	196
Widowed	94.2	147	52.3	139
Education				
No education	91.3	115	56.3	106
Primary	84.9	611	52.2	521
Secondary	89.6	231	51.9	208
More than secondary	85.3	65	55.8	57
Wealth quintile				
Lowest	85.1	208	43.5	179
Second	85.3	183	57.1	158
Middle	87.7	227	54.2	202
Fourth	87.7	205	57.8	181
Highest	87.0	201	49.3	174
Total 15-24 (years)	73.6	70	53.9	52
Total 15-49 (years)	85.2	788	53.2	676
Total 50+ (years)	92.4	236	51.4	218
Total 15+ (years)	86.7	1,024	52.8	894

* Estimates based on a denominator less than 25 have been suppressed.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

8.8 GAPS AND UNMET NEEDS

- Generally, among adults living with HIV, there were higher rates of VLS in women compared to men, with men lagging behind in all age groups.
- There was considerable regional variation in prevalence of VLS.
- While the high proportion with VLS among those who were aware of their status and on ART (based upon self-report and ARV-detection) is to be expected, the findings that among those who said they were not aware of their status and who did not have detectable ARVs in their blood, 17.4% had VLS and 14.5% had a viral load below 200/copies/mL, merit further investigation.
- There was considerable regional variation in the self-reported receipt of viral load testing, but receipt of results was substantially lower.
- Although more than 85% of adults aged 15 and older living with HIV had had a viral load test, only about half had received the results of their last test. This proportion differs from programmatic data (viral load testing is routinely provided to people living with HIV on treatment in Uganda), and thus may reflect a need to enhance treatment literacy on viral load testing and the need to know one's viral load results.

8.9 REFERENCES

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9. UNAIDS 95-95-95 TARGETS

9.1 KEY FINDINGS

- **Diagnosed:** Based on self-report and ARV detection data, 80.9% of adults living with HIV in Uganda were aware of their HIV-positive status. Among these, a higher proportion of women than men were aware of their HIV-positive status: 83.5% compared to 76.1%.
- **On treatment:** Among those who were aware of their HIV-positive status, 96.1% were on ART: 96.7% of women and 94.7% of men.
- **With viral load suppression:** Among those aware of their status and on treatment, 92.2% had suppressed viral loads: 92.6% of women and 91.3% of men.
- **Overall:** Among all the adults living with HIV in Uganda, 80.9% were aware of their HIV-positive status, 77.7% were on ART, and 71.7% had achieved VLS on treatment.

9.2 BACKGROUND

To bring the HIV epidemic under control, UNAIDS has set targets that by 2025, 95% of all people living with HIV would know their HIV status; 95% of all persons diagnosed with HIV would receive sustained ART; and 95% of all persons receiving ART would have VLS, defined by UNAIDS as HIV RNA < 1,000 copies per mL.[1, 2]

While Chapter 7 provides results on coverage of HIV testing and treatment services, and Chapter 8 reports VLS among all HIV-positive individuals, irrespective of knowledge of status or ART use, this chapter presents the status of the 95-95-95 which reflects each stage of program performance. Awareness of HIV-positive status among people living with HIV and current ART use among those who are aware of their HIV-positive status are indicators of access to services. VLS among those who know their HIV-positive status and are on treatment not only provides an indication of access to and retention in care, but also provides a measure of program success. The overall 95-95-95 target of VLS among all HIV-positive individuals of 85.7% (the product of 95% of people living with HIV diagnosed, 95% of those diagnosed on treatment, and 95% of those on treatment achieving VLS) or greater is an indication of successful testing and treatment services.[1]

UPHIA 2020-2021 measured the 95-95-95 indicators using self-reported data adjusted with one of two types of biomarker data: either ARV biomarker data or having a viral load result below 200 copies/mL. For instance, in the ARV-adjusted estimates at the national and subnational levels, individuals were defined as 'aware' of their HIV-positive status if they reported knowing they were HIV positive before testing as part of UPHIA 2020-2021 or if they had a detectable ARV in their blood. Individuals were categorized as 'on treatment' if they reported ART use or if they had an ARV detectable in their blood. This chapter also presents 95-95-95 estimates at the national level using self-reported data adjusted for having a viral load below 200 copies per mL. Recent research suggests that a viral load measurement below 200 copies per mL may be a useful alternative to ARV-detection for determining awareness and treatment status since individuals living with HIV are unlikely to achieve a viral load below 200 copies per mL if they are not on ART.[3]

The tables in this chapter present the 95-95-95 results in two ways, as conditional, and overall percentages. In both the conditional and the overall cascade, the denominator for the first 95, awareness of HIV positive status, is all the adults living with HIV in the country. However, in the conditional 95-95-95 cascade (shown in Tables 9.3.B and 9.4.B), the denominator for the second and third 95 indicator is the value of the target preceding it. In other words, the second 95 is the percentage of people on ART among those aware of their HIV-positive status (diagnosed), and the third 95 is the percentage of people with VLS among those on treatment.

In the 95-95-95 overall percentages tables (9.3.A and 9.4.A), the denominator is the same for each 95 indicator: the overall population of adults living with HIV in the country. Thus, while the first 95 is the same as in the conditional table, the second 95 estimate is the percentage of people receiving treatment among the overall population of adults living with HIV in the country, while the third 95 is the percentage of people achieving VLS on ART among all the adults living with HIV in Uganda.

The figures in this chapter present both conditional percentages (the estimates shown in the insets in the figures) and overall percentages (represented by the bar heights in the figures).

Note that in each 95-95-95 table, individuals with VLS who were not aware of their HIV-positive status or were not on ART, were excluded from the numerator for the third 95 (VLS among those on ART). For this reason, the VLS estimates in the overall 95-95-95 are sometimes slightly lower than VLS estimates reported in the previous chapter, which may include VLS data from individuals with low viral loads who were not receiving treatment, such as individuals who have transiently low viral loads after seroconversion and elite controllers. Thus, the overall 95-95-95 VLS estimates represent the percentage of the adult population living with HIV known to have been reached by the national HIV program and who are benefiting at each step of the cascade.

9.3 STATUS OF THE UNAIDS 95-95-95 TARGETS AT THE NATIONAL LEVEL, BASED UPON SELF-REPORTED AND ANTIRETROVIRAL BIOMARKER DATA

For the conditional 95-95-95 targets in Uganda, 80.9% of adults living with HIV were aware of their HIV-positive status. Among these, a higher proportion of women than men were aware of their HIV-positive status: 83.5% (95% CI: 81.0%-86.0%*) compared to 76.1% (95% CI: 71.3%-80.9%*). Among those who were aware of their HIV-positive status, 96.1% were on ART: 96.7% of women and 94.7% of men. Among those aware of their status and on treatment, 92.2% had suppressed viral loads: 92.6% of women and 91.3% of men.

For the overall 95-95-95 targets among all adults living with HIV in Uganda, 80.9% were aware of their HIV-positive status: with a higher rate in women, 83.5% (95% CI: 81.0%-86.0%*) than in men, 76.1% (95% CI: 71.3%-80.9%*). Among the national population of adults living with HIV, 77.7% were on ART: 80.8% among women and 72.1% among men; while 71.7% of all adults living with HIV in Uganda had achieved VLS on treatment: 74.8% among women and 65.8% among men.

Tables 9.3.A and 9.3. B also describe the achievements of the 95-95-95 among different age groups.

There was generally better achievement of the unconditional (overall) 95-95-95 targets with increasing age. For instance, among those living with HIV aged 25-34 years, 75.6% were diagnosed, 72.8% were on treatment, and 64.8% had achieved VLS on treatment. Among those aged 35-49 years, 87.1% were diagnosed, 83.2% were on treatment, and 78.1% had achieved VLS on treatment. Notably, in the 25-34-year age group, men were much less likely than women to be aware of their HIV-positive status: 58.6% (95% CI: 47.4%-69.7%*) versus 81.9% (95% CI: 77.2%-86.7%*).

Among young people:

For the conditional 95-95-95 targets among young people aged 15-24 years living with HIV, 60.2% of were aware of their HIV status: 63.7% among young women and 47.3%† among young men. Among those who were aware of their HIV status, 95.4% were on ART: 94.5% among young women. The estimate among young men was suppressed because the denominator was below 25. Among those who were on ART, 85.6% had achieved VLS: 86.9% among young women (and the estimate among young men was suppressed because the denominator was below 25).

For the overall 95-95-95 targets among all the young people living with HIV in Uganda, 60.2% of all young people living with HIV were aware of their HIV status: 63.7% among young women and 47.3%† among young men. Of all the young people living with HIV, 57.4% were on ART: 60.2% among young women and 47.3%† among young men. Less than half, 49.2%, of all the young people living with HIV achieved VLS on treatment: 52.3% among young women and 37.6%† among young men.

Table 9.3.A Adult 95-95-95 (self-reported and antiretroviral biomarker data); overall percentages

95-95-95 targets among people living with HIV aged 15 years and older based upon their self-reported HIV status and antiretroviral (ART) use, both adjusted for a having a detectable antiretroviral (ARV) in blood, by sex and age, UPHIA 2020-2021

	Diagnosed					
	Men		Women		Total	
Age (years)	Percentage aware of HIV status[1,2]	Number	Percentage aware of HIV status[1,2]	Number	Percentage aware of HIV status[1,2]	Number
15-24	(47.3)	30	63.7	134	60.2	164
25-34	58.6	89	81.9	306	75.6	395
35-49	83.1	218	89.8	393	87.1	611
50+	88.9	130	91.6	180	90.4	310
15-49	72.1	337	82.0	833	78.7	1,170
15+	76.1	467	83.5	1,013	80.9	1,480

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

† This estimate is based on a denominator between 25 and 49 and should be interpreted with caution.

Table 9.3.A Adult 95-95-95 (self-reported and antiretroviral biomarker data); overall percentages (continued)

95-95-95 targets among people living with HIV aged 15 years and older based upon their self-reported HIV status and antiretroviral (ART) use, both adjusted for a having a detectable antiretroviral (ARV) in blood, by sex and age, UPHIA 2020-2021

	On Treatment					
	Men		Women		Total	
Age (years)	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number
15-24	(47.3)	30	60.2	134	57.4	164
25-34	54.3	89	79.6	306	72.8	395
35-49	78.3	218	86.6	393	83.2	611
50+	85.3	130	89.9	180	87.8	310
15-49	67.9	337	79.1	833	75.4	1,170
15+	72.1	467	80.8	1,013	77.7	1,480
	Viral Load Suppression (VLS) on Treatment					
	Men		Women		Total	
Age (years)	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number
15-24	(37.6)	30	52.3	134	(49.2)	164
25-34	47.0	89	71.4	306	64.8	395
35-49	72.3	218	82.1	393	78.1	611
50+	80.5	130	87.0	180	84.1	310
15-49	61.2	337	72.5	833	68.8	1,170
15+	65.8	467	74.8	1,013	71.7	1,480

[1] Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.
[2] Relates to Global AIDS Monitoring Indicator 2021 (GAM 2021) 1.1: People living with HIV who know their HIV status; and PEPFAR indicator DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed).
[3] Relates to GAM 2021 1.2: People living with HIV on ART; and PEPFAR indicator TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving ART.
[4] Relates to GAM 2021 1.3: People living with HIV who have suppressed viral loads; and PEPFAR indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 9.3.B Adult 95-95-95 (self-reported and antiretroviral biomarker data); conditional percentages

95-95-95 targets among people living with HIV aged 15 years and older based upon their self-reported HIV status and antiretroviral (ART) use, both adjusted for a having a detectable antiretroviral (ART) in blood, by sex and age, UPHIA 2020-2021

	Diagnosed					
	Men		Women		Total	
Age (years)	Percentage aware of HIV status[1,2]	Number	Percentage aware of HIV status[1,2]	Number	Percentage aware of HIV status[1,2]	Number
15-24	(47.3)	30	63.7	134	60.2	164
25-34	58.6	89	81.9	306	75.6	395
35-49	83.1	218	89.8	393	87.1	611
50+	88.9	130	91.6	180	90.4	310
15-49	72.1	337	82.0	833	78.7	1,170
15+	76.1	467	83.5	1,013	80.9	1,480

Table 9.3.B Adult 95-95-95 (self-reported and antiretroviral biomarker data); conditional percentages (continued)

95-95-95 targets among people living with HIV aged 15 years and older based upon their self-reported HIV status and antiretroviral (ART) use, both adjusted for a having a detectable antiretroviral (ART) in blood, by sex and age, UPHIA 2020-2021

	On Treatment Among Those Diagnosed					
	Men		Women		Total	
Age (years)	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number
15-24	*	14	94.5	84	95.4	98
25-34	92.7	52	97.2	253	96.3	305
35-49	94.2	185	96.4	352	95.6	537
50+	96.0	115	98.1	165	97.2	280
15-49	94.2	251	96.5	689	95.8	940
15+	94.7	366	96.7	854	96.1	1,220
	Viral Load Suppression (VLS) Among Those on Treatment					
	Men		Women		Total	
Age (years)	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number
15-24	*	14	86.9	78	85.6	92
25-34	(86.5)	48	89.7	246	89.1	294
35-49	92.4	173	94.8	341	93.9	514
50+	94.4	110	96.8	162	95.8	272
15-49	90.1	235	91.7	665	91.2	900
15+	91.3	345	92.6	827	92.2	1,172

[1] Both awareness of HIV-positive status and on-treatment status were based upon self-report or having a detectable ARV in the blood.
[2] Relates to Global AIDS Monitoring Indicator 2021 (GAM 2021) 1.1: People living with HIV who know their HIV status; and PEPFAR DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed).
[3] Relates to GAM 2021 1.2: People living with HIV on ART; and PEPFAR TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving ART.
[4] Relates to GAM 2021 1.3: People living with HIV who have suppressed viral loads; and PEPFAR indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
* Estimates based on a denominator less than 25 have been suppressed.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

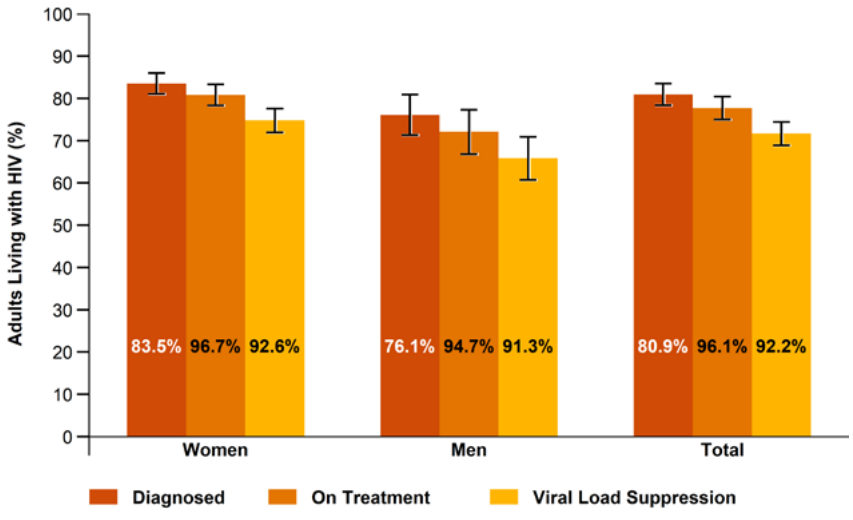


Figure 9.3 Antiretroviral-adjusted 95-95-95 among adults living with HIV (ages 15 years and older), by sex, UPHIA 2020-2021

Note: In the antiretroviral (ARV)-adjusted 95-95-95, participants are classified as "aware" or "diagnosed" if they reported knowing their HIV-positive status before testing positive in UPHIA 2020-2021 or had a 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; the heights of the bars represent the unconditional proportions among all adults living with HIV.

9.4 STATUS OF THE UNAIDS 95-95-95 TARGETS AT THE NATIONAL LEVEL, BASED UPON SELF-REPORTED AND VIRAL LOAD-ADJUSTED DATA

Tables 9.4.A and B describe UNAIDS target achievements with the alternative method of classifying a participant as aware of their HIV-positive status and on-treatment status based on their self-report and having a viral load below 200 copies/mL.

For the conditional 95-95-95 targets in Uganda, 82.9% of adults living with HIV were aware of their HIV-positive status. Among these, a higher proportion of women than men were aware of their HIV-positive status: 85.4% (95% CI: 83.0%-87.9%*) compared to 78.2% (95% CI: 73.6%-82.7%*). Among those who were aware of their HIV-positive status, 96.5% were on ART: 96.9% of women and 95.6% of men. Among those aware of their status and on treatment, 93.2% had suppressed viral loads: 93.6% of women and 92.5% of men (Table 9.4.A).

For the overall 95-95-95 targets among all adults living with HIV in Uganda, 82.9% were aware of their HIV-positive status: with a higher rate in women, 85.4% (95% CI: 83.0%-87.9%*) than in men, 78.2% (95% CI: 73.6%-82.7%*). Among the national population of adults living with HIV, 80.8% were on ART. Among these, a higher proportion of women than men living with HIV were on ART: 82.8% (95% CI: 80.3%-85.3%*) compared to 74.8% (95% CI: 70.0%-79.5%*). Finally, among all adults living with HIV in Uganda, 74.6% had achieved VLS on treatment, with a higher proportion among women than men living with HIV: 77.5% (95% CI: 74.7-80.2%*) compared to 69.2% (95% CI: 64.4%-73.9%*).

Table 9.4.A Adult 95-95-95 (self-reported data adjusted for viral load < 200 HIV RNA copies per milliliter); overall percentages

95-95-95 targets among adults living with HIV aged 15 years and older, based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a viral load (VL) < 200 copies per mL, by sex and age, UPHIA 2020-2021

	Diagnosed					
	Men		Women		Total	
Age (years)	Percentage aware of HIV status[1,2]	Number	Percentage aware of HIV status[1,2]	Number	Percentage aware of HIV status[1,2]	Number
15-24	(53.1)	30	65.9	134	63.2	164
25-34	61.0	89	83.6	307	77.5	396
35-49	84.1	218	91.6	394	88.6	612
50+	91.5	130	94.1	180	92.9	310
15-49	74.0	337	83.8	835	80.6	1,172
15+	78.2	467	85.4	1,015	82.9	1,482
	On Treatment					
	Men		Women		Total	
Age (years)	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number
15-24	(53.1)	30	63.0	134	60.9	164
25-34	58.2	89	81.0	307	74.8	396
35-49	79.0	218	88.7	394	84.8	612
50+	89.6	130	92.3	180	91.1	310
15-49	70.1	337	81.0	835	77.5	1,172
15+	74.8	467	82.8	1,015	80.0	1,482

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

Table 9.4.A Adult 95-95-95 (self-reported data adjusted for viral load < 200 HIV RNA copies per milliliter); overall percentages (continued)

95-95-95 targets among adults living with HIV aged 15 years and older, based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a viral load (VL) < 200 copies per mL, by sex and age, UPHIA 2020-2021

	Viral Load Suppression (VLS) on Treatment					
	Men		Women		Total	
Age (years)	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number
15-24	(43.5)	30	56.6	134	53.8	164
25-34	51.9	89	73.7	307	67.8	396
35-49	74.0	218	84.6	394	80.3	612
50+	84.8	130	89.4	180	87.4	310
15-49	64.3	337	75.2	835	71.7	1,172
15+	69.2	467	77.5	1,015	74.6	1,482

[1] Both awareness of HIV-positive status and on-treatment status were based upon self-report or having a VL < 200 copies/mL.
[2] Relates to Global AIDS Monitoring indicator 2021 (GAM 2021) 1.1: People living with HIV who know their HIV status and PEPFAR Indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed).
[3] Relates to GAM 2021 1.2: People living with HIV on ART and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving ART.
[4] Relates to GAM 2021 1.3: People living with HIV who have suppressed viral loads and PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 9.4.B Adult 95-95-95 (self-reported data adjusted for viral load < 200 HIV RNA copies per milliliter); conditional percentages

95-95-95 targets among adults living with HIV aged 15 years and older, based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a viral load (VL) < 200 copies per milliliter (mL), by sex and age, UPHIA 2020-2021

	Diagnosed					
	Men		Women		Total	
Age (years)	Percentage aware of HIV status[1,2]	Number	Percentage aware of HIV status[1,2]	Number	Percentage aware of HIV status[1,2]	Number
15-24	(53.1)	30	65.9	134	63.2	164
25-34	61	89	83.6	307	77.5	396
35-49	84.1	218	91.6	394	88.6	612
50+	91.5	130	94.1	180	92.9	310
15-49	74.0	337	83.8	835	80.6	1,172
15+	78.2	467	85.4	1,015	82.9	1,482
	On Treatment Among Those Diagnosed					
	Men		Women		Total	
Age (years)	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number
15-24	*	16	95.7	87	96.5	103
25-34	95.5	55	96.9	258	96.6	313
35-49	93.9	186	96.8	362	95.7	548
50+	97.9	119	98.1	170	98	289
15-49	94.8	257	96.7	707	96.1	964
15+	95.6	376	96.9	877	96.5	1,253

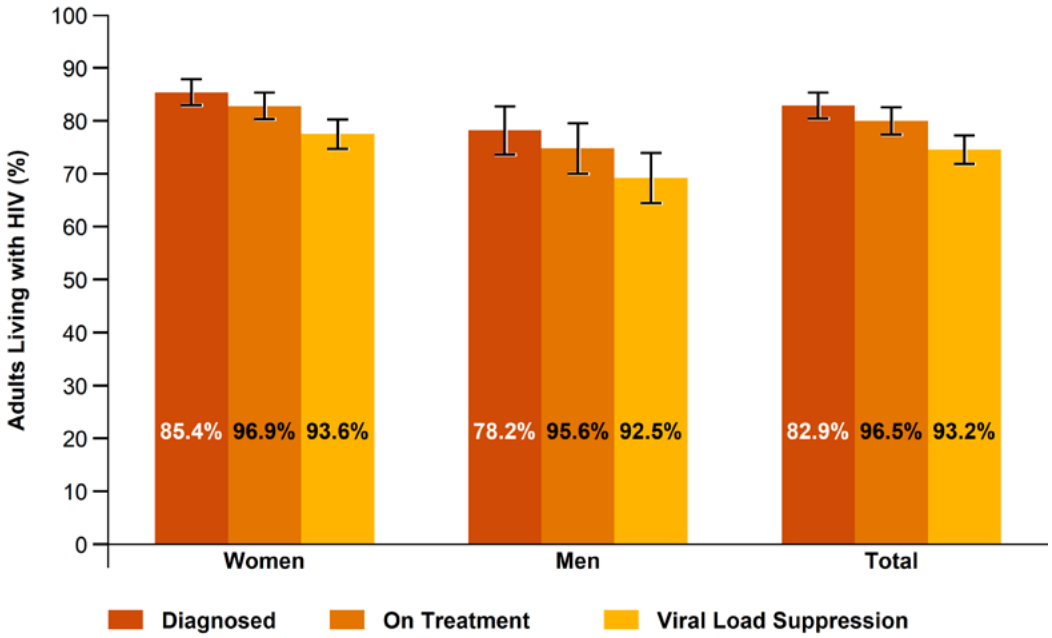
Table 9.4.B Adult 95-95-95 (self-reported data adjusted for viral load < 200 HIV RNA copies per milliliter); conditional percentages (continued)

95-95-95 targets among adults living with HIV aged 15 years and older, based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a viral load (VL) < 200 copies per milliliter (mL), by sex and age, UPHIA 2020-2021

	Viral Load Suppression (VLS) on Treatment					
	Men		Women		Total	
Age (years)	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number
15-24	*	16	89.8	82	88.3	98
25-34	89.1	52	91	250	90.6	302
35-49	93.7	173	95.4	352	94.7	525
50+	94.7	116	96.9	167	95.9	283
15-49	91.6	241	92.9	684	92.5	925
15+	92.5	357	93.6	851	93.2	1,208

[1] Both awareness of HIV-positive status and on-treatment status were based upon self-report or having a VL < 200 copies/mL.
[2] Relates to Global AIDS Monitoring indicator 2021 (GAM 2021) 1.1: People living with HIV who know their HIV status and PEPFAR Indicator DIAGNOSED_NAT: The percentage of adults and children living with HIV who know their status (have been diagnosed).
[3] Relates to GAM 2021 1.2: People living with HIV on ART and PEPFAR TX_CURR_NAT / SUBNAT: Percentage of adults and children receiving ART.
[4] Relates to GAM 2021 1.3: People living with HIV who have suppressed viral loads and PEPFAR Indicator VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
* Estimates based on a denominator less than 25 have been suppressed.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Figure 9.4
Viral load-adjusted 95-95-95 among adults living with HIV (ages 15 years and older), by sex, UPHIA 2020-2021



Note: In the viral load-adjusted 95-95-95, participants are classified as "aware" or "diagnosed" if they reported knowing their HIV-positive status before testing positive in UPHIA 2020-2021 or had a VL < 200 copies/mL. Participants are classified as "on treatment" if they reported that they were on treatment or if they had a VL < 200 copies/mL. Inset numbers are conditional proportions; the heights of the bars represent the unconditional proportions among all adults living with HIV.

9.5 STATUS OF THE 95-95-95 TARGETS BY GEOGRAPHY

At the regional level, there was notable variation in achievement of the conditional 95-95-95 targets. For instance, achievement of the first 95 (diagnosis/awareness of HIV status among people living with HIV) was below 80.0% in Central 2: North Buganda, East Central, Mid Eastern and Mid North regions, while it peaked at 90.2% in Northeast: Teso. However, once diagnosed, every region met the second 95 target of people living with HIV on ART, except Kampala, which placed 93.0% of people living with HIV on treatment. Achievement of the third 95 target, the proportion of people living with HIV who achieve VLS on ART, ranged from 84.7%* in Northeast: Karamoja up to 97.1% in South Western, which was the only region to reach the target, although Central 1: South Buganda and Central 2: North Buganda came close to the target at 94.5% and 94.8%, respectively.

Table 9.5.A Adult 95-95-95 by geography (self-reported and antiretroviral biomarker data); overall percentages

95-95-95 targets among people living with HIV aged 15 years and older based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, by sex, residence, and Region, UPHIA 2020-2021

Characteristic	Diagnosed					
	Men		Women		Total	
	Percentage aware of HIV status[1,2]	Number	Percentage aware of HIV status[1,2]	Number	Percentage aware of HIV status[1,2]	Number
Residence						
Urban	80.6	157	85.8	438	84.2	595
Rural	73.7	310	81.8	575	78.7	885
Region						
Central 1: South Buganda	79.6	82	86.5	175	84.1	257
Central 2: North Buganda	64.5	52	79.8	93	73.8	145
East Central	72.7	23	81.0	58	78.5	81
Kampala	(91.0)	28	84.6	111	86.2	139
Mid Eastern	59.0	24	78.1	66	72.3	90
Mid North	79.9	69	75.5	119	77.2	188
Mid Western	(80.8)	45	83.7	88	82.6	133
Northeast: Karamoja	*	15	(83.3)	37	80.8	52
Northeast: Teso	(87.6)	33	91.8	65	90.2	98
South Western	72.7	71	88.5	140	82.7	211
West Nile	(78.7)	25	84.6	61	82.7	86
Characteristic	On Treatment					
	Men		Women		Total	
	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number
Residence						
Urban	75.5	157	83.9	438	81.3	595
Rural	70.2	310	78.5	575	75.3	885
Region						
Central 1: South Buganda	77.0	82	83.1	175	80.9	257
Central 2: North Buganda	61.1	52	76.7	93	70.6	145

* This estimate is based on a denominator between 25 and 49 and should be interpreted with caution.

Table 9.5.A Adult 95-95-95 by geography (self-reported and antiretroviral biomarker data); overall percentages (continued)

95-95-95 targets among people living with HIV aged 15 years and older based upon their self-reported HIV status and antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, by sex, residence, and Region, UPHIA 2020-2021

Characteristic	On Treatment					
	Men		Women		Total	
	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number
East Central	72.7	23	79.3	58	77.2	81
Kampala	(79.9)	28	80.2	111	80.1	139
Mid Eastern	50.9	24	78.1	66	69.7	90
Mid North	72.9	69	73.6	119	73.4	188
Mid Western	(77.7)	45	80.4	88	79.4	133
Northeast: Karamoja	*	15	(83.3)	37	80.8	52
Northeast: Teso	(84.7)	33	86.9	65	86.1	98
South Western	69.8	71	85.6	140	79.9	211
West Nile	(74.6)	25	84.6	61	81.4	86

Characteristic	Viral Load Suppression (VLS) on Treatment					
	Men		Women		Total	
	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number
Residence						
Urban	67.7	157	78.9	438	75.5	595
Rural	64.8	310	71.6	575	69.0	885
Region						
Central 1: South Buganda	72.8	82	78.5	175	76.5	257
Central 2: North Buganda	57.4	52	73.1	93	66.9	145
East Central	68.6	23	70.1	58	69.6	81
Kampala	(68.0)	28	77.3	111	75.1	139
Mid Eastern	36.0	24	64.9	66	56.0	90
Mid North	63.3	69	65.3	119	64.5	188
Mid Western	(72.3)	45	73.7	88	73.1	133
Northeast: Karamoja	*	15	(69.0)	37	68.4	52
Northeast: Teso	(73.4)	33	77.6	65	76.0	98
South Western	67.4	71	83.4	140	77.6	211
West Nile	(65.7)	25	77.1	61	73.4	86

[1] Both awareness of HIV-positive status and on-treatment status were based upon self-report or having a detectable ARV in the blood.
[2] Relates to Global AIDS Monitoring indicator 2021 (GAM 2021) 1.1: People living with HIV who know their HIV status; and PEPFAR DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed).
[3] Relates to GAM 2021 1.2: People living with HIV on ART and PEPFAR TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving ART.
[4] Relates to GAM 2021 1.3: People living with HIV who have suppressed viral loads; and PEPFAR VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
* Estimates based on a denominator less than 25 have been suppressed.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

Table 9.5.B Adult 95-95-95 by geography (self-reported and antiretroviral biomarker data); conditional percentages

95-95-95 targets among people living with HIV aged 15 years and older based upon their self-reported HIV status and antiretroviral (ART) use, both adjusted for a having a detectable antiretroviral (ARV) in blood, by sex, residence, and Region, UPHIA 2020-2021

Characteristic	Diagnosed					
	Men		Women		Total	
	Percentage aware of HIV status[1,2]	Number	Percentage aware of HIV status[1,2]	Number	Percentage aware of HIV status[1,2]	Number
Residence						
Urban	80.6	157	85.8	438	84.2	595
Rural	73.7	310	81.8	575	78.7	885
Region						
Central 1: South Buganda	79.6	82	86.5	175	84.1	257
Central 2: North Buganda	64.5	52	79.8	93	73.8	145
East Central	72.7	23	81.0	58	78.5	81
Kampala	(91.0)	28	84.6	111	86.2	139
Mid Eastern	*	24	78.1	66	72.3	90
Mid North	79.9	69	75.5	119	77.2	188
Mid Western	(80.8)	45	83.7	88	82.6	133
Northeast: Karamoja	75.7	15	(83.3)	37	80.8	52
Northeast: Teso	(87.6)	33	91.8	65	90.2	98
South Western	72.7	71	88.5	140	82.7	211
West Nile	(78.7)	25	84.6	61	82.7	86

Characteristic	On Treatment Among Those Diagnosed[1]					
	Men		Women		Total	
	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number	Percentage on ART[1,3]	Number
Residence						
Urban	93.7	131	97.7	378	96.6	509
Rural	95.3	235	96.0	476	95.7	711
Region						
Central 1: South Buganda	96.8	66	96.0	153	96.3	219
Central 2: North Buganda	(94.6)	35	96.1	75	95.6	110
East Central	*	17	(97.8)	47	98.4	64
Kampala	(87.8)	26	94.8	95	93.0	121
Mid Eastern	*	14	100.0	52	96.5	66
Mid North	91.2	56	97.6	90	95.0	146
Mid Western	(96.3)	38	96.0	75	96.1	113
Northeast: Karamoja	*	12	(100.0)	30	100.0	42
Northeast: Teso	(96.7)	29	94.7	60	95.5	89
South Western	96.1	54	96.8	125	96.6	179
West Nile	*	19	100.0	52	98.4	71

Table 9.5.B Adult 95-95-95 by geography (self-reported and antiretroviral biomarker data); conditional percentages (continued)

95-95-95 targets among people living with HIV aged 15 years and older based upon their self-reported HIV status and antiretroviral (ART) use, both adjusted for a having a detectable antiretroviral (ARV) in blood, by sex, residence, and Region, UPHIA 2020-2021

Characteristic	Viral Load Suppression (VLS) Among Those on Treatment					
	Men		Women		Total	
	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number	Percentage with VLS[4]	Number
Residence						
Urban	89.7	121	94.1	369	92.9	490
Rural	92.3	224	91.3	458	91.7	682
Region						
Central 1: South Buganda	94.5	64	94.5	147	94.5	211
Central 2: North Buganda	(94.0)	33	95.2	72	94.8	105
East Central	*	17	(88.4)	46	90.2	63
Kampala	*	22	96.4	90	93.7	112
Mid Eastern	*	12	83.1	52	80.3	64
Mid North	86.8	51	88.6	88	87.9	139
Mid Western	(93.0)	36	91.7	72	92.2	108
Northeast: Karamoja	*	12	(82.9)	30	84.7	42
Northeast: Teso	(86.7)	28	89.2	57	88.3	85
South Western	96.5	52	97.4	121	97.1	173
West Nile	*	18	91.2	52	90.3	70

[1] Both awareness of HIV-positive status and on-treatment status were based upon self-report or having a detectable ARV in the blood.
[2] Relates to Global AIDS Monitoring indicator 2021 (GAM 2021) 1.1: People living with HIV who know their HIV status; and PEPFAR DIAGNOSED_NAT: Percentage of adults and children living with HIV who know their status (have been diagnosed).
[3] Relates to GAM 2021 1.2: People living with HIV on ART and PEPFAR TX_CURR_NAT / SUBNAT: Number of adults and children currently receiving ART.
[4] Relates to GAM 2021 1.3: People living with HIV who have suppressed viral loads; and PEPFAR VL_SUPPRESSION_NAT: Percentage of people living with HIV on ART with a suppressed viral load.
* Estimates based on a denominator less than 25 have been suppressed.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

9.6 GAPS AND UNMET NEEDS

- Progress towards the achievement of the first 95%, awareness of HIV status among adults living with HIV remains below 90%, so there is a pronounced need to refine case finding strategies to address gaps in the first 95.
- There was also a major gap in achievement of the targets among men, who may benefit from differentiated services to diagnosis and linkage to sustained treatment.
- There was considerable regional variation in several programmatic indicators for the achievement of the 95-95-95 targets.
- Young people living with HIV aged 15-24 years in Uganda are also not meeting the UNAIDS targets, particularly for diagnosis and VLS, which is consistent with other gaps the survey observed in this critical population of interest.

9.7 REFERENCES

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10. CLINICAL PERSPECTIVES ON PEOPLE LIVING WITH HIV

10.1 KEY FINDINGS

- The median CD4 count among adults living with HIV was 576 cells/microliter (μL): 636 cells/μL among women and 472 cells/μL among men.
- Among adults living with HIV, the median CD4 count was 468 cells/μL among those who were unaware of their status, 376 cells/μL* among those who were aware of their status but not on ART and 611 cells/μL among those who were aware of their status and on ART.
- Among individuals who tested HIV positive in the survey but had not been previously diagnosed with HIV (based on self-report) and did not have ARVs detected in their blood, 8.9% had advanced HIV disease (less than 200 CD4 cells/μL) and 25.2% had a CD4 count between 200-349 cells cells/μL.
- The prevalence of VLS among those with an extended stay away from home was 67.9% (and below targets), possibly a consequence of treatment interruptions due to travel (reported by 13.0%).
- Based upon self-report among all adults living with HIV who had started treatment (n=1093), 98.1% were still taking ART: 98.2% among women and 97.7% among men.
- Among those who screened likely for symptoms of depression, adherence to treatment, based upon self-report, was 66.7% compared to 85.5% among those who did not have symptoms of depression.

* This estimate is based on a denominator between 25 and 49 and should be interpreted with caution.

10.2 BACKGROUND

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

UPHIA 2020-2021 provided a unique opportunity to gauge progress in the expansion of HIV clinical services in Uganda, as well as identify gaps and future challenges. Indicators such as CD4 count at diagnosis and retention on ART can provide evidence of program coverage, the ability to reach vulnerable populations, and quality of care. The distribution of CD4 counts also reflects population health and the potential impact of HIV on mortality. For instance, a CD4 count below 350/µL is categorized as immune suppression, and a CD4 count of less than 200/µL is categorized as advanced HIV disease that requires more intensive care, treatment, and support services to manage. When HIV is diagnosed in someone with immune suppression or advanced HIV disease, it is also considered a late diagnosis. Tracking the proportion of diagnoses made late can serve as an indicator of whether there are barriers to testing and can help programs allocate resources for the care of people living with advanced HIV disease.

Mobility with extended stays away from home among people living with HIV may also interfere with continuity of care and lead to treatment disruptions and failure, although this may be mitigated by differentiated approaches to treatment delivery. In addition, this survey gathered data on whether mental health issues affect health-seeking behavior, adherence, retention in care, and other clinical outcomes.[2]

10.3 CD4 COUNTS

The median CD4 count among adults living with HIV was 576 cells/microliter (µL): 636 cells/µL among women and 472 cells/µL among men (Table 10.3).

Among adults living with HIV, the median CD4 count was 468 cells/µL among those who were unaware of their status, 376 cells/µL* among those who were aware of their status but not on ART, and 611 cells/µL among those who were aware of their status and on ART (Table 10.3 and Figure 10.3).

Table 10.3 Median CD4 count by HIV diagnosis and antiretroviral therapy status

Among HIV-positive adults aged 15 years and older, median (quartile 1 [Q1], quartile 3 [Q3]) CD4 count (cells per microliter), by sex, and HIV diagnosis and treatment status based upon self-reported HIV-status and current antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, UPHIA 2020-2021

Characteristic	Men			Women			Total		
	Median (Q1, Q3)	Range	Number	Median (Q1, Q3)	Range	Number	Median (Q1, Q3)	Range	Number
HIV diagnosis and treatment status[1]									
Unaware of HIV status	443 (311, 615)	11-1317	100	481 (298, 740)	15-1730	158	468 (304, 682)	11-1730	258
Aware of HIV status and not on ART	322 (164, 473)	82-1172	20	410 (258, 487)†	134-874†	27	376 (223, 481)†	82-1172†	47
Aware of HIV status and on ART	492 (336, 666)	19-1299	344	668 (486, 863)	6-1881	827	611 (431, 807)	6-1881	1,171

* This estimate is based on a denominator between 25 and 49 and should be interpreted with caution.

Table 10.3 Median CD4 count by HIV diagnosis and antiretroviral therapy status (continued)

Among HIV-positive adults aged 15 years and older, median (quartile 1 [Q1], quartile 3 [Q3]) CD4 count (cells per microliter), by sex, and HIV diagnosis and treatment status based upon self-reported HIV-status and current antiretroviral therapy (ART) use, both adjusted for having a detectable antiretroviral (ARV) in blood, UPHIA 2020-2021

Characteristic	Men			Women			Total		
	Median (Q1, Q3)	Range	Number	Median (Q1, Q3)	Range	Number	Median (Q1, Q3)	Range	Number
Total 15-24 (years)	485 (383, 681)†	19-1286†	30	641 (432, 822)	44-1579	134	611 (423, 795)	19-1579	164
Total 15-49 (years)	470 (319, 660)	11-1317	334	631 (442, 841)	6-1881	835	578 (390, 786)	6-1881	1,169
Total 50+(years)	495 (340, 611)	100-1184	130	670 (483, 839)	97-1423	180	572 (400, 757)	97-1423	310
Total 15+ (years)	472 (322, 648)	11-1317	464	636 (451, 840)	6-1881	1,015	576 (393, 779)	6-1881	1,479

[1] Both awareness of HIV-positive status and on-treatment status were based upon self-report or having a detectable ARV in the blood.
† Estimates based on a denominator of 25-49 should be interpreted with caution.

