



ZAMBIA POPULATION-BASED HIV IMPACT ASSESSMENT **ZAMPHIA 2016**

FINAL REPORT
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Zambia Population-based HIV Impact Assessment (ZAMPHIA) 2016

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GLOSSARY OF TERMS

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

Acquired Immunodeficiency Syndrome (AIDS): AIDS is a disease caused by infection with HIV. AIDS is the result of severe damage to the immune system that leaves the body vulnerable to life-threatening conditions such as infections and cancers.

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

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

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

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

Head of Household: The head of household is defined as the person who is recognized within the household as being the head and is 18 years of age or older or, in special cases, a person between the ages of 15 and 17 years who is either married, has one or more children or living alone. This person may be acknowledged as the head on the basis of age (older), sex (generally, but not necessarily, male), economic status (main provider), or some other reason.

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

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

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

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

HIV Viral Load Suppression (VLS) or Suppressed Viral Load: An HIV VL of less than 1,000 copies/mL.

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

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

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

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

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

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

Tuberculosis: Tuberculosis (TB) is a contagious bacterial disease that spreads through the air and is the leading cause of death among people living with HIV in Africa.

LIST OF ABBREVIATIONS

| | |
|---------|---|
| AIDS | Acquired Immunodeficiency Syndrome |
| ANC | Antenatal Care |
| ART | Antiretroviral Therapy |
| ARV | Antiretroviral |
| CDC | U.S. Centers for Disease Control and Prevention |
| CD4 | CD4+ T-cell |
| CI | Confidence Interval |
| CSO | Central Statistical Office |
| EA | Enumeration Area |
| EID | Early Infant Diagnosis |
| EIA | Enzyme Immunoassay |
| HBTC | Home-Based Testing and Counselling |
| HIV | Human Immunodeficiency Virus |
| HPV | Human Papillomavirus |
| IPV | Intimate Partner Violence |
| LAg | Limiting Antigen |
| MOH | Ministry of Health |
| MTCT | Mother-to-Child Transmission |
| ODn | Normalized Optical Density |
| PCR | Polymerase Chain Reaction |
| PEPFAR | U.S. President's Emergency Plan for AIDS Relief |
| PFR | Proportion False Recent |
| PHIA | Population-based HIV Impact Assessment |
| PLHIV | People Living with HIV |
| PMTCT | Prevention of Mother-to-Child Transmission |
| RNA | Ribonucleic acid |
| RR | Response Rate |
| QA | Quality Assurance |
| QC | Quality Control |
| SMS | Short Message Service |
| STI | Sexually Transmitted Infection |
| TB | Tuberculosis |
| UNAIDS | Joint United Nations Programme on HIV and AIDS |
| UNZA | University of Zambia |
| VL | Viral Load |
| VLS | Viral Load Suppression |
| VMMC | Voluntary Medical Male Circumcision |
| WHO | World Health Organization |
| ZAMPHIA | Zambia Population-based HIV Impact Assessment |

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SUMMARY OF KEY FINDINGS

Survey Household Characteristics

- Among all households, 74.5% were headed by males and 25.5% were headed by females.
- Among female household heads, 31.5% were HIV positive, as compared to 14.0% of male household heads.
- Among all households, 21.5% have at least one HIV-positive household member.

Survey Respondent Characteristics

- The largest proportion of the population was located in Lusaka Province (20.1%) and the smallest in North-Western Province (5.2%).
- Among males, 49.4% reported secondary education as their highest level of schooling, compared to 39.6% of the female population.

HIV Incidence

- The annual incidence of HIV among adults aged 15-59 years in Zambia is 0.61%: 0.93% among females and 0.29% among males. This corresponds to approximately 43,000 new cases of HIV infection annually among adults aged 15-59 years in Zambia.

HIV Prevalence

- The prevalence of HIV among adults aged 15-59 years in Zambia is 12.0%: 14.6% among females and 9.3% among males. This corresponds to approximately 960,000 people living with HIV (PLHIV) aged 15-59 years in Zambia.
- The prevalence among adults aged 15-49 years was higher among females (14.3%) than among males (8.3%), as well as among those residing in urban areas (14.4%) compared to those living in rural areas (8.7%).
- HIV prevalence peaked between the ages of 40-44 years for females (29.6%) and between 45-49 years of age for males (23.0%).
- Among young adults (20-24 years of age), HIV prevalence was four times higher among females (8.3%) than among males (2.0%).

HIV Testing

- Almost two-thirds of males (65.1%) and 79.2% of females aged 15-59 years reported ever having been tested for HIV and having received their results. In this sample, 34.8% of all males and 42.0% of females in the same age bracket reported receiving an HIV test in the 12 months preceding the survey.
- Among males and females aged 15-59 years who tested positive in the survey, 85.9% and 92.9%, respectively, reported they had ever been tested for HIV and received their results.

- Among adults in urban areas, 75.9% reported ever testing for HIV while 40.5% reported testing for HIV in the 12 months prior to survey, compared 69.3% and 36.7% of adults in rural areas, respectively.

HIV Diagnosis and Treatment

- Over two-thirds (67.1%) of HIV-positive males 25-29 years of age reported being unaware of their HIV status.
- Based on self-report, among HIV-positive men 15-59 years of age, awareness varied geographically, from 26.6% unaware of their HIV status in Eastern Province to 57.1% in Luapula Province. As among HIV-positive men, awareness of HIV status among HIV-positive females varied geographically, from 23.5% unaware in Southern Province to 42.8% in Luapula Province.
- Concordance between self-report of ART and detection of ARVs was high among adults aged 15-59 years, with 96.3% of those who reported current ART use having detectable ARVs in blood. However, self-report of HIV status was less accurate, with 18.1% of those who reported that they had not been previously diagnosed with HIV having ARVs detected in their blood.

Viral Load Suppression (VLS)

- Among people living with HIV 15-59 years of age in Zambia, the prevalence of VLS (defined as an HIV of less than 1,000 copies/mL) was 59.2%.
- The prevalence of VLS ranged from 30.7% among HIV-positive individuals aged 15-19 years to 79.0% among those aged 55-59 years.
- Among HIV-positive adults aged 15-59 years, the prevalence of VLS varies geographically across Zambia, ranging from 47.3% in Western Province to 67.1% in Eastern Province.

90-90-90

- Diagnosed: In Zambia, 71.4% of people living with HIV aged 15-59 years report knowing their HIV status and/or had detectable ARVs in their blood (72.6% of HIV-positive females and 69.2% of HIV-positive males).
- On Treatment: Among people living with HIV aged 15-59 years who know their HIV status, 87.1% self-reported current use of ART and/or had detectable ARVs in their blood (86.5% of HIV-positive females and 88.2% of HIV-positive males).
- Suppressed Viral Load: Among people living with HIV aged 15-59 years who self-report current use of ART and/or had detectable ARVs in their blood, 89.2% have suppressed viral loads (90.2% of HIV-positive females and 87.7% of HIV-positive males).

Clinical Perspectives on People Living with HIV

- The median CD4+ T-cell (CD4) count among HIV-positive adults aged 15-59 years was 421 cells/ μ L. Nearly two-thirds (64.3%) of those had CD4 counts < 500 cells/ μ L. The proportion of immunosuppression (defined as CD4 count < 500 cells/ μ L) among HIV-positive persons who reported having been previously diagnosed and on ART was 59.2%, compared to 76.0% among those who reported having been previously diagnosed but not on ART.

- Among HIV-positive adults 15-59 years of age, the prevalence of immunosuppression was 58.9% in females compared to 73.2% in males.
- Overall, among newly diagnosed HIV-positive persons aged 15-59 years, 45.5% had a CD4 count less than 350 cells/ μ L and 17.7% had a CD4 count less than 200 cells/ μ L.

Prevention of Mother-to-Child Transmission

- In Zambia, 99.0% of women aged 15-49 years who delivered in the three years preceding the survey attended at least one ANC visit for their most recent birth.
- Prevention of mother-to-child transmission: Among women aged 15-49 years who delivered in the 12 months preceding the survey, 93.1% knew their HIV status; while 98.9% of HIV-positive women who gave birth in the 12 months preceding the survey received antiretrovirals (ARVs).
- 9.3% of the infants born in the previous 17 months to HIV-positive mothers who reported ever breastfeeding were confirmed to be HIV positive.

Adolescents and Young Adults

- Nearly twice the proportion of males (17.1%) aged 15-24 years compared to females (9.5%) in the same age bracket reported having sexual intercourse before the age of 15 years.
- The percentage of young people aged 15-24 years who reported sex before the age of 15 years, was nearly twice as high in rural areas compared to urban areas (17.3% and 8.6%, respectively).
- Less than half of people aged 15-24 years in both urban (46.7%) and rural (32.4%) areas had comprehensive knowledge on HIV transmission and prevention.

Children

- The prevalence of HIV among children aged 0-14 years in Zambia was 1.1%.
- Only 50.6% of HIV-positive children aged 0-14 years were previously diagnosed. Of the previously diagnosed, 92.3% were on treatment. However, of those on treatment only 54.3% had suppressed viral loads.

HIV Risk Factors

- HIV prevalence was twice as high among women who reported paid sexual intercourse in the previous 12 months (32.2%) as among those who did not (14.7%).
- Only two in 10 (21.2%) males aged 15-59 years reported having undergone medical circumcision.

Discriminatory Attitudes Towards People Living with HIV

- In rural areas, 25.3% of people held discriminatory attitudes towards people living with HIV compared to 14.5% in urban areas.
- Discriminatory attitudes towards people living with HIV are more common among those with less education, ranging from 34.3% among those with no education to 5.7% among those with more than secondary education.

Tuberculosis, Syphilis, HBV, STI Symptoms, and Cervical Cancer Screening

- Based on self-report, among adults aged 15-59 years who visited a TB clinic, 60.9% reported testing for HIV at the TB clinic while 30.7% neither tested at the clinic nor were aware of their HIV status.
- Among adults living with HIV who had ever visited a TB clinic, 54.3% were diagnosed with TB and 98.4% of these were treated for TB.
- Overall, 39.4% of HIV-positive persons were screened for TB at their last HIV clinic visit.
- The prevalence of having ever been infected with syphilis among those aged 15-59 years was 6.8% (7.2% among females and 6.3% among males).
- The overall prevalence of active syphilis infection was 3.0% (3.4% among females and 2.7% among males).
- The prevalence of ever having been infected with syphilis was lower among HIV-negative (5.5%) than among HIV-positive (16.6%) participants. Active syphilis infections were less common among HIV-negative participants (2.1%) than HIV-positive (9.6%) participants.
- The overall prevalence of hepatitis B in the population of those aged 0-59 years was 3.5%. The prevalence of hepatitis B was four times higher among those aged 15-59 years (5.6%) compared to those aged 0-14 years (1.3%).
- Among adult people living with HIV, 7.0% of men and 3.5% of women reported having a sexually transmitted infection (STI) diagnosed by a medical professional in the past 12 months. Among HIV-negative adults, 3.4% of men and 1.3% of women reported having an STI diagnosed by a medical professional in the last 12 months.
- Among women with HIV aged 30-49 years, the probability of having been screened for cervical cancer was 34.5% in urban areas compared to 17.0% in rural areas.

1 INTRODUCTION

1.1 Background

The Population-based HIV Impact Assessment (PHIA) is a multi-country project funded by the United States President's Emergency Plan for AIDS Relief (PEPFAR) to conduct national HIV-focused surveys that describe the status of the HIV epidemic. The surveys measure important national and regional HIV-related parameters, including progress toward the achievement of the Joint United Nations Programme on HIV and AIDS (UNAIDS) 90-90-90 targets (UNAIDS, 2014), and will guide policy and funding priorities.

1.2 Overview of ZAMPHIA 2016

The Zambia Population-based HIV Impact Assessment (ZAMPHIA), a household-based, national survey, was conducted between March and August 2016 to measure the status of Zambia's national HIV response. ZAMPHIA offered HIV counseling and testing with return of results, and collected information about uptake of HIV care and treatment services.

This survey is the first in Zambia to measure national HIV incidence, VLS, and pediatric HIV prevalence. The results provide information on national and subnational progress toward control of the HIV epidemic and Zambia's progress toward the UNAIDS 90-90-90 treatment targets. ZAMPHIA was led by the government of the Republic of Zambia through the Ministry of Health (MOH) and conducted with funding from PEPFAR and with technical assistance through the U.S. Centers for Disease Control and Prevention (CDC). The survey was implemented by ICAP at Columbia University in collaboration with the statistical survey research corporation, Westat, and local partners, including the Central Statistical Office (CSO), the Tropical Diseases Research Centre (TDRC), the University of Zambia (UNZA), the University Teaching Hospital (UTH), the Zambia National Public Health Institute, and the National HIV/AIDS/STI/TB Council.

Multiple HIV-related measures, such as CD4 count distribution, prevalence of detectable ARVs, and HIV drug resistance were also assessed to characterize the HIV epidemic in Zambia and provide greater clarity on the impact of the national HIV program. In addition, the survey collected information on selected behaviors typically associated with HIV acquisition and transmission, and on common HIV comorbidities and other health conditions.

1.3 Specific Objectives

The objective of the survey was to examine the distribution of HIV in Zambia, to assess the coverage and impact of HIV services at the population level, and to measure HIV-related risk behaviors using a nationally representative sample of adults and children.

Primary Objectives

- To estimate the national rate of new HIV infections (incidence) among adults aged 15-59 years.
- To estimate the provincial level prevalence of HIV VLS, among HIV-positive adults aged 15-59 years.