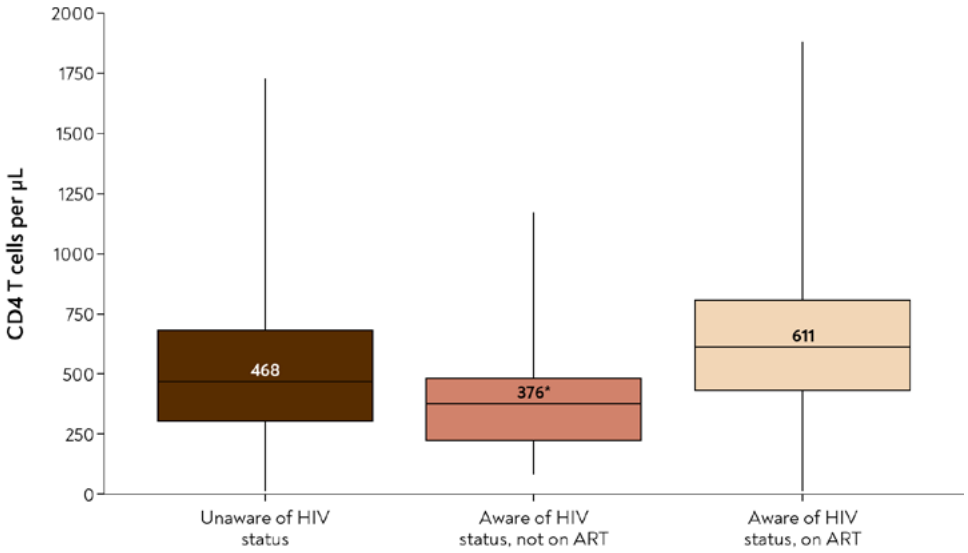

Figure 10.3
CD4 count distribution among adults living with HIV (ages 15 years and older), by HIV diagnosis and ART status, UPHIA 2020-2021

This box plot shows the CD4 count distribution among those who tested positive in the survey, based upon their self-reported awareness of HIV-positive status and antiretroviral therapy (ART) use. The band and number within each box represent the median CD4 count; the box represents the interquartile range (where half of the CD4 count measurements lie); while the whiskers (vertical lines) above and below the box show the range from the minimum to the maximum CD4 count.

* Estimates based on a denominator between 25 and 49 are indicated by an asterisk and should be interpreted with caution.

10.4 CD4 COUNT DISTRIBUTION AND LATE DIAGNOSIS

Among individuals that were diagnosed with HIV in the survey for the first time based on self-report and ARV detection, 25.2% were immunosuppressed, with CD4 counts between 200-349 cells/µL, and 8.9% had advanced HIV disease (less than 200 CD4 cells/µL)

Table 10.4 CD4 count distribution

Percent distribution of CD4 count among adults aged 15 years and older who tested HIV positive in the survey but reported an HIV-negative status and had no antiretroviral detectable in blood, by sex and selected demographic characteristics, UPHIA 2020-2021

Characteristic	CD4 Count				Number
	< 200 cells/μL[1]	200-349 cells/μL	350-499 cells/μL	>= 500 cells/μL	
Age (years)					
15-24	4.6	23.0	18.6	53.7	66
25-34	8.8	22.1	22.0	47.0	88
35-44	17.9	30.8	23.9	27.4	58
45-54	(5.1)	(32.6)	(20.6)	(41.7)	27
55-64	*	*	*	*	12
65+	*	*	*	*	7
Sex					
Male	10.8	26.5	20.8	41.9	100
Female	7.5	24.2	21.1	47.2	158
Residence					
Urban	3.2	26.5	22.7	47.6	86
Rural	11.8	24.5	20.1	43.6	172
Region					
Central 1: South Buganda	(12.4)	(36.1)	(24.0)	(27.4)	38
Central 2: North Buganda	(13.1)	(15.0)	(16.6)	(55.3)	35
East Central	*	*	*	*	17
Kampala	*	*	*	*	18
Mid Eastern	*	*	*	*	24
Mid North	(7.5)	(21.5)	(33.4)	(37.6)	41
Mid Western	*	*	*	*	20
Northeast: Karamoja	*	*	*	*	9
Northeast: Teso	*	*	*	*	9
South Western	(6.2)	(24.9)	(8.1)	(60.8)	32
West Nile	*	*	*	*	15
Total 15-24 (years)	4.6	23.0	18.6	53.7	66
Total 15-49 (years)	9.7	26.3	20.5	43.5	228
Total 50+ (years)	(2.0)	(14.1)	(25.3)	(58.6)	30
Total 15+ (years)	8.9	25.2	21.0	44.9	258

[1] Relates to Global AIDS Monitoring indicator 2002 1.4: Late HIV Diagnosis.
* Estimates based on a denominator less than 25 have been suppressed.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

10.5 RETENTION IN CARE

Based upon self-report among all adults living with HIV who had started treatment (n=1093), 98.1% were still taking ART: 98.2% among women and 97.7% among men.

Table 10.5 Retention on antiretroviral therapy

Among HIV-positive adults aged 15 years and older who reported initiating antiretroviral therapy (ART), percentage who reported they were still taking ART, by sex and years since initiating ART, UPHIA 2020-2021

Characteristic	Men		Women		Total	
	Percentage still taking ART	Number	Percentage still taking ART	Number	Percentage still taking ART	Number
Number of years since initiating ART						
Less than 12 months	(97.3)	31	95.5	67	96.2	98
12 months or more	97.7	269	98.6	669	98.3	938
1 to less than 5 years	97.8	105	98.3	252	98.1	357
5 to less than 10 years	96.5	68	99.0	208	98.3	276
10 years or more	97.9	78	99.2	188	98.8	266
Total 15-24 (years)	*	13	97.4	64	97.9	77
Total 15-49 (years)	97.1	216	98.4	618	98.0	834
Total 50+ (years)	99.4	102	97.4	157	98.2	259
Total 15+ (years)	97.7	318	98.2	775	98.1	1,093

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

10.6 THE IMPACT OF MOBILITY ON HIV CARE AND TREATMENT

Contrary to expectations, among people living with HIV, a similar proportion of those who had an extended stay away from home (more than one month) were aware of their HIV status and on ART, 72.9% (95% CI: 64.9%-80.8%*) as those who did not have an extended stay away from home, 79.7% (95% CI: 76.5%-82.9%*)

The prevalence of VLS among those with an extended stay away from home was 67.9% (and below national targets), possibly a consequence of treatment interruptions due to travel (reported by 13.0%).

Table 10.6 HIV care and treatment status by extended stay away from home

Among HIV-positive adults aged 15 years and older, percent distribution of HIV care and antiretroviral therapy (ART) status and receipt characteristics, by extended stay away from home, based upon self-report, UPHIA 2020-2021

Characteristic	Lived away from home for more than one month at a time in the year before the survey			
	Yes	Number	No	Number
HIV diagnosis and treatment status[1]				
Unaware of HIV status	23.6	37	17.2	175
Aware of HIV status and not on ART	3.6	6	3.1	34
Aware of HIV status and on ART	72.9	127	79.7	871
Viral load suppression (VLS)				
Yes	67.9	119	77.6	850
No	32.1	51	22.4	232
Treatment interrupted				
Yes	13.0	14	NA	NA
No	84.9	93	NA	NA
Never on ART	2.1	2	NA	NA

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

Table 10.6 HIV care and treatment status by extended stay away from home (continued)

Among HIV-positive adults aged 15 years and older, percent distribution of HIV care and antiretroviral therapy (ART) status and receipt characteristics, by extended stay away from home, based upon self-report, UPHIA 2020-2021

Characteristic	Lived away from home for more than one month at a time in the year before the survey			
	Yes	Number	No	Number
Was ART changed				
Yes	57.0	64	57.2	470
No	40.9	43	39.9	325
Never on ART	2.1	2	2.9	23
How normally receive ART				
Pick up at local clinic	14.8	16	20.7	160
Pick up at hospital	72.6	84	72.1	603
From the community support group/ adherence club	2.3	2	3.2	24
Delivery	3.1	3	1.7	11
A family member or friend collects them	2.4	2	0.9	6
Not currently on ART	4.8	6	1.4	13
Total 15+ years	100.0	170	100.0	1,082

[1] Both awareness of HIV-positive status and on-treatment status were based upon self-report or having a detectable antiretroviral in the blood.

10.7 THE IMPACT OF MENTAL HEALTH ON HIV CARE AND TREATMENT

Among those who reported current ART use, adherence to treatment, based upon self-report, was lower among those who screened likely for symptoms of depression, at 66.7% (95% CI: 51.9%-81.4%*), than among those who did not have symptoms of depression, at 85.5% (95% CI: 82.8%-88.1%*).

Table 10.7 Mental health and HIV care and treatment

Percent distribution of care and treatment outcomes among HIV positive adults, by mental health screening symptoms, UPHIA 2020-2021

	Screened likely for depressive symptoms[2]		Did not screen likely for depressive symptoms		Screened likely for generalized anxiety symptoms[3]		Did not screen likely for generalized anxiety symptoms	
Characteristic	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number
HIV diagnosis and treatment status[1]								
Unaware of HIV status	12.7	11	19.5	246	7.9	8	19.8	248
Aware of HIV status and not on antiretroviral therapy (ART)	4.1	4	3.1	43	8.9	9	2.7	38
Aware of HIV status and on ART	83.2	71	77.4	1,098	83.2	82	77.5	1,085
Presence of a detectable antiretroviral (ARV)								
Detectable	75.8	66	72.9	1,028	75.4	75	73.0	1,017
Not detectable	24.2	20	27.1	361	24.6	24	27.0	356

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

Table 10.7 Mental health and HIV care and treatment (continued)

Percent distribution of care and treatment outcomes among HIV positive adults, by mental health screening symptoms, UPHIA 2020-2021

	Screened likely for depressive symptoms[2]		Did not screen likely for depressive symptoms		Screened likely for generalized anxiety symptoms[3]		Did not screen likely for generalized anxiety symptoms	
Characteristic	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number
Viral load suppression (VLS)								
Yes	77.4	68	75.2	1,066	73.0	73	75.6	1,059
No	22.6	18	24.8	324	27.0	26	24.4	315
Ever on ART								
Yes	97.1	68	97.3	1,022	94.9	80	97.5	1,009
No	2.9	2	2.7	27	5.1	4	2.5	25
Retention (among those who reported ever initiating ART)								
Reported current ART use	96.6	65	98.2	1,002	94.2	75	98.4	991
Reported initiating but not on ART at time of the survey	3.4	3	1.8	20	5.8	5	1.6	18
Adherence (among those who reported current ART use)								
Adherent	66.7	45	85.5	858	72.8	55	85.2	848
Non-adherent	33.3	20	14.5	139	27.2	20	14.8	138
Total 15+ (years)	100.0	86	100.0	1,390	100.0	99	100.0	1,374

[1] Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.
[2] Patient Health Questionnaire 2 score over 3 indicating depressive symptoms.
[3] Generalized Anxiety Disorder 2-item score over 3 indicating generalized anxiety symptoms.

10.8 GAPS AND UNMET NEEDS

- Based on small numbers, there are suggestions that those aware of their HIV status but not on ART are at risk of progression to immune suppression. Efforts should be made to determine reasons why these individuals are not being effectively linked to treatment.
- Over one third of those who were unaware of their HIV status when they tested positive in the survey had suppressed immune systems or even advanced HIV disease. These individuals have a heightened risk of developing life-threatening opportunistic infections and AIDS-related mortality.
- A substantial proportion of those who spent an extended stay away from home reported treatment interruption due to their travel, which may have affected the proportion achieving VLS. This could potentially be addressed by the expansion of multi-month dispensing of ART.
- Based on self-reporting, retention among women and men differs from programmatic data. It might be possible to draw further conclusions about the discrepancy if we considered duration on ART considering other disaggregations not currently shown in the table.
- The lower self-reported adherence among those who screened positive for depression suggests a potential programmatic weakness in mental health screening that could potentially lead to lower rates of VLS, the development of drug resistance, and treatment failure.

10.9 REFERENCES

1. World Health Organization (WHO). *Consolidated guidelines on HIV prevention, testing, treatment, service delivery and monitoring: recommendations for a public health approach*. Geneva: WHO; 2021. https://www.who.int/publications/i/item/9789240031593. Accessed February 2, 2020.

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11. PREVENTION OF MOTHER-TO-CHILD TRANSMISSION

11.1 KEY FINDINGS

- Among women of childbearing age (ages 15-49 years, henceforth referred to as women in this section) who delivered a child in the 3 years before the survey, 98.9% reported attending at least one antenatal care (ANC) visit for their most recent birth.
- Among women who delivered in the year before the survey, 0.9% reported that they had tested HIV positive and 81.9% that they tested HIV negative during ANC, while 3.6% reported that they already knew their HIV-positive status. However, the HIV status during ANC was unknown (or unreported) in 13.6%.
- Among women living with HIV who delivered in the 12 months before the survey, 98.9% reported that they took ART to reduce mother-to-child transmission.
- Among women living with HIV aged 15-49 years, the proportion with VLS ranged from 65.4% among those who were pregnant at the time of the survey up to 87.7% among those who delivered in the 12 months before the survey.

11.2 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 MTCT.[1] Without any interventions, between 20-45% of infants may become infected with HIV, with an estimated risk of 5-10% during pregnancy, 10-20% during labor and delivery, and 5-20% through breastfeeding.[1] In 2010, global targets were set to decrease new HIV infections in children and reduce mortality among mothers living with HIV, including a 90% reduction in child HIV infections, a 50% reduction in AIDS-related maternal deaths, and virtual elimination of MTCT.[2]

To prevent MTCT, WHO recommends a comprehensive four-pronged approach including: (1) primary prevention of HIV infection among women of childbearing age (ages 15-49 years, referred to as women in this chapter); (2) preventing unintended pregnancies among women living with HIV; (3) preventing HIV transmission from women living with HIV to their infants; and (4) providing appropriate treatment, care, and support to mothers living with HIV and their children and families.[2]

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

11.3 ANTENATAL CARE ATTENDANCE

Among women of childbearing age (ages 15-49 years, henceforth referred to as women in this section) who delivered a child in the 3 years before the survey, 98.9% reported attending at least one antenatal care (ANC) visit for their most recent birth. Regionally, reported ANC attendance ranged from 95.9% in Northeast: Karamoja to 100% in Northeast: Teso.

Table 11.3 Antenatal care

Among women aged 15-49 years who delivered in the three years before the survey, percentage who reported attending at least one antenatal care (ANC) visit for her most recent birth, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Percentage who attended at least one ANC visit	Number
Age (years)		
15-19	98.6	331
20-24	99.6	1,370
25-29	99.2	1,143
30-34	98.8	799
35-39	98.7	587
40-44	95.7	229
45-49	92.5	67
Residence		
Urban	99.2	1,263
Rural	98.8	3,263
Region		
Central 1: South Buganda	98.5	458
Central 2: North Buganda	98.9	375
East Central	99.3	288

Table 11.3 Antenatal care (continued)

Among women aged 15-49 years who delivered in the three years before the survey, percentage who reported attending at least one antenatal care (ANC) visit for her most recent birth, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Percentage who attended at least one ANC visit	Number
Kampala	99.0	276
Mid Eastern	99.2	342
Mid North	98.3	399
Mid Western	98.8	400
Northeast: Karamoja	95.9	586
Northeast: Teso	100.0	394
South Western	98.8	487
West Nile	99.7	521
Marital status		
Never married	99.4	224
Married or living together	99.1	3,723
Divorced or separated	97.7	527
Widowed	(95.0)	46
Education		
No education	97.3	593
Primary	98.8	2,566
Secondary	99.3	1,095
More than secondary	99.5	272
Wealth quintile		
Lowest	98.1	1,562
Second	98.3	893
Middle	99.6	781
Fourth	99.3	623
Highest	99.6	665
Total 15-24 (years)	99.4	1,701
Total 15-49 (years)	98.9	4,526

( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

11.4 AWARENESS OF MOTHER'S HIV STATUS AND ANTIRETROVIRAL THERAPY AMONG PREGNANT WOMEN LIVING WITH HIV

Among women who delivered in the 12 months before the survey, 81.9% reported that they tested HIV negative as part of ANC testing, 0.9% tested HIV positive during ANC testing, 3.6% already knew they were HIV positive. Thus, overall, 86.4% of the women who delivered in the year before the survey reported that they knew their HIV status; however, 13.6%* did not report knowing their HIV status when they were pregnant.

* Unknown HIV status included all those who said "no," "don't know," or refused to answer when asked whether they were tested for HIV in the ANC for their last pregnancy, as well as those who answered "unknown/inconclusive," "did not receive results," "don't know," or who refused to answer when asked what their test results were when they tested in the ANC for their last pregnancy.

Overall, awareness of HIV status among women who delivered in the 12 months before the survey also varied considerably by residence and region. For instance, 83.1% (95% CI: 80.0%-86.2%*) of women who lived in rural settings were aware of their HIV status before delivery compared to 94.1% (95% CI: 91.7%-96.5%*) of women living in urban areas. Regionally, awareness of HIV status before delivery was below 90% in all regions except Central 1: South Buganda (94.7%), Central 2: North Buganda (94.6%), Kampala (94.6%), and Northeast Teso (91.3%).

By age, awareness of HIV status before delivery ranged from 75.7% among those aged 15-19 years to 89.0% among those aged 30-34 years.

Awareness of HIV status before delivery was also below 90% among those with less education at 83.2% among those with no formal education, and 83.9% among those with a primary education.

Awareness of HIV status was above 90% in the higher wealth quintiles, at 93.0% among those in the fourth highest quintile, and at 97.4% in the highest quintile.

Among women living with HIV who delivered in the 12 months before the survey, 98.9% reported that they took ART to reduce mother-to-child transmission: 72.4% reported that they were already on ART before becoming pregnant, and 26.5% reported that they started ART during pregnancy or labor or delivery.

Table 11.4.1 Prevention of mother-to-child transmission: Known HIV status

Among women aged 15-49 years who gave birth within the 12 months before the survey [or country specific cutoff up to 3 years], percentage who reported that they were tested for HIV during antenatal care (ANC) and received their results or that they already knew they were HIV positive during their last pregnancy, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status[1]	Number of women who gave birth within the 12 months before the survey
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Age (years)					
15-19	0.8	73.6	1.3	75.7	193
20-24	0.7	85.4	1.2	87.3	589
25-29	1.4	84.0	3.1	88.5	458
30-34	0.7	81.5	6.8	89.0	347
35-39	1.0	81.4	5.3	87.7	216
40-44	1.0	68.0	9.8	78.8	72
45-49	*	*	*	*	21
Residence					
Urban	1.2	86.0	7.0	94.1	536
Rural	0.8	80.1	2.1	83.1	1,360
Region					
Central 1: South Buganda	1.7	86.9	6.0	94.7	202
Central 2: North Buganda	2.0	89.2	3.3	94.6	178
East Central	1.0	68.5	0.9	70.4	110
Kampala	1.0	84.6	9.1	94.6	110
Mid Eastern	0.0	77.5	1.2	78.7	143

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

Table 11.4.1 Prevention of mother-to-child transmission: Known HIV status (continued)

Among women aged 15-49 years who gave birth within the 12 months before the survey [or country specific cutoff up to 3 years], percentage who reported that they were tested for HIV during antenatal care (ANC) and received their results or that they already knew they were HIV positive during their last pregnancy, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Tested for HIV during ANC and received results		Percentage who already knew they were HIV positive	Total percentage with known HIV status[1]	Number of women who gave birth within the 12 months before the survey
	Percentage who tested HIV positive	Percentage who tested HIV negative			
Mid North	0.0	80.8	5.6	86.4	144
Mid Western	1.8	79.7	5.6	87.0	155
Northeast: Karamoja	0.0	82.3	0.9	83.2	241
Northeast: Teso	0.5	89.9	1.0	91.3	190
South Western	0.6	80.2	3.0	83.7	213
West Nile	0.0	79.6	1.0	80.6	210
Marital status					
Never married	1.9	80.9	0.8	83.6	96
Married or living together	0.7	82.0	3.5	86.1	1,602
Divorced or separated	2.2	83.1	5.7	90.9	177
Widowed	*	*	*	*	18
Education					
No education	0.7	74.8	7.7	83.2	245
Primary	0.8	80.0	3.1	83.9	1,101
Secondary	1.3	85.8	3.9	91.0	440
More than secondary	1.2	89.7	2.6	93.5	110
Wealth quintile					
Lowest	0.6	83.5	1.3	85.4	644
Second	1.2	74.7	2.8	78.7	386
Middle	0.7	78.3	2.8	81.8	333
Fourth	1.1	86.3	5.6	93.0	260
Highest	1.1	89.4	6.9	97.4	272
Total 15-24 (years)	0.7	82.1	1.2	84.1	782
Total 15-49 (years)	0.9	81.9	3.6	86.4	1,896

[1] Relates to PEPFAR indicator PMTCT_STAT_NAT / SUBNAT: Percentage of pregnant women with known HIV status and Global AIDS Monitoring indicator 2020 2.6: HIV testing in pregnant women.

* Estimates based on a denominator less than 25 have been suppressed.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 11.4.2 Prevention of mother-to-child transmission: HIV-positive pregnant women who received antiretroviral therapy

Among self-reported HIV-positive women aged 15-49 years who gave birth within the 12 months before the survey [or country specific cutoff up to 3 years], percentage who reported they had received antiretroviral therapy (ART) during their last pregnancy to reduce the risk of mother-to-child-transmission, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Percentage who were already on ART prior to pregnancy	Percentage who were newly initiated on ART during pregnancy or labor and delivery	Total percentage who received ART[1]	Number of HIV-positive women who gave birth within the 12 months before the survey
Age (years)				
15-19	*	*	*	3
20-24	*	*	*	9
25-29	*	*	*	18
30-34	(91.3)	(8.7)	(100.0)	25
35-39	*	*	*	11
40-44	*	*	*	6
45-49	*	*	*	2
Residence				
Urban	(72.7)	(27.3)	(100.0)	40
Rural	(72.1)	(25.5)	(97.6)	34
Region				
Central 1: South Buganda	*	*	*	16
Central 2: North Buganda	*	*	*	10
East Central	*	*	*	2
Kampala	*	*	*	11
Mid Eastern	*	*	*	2
Mid North	*	*	*	7
Mid Western	*	*	*	12
Northeast: Karamoja	*	*	*	2
Northeast: Teso	*	*	*	3
South Western	*	*	*	7
West Nile	*	*	*	2
Marital status				
Never married	*	*	*	2
Married or living together	74.7	23.9	98.5	56
Divorced or separated	*	*	*	14
Widowed	*	*	*	2
Education				
No education	*	*	*	10
Primary	(69.8)	(28.0)	(97.8)	38
Secondary	*	*	*	22
More than secondary	*	*	*	4
Wealth quintile				
Lowest	*	*	*	11
Second	*	*	*	14

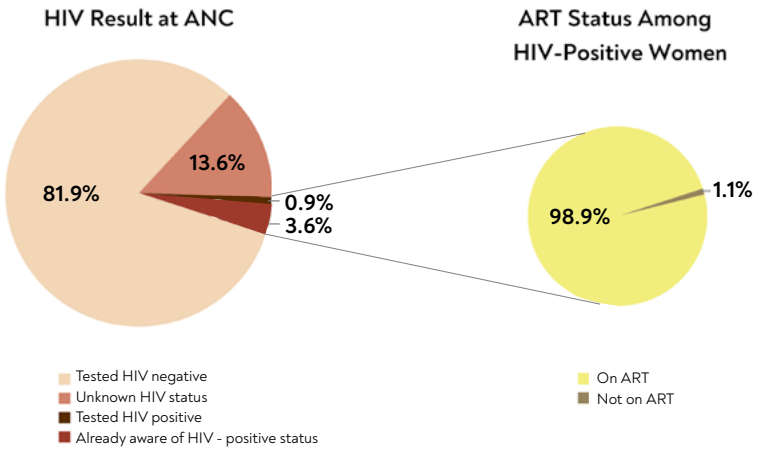
Table 11.4.2 Prevention of mother-to-child transmission: HIV-positive pregnant women who received antiretroviral therapy (continued)

Among self-reported HIV-positive women aged 15-49 years who gave birth within the 12 months before the survey [or country specific cutoff up to 3 years], percentage who reported they had received antiretroviral therapy (ART) during their last pregnancy to reduce the risk of mother-to-child-transmission, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Percentage who were already on ART prior to pregnancy	Percentage who were newly initiated on ART during pregnancy or labor and delivery	Total percentage who received ART[1]	Number of HIV-positive women who gave birth within the 12 months before the survey
Middle	*	*	*	11
Fourth	*	*	*	15
Highest	*	*	*	23
Total 15-24 (years)	*	*	*	12
Total 15-49 (years)	72.4	26.5	98.9	74

[1] Relates to Global AIDS Monitoring indicator 2021 2.3: Preventing mother-to-child transmission of HIV; and PEPFAR indicator PMTCT_ARV_NAT / SUBNAT: Number and percentage of HIV-positive pregnant women who received antiretroviral medicine during pregnancy to reduce the risk of mother-to-child transmission.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
* Estimates based on a denominator less than 25 have been suppressed.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Figure 11.4
Self-reported HIV testing status and antiretroviral therapy use during antenatal care among mothers aged 15-49 years who delivered in the 12 months before the survey, UPHIA 2020-2021



Abbreviations: ANC, antenatal care; ART, antiretroviral therapy.
Unknown HIV status included all those who said "no," "don't know" or refused to answer when asked whether they were tested for HIV in the ANC for their last pregnancy, as well as those who answered "unknown/inconclusive," "did not receive results," "don't know," or who refused to answer when asked what their test results were when they tested in the ANC for their last pregnancy.

11.5 VIRAL LOAD SUPPRESSION

The percentage of women living with HIV (based upon survey HIV test result) with VLS varied; 65.4% among those who were pregnant at the time of the survey, 87.7% among those who delivered in the 12 months before the survey, while 76.1% of those who had ever been pregnant but did not deliver in the 12 months before the survey had suppressed viral loads.

Table 11.5 Viral load suppression in HIV-positive women of childbearing age (ages 15-49), by pregnancy status and postpartum-related characteristics

Among HIV-positive women aged 15-49 years, percentage with viral load suppression (VLS) (HIV RNA < 1,000 copies/milliliter), by self-reported pregnancy and postpartum-related characteristics, UPHIA 2020-2021

Characteristic	Percentage with VLS	Number
Ever pregnant		
Yes	77.0	747
No	68.9	86
Pregnancy status		
Pregnant at time of the survey	65.4	51
Not pregnant at time of the survey	76.7	774
Delivered in the 12 months before the survey		
Delivered in the 12 months before the survey	87.7	87
Did not deliver in the 12 months before the survey	76.1	647
Delivered in the 3 years before the survey		
Delivered in the 3 years before the survey	76.6	241
Did not deliver in the 3 years before the survey	78.1	494

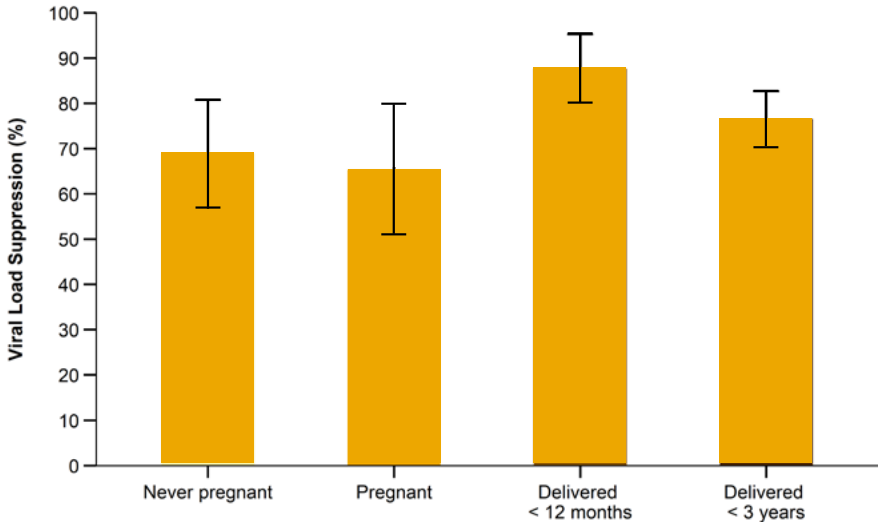


Figure 11.5
Viral load suppression among women living with HIV (ages 15-49 years) who delivered in the last three years, by current pregnancy status and time since last pregnancy, at the time of survey, UPHIA 2020-2021

11.6 GAPS AND UNMET NEEDS

- Reported awareness of HIV status at ANC was below WHO guidance and differs from what is reported in program data and the national target of 100% with disparities by age, region, education and wealth that merit investigation. There is also a need for a second look at those women with an unknown (or unreported) HIV status during pregnancy.
- Viral load suppression among HIV-positive women who reported that they were pregnant at the time of the survey differs from programmatic data and the national target of 95%.

11.7 REFERENCES

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12. HIV RISK FACTORS AND PREVENTION INTERVENTIONS

12.1 KEY FINDINGS

- Among young people, 17.0% of the young men aged 15-24 years and 8.3% of the young women aged 15-24 years said they had an early sexual debut (before the age of 15 years).
- Among adults aged 15 years and older who reported that they had had sex in the 12 months before the survey, 37.0% reported that they had sex with a nonmarital, noncohabitating partner: 28.8% among women and 45.4% among men. Among these, 31.8% (24.9% of women and 36.4% of men) reported that they had used a condom the last time they had sex with such a partner.
- Among men aged 15 years and older, 32.4% reported they had a medical circumcision, 21.7% had a nonmedical circumcision, and 45.9% were uncircumcised. Among young men aged 15-24 years, 42.2% had a medical circumcision and 20.8% had a nonmedical circumcision.

12.2 BACKGROUND

This chapter describes the prevalence of sexual behaviors that increase the risk of HIV infection as well as the uptake of key HIV prevention methods. UPHIA 2020-2021 provides evidence on high-risk behaviors, including early sexual debut, number of lifetime sexual partners, and recent engagement in multiple sexual partnerships among adults in Uganda. The survey also presents data on the uptake of proven HIV prevention interventions including condom use, and male circumcision.

Risk-taking behavior among young adolescents (ages 10-14 years) and young people (ages 15-24 years) is a particularly important challenge for long-term epidemic control. Young people are particularly more likely to engage in risky sexual behaviors than older adults and have less frequent contact with the healthcare system.[1] Although young adolescents were not included in UPHIA 2020-2021, Table 12.3 shows the prevalence of early sexual debut before 15 years of age self-reported by young people in Uganda, by sex, region, and other selected sociodemographic characteristics that may identify where young adolescents and young people may benefit from enhanced HIV education and prevention efforts.

Although the scale-up of universal testing and treatment is expected to lead to reduced HIV transmission, eliminating HIV transmission will require a combination of prevention options that can meet the current needs of different people.[2] Condoms remain an inexpensive and effective tool that can prevent HIV, sexually transmitted infections, and unwanted pregnancies. UPHIA 2020-2021 asked participants about their condom use at last sexual intercourse, particularly with nonmarital, noncohabitating partners. Since 2007, WHO and UNAIDS have also recommended voluntary medical male circumcision as a cost-effective strategy to reduce male acquisition of HIV.[3] To inform the national voluntary medical male circumcision program, UPHIA 2020-2021 asked men whether they had been medically or traditionally circumcised.

With this information, the national program can tailor its prevention efforts to reach those individuals most at risk for HIV infection and most in need of services and provide them with prevention options that work for them.

12.3 HIV PREVALENCE BY SEXUAL BEHAVIORS

This section describes the self-reported sexual behavior characteristics among adults aged 15 years and older in Uganda, and the HIV prevalence associated with these behaviors. Most participants reported that they were sexually active: 86.7% have ever had sex and 70.6% reported that they had had sex in the 12 months before the survey; 73.3% among men, 68.2% among women (Table 12.3.1).

A higher proportion of men than women reported having an earlier sexual debut (sex before the age of 15 years) 11.7% (95% CI: 10.8-12.5%*) compared to 9.8% (95% CI: 9.2%-10.5%*) (Table 12.3). However, among women, early sexual debut was associated with a higher prevalence of HIV compared to the HIV prevalence among women who had their sexual debut between the ages of 15-19 years, at 10.6% (95% CI: 8.7%-12.5%*) versus 7.7% (95 CI: 7.0%-8.5%*); and three times higher than the HIV prevalence among men who reported an early sex debut, at 3.6% (95 CI: 2.3%-4.9%*) (Table 12.3.2).

Adults aged 15 years and older who reported having more than one lifetime sexual partner had a higher prevalence of HIV, 8.0% (95% CI: 7.4%-8.6%*), than those who reported only having one lifetime partner, 2.9% (95% CI: 2.3%-3.5%*) (Table 12.3.2).

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* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

Table 12.3.1 Sexual behavior by demographic characteristics

Percent distribution of self-reported sexual behavior characteristics among adults aged 15 years and older, by sex, UPHIA 2020-2021

	Men		Women		Total	
Characteristic	Percent	Number	Percent	Number	Percent	Number
Ever had sex						
Yes	85.7	9,447	87.5	13,615	86.7	23,062
No	14.3	1,352	12.5	1,580	13.3	2,932
Had sex in the 12 months before the survey						
Yes	73.3	7,926	68.2	10,095	70.6	18,021
No	12.4	1,423	19.2	3,254	16.0	4,677
Never had sex	14.4	1,352	12.6	1,580	13.4	2,932
Had sexual intercourse before the age of 15						
Yes	11.7	1,124	9.8	1,402	10.7	2,526
No	73.7	7,981	77.4	11,664	75.6	19,645
Never had sex	14.7	1,352	12.8	1,580	13.7	2,932
Total 15+ (years)	100.0	10,835	100.0	15,236	100.0	26,071

Table 12.3.2 HIV prevalence by sexual behavior

Prevalence of HIV among adults aged 15 years and older, by sex and self-reported sexual behavior characteristics, UPHIA 2020-2021

	Men		Women		Total	
Characteristic	Percentage HIV positive	Number	Percentage HIV positive	Number	Percentage HIV positive	Number
Age (years) at first sexual intercourse						
Under 15	3.6	1,101	10.6	1,382	7.0	2,483
15-19	5.0	5,140	7.7	9,090	6.6	14,230
20-24	5.2	1,944	7.4	1,987	6.2	3,931
25+	5.6	722	6.5	339	5.8	1,061
Number of lifetime sexual partners						
0	0.4	1,309	1.1	1,535	0.7	2,844
1	1.5	1,602	3.4	5,815	2.9	7,417
2+	5.5	7,415	11.1	7,289	8.0	14,704
Number of sexual partners in the 12 months before the survey						
0	5.1	1,382	10.2	3,177	8.4	4,559
1	4.4	5,182	7.2	9,156	6.1	14,338
2+	5.5	2,559	11.6	542	6.5	3,101
Condom use at last sexual intercourse in the 12 months before the survey						
Used condom	5.4	1,240	12.1	934	7.9	2,174
Did not use condom	4.7	6,497	6.9	8,740	5.9	15,237
No sexual intercourse in the 12 months before the survey	5.1	1,382	10.2	3,177	8.4	4,559
Total 15-24 (years)	0.8	3,785	2.9	5,095	1.8	8,880
Total 15-49 (years)	3.8	8,641	7.1	12,275	5.5	20,916
Total 50+ (years)	7.5	1,935	7.7	2,628	7.6	4,563
Total 15+ (years)	4.3	10,576	7.2	14,903	5.8	25,479

12.4 SEX BEFORE THE AGE OF 15 YEARS AMONG YOUNG PEOPLE

Among young people, 17.0% of the young men aged 15-24 years and 8.3% of the young women aged 15-24 years said they had had an early sexual debut. The proportion of young men aged 15-24 years living in rural areas or urban settings who reported early sexual debut was similar, but among young women aged 15-24 years, a higher proportion who lived in rural areas reported early sexual debut than in urban settings, 9.2% (95% CI: 7.9-10.4%*) and 6.5% (95 CI: 5.3%-7.8%*), respectively.

For adolescent girls and young women (AGYW), more education was effective in the prevention of early sexual debut. Only 1.1% (95% CI: 0.0%-2.4%*) of young women aged 15-24 years who had more than a secondary education, 4.1% (95% CI: 3.1%-5.1%*) of those who only attended secondary school, 11.7% (95% CI: 10.3%-13.2%*) who only had a primary education, and 18.0% (95% CI: 9.7%-26.2%*) with no education reported early sexual debut (Note that wealth [which is often associated with education] also prevented early sexual debut somewhat).

The protective effect of education among adolescent boys and young men was not as pronounced, although early sexual debut ranged from 12.2% of young men aged 15-24 years who had attended more than secondary school up to 19.2% among those who had only attended primary school.

There was also marked regional variation in self-reported early sexual debut, ranging from 3.7% in Northeast Karamoja up to 15.2% in East Central among young women aged 15-24 years; and from 11.0% in Northeast Karamoja up to 27.1% in Mid Eastern among young men aged 15-24 years.

Table 12.4 Sex before the age of 15 years

Percentage of young people aged 15-24 years who reported that they had sexual intercourse before the age of 15 years, by sex and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Men		Women		Total	
	Percentage who had sex before the age of 15 years	Number	Percentage who had sex before the age of 15 years	Number	Percentage who had sex before the age of 15 years	Number
Age (years)						
15-19	18.8	2,110	7.4	2,541	13.1	4,651
20-24	14.7	1,707	9.3	2,574	11.9	4,281
Residence						
Urban	15.7	1,154	6.5	1,721	10.8	2,875
Rural	17.6	2,663	9.2	3,394	13.5	6,057
Region						
Central 1: South Buganda	13.8	402	5.1	565	9.2	967
Central 2: North Buganda	17.4	364	6.5	424	12.2	788
East Central	21.4	258	15.2	294	18.5	552
Kampala	11.5	329	4.7	500	7.9	829
Mid Eastern	27.1	292	13.3	363	20.3	655
Mid North	12.4	406	6.1	527	9.3	933
Mid Western	23.0	352	11.0	409	17.3	761
Northeast: Karamoja	11.0	219	3.7	418	6.6	637
Northeast: Teso	16.3	363	9.7	484	12.9	847

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

Table 12.4 Sex before the age of 15 years (continued)

Percentage of young people aged 15-24 years who reported that they had sexual intercourse before the age of 15 years, by sex and selected demographic characteristics, UPHIA 2020-2021						
South Western	11.2	398	4.2	513	7.6	911
West Nile	18.4	434	12.0	618	15.0	1,052
Marital status						
Never married	16.5	3,042	5.4	2,715	11.9	5,757
Married or living together	17.8	597	11.5	1,968	13.3	2,565
Divorced or separated	25.2	170	13.8	419	17.8	589
Widowed	*	0	*	7	*	7
Education						
No education	16.0	90	18.0	231	17.2	321
Primary	19.2	2,027	11.7	2,771	15.4	4,798
Secondary	15.0	1,481	4.1	1,834	9.5	3,315
More than secondary	12.2	216	1.1	279	6.7	495
Wealth quintile						
Lowest	16.1	1,116	10.0	1,527	13.1	2,643
Second	20.4	768	7.7	875	14.5	1,643
Middle	18.2	742	12.3	907	15.3	1,649
Fourth	16.3	611	5.9	803	11.1	1,414
Highest	13.0	578	5.0	1,001	8.4	1,579
Total 15-24 (years)	17.0	3,817	8.3	5,115	12.6	8,932

* Estimates based on a denominator less than 25 have been suppressed.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

12.5 CONDOM USE AT LAST SEX WITH A NONMARITAL, NONCOHABITATING PARTNER AMONG ADULTS WHO HAD SEX IN THE 12 MONTHS BEFORE THE SURVEY

Among adults aged 15 years and older, 37.0% reported that they had had sex with a nonmarital, noncohabitating partner, 28.8% among women and 45.4% among men. Among these, 31.8% (24.9% of women and 36.4% of men) reported that they had used a condom the last time they had sex with such a partner.

By residence, 34.5% of adults living in rural areas and 42.0% in urban settings reported sex with a nonmarital, noncohabitating partner, and among these, 28.7% living in rural areas and 37.0% living in urban settings reported condom use at last sex with such a partner. By region, the proportion that reported sex with a nonmarital, noncohabitating partner was 12.2% in Northeast Karamoja, but ranged from 31.8% in Mid North to 47.1% in Kampala, while condom used with such a partner ranged from 20.8% in Mid Western up to 43.6% in Mid North.

By 5-year age groups, the proportion reporting condom use with a nonmarital, noncohabitating partner generally decreased with increasing age, from 41.4% among those aged 15-19 years down to 11.4% among those aged 65 years and older. Although only 21.5% of men who were married or living with their partner reported sex with a nonmarital or noncohabitating partner, only 27.9% reported using a condom the last time they had sex with such a partner.

Sex with nonmarital or noncohabitating partner varied by education, ranging from 21.0% among those with no formal education to 44.8% among those with secondary education. Condom use with such a partner also ranged from 15.6% among those with no formal education to 39.9% among those with more than secondary education. By wealth, sex with nonmarital or noncohabitating partner ranged from 30.1% among those in the lowest wealth quintile to 41.7% among those in the highest quintile, while condom use ranged from 28.2% among those in the second lowest quintile to 36.5% in the highest quintile.

Table 12.5.A Condom use at last sex with a nonmarital, noncohabitating partner: Men

Among men aged 15 years and older, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among men who reported having sex in the 12 months before the survey		Among men who reported having sex with a nonmarital, noncohabitating partner	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the 12 months before the survey[1]	Number	Percentage who reported using a condom the last time they had sex with a such a partner[2]	Number
Age (years)				
15-19	95.4	693	43.1	655
20-24	72.6	1,317	40.8	896
25-29	44.4	1,189	37.6	488
30-34	34.6	1,003	28.9	308
35-39	28.5	857	30.7	225
40-44	23.9	739	28.7	157
45-49	20.7	605	21.3	114
50-54	23.7	533	24.3	111
55-59	21.0	335	18.0	65
60-64	18.5	258	(13.6)	43
65+	16.7	381	9.1	60
Residence				
Urban	48.6	2,362	44.7	1,088
Rural	43.9	5,548	32.0	2,034
Region				
Central 1: South Buganda	46.5	846	39.0	364
Central 2: North Buganda	52.5	742	43.4	364
East Central	51.3	570	37.7	264
Kampala	53.7	594	47.6	306
Mid Eastern	46.5	698	25.9	287
Mid North	39.4	741	49.2	262
Mid Western	46.7	757	23.2	321
Northeast: Karamoja	16.9	545	42.9	83
Northeast: Teso	39.0	688	35.9	241
South Western	38.4	968	24.0	340
West Nile	42.3	761	43.7	290
Marital status				
Never married	96.6	1,609	44.6	1,541
Married or living together	21.5	5,671	27.9	1,016
Divorced or separated	92.3	587	26.4	530
Widowed	(80.4)	35	(12.1)	27
Education				
No education	27.2	561	16.8	99
Primary	43.3	4,068	31.6	1,513
Secondary	52.7	2,327	41.8	1,125
More than secondary	42.1	952	43.7	384

Table 12.5.A Condom use at last sex with a nonmarital, noncohabitating partner: Men (continued)

Among men aged 15 years and older, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among men who reported having sex in the 12 months before the survey		Among men who reported having sex with a nonmarital, noncohabitating partner	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the 12 months before the survey[1]	Number	Percentage who reported using a condom the last time they had sex with a such a partner[2]	Number
Wealth quintile				
Lowest	38.1	2,193	34.7	672
Second	45.0	1,607	30.6	628
Middle	48.3	1,606	32.3	676
Fourth	48.0	1,288	39.9	576
Highest	47.7	1,214	46.3	567
Total 15-24 (years)	80.7	2,010	41.8	1,551
Total 15-49 (years)	49.7	6,403	37.6	2,843
Total 50+ (years)	20.5	1,507	18.1	279
Total 15+ (years)	45.4	7,910	36.4	3,122

[1] For individuals with more than three partners, having sex with a nonmarital noncohabitating partner is determined using information about the last three partners.
[2] Relates to Global AIDS Monitoring indicator 2021 3.18: Condom use at last high-risk sex.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 12.5.B Condom use at last sex with a nonmarital, noncohabitating partner: Women

Among women aged 15 years and older, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among women who reported having sex in the 12 months before the survey		Among women who reported having sex with a nonmarital, noncohabitating partner in the 12 months before the survey	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the 12 months before the survey[1]	Number	Percentage who reported using a condom the last time they had sex with such a partner[2]	Number
Age (years)				
15-19	63.1	952	39.0	571
20-24	34.1	2,126	27.4	678
25-29	22.6	1,841	17.8	394
30-34	22.0	1,412	18.1	277
35-39	23.5	1,244	17.4	269
40-44	22.6	824	15.7	169
45-49	18.7	622	9.7	106
50-54	16.1	360	7.1	54
55-59	10.9	242	(6.4)	25
60-64	6.7	135	*	7
65+	7.2	129	*	7
Residence				
Urban	36.0	3,227	27.6	1,100
Rural	25.0	6,660	22.9	1,457

Table 12.5.B Condom use at last sex with a nonmarital, noncohabitating partner: Women (continued)

Among women aged 15 years and older, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among women who reported having sex in the 12 months before the survey		Among women who reported having sex with a nonmarital, noncohabitating partner in the 12 months before the survey	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the 12 months before the survey[1]	Number	Percentage who reported using a condom the last time they had sex with such a partner[2]	Number
Region				
Central 1: South Buganda	31.8	1,128	27.3	347
Central 2: North Buganda	32.2	813	25.1	251
East Central	28.9	653	21.3	176
Kampala	40.6	809	28.1	319
Mid Eastern	26.7	842	22.5	211
Mid North	23.6	819	33.4	178
Mid Western	29.3	901	16.9	253
Northeast: Karamoja	8.9	926	16.2	73
Northeast: Teso	28.7	799	23.7	217
South Western	26.4	1,270	19.7	320
West Nile	23.8	927	39.5	212
Marital status				
Never married	90.1	1,115	36.9	980
Married or living together	8.7	7,552	15.6	604
Divorced or separated	83.6	1,045	18.1	848
Widowed	78.2	160	12.4	115
Education				
No education	17.9	1,411	14.6	178
Primary	26.3	5,315	22.0	1,290
Secondary	35.9	2,430	28.8	843
More than secondary	33.4	725	32.9	245
Wealth quintile				
Lowest	21.9	2,785	26.0	499
Second	24.7	1,859	24.2	424
Middle	27.7	1,852	21.2	473
Fourth	33.8	1,614	27.5	524
Highest	36.1	1,775	25.7	636
Total 15-24 (years)	44.3	3,078	33.2	1,249
Total 15-49 (years)	30.1	9,021	25.5	2,464
Total 50+ (years)	12.0	866	8.3	93
Total 15+ (years)	28.8	9,887	24.9	2,557

[1] For individuals with more than three partners, having sex with a nonmarital noncohabitating partner is determined using information about the last three partners.
[2] Relates to Global AIDS Monitoring indicator 2021 3.18: Condom use at last high-risk sex.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
* Estimates based on a denominator less than 25 have been suppressed.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Table 12.5.C Condom use at last sex with a nonmarital, noncohabitating partner: Total

Among adults aged 15 years and older, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among adults who reported having sex in the 12 months before the survey		Among adults who reported having sex with a nonmarital, noncohabitating partner in the 12 months before the survey	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the 12 months before the survey[1]	Number	Percentage who reported using a condom the last time they had sex with a such a partner[2]	Number
Age (years)				
15-19	78.4	1,645	41.4	1,226
20-24	52.2	3,443	36.1	1,574
25-29	32.6	3,030	30.0	882
30-34	27.8	2,415	24.2	585
35-39	25.9	2,101	24.4	494
40-44	23.3	1,563	22.4	326
45-49	19.8	1,227	16.2	220
50-54	20.8	893	19.0	165
55-59	17.2	577	15.1	90
60-64	14.8	393	12.1	50
65+	14.7	510	11.4	67
Residence				
Urban	42.0	5,589	37.0	2,188
Rural	34.5	12,208	28.7	3,491
Region				
Central 1: South Buganda	38.8	1,974	33.9	711
Central 2: North Buganda	42.8	1,555	36.7	615
East Central	40.4	1,223	31.9	440
Kampala	47.1	1,403	39.1	625
Mid Eastern	36.6	1,540	24.6	498
Mid North	31.8	1,560	43.6	440
Mid Western	38.1	1,658	20.8	574
Northeast: Karamoja	12.2	1,471	31.7	156
Northeast: Teso	33.9	1,487	30.8	458
South Western	32.0	2,238	22.1	660
West Nile	33.0	1,688	42.1	502
Marital status				
Never married	94.3	2,724	42.0	2,521
Married or living together	14.8	13,223	23.9	1,620
Divorced or separated	87.1	1,632	21.7	1,378
Widowed	78.6	195	12.3	142
Education				
No education	21.0	1,972	15.6	277
Primary	34.5	9,383	27.7	2,803
Secondary	44.8	4,757	36.9	1,968
More than secondary	38.7	1,677	39.9	629

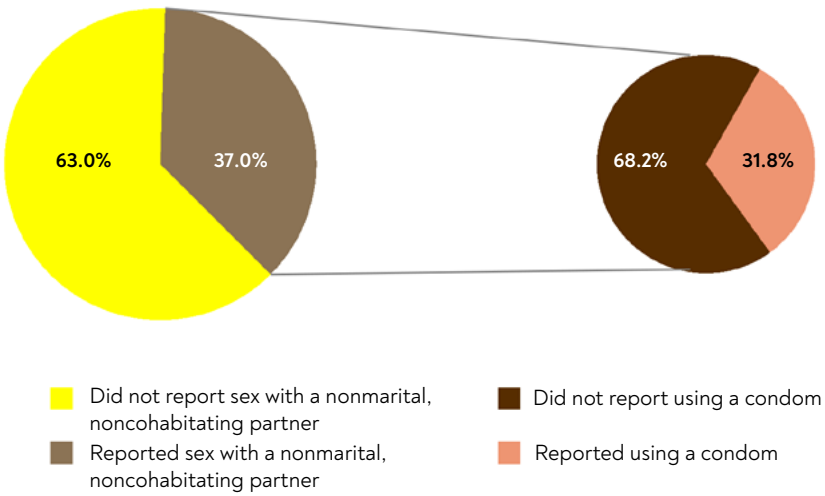
Table 12.5.C Condom use at last sex with a nonmarital, noncohabitating partner: Total (continued)

Among adults aged 15 years and older, self-reported condom use with nonmarital, noncohabitating partners in the 12 months before the survey, by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among adults who reported having sex in the 12 months before the survey		Among adults who reported having sex with a nonmarital, noncohabitating partner in the 12 months before the survey	
	Percentage who reported having sex with a nonmarital, noncohabitating partner in the 12 months before the survey[1]	Number	Percentage who reported using a condom the last time they had sex with a such a partner[2]	Number
Wealth quintile				
Lowest	30.1	4,978	31.5	1,171
Second	35.1	3,466	28.2	1,052
Middle	38.2	3,458	28.3	1,149
Fourth	40.8	2,900	34.6	1,100
Highest	41.5	2,989	36.5	1,203
Total 15-24 (years)	61.4	5,088	38.5	2,800
Total 15-49 (years)	39.4	15,424	32.7	5,307
Total 50+ (years)	17.7	2,373	15.8	372
Total 15+ (years)	37.0	17,797	31.8	5,679

[1] For individuals with more than three partners, having sex with a nonmarital noncohabitating partner is determined using information about the last three partners.
[2] Relates to Global AIDS Monitoring indicator 2021 3.18: Condom use at last high-risk sex.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

Figure 12.5
Self-reported sex and condom use among adults aged 15 years and older at last sex with a nonmarital, noncohabitating partner in the 12 months before the survey, UPHIA 2020-2021



12.6 MALE CIRCUMCISION

Among men aged 15 years and older, 32.4% reported they had a medical circumcision, 21.7% had a nonmedical circumcision, and 45.9% were uncircumcised. Among young men aged 15-24 years, 42.2% had a medical circumcision and 20.8% had a nonmedical circumcision (Table 12.6).

Of those who tested HIV positive in the survey, 64.9% (95% CI: 59.6%-70.2%*) were uncircumcised, which was a higher proportion than among those who tested HIV negative or who did not get tested in the survey, at 45.1% (95% CI: 43.0%-47.2%*) and 44.2% (95% CI: 35.4%-53.0%*), respectively (Table 12.6 and Figure 12.6). The uptake of medical circumcision generally increased with increased wealth and education, ranging from 25.4% in the lowest wealth quintile, up to 44.3% in the highest, and from 17.3% among those with no formal education up to 42.1% among those with some post-secondary education (Table 12.6).

By region, the uptake of medical circumcision ranged from 17.0% in Northeast: Karamoja (overall, 79.5% were uncircumcised) to 47.2% in Kampala (where 26.7% were uncircumcised). In addition to Karamoja, substantial circumcision gaps exist in Mid North, where 75.9% remained uncircumcised, Northeast: Teso, where 76.4% were uncircumcised, and South Western, where 63.3 reported they were uncircumcised.

Table 12.6 Male circumcision

Percent distribution of men aged 15 years and older by self-reported circumcision status, by result of UPHIA HIV test and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Circumcised[1]		Uncircumcised	Total	Number
	Medical circumcision	Nonmedical circumcision			
Age (years)					
15-19	42.0	19.5	38.5	100.0	2,136
20-24	42.6	22.4	35.1	100.0	1,744
25-29	37.3	20.4	42.3	100.0	1,363
30-34	32.2	26.0	41.8	100.0	1,124
35-39	26.2	21.7	52.1	100.0	952
40-44	25.0	22.7	52.3	100.0	825
45-49	19.2	21.8	58.9	100.0	700
50-54	13.4	21.6	65.0	100.0	618
55-59	11.7	22.3	66.0	100.0	387
60-64	11.2	24.5	64.2	100.0	321
65+	6.8	21.1	72.2	100.0	651
Result of UPHIA HIV test					
HIV positive	20.2	14.9	64.9	100.0	467
HIV negative	33.0	22.0	45.1	100.0	10,095
Not tested	32.3	23.5	44.2	100.0	259
Residence					
Urban	39.8	25.1	35.2	100.0	3,233
Rural	28.9	20.1	50.9	100.0	7,588

* In this report, 95% CIs are presented whenever a comparison is made between two estimates to show that the intervals do not overlap. Note that these CIs are not always available in the table. See Chapter 2, section 5 for more information.

Table 12.6 Male circumcision (continued)

Percent distribution of men aged 15 years and older by self-reported circumcision status, by result of UPHIA HIV test and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Circumcised[1]		Uncircumcised	Total	Number
	Medical circumcision	Nonmedical circumcision			
Region					
Central 1: South Buganda	41.4	21.7	36.9	100.0	1,190
Central 2: North Buganda	30.6	24.1	45.3	100.0	996
East Central	29.1	37.0	33.9	100.0	717
Kampala	47.2	26.1	26.7	100.0	833
Mid Eastern	24.6	46.6	28.8	100.0	863
Mid North	22.9	1.3	75.9	100.0	1,058
Mid Western	38.3	27.3	34.4	100.0	981
Northeast: Karamoja	17.0	3.6	79.5	100.0	793
Northeast: Teso	19.2	4.4	76.4	100.0	934
South Western	29.8	6.9	63.3	100.0	1,328
West Nile	38.1	23.0	38.9	100.0	1,128
Marital status					
Never married	41.8	19.5	38.6	100.0	3,617
Married or living together	26.4	22.8	50.8	100.0	6,159
Divorced or separated	28.4	25.9	45.7	100.0	892
Widowed	8.5	15.2	76.3	100.0	139
Education					
No education	17.3	24.1	58.6	100.0	772
Primary	27.5	21.5	51.0	100.0	5,633
Secondary	39.0	23.3	37.8	100.0	3,271
More than secondary	42.1	16.8	41.0	100.0	1,141
Wealth quintile					
Lowest	25.4	14.6	60.0	100.0	3,100
Second	29.0	21.7	49.3	100.0	2,183
Middle	28.7	23.8	47.6	100.0	2,156
Fourth	37.8	24.7	37.5	100.0	1,754
Highest	44.3	24.7	31.0	100.0	1,624
Total 15-24 (years)	42.2	20.8	37.0	100.0	3,880
Total 15-49 (years)	35.8	21.7	42.5	100.0	8,844
Total 50+ (years)	10.6	22.1	67.3	100.0	1,977
Total 15+ (years)	32.4	21.7	45.9	100.0	10,821

[1] Relates to Global AIDS Monitoring indicator 2021 3.16: Prevalence of male circumcision; and PEPFAR indicator VMMC_TOTALCIRC NAT / SUBNAT: Total number of men ever circumcised.

Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

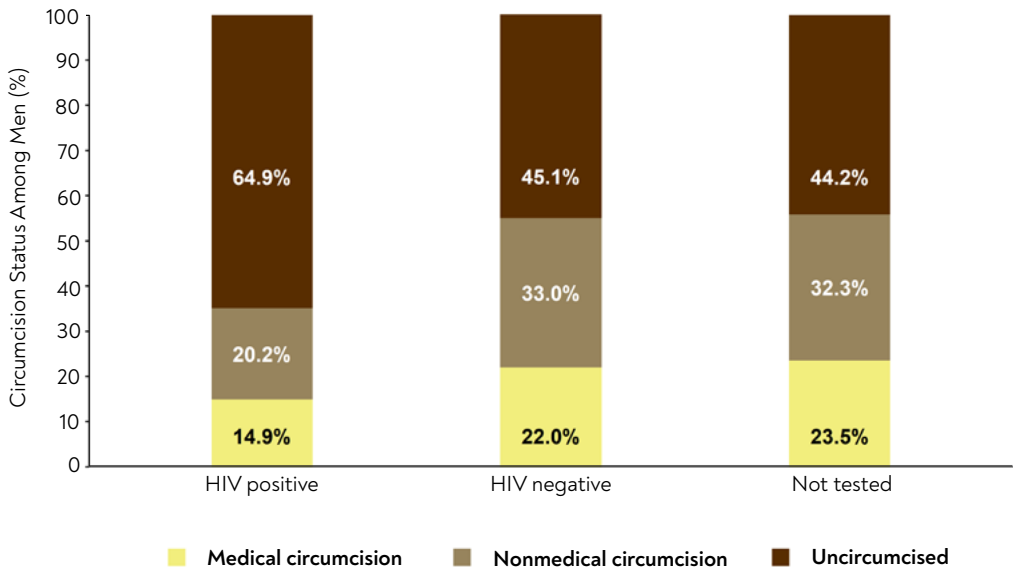


Figure 12.6
Self-reported male circumcision status among men aged 15 years and older, by survey HIV test result, UPHIA 2020-2021

12.7 GAPS AND UNMET NEEDS

- A higher proportion of men are reporting early sexual debut than women, and yet it is the women who have an early sexual debut who are bearing the greater burden in terms of HIV prevalence.
- Less than half of adults who had sex within the 12 months before the survey reported using condoms the last time they had sex with a nonmarital, noncohabitating partner. Although only one out of five married men are reporting sex with a casual partner, little more than a quarter of those who are having sex with casual sex partners reported using condoms the last time they had sex with such casual partners, suggesting that they may be putting the women they are married to or living with at risk.
- Uptake of medical male circumcision remains below national targets, particularly in rural areas and in the regions of Northeast: Karamoja, Northeast: Teso, Mid North, and South Western, where more than 60% of men remain uncircumcised.

12.8 REFERENCES

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13. TUBERCULOSIS, CERVICAL CANCER, AND CHRONIC CONDITIONS

13.1 KEY FINDINGS

- Among women aged 15 years and older living with HIV in Uganda, only 23.6% reported that they had ever been screened for cervical cancer. Among these, 3.7% reported that they had received an abnormal result.
- According to adults who reported that they had a tuberculosis (TB)-related visit to a health facility in the 12 months before the survey, 55.8% said they were tested for HIV at the visit, 10.8% already knew they were HIV positive, while 33.5% reported that they did not know their status and were not tested.
- Among adults living with HIV in the survey, 60.1% reported that they had been screened for TB at their last health facility visit: 65.1% among men, and 57.7% among women.

13.2 BACKGROUND

People living with HIV are at a heightened risk for acquiring other diseases such as cervical cancer among women, and TB. Common noncommunicable chronic health conditions can also complicate their clinical care.

Women living with HIV are at greater risk of developing cervical cancer because their weakened immune systems are not able to clear human papillomavirus (HPV) infections. WHO recommends starting regular HPV screening and treatment in women living with HIV starting at the age of 25 years.[1] UPHIA 2020-2021 provides population-based rates of screening unavailable from routine clinic data. This chapter presents cervical cancer screening rates by age and sociodemographic characteristics.

With changes in lifestyle and diet, noncommunicable health conditions, including diabetes, hypertension, heart disease, kidney disease, cancers, lung diseases, and depression or other mental health issues have become increasingly important causes of illness and mortality in many communities in low and middle income countries.[2] While it is not clear whether these conditions are more common among people living with HIV, there are some data to suggest that people living with HIV may develop comorbidities at younger ages and may be at higher risk of developing multiple chronic comorbidities.[3] Regardless, as people live longer with HIV on treatment, their risk of comorbidities has increased; and their care is more likely to require prevention and/or management of chronic health comorbidities.[4] In order to inform national program planning, UPHIA 2020-2021 asked both HIV-negative and HIV-positive participants whether they have been told by a doctor or health worker that they have a chronic health condition.

Finally, TB remains the leading cause of death for people living with HIV in Africa.[5] HIV infection increases a person's susceptibility to TB infection and dramatically increases the risk of progression of latent TB to active disease.[6, 7] WHO estimates that there were 6,200 (95% CI 3,800-9,100) TB-related deaths among HIV-positive persons in Uganda in 2021.

Information regarding health-seeking behavior and access to services among people living with HIV, particularly for TB health services, can help the HIV program decrease the impact of TB on people living with HIV. This chapter also describes the self-reported uptake of TB services (TB clinic attendance, TB diagnosis, and TB treatment initiation) among people living with HIV in Uganda. In addition, this chapter presents data on the performance of two of the key collaborative TB/HIV activities recommended by WHO: (1) HIV testing of all of those visiting a health facility for TB-related services clinic who are not already aware of their HIV-positive status; and (2) TB symptom screening of all people living with HIV at every HIV clinic visit.[8]

13.3 CERVICAL CANCER SCREENING AMONG HIV-POSITIVE WOMEN

Among women aged 15 years and older living with HIV in Uganda, only 23.6% reported that they had ever been screened for cervical cancer. Among these, 3.7% reported that they had received an abnormal result (Table 13.3).

Among the age group of women living with HIV that was previously prioritized by WHO for screening (ages 30-49 years)*, 27.4% reported ever receiving cervical cancer screening, and among these 4.1% reported that they received an abnormal result. It should be noted that those likely to have an abnormal result may be more likely to present for screening (Table 13.3 and Figure 13.3).

Among women living with HIV aged 15 years and older, there were variations and disparities in the self-reported receipt of cervical cancer screening services by residence, health zone and wealth quintile. For instance, a lower percentage of women reported receipt of screening in rural areas than in urban settings: 17.9% (95% CI: 14.8%-21.1%†) versus 31.2% (95% CI: 26.9%-35.5%†). Among those women who screened, 5.4% in the rural areas, and 2.4% in urban settings reported receiving an abnormal result. The reported receipt of cervical cancer screening varied widely by region, from 6.5% in the Mid Eastern to 33.2% in the Mid North region.

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* Note that in the recent edition of its guidance, WHO updated their recommendation to starting regular cervical cancer screening among women living with HIV at the age of 25 years. WHO guideline for screening and treatment of cervical pre-cancer lesions for cervical cancer prevention, second edition. Geneva: World Health Organization; 2021. License: CC BY-NC-SA 3.0 IGO.

† This estimate was based on a denominator between 25 and 49 and should be interpreted with caution.

By wealth, receipt of cervical cancer screening ranged from 17.3% in the lowest quintile up to 30.0% in the fourth (second highest) quintile. By education, receipt of cervical cancer screening ranged from 18.0% among those with no education up to 29.2%* among those with more than a secondary education.

Table 13.3 Cervical cancer screening among women living with HIV

Among HIV-positive women aged 15 years and older, percentage who reported they had ever received a cervical cancer screening test by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among HIV-positive women		Among HIV-positive women who reported they had received a cervical cancer screening test	
	Percentage who reported they had ever received a cervical cancer screening test	Number	Percentage with an abnormal result	Number
Age (years)				
15-19	(8.4)	37	*	3
20-24	6.8	96	*	6
25-29	19.9	145	*	24
30-34	21.7	161	(2.6)	34
35-39	24.9	166	(3.2)	41
40-44	30.3	114	(2.3)	32
45-49	38.3	114	(8.0)	42
50-54	38.0	83	(0.0)	30
55-59	(25.5)	47	*	14
60-64	*	22	*	2
65+	(25.2)	28	*	6
Residence				
Urban	31.2	437	2.4	129
Rural	17.9	576	5.4	105
Region				
Central 1: South Buganda	27.3	174	(4.2)	48
Central 2: North Buganda	20.0	93	*	18
East Central	15.5	58	*	9
Kampala	29.6	112	(3.1)	31
Mid Eastern	6.5	67	*	3
Mid North	33.2	119	(6.5)	40
Mid Western	21.4	87	*	17
Northeast: Karamoja	(18.0)	36	*	6
Northeast: Teso	30.7	65	*	18
South Western	24.1	141	(2.7)	35
West Nile	14.2	61	*	9
Marital status				
Never married	14.6	94	*	13
Married or living together	23.5	463	1.0	110
Divorced or separated	23.9	282	7.2	62
Widowed	29.7	173	(3.7)	49

* This estimate was based on a denominator between 25 and 49 and should be interpreted with caution.

Table 13.3 Cervical cancer screening among women living with HIV (continued)

Among HIV-positive women aged 15 years and older, percentage who reported they had ever received a cervical cancer screening test by selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among HIV-positive women		Among HIV-positive women who reported they had received a cervical cancer screening test	
	Percentage who reported they had ever received a cervical cancer screening test	Number	Percentage with an abnormal result	Number
Education				
No education	18.0	151	(3.7)	27
Primary	23.9	595	3.8	141
Secondary	24.5	221	4.4	51
More than secondary	(29.2)	45	*	14
Wealth quintile				
Lowest	17.3	206	(3.1)	38
Second	18.1	173	(8.0)	31
Middle	20.6	201	(8.0)	41
Fourth	30.0	218	1.0	67
Highest	28.9	215	2.0	57
Total 15-24 (years)	7.3	133	*	9
Total 15-49 (years)	22.5	833	4.1	182
Total 30-49 (years)	27.4	555	4.1	149
Total 50+ (years)	29.8	180	2.1	52
Total 15+ (years)	23.6	1,013	3.7	234

[1] Relates to Global AIDS Monitoring indicator 2021 10.8: Cervical cancer screening among women living with HIV; and PEPFAR indicator CXCA_SCRN NAT/SUBNAT: Percentage of HIV-positive women on antiretroviral therapy screened for cervical cancer.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.
* Estimates based on a denominator less than 25 have been suppressed.
Note: Education categories refer to the highest level of education attended, whether or not that level was completed.

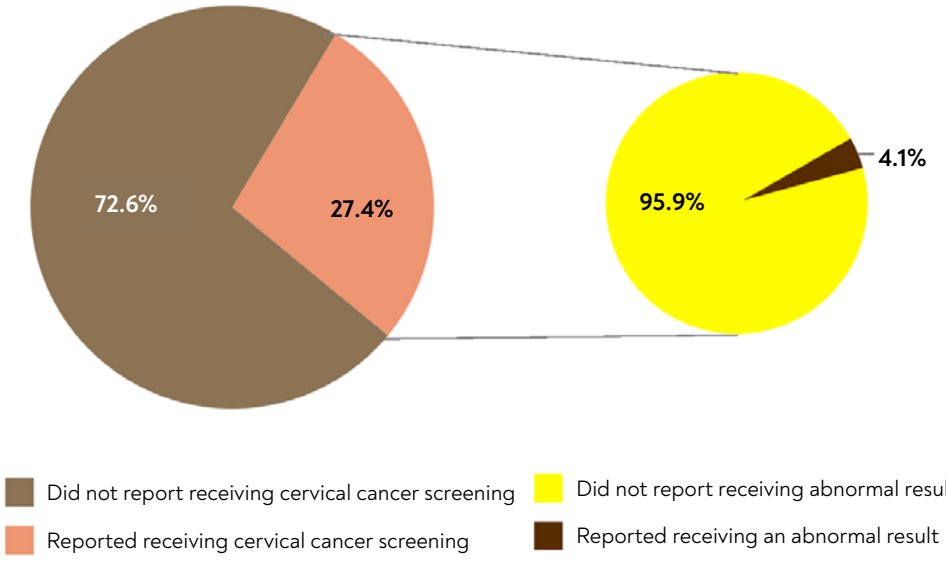


Figure 13.3 Self-reported cervical cancer screening history and abnormal results among women living with HIV (ages 30-49 years), UPHIA 2020-2021

13.4 CHRONIC HEALTH CONDITIONS

This section provides estimates of chronic health conditions that Ugandan adults aged 15 years and older, both HIV negative and those living with HIV, recall receiving from a healthcare worker—and thus may not match actual disease burden or programmatic data. In addition, because of the small denominators, it is difficult to make comparisons between subgroups with confidence.

Among HIV-negative Ugandan adults, 1.7% reported they have been told by a healthcare professional that they had high blood sugar or diabetes, while 2.3% of those living with HIV reported receiving such a diagnosis. A diagnosis of high blood pressure or hypertension was reported by 5.9% of HIV-negative adults, and 7.3% of adults living with HIV. Whether HIV-negative or living with HIV, 0.9% reported being told that they had heart disease or a chronic heart condition. Similarly, 0.8% of HIV-negative adults and 0.7% of adults living with HIV reported they were told that they had kidney disease. A diagnosis of cancer or tumor was reportedly received by 0.3% of HIV-negative adults, and 0.7% of adults living with HIV. Among HIV-negative adults, 0.6% reported being told they had lung disease or a chronic lung condition, while 1.1% of adults living with HIV had been told that. Finally, 0.6% of HIV-negative adults, and 1.0% of people living with HIV said they had been told by a healthcare professional that they had depression or a mental health condition.

Table 13.4 Chronic health conditions among HIV-positive and HIV-negative individuals

Among HIV-positive and HIV-negative adults aged 15 years and older, percentage indicating that they have ever been told by a doctor or health worker that they have chronic health conditions, by self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral [ARV] in blood), UPHIA 2020-2021

Chronic health conditions	HIV negative		HIV positive						Total	
			Unaware of HIV status[1]		Aware of HIV status and not on ART[1]		Aware of HIV status and on ART[1]			
	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number
High blood sugar or diabetes										
Yes	1.7	415	0.2	1	(5.1)	3	2.7	30	2.3	34
No	98.3	22,952	99.8	248	(94.9)	45	97.3	1,117	97.7	1,413
High blood pressure or hypertension										
Yes	5.9	1,466	6.3	16	(6.7)	3	7.6	90	7.3	109
No	94.1	21,901	93.7	233	(93.3)	45	92.4	1,057	92.7	1,338
Heart disease or chronic heart condition										
Yes	0.9	242	1.0	4	(0.0)	0	0.9	13	0.9	17
No	99.1	23,125	99.0	245	(100.0)	48	99.1	1,134	99.1	1,430
Kidney disease										
Yes	0.8	249	0.0	0	(0.0)	0	0.9	11	0.7	11
No	99.2	23,118	100.0	249	(100.0)	48	99.1	1,136	99.3	1,436
Cancer or tumor										
Yes	0.3	78	0.8	1	(0.0)	0	0.7	9	0.7	10
No	99.7	23,289	99.2	248	(100.0)	48	99.3	1,138	99.3	1,437

Table 13.4 Chronic health conditions among HIV-positive and HIV-negative individuals (continued)

Among HIV-positive and HIV-negative adults aged 15 years and older, percentage indicating that they have ever been told by a doctor or health worker that they have chronic health conditions, by self-reported HIV status and antiretroviral therapy (ART) use (adjusted by detection of an antiretroviral [ARV] in blood), UPHIA 2020-2021

Chronic health conditions	HIV negative		HIV positive						Total	
			Unaware of HIV status[1]		Aware of HIV status and not on ART[1]		Aware of HIV status and on ART[1]			
	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage	Number
Lung disease or chronic lung condition										
Yes	0.6	143	0.8	2	(0.0)	0	1.3	12	1.1	14
No	99.4	23,224	99.2	247	(100.0)	48	98.7	1,135	98.9	1,433
Depression or mental health condition										
Yes	0.6	161	0.8	3	(2.5)	1	0.9	13	1.0	17
No	99.4	23,206	99.2	246	(97.5)	47	99.1	1,134	99.0	1,430
Total 15+ (years)	100.0	23,367	100.0	249	(100.0)	48	100.0	1,147	100.0	1,447

[1] Both awareness of HIV-positive status and on treatment status were based upon self-report or having a detectable ARV in the blood.
( ) Estimates based on a denominator of 25-49 are included in parentheses and should be interpreted with caution.

13.5 TUBERCULOSIS

This section describes the receipt and utilization of TB/HIV services as recalled by Ugandan adults—and thus may not match programmatic data.

According to adults who reported that they had a TB-related visit to a health facility in the 12 months before the survey, 55.8% said they were tested for HIV at the visit, 10.8% already knew they were HIV positive, while 33.5% reported that they did not know their status and were not tested: 35.9% among men and 31.6% among women.

Among adults living with HIV, 21.3% reported that they had a TB-related visit to a health facility in the 12 months before the survey. Among those, 17.6% said they received a TB diagnosis, and among those who were diagnosed with TB, 85.6%* said that they were treated for TB during that period.

Among adults living with HIV in the survey, 60.1% reported that they had been screened for TB symptoms at their last health facility visit: 65.1% among men, and 57.7% among women. This is below WHO recommendations that all people living with HIV receive TB symptom screening at every health facility visit.

* This estimate was based on a denominator between 25 and 49 and should be interpreted with caution.

Table 13.5.1 Self-reported tuberculosis receipt of HIV testing in tuberculosis clinics

Among adults aged 15 years and older who reported visiting a health facility for tuberculosis (TB) diagnosis or treatment in the 12 months before the survey, percentage who reported that they were tested for HIV during a TB clinic visit in that period, by sex and self-reported TB diagnosis, UPHIA 2020-2021

Characteristic	Tested for HIV during a TB clinic visit in the 12 months before the survey	Not tested for HIV during a TB clinic visit in the 12 months before the survey		Total	Number
		Already knew they were HIV positive	Did not know their status		
Sex					
Men	57.1	7.0	35.9	100.0	362
Women	54.7	13.7	31.6	100.0	550
TB diagnosis in the 12 months before the survey					
Diagnosed with TB	58.3	13.9	27.8	100.0	130
Not diagnosed with TB	55.4	10.2	34.3	100.0	781
Total 15+ years	55.8	10.8	33.5	100.0	912

Figure 13.5.1
Self-reported receipt of HIV testing among adults aged 15 years and older during a visit to a health facility for tuberculosis diagnosis or treatment in the 12 months before the survey, UPHIA 2020-2021

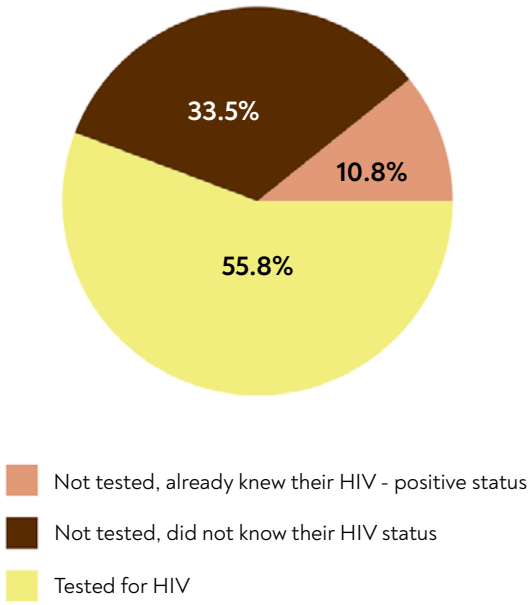


Table 13.5.2 Self-reported tuberculosis clinic attendance and services among adults living with HIV

Among self-reported HIV-positive adults aged 15 years and older, percentage who reported that they had visited a health facility for tuberculosis (TB) diagnosis or treatment in the 12 months before the survey; among those who visited the facility during that period, percentage who were diagnosed with TB; and among those diagnosed with TB in that period, percentage who reported receiving treatment for TB, by sex and selected demographic characteristics, UPHIA 2020-2021

Characteristic	Among HIV-positive adults		Among HIV-positive adults who visited a TB clinic in the 12 months before the survey		Among HIV-positive adults diagnosed with TB in the 12 months before the survey	
	Percentage who visited a TB clinic in the 12 months before the survey	Number	Percentage diagnosed with TB in the 12 months before the survey	Number	Percentage treated for TB in the 12 months before the survey	Number
Age (years)						
15-24	18.3	89	*	14	*	4
25-34	21.5	299	17.1	62	*	10
35-44	21.4	344	19.7	68	*	14
45-54	22.2	289	11.3	62	*	6
55-64	22.2	109	*	21	*	3
65+	(19.0)	47	*	8	*	3
Sex						
Men	22.1	353	27.4	72	*	18
Women	20.9	824	12.6	163	*	22
Residence						
Urban	21.9	485	18.4	99	*	18
Rural	20.9	692	17.1	136	*	22
Region						
Central 1: South Buganda	16.3	117	*	19	*	3
Central 2: North Buganda	24.4	216	14.5	52	*	7
East Central	27.1	105	(10.7)	28	*	3
Kampala	25.8	59	*	15	*	5
Mid Eastern	13.9	62	*	8	*	1
Mid North	16.8	90	*	15	*	2
Mid Western	(9.5)	43	*	4	*	2
Northeast: Karamoja	19.2	141	(24.5)	25	*	6
Northeast: Teso	12.4	67	*	8	*	2
South Western	24.9	109	(6.8)	27	*	2
West Nile	19.7	168	(21.8)	34	*	7
Pregnancy status						
Currently pregnant	(13.7)	42	*	5	*	0
Not currently pregnant	21.6	774	13.0	158	*	22
Total 15-24 (years)	18.3	89	*	14	*	4
Total 15-49 (years)	21.6	900	19.0	182	(86.0)	34
Total 50+ (years)	20.3	277	12.3	53	*	6
Total 15+ (years)	21.3	1,177	17.6	235	(85.6)	40

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

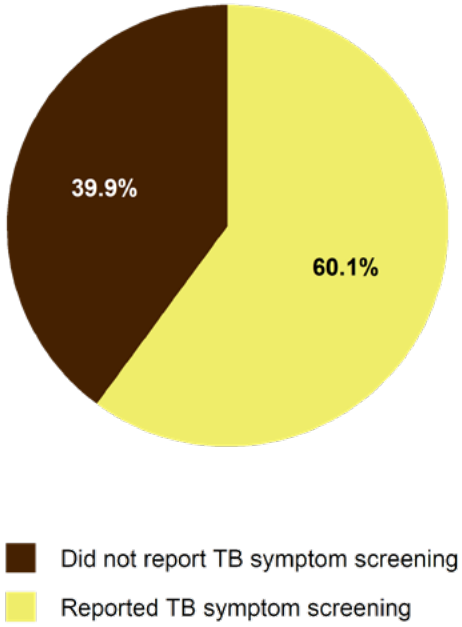
Table 13.5.3 Self-reported tuberculosis symptom screening in HIV clinics

Among self-reported HIV-positive adults aged 15 years and older currently in HIV care, percentage who reported that they were screened for tuberculosis (TB) symptoms during their last HIV-related health facility visit, by sex, UPHIA 2020-2021

Characteristic	Percentage screened for TB symptoms[1]	Number
Sex		
Men	65.1	314
Women	57.7	778
Total 15+ (years)	60.1	1,092

[1] TB symptoms included persistent cough, fever, night sweats, and weight loss.

Figure 13.5.3
Tuberculosis symptom screening at last HIV-related health facility visit among adults living with HIV (ages 15 years and older), based on self-report, UPHIA 2020-2021



Abbreviation: TB, tuberculosis.

13.6 GAPS AND UNMET NEEDS

- The estimates based on the self-reported data on cervical cancer screening, chronic health conditions, and TB do not match programmatic data on these indicators and require further research to understand the discrepancies.
- Less than one out of four women aged 15 years and older living with HIV in Uganda reported they had received cervical cancer screening—and the proportion was particularly low in rural settings.
- There was considerable regional variation in receipt of cervical cancer screening.
- Self-reported uptake of HIV testing among adults when they were visiting a health facility for TB diagnosis or treatment, and receipt of TB screening reported by adults living with HIV in HIV-related visits to health facilities were below global targets and differs from programmatic data, which if accurate, would be particularly worrisome given the high risk of HIV/TB coinfection in Uganda.