Secondary Objectives

- To estimate the national and provincial level prevalence of HIV infection for adults aged 15-59 years.
- To estimate the prevalence of HIV-related knowledge and risk behaviors for adults aged 15-59 years.
- To estimate syphilis antibody prevalence among adults aged 15-59 years.
- To estimate the prevalence of hepatitis B among adults and children aged 0-59 years.
- To estimate the national prevalence of HIV infection among children aged 0-14 years.
- To describe the uptake of HIV-related services, especially prevention of mother-to-child transmission of HIV (PMTCT) services.
- To determine the distribution of CD4 counts in HIV-positive persons aged 0-59 years.

2 SURVEY DESIGN, METHODS, AND RESPONSE RATES

ZAMPHIA 2016 was a nationally representative, cross-sectional, population-based survey of households across Zambia. Its target population corresponded to children aged 0-14 years and adults aged 15-59 years. The survey population excluded institutionalized children and adults.

2.1 Sample Frame and Design

ZAMPHIA 2016 used a two-stage stratified cluster sample design, where the first stage selected 511 enumeration areas (EAs) from the 2010 Census of Population and Housing in Zambia, using a probability proportional to size method. The second stage randomly selected a sample of households in each EA (cluster) using an equal probability method, where the average number of households selected per cluster was 27 and the actual number of households selected per cluster ranged from 11 to 48. The sampling frame for the second stage was defined based on a household listing exercise conducted from August to September 2015, prior to the initiation of data collection.

The sample size of selected households was calculated to provide a representative national estimate of HIV incidence among adults aged 15-59 years with a relative standard error less than or equal to 31.2%, as well as representative provincial estimates of VLS prevalence among HIV-positive adults aged 15-59 years with 95% confidence intervals (CIs) $\pm 11.0\%$. One-half of households were randomly selected for inclusion of children aged 0-14 years, which was designed to provide a representative national estimate of pediatric HIV prevalence with a relative standard error $\leq 14.6\%$. The target sample size was 19,168 for adults aged 15-59 years, and 8,974 for children aged 0-14 years.

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

| Province | Enumeration areas | | | Households | | |
|---------------|-------------------|-------|-------|------------|-------|-------|
| | Urban | Rural | Total | Urban | Rural | Total |
| Central | 10 | 32 | 42 | 255 | 842 | 1097 |
| Copperbelt | 60 | 14 | 74 | 1621 | 311 | 1932 |
| Eastern | 6 | 43 | 49 | 130 | 1147 | 1277 |
| Luapula | 6 | 26 | 32 | 159 | 676 | 835 |
| Lusaka | 69 | 16 | 85 | 1860 | 381 | 2241 |
| Muchinga | 8 | 42 | 50 | 258 | 1050 | 1308 |
| Northern | 8 | 35 | 43 | 233 | 941 | 1174 |
| North-Western | 9 | 40 | 49 | 297 | 1008 | 1305 |
| Southern | 15 | 40 | 55 | 414 | 1022 | 1436 |
| Western | 3 | 29 | 32 | 120 | 716 | 836 |
| Total | 194 | 317 | 511 | 5347 | 8094 | 13441 |

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

2.2 Eligibility Criteria, Recruitment, and Consent Procedures

Participants were eligible if they were literate in one of the survey languages or could provide a literate witness and were willing and cognitively able to provide consent. The eligible survey population included:

- Children aged 0-9 years living in residential households, and child visitors who slept in the household the night before the survey, whose parents or guardians were able to provide consent for their participation.
- Young people aged 10-17 years living in residential households, and young visitors who slept in the household the night before the survey, willing and able to provide assent and whose parents or guardians provided permission.
- Women and men aged 18-59 years living in residential households, and visitors who slept in the household the night before the survey, who were able to provide consent in one of the eight survey languages (English, Bemba, Nyanja, Lozi, Tonga, Lunda, Luvale, or Kaonde).

A designated head of household provided written consent for household members to participate in the survey on an electronic informed consent form administered using a tablet (Appendix H). Individual members were then rostered during a household interview. Persons aged 15-59 (note that parental permission and participant assent were obtained for adolescents 15 to 17 years of age) and emancipated minors (minors 15-17 years of age who are married, have children and or living without parental/guardian supervision) then provided written consent for an interview on the tablet. After completing the interview, they provided written consent for participation in the biomarker component of the survey, which included home-based testing and counseling (HBTC) for HIV, hepatitis B, and syphilis (for persons 15-59 years of age) with return of HIV test results and CD4 count results for those who tested HIV positive, during the household visit. If an individual did not want to receive his or her HIV test result, it was considered a refusal and the survey was stopped. Adults were also asked for written consent for their blood samples to be stored in a repository for future testing. At each stage of the consent process, consent was indicated by signing or making a mark on the consent form on the tablet and on a printed copy, which was retained by the participant.

Adolescents aged 10-14 years were asked for assent to the interview and biomarker components after permission was granted by their parents or guardians. Parents or guardians provided consent directly for minors below the age of assent (ages 0-9 years). In both cases, if a parent or guardian did not want to receive his or her HIV test result, this was considered a refusal and the survey was concluded.

Procedures with non-literate participants, or participants with a sight disability, involved the use of an impartial witness, chosen by the potential participant who also signed or made a mark on the consent form on the tablet and the printed copy. If no witness could be identified, the potential participant or household (if the head of household was illiterate) was deemed ineligible.

Note: only those who slept in the household in the night prior to the survey were included in analysis and creation of the dataset.

2.3 Survey Implementation

Training of Field and Laboratory Staff

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

- Scientific objectives of the survey
- Survey design and methods
- Completion of survey forms
- Data collection
- Staff responsibilities
- Recruitment of participants
- Informed consent procedures, including human subjects' protection, privacy, and confidentiality
- Blood collection for children and adults, including venipuncture and finger/heel stick
- Home-based HIV testing and counseling (HBTC)
- CD4 count measurement using Point of Care PIMA Analyzer
- Referral of participants to health and social services
- Management and transportation of blood specimens
- Biosafety
- Communication skills
- Protocol deviations, adverse events, and reporting of events

Laboratory staff were trained in specimen management, including sample processing, labeling, and quality assurance (QA). Central laboratory staff were trained in viral load (VL) measurement, early infant diagnosis (EID), HIV confirmatory testing, and HIV recency testing using the Limiting Antigen (LAG) Avidity enzyme immunoassay.

Survey Staff

Field work started on March 1, 2016 and completed by August 31, 2016. A total of 47 field teams conducted the survey; however, at any given time, there were a maximum of 37 teams in the field. Each team was composed of one team leader, two interviewers, two nurse counselors, one midwife, and one laboratory technician. Survey personnel were selected based on local language proficiency and profession. While all survey personnel had the responsibility of obtaining consent and administering the interview, nurse counselors, midwives, and laboratory technicians also conducted phlebotomy and other duties as needed. In addition, nurse counselors and midwives provided adult and pediatric HIV counseling.

Over 40 laboratory staff processed samples and performed additional tests for HIV-1 viral load, infant virological testing, and quality control (QC) and QA. Teams were supervised by three or four provincial supervisors at a time, along with 40 rotating field monitors who performed spot-checks of teams in the field, providing technical support and assistance where needed. National and international monitors routinely provided direct observation of field work and QA.

Community Sensitization and Mobilization

In coordination with the MOH, the Ministry of Community Development and Social Work, CSO, the National HIV/AIDS/STI/TB Council, the Network of Zambian People Living with HIV, and the Treatment

Advocacy and Literacy Campaign, community mobilization was organized to maximize community support and participation rates at the national and subnational levels. The mobilization began with a high-level national launch meeting that included key national and regional leaders, mass media, and other stakeholders before the survey field work commenced. Community mobilization teams visited each enumeration area approximately two to three weeks prior to initiation of data collection and partnered with community health workers to meet key gatekeepers in the communities (chiefs, village headmen, local government officials, and religious and community leaders). Community mobilizers consulted with community leaders and provided them with information about the survey to share with their community members. Mobilizers also held community meetings, disseminated written informational materials, such as brochures and posters, and held discussions with selected households and other community residents.

Questionnaire Data Collection

Questionnaire and field laboratory data were collected on mobile tablet devices using an application programmed in Open Data Kit, an open-source mobile data collection application. The household interview collected information on household residents, assets, economic support, recent deaths, and orphans and vulnerable children (Appendix E). The adult interview was administered to participants aged 15-59 years and included modules on demographic characteristics, sexual and reproductive health, marriage, male circumcision, sexual activity, HIV/AIDS knowledge and attitudes, the HIV testing and treatment history, TB and other health conditions, alcohol use, and gender norms (see Appendix F). Participants who self-reported being HIV positive were asked questions about their HIV care experience. Parents also answered questions about their children's (ages 0-14 years) health and participation in HIV testing and care services as a part of the adult interview. In addition, one woman between the ages of 15-59 years in each household was randomly selected to answer questions about her experiences with violence. Participants of any age who reported being victims of violence and minors who reported being victims of sexual exploitation were provided with referrals to social services. Female participants were interviewed by female staff, and male participants by male staff, whenever possible. The questionnaire was administered in the eight languages most commonly used in Zambia. The English, Bemba, Nyanja, Lozi, Tonga, Lunda, Luvale, and Kaonde versions of the questionnaires were reviewed and tested thoroughly for acceptability, feasibility, and flow of questions.

Adolescents 10-14 years of age participated in an interview that included questions on demographic characteristics, HIV stigma, knowledge and risk perception, exposure to HIV prevention interventions, sexual behavior, social norms, HIV testing, alcohol and drugs, parental support, and violence (Appendix G).

Supervision

Data-collection teams were regularly supervised by teams of national supervisors/monitors from the MOH, CSO, CDC, ICAP, TDRC, and UNZA. All institutions provided national supervisors/monitors, who rotated throughout the duration of the survey to perform intensive team monitoring, supervision, laboratory, and information technology support based on team metrics and performance. ICAP and CDC international staff conducted monitoring visits routinely to ensure adherence to protocol and standard operating procedures throughout the duration of the survey.

Regional statisticians from the CSO, who were permanently based in their respective provinces and were trained supervisors, assisted with hands-on troubleshooting, replenishment of forms and supplies, and community mobilization and entry procedures.

These supervision/monitoring teams visited the field teams across the country to deliver survey supplies, perform quality checks on data completeness, provide technology support, assess mobilization efforts, and help address challenges to data collection. Regular debriefing sessions were held between field-based supervisors and monitoring teams. Supervision reports were circulated to principal investigator institutions and the ZAMPHIA Technical Working Group to respond to any issues.

Electronic monitoring system

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

2.4 Field-Based Biomarker Testing

Blood Collection

Blood was collected by qualified survey staff from consenting participants, including 14 mL of venous blood from persons aged 15-59 years; 6 mL from persons aged 2-14 years; and 1 mL of capillary blood from children aged 0-23 months (via finger-stick for children aged 6-23 months and heel-stick for children under 6 months of age).

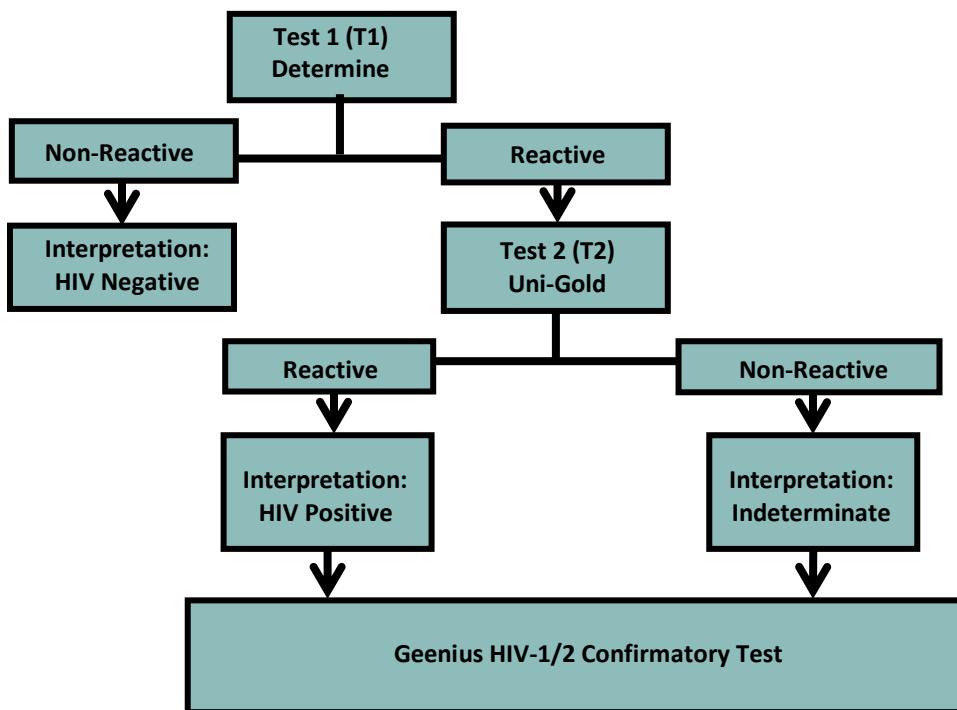
Blood samples were labeled with a unique bar-coded participant identification number and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for processing into plasma and frozen within 24 hours of blood collection and stored in Sarstedt 2.0 mL polypropylene tubes.

HIV Home-Based Testing and Counselling (HBTC)

HIV HBTC was conducted in each household in accordance with national guidelines (Figure 2.4.A). HIV-seropositive participants were referred to HIV care and treatment services at a health facility of their choice. For children under the age of disclosure (children under 18 years of age), results were provided to a parent or guardian.

As per Figure 2.4.A, individuals with a non-reactive result on the screening test (Determine™ HIV-1/2 [Abbott Molecular Inc., Des Plaines, Illinois, United States]) were reported as HIV negative. Individuals with a reactive screening test result underwent confirmatory testing using Uni-Gold™ (Trinity Biotech, plc. Wicklow, Ireland). Those with a reactive result on both screening and confirmatory tests were classified as HIV positive. Individuals with a reactive screening test result followed by a non-reactive confirmatory test result were classified as indeterminate and counseled to attend a facility for a repeat test in 4 weeks, per national guidelines. For children less than the age of 18 months, only the screening test (Determine) was performed in the household. If the test was reactive, HIV total nucleic acid (TNA) polymerase chain reaction (PCR) testing (HIV TNA PCR) for virological testing of HIV infection was performed in the central laboratory as described below. The ability of rapid tests to detect HIV antibodies among people in the serological window of infection, HIV antibodies in patients on ART, and maternal HIV antibodies among infants aged four months or older born to HIV-positive women, is an inherent limitation of the study. Participants in the first two categories are not expected to be a significant source of bias; further analysis will identify how many infants born to HIV-positive women were not identified by a rapid test.

Figure 2.4.A Household-based HIV-testing algorithm¹, ZAMPHIA 2016



¹ This figure only applies to individuals aged 18 months or older.

Anthropometric Assessment

Height and weight measurements were obtained for all children aged 0-5 years who tested HIV positive during HBTC. Among HIV-negative children, 5.0% were also included for laboratory QC testing.

CD4 Cell Count Measurement

Participants aged 0-59 years who tested HIV positive during HBTC received a CD4 count measurement in the field by qualified survey staff, using the Pima™ CD4 Analyzer (Abbott Molecular Inc., Chicago, Illinois, United States, formerly Alere). In addition, a random sample of 5.0% of HIV-negative participants also received CD4 count measurement.

Hepatitis B Testing

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

Syphilis Testing

Testing for syphilis infection was conducted in each household among participants aged 15-59 years using the DPP Syphilis Screen and Confirm Assay (Chembio, Medford, NY) for the simultaneous detection of antibodies against non-Treponemal and *Treponema pallidum* antigens, with confirmatory testing using the SD BIOLINE Syphilis 3.0 (Abbott Molecular Inc., Chicago, Illinois, United States). SD BIOLINE was used for confirmatory testing as it is approved by the Zambian Government.

2.5 Laboratory-Based Biomarker Testing

Satellite and Central Laboratories

A total of 22 satellite laboratories for the survey were established in a combination of existing health facility laboratories and mobile laboratories. One central referral laboratory was chosen for more specialized tests. At each satellite laboratory, trained technicians processed whole blood into plasma aliquots and dried blood spot samples for storage at -20°C, HIV confirmatory testing, and QA testing. Confirmatory testing, using the Geenius HIV 1/2 Supplemental Assay (Bio-Rad, Bio-Rad, Hercules, California, United States), was conducted on all samples that tested HIV positive during HBTC. For QA of the HIV rapid-testing conducted in the field, retesting, using the national HIV rapid-testing algorithm, was performed in the laboratory upon the first 50 samples tested by each field tester, and subsequently all indeterminate samples, along with a random sample of 5.0% of specimens that tested HIV negative during HBTC. Central laboratory procedures included VL testing, HIV TNA PCR for infant virological testing and for confirmation of status of those who self-reported being HIV positive but tested negative in HBTC, HIV recency testing, and long-term storage of samples at -80°C.

Testing of HBTC-Indeterminate Results

Samples that yielded indeterminate results during HBTC were retested in the laboratory using the national HIV rapid-testing algorithm. Those with HIV-positive or indeterminate retesting results underwent confirmation with the Geenius HIV 1/2 Supplemental Assay (Bio-Rad).

Viral Load Testing

HIV-1 VL (HIV RNA copies per mL) of confirmed HIV-positive participants was measured on the Roche COBAS AmpliPrep Instrument and COBAS TaqMan 48 Analyzer using the COBAS AmpliPrep/COBAS TaqMan HIV-1 Test, v2.0 (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). HIV-1 VL from dried blood spot specimens, from children and adults with insufficient volume of plasma, was measured on the Abbott m2000 RealTime system using the Abbott RealTime HIV-1 Assay (Abbott Molecular, Wiesbaden, Germany).

Viral load results were returned within approximately six to eight weeks to the health facility chosen by each HIV-positive participant. Additionally, participants were provided with a referral form during HBTC for subsequent retrieval of their results. Survey staff also contacted each participant informing them that their VL results were available at the chosen facility and further advising them to seek care and treatment.

Infant Virological Testing

For infants under the age of 18 months who screened positive for HIV during HBTC, virological testing was conducted via HIV TNA PCR, on the Roche COBAS AmpliPrep Instrument and COBAS TaqMan 48 Analyzer using the COBAS AmpliPrep/COBAS Taqman HIV-1 Qualitative Test (Roche Molecular Diagnostics, Branchburg, New Jersey, United States). Results were returned to a health facility selected by the child's parent or guardian within approximately six to eight weeks, and survey staff also contacted the parent or guardian to inform them that the child's results were available at the facility.

HIV Recency Testing Algorithm

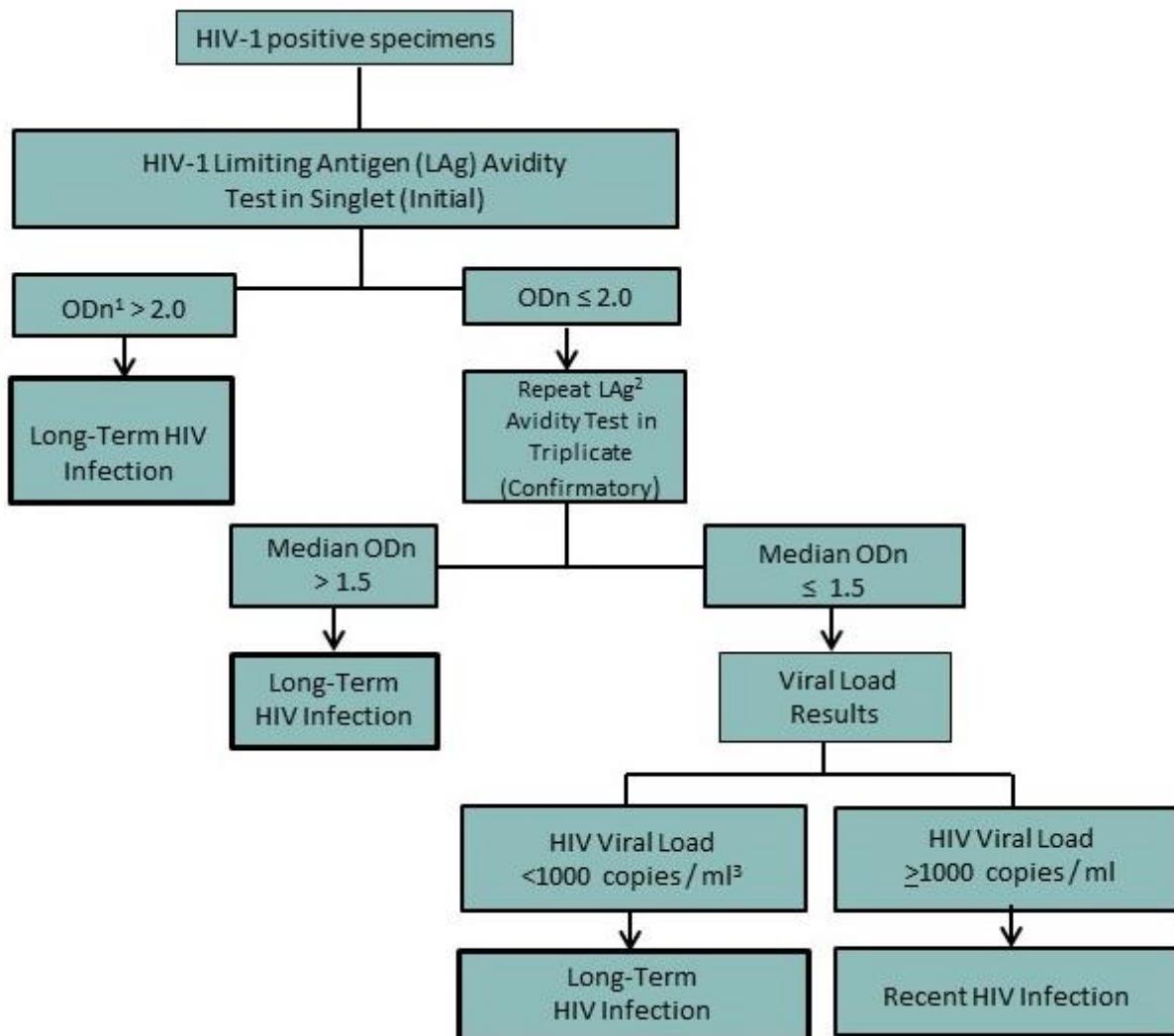
To distinguish recent from long-term HIV infections, in order to estimate incidence of participants aged 18 months-59 years, the survey used two different laboratory-based testing algorithms. Each algorithm employed a combination of assays: 1) HIV-1 LAg Avidity enzyme immunoassay (EIA) (Sedia Biosciences

Corporation, Portland, Oregon, United States) and VL (Figure 2.5.A) and 2) HIV-1 LAg Avidity EIA, VL, and ARV detection (Figure 2.5.B), as described in Appendix B.

Specimens with a median normalized optical density (ODn) of ≤ 1.5 were classified as potentially recently HIV-infected samples and underwent VL testing for further classification. Specimens with a VL of $< 1,000$ copies/mL were classified as long-term infections, while those with a VL of $\geq 1,000$ copies/mL were classified as recent infections (Figure 2.5.A). In the ARV-adjusted algorithm, specimens with VL $\geq 1,000$ copies/mL and with detectable ARVs were classified as long-term infections. Specimens with VL $\geq 1,000$ copies/mL and without detectable ARVs were classified as recent infections.

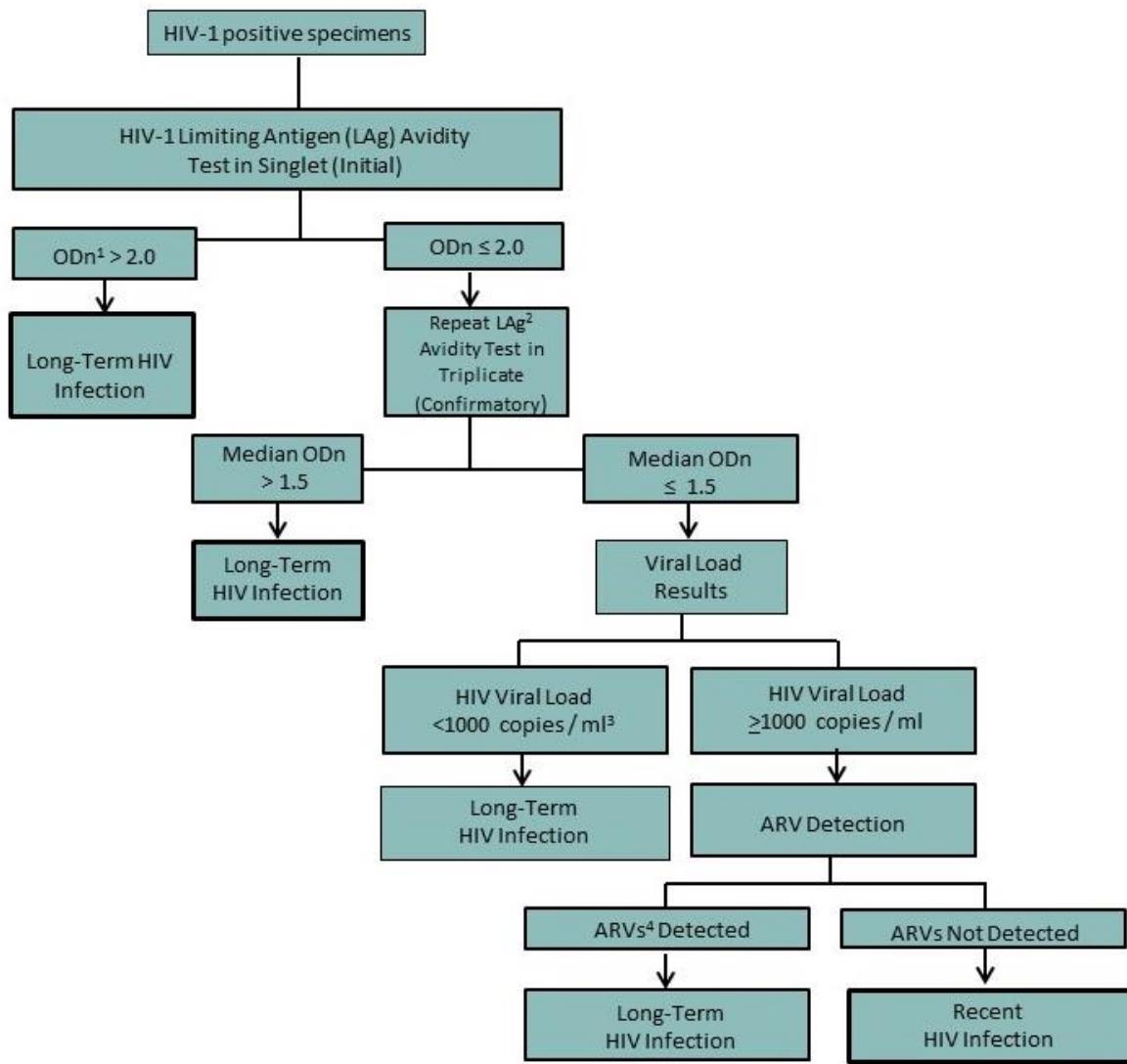
The ZAMPHIA protocol for all procedures described was reviewed and approved by the TDRC Ethical Review Committee, the Institutional Review Board at Columbia University, the Zambia National Health Research Authority and the CDC.