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14. DISCUSSION AND CONCLUSIONS

14.1 SUMMARY

UPHIA 2020-2021 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 survey provided critical data on the primary outcomes of HIV incidence, HIV prevalence among adults aged 15 years and older, and VLS among adults living with HIV at national and regional levels. The survey demonstrated that Uganda is still in need of HIV prevention and clinical services with an annual incidence of 0.29% and an HIV prevalence of 5.8% among adults. The survey documented encouraging progress as demonstrated by Uganda's UNAIDS target achievements among people living with HIV, with 80.9% diagnosed, 96.1% of those diagnosed on treatment, and 92.2% of those on treatment with viral suppression. In addition, the prevalence of VLS among adults living with HIV regardless of their knowledge of HIV status or use of ART was 75.4% albeit with substantial regional variation.

14.2 PROGRAMMATIC RESPONSES AND POLICY RECOMMENDATIONS FROM UGANDA'S MINISTRY OF HEALTH

The following are preliminary considerations to inform policy changes, programmatic responses, and suggestions for further analyses, to address specific priority areas in the HIV program.

Challenges and opportunities in the HIV care cascade

Looking at the conditional 95-95-95 cascade, the second 95 target has been achieved, and the third 95 is approaching the target. However, the first 95 remains below the target.

- There is a pronounced need to refine case finding strategies to address gaps in the first 95. Strategies that engage men and young people in HIV testing and case finding are especially needed, such as index testing with assisted partner notification, risk screening with provider-initiated testing, and self-testing. In addition, enhancing our ongoing efforts to identify those who remain unaware of their HIV-status, particularly among marginalized populations, coupled with linkage to care and treatment and combination prevention services to interrupt further transmission. Further studies to establish the potential contribution of hard-to-reach populations to the gap in the first 95 and identification of strategies to bring them into care may be warranted.
- Given the high proportion of young people aged 15-24 years who are unaware of their status, and not on treatment, focus should continue to be placed on programs specifically tailored to adolescents and young adults through effective use of social media, peer-led innovative approaches, and differentiated services integrated into youth-friendly reproductive health services.
- Regional disparities in achieving the UNAIDS targets merit attention. Regions with higher rates of viremia and lower VLS should be prioritized for closing the gaps in the HIV cascade and preventing new infections.

Services for people living with HIV

- The survey identified a high proportion of people living with HIV who did not disclose their status. This calls for closer inspection to identify the reasons for the disparity including the potential contribution of HIV stigma and discrimination.
- Mental health screening and services should be integrated as part of HIV prevention and treatment programs.
- The survey identified that there may be particular populations such as men, young people and those who travel from home for extended periods of time in need of differentiated service delivery including provision of multi-month dispensing of ART.
- The program should continue to expand access to viral load testing. A focus on person-centered services including expansion of HIV treatment literacy services, demand creation, and timely return of viral load results to individuals should be prioritized.
- Based on small numbers, there were observations that those aware of their HIV status but not on ART at the time of the survey were at risk of progression to immunosuppression (a decline in their immune function where they may be more susceptible to life-threatening infections and cancer). Efforts should be made to determine reasons why these individuals are not being effectively linked to treatment.
- The survey identified a substantial proportion of individuals who tested HIV-positive in the survey, but reported no previous diagnosis, living with immunosuppression and advanced HIV. It is unclear whether these individuals were truly unaware or chose to not disclose their status and they may have dropped out of care. Understanding if these are indeed late diagnoses could help lead to more effective case finding interventions, if on the other hand these are related to treatment drop-out, there is need to understand factors related to low retention on ART.

- Those individuals at risk for advanced HIV disease have a heightened risk of developing life-threatening opportunistic infections and AIDS-related mortality. Regardless, efforts should be made to identify and develop services to make sure such individuals receive the specialized treatment, care, and support for advanced HIV disease.
- The survey also identified an aging population living with HIV who need care for common comorbidities associated with aging, integrated with their HIV care.

HIV prevention

- To bring down the high incidence, prevention activities should be intensified with a continued focus on adolescent girls and young women (AGYW). This should include efforts to delay sexual debut, and continued engagement with DREAMS (Determined, Resilient, Empowered, AIDS-free, Mentored, and Safe) and other interventions targeting AGYW. In addition, early identification and treatment of HIV among their male partners will be crucial.
- Given the higher burden of HIV, women living with HIV in different age groups and demographics could benefit from services and support tailored to their needs. Younger women and their families could benefit from comprehensive services to support the wellbeing of their families. Previously married women and widows living with HIV, as well as those living in urban settings may also benefit from services, such as programs that provide them with legal support and safeguards to retain their property, reduce vulnerability, and ensure their social and financial welfare.
- Quality improvement of PMTCT services should be strengthened, particularly in the regions where awareness of HIV status among women during pregnancy was far below national targets. In addition, further analysis is needed to identify the causes for the low viral suppression among women living with HIV who reported being pregnant during the survey, to tailor more effective interventions both to prevent vertical HIV transmission and for the mother's own health.
- The program should reinforce key HIV prevention messages to limit the number of sexual partners and encourage the correct and consistent use of condoms whenever having sex with nonmarital, noncohabitating partners. In addition, the country should scale up prevention interventions such as pre-exposure prophylaxis (PrEP).
- Strategies to increase access to medical circumcision services should be strengthened, particularly in rural areas and regions with very low uptake.

Further research and recommendations for analysis

- Comparison of UPHIA 2020-2021 and UPHIA 2016-2017 data plus other in-country estimates may reveal important trends in incidence and other indicators over time, help to explain discrepancies with programmatic data, and may suggest opportunities to improve program outcomes.
- The survey identified a substantial proportion of people living with HIV who claimed to be unaware of their HIV status and did not have detectable ARVs in their blood with viral loads below 200 copies/mL. Further research is needed to understand the factors associated with this and the implications for use of viral load adjustment to determine treatment status, as well as the impact upon other survey indicators.
- The discrepancies between UPHIA and programmatic data on receipt of TB/HIV, PMTCT, and cervical cancer screening services need to be explained and gaps in delivery addressed.

It is important to note that some findings from UPHIA 2020-2021 were subject to limitations. For instance, the survey was cross-sectional, which limits the ability to evaluate factors over time and attribution of characteristics that occurred prior to the survey. In addition, many outcomes were measured through participants' self-report and may have been subject 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 HIV-positive status. In addition, regarding self-reported service provision such as for TB and cervical cancer related services, findings may be underestimated due to recall bias if participants did not remember receiving such screening or diagnosis. Supplementing self-reported ART status with ARV detection improved these estimates; however, such data were not available for all self-reported outcomes which may be prone to bias. Further limitations include indicators with small numbers and missing data due to nonresponse. This 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.

Nevertheless, UPHIA 2020-2021 has provided valuable data on a wide range of HIV program indicators. MOH encourages public health staff, programmers, epidemiologists, and policy makers to examine these findings for their respective program areas and utilize them to inform program planning.

APPENDICES

APPENDIX A SAMPLE DESIGN AND IMPLEMENTATION

Appendix A provides a high-level overview of sampling and weighting procedures for UPHIA 2020-2021. In-depth details are provided in the UPHIA 2020-2021 Sampling and Weighting Technical Report, which may be found on the PHIA Project website.

A.1 SAMPLE DESIGN

Overview

The sample design for the UPHIA 2020-2021 is a stratified multistage probability sample design, with strata defined by the 11 regions of the country, first-stage sampling units defined by EAs within strata, second-stage sampling units defined by households within EAs, and finally, eligible persons within households. Within each region, the first-stage sampling units (also referred to as PSUs) were selected with probabilities proportionate to the updated number of households in the PSU derived from the 2014 National Population and Housing Census in Uganda.[1] The allocation of the sample PSUs to the 11 regions was made in a manner designed to achieve specified precision levels for (a) national estimate of HIV incidence among adults aged 15-49 years, (b) regional estimates of viral load suppression (VLS) rates among adults living with HIV aged 15-49 years, and (c) national estimate of VLS among HIV-positive young women aged 15-24 years.

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 (ie, equal probability) samples within each region to the extent feasible.

Within the sampled households, all eligible adults, defined as those aged 15 years and older, who were present in the household on the night prior to the interview were included in the study sample for data collection.

Population of Inference

The population of inference for the UPHIA 2020-2021 is comprised of the de facto household population. The de facto population is comprised of individuals who were present in households (ie, slept in the household) on the night prior to the household interview. In contrast, the de jure population is comprised of individuals who are usual residents of the household, irrespective of whether or not they slept in the household on the night prior to the household interview.

UPHIA also allowed individuals 15 years of age and older who were usual residents but not present on the night before the interview (de jure and not de facto) to have their data collected, however these individuals are coded as not eligible for weighting.

Precision Specifications and Assumptions

The following specifications were used to develop the sample design for the UPHIA 2020-2021:

- Relative standard error (RSE) of the national estimate of HIV incidence among adults 15 to 49 years old should be 30% or less;
- 95% confidence interval (CI) bounds around the estimated VLS rate among HIV-positive adults aged 15 to 49 years for each of the six regions of the country with an HIV prevalence rate of 5% or more should be ±10% or less;
- 95% CI bounds around the estimated VLS rate among HIV-positive adults aged 15 to 49 years for each of the five regions of the country with an HIV prevalence rate of less than 5% should be ±15% or less;
- 95% CI bounds around the national estimate of VLS rate among all HIV-positive persons aged 15 to 49 years should be ±3.2% or less; and
- 95% CI bounds around the national estimate of VLS rate among all HIV-positive young women aged 15 to 24 years should be ±8.2% or less.

The following assumptions were used to develop the sample design for the UPHIA 2020-2021:

- National HIV prevalence rate of 0.06 (6.0%) for adults 15-49 years old that varies by region;[2]
- Annual national incidence rate for adults aged 15-49 of P_a = 0.0039 (0.39%);[2]
- Regional-level incidence rates of P_{ah}, h = 1, 2, …, 11, which are obtained by adjusting the national incidence rate using the regional-level prevalence rates as follows:

$$P_{ah} = (P_h / P)\, P_a,$$

where P_h and P are the HIV prevalence rates for district h and the country, respectively, and Pa is the annual national incidence rate; [2]

- Mean duration of recent infection (MDRI) of 153 days, yielding an annualization rate of 365/153= 2.3856;
- Estimated incidence rate for MDRI = 153 days of P_m = 0.0039/2.3856 = 0.0016 (0.16%), and the corresponding district-level estimates obtained by $P_{mh} = P_{ah}$ /2.3856;
- Viral load suppression rate among HIV-positive adults aged 15-49 of P_{VLS} = 0.50 (50%) in each region, which is a conservative estimate of the underlying population variance associated with VLS rate;
- Intracluster correlation (ICC) of 0.04 for VLS and 0.02 for prevalence (Source: tabulations of UPHIA 2016 data) ; [2]
- ICC of 0.000 for incidence (Source: analyses of prior PHIA surveys);
- Overall sex-age distributions (Source: tabulations of UPHIA 2016 data); [2] and
- Regional population distribution obtained from the Uganda Bureau of Statistics (UBOS) population projections for 2020.

Selection of the Primary Sampling Units

The PSUs for the UPHIA 2020-2021 were selected from a sampling frame of EAs originally created for the 2014 National Population and Housing Census in Uganda, and subsequently updated by UBOS in 2019.[1] The EAs in the updated sampling frame were generally the same as those created for the 2014 Population Census, except that some EAs were subdivided into separate EAs. The updated sampling frame consisted of 68,282 EAs containing an estimated 7,203,173 households as of 2019.

A stratified sample of 318 EAs was selected from the sampling frame. The 11 strata specified for sampling were the 11 regions of Uganda. Within each region, the EAs in the updated sampling frame were sorted in the same way they had been sorted in the UPHIA 2016 frame to the extent feasible, ie, by district within region, county within district, subcounty within county, parish within subcounty, village within parish, and finally by EA within village. The sorting of EAs prior to sample selection induces an implicit geographic substratification within each region.

Next, a systematic sample of the EAs was selected from each region. The EAs were selected with probabilities proportionate to a measure of size (MOS) equal to the estimated number of households in the EA in 2019. To select the sample from a given region, the cumulative MOS was determined for each EA in the ordered list of EAs, and the sample selections were designated using the specified random start and a sampling interval equal to the total MOS of the EAs in the region divided by the number of EAs to be selected. The resulting sample has the property that the probability of selecting an EA within a region is proportional to the MOS of the EA.

Of the 318 EAs selected using this method, five had previously been selected for UPHIA 206-2017, but were kept as part of the sample following recommendations by UBOS. However, two EAs were ineligible for the survey (one contained a military base, and the other no longer contained households due to flooding) and three other EAs were inaccessible due to security concerns. This left 313 in-scope PSUs that were included in the study. Further details may be found in the UPHIA 2020-2021 Sampling and Weighting Technical Report available 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 have contained more than one household meeting the above definition. Households were eligible for participation in the study if they were located within the sampled EA.

The selection of households for the UPHIA 2020-2021 involved the following steps: (1) listing the dwelling units/households within the sampled EAs; (2) assigning eligibility codes to the listed dwelling unit/household records; (3) and selecting the samples of dwelling units/households.

A description of the household listing process as well as a summary of household eligibility may be found in the UPHIA 2020-2021 Sampling and Weighting Technical Report.

Selection of households utilized an equal probability design. In order to achieve equal probability samples of households within each of the regions of Uganda, the sampling rates required to select dwelling units/households within an EA depended 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 could have yielded more or less than the desired number of households in EAs where the sampling MOS differs from the actual listing count. The UPHIA 2020-2021 Sampling and Weighting Technical Report provides 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 the UPHIA 2020-2021 involved the following steps: (1) compiling a list of all individuals known to reside in the household or who slept in the household during the night prior to data collection; (2) identifying those rostered individuals who were eligible for data collection; and (3) selecting for the study those individuals who met the age and residency requirements of the study. However, only those individuals who slept in the household the night before the household interview (ie, the de facto population) were retained for subsequent weighting and analysis. Data was collected for usual residents of the household who had not slept in the household the previous night, but these people are not included in the weighting and analysis.

The UPHIA 2020-2021 Sampling and Weighting Technical Report provides a brief description of the process for listing and selecting individuals for participation in the UPHIA 2020-2021, 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 (eg, a household or person), and using that weight to calculate weighted estimates from the sample. The critical component of the sampling weight is the base weight, which is defined as the reciprocal of the probability of including a household or person in the sample. The base weights are used to inflate the responses of the sampled units to population levels and are generally unbiased (or consistent) if there is no nonresponse or noncoverage in the sample. When nonresponse or noncoverage occurs in the survey, weighting adjustments are applied to the base weights to compensate for both types of sample omissions.

Nonresponse is unavoidable in virtually all surveys of human populations. For UPHIA 2020-2021, nonresponse could have occurred at different stages of data collection, for example, (1) before the enumeration of individuals in the household, (2) after household enumeration and selection of persons, but before completion of the individual interview, and (3) after completion of the interview, but before collection of a viable blood sample.

Noncoverage arises when some members of the survey population have no chance of being selected for the sample. For example, noncoverage can occur if the field operations fail to enumerate all dwelling units during the listing process, or if certain household members are omitted from the household rosters. To compensate for such omissions, post-stratification procedures were used to calibrate the weighted sample counts to available population projections.

Methods

The overall weighting approach for UPHIA 2020-2021 included several steps. Methods and results for each of the steps below are detailed in the UPHIA 2020-2021 Sampling and Weighting Technical Report.

Initial checks: Checks of the data files were carried out as part of the survey and data QC, and the probabilities of selection for PSUs and households were calculated and checked.

Creation of jackknife replicates: The variables needed to create the jackknife replicates for variance estimation were established at this point. This step was implemented immediately after the PSU sample was selected. All of the subsequent weighting steps described below were applied to the full sample, and to each of the jackknife replicates.

Calculation of PSU base weights: The weighting process began with the calculation and checking of the sample PSU (EA) base weights as the reciprocals of the overall PSU probabilities of selection. The PSU base weights are adjusted first to account for nonresponding eligible PSUs. This adjustment is generally made within the stratum in which the PSUs are located. The resulting weight is the final PSU weight.

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 (ie, weighting up) to 2020 population projections.

Calculation of person-level blood test weights: The individual weights adjusted for nonresponse were in turn the initial weights for the blood data sample, with a further adjustment for nonresponse to the blood draw, 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 accounted 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

Qualified survey staff collected blood from consenting participants: approximately 14 mL of venous blood or 1 mL of capillary blood using finger-stick from individuals who either refused to give venous blood or for whom venous blood draw failed.

Blood samples were labeled with a unique barcoded participant identification and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for registration in a laboratory information management system, processing into plasma and DBS, and storage at -20°C within 24 hours of blood collection. Approximately weekly, samples were transported to the central laboratory for additional testing and long-term storage at -80°C.

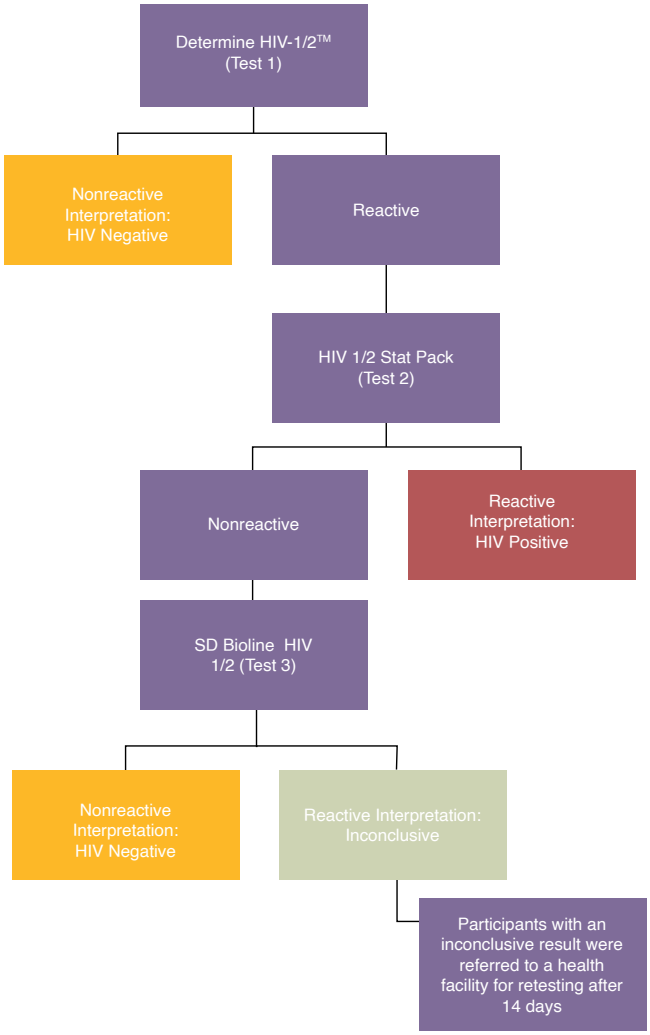
B.2 HOUSEHOLD-BASED PROCEDURES

HIV Rapid Testing

HIV rapid testing was conducted in each household in accordance with Uganda's national guidelines which applies tests in sequence (Figure B.1). As per these guidelines, the survey used a sequential rapid-testing algorithm in the field.

Determine™ HIV-1/2 (Abbott Molecular Inc., Des Plaines, Illinois, United States) was used as a screening test and HIV 1/2 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 subjected to a third test using SD Bioline HIV-1/2 3.0 (Standard Diagnostics, Inc., Kyonggido, South Korea) as a tiebreaker. Those who tested negative on the tie breaker were reported as HIV negative while those who tested positive were reported as inconclusive. Participants with an inconclusive result were referred for retesting after 14 days at a health facility.

Figure B.1
Household-based HIV testing algorithm, UPHIA 2020-2021



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. Survey staff communicated results directly to participants aged 15 years or older. Although parental consent was required for their participation in the survey, adolescents aged 15-17 years could receive their HIV test results without their parents being present.

As they were told their HIV test results, each participant received a Field Test Referral form that included their full name or participant identification number and the reason for their referral. Those who tested HIV negative received information on available prevention services in the community. Women who were pregnant at the time of the survey and not attending an ANC clinic were referred to the nearest ANC clinic.

Those who tested HIV positive received a referral form to the health facility of their choice so they could seek HIV treatment and care. If they consented, they could have their names and age added when their viral load and CD4 results were returned to the clinic. They were also counseled on the possibility of receiving facilitated linkage to a clinic for ART, care, and support. They were asked to provide verbal consent for their information to be shared with a trained healthcare worker or counselor to facilitate linkage. If the participant consented, the field staff completed the Active Linkage to Care Form. All survey staff, healthcare workers and counselors participating in linkage to care were trained in confidentiality procedures and detailed procedures on active linkage to care. This included eligibility for linkage to care, how contact information should be shared with the linkage to care coordinator, and documentation of linkage to care.

If a person who self-reported an HIV-positive status tested HIV negative in the survey, additional testing was performed at the satellite lab to confirm their status (see below). Once the participant's status was confirmed, survey staff returned to the household after consultation with the MOH to share the results and provide counseling to these participants. In other rare cases where participants were provided an incorrect HIV test result or required additional collection of blood to complete testing, households were revisited by qualified personnel to provide participants with correct information and guidance on appropriate actions.

Quality Assurance and Control

To control the quality of the performance of HIV rapid tests, field and satellite laboratory staff performing HIV testing conducted QC testing of a panel of HIV-positive and HIV-negative DTS on a weekly basis.

In addition, to assure the quality of the performance of field staff conducting HIV testing, proficiency testing was conducted twice during the course of the survey, using a panel of masked HIV-positive and negative DTS. Proficiency in the correct performance and interpretation of the HIV testing algorithm was assessed for each tester. Additionally, sample re-testing was conducted at a satellite lab for the first 25 samples tested by each field staff member.

A limitation of the survey was the limited potential of rapid tests to detect low levels of HIV antibodies among people within the serological window of infection, and in HIV-positive patients on ART. Participants in these two categories were not expected to be a significant source of bias.

B.3 LABORATORY-BASED PROCEDURES

Ten satellite laboratories for the survey were established in existing health facility laboratories. One central reference laboratory was chosen for more specialized tests. At each satellite laboratory, trained technicians performed CD4 testing, HIV re-testing, QA testing, and processing of whole blood specimens into plasma aliquots and DBS cards for temporary storage at -20°C.

Geenius Testing

All HIV-positive samples, as well as samples with discrepant or indeterminate results, were tested using the Geenius™ HIV 1/2 Supplemental Assay (Bio-Rad, Hercules, California, United States) (Figure B.2). Testing was conducted at satellite laboratories in accordance with the manufacturer-specified protocol.

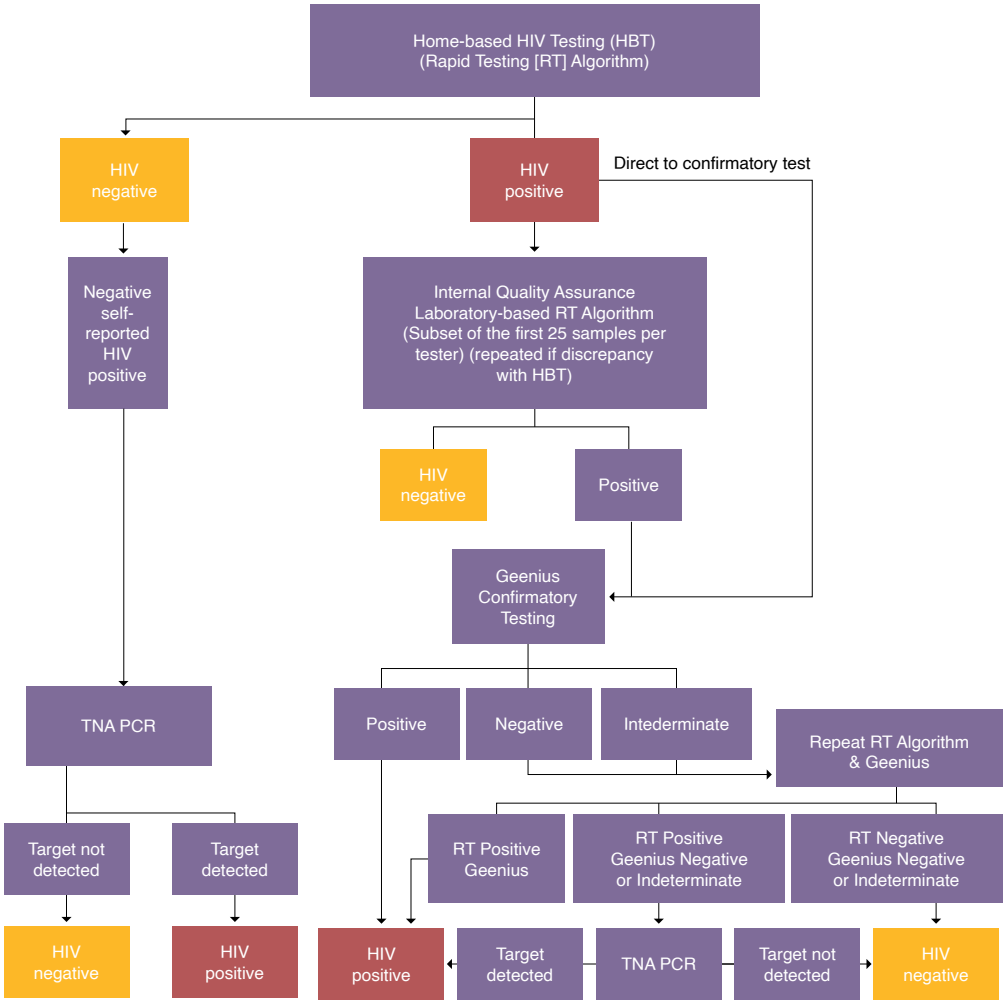
HIV Total Nucleic Acid (TNA) Polymerase Chain Reaction (PCR)

HIV TNA PCR was evaluated for participants who reported an HIV-positive status but tested HIV negative during the survey, as well as for samples that were HIV positive by the rapid testing algorithm but were HIV negative or indeterminate by Geenius testing (Figure B.2). HIV TNA PCR was conducted using the COBAS® AMPLICOR HIV-1 MONITOR Test v1.5 (Roche Molecular Systems, Inc., Branchburg, New Jersey) at Lancet Laboratories in accordance with the manufacturer-specified protocol.

Classification of Final HIV Status

The algorithm for classification of final HIV status included results from HIV rapid testing, Geenius testing, and HIV TNA PCR (Figure B.2).

Figure B.2
Final HIV Status Classification Algorithm, UPHIA 2020-2021



Abbreviations: TNA PCR, Total Nucleic Acid polymerase chain reaction.

Classification of final HIV status was used to determine estimates for HIV prevalence and to inform estimates for HIV incidence.

CD4 Count Measurement

Blood samples from the participants who tested HIV-positive underwent CD4 count measurement at the satellite laboratory. The measurement was performed using the Pima™ CD4 Analyzer (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere).

Viral Load Testing

Determination of HIV-1 VL (HIV RNA copies per mL) of HIV-positive participants with plasma samples was measured using the COBAS AmpliPrep/Taqman 96 assay on the COBAS AmpliPrep/COBAS TaqMan (CAP/CTM) HIV-1, v2.0 Test (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). In cases where plasma samples were not available, HIV-1 VL was performed on dried blood spot (DBS) samples using the COBAS AmpliPrep/COBAS TaqMan (CAP/CTM) Free Virus Elution (FVE) Protocol (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). The COBAS AmpliPrep/TaqMan HIV-1 is a nucleic acid amplification test for the quantification of HIV Type 1 (HIV-1) RNA in human plasma or dried blood spots. Specimen preparation was automated using COBAS AmpliPrep with amplification and detection using TaqMan.

Return of CD4 and Viral Load Results

The return of results coordinator delivered CD4 and viral load results within approximately 8 to 12 weeks to the health facility chosen by each HIV-positive participant. HIV-positive participants were provided with a referral form during HBTC for subsequent retrieval of their results. Survey staff also contacted each participant via mobile phones, informing them that their viral load results were available at the chosen facility and further advising them to seek care and treatment.

HIV Recency Testing

Estimation of annualized HIV-1 incidence was based on the classification of confirmed HIV-positive cases as recent or long-term HIV infections. To distinguish recent from long-term HIV infections, the survey used a laboratory-based testing algorithm that employed a combination of assays: an HIV-1 LAg avidity assay, VL, and ARV detection (Figure B.3).

The Sedia HIV-1 LAg-Avidity EIA (Sedia Biosciences Corporation, Portland, Oregon, United States) was used on plasma specimens, while the Maxim HIV-1 Limiting Antigen-Avidity Dried Blood Spot (DBS) EIA (Maxim Biomedical, Bethesda, Maryland, United States) was used on DBS specimens.

In the case of plasma specimens, LAg avidity testing was performed twice, with an initial screening test followed by a confirmatory test. Samples with a ODn > 2.0 during initial testing were classified as long-term infections, while those with ODn ≤ 2.0 underwent further testing of the specimen in triplicate. Samples with a median ODn > 1.5 during confirmatory testing were classified as long-term infections.

In the case of DBS specimens, LAg avidity testing was performed twice, with an initial screening test followed by a confirmatory test. Samples with ODn > 2.0 during initial testing were classified as long-term infections, while those with ODn ≤ 2.0 underwent further testing of the specimen in triplicate. Samples with a median ODn > 1.0 during confirmatory testing were classified as long-term infections.

VL results were assessed for the samples with a median ODn ≤ 1.5 for plasma and ODn ≤ 1.0 for DBS. Specimens with VL <1,000 copies/mL were classified as long-term infections. ARV detection data were assessed for those with VL ≥ 1,000 copies/mL. Specimens with a detectable ARV were classified as long-term infections and those without were classified as recent infections.

Afterwards, LAg avidity testing was performed separately on specimens with a viral load <1000 copies/mL but the long-term infection classification was retained for all.

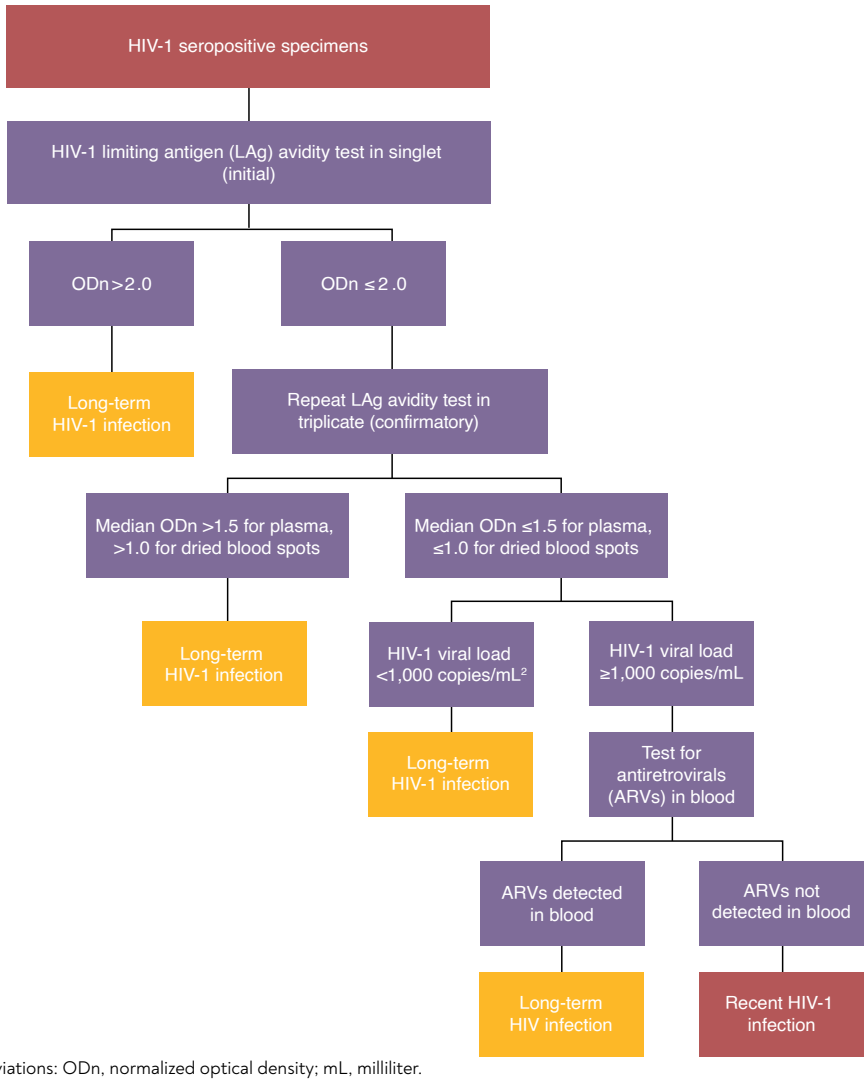


Figure B.3
HIV-1 Recent Infection Testing Algorithm, UPHIA 2020-2021

Abbreviations: ODn, normalized optical density; mL, milliliter.

HIV Incidence Estimation

Incidence estimates were based on the number of HIV infections identified as recent with the HIV-1 LAg avidity plus viral load and ARV detection algorithm and obtained using the formula recommended by the WHO Incidence Working Group and Consortium for Evaluation and Performance of Incidence Assays (CEPHIA) but with adjusted assay performance characteristics.[3]

The relatively high proportion of HIV infections which are of subtype D in Uganda affects HIV incidence estimation. Approximately 10% of HIV-positive samples from participants 15+ years were selected for testing to determine the subtype distribution in the study population. This testing found that 23% of infections were subtype D, and 77% were subtype A. Since the mean duration of recent infection (MDRI), a key parameter for incidence estimation, varies by subtype, a survey-specific MDRI was calculated for UPHIA 2020-2021. 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 Ws and MDRIs 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, Johns Hopkins University, and CDC (unpublished data). The resulting weighted average MDRI for UPHIA 2020-2021 incidence estimation is 156 days (95% CI: 130-182 days), with time cutoff = 1.0 year and residual proportion false recent = 0.00. Note that this differs slightly from the UPHIA 2016-2017 average MDRI of 153 days (95% CI: 127-179 days). In-depth details are provided in the UPHIA 2020-2021 Technical Report, which may be found online on the PHIA Project website.

Table B.1 Annual HIV incidence auxiliary data: N, P, Q, R, MDRI, PFR, and T

Annual incidence of HIV among adults aged 15-49 and 15 years and older, by sex and age, using the recent infection testing algorithm (limiting antigen plus viral load plus antiretroviral biomarker testing), UPHIA 2020-2021

Age (years)	Number HIV negative[1] (N)	Number HIV positive[1] (P)	Number tested on LAg assay[1] (Q)	Number HIV recent[1] (R)
		Men		
15-24	3,755.3	29.7	29.7	0.0
25-34	2,328.8	98.2	98.2	4.7
35-49	2,201.4	227.6	227.6	3.1
50+	1,790.1	144.9	144.9	1.3
15-49	8,316.4	324.6	324.6	7.3
15-64	9,515.8	426.2	426.2	8.1
15+	10,124.9	451.1	451.1	8.7
		Women		
15-24	4,949.5	145.5	145.5	13.1
25-34	3,349.4	338.6	338.6	4.6
35-49	3,067.0	425.0	425.0	2.2
50+	2,424.5	203.5	202.6	0.9
15-49	11,402.9	872.1	872.1	20.7
15-64	12,921.9	1,034.1	1,033.4	21.9
15+	13,830.4	1,072.6	1,071.9	22.3
		Total		
15-24	8,717.6	162.4	162.4	11.5
25-34	5,696.8	418.2	418.2	9.6
35-49	5,278.2	642.8	642.8	5.5
50+	4,215.0	348.0	347.2	2.3
15-49	19,764.5	1,151.5	1,151.5	26.9
15-64	22,483.3	1,414.7	1,414.1	29.0
15+	24,000.0	1,479.0	1,478.4	29.9

[1] Weighted number.

Note: mean duration recent infection (MDRI) = 156 days (95% CI: 130-182 days); proportion false recent (PFR) = 0.00; time cutoff (T) = 1 year.

Detection of Antiretrovirals

Qualitative screening for detectable concentrations of ARVs was conducted on DBS specimens from all HIV-positive participants by means of high-resolution liquid chromatography coupled with tandem mass spectrometry. The method used for ARV detection was a modified version of the methodology described by Koal et al.[1] To qualitatively detect ARVs, a single DBS was eluted, and chromatographic separation carried out on a Luna 5µm PFP column (110 Å, 50 x 2 mm) (Phenomonex, Torrance, California, United States). Each ARV was detected using an API 4000 LC/MS/MS instrument (Applied Biosystems, Foster City, California, United States). Internal standards and in-house QC cut-off samples, including negative controls, were utilized in each run.

This qualitative assay was highly specific, as it separates the parent compound from the fragments, and highly sensitive, with a limit of detection of 0.02 µg/mL for each drug, and a signal-to-noise ratio of at least 5:1 for all drugs. Samples with concentrations above 0.02 µg/mL were considered positive for each ARV. As detection of all ARVs in use at the time of the survey was cost-prohibitive, four ARVs (efavirenz, dolutegravir, atazanavir, and lopinavir) were selected as markers for the most prescribed first- and second-line regimens. These ARVs were also selected based on their relatively long half-lives, allowing for a longer period of detection following intake.

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

Genotyping for Detection of Antiretroviral Drug Resistance and HIV Subtyping

HIV resistance to ARVs was assessed for HIV-positive participants including recent cases, those without VLS (≥1,000 copies/mL; both on treatment and not on treatment), and those with viral load of 200-999 copies/mL. Drug mutations in the HIV pol gene encoding protease, reverse transcriptase, and integrase that confer resistance (according to the Stanford University HIV Drug Resistance Database) were detected simultaneously by use of the CDC in-house multiplex allele-specific drug resistance assay.

Specimens were tested for drug resistance at the Ugandan Virus Research Institute (UVRI), a World Health Organization (WHO)-accredited laboratory for HIV drug resistance testing.

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APPENDIX C ESTIMATES OF SAMPLING ERRORS

Estimates from sample surveys are affected by two types of errors: nonsampling errors and sampling errors. Nonsampling errors result from mistakes made during data collection (eg, misinterpretation of an HIV test result) and data management (eg, transcription errors in data entry). While UPHIA 2020-2021 implemented numerous QA and QC measures to minimize nonsampling 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 2020-2021 is only one of many samples that could have been selected from the same population, using the same design and expected size. Each of these samples would yield results that differ somewhat from the results of the actual sample selected. Sampling errors are a measure of the variability between all possible samples. Although the degree of variability is not known exactly, it can be estimated from the survey results.

The standard error, which is the square root of the variance, is the usual measurement of sampling error for a particular statistic (eg, proportion, mean, rate, count). In turn, the standard error can be used to calculate confidence intervals within which the true value for the population can reasonably be assumed to fall. For example, for any given statistic calculated from a sample survey, the value of that statistic will fall within a range of approximately plus or minus two times the standard error of that statistic in 95% of all possible samples of identical size and design.

UPHIA 2020-2021 utilized a multistage stratified sample design, which required complex calculations to obtain sampling errors. Specifically, a variant of the jackknife replication method was implemented in SAS to estimate variance for proportions (eg, HIV prevalence), rates (eg, annual HIV incidence), and counts (eg, numbers of people living with HIV). Each replication considered all but one cluster in the calculation of the estimates. Pseudo-independent replications were thus created. In UPHIA 2020-2021, 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 168 variance-estimation strata were created by pairing (or occasionally tripling) the sample clusters in the systematic order in which they had been selected. Hence, 168 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 variance using the given sample design to the variance that would result if a simple random sample had been used. A design effect of 1.0 indicates that the sample design is as efficient as a simple random sample, while a value greater than 1.0 indicates the increase in the sampling error due to the use of a more complex and less statistically efficient design. Confidence limits for the estimates, which are calculated as

$$y \pm t(0.975; K) \sqrt{var(y)},$$

where t(0.975; K) is the 97.5th percentile of a t-distribution with K degrees of freedom, were also computed. Sampling errors for selected variables from the UPHIA 2020-2021 are presented in tables C.1 through C.8, and sampling errors for all survey estimates may be found online on the PHIA website. For each variable, sampling error tables include the weighted estimate, unweighted denominator, standard error, design effect, and lower and upper 95% confidence limits.

Table C.1 : Sampling errors: Annual HIV incidence by age, UPHIA 2020-2021

Age (years)	Weighted estimate (%)	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Men			
15-24	0.00	0.00	0.00	0.00	0.00	0.23
25-34	0.47	0.24	1.22	0.50	0.00	0.93
35-49	0.33	0.24	1.71	0.75	0.00	0.80
50+	0.17	0.15	0.66	0.88	0.00	0.46
15-49	0.21	0.09	1.28	0.42	0.03	0.38
15+	0.20	0.08	1.25	0.39	0.05	0.35

Table C.1 : Sampling errors: Annual HIV incidence by age, UPHIA 2020-2021 (continued)

Age (years)	Weighted estimate (%)	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Women			
15-24	0.62	0.18	1.13	0.29	0.26	0.97
25-34	0.32	0.17	1.21	0.51	0.00	0.65
35-49	0.16	0.12	1.08	0.71	0.00	0.39
50+	0.09	0.09	0.94	1.03	0.00	0.28
15-49	0.42	0.10	1.08	0.24	0.22	0.62
15+	0.38	0.09	1.11	0.24	0.20	0.55
			Total			
15-24	0.31	0.09	0.99	0.30	0.13	0.49
25-34	0.39	0.15	1.27	0.37	0.11	0.68
35-49	0.24	0.13	1.58	0.54	0.00	0.50
50+	0.13	0.08	0.78	0.66	0.00	0.29
15-49	0.32	0.07	1.09	0.22	0.18	0.45
15+	0.29	0.06	1.10	0.21	0.17	0.41

Table C.2 Sampling errors: HIV prevalence by age, UPHIA 2020-2021

Ages (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
				Men			
15-19	0.2	2,086	0.1	0.9	0.5	0.0	0.4
20-24	1.6	1,699	0.3	1.2	0.2	0.9	2.2
25-29	3.4	1,332	0.5	1.0	0.1	2.4	4.5
30-34	4.8	1,095	0.7	1.1	0.1	3.5	6.2
35-39	8.9	933	1.2	1.6	0.1	6.4	11.3
40-44	8.6	809	1.2	1.5	0.1	6.1	11.1
45-49	11.1	687	1.3	1.3	0.1	8.3	13.8
50-54	10.0	606	1.4	1.3	0.1	7.2	12.9
55-59	8.5	378	1.5	1.2	0.2	5.3	11.7
60-64	8.3	317	1.7	1.2	0.2	4.8	11.7
65+	3.8	634	0.9	1.3	0.2	2.0	5.5
Total 15-24	0.8	3,785	0.1	1.1	0.2	0.5	1.1
Total 15-49	3.8	8,641	0.2	1.3	0.1	3.3	4.2
Total 50+	7.5	1,935	0.6	1.1	0.1	6.2	8.8
Total 15+	4.3	10,576	0.2	1.2	0.1	3.8	4.7
				Women			
15-19	1.7	2,519	0.3	1.1	0.2	1.2	2.3
20-24	4.2	2,576	0.5	1.6	0.1	3.2	5.2
25-29	7.5	2,086	0.7	1.5	0.1	6.0	8.9
30-34	11.4	1,602	1.1	2.1	0.1	9.0	13.7
35-39	12.4	1,494	1.1	1.7	0.1	10.2	14.7
40-44	11.1	1,072	1.1	1.3	0.1	8.8	13.3

Table C.2 Sampling errors: HIV prevalence by age, UPHIA 2020-2021 (continued)

Ages (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Women				
45-49	13.1	926	1.4	1.5	0.1	10.3	15.9
50-54	13.6	697	1.7	1.6	0.1	10.1	17.0
55-59	8.9	551	1.3	1.2	0.1	6.1	11.6
60-64	6.0	433	1.3	1.3	0.2	3.3	8.7
65+	3.1	947	0.7	1.3	0.2	1.8	4.5
Total 15-24	2.9	5,095	0.3	1.5	0.1	2.3	3.4
Total 15-49	7.1	12,275	0.3	2.2	0.0	6.4	7.8
Total 50+	7.7	2,628	0.6	1.3	0.1	6.5	8.9
Total 15+	7.2	14,903	0.3	2.1	0.0	6.6	7.8
			Total				
15-19	0.9	4,605	0.1	1.0	0.2	0.6	1.2
20-24	2.9	4,275	0.3	1.5	0.1	2.3	3.6
25-29	5.6	3,418	0.5	1.6	0.1	4.6	6.6
30-34	8.4	2,697	0.7	1.8	0.1	6.9	9.9
35-39	10.8	2,427	1.0	2.3	0.1	8.8	12.7
40-44	9.9	1,881	0.8	1.3	0.1	8.3	11.6
45-49	12.1	1,613	1.0	1.5	0.1	10.1	14.2
50-54	11.8	1,303	1.2	1.8	0.1	9.4	14.3
55-59	8.7	929	1.1	1.3	0.1	6.5	10.9
60-64	7.0	750	1.0	1.2	0.1	4.9	9.2
65+	3.4	1,581	0.5	1.3	0.2	2.3	4.5
Total 15-24	1.8	8,880	0.2	1.4	0.1	1.5	2.2
Total 15-49	5.5	20,916	0.3	2.5	0.0	5.0	6.0
Total 50+	7.6	4,563	0.5	1.4	0.1	6.7	8.6
Total 15+	5.8	25,479	0.2	2.5	0.0	5.3	6.3

Table C.3 Sampling errors: HIV prevalence by residence and region among adults aged 15 years and older, UPHIA 2020-2021

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Men				
Residence							
Urban	4.65	3,148	0.48	1.60	0.10	3.67	5.63
Rural	4.08	7,428	0.25	1.20	0.06	3.56	4.60
Region							
Central 1: South Buganda	6.17	1,158	0.77	1.18	0.12	4.59	7.75
Central 2: North Buganda	4.81	977	0.39	0.33	0.08	4.00	5.62
East Central	2.77	700	0.51	0.68	0.18	1.72	3.82
Kampala	3.04	808	0.45	0.55	0.15	2.12	3.96
Mid Eastern	2.70	829	0.56	0.99	0.21	1.55	3.86
Mid North	6.06	1,028	0.59	0.63	0.10	4.84	7.28

Table C.3 Sampling errors: HIV prevalence by residence and region among adults aged 15 years and older, UPHIA 2020-2021 (continued)

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
Mid Western	4.15	962	0.63	0.96	0.15	2.85	5.44
Northeast: Karamoja	1.77	769	0.44	0.85	0.25	0.87	2.68
Northeast: Teso	3.28	928	0.86	2.15	0.26	1.51	5.05
South Western	5.00	1,315	0.88	2.15	0.18	3.19	6.82
West Nile	1.99	1,102	0.40	0.91	0.20	1.16	2.81
			Women				
Residence							
Urban	9.23	4,688	0.65	2.38	0.07	7.89	10.58
Rural	6.17	10,215	0.31	1.71	0.05	5.53	6.81
Region							
Central 1: South Buganda	9.83	1,667	0.85	1.36	0.09	8.08	11.58
Central 2: North Buganda	7.54	1,197	0.55	0.52	0.07	6.40	8.68
East Central	6.08	912	0.46	0.34	0.08	5.14	7.03
Kampala	8.67	1,227	0.74	0.85	0.09	7.14	10.20
Mid Eastern	5.50	1,148	1.04	2.39	0.19	3.36	7.65
Mid North	9.18	1,313	1.45	3.31	0.16	6.19	12.16
Mid Western	6.88	1,173	0.92	1.54	0.13	4.99	8.77
Northeast: Karamoja	2.28	1,495	0.38	0.98	0.17	1.49	3.07
Northeast: Teso	5.08	1,234	0.94	2.24	0.18	3.15	7.01
South Western	7.33	1,916	0.98	2.73	0.13	5.30	9.35
West Nile	3.48	1,621	1.16	6.49	0.33	1.09	5.86
			Total				
Residence							
Urban	7.11	7,836	0.51	3.07	0.07	6.06	8.16
Rural	5.17	17,643	0.23	1.92	0.04	4.69	5.64
Region							
Central 1: South Buganda	8.14	2,825	0.68	1.77	0.08	6.73	9.55
Central 2: North Buganda	6.17	2,174	0.37	0.51	0.06	5.41	6.92
East Central	4.45	1,612	0.40	0.61	0.09	3.63	5.28
Kampala	6.03	2,035	0.40	0.57	0.07	5.21	6.85
Mid Eastern	4.18	1,977	0.68	2.29	0.16	2.78	5.59
Mid North	7.65	2,341	0.94	2.96	0.12	5.70	9.59
Mid Western	5.50	2,135	0.60	1.46	0.11	4.27	6.73
Northeast: Karamoja	2.08	2,264	0.36	1.44	0.17	1.34	2.83
Northeast: Teso	4.22	2,162	0.86	3.91	0.20	2.46	5.98
South Western	6.27	3,231	0.88	4.29	0.14	4.45	8.09
West Nile	2.80	2,723	0.74	5.47	0.26	1.27	4.32

Table C.4 Sampling errors: Viral load suppression by age, UPHIA 2020-2021

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Men				
15-19	73.70	5	22.89	1.08	0.31	26.56	100.00
20-24	39.10	25	10.41	1.09	0.27	17.66	60.55
25-29	37.88	40	8.76	1.27	0.23	19.84	55.91
30-34	64.54	49	6.56	0.90	0.10	51.03	78.05
35-39	71.69	77	5.11	0.98	0.07	61.15	82.22
40-44	73.81	68	5.93	1.22	0.08	61.60	86.03
45-49	80.45	73	4.63	0.98	0.06	70.91	89.99
50-54	78.86	54	6.59	1.38	0.08	65.28	92.43
55-59	91.01	31	5.16	0.98	0.06	80.38	100.00
60-64	90.86	24	5.27	0.77	0.06	80.00	100.00
65+	86.62	21	7.32	0.92	0.08	71.55	100.00
15-24	43.53	30	9.49	1.06	0.22	23.99	63.07
25-34	51.88	89	5.51	1.07	0.11	40.54	63.22
35-44	72.61	145	3.72	1.00	0.05	64.95	80.27
45-54	79.81	127	3.88	1.18	0.05	71.81	87.81
55-64	90.95	55	3.76	0.93	0.04	83.21	98.70
Total 15-49	64.90	337	2.68	1.06	0.04	59.39	70.41
Total 50+	85.39	130	3.37	1.18	0.04	78.45	92.33
Total 15+	69.80	467	2.27	1.14	0.03	65.12	74.47
			Women				
15-19	53.85	38	8.35	1.04	0.16	36.65	71.05
20-24	59.68	96	5.31	1.11	0.09	48.75	70.61
25-29	71.75	145	3.89	1.07	0.05	63.74	79.75
30-34	77.78	162	3.44	1.10	0.04	70.70	84.86
35-39	81.35	167	3.08	1.04	0.04	75.00	87.70
40-44	80.63	114	4.05	1.19	0.05	72.29	88.98
45-49	94.75	114	2.49	1.41	0.03	89.62	99.88
50-54	91.71	83	3.27	1.15	0.04	84.97	98.44
55-59	86.23	47	5.10	1.01	0.06	75.73	96.74
60-64	84.33	22	7.70	0.94	0.09	68.46	100.00
65+	97.87	28	2.18	0.61	0.02	93.39	100.00
15-24	57.78	134	4.76	1.23	0.08	47.98	67.57
25-34	75.03	307	2.41	0.95	0.03	70.06	80.00
35-44	81.06	281	2.54	1.18	0.03	75.83	86.29
45-54	93.46	197	1.98	1.25	0.02	89.39	97.53
55-64	85.68	69	4.25	1.00	0.05	76.93	94.43
Total 15-49	76.12	836	1.57	1.13	0.02	72.89	79.35
Total 50+	90.20	180	2.29	1.06	0.03	85.49	94.91
Total 15+	78.33	1,016	1.36	1.11	0.02	75.52	81.13

Table C.4 Sampling errors: Viral load suppression by age, UPHIA 2020-2021 (continued)

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Total				
15-19	55.75	43	8.23	1.15	0.15	38.81	72.70
20-24	54.34	121	4.71	1.07	0.09	44.64	64.04
25-29	62.33	185	3.92	1.21	0.06	54.25	70.42
30-34	74.30	211	3.14	1.08	0.04	67.84	80.76
35-39	77.68	244	2.94	1.21	0.04	71.62	83.73
40-44	77.86	182	3.57	1.34	0.05	70.51	85.21
45-49	88.49	187	2.57	1.21	0.03	83.19	93.79
50-54	86.39	137	3.46	1.39	0.04	79.26	93.53
55-59	88.38	78	3.71	1.03	0.04	80.73	96.03
60-64	87.87	46	4.71	0.94	0.05	78.17	97.56
65+	92.52	49	3.54	0.87	0.04	85.24	99.80
15-24	54.74	164	4.29	1.21	0.08	45.90	63.58
25-34	68.78	396	2.48	1.13	0.04	63.68	73.89
35-44	77.75	426	2.22	1.21	0.03	73.19	82.32
45-54	87.62	324	2.18	1.42	0.02	83.12	92.12
55-64	88.21	124	2.90	0.99	0.03	82.24	94.18
Total 15-49	72.46	1,173	1.53	1.38	0.02	69.30	75.62
Total 50+	88.04	310	1.96	1.13	0.02	83.99	92.08
Total 15+	75.35	1,483	1.31	1.38	0.02	72.64	78.06

Table C.5 Sampling errors: Viral load suppression among adults aged 15 years and older by residence and region, UPHIA 2020-2021

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Men				
Residence							
Urban	70.99	157	4.25	1.37	0.06	62.23	79.75
Rural	69.16	310	2.80	1.14	0.04	63.39	74.93
Region							
Central 1: South Buganda	75.31	82	5.51	1.32	0.07	63.96	86.66
Central 2: North Buganda	69.30	52	6.73	1.09	0.10	55.43	83.17
East Central	68.62	23	11.76	1.41	0.17	44.40	92.85
Kampala	68.02	28	7.30	0.66	0.11	53.00	83.05
Mid Eastern	41.58	24	7.30	0.51	0.18	26.54	56.63
Mid North	67.39	69	5.54	0.95	0.08	55.98	78.80
Mid Western	75.24	45	5.72	0.77	0.08	63.46	87.02
Northeast: Karamoja	75.41	15	11.16	0.94	0.15	52.44	98.39
Northeast: Teso	76.62	33	6.01	0.64	0.08	64.25	88.99

Table C.5 Sampling errors: Viral load suppression among adults aged 15 years and older by residence and region, UPHIA 2020-2021 (continued)

Characteristic	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
South Western	69.01	71	5.06	0.84	0.07	58.59	79.42
West Nile	76.71	25	8.24	0.91	0.11	59.73	93.69
			Women				
Residence							
Urban	81.22	439	1.78	0.91	0.02	77.56	84.89
Rural	76.13	577	2.02	1.29	0.03	71.97	80.29
Region							
Central 1: South Buganda	80.44	175	1.71	0.32	0.02	76.91	83.96
Central 2: North Buganda	79.69	93	5.28	1.58	0.07	68.82	90.55
East Central	76.59	58	5.23	0.87	0.07	65.82	87.37
Kampala	78.50	112	3.47	0.79	0.04	71.35	85.65
Mid Eastern	68.56	67	6.65	1.35	0.10	54.86	82.26
Mid North	67.39	119	4.68	1.18	0.07	57.75	77.04
Mid Western	76.23	88	4.90	1.15	0.06	66.13	86.32
Northeast: Karamoja	79.41	37	4.57	0.46	0.06	69.99	88.82
Northeast: Teso	77.56	65	5.32	1.04	0.07	66.61	88.52
South Western	90.60	141	4.09	2.74	0.05	82.18	99.01
West Nile	77.14	61	4.76	0.77	0.06	67.33	86.95
			Total				
Residence							
Urban	78.12	596	2.04	1.44	0.03	73.92	82.31
Rural	73.49	887	1.80	1.48	0.02	69.77	77.20
Region							
Central 1: South Buganda	78.65	257	2.40	0.88	0.03	73.71	83.59
Central 2: North Buganda	75.61	145	4.03	1.27	0.05	67.31	83.90
East Central	74.15	81	6.31	1.66	0.09	61.15	87.14
Kampala	76.02	140	3.52	0.94	0.05	68.77	83.26
Mid Eastern	60.32	91	4.85	0.88	0.08	50.34	70.30
Mid North	67.39	188	4.40	1.65	0.07	58.33	76.46
Mid Western	75.85	133	4.46	1.43	0.06	66.67	85.04
Northeast: Karamoja	78.09	52	4.62	0.64	0.06	68.57	87.61
Northeast: Teso	77.21	98	2.62	0.38	0.03	71.83	82.60
South Western	82.79	212	3.32	1.63	0.04	75.95	89.62
West Nile	77.00	86	5.13	1.27	0.07	66.43	87.58

Table C.6 Sampling errors: ARV-adjusted 95-95-95 by age (conditional percentages), UPHIA 2020-2021

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
Men							
Diagnosed							
15-24	47.26	30	9.82	1.12	0.21	27.04	67.47
25-34	58.57	89	5.41	1.06	0.09	47.43	69.71
35-49	83.11	218	2.94	1.34	0.04	77.04	89.17
50+	88.85	130	3.28	1.40	0.04	82.09	95.62
15-49	72.07	337	2.84	1.35	0.04	66.21	77.93
15+	76.08	467	2.34	1.40	0.03	71.27	80.89
On Treatment							
15-24	100.00	14	0.00		0.00	100.00	100.00
25-34	92.74	52	3.56	0.96	0.04	85.40	100.00
35-49	94.22	185	2.08	1.47	0.02	89.93	98.51
50+	95.98	115	1.90	1.07	0.02	92.07	99.89
15-49	94.24	251	1.57	1.14	0.02	91.00	97.47
15+	94.72	366	1.25	1.14	0.01	92.16	97.29
Viral Load Suppression							
15-24	79.66	14	10.95	0.96	0.14	57.11	100.00
25-34	86.55	48	5.05	1.03	0.06	76.15	96.95
35-49	92.39	173	2.21	1.20	0.02	87.84	96.95
50+	94.43	110	2.37	1.16	0.03	89.55	99.31
15-49	90.09	235	1.86	0.91	0.02	86.26	93.92
15+	91.32	345	1.52	1.01	0.02	88.18	94.46
Women							
Diagnosed							
15-24	63.66	134	4.38	1.10	0.07	54.64	72.69
25-34	81.92	306	2.31	1.10	0.03	77.15	86.68
35-49	89.83	393	1.85	1.48	0.02	86.02	93.65
50+	91.65	180	2.21	1.14	0.02	87.11	96.19
15-49	81.99	833	1.33	1.00	0.02	79.25	84.73
15+	83.51	1,013	1.23	1.10	0.01	80.98	86.03
On Treatment							
15-24	94.51	84	2.23	0.80	0.02	89.91	99.10
25-34	97.18	253	1.07	1.06	0.01	94.97	99.39
35-49	96.43	352	1.07	1.17	0.01	94.22	98.63
50+	98.10	165	1.18	1.22	0.01	95.67	100.00
15-49	96.46	689	0.76	1.15	0.01	94.90	98.01
15+	96.74	854	0.65	1.13	0.01	95.41	98.07
Viral Load Suppression							
15-24	86.92	78	4.33	1.27	0.05	78.01	95.83
25-34	89.74	246	2.05	1.11	0.02	85.53	93.95
35-49	94.77	341	1.25	1.07	0.01	92.20	97.34
50+	96.80	162	1.28	0.85	0.01	94.17	99.43
15-49	91.68	665	1.18	1.21	0.01	89.26	94.11
15+	92.58	827	0.98	1.17	0.01	90.55	94.61

Table C.6 Sampling errors: ARV-adjusted 95-95-95 by age (conditional percentages), UPHIA 2020-2021 (continued)

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
Total							
Diagnosed							
15-24	60.17	164	4.20	1.20	0.07	51.53	68.81
25-34	75.61	395	2.35	1.18	0.03	70.77	80.44
35-49	87.10	611	1.66	1.50	0.02	83.68	90.52
50+	90.39	310	1.88	1.26	0.02	86.51	94.27
15-49	78.75	1,170	1.43	1.43	0.02	75.80	81.70
15+	80.91	1,480	1.23	1.46	0.02	78.37	83.45
On Treatment							
15-24	95.43	98	1.88	0.79	0.02	91.55	99.30
25-34	96.25	305	1.11	1.04	0.01	93.97	98.54
35-49	95.57	537	1.06	1.42	0.01	93.39	97.76
50+	97.16	280	1.06	1.13	0.01	94.99	99.34
15-49	95.79	940	0.75	1.33	0.01	94.24	97.35
15+	96.08	1,220	0.63	1.28	0.01	94.78	97.37
Viral Load Suppression							
15-24	85.65	92	4.03	1.20	0.05	77.36	93.94
25-34	89.09	294	1.92	1.12	0.02	85.13	93.06
35-49	93.86	514	1.07	1.02	0.01	91.66	96.06
50+	95.77	272	1.25	1.04	0.01	93.20	98.34
15-49	91.21	900	1.00	1.12	0.01	89.15	93.28
15+	92.17	1,172	0.81	1.08	0.01	90.49	93.85

Table C.7 Sampling errors: ARV-adjusted 95-95-95 by age (overall percentages), UPHIA 2020-2021

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
Men							
Diagnosed							
15-24	47.3	30	9.8	1.1	0.2	27.0	67.5
25-34	58.6	89	5.4	1.1	0.1	47.4	69.7
35-49	83.1	218	2.9	1.3	0.0	77.0	89.2
50+	88.9	130	3.3	1.4	0.0	82.1	95.6
15-49	72.1	337	2.8	1.4	0.0	66.2	77.9
15+	76.1	467	2.3	1.4	0.0	71.3	80.9
On Treatment							
15-24	47.3	30	9.8	1.1	0.2	27.0	67.5
25-34	54.3	89	5.7	1.2	0.1	42.5	66.1
35-49	78.3	218	3.2	1.3	0.0	71.8	84.8
50+	85.3	130	3.7	1.4	0.0	77.7	92.8
15-49	67.9	337	3.1	1.5	0.0	61.6	74.2
15+	72.1	467	2.5	1.5	0.0	66.8	77.3

Table C.7 Sampling errors: ARV-adjusted 95-95-95 by age (overall percentages), UPHIA 2020-2021 (continued)

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
			Viral Load Suppression				
15-24	37.6	30	9.4	1.1	0.2	18.3	57.0
25-34	47.0	89	6.2	1.4	0.1	34.2	59.9
35-49	72.3	218	3.4	1.2	0.0	65.4	79.3
50+	80.5	130	3.9	1.2	0.0	72.6	88.5
15-49	61.2	337	2.9	1.2	0.0	55.1	67.2
15+	65.8	467	2.5	1.3	0.0	60.7	70.9
			Women				
			Diagnosed				
15-24	63.7	134	4.4	1.1	0.1	54.6	72.7
25-34	81.9	306	2.3	1.1	0.0	77.2	86.7
35-49	89.8	393	1.9	1.5	0.0	86.0	93.7
50+	91.6	180	2.2	1.1	0.0	87.1	96.2
15-49	82.0	833	1.3	1.0	0.0	79.3	84.7
15+	83.5	1,013	1.2	1.1	0.0	81.0	86.0
			On Treatment				
15-24	60.2	134	4.4	1.1	0.1	51.1	69.2
25-34	79.6	306	2.3	1.0	0.0	74.9	84.3
35-49	86.6	393	1.9	1.3	0.0	82.6	90.6
50+	89.9	180	2.4	1.1	0.0	84.9	94.9
15-49	79.1	833	1.3	0.9	0.0	76.4	81.8
15+	80.8	1,013	1.2	0.9	0.0	78.3	83.3
			Viral Load Suppression				
15-24	52.3	134	4.6	1.1	0.1	42.8	61.8
25-34	71.4	306	2.5	0.9	0.0	66.3	76.6
35-49	82.1	393	2.1	1.2	0.0	77.7	86.5
50+	87.0	180	2.6	1.1	0.0	81.6	92.5
15-49	72.5	833	1.6	1.0	0.0	69.3	75.7
15+	74.8	1,013	1.4	1.0	0.0	71.9	77.6
			Total				
			Diagnosed				
15-24	60.2	164	4.2	1.2	0.1	51.5	68.8
25-34	75.6	395	2.3	1.2	0.0	70.8	80.4
35-49	87.1	611	1.7	1.5	0.0	83.7	90.5
50+	90.4	310	1.9	1.3	0.0	86.5	94.3
15-49	78.7	1,170	1.4	1.4	0.0	75.8	81.7
15+	80.9	1,480	1.2	1.5	0.0	78.4	83.5
			On Treatment				
15-24	57.4	164	4.2	1.2	0.1	48.7	66.1
25-34	72.8	395	2.4	1.2	0.0	67.8	77.7
35-49	83.2	611	1.9	1.6	0.0	79.3	87.1
50+	87.8	310	2.1	1.3	0.0	83.5	92.1
15-49	75.4	1,170	1.5	1.5	0.0	72.3	78.6
15+	77.7	1,480	1.3	1.5	0.0	75.0	80.4

Table C.7 Sampling errors: ARV-adjusted 95-95-95 by age (overall percentages), UPHIA 2020-2021 (continued)

Age (years)	Weighted estimate (%)	Unweighted number	Standard error (%)	Design effect	Relative standard error	Lower confidence limit (%)	Upper confidence limit (%)
Viral Load Suppression							
15-24	49.2	164	4.3	1.2	0.1	40.3	58.1
25-34	64.8	395	2.6	1.2	0.0	59.5	70.2
35-49	78.1	611	1.9	1.3	0.0	74.2	82.1
50+	84.1	310	2.3	1.2	0.0	79.5	88.8
15-49	68.8	1,170	1.6	1.4	0.0	65.6	72.1
15+	71.7	1,480	1.4	1.3	0.0	68.9	74.4

APPENDIX D SURVEY PERSONNEL

Ministry of Health

Baka Joshua
Bakunda Kamarazi
Carol Nalero
Derrick Ngobi
Dinnah Kwarisiima
Doreen Nasamula
Edison Niwagaba
Flavia Kabengano
Geoffrey Taasi
Ivan Lukabwe
Jane Nabalonzi Kisitu
Joshua Musinguzi
Lillian Kugonza
Lordwin Kasambula
Mukama Emmanuel
Noordin Mulumba
Obalim Emmanuel
Patrick Turyaguma
Ronald Ahurra
Ruth Ategeka
Stella Nangobi
Teddy Chimulwa
Wilford L. Kirungi

UVRI

Aminah Nalumansi
Christine Watera
Edward Katongole Mbidde
Robert Downing

Uganda Bureau of Statistics

James Muwonge
Stephen Baryahirwa

US Centers for Disease Control and Prevention (CDC)

Uganda

Anna Colletar Awor
Brittany Gianetti
Christina Mwangi
Herbert S. Kiyingi
Jennifer A. Nel
Lisa Mills
Lisa Nelson
Mary Naluguza
Pamela Nasirumbi Muniina
Samuel Sendagala

Atlanta

Abraham Ater
Aderonke (Solape) Ajiboye
Andrew Voetsch
Bharat Parekh
Carole Moore
Christine West
Divya Patel
Dustin Currie
Elisabeth Mungai
Faith Ussery
Kristin Brown
Megan Bronson
Rebecca Laws
Stephen McCracken
Steve Kinchen
Victoria (Tory) Seffren
Wolfgang Hladik

ICAP

Uganda

Abudullah Ssewanyana
Andrew Kabala
Annet Brenda Mushabe
David Okimait
Deo Magoba
Dorothy Aibo
Gerald Ashaba
Godfrey Kalungi
Hajjara Nanyonjo
Harriet Aryam Apio
Herbert Mulindwa
Janet Bahizi
Mark Odong
Monica Kuteesa
Moses Ecau Emecu
Nelson Kukundawe
Peter Nkurunzinza
Sam Biraro
Sam Okiror
Sara Acan
Simon Ssekasala
Stella Atugonza
Tonny Akankunda T

PHIA Fellows

Carol Asiimwe
Francis Tamale
Vivian Among

Regional

Blanche Pitt
Bright Phiri
Erika Fazito

Herbert Longwe
Herman Brou
Julius Manjengwa
Mandisa Skhosana
Monica Kuteesa
Oliver Murangandi
Philippe Mambo
Pule Mphohle
Sakhile Sithole
Shamagonam James
Tafadzwa Dzinamarira
Takura Kupamupindi
Tangang Akamangwa
Temantfulini Mamba
Tepa Nkumbula
Terefe Gelibo
Veronicah Mugisha
Vusumuzi Maliwa
Yvonne Mavengere

New York

Abigail Greenleaf
Andrea Low
Apala Guhathakurta
Blair Gilmartin
Chelsea Solmo
Christiana Chang
Connor Wright
David Hoos
Donna Lopp
Gili Hrusa Castillo
Hannah Chung
Jacqueline Maxwell
Jared Garfinkel
Jessica Zheng
John Wylie
Karam Sachathep
Karina Myers
Katharine Yuengling
Katherine Johnson
Kiwon Lee
Leticia Froix
Mansoor Farahani
Mark Fussell
Mekleet Teferi
Melissa Metz
Monique Millington
Natasha McLeod
Natazia Fistrovic
Noelle Esquire
Olga Crowley
Rachel Bray
Richard Mitchell
Sara Winterhalter
Shannon Farley
Stephen Delgado
Tamara White
Theo Smart
Thomas Carpino
Udee Narayan
Wafaa El-Sadr
Yike Zhao
Zach Keefer

Regional Community Mobilization Coordinators

Aboth Carolyn
Allan Arinaitwe
Asimiire Dan
Jooga David
Jovah Praise
Kabunga Emmanuel
Kabunga Medi
Kayizzi Fred
Living Stone Matsiko
Mugabe Lawrence
Mukisa Mark
Ntale Mark
Onyango Peter
Sharon Acen
Ssenyenya Vincent

Regional Supervisors

Aaron Orech
Bampiga Ronald
Doreen Kabatongole
Kamwesigye Remus
Kasibante Philip
Kiggwe Philemon
Kusemererwa Patrick
Mugerwa Hillary
Musoke Nasir
Muwonge Ramathan
Nelson Bazaale
Nerima Janet
Okek Erick
Opio Moses
Opolot Ferdinand
Ssemwanga Brian

Team Leaders

Anitah Kabenge
Aroko Suzan
Atukwasa Caroline
Babu Emenyat
Businge Jonnes Wycliffe
Daniel Ipeaju M
Edgar Davids Muruta
Esther Namayanja
Evaline Akol
Francis Okodel
Gloria Akisa Amaniyo
Igola Winfred
Immaculate Muloni
Jackline Nabulwala Jadah
Kabugo Timothy Godfrey
Kasaana K. Washington
Keefa Kibaalya
Micheal Etoori
Ms Ajidiru Liberty Brenda
Ms. Awio Florence
Nabakiibi Suzan
Namugenyi Patricia Mutesi
Namugga Judith Mayinja
Olwoch Daniel Stewart
Paul Hirome Nyende
Samuel Ntambi
Sarah Tanafuga
Shane Kyawe
Willy Kasimbi
Ssekayi Micheal Lameck

Interviewers

Abiti Emmanuel
Aceng Patricia
Achumo Josephine Carol
Adong Lillian
Agaba Nelson
Akajo Agnes
Akatwijuka Brian
Akello Florence
Akello Winnie
Alinaitwe Ronald
Alupot Jesca
Amanyire Adrona Kengaaju
Andrew Irafasha
Anita Nakangu
Anywar John Kennedy
Arao Morine
Arinda Agatha
Ayagalwa Justine
Ayakaka Beatrice
Bazaale Jennifer
Begumisa Abia
Belinda Kibanza
Bisanga Daisy Neddy
Candia Alex
Caroline Kiconco
Caroline Kyomuhangi Annet
Caroline Neumbe
Catherine Tinkamanyire
Chepundon Mary
Christine Apio
David Lokwii
David Okolimong
Denis Hashaka
Denis Mitala
Denise Mutoni Babirye
Diana Bogere Nalutaya
Dorothy Namirembe
Draru Holda
Eloumo Lamech
Emmanuel Eyap Oboi
Emmanuelson Mubiru
Erias Muyanda
Evelyn Mbonye
Eyul Alex
Fred Turyaguma
George Kirunda
Gladys Acen Otim
Gloria Alubi
Hadijah Busulwa
Ibrahim Nkugwa
Iga Ronnie
Irene Naluyima
Isaac Luyima
Jane Agudo Frances
Jennifer Kataike Mbatenda
Joan Nabumba
Joan Namubiru
Joselyn Namwanje
Joyce Mutesi
Kabagambe Jooachim Moris
Kajumba Lillian
Kakooza Rogers
Kasozi Francis
Katende Anthony
Katusabe Robert
Kayodi Proscovia
Kenneth Kugonza
Kirabira Muzafalu
Kyasiimire Sarah
Kyomuhendo Winifred
Lillian Kiiza. W
Lotee Moses
Lydia Kemigisha Drabo
Madrara Justine
Magombe Arthur Sam
Margret Ajok
Marie Musumika
Martin Asire
Micheal Kiberu Mickey
Micheal Muhumuza
Moses Ssekabembe
Moureen Akatukunda
Mpajji Andrew
Mugabiirwe Oliver
Muhwezi Nicholas
Muyiyi Rhoda
Mwesigye Lucian
Nakaayi Loy
Namuli Racheal
Namusisi Hildah
Nangiiro Regina
Nguza James
Nicholas Musisi
Norah Nabudduwa
Nyamutale David
Nyangoma Eliza
Nyangoma Winifred
Nyiramugisha Emily
Oculi Robert
Odong Tonny
Odongmon Charles
Okene Denis
Onen Tonny Ocii
Onyait Richard
Palma Berocwiny
Pamella Akello
Paul Mukama
Proscovia Chebet
Rebecca Nakayovu
Richard Omongole
Sai Mukoti
Sandra Akello
Sarah Kajumba
Senoga Joseph
Shem Mutala Nseizere
Simeo Ochieng
Simon Peter Longoli
Ssekiranda Fred
Suzan Kavuma Salome Luyiga
Tegule Paul
Thomas Wabwire
Umutesi Kaliisa Barbra
Wanican Genaro
Wasswa Alex
Wilfred Olwortho

Counselors

Alex Byareeta
Alfred Lowanyang
Alice Opondo
Allen Kyozira
Anita Elizabeth N
Anna Bako
Anthony Ekisa
Anthony Oundo Jeeyo
Amindre Juliet
Asega Joel
Atukunda Jackline
Bainomujinya Rubarema Clement
Betty Adumo
Betty Birungi
Betty Kafuko
Betty Lorot
Caroline Ruth Akello
Catherine Adiaka

Catherine Orono Alokait
Christine Ibucho
Christine Nansubuga
Deborah Ashabahebwa
Deogratious Kiyaga
Diana Samali Komungaro
Dinah Akwii Oleicho
Doreen Ajonye
Emmanuael Alele
Esther Chemutai
Eunice Aceng
Evas Tugume
Evelyn Mandhawun
Flavia Nasuuna
Florence Kabyanga
Florence Nsubuga
Joyce Lamwaka
Lillian Nyakato
Loyce Namusobya
Lucy Asiimwe
Lydia Alisingura
Margret Namaganda
Mariam Nanziri
Martha Akello
Mercy Mudondo
Milly Mukite
Moses Miiro Nsubuga
Muhamad Bulega
Musiime Jackylyne
Nanono Jackline
Patricia Unen Kwagala
Paul Ernest Ochen
Priscilla Murungi
Prossy Tusiime
Ritah Kisakye
Robert Emolu Ebong
Sarah Inotu
Sarah Nabawanuka
Sarah Namulema
Vespa Tusiime
Wanyana Juliet
Winfred Kazigo
Winnie Namulema

Drivers

Agaba Amos
Allan Nimusiima
Ampumwize Rawlings
Arinaitwe Allan
Asinguza Amuza
Bahati Moses
Bate Meddy
Bugembe Wilson
Butambuze Julius
Byamugisha Barnet
Byarugaba Charles
City Tyson
Dan Kabala
David Asaba Nkojo
Edgar Kuteesa
Elias Goloba
Emma Majwejwe
Emmanuel Kabunga
George Shindisha
Godon Monday
Hamidu Kalyango
Hannington Talyanguzi
Idy Muhammad
Jjoga David
Jjunju Musa
Kabanda Oscar
Kabunga Emmanuel
Kamusiime Siraji
Kansiime Brian
Kasadha Donanto
Kashaija Ahmed
Kasule Hussein
Katamba Geofrey
Katongole Ronnie
Katungire Clinton
Kauki Bashir
Kaweesa Charles
Kiggundu Willy
Kintuzi Eddie
Kirungi Gerald
Kitimbo Samuel
Kiwendo Abdul
Kwizera Andrew
Kyererezi Francis
Lubega Abdul
Lubega Shafik
Lukyamuzi Kenneth
Luyinda Godfrey
Majid Hassan
Makanda Joshua
Manyindo Patrick
Marinze Jamal
Massa Zubairi
Matovu Hamidu
Mayanja Issa
Moses Okao
Mubiru Ali
Mugabe Hajji Leo
Mugabi Pius
Mugumye Julius
Mujuni Kenneth
Mulimi Charles
Murwani Bruce
Mwesigwa Herman
Nahamya Justus
Natukunda Lucky
Ndawula Joseph
Nkoola Khalif
Nsubuga Charles
Nsubuga Emmanuel
Ntale Martin
Odeke Bonny
Okwii Emmanuel
Oyanga Brian
Richard Akol
Richard Nemirweki
Sebowa Cyrus
Senkya Brian
Sentongo Ananias
Shakul Abudul
Ssebowa Dauda
Ssekaja Jacob
Ssekitoleko Musa
Ssemaganda Muwadda
Sunday Godson
Tebuseeke Moses Ali
Twesiime Emmy
Wagaro Aron
Waiswa Peter
Wobudeya Benon

Laboratory Technicians

Adolf Muhumuza
Anigo Pascal
Benson Okello
Bernald Kiwungulo
Bileyo Christopher
Burunga Kateeba Thelmah

Deogracious Obukui
Emmanuel Sserwadda
Eric Babuuza
Joseph Tomusange
Joshua Omoding
Kennedy Draburu
Kheriza Thomas Becker
Kigozi Yusuf
Kisembo Moses Akiiki
Latifah Nakayenga
Mukwaya Shakulu
Nathan Bekalaze
Nina Namulinda
Nkoba Vianne
Okutui Deogracious
Omodo Bosco
Opwonya Stephen
Prossie Namukwaya Makumbi
Ramathan Amin
Resty Nalugya
Ronald Dhikusoka
Sendakize Aloisius
Tom Okurut
Agero Juliet
Akello Agnes Patra
Asiimwe Brenda
Bamusubire Daniel
Bemera Amon
Byarugaba Obadiah
Dorothy Namaganda
Elaleit Ptrick Sam
Emmanuael Oconi
Emmanuelina Kabatooro
Gladys Iyengu
Hellen Nakawunde
Johnson Ojok
Joyce Kisaakye
Katende Andrew
Kibirige Peter
Kyakimwa Catherine
Lobida Ismail Kadif
Maate Abraham
Margret Nantale
Mugoya Julius
Nabayinda Jawuhara
Nanyonga Agnes
Okori Bonny
Oule Samuel Peter
Ruth Kateeba
Sam Twongyeirwe
Ssenono Deus
Waiswa Emmanuel
William Emaru
William Odokonyero

Satellite Laboratory

Adinani Andama
Adubango Wahab
Ahumuza Ronald
Amandu Christopher
Aniongo Fred
Annet Namuli Christine
Asago Anna
Asigaci Abraham
Asiimwe Kalemire
Baker Turyasingura
Bawera Agnes
Benjamin Niringyirinama
Betty Naziiwa
Charles Kenedy
Daniel Bagambe
Eilu Rogers
Ekwang Jimmy
Esther Kantono
Flavia Ninsiima
Gad Mbeera
Hilda Nabakooza
Hillary Tumushime
Igune James
Ikinyom Joseph
Innocent Tukahirwa
Ivan Otema
Johnson Bwambale
Kagurire Charles Stanley
Kenneth Musinguzi
Kisa Sylvia
Labalpiny Lonnex
Mabonga Julius
Mary Goretti Ajumo
Matovu Keneddy
Michael Mulwana
Nicholas Okengo
Niwagaba Aggrey
Ocan Ben
Oliver Nakamaanya
Olore Joseph
Owili Joseph
Richard Maghada
Sam Okello
Scovia Nafuna
Shamim Bakuwera
Ssegutunga George
Ssekyewa Rashid
Sunday Monica
Tsongo Lawrence
Turyabe Goodwill Mark

APPENDIX E HOUSEHOLD QUESTIONNAIRE

HOUSEHOLD SCHEDULE

LINE NO.	USUAL RESIDENTS AND VISITORS	RELATIONSHIP TO HEAD OF HOUSEHOLD	SEX	RESIDENCE		AGE	
	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."					IF LESS THAN 2 YEARS, RECORD IN MONTHS.	
	AFTER LISTING THE NAME AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON ASK QUESTIONS 2A-2C BELOW TO BE SURE THAT THE SCHEDULE IS COMPLETE.	What is the relationship of (**NAME**) to the head of the household? SEE CODES BELOW	Is (**NAME**) Male or Female?	Does (**NAME**) usually live here?	Did (**NAME**) sleep here last night?	How old is (**NAME**)?	Is age of (**NAME**) recorded in MONTHS/ YEARS?
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1			M F	Y N	Y N		MONTHS YEARS
2			M F	Y N	Y N		MONTHS YEARS
3			M F	Y N	Y N		MONTHS YEARS
4			M F	Y N	Y N		MONTHS YEARS
5			M F	Y N	Y N		MONTHS YEARS
6			M F	Y N	Y N		MONTHS YEARS
7			M F	Y N	Y N		MONTHS YEARS
8			M F	Y N	Y N		MONTHS YEARS
9			M F	Y N	Y N		MONTHS YEARS
10			M F	Y N	Y N		MONTHS YEARS

HOUSEHOLD SCHEDULE (continued)

CODES FOR COLUMN 3: RELATIONSHIP TO HOUSEHOLD HEAD

01 = HEAD
02 = WIFE/HUSBAND/PARTNER
03 = SON OR DAUGHTER
04 = SON-IN-LAW/DAUGHTER-IN-LAW
05 = GRANDCHILD
06 = PARENT
07 = PARENT-IN-LAW
08 = BROTHER/SISTER
09 = CO-WIFE
10 = OTHER RELATIVE
11 = ADOPTED/ FOSTER/STEPCHILD
12 = NOT RELATED
-8 = DON'T KNOW

LINE NO.	IF AGED 15-17 YEARS EMANCIPATION STATUS	LAST TIME USUAL RESIDENT SLEPT IN HOUSEHOLD		LIVES AWAY	COUNTRY OR PROVINCE	SICK PERSON
	Is (**NAME**) emancipated? Emancipated minors may include those that society may regard as mature minors by law, or those legally married who are aged between 15-17 years and/or are free from any legally competent representative as defined by law in Uganda.	CHECK COLUMN 6, IF NO, when was the last time, **(NAME)** slept the night in the household? MONTH (SEE CODES BELOW)	YEAR	Is (**NAME**) in another district or country?	Which district or country is (**NAME**) in currently? (SEE CODES BELOW)	Has (**NAME**) been very sick for at least 3 months during the past 12 months, that is (**NAME**) was too sick to work or do normal activities?
(1)	(9)	(10)		(11)	(12)	(13)
1	Y N		DK = -8 REFUSED = -9	Y N		Y N
2	Y N		DK = -8 REFUSED = -9	Y N		Y N
3	Y N		DK = -8 REFUSED = -9	Y N		Y N
4	Y N		DK = -8 REFUSED = -9	Y N		Y N
5	Y N		DK = -8 REFUSED = -9	Y N		Y N
6	Y N		DK = -8 REFUSED = -9	Y N		Y N
7	Y N		DK = -8 REFUSED = -9	Y N		Y N
8	Y N		DK = -8 REFUSED = -9	Y N		Y N
9	Y N		DK = -8 REFUSED = -9	Y N		Y N
10	Y N		DK = -8 REFUSED = -9	Y N		Y N

HOUSEHOLD SCHEDULE (continued)

☐ **TICK HERE IF CONTINUATION SHEET USED**

Just to make sure I have a complete listing, are there any other persons such as small children or infants that we have not listed? YES ☐ NO ☐

Are there any other people such as domestic servants or friends who may not be members of your household who usually live here? YES ☐ NO ☐

Are there any guests or temporary visitors staying here, or anyone else who stayed here last night who we have not seen and listed? YES ☐ NO ☐

ADD TO SCHEDULE

IF NO, INTERVIEWER SAYS: "Thank you for confirming the Household Roster is complete."