Figure 2.5.A HIV-1 recent infection testing algorithm (LAvg/VL algorithm), ZAMPHIA 2016



¹ODn: normalized optical density; ²LAvg: Limiting Antigen; ³ml: milliliter

Figure 2.5.B HIV-1 recent infection testing algorithm (LAG/VL/ARV algorithm), ZAMPHIA 2016



¹ODn: normalized optical density; ²LAG: Limiting Antigen; ³ml: milliliter; ⁴ARV: antiretroviral

Detection of Antiretroviral Drug Resistance

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

Specimens were sent to CDC in the United States where testing was performed at the International Laboratory Branch, a World Health Organization (WHO) accredited laboratory for drug resistance testing.

Detection of Antiretrovirals

Qualitative screening for detectable concentrations of ARVs was conducted on DBS specimens from all HIV-positive adults and children by means of high-resolution liquid chromatography coupled with tandem mass spectrometry. The method used for ARV detection was a modified version of the methodology described by Koal et al.¹ 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. As detection of all ARVs in use at the time of the survey was cost-prohibitive, three ARVs, efavirenz, atazanavir and lopinavir, were selected as markers for the most commonly prescribed first and second line regimens. Samples from participants who had suppressed viral loads and/or self-reported on ART, but had no evidence of the first three compounds, were tested for nevirapine. These ARVs were also selected based on their relatively long half-lives, allowing for a longer period of detection following intake.

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

2.6 Data Processing and Analysis

Completed household and individual questionnaires and field laboratory data were submitted electronically to a cloud server and stored in a secure PostgreSQL database. Data were automatically removed from the tablet after secure transmission to the central server. A web-based, automated reporting tool drew raw data from the survey server on a weekly basis to generate predefined reports. These summarized key statistics for survey monitoring and management, with reports generated for the survey team, the government of the Republic of Zambia through the MOH, ICAP at Columbia, the University Teaching Hospital, CDC, CSO, TDRC, and UNZA.

Data cleaning was conducted using SAS 9.4. Laboratory data were cleaned and merged with the final questionnaire database using unique specimen barcodes and study identification numbers. Sampling weights were computed to adjust for probability of selection, nonresponse, and noncoverage. All results presented in the report are based on weighted estimates unless otherwise noted.

Analysis weights account for sample selection probabilities and are adjusted for nonresponse and noncoverage. Nonresponse adjusted weights were calculated for households, individual interviews, and individual blood draws in a hierarchical form. Adjustment for nonresponse for initial individual and blood-level weights was based on the development of weighting adjustment cells defined by a combination of variables that are potential predictors of response and HIV status. The nonresponse adjustment cells were constructed using 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 five-year age groups.

Descriptive analyses of response rates, characteristics of respondents, HIV prevalence, CD4 count distribution, HIV testing, self-reported HIV status, self-reported ART, VLS, PMTCT indicators, and sexual behavior were conducted using SAS 9.4.

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

2.7 Response Rates

Of the 13,441 households selected for this survey, 12,193 were occupied, and 89.4% of these completed a household interview. The urban and rural weighted household response rates were almost exactly the same at 89.5% and 89.2%, respectively (Table 2.7.A).

Table 2.7.A Household response rates

Number of households selected, occupied, and interviewed and household response rates (unweighted and weighted), by residence, ZAMPHIA 2016

| Result | Residence | | Total |
|---|-----------|-------|--------|
| | Urban | Rural | |
| Household interviews | | | |
| Households selected | 5,347 | 8,094 | 13,441 |
| Households occupied | 4,989 | 7,204 | 12,193 |
| Households interviewed | 4,494 | 6,463 | 10,957 |
| Household response rate ¹ (unweighted) | 89.6 | 88.8 | 89.1 |
| Household response rate ¹ (weighted) | 89.5 | 89.2 | 89.4 |

¹Household response rate was calculated using the American Association for Public Opinion Research (AAPOR) Response Rate 4 (RR4) method:

http://www.aapor.org/AAPOR_Main/media/publications/Standard-Definitions20169theditionfinal.pdf

Of the 13,317 eligible women and 11,346 eligible men aged 15-59 years, 90.8% of women and 80.4% of men were interviewed. The response rate for biomarker testing among those who completed an individual interview was 88.5% for males and 90.3% for females (Table 2.7.B). Of the 3,593 eligible children aged 10-14 years, 74.6% of males and 79.1% of females completed an interview, while similar percentages of males (90.9%) and females (90.6%) completed biomarker testing. Of 8,053 eligible children aged 0-9 years, about two-thirds (66.9% for males and 66.7% for females) had their blood drawn (Table 2.7.B).

Table 2.7.B Interview and blood draw response rates

Number of eligible individuals and response rates for individual interviews¹ and blood draws² (unweighted and weighted), by residence and sex, ZAMPHIA 2016

| Result | Residence | | | | | |
|--|-----------|---------|-------|---------|--------|---------|
| | Urban | | Rural | | Total | |
| | Males | Females | Males | Females | Males | Females |
| Eligible individuals, age 0-9 years | | | | | | |
| Number of eligible individuals | 1,399 | 1,456 | 2,637 | 2,561 | 4,036 | 4,017 |
| Blood draw response rate (unweighted) | 68.0 | 68.4 | 67.8 | 67.7 | 67.8 | 68.0 |
| Blood draw response rate (weighted) | 67.6 | 68.6 | 66.5 | 65.6 | 66.9 | 66.7 |
| Eligible individuals, age 10-14 years | | | | | | |
| Number of eligible individuals | 659 | 700 | 1,170 | 1,064 | 1,829 | 1,764 |
| Interview response rate (unweighted) | 78.3 | 79.0 | 73.9 | 80.4 | 75.5 | 79.8 |
| Interview response rate (weighted) | 78.3 | 78.8 | 72.5 | 79.2 | 74.6 | 79.1 |
| Blood draw response rate (unweighted) | 91.9 | 92.2 | 91.2 | 90.4 | 91.5 | 91.1 |
| Blood draw response rate (weighted) | 92.0 | 92.0 | 90.2 | 89.7 | 90.9 | 90.6 |
| Eligible individuals, age 15-24 years | | | | | | |
| Number of eligible individuals | 1,885 | 2,470 | 2,452 | 2,735 | 4,337 | 5,205 |
| Interview response rate (unweighted) | 79.6 | 88.7 | 81.6 | 87.6 | 80.7 | 88.1 |
| Interview response rate (weighted) | 79.4 | 88.3 | 81.4 | 87.9 | 80.5 | 88.1 |
| Blood draw response rate (unweighted) | 90.4 | 91.9 | 89.9 | 89.8 | 90.1 | 90.8 |
| Blood draw response rate (weighted) | 90.5 | 92.0 | 89.6 | 89.4 | 90.0 | 90.6 |
| Eligible individuals, age 15-49 years | | | | | | |
| Number of eligible individuals | 4,705 | 5,660 | 5,653 | 6,532 | 10,358 | 12,192 |
| Interview response rate (unweighted) | 73.9 | 89.6 | 85.4 | 91.6 | 80.2 | 90.7 |
| Interview response rate (weighted) | 73.2 | 89.3 | 85.3 | 91.6 | 79.8 | 90.5 |
| Blood draw response rate (unweighted) | 87.6 | 91.4 | 89.3 | 89.9 | 88.6 | 90.6 |
| Blood draw response rate (weighted) | 87.5 | 91.4 | 89.0 | 89.4 | 88.3 | 90.3 |
| Eligible individuals, age 15-59 years | | | | | | |
| Number of eligible individuals | 5,093 | 6,125 | 6,253 | 7,192 | 11,346 | 13,317 |
| Interview response rate (unweighted) | 74.3 | 89.7 | 86.1 | 92.0 | 80.8 | 90.9 |
| Interview response rate (weighted) | 73.6 | 89.4 | 86.0 | 92.0 | 80.4 | 90.8 |
| Blood draw response rate (unweighted) | 87.6 | 91.5 | 89.6 | 89.9 | 88.8 | 90.6 |
| Blood draw response rate (weighted) | 87.5 | 91.5 | 89.4 | 89.4 | 88.5 | 90.3 |

¹Interview response rate = number of individuals interviewed/number of eligible individuals

²Blood draw response rate = number of individuals who provided blood/number of individuals interviewed

2.8 References

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

3 SURVEY HOUSEHOLD CHARACTERISTICS

3.1 Key Findings

- Among all households, 74.5% were headed by males and 25.5% by females.
- Among female household heads, 31.5% were HIV positive, as compared to 14.0% of male household heads.
- Among all households, 21.5% have at least one HIV-positive household member.

3.2 Background

This chapter describes the characteristics of households surveyed in ZAMPHIA 2016. Household composition is described in terms of sex of the head of the household, as well as the size of the household. The age structure of the de facto household population is described by sex as well as urban/rural residence. This chapter also describes the prevalence and composition of households impacted by HIV, which are households with one or more HIV-positive member.

3.3 Household Composition

ZAMPHIA documented 50,859 individuals living in the surveyed households. As is frequently the case in southern African countries, the population skews young. In urban areas, 40.6% of the population was under the age of 15 years. In rural areas, nearly 50% of the household population was under the age of 15 years. In rural areas, 10.0% of the household population was over the age of 50 years, whereas in urban areas 8.4% of the household population was over the age of 50 years. (Table 3.3.C).

Among the de facto population, 56.3% were under the age of 20 years. Women of childbearing age (ages 15-49 years) comprise 24.1% of the population. Those aged 50 years and older comprised 9.4% of the population (Figure 3.3.A; Table 3.3.B).

Overall, 74.5% of all households were headed by males. This was the case in both rural (74.2%) and urban areas (75.1%). Households had a median size of five members, and the median number of children under the age of 18 years per household was two (Table 3.3.A).

Table 3.3.A Household composition

Percent distribution of households by sex of head of household; median size of household and median (Q1¹, Q3²) number of children under 18 years of age, by residence, ZAMPHIA 2016

| Characteristic | Residence | | | | | |
|--|-----------|--------|---------|--------|---------|--------|
| | Urban | | Rural | | Total | |
| | Percent | Number | Percent | Number | Percent | Number |
| Household headship | | | | | | |
| Male | 75.1 | 3,361 | 74.2 | 4,798 | 74.5 | 8,159 |
| Female | 24.9 | 1,133 | 25.8 | 1,665 | 25.5 | 2,798 |
| Total | 100.0 | 4,494 | 100.0 | 6,463 | 100.0 | 10,957 |
| | | | | | | |
| Characteristic | Residence | | | | | |
| | Urban | | Rural | | Total | |
| | Median | Q1, Q3 | Median | Q1, Q3 | Median | Q1, Q3 |
| Size of households | 5 | (3, 6) | 5 | (3, 7) | 5 | (3, 6) |
| Number of children under 18 years of age | 2 | (1, 3) | 3 | (1, 4) | 2 | (1, 4) |

¹Q1: quartile one²Q3: quartile three**Table 3.3.B Distribution of de facto household population by age and sex**

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

| Age | Males | | Females | | Total | |
|-------|---------|--------|---------|--------|---------|--------|
| | Percent | Number | Percent | Number | Percent | Number |
| 0-4 | 7.9 | 4,015 | 8.1 | 4,100 | 16.0 | 8,115 |
| 5-9 | 8.0 | 4,093 | 8.0 | 4,045 | 16.0 | 8,138 |
| 10-14 | 6.9 | 3,566 | 7.0 | 3,556 | 13.9 | 7,122 |
| 15-19 | 5.0 | 2,543 | 5.5 | 2,799 | 10.4 | 5,342 |
| 20-24 | 3.6 | 1,847 | 4.8 | 2,447 | 8.5 | 4,294 |
| 25-29 | 2.9 | 1,494 | 3.9 | 1,969 | 6.8 | 3,463 |
| 30-34 | 3.0 | 1,497 | 3.5 | 1,749 | 6.5 | 3,246 |
| 35-39 | 2.4 | 1,232 | 2.7 | 1,388 | 5.2 | 2,620 |
| 40-44 | 2.2 | 1,099 | 2.3 | 1,162 | 4.4 | 2,261 |
| 45-49 | 1.5 | 768 | 1.4 | 745 | 3.0 | 1,513 |
| 50-54 | 1.1 | 575 | 1.3 | 677 | 2.4 | 1,252 |
| 55-59 | 0.8 | 420 | 0.9 | 455 | 1.7 | 875 |
| 60-64 | 0.7 | 356 | 1.0 | 479 | 1.7 | 835 |
| 65-69 | 0.5 | 277 | 0.7 | 360 | 1.3 | 637 |
| 70-74 | 0.4 | 210 | 0.6 | 278 | 1.0 | 488 |
| 75-79 | 0.3 | 145 | 0.3 | 164 | 0.6 | 309 |
| ≥80 | 0.3 | 169 | 0.3 | 180 | 0.7 | 349 |
| Total | 47.7 | 24,306 | 52.3 | 26,553 | 100.0 | 50,859 |

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

Percent distribution of the de facto household population, by sex, age, and residence, ZAMPHIA 2016

| Age | Urban | | | | | |
|-------|---------|--------|---------|--------|---------|--------|
| | Males | | Females | | Total | |
| | Percent | Number | Percent | Number | Percent | Number |
| 0-4 | 14.9 | 1,417 | 13.5 | 1,482 | 14.1 | 2,899 |
| 5-14 | 27.2 | 2,647 | 26.0 | 2,838 | 26.5 | 5,485 |
| 15-49 | 49.8 | 4,768 | 52.0 | 5,691 | 51.0 | 10,459 |
| ≥50 | 8.2 | 788 | 8.6 | 949 | 8.4 | 1,737 |
| Total | 100.0 | 9,620 | 100.0 | 10,960 | 100.0 | 20,580 |

| Age | Rural | | | | | |
|-------|---------|--------|---------|--------|---------|--------|
| | Males | | Females | | Total | |
| | Percent | Number | Percent | Number | Percent | Number |
| 0-4 | 17.7 | 2,598 | 16.8 | 2,618 | 17.2 | 5,216 |
| 5-14 | 33.9 | 5,012 | 30.6 | 4,763 | 32.2 | 9,775 |
| 15-49 | 39.1 | 5,712 | 41.9 | 6,568 | 40.5 | 12,280 |
| ≥50 | 9.3 | 1,364 | 10.7 | 1,644 | 10.0 | 3,008 |
| Total | 100.0 | 14,686 | 100.0 | 15,593 | 100.0 | 30,279 |

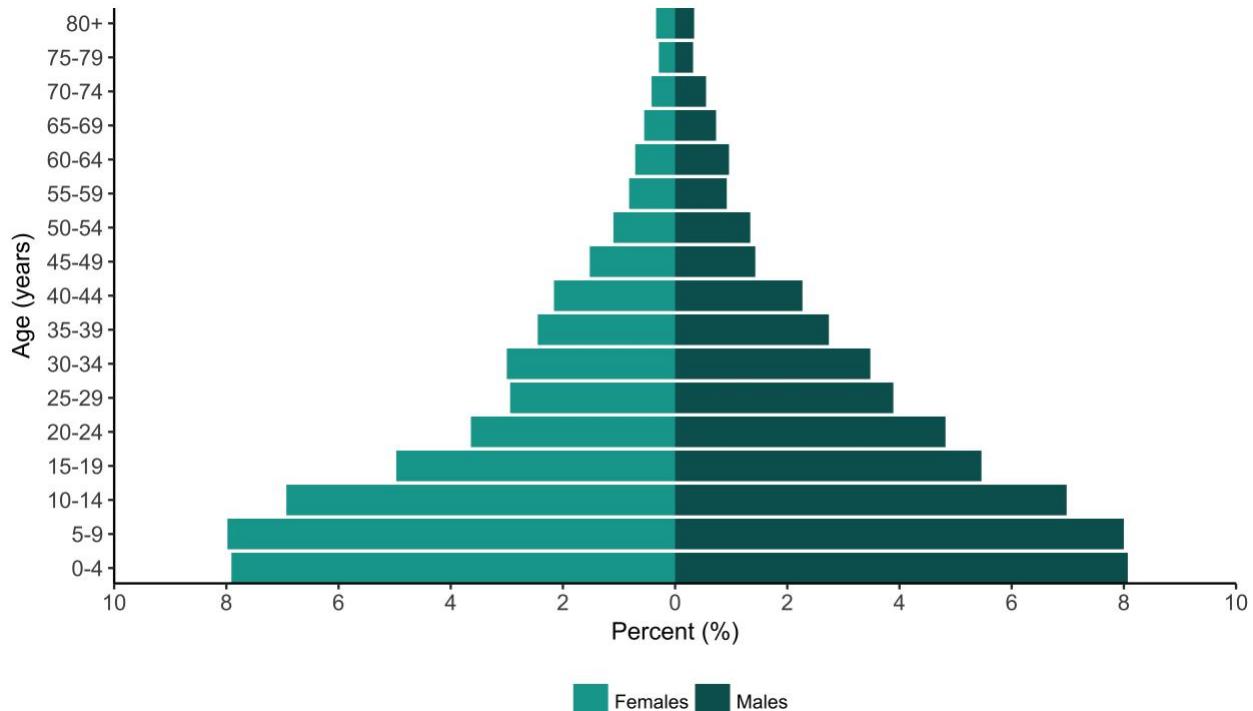
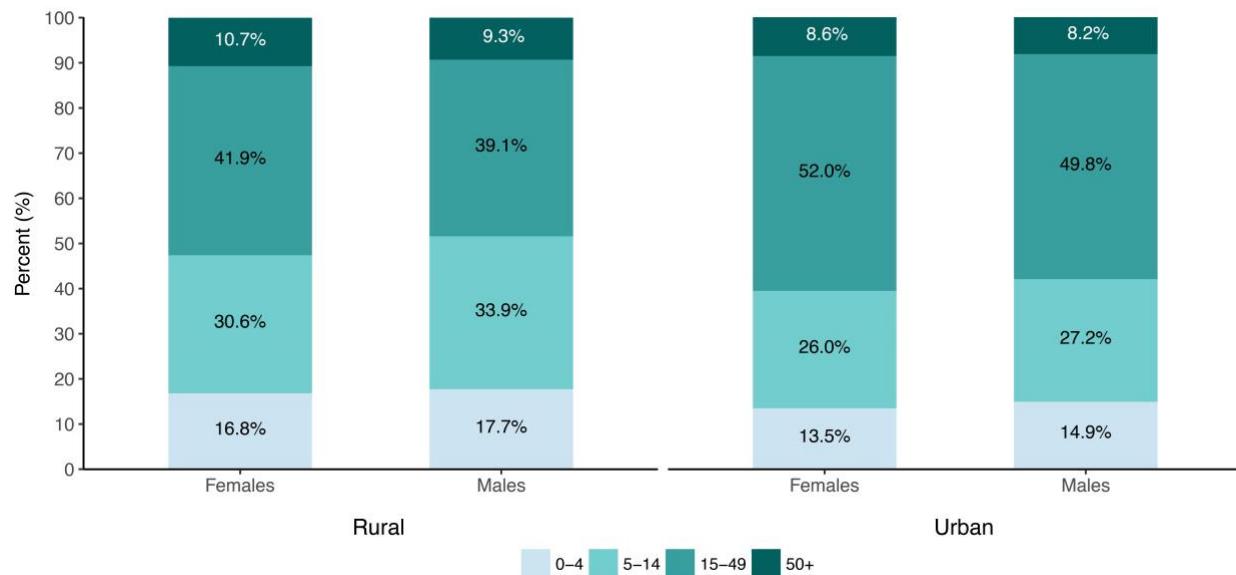
Figure 3.3.A Distribution of the de facto population by sex and age, ZAMPHIA 2016

Figure 3.3.B Household population by age, sex, and residence, ZAMPHIA 2016



3.4 Prevalence of HIV-Affected Households

Tables 3.4.A, 3.4.B and 3.4.C provide information about the extent to which households in Zambia have been affected by the HIV epidemic.

Overall, 21.5% of households had at least one HIV-positive household member, with 29.0% of urban and 16.0% of rural households being affected (Table 3.4.A). Among those households with any HIV-positive members, 74.5% had one HIV-positive person, while 22.3% had two HIV-positive household members and 2.8% had three. These percentages were similar for urban and rural households (Table 3.4.B).

Table 3.4.A Prevalence of HIV-affected households

Percentage of households with at least one household member who tested HIV positive, by residence, ZAMPHIA 2016

| Residence | Percent | Number |
|-----------|---------|--------|
| Urban | 29.0 | 3,960 |
| Rural | 16.0 | 5,419 |
| Total | 21.5 | 9,379 |

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

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

| Number of HIV-positive household members | Residence | | | | | |
|--|-----------|--------|---------|--------|---------|--------|
| | Urban | | Rural | | Total | |
| | Percent | Number | Percent | Number | Percent | Number |
| 1 | 75.9 | 874 | 72.7 | 619 | 74.5 | 1,493 |
| 2 | 20.7 | 240 | 24.4 | 202 | 22.3 | 442 |
| 3 | (3.0) | 32 | * | 20 | 2.8 | 52 |
| 4 | * | 4 | * | 2 | * | 6 |
| 5 | * | 0 | * | 1 | * | 1 |
| ≥6 | * | 0 | * | 0 | * | 0 |
| Total | 100.0 | 1,150 | 100.0 | 844 | 100.0 | 1,994 |

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

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

Nationally, the household head was HIV positive for 18.8% of households. This figure differs substantially for female-headed and male-headed households, with 31.5% of female household heads being HIV positive, compared to 14.0% of male household heads.

Table 3.4.C Prevalence of households with an HIV-positive head of household

Percentage of households with an HIV-positive head of household, by sex of head of household, ZAMPHIA 2016

| Sex of head of household | Percent | Number |
|--------------------------|---------|--------|
| Male | 14.0 | 4,564 |
| Female | 31.5 | 1,707 |
| Total | 18.8 | 6,271 |

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

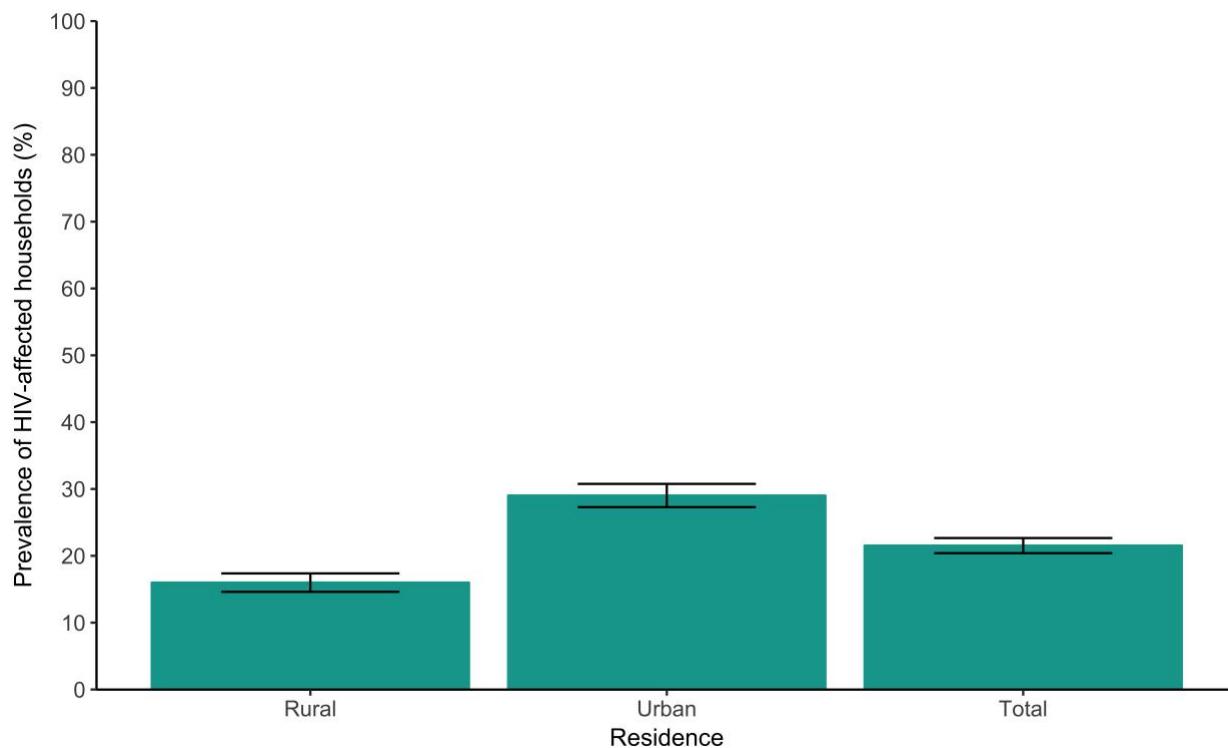
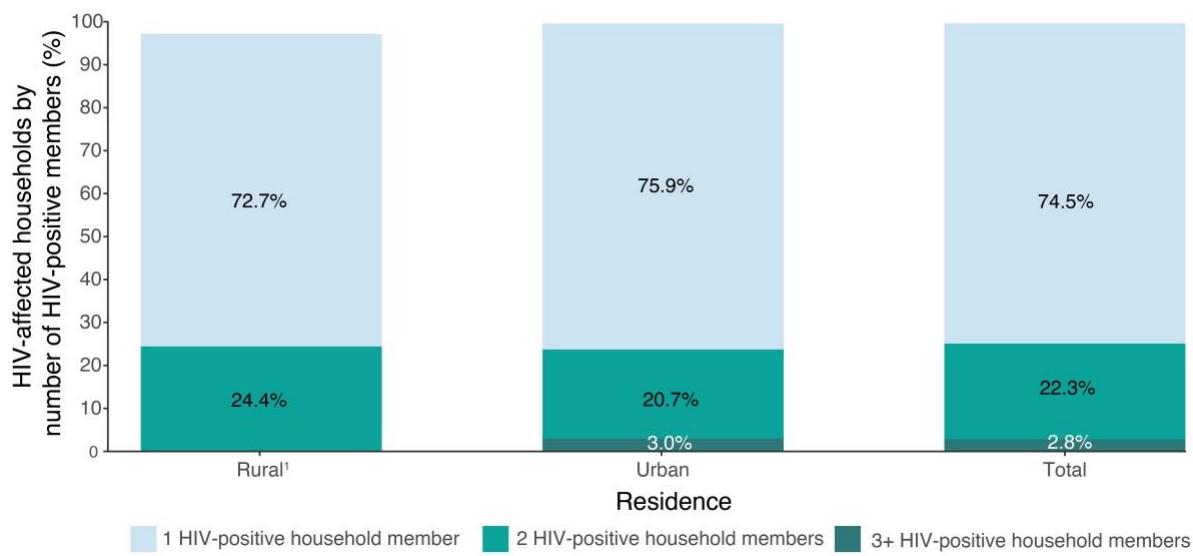
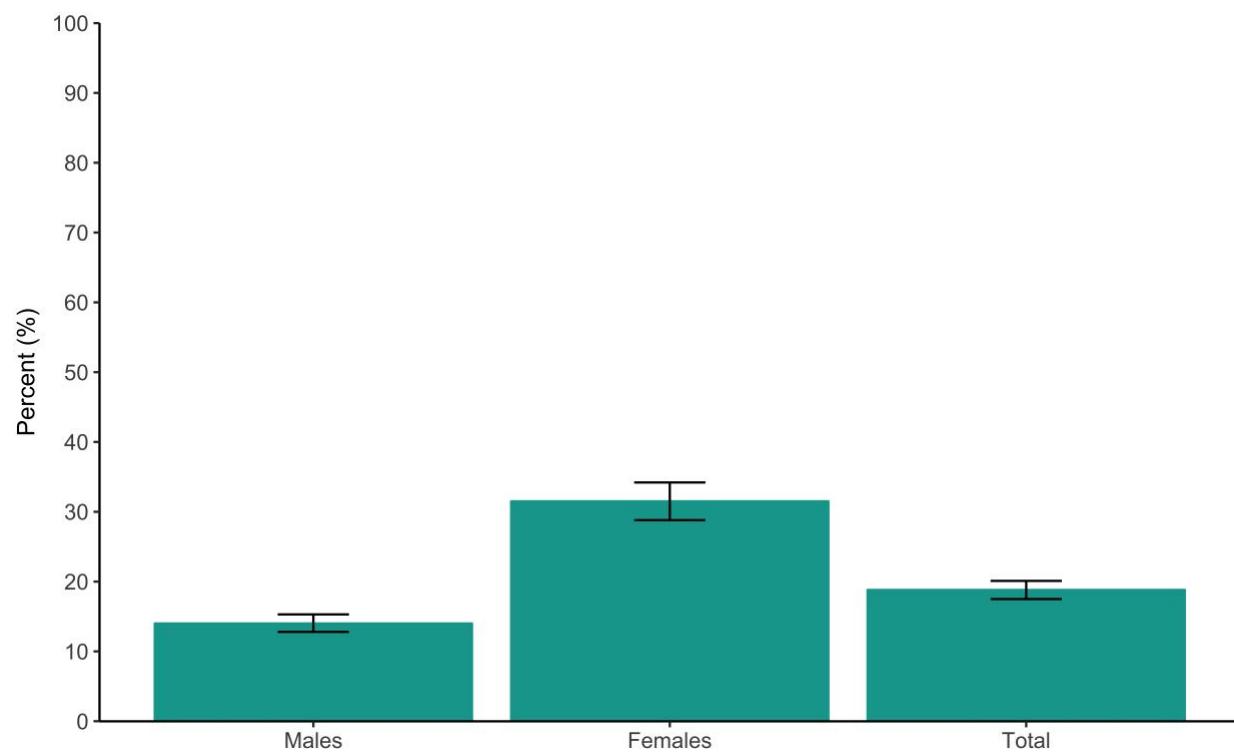