CODES FOR COLUMN 10: LAST TIME SLEPT IN HOUSEHOLD

01 = JANUARY
02 = FEBRUARY
03 = MARCH
04 = APRIL
05 = MAY
06 = JUNE
07 = JULY
08 = AUGUST
09 = SEPTEMBER
10 = OCTOBER
11 = NOVEMBER
12 = DECEMBER
-8 = DON'T KNOW
-9 = REFUSED MONTH

CODES FOR COLUMN 12: PROVINCE/COUNTRY PRESENTLY IN

If district, see list of 134 DISTRICTS
136 = DEMOCRATIC REPUBLIC OF THE CONGO (DRC)
137 = KENYA
138 = SOUTH SUDAN
139 = RWANDA
140 = TANZANIA
996= ANOTHER (Specify) _____
-8 = DON'T KNOW
-9 = REFUSED

HOUSEHOLD SCHEDULE (for minors—skip if emancipated)

LINE NO.	IF (**NAME**) is 0-17 years: SCHOOL	IF (**NAME**) is 0-17 years: ORPHAN STATUS / PARENT OR GUARDIAN				IF (**NAME**) is 15-17 years: WRITTEN PERMISSION TO PARTICIPATE	
	Interviewer says: "The next step will be to answer some additional questions for the Household Members who are 0-17 years old." These questions are regarding (**NAME**). Is (**NAME**) currently enrolled in school?	Is (**NAME**)'s natural mother alive?	Does (**NAME**)'s natural mother usually live in this household or was a guest last night? IF YES: RECORD MOTHER'S LINE NUMBER. IF NO: RECORD **FEMALE** GUARDIAN'S LINE NUMBER OR '00' IF FEMALE PARENT OR GUARDIAN NOT PRESENT IN HH.	Is (**NAME**)'s natural father alive?	Does (**NAME**)'s natural father usually live in this household or was a guest last night? IF YES: RECORD FATHER'S LINE NUMBER. IF NO: RECORD **MALE** GUARDIAN'S LINE NUMBER OR '00' IF MALE PARENT OR GUARDIAN NOT PRESENT IN HH.	RECORD LINE NUMBER OF PARENT / GUARDIAN WHO CAN GIVE PERMISSION FOR (**NAME**) TO PARTICIPATE IN THE SURVEY.	You said that there is no adult or parent/ guardian in the household who can give permission for (**NAME**) to participate in the survey. Is this correct?
(1)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
1	Y N	Y N DK → 17		Y N DK → 19			Y N
2	Y N	Y N DK → 17		Y N DK → 19			Y N
3	Y N	Y N DK → 17		Y N DK → 19			Y N
4	Y N	Y N DK → 17		Y N DK → 19			Y N
5	Y N	Y N DK → 17		Y N DK → 19			Y N
6	Y N	Y N DK → 17		Y N DK → 19			Y N
7	Y N	Y N DK → 17		Y N DK → 19			Y N
8	Y N	Y N DK → 17		Y N DK → 19			Y N
9	Y N	Y N DK → 17		Y N DK → 19			Y N
10	Y N	Y N DK → 17		Y N DK → 19			Y N

TOTAL ELIGIBLE MEN (ADULTS 15+ YEARS AND EMANCIPATED MINORS) | |

TOTAL ELIGIBLE WOMEN (ADULTS 15+ YEARS AND EMANCIPATED MINORS) | |

HOUSEHOLD SCHEDULE (for minors—skip if emancipated) (continued)						
LINE NO.	SICKNESS AND RESIDENCE OF BIOLOGICAL PARENTS				MOTHER DEAD OR SICK	FATHER DEAD OR SICK
	CHECK COLUMN 15, IF COLUMN 15 = 'N' OR 'DK' →25 IF COLUMN 15 = 'Y': Has (**NAME**)'s natural mother been very sick for at least 3 months during the past 12 months, that is she was too sick to work or do normal activities?	IF MOTHER SICK: Does (**NAME**)'s natural mother have HIV/AIDS?	CHECK COLUMN 17, IF COLUMN 17 'N' OR 'DK' →26 IF COLUMN 17 'Y': Has (**NAME**)'s natural father been very sick for at least 3 months during the past 12 months, that is he was too sick to work or do normal activities?	IF FATHER SICK: Does (**NAME**)'s natural father have HIV/AIDS?	IF CHILD'S NATURAL MOTHER HAS DIED (COLUMN 15 'N') OR BEEN SICK (COLUMN 21 'Y'), SELECT Y.	IF CHILD'S NATURAL FATHER HAS DIED (COLUMN 12'N') OR BEEN SICK (COLUMN 23 'Y'), SELECT Y.
(1)	(21)	(22)	(23)	(24)	(25)	(26)
1	Y N DK → 23	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
2	Y N DK → 23	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
3	Y N DK → 23	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
4	Y N DK → 23	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
5	Y N DK → 23	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
6	Y N DK → 23	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
7	Y N DK → 23	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
8	Y N DK → 23	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
9	Y N DK → 23	Y N DK	Y N DK → 21	Y N DK	Y N	Y N
10	Y N DK → 23	Y N DK	Y N DK → 21	Y N DK	Y N	Y N

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN			
101	DO NOT READ: CHECK COLUMN 7 IN THE HOUSEHOLD SCHEDULE. **ANY CHILD AGE 0-17 YEARS? (SKIP IF EMANCIPATED)**	NUMBER OF CHILDREN 0-17 YRS: ☐☐	NONE→113
102	DO NOT READ: CHECK COLUMN 25 IN THE HOUSEHOLD SCHEDULE. **ANY CHILD WHOSE MOTHER HAS DIED OR IS VERY SICK?**	YES ..... 1 NO 2	YES→104
103	DO NOT READ: CHECK COLUMN 26 IN THE HOUSEHOLD SCHEDULE. **ANY CHILD WHOSE FATHER HAS DIED OR IS VERY SICK?**	YES ..... 1 NO 2	NO→113
104	**Record names, line numbers, and ages of all children 0-17 who are identified in columns 25, and 26 as having a mother and/or father who has died or has been very sick.**		

	CHILD (1)	CHILD (2)	CHILD (3)
NAME	_____	_____	_____
LINE NUMBER (FROM COLUMN 1)	☐☐	☐☐	☐☐
AGE (FROM COLUMN 7)	☐☐	☐☐	☐☐

INTERVIEWER SAYS: "I would like to ask you about any formal, organized help or support for children that your household may have received for which you did not have to pay. By formal, organized support, I mean help provided by someone working for a program. This program could be government, private, religious, charity, or community-based."

105	Now I would like to ask you about the support your household received for (**NAME**). In the last 12 months, has your household received any medical support for (**NAME**), such as medical care, supplies, or medicine, for which you did not have to pay?	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9
106	In the last 12 months, has your household received any emotional or psychological support for (**NAME**) such as companionship, counseling from a trained counselor, or spiritual support, which you received at home and for which you did not have to pay?	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9 NO, DK,R→ 108	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9 NO, DK,R→ 108	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9 NO, DK,R→ 108
107	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 REFUSED ..... -9	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES		SKIP
SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN (continued)				
108	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 REFUSED ..... -9 NO, DK,R→ 110	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9 NO, DK,R→ 110	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9 NO, DK,R→ 110
109	Did your household receive any of this material support for (**NAME**) in the past 3 months?	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9
110	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 REFUSED ..... -9 NO, DK,R→ 112	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9 NO, DK,R→ 112	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9 NO, DK,R→ 112
111	Did your household receive any of this social support for (**NAME**) in the past 3 months?	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9
112	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 REFUSED ..... -9	YES ..... 1 NO, DID NOT RECEIVE SUPPORT ..... 2 NO, CHILD DOES NOT ATTEND SCHOOL ..... 3 DON'T KNOW ..... -8 REFUSED ..... -9	YES ..... 1 NO, DID NOT RECEIVE SUPPORT ..... 2 NO, CHILD DOES NOT ATTEND SCHOOL ..... 3 DON'T KNOW ..... -8 REFUSED ..... -9

CONTINUE TO NEXT CHILD IF OTHER CHILDREN WHOSE MOTHER AND/OR FATHER HAS DIED OR IS VERY SICK.

MATRIX END

INTERVIEWER SAYS: "Thank you for the information regarding (**NAME**)."

IF THERE IS ANOTHER CHILD 0-17 YEARS IN THE HOUSEHOLD WHO HAS BEEN IDENTIFIED IN COLUMN 17 AS HAVING A MOTHER/FATHER WHO HAS DIED OR IS VERY SICK BESIDES (NAME) → CONTINUE TO 105 AND ASK ABOUT THE NEXT CHILD.

INTERVIEWER SAYS: "Next, I would like to ask you about (**NAME**)".

☐ **TICK IF CONTINUATION SHEET REQUIRED.**

IF NO OTHER CHILDREN, CONTINUE HOUSEHOLD INTERVIEW.

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
HOUSEHOLD DEATHS			
113	Now I would like to ask you more questions about your household. Has any usual resident of your household died since January 1, 2018?	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9	NO, DK, R → 201
114	How many usual household residents died since January 1, 2018?	NUMBER OF DEATHS ☐☐	

ASK 115-118 AS APPROPRIATE FOR EACH PERSON WHO DIED. IF THERE WERE MORE THAN 3 DEATHS USE ADDITIONAL QUESTIONNAIRES.

		NAME 1ST DEATH	NAME 2ND DEATH	NAME 3RD DEATH
115	What was the name of the person who died (most recently/before him/her)?	_____	_____	_____
116	When did (**NAME**) die? Please give your best guess.	DAY ☐☐ MONTH ☐☐ YEAR ☐☐ DON'T KNOW ..... -8 REFUSED ..... -9	DAY ☐☐ MONTH ☐☐ YEAR ☐☐ DON'T KNOW ..... -8 REFUSED ..... -9	DAY ☐☐ MONTH ☐☐ YEAR ☐☐ DON'T KNOW ..... -8 REFUSED ..... -9
117	Was (**NAME**) male or female?	MALE ..... 1 FEMALE ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9	MALE ..... 1 FEMALE ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9	MALE ..... 1 FEMALE ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9
118	How old was (**NAME**) when (he/she) died? RECORD DAYS IF LESS THAN 1 MONTH, MONTHS IF LESS THAN 1 YEAR, AND COMPLETED YEARS IF 1 YEAR OR MORE.	DAYS ☐☐ MONTHS ☐☐ YEARS ☐☐ DON'T KNOW ..... -8 REFUSED ..... -9	DAYS ☐☐ MONTHS ☐☐ YEARS ☐☐ DON'T KNOW ..... -8 REFUSED ..... -9	DAYS ☐☐ MONTHS ☐☐ YEARS ☐☐ DON'T KNOW ..... -8 REFUSED ..... -9

CONTINUE TO NEXT DEATH ACCORDING UP TO THE NUMBER REPORTED FROM 114.

☐ **TICK IF CONTINUATION SHEET REQUIRED.**

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
HOUSEHOLD CHARACTERISTICS			
INTERVIEWER SAYS: "Now I would like to ask you more questions about your household."			
201	What is the main source of drinking water for members of your household?	**PIPED WATER** PIPED INTO DWELLING ..... 11 PIPED TO YARD/PLOT ..... 12 PUBLIC TAP/STANDPIPE ..... 13 TUBE WELL OR BOREHOLE ..... 21 **DUG WELL** PROTECTED WELL ..... 31 UNPROTECTED WELL ..... 32 **WATER FROM SPRING** PROTECTED SPRING ..... 41 UNPROTECTED SPRING ..... 42 RAINWATER ..... 51 TANKER TRUCK ..... 61 CART WITH SMALL TANK ..... 71 SURFACE WATER (RIVER/DAM/LAKE/POND / STREAM/CANAL) ..... 81 BOTTLED WATER ..... 91 OTHER (SPECIFY) ..... 96 _____ DON'T KNOW ..... -8 REFUSED ..... -9	
202	What kind of toilet facility do members of your household usually use?	FLUSH OR POUR FLUSH TOILET ..... 11 TRADITIONAL PIT LATRINE ..... 21 VENTILATED IMPROVED PIT LATRINE (VIP) ..... 22 NO FACILITY/BUSH/FIELD ..... 61 OTHER (SPECIFY) ..... 96 _____ DON'T KNOW ..... -8 REFUSED ..... -9	IF NO FACILITY/ BUSH/ FIELD = DK, R→204
203	Do you share this toilet facility with other households?	YES ..... 1 NO ..... 2 DON'T KNOW ..... -8 REFUSED ..... -9	
204	Does your household have:	ELECTRICITY ..... A A WORKING RADIO ..... B A WORKING TELEVISION ..... C A WORKING TELEPHONE/MOBILE TELEPHONE ..... D A WORKING REFRIGERATOR ..... E SOLAR PANELS ..... G NONE OF THE ABOVE ..... F DON'T KNOW ..... Y REFUSED ..... Z	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
HOUSEHOLD CHARACTERISTICS (continued)			
205	What type of fuel does your household mainly use for cooking?	ELECTRICITY ..... 1 LPG / NATURAL GAS ..... 2 BIOGAS ..... 3 PARAFFIN / KEROSENE ..... 4 COAL, LIGNITE ..... 5 CHARCOAL FROM WOOD ..... 6 FIREWOOD / STRAW / SHRUBS ..... 7 DUNG ..... 8 NO FOOD COOKED IN HOUSEHOLD ..... 95 OTHER (SPECIFY) ..... 96 _____ DON´T KNOW ..... -8 REFUSED ..... -9	
206	Main material of floor (RECORD OBSERVATION).	**NATURAL FLOOR** EARTH / SAND / MUD ..... 11 DUNG ..... 12 **RUDIMENTARY FLOOR** WOOD PLANKS ..... 21 PALM / BAMBOO ..... 22 **FINISHED FLOOR** PARQUET OR POLISHED WOOD ..... 31 VINYL OR ASPHALT STRIP ..... 32 CERAMIC TILES ..... 33 CEMENT ..... 34 CARPET ..... 35 OTHER (SPECIFY) ..... 96 _____	
207	Main material of the roof (RECORD OBSERVATION).	**NATURAL ROOFING** NO ROOF ..... 11 THATCH / PALM LEAF ..... 12 DUNG / MUD ..... 13 **RUDIMENTARY ROOFING** CORRUGATED IRON ..... 21 TIN CANS ..... 22 **FINISHED ROOFING** ASBESTOS SHEET ..... 31 CONCRETE ..... 32 TILES ..... 33 OTHER (SPECIFY) ..... 96 _____	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
HOUSEHOLD CHARACTERISTICS (continued)			
208	Main material of the exterior walls (RECORD OBSERVATION).	**NATURAL WALLS** NO WALLS ..... 11 CANE / PALM / TREE TRUNKS ..... 12 DUNG / MUD ..... 13 **RUDIMENTARY WALLS** BAMBOO WITH MUD ..... 21 STICKS WITH MUD ..... 22 PLYWOOD/CARDBOARD ..... 23 CARTON ..... 24 REUSED WOOD ..... 25 **FINISHED WALLS** CEMENT ..... 31 STONE WITH LIME/CEMENT ..... 32 BRICKS ..... 33 CEMENT BLOCKS ..... 34 WOOD PLANKS/SHINGLES ..... 35 OTHER (SPECIFY) ..... 96 _____	
209	How many rooms are used for sleeping?	NUMBER OF ROOMS: ☐☐	
210	Does any member of your household own:	A BICYCLE ..... A A WORKING MOTORCYCLE OR MOTOR SCOOTER ..... B A WORKING CAR OR TRUCK ..... C A WORKING BOAT WITH A MOTOR ..... D NONE OF THE ABOVE ..... F DON´T KNOW ..... Y REFUSED ..... Z	
211	Altogether, how many COWS do members of your household own?	NUMBER OF COWS: ☐☐ OWN BUT NOT SURE HOW MANY ..... -7 REFUSED ..... -9	
212	Altogether, how many GOATS/SHEEP do members of your household own?	NUMBER OF GOATS/SHEEP: ☐☐ OWN BUT NOT SURE HOW MANY ..... -7 REFUSED ..... -9	
213	Altogether, how many POULTRY (e.g., DUCKS, CHICKENS) do members of your household own?	NUMBER OF POULTRY (E.G., DUCKS, CHICKENS: ☐☐ OWN BUT NOT SURE HOW MANY ..... -7 REFUSED ..... -9	
214	Altogether, how many DOGS do members of your household own?	NUMBER OF DOGS: ☐☐ OWN BUT NOT SURE HOW MANY ..... -7 REFUSED ..... -9	

NO.	QUESTIONS AND INSTRUCTIONS	CODING CATEGORIES	SKIP
HOUSEHOLD CHARACTERISTICS (continued)			
215	Altogether, how many WORK ANIMALS (CAMELS, HORSES, DONKEYS) do members of your household own?	NUMBER OF WORK ANIMALS: ☐☐ OWN BUT NOT SURE HOW MANY ..... -7 REFUSED ..... -9	
ECONOMIC SUPPORT			
Now I will ask you questions on economic support you have received.			
301	Has your household received any of the following forms of external economic support in the last 12 months? (INTERVIEWER: READ THE RESPONSES ALOUD SELECT UP TO THREE RESPONSES FOR THE MOST IMPORTANT SOURCES OF OUTSIDE SUPPORT.)	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 (EG, AGRICULTURAL INPUTS) ..... E FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD OR EXTERNAL INSTITUTION ..... F MATERIAL OR FINANCIAL SUPPORT FOR SHELTER ..... G SOCIAL PENSION ..... H REMITTANCES ..... I CASH PROVIDED FOR DROUGHT RELIEF ..... J OTHER (SPECIFY) ..... X _____ DON'T KNOW ..... Y REFUSED ..... Z	IF NOTHING, DON'T KNOW, REFUSED →END OF SECTION

END OF HOUSEHOLD INTERVIEW

INTERVIEWER SAY: "This is the end of the household survey. Thank you very much for your time and for your responses. Do you have any questions for me at this time? "

END TIME

END	RECORD THE END TIME. USE 24 HOUR TIME. IF START TIME IS 3:12 PM, RECORD 15 HOURS, 12 MINUTES, NOT 03 HOURS, 12 MINUTES.	☐☐☐☐ HOUR: ☐☐ MINUTES: ☐☐	

INTERVIEWER OBSERVATIONS:

TO BE COMPLETED AFTER THE INTERVIEW:

COMMENTS ABOUT RESPONDENT:

COMMENTS ABOUT SPECIFIC QUESTIONS:

GENERAL QUESTIONS:

APPENDIX F ADULT QUESTIONNAIRE

NO	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
LANGUAGE			
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."			
L1	LANGUAGE OF QUESTIONNAIRE	ENGLISH = 1 ATESO = 2 KARAMAJONG = 3 LUGANDA = 4 LUGBARA = 5 LUO = 6 RUNYANKOLE-RUKIGA = 7 RUNYORO-RUTORO = 8	
L2	LANGUAGE OF INTERVIEW	ENGLISH = 1 ATESO = 2 KARAMAJONG = 3 LUGANDA = 4 LUGBARA = 5 LUO = 6 RUNYANKOLE-RUKIGA = 7 RUNYORO-RUTORO = 8 OTHER (SPECIFY) = 96 _____	
L3	NATIVE LANGUAGE OF PARTICIPANT	ENGLISH = 1 ATESO = 2 KARAMAJONG = 3 LUGANDA = 4 LUGBARA = 5 LUO = 6 RUNYANKOLE-RUKIGA = 7 RUNYORO-RUTORO = 8 OTHER (SPECIFY) = 96 _____	IF OTHER → L4
L4	TRANSLATION USED	YES = 1 NO = 2	
MODULE ONE: RESPONDENT BACKGROUND			
Interviewer says: "Thank you for agreeing to participate in this survey. The first set of questions is about your life in general. Afterwards, we will move on to other topics."			
101	What is your 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	

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE ONE: RESPONDENT BACKGROUND (continued)			
102	What is your religion?	CATHOLIC = 1 ANGLICAN/PROTESTANT = 2 SDA = 3 ORTHODOX = 4 PENTECOSTAL = 5 OTHER CHRISTIAN = 6 MUSLIM = 7 BAHAI = 8 TRADITIONAL = 9 HINDU = 10 NONE = 11 OTHER (SPECIFY) = 96 _____ DON'T KNOW = -8 REFUSED = -9	
103	Have you ever attended school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF IF NO, DON'T KNOW, REFUSED → 106
104	Are you currently enrolled in school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
105	What is your highest level you have completed?	PRIMARY 1 = 1 PRIMARY 2 = 2 PRIMARY 3 = 3 PRIMARY 4 = 4 PRIMARY 5 = 5 PRIMARY 6 = 6 PRIMARY 7 = 7 SECONDARY 1 = 9 SECONDARY 2 = 10 SECONDARY 3 = 11 SECONDARY 4 = 12 SECONDARY 5 = 13 SECONDARY 6 = 14 TERTIARY = 15 DON'T KNOW =-8 REFUSED =-9	
106	How long have you lived in this area or community?	MONTHS ____ = 2 YEARS ____ = 3 I HAVE ALWAYS LIVED HERE = 3 HH VISITOR FROM DIFFERENT COMMUNITY OR AREA = 4 DON'T KNOW = -8 REFUSED = -9	IF YEARS OR HAVE ALWAYS LIVED HERE → 109
107	Just before you moved here, did you live in Kampala, in a town, or in a rural area?	KAMPALA = 1 TOWN = 2 RURAL AREA =3 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE ONE: RESPONDENT BACKGROUND (continued)			
108	Just before you moved here, which district did you live in? If you lived outside of Uganda, which country did you live in?	(LIST OF 134 DISTRICTS] = 1-134 DEMOCRATIC REPUBLIC OF THE CONGO (DRC) = 136 KENYA = 137 SOUTH SUDAN = 138 RWANDA = 139 TANZANIA = 140 OTHER COUNTRIES (SPECIFY) = 996 _____ DON'T KNOW) = -8 REFUSED) = -9	
109	Have you ever lived away from home for more than 1 month at a time?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 115
110	When was the last time you lived away from home for over a month?	MONTH_____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR_____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	IF > 1 YEAR BEFORE CURRENT DATE, OR DON'T KNOW OR REFUSED MONTH AND DON'T KNOW OR REFUSED YEAR → 112
111	How many times have you been away from home for one or more months IN THE PAST YEAR?	NUMBER OF TIMES ____ DON'T KNOW = -8 REFUSED = -9	
112	The last time you were away from home for more than one month, where were you? Interviewer: If you were in more than one place while you were away, please give the place you spent the most time.	ANOTHER AREA IN THIS DISTRICT = 1 ANOTHER DISTRICT IN UGANDA = 2 ANOTHER COUNTRY = 3 OTHER (SPECIFY) = 96 _____ DON'T KNOW =-8 REFUSED =-9	
113	The last time you were away from home for more than one month, where were you? Interviewer: If you were in more than one place while you were away, please give the place you spent the most time.	(LIST OF 134 DISTRICTS] = 1-134 DEMOCRATIC REPUBLIC OF THE CONGO (DRC) = 136 KENYA = 137 SOUTH SUDAN = 138 RWANDA = 139 TANZANIA = 140 OTHER COUNTRIES (SPECIFY) = 996 _____ DON'T KNOW = -8 REFUSED = -9	
114	What was the main reason you went there?	WORK = 1 SCHOOL/UNIVERSITY = 2 FAMILY/MARRIAGE = 3 ACCESS HEALTH OR OTHER SERVICES = 4 CONFLICT OR NATURAL DISASTER (FLOODS, CYCLONE, DROUGHT) = 5 OTHER (SPECIFY) = 96 _____ DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE ONE: RESPONDENT BACKGROUND (continued)			
115	Have you done any work in the last 12 months for which you received cash or goods as payment? This includes work on the family farm or business for which you may not have been paid directly.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 201
116	Have you done any work in the last seven days for which you received cash or goods as payment? This includes work on the family farm or business for which you may not have been paid directly.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
117	What is your occupation? That is, what kind of work do you mainly do?	MINING = 1 AGRICULTURE/FARMING = 2 TRANSPORT = 3 CONSTRUCTION = 4 UNIFORMED PERSONNEL = 5 INFORMAL TRADE = 6 GARMENT INDUSTRIES = 7 HOUSEKEEPER = 8 SEX WORKER = 9 STUDENT = 10 OTHER (SPECIFY) = 96 _____ DON'T KNOW = -8 REFUSED = -9	
118	Where do you normally work? In your home community, elsewhere in region/ country, or outside the country?	HOME COMMUNITY=1 SAME COUNTRY, DIFFERENT COMMUNITY = 2 OUTSIDE THE COUNTRY = 3 DON'T KNOW = -8 REFUSED = -9	
MODULE 2: MARRIAGE			
Interviewer says: "Now I would like to ask you about your current and previous relationships and/or marriages."			
201	Have you ever been married or lived together with a [man/woman] as if married?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED SKIP TO NEXT MODULE
202	How old were you the first time you married or started living with a [man/ woman] as if married?	____YEARS OLD DON'T KNOW = -8 REFUSED = -9	
203	What is your marital status now: are you married, living together with someone as if married, widowed, divorced, or separated/single?	MARRIED = 1 LIVING TOGETHER = 2 WIDOWED = 3 DIVORCED = 4 SEPARATED/SINGLE = 5 DON'T KNOW = -8 REFUSED = -9	IF WIDOWED, DIVORCED, SEPARATED/ SINGLE, DON'T KNOW, REFUSED, SKIP TO NEXT MODULE
Interviewer says: "The next several questions are about your current husband, wife or partner(s)."			

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MARRIAGE GROUP FOR MEN			
204	Altogether, how many wives or live-in partners do you have who live with you here in this household?	NUMBER OF WIVES OR PARTNERS LIVING IN HOUSEHOLD_____ DON'T KNOW = -8 REFUSED = -9	
205	Please enter the name(s) of your wife/ partner that lives with you in this household.	_____ (REPEAT AS NECESSARY) NOT LISTED IN HOUSEHOLD DON'T KNOW = -8 REFUSED = -9	
206	How many wives or live-in partners do you have who live elsewhere? This would include wives or partners that you stay with or support in other households.	NUMBER OF WIVES/LIVE-IN PARTNERS____ DON'T KNOW = -8 REFUSED = -9	IF NONE, DON'T KNOW, REFUSED → 330
207	You mentioned that you have wife/ wives who live elsewhere. Where are they?	STAYING IN A DIFFERENT HOUSEHOLD, SAME COMMUNITY = 1 STAYING IN A DIFFERENT COMMUNITY, SAME REGION/DISTRICT = 2 STAYING IN A DIFFERENT REGION/ DISTRICT = 3 STAYING IN A DIFFERENT COUNTRY = 4 DON'T KNOW = -8 REFUSED = -9	FOR ALL → 330
MARRIAGE GROUP FOR WOMEN			
208	Is your husband or partner living with you now or is he staying elsewhere?	LIVING IN THE HOUSEHOLD = 0 STAYING IN A DIFFERENT HOUSEHOLD, SAME COMMUNITY = 1 STAYING IN A DIFFERENT COMMUNITY, SAME REGION/DISTRICT = 2 STAYING IN A DIFFERENT REGION/ DISTRICT = 3 STAYING IN A DIFFERENT COUNTRY = 4 DON'T KNOW = -8 REFUSED = -9	IF LIVING IN THE HOUSHOLD → 211
209	Please select the husband/partner who lives with you (SEE LIST OF PERSONS ON HH ROSTER)	_____ NOT LISTED IN HOUSEHOLD = 96 DON'T KNOW = -8 REFUSED = -9	IF NOT LISTED IN HOUSEHOLD → 211
210	Please enter the name of your husband/partner that lives with you.	_____ DON'T KNOW = -8 REFUSED = -9	
211	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 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 301
212	Including yourself, in total, how many wives or live-in partners does your husband or partner have?	NUMBER OF WIVES/LIVE-IN PARTNERS__ DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE THREE: REPRODUCTION			
Interviewer says: "Now I would like to ask you questions about your pregnancies and your children."			
301	How many times have you 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, even if the baby subsequently died.]	NUMBER OF LIVE BIRTHS ___ DON'T KNOW = -8 REFUSED = -9	IF 0, DON'T KNOW, REFUSED → 329
302	How many live births have you had since the 1st of January, 2017?	NUMBER OF LIVE BIRTHS ___ DON'T KNOW = -8 REFUSED = -9	IF 0, NO, DON'T KNOW, REFUSED → 329
Interviewer says: "Now I would like to ask you some questions about the last pregnancy that resulted in a live birth since the 1st of January, 2017"			
303	Did your last pregnancy result in birth to twins or more?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
304	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, even if the baby subsequently died. (IF THE CHILD WAS NOT NAMED BEFORE DEATH, INPUT BIRTH AND THE BIRTH ORDER NUMBER)	NAME _____	IF 303 = YES, NAME LISTING WILL BE REPEATED FOR EACH MULTIPLE BIRTH
305	During your last pregnancy with [LAST CHILD NAME(S)], did you visit a health facility for antenatal care?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF YES SKIP 306 IF DON'T KNOW, REFUSED → 314
306	What is the main reason you did not visit a clinic for antenatal care when you were pregnant with [LAST CHILD]	CLINIC WAS TOO FAR AWAY = 1 COULD NOT TAKE TIME OFF WORK/TOO BUSY = 2 COULD NOT AFFORD TO PAY FOR THE SERVICE = 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	
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."			

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE THREE: REPRODUCTION (continued)			
307	Have you ever tested for HIV before your pregnancy with [CHILD NAME]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 310
308	Did you test positive for HIV before your pregnancy with [CHILD NAME]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 310
309	At the time of your first antenatal care visit when you were last pregnant with [CHILD NAME], were you already taking ARVs, that is, antiretroviral medications to treat HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF YES → 316 IF NO, DON'T KNOW, REFUSED → 312
310	Were you tested for HIV anytime during pregnancy or delivery with [CHILD NAME]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 314
311	What was the result of your last HIV test during your last pregnancy with [CHILD NAME]?	POSITIVE = 1 NEGATIVE = 2 UNKNOWN/INCONCLUSIVE = 3 DID NOT RECEIVE RESULTS = 4 DON'T KNOW = -8 REFUSED = -9	IF NEGATIVE, UNKNOWN /INCONCLUSIVE, DID NOT RECEIVE RESULTS, DON'T KNOW, REFUSED → 314
312	Did you take ARVs at any time during your last pregnancy with [CHILD NAME] to prevent the child from getting HIV?	YES = 1 NO = 2 DON'T KNOW =-8 REFUSED =-9	IF YES, DON'T KNOW, REFUSED → 316
313	What was the main reason you did not take ARVs while you were pregnant with [CHILD NAME]?	WAS NOT PRESCRIBED = 1 I FELT HEALTHY/NOT SICK = 2 COST OF MEDICATIONS = 3 COST OF TRANSPORT = 4 RELIGIOUS REASONS = 5 WAS TAKING TRADITIONAL MEDICATIONS = 6 MEDICATIONS OUT OF STOCK = 7 DID NOT WANT PEOPLE TO KNOW HIV STATUS = 8 DID NOT RECEIVE PERMISSOIN FROM SPOUSE/FAMILY = 9 OTHER (SPECIFY) = 96 _____ DON'T KNOW = -8 REFUSED = -9	
314	Were you tested for HIV at any time after delivery of your last pregnancy with [CHILD NAME]? For example, were you tested while you were breastfeeding or after your completed breastfeeding?	YES = 1 NO = 2 DON'T KNOW =-8 REFUSED =-9	IF NO, DON'T KNOW, REFUSED → 316

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE THREE: REPRODUCTION (continued)			
315	What was the result of the HIV test that you received after delivery of your last pregnancy with [CHILD NAME]?	POSITIVE = 1 NEGATIVE = 2 UNKNOWN/INCONCLUSIVE = 3 DID NOT RECEIVE RESULTS = 4 DON'T KNOW = -8 REFUSED = -9	
316	When did you give birth to [CHILD NAME]? Please give your best guess.		
	Day	DAYS ___ DON'T KNOW DAY = -8 REFUSED DAY = -9	
	Month	MONTHS___ DON'T KNOW MONTH = -8 REFUSED MONTH = -9	
	Year	YEARS___ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
317	Where did you give birth to [CHILD NAME*] during your last pregnancy? Please give your best guess.	AT HOME = 1 AT A HEALTH FACILITY = 2 IN TRANSIT = 3 TRADITIONAL BIRTH ATTENDANT (TBA) = 4 OTHER (SPECIFY) = 96 _____ DON'T KNOW = -8 REFUSED = -9	
318	Is [CHILD NAME] still alive?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF YES, DON'T KNOW, REFUSED→ 320
319	How old was [CHILD NAME] in years when he/she died?	___ MONTHS OLD ___ YEARS OLD DON'T KNOW = -8 REFUSED = -9	
320	Did you ever breastfeed [CHILD NAME]?	YES = 1 NO, NEVER BREASTFEED = 2 NO, CHILD DIED BEFORE BREASTFEEDING = 3 DON'T KNOW = -8 REFUSED = -9	IF NO, NEVER BREASTFEED; NO, CHILD DIED BEFORE BREASTFEEDING; DON'T KNOW; REFUSED → 325
321	Are you still breastfeeding [CHILD NAME]?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	DISPLAY ONLY IF 320 = YES, DON'T KNOW, REFUSED
322	After [CHILD NAME] was born, was he/she tested for HIV?	YES = 1 NO, NOT TESTED FOR HIV = 2 NO, CHILD DIED BEFORE TESTING = 3 DON'T KNOW = -8 REFUSED = -9	IF NO, NOT TESTED FOR HIV; NO, CHILD DIED BEFORE TESTING; DON'T KNOW, REFUSED → 331
323	How old was [CHILD NAME] when he/she first tested for HIV? (ONLY ONE OPTION MAY BE ENTERED)	LESS THAN 1 WEEK = 0 WEEKS ___ = 1 MONTHS ___ = 2 YEARS ___ = 3	

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE THREE: REPRODUCTION (continued)			
324	What was the result of [CHILD NAME]'s first HIV test?	POSITIVE; CHILD HAS HIV = 1 NEGATIVE; CHILD DOES NOT HAVE HIV = 2 UNKNOWN/INCONCLUSIVE = 3 DID NOT RECEIVE RESULTS = 4 DON'T KNOW = -8 REFUSED = -9	
325	Was [CHILD NAME] tested for HIV after you stopped breastfeeding?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	SKIP IF 323 = NO, NEVER BREASTFEED; NO, CHILD DIED BEFORE BREASTFEEDING; DON'T KNOW; REFUSED
326	How old was [CHILD NAME] when he/she last tested for HIV?	LESS THAN 1 WEEK = 0 WEEKS ___ = 1 MONTHS ___ = 2 YEARS ___ = 3 CHILD ONLY TESTED ONCE FOR HIV (FIRST TEST IS THE SAME AS LAST TEST) = 4 DON'T KNOW = -8 REFUSED = -9	IF CHILD ONLY TESTED ONCE FOR HIV (FIRST TEST IS THE SAME AS LAST TEST), DON'T KNOW, REFUSED → 331
327	What was the result of [CHILD NAME]'s most recent HIV test?	POSITIVE; CHILD HAS HIV = 1 NEGATIVE; CHILD DOES NOT HAVE HIV = 2 UNKNOWN/INCONCLUSIVE = 3 DID NOT RECEIVE RESULTS = 4 DON'T KNOW = -8 REFUSED = -9	SKIP IF 327= POSITIVE; CHILD HAS HIV
328	Interviewer says: "Thank you for the information regarding [CHILD NAME]."		IF 306 = YES, RETURN TO 317 FOR EACH VALUE OF 307
Interviewer says: "I will now ask about current pregnancies."			
329	Are you pregnant now?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF YES → END OF MODULE
Interviewer says: "I will now ask you about family planning."			
330	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 NO, DON'T KNOW, REFUSED → END OF MODULE
331	Which method are you or your partner using?	FEMALE STERILIZATION = A MALE STERILIZATION = B PILL = C IUD/"COIL" = D INJECTIONS = E IMPLANT = F CONDOM = G FEMALE CONDOM = H RHYTHM/NATURAL METHODS/CYCLE = I BEADS/STANDARD DAYS/WITHDRAWL = J NOT HAVING SEX = K OTHER = X _____ (SPECIFY) DON'T KNOW = Y REFUSED = Z	IF OTHER → END OF MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE FOUR: MALE CIRCUMCISION (SKIP IF FEMALE)			
Interviewer says: "I will be asking a few questions about circumcision. Circumcision is the complete removal of the foreskin from the penis. If you feel comfortable, I can show you a picture of an uncircumcised penis, a partially circumcised penis and a completely circumcised penis."			
401	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, FULLY CIRCUMCISED = 1 YES, PARTIALLY CIRCUMCISED = 2 NOT CIRCUMCISED = 3 DON'T KNOW = -8 REFUSED = -9	IF YES, FULLY CIRCUMCISED, YES, PARTIALLY CIRCUMCISED → 403 IF DON'T KNOW, REFUSED → END OF MODULE
402	Are you planning to get circumcised within the next 6 months?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF YES, NO, DON'T KNOW, REFUSED → END OF MODULE
Interviewer says: "Some men are circumcised by a medical provider such as a doctor, clinical officer, nurse, or midwife. Some men are circumcised by a traditional practitioner. Some men are circumcised by both a medical provider and a traditional practitioner."			
403	Have you been to initiation school?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
404	Were you circumcised by a traditional practitioner or circumciser	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
405	Were you circumcised by a medical provider? By medical provider, I mean a doctor, clinical officer, nurse or midwife.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → END OF MODULE
406	How old were you when you were circumcised by the medical provider? Please give your best guess.	_____ YEARS OLD DON'T KNOW = -8 REFUSED = -9	IF 0 → END OF MODULE
MODULE FIVE: SEXUAL ACTIVITY			
Interviewer says: "In this part of the interview, I will be asking about your sexual relationships and practices. These questions will help us better understand how they may affect your life and risk for HIV. Sex is when a penis enters a vagina or the anus." "Remember 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."			
501	How old were you when you had sex for the very first time? If they are unsure, confirm if they have had vaginal sex. If they said an age less than 12 years: Confirm age at first sex. Are you sure this is what the participant said?	AGE AT FIRST SEX____ NEVER HAD SEX = -96 DON'T KNOW = -8 REFUSED = -9	IF NEVER HAD SEX → GO TO NEXT MODULE