Figure 3.4.B HIV-affected households by number of HIV-positive members and residence, ZAMPHIA 2016



¹The estimate for 3+ HIV in the rural areas has been suppressed because it is based on fewer than 25 unweighted cases.

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



4 SURVEY RESPONDENT CHARACTERISTICS

4.1 Key Findings

- The largest proportion of the population was located in Lusaka (20.1%) and the smallest in North-Western Province (5.2%).
- Among males, 49.4% reported secondary education as their highest level of schooling attended, compared to 39.6% of the female population.

4.2 Background

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

4.3 Demographic Characteristics of the Adult Population

Respondents

A total of 21,280 persons aged 15-59 years participated in the survey's individual interviews (9,171 males and 12,109 females). Slightly more than half of the total population lived in rural areas of the country (54.3%) at the time of the survey. The proportion of the population located in Lusaka was 20.1% compared to 5.2% located in North-Western Province. The distribution of adults ranged from 3.4% of those aged 55-59 years to 22.0% of those aged 15-19 years. Secondary education was the highest level of schooling attended for 44.4% of adults. Nearly half (49.4%) of the male population reported secondary education as their highest level of schooling attended, compared to 39.6% of the female population. The proportion of females with no education (7.1%) was double that of males (3.3%). Slightly more than half of the population (53.6%) reported being married or living with a partner, with more than a third of the population (37.2%) reporting being single.

Table 4.3.A Demographic characteristics of the adult population

Percent distribution of the population age 15-59 years, by sex and other selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Males | | Females | | Total | |
|----------------------------|---------|--------|---------|--------|---------|--------|
| | Percent | Number | Percent | Number | Percent | Number |
| Residence | | | | | | |
| Urban | 45.3 | 3,785 | 46.1 | 5,494 | 45.7 | 9,279 |
| Rural | 54.7 | 5,386 | 53.9 | 6,615 | 54.3 | 12,001 |
| Province | | | | | | |
| Central | 9.6 | 789 | 9.5 | 1,001 | 9.5 | 1,790 |
| Copperbelt | 16.7 | 1,565 | 16.4 | 2,063 | 16.6 | 3,628 |
| Eastern | 10.8 | 881 | 11.2 | 1,147 | 11.0 | 2,028 |
| Luapula | 6.4 | 476 | 6.9 | 663 | 6.6 | 1,139 |
| Lusaka | 20.2 | 1,440 | 20.0 | 2,207 | 20.1 | 3,647 |
| Muchinga | 5.7 | 846 | 5.6 | 1,073 | 5.6 | 1,919 |
| Northern | 8.5 | 771 | 8.5 | 959 | 8.5 | 1,730 |
| North-Western | 5.2 | 867 | 5.2 | 1,115 | 5.2 | 1,982 |
| Southern | 11.8 | 1,085 | 11.1 | 1,288 | 11.4 | 2,373 |
| Western | 5.2 | 451 | 5.7 | 593 | 5.4 | 1,044 |
| Marital status | | | | | | |
| Never married | 44.7 | 3,779 | 30.0 | 3,293 | 37.2 | 7,072 |
| Married or living together | 50.7 | 4,874 | 56.4 | 7,010 | 53.6 | 11,884 |
| Divorced or separated | 4.0 | 378 | 9.1 | 1,132 | 6.6 | 1,510 |
| Widowed | 0.6 | 64 | 4.5 | 585 | 2.6 | 649 |
| Education | | | | | | |
| No education | 3.3 | 287 | 7.1 | 842 | 5.2 | 1,129 |
| Primary | 37.0 | 3,525 | 46.3 | 5,689 | 41.7 | 9,214 |
| Secondary | 49.4 | 4,462 | 39.6 | 4,755 | 44.4 | 9,217 |
| More than secondary | 10.4 | 887 | 7.0 | 813 | 8.7 | 1,700 |
| Wealth quintile | | | | | | |
| Lowest | 14.5 | 1,421 | 16.1 | 1,948 | 15.3 | 3,369 |
| Second | 18.1 | 1,776 | 17.7 | 2,159 | 17.9 | 3,935 |
| Middle | 20.1 | 1,912 | 19.4 | 2,373 | 19.7 | 4,285 |
| Fourth | 21.6 | 1,882 | 21.8 | 2,650 | 21.7 | 4,532 |
| Highest | 25.7 | 2,136 | 25.0 | 2,930 | 25.4 | 5,066 |
| Age | | | | | | |
| 15-19 | 22.3 | 2,006 | 21.7 | 2,331 | 22.0 | 4,337 |
| 20-24 | 19.1 | 1,496 | 19.0 | 2,256 | 19.1 | 3,752 |
| 25-29 | 14.0 | 1,209 | 15.4 | 1,804 | 14.7 | 3,013 |
| 30-34 | 11.9 | 1,157 | 13.2 | 1,614 | 12.5 | 2,771 |
| 35-39 | 10.2 | 956 | 9.9 | 1,299 | 10.0 | 2,255 |
| 40-44 | 8.5 | 851 | 7.7 | 1,071 | 8.1 | 1,922 |
| 45-49 | 6.1 | 630 | 5.4 | 677 | 5.7 | 1,307 |
| 50-54 | 4.5 | 491 | 4.3 | 630 | 4.4 | 1,121 |
| 55-59 | 3.3 | 375 | 3.5 | 427 | 3.4 | 802 |
| Total 15-24 | 41.4 | 3,502 | 40.7 | 4,587 | 41.1 | 8,089 |
| Total 15-49 | 92.2 | 8,305 | 92.2 | 11,052 | 92.2 | 19,357 |
| Total 15-59 | 100.0 | 9,171 | 100.0 | 12,109 | 100.0 | 21,280 |

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

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

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

4.4 Demographic Characteristics of the Adolescent Population

Over 60% of adolescents aged 10-14 years reside in rural areas (63.1% of males, 61.1% of females). Copperbelt (15.0%) and Lusaka (14.9%) Provinces have the largest share of the adolescent population, followed by the Eastern (13.1%) and Southern (11.7%) Provinces. The vast majority (95.5%) of the adolescent population was currently attending school (Table 4.4.A).

Table 4.4.A Demographic characteristics of the adolescent population

Percent distribution of the population aged 10-14 years, by sex and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Males | | Females | | Total | |
|--------------------------------|---------|--------|---------|--------|---------|--------|
| | Percent | Number | Percent | Number | Percent | Number |
| Residence | | | | | | |
| Urban | 36.9 | 516 | 38.9 | 553 | 37.9 | 1,069 |
| Rural | 63.1 | 865 | 61.1 | 855 | 62.1 | 1,720 |
| Province | | | | | | |
| Central | 9.7 | 117 | 10.4 | 140 | 10.0 | 257 |
| Copperbelt | 14.3 | 208 | 15.6 | 233 | 15.0 | 441 |
| Eastern | 14.2 | 162 | 11.9 | 131 | 13.1 | 293 |
| Luapula | 7.2 | 76 | 7.9 | 87 | 7.6 | 163 |
| Lusaka | 14.3 | 184 | 15.5 | 196 | 14.9 | 380 |
| Muchinga | 7.1 | 153 | 6.3 | 134 | 6.7 | 287 |
| Northern | 10.5 | 116 | 9.1 | 112 | 9.8 | 228 |
| North-Western | 5.6 | 136 | 5.8 | 147 | 5.7 | 283 |
| Southern | 12.0 | 167 | 11.4 | 157 | 11.7 | 324 |
| Western | 5.0 | 62 | 5.9 | 71 | 5.5 | 133 |
| Education | | | | | | |
| Currently attending | 95.4 | 1,274 | 95.5 | 1,313 | 95.5 | 2,587 |
| Not currently attending school | 4.6 | 55 | 4.5 | 61 | 4.5 | 116 |
| Total 10-14 | 100.0 | 1,381 | 100.0 | 1,408 | 100.0 | 2,789 |

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

4.5 Demographic Characteristics of the Pediatric Population

Table 4.5.A shows the demographic characteristics of the pediatric population (ages 0-14 years). The pediatric population was comprised of 10,208 males and females aged 0-14 years, of which 39.4% were under the age of five years. Most children resided in rural areas (63.8%). All provinces were represented in the survey's pediatric population.

Table 4.5.A Demographic characteristics of the pediatric population

Percent distribution of the population aged 0-14 years, by sex and other selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Males | | Females | | Total | |
|------------------------|---------|--------|---------|--------|---------|--------|
| | Percent | Number | Percent | Number | Percent | Number |
| Age | | | | | | |
| 0-17 months | 10.7 | 510 | 11.7 | 569 | 11.2 | 1,079 |
| 18-59 months | 28.8 | 1,335 | 27.6 | 1,331 | 28.2 | 2,666 |
| 5-9 years | 33.2 | 1,880 | 33.3 | 1,791 | 33.2 | 3,671 |
| 10-14 years | 27.3 | 1,381 | 27.3 | 1,408 | 27.3 | 2,789 |
| Residence | | | | | | |
| Urban | 35.6 | 1,799 | 36.7 | 1,858 | 36.2 | 3,657 |
| Rural | 64.4 | 3,308 | 63.3 | 3,243 | 63.8 | 6,551 |
| Province | | | | | | |
| Central | 10.2 | 445 | 10.1 | 455 | 10.1 | 900 |
| Copperbelt | 13.5 | 712 | 13.8 | 731 | 13.6 | 1,443 |
| Eastern | 12.4 | 515 | 11.7 | 477 | 12.1 | 992 |
| Luapula | 7.7 | 299 | 8.2 | 326 | 7.9 | 625 |
| Lusaka | 15.0 | 697 | 15.2 | 704 | 15.1 | 1,401 |
| Muchinga | 7.0 | 575 | 6.8 | 549 | 6.9 | 1,124 |
| Northern | 10.1 | 460 | 9.4 | 434 | 9.7 | 894 |
| North-Western | 5.8 | 519 | 5.7 | 513 | 5.7 | 1,032 |
| Southern | 12.1 | 599 | 12.0 | 594 | 12.1 | 1,193 |
| Western | 6.3 | 286 | 7.1 | 318 | 6.7 | 604 |
| Wealth quintile | | | | | | |
| Lowest | 20.9 | 1,040 | 19.3 | 965 | 20.1 | 2,005 |
| Second | 21.6 | 1,110 | 22.1 | 1,135 | 21.9 | 2,245 |
| Middle | 20.2 | 1,041 | 21.5 | 1,096 | 20.8 | 2,137 |
| Fourth | 20.5 | 1,065 | 20.1 | 1,033 | 20.3 | 2,098 |
| Highest | 16.8 | 826 | 16.9 | 853 | 16.9 | 1,679 |
| Total 0-4 | 39.5 | 1,846 | 39.3 | 1,902 | 39.4 | 3,748 |
| Total 0-14 | 100.0 | 5,107 | 100.0 | 5,101 | 100.0 | 10,208 |

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

5 HIV INCIDENCE

5.1 Key Findings

- Annual incidence of HIV among adults aged 15-59 years in Zambia was 0.61% (0.29% among males and 0.93% among females). This corresponds to approximately 43,000 new cases of HIV annually among adults aged 15-59 years in Zambia.

5.2 Background

HIV incidence is the measure of new HIV infections in a population over time. It can provide important information on the status of the HIV epidemic and measures impact of HIV prevention programs. HIV incidence is useful for effective and targeted HIV prevention planning for vulnerable groups.

While HIV prevalence is a measure of the relative burden of disease in a population, it is not optimal for measuring acute changes in an HIV epidemic, including changes in HIV transmission. The survey was designed to estimate national-level HIV incidence for the overall population aged 15-59 years. Consequently, point estimates disaggregated by age and sex should be interpreted with caution, and special attention should be given to CIs presented in Table 5.3.A and Table 5.3.B. In this survey, 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 direct incidence rate. It is important to note that ZAMPHIA 2016 was not powered to estimate incidence at the provincial level or across different sub-groups.

For ZAMPHIA 2016, a laboratory-based incidence testing algorithm (HIV-1 LAg avidity plus VL) 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, with time cutoff (T) = 1.0 year and residual Proportion False Recent (PFR) = 0.00. Survey weights are utilized for all estimates. All HIV-positive participants aged 18 months and older were tested for recent infection using HIV-1 LAg avidity assay.

Incidence estimation is based on recent/long-term (LT) classification using algorithms with Limiting antigen (LA_g) avidity.^{1, 2, 3} The original algorithm incorporated viral load results to mitigate misclassification from persons who may be elite controllers or on ART – both groups characterized by low VL. As ART coverage has increased, it has become apparent that some individuals on treatment for long-periods of time have the potential to be misclassified by the LAg plus VL algorithm as a recent infection. Although they may have suppressed VL for years, drug resistance or lack of adherence may result in VL \geq 1000 copies/mL. Based in part on data from multiple PHIA surveys, the updated incidence algorithm includes ARV detection as a second exclusion criteria. The addition of ARV detection is expected to produce more accurate estimates of both HIV incidence and transmitted HIV drug resistance.

5.3 HIV Incidence among Adults

HIV incidence estimates using LAg Avidity and HIV viral load

Using the LAg Avidity assay and viral load algorithm, estimated incidence was 0.67% (95% CI: 0.45%-0.88%) among adults aged 15-59 years (0.32% among males and 1.02% among females). This corresponds to 67 new infections per 10,000 uninfected persons in a year, which corresponds to approximately 47,000 new cases of HIV infection per year in Zambia (Table 5.3.A). Annual incidence peaked among males aged 35-49 years (0.87%), and females aged 25-34 years (1.16%). HIV incidence for adults aged 15-49 years was estimated at 0.70% (95% CI: 0.47%-0.93%). HIV incidence was 0.31% among males and 1.10% among females aged 15-49 years (Table 5.3.A).

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

Using the LAg Avidity assay, viral load and ARV algorithm, estimated incidence was 0.61% (95% CI: 0.40%-0.81%) among adults aged 15-59 years (0.29% among males and 0.93% among females). This amounts to approximately 61 new infections per 10,000 persons in a year, which corresponds to approximately 43,000 new cases of HIV per year. Annual incidence peaked among males aged 35-49 years (0.73%) and among females aged 25-34 years (1.07%). HIV incidence for adults aged 15-49 years was estimated at 0.64% (95% CI: 0.42%-0.86%; 0.28% among males and 1.00% among females) (Table 5.3.B).

Table 5.3.A Annual HIV incidence using LAg/VL¹ testing algorithm

Annual incidence of HIV among persons 15-49 and 15-59 years of age using LAg/VL¹ algorithm, by sex and age, ZAMPHIA 2016

| Age | Males | | Females | | Total | |
|-------|--|---------------------|--|--------------|--|--------------|
| | Percentage annual incidence ² | 95% CI ³ | Percentage annual incidence ² | 95% CI | Percentage annual incidence ² | 95% CI |
| 15-24 | 0.08 | (0.00, 0.25) | 1.07 | (0.54, 1.60) | 0.57 | (0.28, 0.86) |
| 25-34 | 0.25 | (0.00, 0.62) | 1.16 | (0.46, 1.86) | 0.72 | (0.30, 1.13) |
| 35-49 | 0.87 | (0.13, 1.60) | 1.06 | (0.30, 1.81) | 0.96 | (0.43, 1.49) |
| 15-49 | 0.31 | (0.09, 0.54) | 1.10 | (0.72, 1.48) | 0.70 | (0.47, 0.93) |
| 15-59 | 0.32 | (0.10, 0.54) | 1.02 | (0.67, 1.37) | 0.67 | (0.45, 0.88) |

¹ LAg/VL: Limiting antigen/viral load.

² Relates to Global AIDS Monitoring indicator 1.3: Retention on antiretroviral therapy at 12 months.

³ CI (confidence interval) indicates the interval that is expected to encompass the true population parameter 95% of the time.

Table 5.3.B Annual HIV incidence using LAg/VL/ARV¹ testing algorithm

Annual incidence of HIV among persons 15-49 and 15-64 years of age, by sex and age, using LAg/VL/ARV¹ algorithm, ZAMPHIA 2016

| Age | Males | | Females | | Total | |
|-------|--|---------------------|--|--------------|--|--------------|
| | Percentage annual incidence ² | 95% CI ³ | Percentage annual incidence ² | 95% CI | Percentage annual incidence ² | 95% CI |
| 15-24 | 0.08 | (0.00, 0.25) | 0.94 | (0.44, 1.44) | 0.51 | (0.23, 0.78) |
| 25-34 | 0.25 | (0.00, 0.62) | 1.07 | (0.40, 1.73) | 0.67 | (0.26, 1.07) |
| 35-49 | 0.73 | (0.05, 1.40) | 1.06 | (0.30, 1.81) | 0.89 | (0.38, 1.39) |
| 15-49 | 0.28 | (0.07, 0.49) | 1.00 | (0.64, 1.37) | 0.64 | (0.42, 0.86) |
| 15-59 | 0.29 | (0.08, 0.50) | 0.93 | (0.60, 1.26) | 0.61 | (0.40, 0.81) |

¹ LAg/VL/ARV: Limiting antigen/viral load/antiretrovirals

² Relates to Global AIDS Monitoring indicator 1.2: Retention on antiretroviral therapy at 12 months

³ CI: confidence interval indicates the interval that is expected to include the true population parameter 95% of the time

5.4 Gaps and Unmet Needs

- About 43,000 new HIV infections occur every year in Zambia among adults 15-59 years, according to the LaAg Avidity assay, viral load and ARV algorithm. To reach epidemic control, newly infected individuals should be quickly diagnosed and initiated on ART.
- HIV incidence is higher among women than men in Zambia. This suggests a need for more intensive primary prevention among HIV-negative women as well as targeting of secondary prevention, including safer sexual behaviors, HIV diagnosis, and treatment among HIV-positive individuals.
- Approaches, such as routine case reporting and case-based surveillance, could provide the data needed to describe the demographic profile of those newly infected to allow for targeted prevention efforts.

5.5 References

1. Duong YT, Kassanjee R, Welte A, et al. Recalibration of the limiting antigen avidity EIA to determine mean duration of recent infection in divergent HIV-1 subtypes. *PLoS One*. 2015 Feb 24;10(2):e0114947. doi: 10.1371/journal.pone.0114947.
2. Kassanjee R, McWalter TA, Bärnighausen T, Welte A. A new general biomarker-based incidence estimator. *Epidemiology*. 2012 Sep;23(5):721-8. doi: 10.1097/EDE.0b013e3182576c07.
3. Duong YT, Qiu M, De AK, et al. Detection of recent HIV-1 infection using a new limiting-antigen avidity assay: potential for HIV-1 incidence estimates and avidity maturation studies. *PLoS One*. 2012;7(3):e33328. doi: 10.1371/journal.pone.0033328. Epub 2012 Mar 27.

6 HIV PREVALENCE

6.1 Key Findings

- Prevalence of HIV among adults aged 15-59 years in Zambia is 12.0% (14.6% among females and 9.3% among males). This corresponds to approximately 960,000 people aged 15-59 years living with HIV in Zambia.
- Among those aged 15-49 years, the prevalence was higher among females (14.3%) than among males (8.3%), as well as among those residing in urban areas (14.4%) compared to those living in rural areas (8.7%).
- HIV prevalence peaked between ages 40-44 years for females (29.6%) and between ages 45-49 years for males (23.0%).
- HIV prevalence among those aged 20-24 years is four times higher among females (8.3%) than among males (2.0%).

6.2 Background

This chapter presents representative estimates of prevalence of HIV infection among adults 15-59 years of age at the national and provincial levels by selected demographic and behavioral characteristics. HIV prevalence testing was conducted in each household using a serological rapid diagnostic testing algorithm based on Zambia's national guidelines, with laboratory confirmation of seropositive samples using a supplemental assay. Appendix B further describes the PHIA HIV testing methodology.

6.3 Adult HIV Prevalence by Demographic Characteristics

The prevalence of HIV among adults 15-59 years of age in Zambia was 12.0%. This corresponds to an estimated 960,000 persons aged 15-59 years living with HIV in Zambia. The prevalence was higher among females (14.6%) than among males (9.3%) (Table 6.4.A). HIV prevalence was higher among those residing in urban areas (15.3%) compared to those living in rural areas (9.2%) (Table 6.3.B).

HIV prevalence ranged from 15.9% in Western province to 5.7% in Muchinga Province. Across all provinces, the prevalence for females was higher than males. In Eastern Province, HIV prevalence was twice as high among females (10.7%) compared to males (5.2%). By marital status, HIV prevalence ranged from 4.7% among never married adults to 48.5% among widowed adults. There was little difference in HIV prevalence between participants with different levels of education (Table 6.3.B).

Table 6.3.A HIV prevalence by demographic characteristics: Ages 15-49 years

Prevalence of HIV among persons aged 15-49 years, by sex and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Males | | Females | | Total | |
|----------------------------|----------------------------|--------|----------------------------|--------|----------------------------|--------|
| | Percentage HIV positive | Number | Percentage HIV positive | Number | Percentage HIV positive | Number |
| Residence | | | | | | |
| Urban | 10.4 | 3,047 | 18.2 | 4,636 | 14.4 | 7,683 |
| Rural | 6.6 | 4,311 | 10.8 | 5,374 | 8.7 | 9,685 |
| Province | | | | | | |
| Central | 8.5 | 630 | 16.2 | 812 | 12.4 | 1,442 |
| Copperbelt | 8.9 | 1,245 | 17.3 | 1,715 | 13.2 | 2,960 |
| Eastern | 4.5 | 736 | 10.1 | 965 | 7.4 | 1,701 |
| Luapula | 6.8 | 386 | 10.9 | 521 | 8.9 | 907 |
| Lusaka | 10.7 | 1,134 | 17.9 | 1,869 | 14.4 | 3,003 |
| Muchinga | 2.8 | 686 | 7.8 | 892 | 5.3 | 1,578 |
| Northern | 7.7 | 593 | 10.9 | 745 | 9.4 | 1,338 |
| North-Western | 4.6 | 679 | 8.2 | 935 | 6.4 | 1,614 |
| Southern | 10.7 | 911 | 14.4 | 1,071 | 12.5 | 1,982 |
| Western | 12.2 | 358 | 18.1 | 485 | 15.4 | 843 |
| Marital status | | | | | | |
| Never married | 2.7 | 3,345 | 7.3 | 2,959 | 4.6 | 6,304 |
| Married or living together | 12.6 | 3,620 | 13.6 | 5,742 | 13.2 | 9,362 |
| Divorced or separated | 22.9 | 293 | 29.5 | 895 | 27.6 | 1,188 |
| Widowed | (39.0) | 40 | 57.4 | 336 | 54.9 | 376 |
| Education | | | | | | |
| No education | 6.7 | 220 | 11.7 | 606 | 10.0 | 826 |
| Primary | 7.7 | 2,742 | 14.0 | 4,546 | 11.2 | 7,288 |
| Secondary | 8.7 | 3,737 | 14.8 | 4,181 | 11.5 | 7,918 |
| More than secondary | 9.0 | 651 | 15.5 | 674 | 11.7 | 1,325 |
| Wealth quintile | | | | | | |
| Lowest | 5.6 | 1,125 | 8.9 | 1,547 | 7.4 | 2,672 |
| Second | 6.5 | 1,418 | 9.8 | 1,739 | 8.1 | 3,157 |
| Middle | 8.2 | 1,567 | 15.6 | 1,966 | 11.9 | 3,533 |
| Fourth | 10.7 | 1,533 | 18.2 | 2,255 | 14.5 | 3,788 |
| Highest | 9.0 | 1,678 | 16.1 | 2,461 | 12.6 | 4,139 |
| Pregnancy status | | | | | | |
| Currently pregnant | NA | NA | 9.2 | 789 | NA | NA |
| Not currently pregnant | NA | NA | 14.8 | 9,067 | NA | NA |
| Total 15-49 | 8.3 | 7,358 | 14.3 | 10,010 | 11.4 | 17,368 |

The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

The prevalence in the population aged 15 to 49 years was 11.4%. The prevalence by sex was 8.3% for males and 14.3% for females. In rural areas, the prevalence was 8.7% compared to 14.4% in urban areas.