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE FIVE: SEXUAL ACTIVITY (continued)			
502	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.	NUMBER OF PEOPLE ___ _____ DON'T KNOW = -8 REFUSED = -9	IF 0, GO TO NEXT MODULE
503	How many different people have you had sex with in the last 12 months? (If none, code '0'. If number of partners is greater than 100, enter '100.')	NUMBER OF PEOPLE___ _____ DON'T KNOW = -8 REFUSED = -9	IF 0, DON'T KNOW, REFUSED → GO TO NEXT MODULE
Interviewer says: "Now I would like to ask you some questions about the people you have had sex with in the last 12 months. Let me assure you again that your answers are completely confidential and will not be told to anyone. I will first ask you about the most recent person you had sex with." (Ask only about the last 3 persons the participant has had sex with).			
504	Is the person that you had sex with a spouse or a partner who lives in this household?	YES = 1 NO = 2	IF NO → 506
505	Please select the name below from the household membership list. Please identify the person you had sex with.	HOUSEHOLD QUESTIONNAIRE LINE NO. ____ NOT LISTED IN HOUSEHOLD = 96	
506	I would like to ask you for the initials of this person so I can keep track [INITIALS]. They do not have to be the actual initials of this person. Is [INITIALS] the most recent person you had sex with?	[INITIALS] _____ YES = 1 NO = 2	IF [FIRST REPORTED PARTNER] → 507 LIST IF 505 = [FIRST REPORTED PARTNER]
507	What is your relationship with [INITIALS]?	HUSBAND/WIFE = 1 LIVE-IN PARTNER = 2 PARTNER, NOT LIVE-IN = 3 EX-SPOUSE/EX-PARTNER = 4 FRIEND/ACQUAINTANCE = 5 SEX WORKER = 6 SEX WORKER CLIENT = 7 STRANGER = 8 OTHER (SPECIFY) = 96 _____ DON'T KNOW = -8 REFUSED = -9	
508	Is [INITIALS] male or female?	MALE = 1 FEMALE = 2 DON'T KNOW = -8 REFUSED = -9	
509	How old is [INITIALS]? Please give your best guess.	____YEARS OLD DON'T KNOW = -8 REFUSED = -9	
510	The last time you had sex with [INITIALS], was a condom used?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE FIVE: SEXUAL ACTIVITY (continued)			
511	The last time you had sex with [INITIALS], did either of you drink alcohol beforehand?	ONLY I WAS DRINKING = 1 ONLY PARTNER WAS DRINKING = 2 BOTH WERE DRINKING = 3 NEITHER = 4 DON'T KNOW = -8 REFUSED = -9	
512	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	
513	What is the HIV status of [INITIALS]? (Read responses aloud).	HE/SHE IS POSITIVE (DID NOT TEST TOGETHER) = 1 HE/SHE IS POSITIVE, TESTED TOGETHER = 2 HE/SHE IS NEGATIVE (DID NOT TEST TOGETHER) = 3 HE/SHE IS NEGATIVE, TESTED TOGETHER = 4 DON'T KNOW STATUS = -8 REFUSED = -9	
514	Interviewer says: "I will now ask you about the person you have had sex with previous to [INITIALS]."		SKIP IF 503 <= 1 IF 503 > 1 → 504
NO.	**QUESTIONS**	**CODING CATEGORIES**	**SKIP PATTERNS**
MODULE SIX: HIV TESTING			
Interviewer says: "I would like to ask you some questions about HIV testing."			
601	Have you seen a doctor, healthcare worker or nurse in a health facility in the last 12 months?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 603
602	During any of your visits to the health facility in the last 12 months, did a doctor, healthcare worker or nurse offer you an HIV test?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
603	Have you ever tested for HIV?	YES =1 NO =2 DON'T KNOW = -8 REFUSED = -9	IF YES → 605 IF DON'T KNOW, REFUSED → 608
604	Why have you never been tested for HIV? (Select all that apply. Prompt for any more reasons.)	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 AVAILIBLE = K RELIGIOUS REASONS = L OTHER (SPECIFY) = X _____ DON'T KNOW = -Y REFUSED = -Z	IF OTHER → 608

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE SIX: HIV TESTING (continued)			
605	When was your last HIV test? Please give month and year if you can.		
	Month	MONTHS _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9	
	Year	YEARS _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
606	Where was your last HIV test done?	VCT FACILITY = 1 MOBILE VCT = 2 AT HOME = 3 HEALTH CLINIC/FACILITY = 4 HOSPITAL OUTPATIENT CLINIC = 5 TB CLINIC = 6 STI CLINIC = 7 HOSPITAL INPATIENT WARDS = 8 BLOOD DONATING CENTER = 9 ANC CLINIC = 10 VMMC CLINIC = 11 OTHER (SPECIFY) = 96 _____ DON'T KNOW = -8 REFUSED = -9	
607	When you last tested for HIV, what was the main reason you tested?	WAS OFFERED TEST BY HEALTH CARE OR OUTREACH WORKER = 1 WANTED TO KNOW MY HIV STATUS = 2 FELT AT RISK = 3 FELT SICK = 4 NEW PARTNER = 5 PREGNANCY = 6 MY PARTNER TESTED POSITIVE = 7 OTHER (SPECIFY) = 96 _____ DON'T KNOW = -8 REFUSED = -9	IF OTHER → 608
608	What was the result of your last HIV test?	POSITIVE = 1 NEGATIVE = 2 UNKNOWN/INCONCLUSIVE = 3 DID NOT RECEIVE RESULTS = 4 DON'T KNOW = -8 REFUSED = -9	IF NEGATIVE, UNKNOWN/ INCONCLUSIVE, DID NOT RECEIVE RESULTS, DON'T KNOW, REFUSED → 611

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE SIX: HIV TESTING (continued)			
609	When was your first positive HIV test? Please give month and year. This will be the very first HIV-positive test result that you have received. This will be the first time a health care provider told you that you had HIV. (Probe to verify date. Suggest that they can look at treatment card if available.)		
	Month	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9	
	Year	YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR =-9	
610	When was your last negative HIV test? This would be your last negative before you tested positive. Please give month and year. (Swipe forward if no previous HIV test.)		ASK ONLY TO THOSE WHO SELF-REPORTED HIV POSITIVE (IF 608=YES OR 308=YES OR 311=POSITIVE OR 315=POSITIVE)
	Month	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9	
	Year	YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR =-9 NO PREVIOUS HIV NEGATIVE TEST BEFORE THE POSITIVE TEST = 3	
611	Has a healthcare provider ever told you that you have HIV?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	ASK IF NEVER TESTED OR NEVER TESTED POSITIVE (IF 307 <> 1 AND 310 <> 1 AND 314 <> 1 AND 603 <> 1 AND 307 <> 1 AND 310 <> 1 AND 315 <> 1 AND 608 <> 1) IF NO, DON'T KNOW, REFUSED → 613
612	When did a healthcare provider first tell you that you have HIV?		DISPLAY IF 611=YES
	Month	MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9	
	Year	YEAR _____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	

Interviewer says: "There are now HIV tests that you can do yourself at home. Some of these self-test kits allow you to test yourself for HIV by swabbing your mouth or pricking your finger and testing the fluid for HIV."

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE SIX: HIV TESTING (continued)			
613	Have you ever tested yourself for HIV using a self-test kit?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
614	If a self-test kit was available, would you use it?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
615	Of the following people, who have you told that you are HIV positive? (Read the list out loud. Select 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	SHOW SCREEN IF INDIVIDUAL HAS SAID TESTED POSITIVE (IF 307=YES OR 311=POSITIVE OR 315=POSITIVE OR 611=YES)
MODULE SEVEN: HIV STATUS, CARE AND TREATMENT			
Interviewer says: "Now I am going to ask you more about your experience with HIV care and treatment."			
701	After learning you had HIV, have you ever received care or treatment for HIV from a doctor, clinical officer or nurse?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF YES → 703 IF DON'T KNOW, REFUSED → 709
702	What is the main reason why you have never received care or treatment for HIV from a doctor, clinical officer, or nurse?	FACULTY 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/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 OTHER → 709
703	Are you currently receiving HIV care from a health facility?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 707
704	At which facility are you currently receiving HIV care? (Select district.) (Select facility.) (If facility information is available, please key. Otherwise swipe forward to continue.)	[LIST OF FACILITY DISTRICTS] _____ DISTRICT NOT ON LIST = 99 [LIST OF FACILITIES] FACILITY NOT ON LIST = 99 _____	

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE SEVEN: HIV STATUS, CARE AND TREATMENT (continued)			
705	In the past year, did you change the clinic where you receive HIV care?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
706	At your last HIV care visit, approximately how long did it take you to travel from your home (or workplace) one-way?	LESS THAN HALF HOUR = 1 HALF HOUR TO ONE HOUR = 2 ONE TO TWO HOURS = 3 MORE THAN TWO HOURS = 4 DON'T KNOW = -8 REFUSED = -9	
707	Does travel time to health facility make it difficult for you to access care?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
708	When did you last see a doctor, clinical officer, pharmacist or nurse for HIV treatment or care?		
	Month	MONTH_____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9	
	Year	YEAR_____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
709	Have you ever taken ARVs, that is, antiretroviral medications to treat HIV infection?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF YES → 711 IF DON'T KNOW, REFUSED AND 701 <> DON'T KNOW, REFUSED → 720 IF DON'T KNOW, REFUSED AND 701 = DON'T KNOW, REFUSED → 801
710	What is the main reason you have never taken ARVs?	NOT ELIGIBLE FOR TREATMENT = 1 HEALTH CARE PROVIDER DID NOT PRESCRIBE = 2 HIV MEDICINES ARE NOT AVAILABLE = 3 I FEEL HEALTHY/NOT SICK = 4 COST OF CARE = 5 RELIGIOUS REASONS = 6 TAKING TRADITIONAL MEDICATIONS = 7 NOT ATTENDING HIV CLINIC = 8 CLINIC IS TOO FAR = 9 OTHER (SPECIFY) = 96 _____ DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE SEVEN: HIV STATUS, CARE AND TREATMENT (continued)			
711	What month and year did you first start taking ARVs? (Probe to verify date.) Month Year	 MONTH _____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR_____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
712	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 YES → 714 IF DON'T KNOW, REFUSED → 720
713	Can you tell me the main reason you stopped taking ARVs?	I HAD TROUBLE TAKING A TABLET EVERYDAY = 1 I HAD SIDE EFFECTS = 2 FACILITY TOO FAR AWAY FOR ME TO GET MEDICINE REGULARLY = 3 COST OF CARE = 4 I FEEL HEALTHY/SICK = 5 FACILITY OUT OF STOCK = 6 RELIGIOUS REASONS = 7 TAKING TRADITIONAL MEDICATIONS = 8 OTHER (SPECIFY) = 96 _____ DON'T KNOW = -8 REFUSED = -9	ALL → 720
714	How do you normally receive your ARVs? (Read each response. Select the most common method of collection.)	PICK UP AT THE LOCAL CLINIC = 1 PICK UP AT THE HOSPITAL = 2 FROM THE COMMUNITY SUPPORT GROUP/ ADHERENCE CLUB = 3 THEY ARE DELIVERED TO MY HOME = 4 A FAMILY MEMBER/FRIEND COLLECTS THEM =5 DON'T KNOW = -8 REFUSED = -9	
715	The last time you picked up or received your ARVs, how much supply were you given? You should include both your prescription and any extra you were given. (Use weeks if less than one month. Swipe forward to enter DON'T KNOW or REFUSED.) Number of Weeks or Months of Supply Units	 _____WEEKS = 1 _____MONTHS = 2 DON'T KNOW = -8 REFUSED = -9	
716	Have your ARVs ever been changed or modified?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 718

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE SEVEN: HIV STATUS, CARE AND TREATMENT (continued)			
717	Why were your ARVs changed?	I WAS NOT RESPONDING TO MY FIRST TREATMET = 1 MY VIRAL LOAD WASN'T SUPPRESSED = 2 I WANTED TO GET PREGNANT OR WAS PREGNANT = 3 I WAS HAVING/WORRIED ABOUT SERIOUS SIDE EFFECTS = 4 OTHER (SPECIFY) = 96 _____ DON'T KNOW = -8 REFUSED = -9	IF OTHER → 718
718	You said before that you had been away from home during the past year. At any point in the past year were you away from home, was there any period when you interrupted your ARV treatment? How did you get your ARVs when you are away from home for more than a month?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9 I OBTAIN THEM BEFORE I LEAVE = 1 SOMEBODY PICKED THEM UP FOR ME = 2 I GET THEM FROM A LOCAL CLINIC AT MY TEMPORARY RESIDENCE = 3 I WILL STOP TAKING MY ARVS DURING THAT TIME = 4 OTHER (SPECIFY) = 96 _____ DON'T KNOW = -8 REFUSED = -9	ONLY ASK IF 109 >= 1
719	People sometimes forget to take all of their ARVs every day. In the last 30 days, how many days have you missed taking any of your ARV pills? (ENTER '0' if NONE.)	NUMBER OF DAYS_____ DON'T KNOW = -8 REFUSED = -9	
720	Did you ever have a viral load test? This is a test that measure how much HIV is in your blood.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 723
721	When did you last have a viral load test? Month Year	 MONTH_____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR_____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
722	Did you receive the results of your last viral load test?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
723	At your last HIV medical care visit, were you asked if you had any of the following tuberculosis or TB symptoms: (Read all responses aloud. Select all that apply.)	PERSISTENT COUGH? = A FEVER? = B NIGHT SWEATS? = C WEIGHT LOSS? = D NONE OF THE ABOVE = E DON'T KNOW = Y REFUSED = Z	

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE SEVEN: HIV STATUS, CARE AND TREATMENT (continued)			
724	Have you ever taken medicine or a pill to prevent you from coming down with TB? This is sometimes known as TB Preventative Therapy or TPT. An example of TPT is Isoniazid, IPT or INH, which is medication that prevents TB. It is given to people with HIV or people who are in contact with someone with TB. It is not treatment for TB.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 801
725	Are you currently taking TPT? By currently, I mean that you may have missed some doses but you are still taking TPT.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 801
726	How many months have you taken TPT?	MONTHS_____ DON'T KNOW = -8 REFUSED = -9	
MODULE EIGHT: TUBERCULOSIS			
Interviewer says: "Now we will ask you about tuberculosis or TB."			
801	In the last 12 months, did you visit a clinic for TB diagnosis or treatment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED AND MALE → 812 IF NO, DON'T KNOW, REFUSED AND FEMALE=2 → 807
802	When you visited a TB clinic in the last 12 months, were you tested for HIV?	YES = 1 NO, WAS NOT TESTED FOR HIV = 2 NO, ALREADY KNOW I AM HIV POSITIVE = 3 DON'T KNOW = -8 REFUSED = -9	
803	In the last 12 months, were you told by a doctor, clinical officer or nurse that you had TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED AND MALE → 812 IF NO, DON'T KNOW, REFUSED AND FEMALE=2 → 807
804	In the last 12 months, were you treated for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED AND MALE → 812 IF NO, DON'T KNOW, REFUSED AND FEMALE=2 → 807
805	Are you currently on treatment for TB?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED AND MALE → 812 IF NO, DON'T KNOW, REFUSED AND FEMALE=2 → 807

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE EIGHT: TUBERCULOSIS (continued)			
806	The last time you were treated for TB, did you complete at least 6 months of treatment?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF MALE → 812
Interviewer says: "Now I am going to ask you about tests a health care provider can do to check for cervical cancer. The cervix connects the uterus to the vagina. The tests a healthcare provider can do to check for cervical cancer are called a Pap smear, HIV test and VIA test." **For a Pap smear and HPV test, a health care provider puts a small stick inside the vagina to wipe the cervix and sends the sample to the laboratory. For a VIA test, a healthcare worker puts vinegar on the cervix and looks to see if the cervix changes color.**			SKIP IF MALE
807	Have you ever been tested for cervical cancer?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF NO, DON'T KNOW, REFUSED → 812
808	What month and year was your last test for cervical cancer? Month Year	 MONTH_____ DON'T KNOW MONTH = -8 REFUSED MONTH = -9 YEAR_____ DON'T KNOW YEAR = -8 REFUSED YEAR = -9	
809	What was the result of your last test for cervical cancer?	NORMAL/NEGATIVE = 1 ABNORMAL/POSITIVE = 2 SUSPECT CANCER = 3 UNCLEAR/INCONCLUSIVE = 4 DID NOT RECEIVE RESULTS = 5 DON'T KNOW = -8 REFUSED = -9	IF NORMAL/NEGATIVE, DON'T KNOW, REFUSED → 811
810	Did you receive treatment after your last test for cervical cancer? Did you receive treatment on the same day or on a different day?	YES, I WAS TREATED ON THE SAME DAY = 1 YES, I RECEIVED TREATMENT ON A DIFFERENT DAY = 2 NO = 3 DON'T KNOW = -8 REFUSED = -9	
811	Have you ever been vaccinated to prevent cervical cancer? This would be the HPV vaccine.	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
Interviewer says: "I am now going to ask you about other aspects of health."			
812	Over the past two weeks, how often have you been bothered by having little interest in doing things?	NOT AT ALL = 1 1-7 DAYS = 2 8-11 DAYS = -3 12-14 DAYS = -4 DON'T KNOW = -8 REFUSED = -9	
813	Over the past two weeks, how often have you felt down, depressed or hopeless?	NOT AT ALL = 1 1-7 DAYS = 2 8-11 DAYS = -3 12-14 DAYS = -4 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE EIGHT: TUBERCULOSIS (continued)			
814	Over the past two weeks, how often have you felt nervous, anxious or on edge?	NOT AT ALL = 1 1-7 DAYS = 2 8-11 DAYS = -3 12-14 DAYS = -4 DON'T KNOW = -8 REFUSED = -9	
815	Over the past two weeks, how often have you not been able to stop or control worrying?	NOT AT ALL = 1 1-7 DAYS = 2 8-11 DAYS = -3 12-14 DAYS = -4 DON'T KNOW =- 8 REFUSED = -9	
816	Have you ever been told by a doctor or health worker that you have any of the following chronic health conditions? (Select all that apply.)	HIGH BLOOD SUGAR OR DIABETES = A HIGH BLOOD PRESSURE OR HYPERTENSION = B HEART DISEASE OR CHRONIC HEART CONDITION = C KIDNEY DISEASE = D CANCER OR TUMOR = E LUNG DISEASE OR CHRONIC LUNG DISEASE = F DEPRESSION OR MENTAL HEALTH CONDITION = G NONE OF THE ABOVE = I OTHER (SPECIFY) = 96 _____ DON'T KNOW = Y REFUSED = Z	IF NONE OF THE ABOVE, DON'T KNOW, REFUSED → 901
817	Are you currently taking medication for any of the following chronic health conditions? (If any of the conditions in the previous question are selected, respondent should be asked about treatment for that condition.)	HIGH BLOOD SUGAR OR DIABETES = A HIGH BLOOD PRESSURE OR HYPERTENSION = B HEART DISEASE OR CHRONIC HEART CONDITION = C KIDNEY DISEASE = D CANCER OR TUMOR = E LUNG DISEASE OR CHRONIC LUNG DISEASE = F DEPRESSION OR MENTAL HEALTH CONDITION = G NONE OF THE ABOVE = I OTHER (SPECIFY) = 96 _____ DON'T KNOW = Y REFUSED = Z	IF OTHER → 817
MODULE NINE: ALCOHOL USE			
Interviewer says: "The next few questions will be on your use of alcohol. Remember, all of the answers you provide will be kept confidential."			
901	How often do you have a drink containing alcohol?	NEVER = 0 MONTHLY OR LESS = 1 2-4 TIMES A MONTH = 2 2-3 TIMES A WEEK = 3 4 OR MORE TIMES A WEEK = 4 DON'T KNOW = -8 REFUSED = -9	IF NEVER, DON'T KNOW, REFUSED → 1001

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE NINE: ALCOHOL USE (continued)			
902	How many drinks containing alcohol do you have on a typical day?	1 OR 2 = 0 3 OR 4 = 1 5 OR 6 = 2 7 TO 9 = 3 10 OR MORE = 4 DON'T KNOW = -8 REFUSED = -9	
903	How often do you have six or more drinks on one occasion?	NEVER = 0 LESS THAN MONTHLY = 1 MONTHLY = 2 WEEKLY = 3 DAILY OR ALMOST DAILY = 4 DON'T KNOW = -8 REFUSED = -9	
MODULE TEN: EXPOSURE TO PREVENTION INTERVENTION AMONG 15-24 YEARS			
Interviewer says: "We will now ask you about your experience with HIV prevention program."			
1001	Where can you get condoms? (Select all that apply.)	CLINIC/HOSPITAL = A KIOSK/SHOP = B PHARMACY = C LOCAL FREE DISPENSER = D FRIENDS/PEER = E SEXUAL PARTNER(S) = F OTHER (SPECIFY) = X _____ DON'T KNOW = -Y REFUSED = -Z	
1002	If you wanted a condom, would it be easy for you to get one?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	IF YES, DON'T KNOW, REFUSED → 1004
1003	Why is it not easy for you to get a condom?	CONDOMS NOT AVAILABLE/TOO FAR = A NOT CONVENIENT = B COSTS TOO MUCH = C EMBARRASED TO GET CONDOMS = D DO NOT WANT OTHERS TO KNOW = E DO NOT KNOW WHERE TO GET CONDOMS = F OTHER (SPECIFY) = X _____ DON'T KNOW = Y REFUSED = Z	
1004	Have you ever talked with a parent or guardian about sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
1005	Have you ever discussed HIV with your parents or guardians?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	
1006	Have you ever talked with peers about sex?	YES = 1 NO = 2 DON'T KNOW = -8 REFUSED = -9	

NO.	QUESTIONS	CODING CATEGORIES	SKIP PATTERNS
MODULE TEN: EXPOSURE TO PREVENTION INTERVENTION AMONG 15-24 YEARS (continued)			
1007	Have you taken part in any of the following HIV prevention or treatment programs?	STEPPING STONE = A JOURNEYS PLUS = B SINOVUYO = C SAFE SPACES = D SASA = E HIV TESTING SERVICES (HTS) = F FINANCIAL LITERACY, VLSA AND ASSET FINANCING = G NONE = W OTHER (SPECIFY) = X _____ DON'T KNOW = Y REFUSED = Z	
1008	In the past 12 months, how many times have you participated in a school meeting or class period where they talked about HIV/AIDS? If you are not certain, give your best guess.	NONE= 0 1-4 TIMES = 1 5-9 TIMES = 2 10 OR MORE TIMES = 3 DON'T KNOW = -8 REFUSED = -9	
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." (Provide participant with list of organizations, if not already given.)			
COMMENTS FROM INTERVIEWER:			

APPENDIX G SURVEY CONSENT FORMS

VERBAL CONSENT FOR HOUSEHOLD INTERVIEW (ADULTS 18+ AND EMANCIPATED MINORS 15-17 YEARS)

What language do you prefer for our discussion today?

☐ ENGLISH ☐ ATESO ☐ NGAKARIMOJONG ☐ LUGANDA ☐ LUGBARA ☐ LUO
☐ RUNYANKORE-RUKIGA ☐ RUNYORO-RUTORO ☐ OTHER LANGUAGE (Specify) _____

TITLE OF STUDY: THIS STUDY IS CALLED THE 2020 UGANDA POPULATION-BASED HIV IMPACT ASSESSMENT (UPHIA 2020)

Interviewer reads:

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

Purpose of the study

HIV is a virus that causes an illness called AIDS. HIV and AIDS can be treated by taking medicines regularly.

This study will help us to know how many people in Uganda have HIV and need health services. We expect about 25,000 men, women, and children 15 years of age or older from about 10,000 households throughout Uganda to take part in the study. If you take part, your taking part will help the Ministry of Health to improve HIV services in the country.

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.

Study procedures

- If you join this study, we will ask you questions about your age, the work you do, your health and experience with health services, and your social and sexual behavior. In the household interview, we would like to ask you some questions about the people who live here. We will also ask you about support you receive and some of the things you have or own. After the household interview, we will invite you and others living in your household to take part in individual interviews. The questions will be about your age, the work you do, your health and experience with health services, and social and sexual behavior. The interview may take about 20 to 30 minutes.
- The information is collected on this tablet. The information is stored securely and can only be accessed by selected study staff. The interview will take place in private, here in your house, or a nearby private area of your choosing.

  We will ask each person to give permission to take part before joining the study. Study procedures also include a blood draw, HIV testing, and storage of that blood for future testing if you agree to this. The testing and counseling will take about 45 minutes.

Alternatives to taking part

You can decide not to take part in this study. If you choose to take part in the study, you may change your mind at any time and stop taking part. If you decide not to take part, it will not affect your healthcare in any way. We can tell you where to go for HIV services and learn about your HIV status. If you decide to leave the study, no more information will be collected from you. However, you will not be able to take back the information that has already been collected and shared.

Costs for being in the study

There is no cost to you for being in the study, apart from your time.

Benefits

The main benefit for you to be in the study is the chance to learn more about your health today. Additionally, the information you provide to us will be used to improve healthcare services in Uganda.

Risks

The risks of taking part in the household interview are small. You may feel uncomfortable about some of the questions we will ask. You can refuse to answer any specific question. We will do everything we can to keep your information private. As with all studies, there is a chance that someone could find out you took part in the study. We are doing everything possible to ensure confidentiality and minimize this risk.

Confidentiality and access to your health information

We will do everything we can to keep your answers private and confidential. The information we collect from you will be identified by a number and not by your name. Your name will not appear when we share study findings and study data. The data from this study will be released to the public without any identifiers, and this will not require another consent from you. Your name and contact information will not be released outside of the study groups listed unless there is an issue of safety.

The following individuals and/or agencies will be able to look at your interview records to help oversee the conduct of this study:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- 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 person taking part in a study, including:
  - Uganda Virus Research Institute (UVRI)
  - Uganda National Council of Science and Technology (UNCST)
  - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
  - Columbia University Medical Center (New York, NY, USA)
  - Westat (a statistical study research organization) (Rockville, MD, USA)
- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this study
- Selected study staff and study monitors.

[INTERVIEWER: READ FROM HERE]

This study has received approval from UVRI, UNCST and the Institutional Review Boards of the Centers for Disease Control and Prevention, Columbia University Medical Center, and Westat.

Whom should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Dr. Joshua Musinguzi

Address: 6 Lourdel Road

Kampala, Uganda

Mobile: 0772611135, Office Phone: +256 414 256683

Email: joshuamusinguzi@yahoo.co.uk

Dr. Wilford Kirungi

Address: 6 Lourdel Road

Kampala, Uganda

Mobile: 0772694888, Office phone: +256 414 256683

Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ FROM HERE]

If you have questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Tom Lutalo

UVRI Science and Ethics Committee

Address: P.O Box 49 Entebbe Nakiwogo Road, Plot 51-59, Entebbe, Uganda

Mobile: 0716321912, Office Phone: +256 414 321962

Email: tlutalo@rhsp.org

[INTERVIEWER: READ FROM HERE]

Do you want to ask me anything about the study?

CONSENT STATEMENT

By answering the questions below, you confirm that any questions you had have been answered satisfactorily and you have been offered a copy of this consent form.

Do you agree to do the household interview?

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 refuse 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.

(IF PARTICIPANT DOES NOT AGREE, THEN STOP)

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: HOUSEHOLD INTERVIEW>. Is this correct?

☐ Yes ☐ No

Printed name of Household Head_____

HH ID number _____

Signature of person obtaining consent_____ Date: __/__/__

Printed name of person obtaining consent_____

Study staff UPHIA 2020 ID number_____

INDIVIDUAL VERBAL CONSENT FOR ADULTS 18+ AND EMANCIPATED MINORS 15-17 YEARS: INTERVIEW, BLOOD TESTING, AND CONTACT FOR FUTURE RESEARCH

(SKIP IF PARTICIPANT ALREADY COMPLETED HOUSEHOLD CONSENT)

What language do you prefer for our discussion today?

☐ ENGLISH ☐ ATESO ☐ NGAKARIMOJONG ☐ LUGANDA ☐ LUGBARA ☐ LUO
☐ RUNYANKORE-RUKIGA ☐ RUNYORO-RUTORO ☐ OTHER LANGUAGE (Specify) _____

TITLE OF STUDY: THIS STUDY IS CALLED THE 2020 UGANDA POPULATION-BASED HIV IMPACT ASSESSMENT (UPHIA 2020).

Interviewer reads:

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

Purpose of study

HIV is a virus that causes an illness called AIDS. HIV and AIDS can be treated by taking medicines regularly.

This study will help us to know how many people in Uganda have HIV and need health services. We expect about 25,000 men, women, and children 15 years of age or older from about 10,000 households throughout Uganda to take part in the study. If you take part, your taking part will help the Ministry of Health to improve HIV services in the country.

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.

Survey procedures

- The information is collected on this tablet. The information is stored securely and can only be accessed by selected study staff. The interview will take place in private, here in your house, or an acceptable nearby private area of your choosing.

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD CONSENT)

- If you join this study, we will ask you questions about your age, the work you do, your health and experience with health services, and your social and sexual behaviour. The questions will be about your age, the work you do, your health and experience with health services, and your social and sexual behavior. The interview will take about 20 to 30 minutes. The interview will take place in a private area in or around your home.

Blood Draw

- Study procedures also include a blood draw, HIV testing, and storage of that blood for future testing if you agree to this. The testing and counseling will take about 45 minutes.
    - If you agree to the HIV testing, a study staff member who has been trained to draw blood, will take about 14 milliliters (about a tablespoonful) of blood from your arm into two tubes. 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. The blood test will take place here in or around your household. We will give you the results of your HIV test and provide counseling on the same day.
    - If you have a positive HIV test result, we will give you a referral form and information so you can consult with a doctor or nurse to learn more about the test results.
    - If you test positive for HIV, we will send your blood to a laboratory to measure your viral load and CD4 count. Viral load is the amount of HIV in your blood. CD4 cells are the part of the immune system that fights HIV infection and other diseases. These results will be sent to a health facility of your choosing in about 8 to 12 weeks. You will be able to talk to a nurse or doctor at that facility about your results. Some of your blood will be sent to a laboratory out of the country for additional tests related to HIV. If we have test results that might help guide your treatment, we will return them to a clinic. If you have given us your contact information, we will contact you to tell you how you and your doctor or nurse may get these results.

- Additionally, you may be eligible to take part in future studies related to health in Uganda. We are asking for your permission to contact you in the next three years if such an opportunity occurs. To do this, approved researchers will be able to request access to your contact information. If they contact you, they will give you details about the new study and invite you to join the study. You may decide at that time that you do not want to take part in that study. If you do not wish to be contacted about future studies, it does not affect your taking part in this study.

(SKIP IF PARTICIPANT ALREADY WENT THROUGH THE HOUSEHOLD CONSENT)

Alternatives to taking part

Joining this study is voluntary; you do not have to join the study if you do not want to. If you choose to take part in the study, you may change your mind at any time and stop taking part. If you decide not to take part, there will be no penalty to you. Your refusal to take part will not affect your healthcare in any way. We can tell you where to go for HIV services and learn about your HIV status. If you decide to leave the study, no more information will be collected from you. However, you will not be able to take back the information that has already been collected and shared.

Costs for being in the study

There is no cost to you for being in the study, apart from your time.

[READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD CONSENT]

Benefits

The main benefit for you to be in the study is the chance to learn more about your health today. Some people who take part will test HIV positive. If you test HIV positive for the first time, you will learn your HIV-positive status and where to go for HIV services. HIV care and treatment provided by the Ministry of Health is free and you will be offered assistance in enrolling in care.

If you already know you have HIV and are not on treatment, you will get information to help your doctor or nurse determine if you are ready to start treatment. If you are HIV positive and on HIV treatment, the viral load tests can help your nurse or doctor judge how well your treatment is working. If you test HIV negative, you will learn about what you can do to stay HIV negative. Your taking part in this study could help us learn more about HIV in Uganda. It can help us learn about how HIV prevention and treatment programs are working in the country.

Risks

The risks involved with taking part in the study are small. You may feel uncomfortable about some of the questions we will ask. You can refuse to answer any question. The risks to you from having your blood drawn are also minor. They include brief pain from the needle stick, bruising, lightheadedness, bleeding and, rarely, infection where the needle enters the skin. The study staff member who performs the blood draw has received training on how to draw blood. If you experience any discomfort or any of the symptoms mentioned above, please let us know, especially if there is any bleeding or swelling.

Learning you have HIV may cause some emotional distress. If you test HIV positive, you will receive counseling on how to cope with learning that you have HIV. We will explain options for care and help you identify where to go for treatment. Care and treatment is available at government facilities free of charge.

As with all studies, there is a chance that someone could find out you took part in the study. We are doing everything possible to ensure confidentiality and minimize this risk.

(SKIP IF PARTICIPANT ALREADY WENT THROUGH HOUSEHOLD CONSENT)

Confidentiality and access to your health information

We will do everything we can to keep your answers confidential. The information we collect from you will be identified by a number and not by your name. Your name will not appear when we share study findings and study data. The data from this study will be released to the public without any identifiers and this will not require another consent form from you. Your name and contact information will not be released outside of the study groups listed below unless there is an issue of safety.

The following individuals and/or agencies will be able to look at your interview records to help oversee the conduct of this study:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- 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 person taking part in a study, including:
  - Uganda Virus Research Institute (UVRI)
  - Uganda National Council of Science and Technology (UNCST)
  - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
  - Columbia University Medical Center (New York, NY, USA)
  - Westat (a statistical study research organization) (Rockville, MD, USA)
- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this study
- Selected study staff and study monitors.

[INTERVIEWER: READ FROM HERE]

This study has received approval from UVRI, UNCST and the Institutional Review Boards of the Centers for Disease Control and Prevention, Columbia University Medical Center, and Westat.

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[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Dr. Joshua Musinguzi

Address: 6 Lourdel Road

Kampala, Uganda

Mobile: 0772611135, Office Phone: +256 414 256683

Email: joshuamusinguzi@yahoo.co.uk

Dr. Wilford Kirungi

Address: 6 Lourdel Road

Kampala, Uganda

Mobile: 0772694888, Office phone: +256 414 256683

Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ FROM HERE]

If you have questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Tom Lutalo

UVRI Science and Ethics Committee

Address: P.O Box 49 Entebbe Nakiwogo Road, Plot 51-59, Entebbe, Uganda

Mobile: 0716321912, Office Phone: +256 414 321962

Email: tlutalo@rhsp.org

[INTERVIEWER: READ FROM HERE]

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED HOUSEHOLD CONSENT)

Do you want to ask me anything about the study?

[INTERVIEWER LISTENS TO QUESTIONS AND RESPONDS ACCORDINGLY, ADDRESSING ALL CONCERNS RAISED BY THE POTENTIAL PARTICIPANT]

CONSENT STATEMENT

By answering the questions below, you confirm that any questions you had have been answered satisfactorily and you have been offered a copy of this consent form.

1. Do you agree to take part in the individual interview? 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 agrees to participate in the individual interview.

If you refuse 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.

(IF PARTICIPANT DOES NOT AGREE, THEN STOP)

2. Do you agree to give blood for testing, including HIV testing and related testing, and receiving the results of your HIV test? If you agree to give blood for HIV testing, related testing and receiving your HIV test result, then please state the following statement:

"I agree to give blood for HIV testing and related testing and to receive my HIV test result."

☐ Check this box if participant agreed to blood testing and related testing.

If you refuse to give blood for HIV and related testing or refuse to receive your HIV test result, please state the following statement:

"I do not wish to take part in blood testing today."

☐ Check this box if participant refuses blood testing, related testing or refuses to receive their HIV test result.

(IF PARTICIPANT DOES NOT AGREE, THEN GO TO #4 – Contact for future research)

3. Do you agree to be contacted for future research? If you agree to be contacted for future research, please state the following statement:

"I agree to be contacted for future research."

☐ Check this box if participant agreed to be contacted for future research.

If you refuse to be contacted for future research, please state the following statement:

"I do not wish to be contacted for future research."

☐ Check this box if participant refuses be contacted for future research.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: INTERVIEW, BLOOD TESTING and FUTURE RESEARCH, >, is this correct?

☐ Yes ☐ No

Printed name of Participant_____

Signature of person obtaining consent _____ Date: __/__/__

Printed name of person obtaining consent_____

Study staff UPHIA 2020 ID number _____

INDIVIDUAL VERBAL CONSENT FOR ADULTS 18+ AND EMANCIPATED MINORS 15-17 YEARS: SAMPLE STORAGE AND FUTURE TESTING

(SKIP ENTIRE CONSENT IF PARTICIPANT DID NOT CONSENT TO BLOOD DRAW)

What language do you prefer for our discussion today?

☐ ENGLISH ☐ ATESO ☐ NGAKARIMOJONG ☐ LUGANDA ☐ LUGBARA ☐ LUO
☐ RUNYANKORE-RUKIGA ☐ RUNYORO-RUTORO ☐ OTHER LANGUAGE (Specify) _____

TITLE OF STUDY: 2020 UGANDA POPULATION-BASED HIV IMPACT ASSESSMENT (UPHIA 2020)

CONSENT FOR SAMPLE STORAGE AND FUTURE TESTING

[INTERVIEWER: READ FROM HERE]

As a part of the UPHIA 2020, 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.

Future Testing

After we collect 14mL of blood there may be some extra blood that we will not use for testing. We would also like to ask you to allow us to store approximately 4mls of your leftover blood (or one teaspoonful) for future research tests. These tests may be about HIV or other health issues which are important to the health of Ugandans, such as Hepatitis B and C infection, nutrition or immunization. This sample will be stored for an indefinite amount of time at the Uganda Virus Research Institute (UVRI) the Ministry of Health's sample repository, but your name will be on the sample for only three years. We will attempt to tell you about any test results during the three-year period that are important to your health.

After the three-year period, the sample will not have your name on it, so we will not be able to tell you the results of these future research tests. Your leftover blood will not be sold or used for profit but may be shared with outside investigators after removal of all identifiers, without asking for your consent again. If you change your mind after three years, once your name is removed from the sample, we will not be able to destroy your sample. Any future studies conducted using your blood sample will be approved by the appropriate institutions overseeing those studies. If you do not agree to future research tests of your blood samples, we will destroy your blood samples after survey-related testing has been completed. If you agree today to store your blood but change your mind later in the next three years, you can call the number provided at the end of this consent form and have your stored specimen destroyed. If you change your mind after three years, once your name is removed from the sample, we will not be able to destroy your sample.

What are the potential risks and benefits?

Your minor can decide not to take part in this study. If your minor chooses to take part in the study, he/she may change his or her mind at any time and stop taking part. If he or she decides not to take part, it will not affect his/her healthcare in any way. We can tell you where to go for HIV services and learn about your HIV status. If he or she decides to leave the study, no more information will be collected from him/her. However, your minor will not be able to take back the information that has already been collected and shared.

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.

We do not expect any risk from agreeing to store your blood for future testing.

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Dr. Joshua Musinguzi
Address: 6 Lourdel Road
Kampala, Uganda
Mobile: 0772611135, Office Phone: +256 414 256683
Email: joshuamusinguzi@yahoo.co.uk

Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Mobile: 0772694888, Office phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ FROM HERE]

For questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Tom Lutalo
UVRI Science and Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo Road, Plot 51-59, Entebbe, Uganda
Mobile: 0716321912, Office Phone: +256 414 321962
Email: tlutalo@rhsp.org

[INTERVIEWER: READ FROM HERE]

I have read and/or had the information fully explained to me concerning my participation in this study and I understand what will be required of me if I agree for my blood sample to be stored for future research. I understand that:

i. My blood sample will be used solely for research purposes.

ii. My leftover blood samples will not be sold or used for profit.

iii. The tests that will be performed on my leftover blood samples may be about HIV or other health issues which are important to the health of Ugandans, such as Hepatitis B and C infection, nutrition or immunization.

iv. During the three-year period after this study, I may be informed about any test results that are important to my health.

v. My blood samples will be stored for an indefinite amount of time but will not be linkable to me after the first three years following the completion of the study.

vi. My personal identification shall be kept confidential and only authorised persons shall be able to link my samples to me, even in the first three years following completion of the survey.

vii. My participation is entirely voluntary and that at any time I may withdraw from this study without giving a reason and without it affecting my entitlement to routine health care and management.

viii. If I do not agree to future research tests of my blood, my blood samples will be destroyed after survey-related testing has been completed.

ix. I can change my mind if I agreed to store my blood in the next three years, to have my stored specimen destroyed. If I change my mind after three years, my sample cannot be destroyed.

Do you want to ask me anything about the study?

CONSENT STATEMENT

By answering the questions below, you confirm that any questions you had have been answered satisfactorily and you have been offered a copy of this consent form.

CONSENT FOR BLOOD STORAGE FOR FUTURE RESEARCH:

Do you agree to have your leftover blood stored for future research? 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 his/her leftover blood stored for future research.

If you refuse to have your leftover blood stored for future research, please state the following statement:

"I do not agree to have my leftover blood stored for future research."

☐ Check this box if participant refuses to have his/her leftover blood stored for future research.

Printed name of Participant_____

Signature of person obtaining consent _____ Date: ___/___/___

Printed name of person obtaining consent_____

Study staff UPHIA 2020 ID number _____

PARENTAL OR GUARDIAN VERBAL PERMISSION FOR PARTICIPANTS 15-17 YEARS: ALLOW INTERVIEW, BLOOD TESTING, CONTACT FOR FUTURE RESEARCH

What language do you prefer for our discussion today?

☐ ENGLISH ☐ ATESO ☐ NGAKARIMOJONG ☐ LUGANDA ☐ LUGBARA ☐ LUO
☐ RUNYANKORE-RUKIGA ☐ RUNYORO-RUTORO ☐ OTHER LANGUAGE (Specify) _____

TITLE OF STUDY: THIS STUDY IS CALLED THE 2020 UGANDA POPULATION-BASED HIV IMPACT ASSESSMENT (UPHIA 2020)

Interviewer reads:

Hello. My name is_____. I would like to invite your child, who is between 15-17 years of age, to take part in this study about HIV in Uganda. The Ministry of Health is leading this study and is conducting it with the United States Centers for Disease Control and Prevention (CDC), ICAP at Columbia University, the Uganda Virus Research Institute (UVRI), Uganda Bureau of Statistics (UBOS) and Westat.

(SKIP IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Purpose of study

HIV is a virus that causes an illness called AIDS. HIV and AIDS can be treated by taking medicines regularly. This study will help us know how many people in Uganda have HIV and need health services. This study involves an interview, blood draw, and HIV testing. We expect about 25,000 men, women, and children over 15 years of age or older from 10,000 households throughout Uganda to take part in the study. If your child takes part, he/she will help the Ministry of Health to improve HIV services in the country.

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.

Study procedures

- The information is collected on this tablet. The information is stored securely and can only be accessed by selected study staff. The interview will take place in private, here in your house, or at an acceptable nearby private area of your adolescent's choosing.

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

- If both you and your child agree for him/her to join the study, we will ask your child some questions. The interview questions will be the same as the ones that we ask adults who agree to take part in the study. The questions will be about what kind of work s/he does, whether s/he has had any experience with health services, and his/her social and sexual behaviors. Your child's answers will not be shared with you. The interview will take about 20 to 30 minutes. The interview will be conducted in private with only the child and a study staff member.

Study procedures also include blood draw, HIV testing, and storage of that blood for future testing if you and your child agree to this. The testing and counseling will take about 45 minutes.

- A study staff member, who has been trained to draw blood, will take about 14 milliliters (about a tablespoonful) of blood from your child's arm into two tubes. 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 and then test for HIV in your home. We will give your child the results of these tests and provide counseling about the results on the same day as the test.

- For all children who test positive for HIV, we will also send his/her blood to a laboratory to measure his or her viral load and CD4 count. Viral load is the amount of HIV in the blood. CD4 cells are the part of the immune system that fights HIV infection and other diseases. If he/she provides us with the name of a health facility of his/her choice, we can send his/her viral load and CD4 results there in about 8 to 12 weeks from now. Some of your child's blood will be sent to a laboratory out of the country for some additional tests related to HIV. If we have test results that might guide your child's care or treatment, we will return them to a clinic. If he/she provides us with his/her contact information, we will contact him/her about how he/she and a doctor or nurse at the preferred health facility may get these results.

- We would like to help your child access the healthcare that he or she needs. If your child tests HIV positive, and with your child's consent, we will provide your child's contact information and HIV results to healthcare workers or counselors from a trained social service organization. Specifically, we will provide your child's name, phone number (if provided to us) and address to the healthcare workers or counselors. These counselors and healthcare workers will contact your child, talk to him or her about HIV,

and help your child go for HIV care. Anyone who is provided with your child's details will be experienced in providing support to people living with HIV and will be trained in maintaining confidentiality.

Future Testing

- Finally, your child may be eligible to take part in future studies related to health in Uganda. We are asking for your permission to contact your child in the next three years if such an opportunity occurs. To do this, approved researchers will be able to request access his/her contact information. If they contact him/her, they will give your child details about the new study and invite him/her to join the study. Your child may decide at that time that he/she does not want to take part in that study. If he/she does not wish to be contacted about future studies, it does not affect him/her taking part in this study.

Alternatives to taking part

Joining this study is voluntary; your child does not have to join the study if s/he does not want to. If s/he chooses to take part in the study, your child may change his/her mind at any time and stop taking part. If your child decides not to take part, there will be no penalty to him/her. Your child's refusal to take part will not affect his/her healthcare in any way. We can tell you where to go for HIV services and learn about your child's HIV status. If your child decides to leave the study, no more information will be collected from him/her. However, your child will not be able to take back the information that has already been collected and shared.

Costs for being in the study

There is no cost to you or your child for being in the study, apart from his/her time.

Benefits

- The main benefit for your child to be in the study is the chance to learn more about his/her health today
- If your child tests HIV positive, the benefit is that your child will learn where to go for HIV services. HIV care and treatment provided by the Ministry of Health is free
- If you or your child already know he/she has HIV and is not on treatment, you or your child will get information to help his/her doctor or nurse determine if your child is ready to start treatment
- If you or your child already know he/she is HIV positive and is on HIV treatment, the viral load tests can help your child's nurse or doctor judge how well the treatment is working
- If your child tests HIV negative, you or your child will learn about how he/she can stay HIV negative
- Your child's taking part in this study could help us learn more about HIV in Uganda. It can help us learn about how HIV prevention and treatment programs are working in the country.

Risks

- The risks involved with taking part in the study are minimal. Your child may feel uncomfortable answering some of the questions. Your child does not have to answer questions he/she feels are too personal or that make him/her feel uncomfortable.
- The risks to your child from having his/her blood drawn are also minor. They include brief pain from the needle stick, bruising, lightheadedness, bleeding, and rarely, infection where the needle enters the skin. The study staff member who will perform the blood draw has received training on how to draw blood. If he/she experiences any discomfort or any of the symptoms mentioned above, please let us know, especially if there is any bleeding or swelling.
- Your child may learn that he/she is HIV positive. Learning that he/she has HIV may cause some emotional distress. If he/she tests positive for HIV, he/she will receive counseling on how to cope with learning that he/she has HIV. We will help your child identify where to go and explain the options available for care and treatment. Care and treatment is available at government facilities free of charge.
- As with all studies, there is a chance that someone could find out your child took part in the study. We are doing everything possible to ensure confidentiality and minimize this risk.

Confidentiality and access to your health information

We will do everything we can to keep your child's taking part in the study and his/her answers private and confidential. The information we collect from your child will be identified by a number and not by his/her name. His/her name will not appear when we share study findings and study data. The data from this study will be released to the public without any identifiers, and this will not require another permission from you. Your child's name and contact information will not be released outside of the study groups listed unless there is an issue of safety.

(SKIP IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

The following individuals and/or agencies will be able to look at your child's interview records to help oversee the conduct of this study:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- 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 person taking part in a study, including:
  - Uganda Virus Research Institute (UVRI)
  - Uganda National Council of Science and Technology (UNCST)
  - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
  - Columbia University Medical Center (New York, NY, USA)
  - Westat (a statistical study research organization) (Rockville, MD, USA)
- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this study
- Selected study staff and study monitors.

[INTERVIEWER: READ FROM HERE]

This study has received approval from UVRI, UNCST and the Institutional Review Boards of the Centers for Disease Control and Prevention, Columbia University Medical Center, and Westat.

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Dr. Joshua Musinguzi

Address: 6 Lourdel Road

Kampala, Uganda

Mobile: 0772611135, Office Phone: +256 414 256683

Email: joshuamusinguzi@yahoo.co.uk

Dr. Wilford Kirungi

Address: 6 Lourdel Road

Kampala, Uganda

Mobile: 0772694888, Office phone: +256 414 256683

Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ FROM HERE]

For questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Tom Lutalo

UVRI Science and Ethics Committee

Address: P.O Box 49 Entebbe Nakiwogo Road, Plot 51-59, Entebbe, Uganda

Mobile: 0716321912, Office Phone: +256 414 321962

Email: tlutalo@rhsp.org

[INTERVIEWER: READ FROM HERE]

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Do you want to ask me anything about the study?

- The interview?
- Drawing blood for HIV testing?
- Testing in the laboratory?

PERMISSION STATEMENT

By answering the questions below you confirm that any questions you had have been answered satisfactorily and you have been offered a copy of this consent form.

1. Do you agree that we can ask this child to do the interview?

If you agree for us to ask this child to do the interview, please state the following statement:

"I give permission to the study team to ask this child to take part in the interview."

☐ Check this box if parent/guardian agrees to allow us to ask this child to take part in the interview·

If you refuse for us to ask your child to do interview, please state the following statement:

"I do not wish for the study team to ask this child to take part in the interview."

☐ Check this box if parent/guardian refuses to allow the study team to ask this child to take part in the interview

(IF PARTICIPANT DOES NOT AGREE, THEN STOP)

2. Do you agree that we can approach this child to give blood for HIV testing, related testing as well as to give them their HIV test result?

If you agree for us to ask this child to give blood for HIV testing and related testing, please state the following statement:

"I give permission for the study team to ask this child to give blood for HIV testing, related testing and to give them their HIV test results."

☐ Check this box if parent/guardian agrees for study team to ask this child to take part in the blood draw, HIV testing and return of the HIV test result to them.

If you refuse for us to ask your child to give blood for HIV testing, and related testing and return of their HIV test result to them, then, please state the following statement:

"I do not wish for the study team to ask this child to take part in blood testing today."

☐ Check this box if parent/guardian refuses to allow the study team to ask this child to take part in the blood draw.

3. Do you agree for us to ask this child to be contacted for future research?

If you agree for us to ask this child to retain his/her contact information for future research, please state the following statement:

"I give permission to the study team to ask this child to be contacted for future research."

☐ Check this box if parent/guardian agrees to allow us to ask this child to be contacted for future research.

If you refuse for us to ask this child if they are willing to be contacted for future research, please state the following statement:

"I do not wish the study team to ask this child if he/she wants to be contacted for future research."

☐ Check this box if parent/guardian refuses to allow the study team to ask this child if they want to be contacted for future research.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: APPROACH CHILD FOR INTERVIEW, APPROACH CHILD FOR FUTURE RESEARCH, APPROACH CHILD FOR BLOOD TESTNG, is this correct?

☐ Yes ☐ No

Printed name of parent/guardian_____

Signature of person obtaining consent _____ Date: __/__/__

Printed name of person obtaining consent_____

Study staff UPHIA 2020 ID number _____

Child's name (print) _____

PARENTAL OR GUARDIAN VERBAL PERMISSION FOR CHILDREN AGED 15-17 YEARS: ALLOW FOR SAMPLE STORAGE AND FUTURE TESTING

What language do you prefer for our discussion today?

☐ ENGLISH ☐ ATESO ☐ NGAKARIMOJONG ☐ LUGANDA ☐ LUGBARA ☐ LUO
☐ RUNYANKORE-RUKIGA ☐ RUNYORO-RUTORO ☐ OTHER LANGUAGE (Specify) _____

TITLE OF STUDY: 2020 UGANDA POPULATION-BASED HIV IMPACT ASSESSMENT (UPHIA 2020).

CONSENT FOR SAMPLE STORAGE AND FUTURE TESTING

[INTERVIEWER: READ FROM HERE]

As a part of the UPHIA 2020, 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.

After we collect 14mL of blood there may be some extra blood that we will not use for testing. We would also like to ask your permission to store approximately 4mls (or one teaspoonful) of your child's leftover blood for future research tests. These tests may be about HIV or other health issues important for the health of people living in Uganda, like Hepatitis B and C infection, nutrition or immunization. This sample will be stored for an indefinite amount of time at the Uganda Virus Research Institute (UVRI), the Ministry of Health's sample repository, but your child's name will be on the sample for only three years. During this three year period we will attempt to tell your child about any test results that are important to his/her health. Your child's leftover blood samples will not be sold or used for profit but may be shared with outside investigators after removal of all identifiers, without asking for your permission again. If you change your mind after three years, once your child's name is removed from the sample, we will not be able to destroy his or her sample. ADD: Any future studies conducted using your child's blood sample will be approved by the appropriate institutions overseeing those studies. If you do not agree to future research tests of your child's blood samples, your child can still take part in the study, and we will destroy your child's blood samples after this study-related testing has been completed. If you agree today to storage of your child's blood but change your mind later in the next three years, you can call the number provided at the end of this consent form and have your child's stored specimen destroyed. If you change your mind after three years, once your child's name is removed from the sample, we will not be able to destroy his/her sample.

What are the potential risks and benefits?

There may be no direct benefit to you or your child, but the information you provide will also be used to improve the health of Ugandans.

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 should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Dr. Joshua Musinguzi
Address: 6 Lourdel Road
Kampala, Uganda
Mobile: 0772611135, Office Phone: +256 414 256683
Email: joshuamusinguzi@yahoo.co.uk

Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Mobile: 0772694888, Office phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ FROM HERE]

For questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Tom Lutalo

UVRI Science and Ethics Committee

Address: P.O Box 49 Entebbe Nakiwogo Road, Plot 51-59, Entebbe, Uganda

Mobile: 0716321912, Office Phone: +256 414 321962

Email: tlutalo@rhsp.org

[INTERVIEWER: READ FROM HERE]

I have read and/or had the information fully explained to me concerning my child's participation in this study and I understand what will be required of my child if I agree for his/her blood sample to be stored for future research. I understand that:

i. My child's blood sample will be used solely for research purposes.

ii. My child's leftover blood samples will not be sold or used for profit.

iii. The tests that will be performed on my child's leftover blood samples may be about HIV or other health issues which are important to the health of Ugandans, such as Hepatitis B and C infection, nutrition or immunization.

iv. During the three-year period after this study, my child may be informed about any test results that are important to his/her health.

v. My child's blood samples will be stored for an indefinite amount of time but will not be linkable to him/her after the first three years following the completion of the study.

vi. My child's personal identification shall be kept confidential and only authorised persons shall be able to link my child's samples to him/her, even in the first three years following completion of the survey.

vii. My child's participation is entirely voluntary and that at any time s/he may withdraw from this study without giving a reason and without it affecting his/her entitlement to routine health care and management.

viii. If I do not agree to future research tests of my child's blood, my child can still take part in the study, but his/her blood samples will be destroyed after survey-related testing has been completed.

ix. I can change my mind if I agreed to store my child's blood in the next three years, to have the stored specimen destroyed. If I change my mind after three years, my child's sample cannot be destroyed.

Do you want to ask me anything about the study?

CONSENT STATEMENT

By answering the questions below, you confirm that any questions you had have been answered satisfactorily and you have been offered a copy of this consent form.

CONSENT FOR BLOOD STORAGE FOR FUTURE RESEARCH:

If you agree for us to ask this child to have his/her leftover blood stored for future research, please state the following statement:

"I agree for the study team to ask this child to have his/her leftover blood stored for future research."

☐ Check this box if parent/guardian agrees for study team to ask this child to have his/her leftover blood stored for future research.

If you refuse for us to ask this child to have his/her leftover blood stored for future research, please state the following statement:

"I do not wish for the study team to ask this child to have his/her leftover blood stored for future research."

☐ Check this box if parent/guardian refuses to have study team ask this child to have his/her leftover blood stored for future research.

[Tablet summary statement]

To confirm, you have agreed for the study team to <INSERT ALL OPTIONS MARKED YES: APPROACH CHILD FOR BLOOD STORAGE>. is this correct?

☐ Yes ☐ No

Printed name of parent/guardian_____

Signature of person obtaining consent _____ Date: ___/___/___

Printed name of person obtaining consent_____

Study staff UPHIA 2020 ID number _____

INDIVIDUAL VERBAL ASSENT FOR PARTICIPANTS 15-17 YEARS: INTERVIEW, BLOOD DRAW AND CONTACT FOR FUTURE RESEARCH

What language do you prefer for our discussion today?

☐ ENGLISH ☐ ATESO ☐ NGAKARIMOJONG ☐ LUGANDA ☐ LUGBARA ☐ LUO
☐ RUNYANKORE-RUKIGA ☐ RUNYORO-RUTORO ☐ OTHER LANGUAGE (Specify) _____

TITLE OF STUDY: THIS STUDY IS CALLED THE 2020 UGANDA POPULATION-BASED HIV IMPACT ASSESSMENT (UPHIA 2020).

Interviewer reads:

Hello. My name is_____. I would like to invite you to take part in a study. As a part of this study, we are asking people questions about themselves and also giving people a chance to learn if they have HIV. We are also asking people if we can keep some of their blood for future testing.

This form talks about our study and the choice that you have to take part in it. You can ask questions any time.

Why are we doing this study?

HIV is a virus. Being infected with HIV can lead to an illness often called AIDS. HIV and AIDS can be treated by taking medicines regularly. This study will help us to know how many people in Uganda have HIV and need health services. This study involves an interview, a blood draw and HIV testing.

Your parent/guardian said it was okay for us to ask you to join.

This form might have some words that you may not have heard before. Please ask me to explain anything that you do not understand.

What would happen if you join this study?

If you decide to join the study, here is what would happen:

- If you join this study, we will ask you questions We will ask you questions about your age, the work you do, your health and experience with health services, and your social and sexual behavior.
- The interview will take about 20 to 30 minutes
- The interview will take place in private here in your house or a nearby area around your house.
- After we ask you the questions, if you agree, we will take some of your blood to test for HIV.
- We will use a needle to take about 14 milliliters (about a tablespoonful) of blood from your arm into two tubes. 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.
- It will take about 45 minutes to do the test and to talk to you about the results.
- If you test positive for HIV:
  - We will send your blood to a laboratory to measure your viral load and CD4 count. Viral load is the amount of HIV in your blood. CD4 cells are the part of the immune system that fights HIV infection and other diseases.
  - We will send your viral load and CD4 test results to a health facility of your choice in about 8 to 12 weeks. At the health facility you will be able to talk to a nurse or doctor about your results.
  - Some of your blood will be sent to a laboratory out of the country for additional tests related to HIV. If we have test results that might help guide your treatment, we will return them to a clinic. If you have given us your contact information, we will contact you to tell you how you and your doctor or nurse may get these results.
- You may be eligible to take part in future studies related to health in Uganda. We are asking for your permission to contact you in the next three years if such an opportunity occurs. To do this, approved researchers will be able to request access to your contact information. If they contact you, they will give you details about the new study and invite you to join the study. You may decide at that time that you do not want to take part in that study. If you do not wish to be contacted about future studies, it does not affect your taking part in this study.

Alternatives to taking part

You can leave the study at any time for any reason. If you decide to leave the study, no more information will be collected from you. We can tell you where to go for HIV services and learn about your HIV status. However, you will not be able to take back the information that has already been collected and shared.

Costs for being in the study

There is no cost to you for being in the study, apart from your time.

Could the study help me?

Being in the study may help you to learn whether or not you have HIV. We will give you the results of your HIV test and provide counseling to you. We will discuss with you how to share these results with your parent/guardian, if you decide to do so. If you test positive for HIV, you will learn about it and where to go for care and treatment of HIV. Care and treatment provided by the Government of Uganda is free. Your taking part in this study will help us to learn more about HIV in Uganda.

Could bad things happen if you join this study?

You may feel uncomfortable answering some of the questions we will ask. You can refuse to answer any question at any time and you can stop the interview at any time.

Your arm may hurt where the needle enters the skin. This pain will go away quickly. Sometimes the needle can leave a bruise on the skin. Also, you might bleed a little or feel a little dizzy. Rarely, an infection might occur where the needle enters the skin. We will do our best to make it as painless as possible.

You may learn that you have HIV. Learning that you have HIV may cause you to feel worried. We will talk with you to help you find a clinic where you can receive treatment.

We will not tell anyone else what we talk about, but there is a small chance that other people might find out. We will do everything we can to minimize this risk.

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.

It is also OK to say 'Yes' and change your mind later. You can stop being in the study at any time. If you want to stop, please tell us.

Confidentiality and Access to your health information

We will do everything we can to keep your test results private and confidential. The information we collect from you will be identified by a number, not by your name. Besides you, no one else will know your test results except the people working on the study and people you may decide to tell. Your name will not appear when we share study findings and study data.

The data from this study will be released to the public without any identifiers, and this will not require another consent from you. Your name and contact information will not be released outside of the study groups listed unless there is an issue of safety. The following individuals and/or agencies will be able to look at your interview records to help oversee the conduct of this study:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- 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 person taking part in a study, including:
  - Uganda Virus Research Institute (UVRI)
  - Uganda National Council of Science and Technology (UNCST)
  - The Centers for Disease Control and Prevention (CDC; Atlanta, GA, USA)
  - Columbia University Medical Center (New York, NY, USA)
  - Westat (a statistical study research organization) (Rockville, MD, USA)
- The United States Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a person taking part in this study
- Selected study staff and study monitors.

[INTERVIEWER: READ FROM HERE]

This study has received approval from UVRI, UNCST and the Institutional Review Boards of the Centers for Disease Control and Prevention, Columbia University Medical Center, and Westat.

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Dr. Joshua Musinguzi
Address: 6 Lourdel Road
Kampala, Uganda
Mobile: 0772611135, Office Phone: +256 414 256683
Email: joshuamusinguzi@yahoo.co.uk

Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Mobile: 0772694888, Office phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ FROM HERE]

For questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Tom Lutalo
UVRI Science and Ethics Committee
Address: P.O Box 49 Entebbe Nakiwogo Road, Plot 51-59, Entebbe, Uganda
Mobile: 0716321912, Office Phone: +256 414 321962
Email: tlutalo@rhsp.org

[INTERVIEWER: READ FROM HERE]

(READ FROM HERE IF PARTICIPANT ALREADY COMPLETED THE HOUSEHOLD OR INTERVIEW CONSENT)

Do you want to ask me anything about the study?

- The interview?
- Drawing blood for HIV testing?
- Testing in the laboratory?

ASSENT STATEMENT

By answering the questions below you confirm that any questions you had have been answered satisfactorily and you have been offered a copy of this consent form.

1. Do you agree to take part in the individual interview? 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 agrees to participate in the individual interview.

If you refuse 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.

(IF PARTICIPANT DOES NOT AGREE, THEN STOP)

2. Do you agree to give blood for HIV testing and related testing, and receiving the results of your HIV test? If you agree to give blood for HIV testing and related testing and receiving the result of your HIV test, please state the following statement:

"I agree to give blood for HIV testing and related testing and to receive my HIV test result."

☐ Check this box if participant agreed to blood testing, related testing and to receive their HIV test result.

If you refuse to give blood for HIV and related testing and receive my HIV test result, please state the following statement:

"I do not wish to take part in blood testing today."

☐ Check this box if participant refuses blood testing, related testing or refuses to receive their HIV test result.

3. Do you agree to be contacted for future research? If you agree to be contacted for future research, please state the following statement:

"I agree to be contacted for future research."

☐ Check this box if participant agrees to be contacted for future research.

If you refuse to be contacted for future research, please state the following statement:

"I do not wish to be contacted for future research."

☐ Check this box if participant refuses be contacted for future research.

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: INTERVIEW, BLOOD TESTING, AND CONTACT FOR FUTURE RESEARCH>. Is this correct?

☐ Yes ☐ No

Printed name of adolescent _____

Printed name of parent/guardian _____

Signature of person obtaining assent_____ Date: __/__/__

Printed name of person obtaining assent_____

Study staff UPHIA 2020 ID number _____

INDIVIDUAL VERBAL ASSENT FOR PARTICIPANTS AGED 15-17 YEARS: SAMPLE STORAGE AND FUTURE TESTING

What language do you prefer for our discussion today?

☐ ENGLISH ☐ ATESO ☐ NGAKARIMOJONG ☐ LUGANDA ☐ LUGBARA ☐ LUO
☐ RUNYANKORE-RUKIGA ☐ RUNYORO-RUTORO ☐ OTHER LANGUAGE (Specify) _____

TITLE OF STUDY: 2020 UGANDA POPULATION-BASED HIV IMPACT ASSESSMENT (UPHIA 2020).

CONSENT FOR SAMPLE STORAGE AND FUTURE TESTING

Interviewer reads:

As a part of the UPHIA 2020, we are also asking people if we can keep some of their leftover 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.

After we collect 14mL of blood there may be some extra blood that we will not use for testing. We would also like to ask your permission to store approximately 4mls (or one teaspoonful) of your leftover blood for future research tests. These tests may be about HIV or other health issues important for the health of people living in Uganda, like Hepatitis B and C infection, nutrition or immunization. This sample will be stored for an indefinite amount of time at the Uganda Virus Research Institute (UVRI), the Ministry of Health's sample repository, but your name will be on the sample for only three years. During this three-year period, we will attempt to tell you about any test results that are important to your health. Your leftover blood samples will not be sold or used for profit but may be shared with outside investigators after removal of all identifiers, without asking for your permission again. If you change your mind after three years, once your name is removed from the sample, we will not be able to destroy your sample. Any future studies conducted using your blood sample will be approved by the appropriate institutions overseeing those studies.

If you do not agree to future research tests of your blood, we will destroy your blood after this study-related testing has finished, and you can still receive your test results and conduct the study interview. If you agree today to store your blood but change your mind later in the next three years, you or your parent/guardian can call the number provided at the end of this consent form to indicate that you would like your stored specimen to be destroyed. If you change your mind after three years, once your name is removed from the sample, we will not be able to destroy your sample.

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 Ugandans.

What are alternatives to taking part?

You can decide to allow or not allow your blood to be stored for future research. Your decision will not affect your health care in any way.

We do not expect any risk from agreeing to store your blood for future testing.

Who should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Dr. Joshua Musinguzi
Address: 6 Lourdel Road
Kampala, Uganda
Mobile: 0772611135, Office Phone: +256 414 256683
Email: joshuamusinguzi@yahoo.co.uk

Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Mobile: 0772694888, Office phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ FROM HERE]

For questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Tom Lutalo

UVRI Science and Ethics Committee

Address: P.O Box 49 Entebbe Nakiwogo Road, Plot 51-59, Entebbe, Uganda

Mobile: 0716321912, Office Phone: +256 414 321962

Email: tlutalo@rhsp.org

[INTERVIEWER: READ FROM HERE]

I have read and/or had the information fully explained to me concerning my participation in this study and I understand what will be required of me if I agree for my blood sample to be stored for future research. I understand that:

i. My blood sample will be used solely for research purposes.

ii. My leftover blood samples will not be sold or used for profit.

iii. The tests that will be performed on my leftover blood samples may be about HIV or other health issues which are important to the health of Ugandans, such as Hepatitis B and C infection, nutrition or immunization.

iv. During the three-year period after this study, I may be informed about any test results that are important to my health.

v. My blood samples will be stored for an indefinite amount of time but will not be linkable to me after the first three years following the completion of the study.

vi. My personal identification shall be kept confidential and only authorised persons shall be able to link my samples to me, even in the first three years following completion of the survey.

vii. My participation is entirely voluntary and at any time I may withdraw from this study without giving a reason and without it affecting my entitlement to routine health care and management.

viii. If I do not agree to future research tests of my blood, I can still take part in the study, but my blood samples will be destroyed after survey-related testing has been completed.

ix. I can change my mind if I agreed to store my blood in the next three years, to have the stored specimen destroyed. If I change my mind after three years, my sample cannot be destroyed.

Do you want to ask me anything about the study?

CONSENT STATEMENT

By answering the questions below, you confirm that any questions you had have been answered satisfactorily and you have been offered a copy of this consent form.

CONSENT FOR BLOOD STORAGE FOR FUTURE RESEARCH:

Do you agree to have your leftover blood stored for future research? If you agree to have your leftover blood stored for future research, please state the following statement:

"I agree to have my blood stored for future research."

☐ Check this box if participant agrees to have his/her leftover blood stored for future research.

If you refuse to have your leftover 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 his/her leftover blood stored for future research..

[Tablet summary statement]

To confirm, you have agreed for the study team to <INSERT ALL OPTIONS MARKED YES: BLOOD STORAGE AND FUTURE TESTING>. is this correct?

☐ Yes ☐ No

Printed name of adolescent _____

Printed name of parent/guardian _____

Signature of person obtaining assent_____ Date: __/__/__

Printed name of person obtaining assent_____

Study staff UPHIA 2020 ID number _____

VERBAL CONSENT TO SHARE CONTACT INFORMATION FOR ACTIVE LINKAGE TO CARE OF PARTICIPANTS 18+ YEARS AND EMANCIPATED MINORS 15-17 YEARS

What language do you prefer for our discussion today?

☐ ENGLISH ☐ ATESO ☐ NGAKARIMOJONG ☐ LUGANDA ☐ LUGBARA ☐ LUO
☐ RUNYANKORE-RUKIGA ☐ RUNYORO-RUTORO ☐ OTHER LANGUAGE (Specify) _____

TITLE OF STUDY: THIS STUDY IS CALLED THE 2020 UGANDA POPULATION-BASED HIV IMPACT ASSESSMENT (UPHIA 2020)

Interviewer reads:

Purpose of consent

You had a positive HIV test today. We have provided you with counselling regarding the results. We have also provided a referral form to bring to a health clinic and seek HIV treatment and care. As we mentioned earlier, your viral load and CD4 results will be returned to a clinic of your choice. If you agree, we will include your name and age when we share those results with your preferred health facility. We would like to help you in accessing the healthcare that you need. If you agree, we may be able to provide your contact information and HIV test results to healthcare workers or counselors from the survey team or a relevant social service organization. This healthcare worker or counselor will contact you to talk to you about HIV and help you go for HIV care. Anyone who is provided with your details will be experienced in providing support to people living with HIV and will be trained in maintaining confidentiality.

What do you have to do if you agree to take part?

If you agree for your information to be shared and to be contacted, we will give your name, phone number (if you shared it with us), and your address to those providers and organizations to provide you with support. The provider of care may contact you by SMS, WhatsApp, phone call, or in person.

What about confidentiality?

Your HIV test results, and your contact information will not be shared with any other parties aside from the survey staff, those specified in the other consent forms, and our colleagues from the support organization. They will also do their utmost to maintain your confidentiality. However, we cannot guarantee complete confidentiality.

What are the potential risks?

As with all studies, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

A healthcare worker or counselor will assist you in accessing the healthcare that you need.

Whom should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Dr. Joshua Musinguzi
Address: 6 Lourdel Road
Kampala, Uganda
Mobile: 0772611135, Office Phone: +256 414 256683
Email: joshuamusinguzi@yahoo.co.uk

Dr. Wilford Kirungi
Address: 6 Lourdel Road
Kampala, Uganda
Mobile: 0772694888, Office phone: +256 414 256683
Email: wkirungi@starcom.co.ug

[INTERVIEWER: READ FROM HERE]

For questions about the process of agreeing to take part in this study or for more information about your rights as someone taking part in this study, you may contact:

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Tom Lutalo

UVRI Science and Ethics Committee

Address: P.O Box 49 Entebbe Nakiwogo Road, Plot 51-59, Entebbe, Uganda

Mobile: 0716321912, Office Phone: +256 414 321962

Email: tlutalo@rhsp.org

[INTERVIEWER: READ FROM HERE]

Do you want to ask me anything about the study?

CONSENT/ASSENT STATEMENT

By answering the questions below, you confirm that any questions you had have been answered satisfactorily and you have been offered a copy of this consent form.

1. Returning these results with your name and age will make it easier for the clinic to return the results to you. Do you agree for the results of your CD4 and viral load testing to be returned to the clinic accompanied by your name and age? If you do not agree the results will be returned to the clinic with your participant ID, a random unique survey number linking you to your results.

If you agree to allow us to include your name and age when returning your CD4 and viral load testing results, please state the following statement:

"I give permission for the survey team to include my name and age when returning my CD4 and viral load testing results to my preferred health facility."

☐ Check this box if participant agrees to have his or her viral load and CD4 testing results returned with his or her name and age.

If you refuse to have your name and age included when returning your viral load and CD4 results, please state the following statement:

"I do not wish for the study team to include my name and age when returning my CD4 and viral load results to my preferred health facility."

☐ Check this box if participant refuses to have his or her viral load and CD4 testing results returned with his or her name.

2. Do you agree to allow the study team to share your contact information with a trained healthcare workers or counselors?

If you agree to share your contact information with a trained healthcare worker or counselor, please state the following statement:

"I give permission for the study team to share my contact information"

☐ Check this box if participant agrees to share his/her contact information.

If you refuse to share your contact information, please state the following statement:

"I do not wish for the study team to share my contact information."

☐ Check this box if participant refuses to share his/her contact information.

IF PARTICIPANT DOES NOT AGREE, THEN STOP.

3. Do you agree to be contacted by:

SMS? ☐ Yes ☐ No

WhatsApp? ☐ Yes ☐ No

Phone call? ☐ Yes ☐ No

In person? ☐ Yes ☐ No

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: RETURN RESULTS WITH NAME AND AGE, SHARE, SMS, WHATSAPP, PHONE, IN-PERSON>, is this correct?

☐ Yes ☐ No

Printed name of participant _____

Signature of person obtaining consent _____ Date: __/__/__

Printed name of person obtaining consent _____

Study staff UPHIA 2020 ID number _____

VERBAL ASSENT TO SHARE CONTACT INFORMATION FOR ACTIVE LINKAGE TO CARE OF PARTICIPANTS 15-17 YEARS

What language do you prefer for our discussion today?

☐ ENGLISH ☐ ATESO ☐ NGAKARIMOJONG ☐ LUGANDA ☐ LUGBARA ☐ LUO
☐ RUNYANKORE-RUKIGA ☐ RUNYORO-RUTORO ☐ OTHER LANGUAGE (Specify) _____

TITLE OF STUDY: THIS STUDY IS CALLED THE 2020 UGANDA POPULATION-BASED HIV IMPACT ASSESSMENT (UPHIA 2020)

Interviewer reads:

Purpose of consent

You had a positive HIV test today. We have provided you with counselling regarding the results. We have also provided a referral form to bring to a health clinic and seek HIV treatment and care. As we mentioned earlier, your viral load and CD4 results will be returned to a clinic of your choice. If you agree, we will include your name and age when we share those results with your preferred health facility. We would like to help you in accessing the healthcare that you need. If you agree, we may be able to provide your contact information and HIV test results to healthcare workers or counselors from the survey team or a relevant social service organization. This healthcare worker or counselor will contact you to talk to you about HIV and help you go for HIV care. Anyone who is provided with your details will be experienced in providing support to people living with HIV and will be trained in maintaining confidentiality.

What do you have to do if you agree to take part?

If you agree for your information to be shared and to be contacted, we will give your name, phone number (if you shared it with us), and your address to those providers and organizations to provide you with support. The provider of care may contact you by SMS, WhatsApp, phone call, or in person.

What about confidentiality?

Your HIV test results, and your contact information will not be shared with any other parties aside from the survey staff, those specified in the other consent forms, and our colleagues from the support organization. They will also do their utmost to maintain your confidentiality. However, we cannot guarantee complete confidentiality.

What are the potential risks?

As with all studies, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

A healthcare worker or counselor will assist you in accessing the healthcare that you need.

Whom should you contact if you have questions?

If you would like to have more information about the study, you may contact:

[INTERVIEWER: INDICATE THE FOLLOWING INFORMATION TO THE PARTICIPANT- DO NOT READ ALOUD]

Dr. Joshua Musinguzi
Address: 6 Lourdel Road
Kampala, Uganda
Mobile: 0772611135, Office Phone: +256 414 256683
Email: joshuamusinguzi@yahoo.co.uk

Dr. Wilford Kirungi
Address: 6 Lourdel Road
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Mobile: 0772694888, Office phone: +256 414 256683
Email: wkirungi@starcom.co.ug

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Address: P.O Box 49 Entebbe Nakiwogo Road, Plot 51-59, Entebbe, Uganda

Mobile: 0716321912, Office Phone: +256 414 321962

Email: tlutalo@rhsp.org

[INTERVIEWER: READ FROM HERE]

Do you want to ask me anything about the study?

CONSENT/ASSENT STATEMENT

By answering the questions below, you confirm that any questions you had have been answered satisfactorily and you have been offered a copy of this consent/assent form.

1. Returning these results with your name and age will make it easier for the clinic to return the results to you. Do you agree for the results of your CD4 and viral load testing to be returned to the clinic accompanied by your name and age? If you do not agree the results will be returned to the clinic with your participant ID, a random unique survey number linking you to your results.

If you agree to allow us to include your name and age when returning your CD4 and viral load testing results, please state the following statement:

"I give permission for the survey team to include my name and age when returning my CD4 and viral load testing results to my preferred health facility."

☐ Check this box if participant agrees to have his or her viral load and CD4 testing results returned with his or her name and age.

If you refuse to have your name and age included when returning your viral load and CD4 results, please state the following statement:

"I do not wish for the study team to include my name and age when returning my CD4 and viral load results to my preferred health facility."

☐ Check this box if participant refuses to have his or her viral load and CD4 testing results returned with his or her name.

2. Do you agree to allow the study team to share your contact information with a trained healthcare workers or counselors?

If you agree to share your contact information with a trained healthcare worker or counselor, please state the following statement:

"I give permission for the study team to share my contact information"

☐ Check this box if participant agrees to share his/her contact information.

If you refuse to share your contact information, please state the following statement:

"I do not wish for the study team to share my contact information."

☐ Check this box if participant refuses to share his/her contact information.

IF PARTICIPANT DOES NOT AGREE, THEN STOP.

3. Do you agree to be contacted by:

SMS?	☐ Yes	☐ No
WhatsApp?	☐ Yes	☐ No
Phone call?	☐ Yes	☐ No
In person?	☐ Yes	☐ No

[Tablet summary statement]

To confirm, you have agreed to <INSERT ALL OPTIONS MARKED YES: RETURN RESULTS WITH NAME AND AGE, SHARE, SMS, WHATSAPP, PHONE, IN-PERSON>, is this correct?

☐ Yes ☐ No

Printed name of participant _____

Signature of person obtaining consent _____ Date: __/__/__

Printed name of person obtaining consent _____

Study staff UPHIA 2020 ID number _____

Uganda Population-based HIV Impact Assessment 2020 (UPHIA 2020-2021)

This project is supported by the US President's Emergency Plan for AIDS Relief (PEPFAR) through CDC under the terms of cooperative agreement #U2GGH002173. The findings and conclusions are those of the authors and do not necessarily represent the official position of the funding agencies.

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Dr. Wilford L. Kirungi: wkirungi@starcom.co.ug