The trends in HIV prevalence by other demographic characteristics for persons aged 15-49 years were similar to those for persons aged 15-59 years (Tables 6.3.A, 6.3.B).

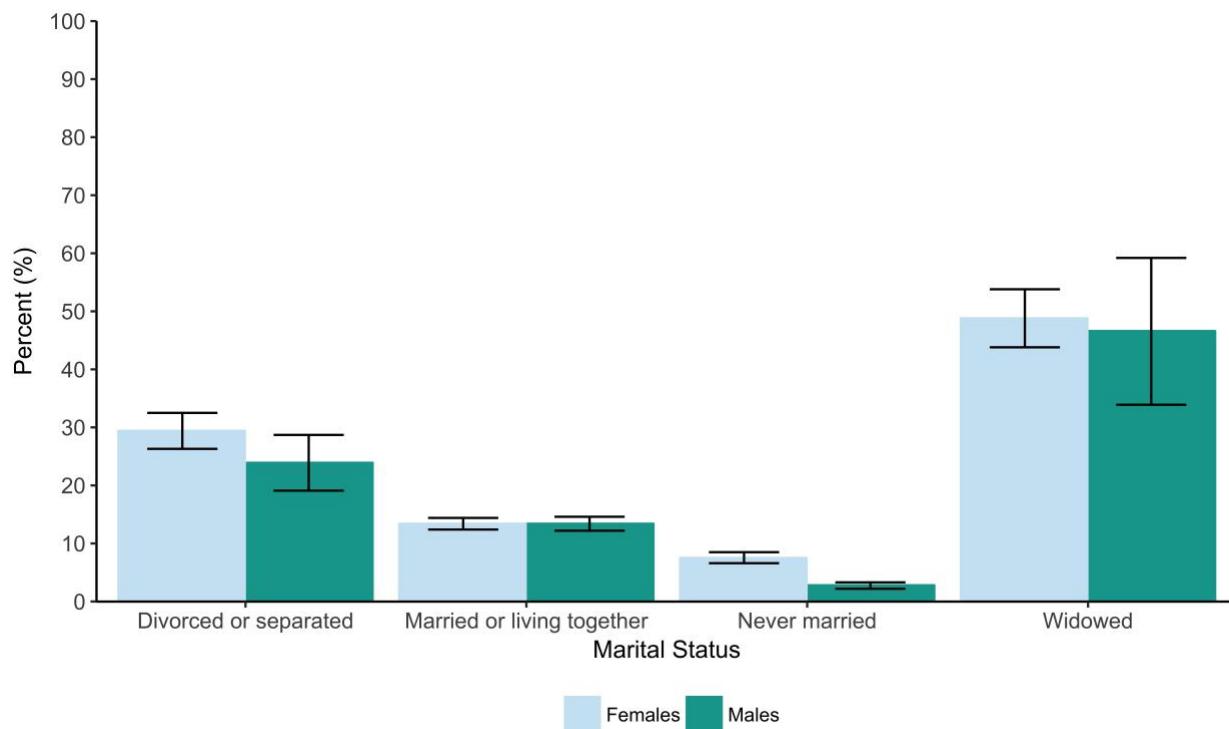
Table 6.3.B HIV prevalence by demographic characteristics: Ages 15-59 years

Prevalence of HIV among persons aged 15-59 years, by sex and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Males | | Females | | Total | |
|----------------------------|----------------------------|--------|----------------------------|--------|----------------------------|--------|
| | Percentage HIV positive | Number | Percentage HIV positive | Number | Percentage HIV positive | Number |
| Residence | | | | | | |
| Urban | 11.6 | 3,315 | 18.7 | 5,025 | 15.3 | 8,340 |
| Rural | 7.4 | 4,827 | 11.1 | 5,948 | 9.2 | 10,775 |
| Province | | | | | | |
| Central | 9.1 | 702 | 16.5 | 889 | 12.8 | 1,591 |
| Copperbelt | 10.0 | 1,386 | 17.5 | 1,898 | 13.8 | 3,284 |
| Eastern | 5.2 | 819 | 10.7 | 1,070 | 8.1 | 1,889 |
| Luapula | 7.3 | 426 | 11.1 | 590 | 9.3 | 1,016 |
| Lusaka | 12.4 | 1,242 | 18.8 | 2,003 | 15.7 | 3,245 |
| Muchinga | 3.4 | 758 | 7.9 | 971 | 5.7 | 1,729 |
| Northern | 7.9 | 659 | 10.5 | 820 | 9.2 | 1,479 |
| North-Western | 4.8 | 765 | 8.8 | 1,012 | 6.9 | 1,777 |
| Southern | 11.6 | 990 | 15.0 | 1,186 | 13.3 | 2,176 |
| Western | 13.7 | 395 | 17.8 | 534 | 15.9 | 929 |
| Marital status | | | | | | |
| Never married | 2.8 | 3,368 | 7.5 | 2,987 | 4.7 | 6,355 |
| Married or living together | 13.4 | 4,319 | 13.4 | 6,333 | 13.4 | 10,652 |
| Divorced or separated | 23.9 | 332 | 29.4 | 1,038 | 27.8 | 1,370 |
| Widowed | 46.6 | 60 | 48.8 | 536 | 48.5 | 596 |
| Education | | | | | | |
| No education | 7.3 | 246 | 12.4 | 715 | 10.8 | 961 |
| Primary | 8.4 | 3,142 | 14.3 | 5,184 | 11.8 | 8,326 |
| Secondary | 9.6 | 4,012 | 15.2 | 4,354 | 12.2 | 8,366 |
| More than secondary | 11.3 | 733 | 15.7 | 716 | 13.1 | 1,449 |
| Wealth quintile | | | | | | |
| Lowest | 6.3 | 1,250 | 9.4 | 1,712 | 8.0 | 2,962 |
| Second | 7.0 | 1,596 | 9.7 | 1,940 | 8.4 | 3,536 |
| Middle | 8.9 | 1,743 | 15.9 | 2,174 | 12.4 | 3,917 |
| Fourth | 11.5 | 1,663 | 18.5 | 2,431 | 15.1 | 4,094 |
| Highest | 10.7 | 1,849 | 16.9 | 2,668 | 13.9 | 4,517 |
| Pregnancy status | | | | | | |
| Currently pregnant | NA | NA | 9.2 | 789 | NA | NA |
| Not currently pregnant | NA | NA | 15.1 | 10,022 | NA | NA |
| Total 15-59 | 9.3 | 8,142 | 14.6 | 10,973 | 12.0 | 19,115 |

The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

Figure 6.3.A HIV prevalence by marital status: Ages 15-59 years, ZAMPHIA 2016



6.4 Adult HIV Prevalence by Age and Sex

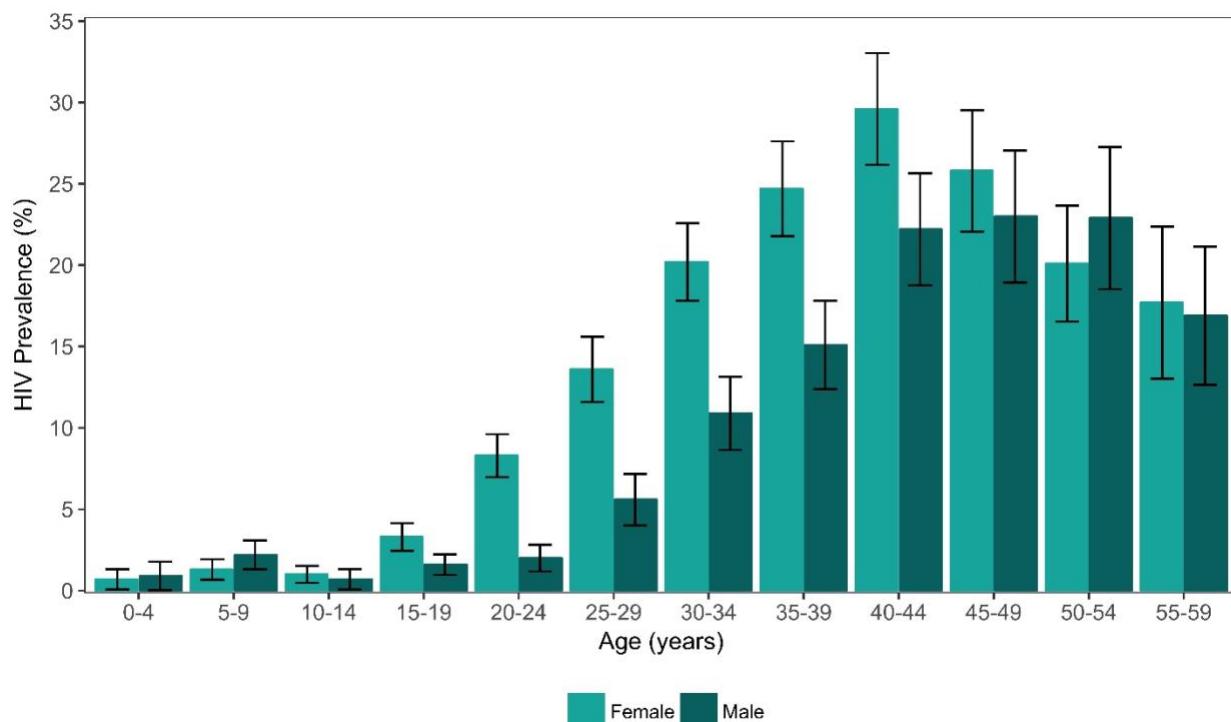
HIV prevalence peaked between ages 40-44 years for females (29.6%) and between ages 45-49 years for males (23.0%). HIV prevalence is higher among females than among males in all age groups between ages 15-49 years. The disparity in HIV prevalence by sex is most pronounced among young adults: HIV prevalence among ages 20-24 years is four times higher among females (8.3%) than among males (2.0%); and among ages 25-29 years, prevalence among women is more than twice that of men (13.6% for females versus 5.6% for males). (Table 6.4.A, Figure 6.4.A).

Table 6.4.A HIV prevalence by age and sex

Prevalence of HIV among persons age 0-59 years, by sex and age, ZAMPHIA 2016

| Age | Males | | Females | | Total | |
|--------------------------|----------------------------|--------|----------------------------|--------|----------------------------|--------|
| | Percentage HIV positive | Number | Percentage HIV positive | Number | Percentage HIV positive | Number |
| 0-17 months ¹ | 1.0 | 310 | 0.7 | 372 | 0.8 | 682 |
| 18-59 months | 0.9 | 966 | 0.7 | 945 | 0.8 | 1,911 |
| 5-9 | 2.2 | 1,462 | 1.3 | 1,414 | 1.8 | 2,876 |
| 10-14 | 0.7 | 1,263 | 1.0 | 1,283 | 0.9 | 2,546 |
| Total 0-4 | 0.9 | 1,276 | 0.7 | 1,317 | 0.8 | 2,593 |
| Total 0-14 | 1.3 | 4,001 | 1.0 | 4,014 | 1.1 | 8,015 |
| 15-19 | 1.6 | 1,811 | 3.3 | 2,120 | 2.5 | 3,931 |
| 20-24 | 2.0 | 1,344 | 8.3 | 2,045 | 5.2 | 3,389 |
| 25-29 | 5.6 | 1,053 | 13.6 | 1,619 | 9.8 | 2,672 |
| 30-34 | 10.9 | 1,003 | 20.2 | 1,458 | 15.9 | 2,461 |
| 35-39 | 15.1 | 836 | 24.7 | 1,160 | 19.9 | 1,996 |
| 40-44 | 22.2 | 751 | 29.6 | 989 | 25.8 | 1,740 |
| 45-49 | 23.0 | 560 | 25.8 | 619 | 24.4 | 1,179 |
| 50-54 | 22.9 | 444 | 20.1 | 584 | 21.5 | 1,028 |
| 55-59 | 16.9 | 340 | 17.7 | 379 | 17.3 | 719 |
| Total 15-24 | 1.8 | 3,155 | 5.7 | 4,165 | 3.8 | 7,320 |
| Total 15-49 | 8.3 | 7,358 | 14.3 | 10,010 | 11.4 | 17,368 |
| Total 15-59 | 9.3 | 8,142 | 14.6 | 10,973 | 12.0 | 19,115 |

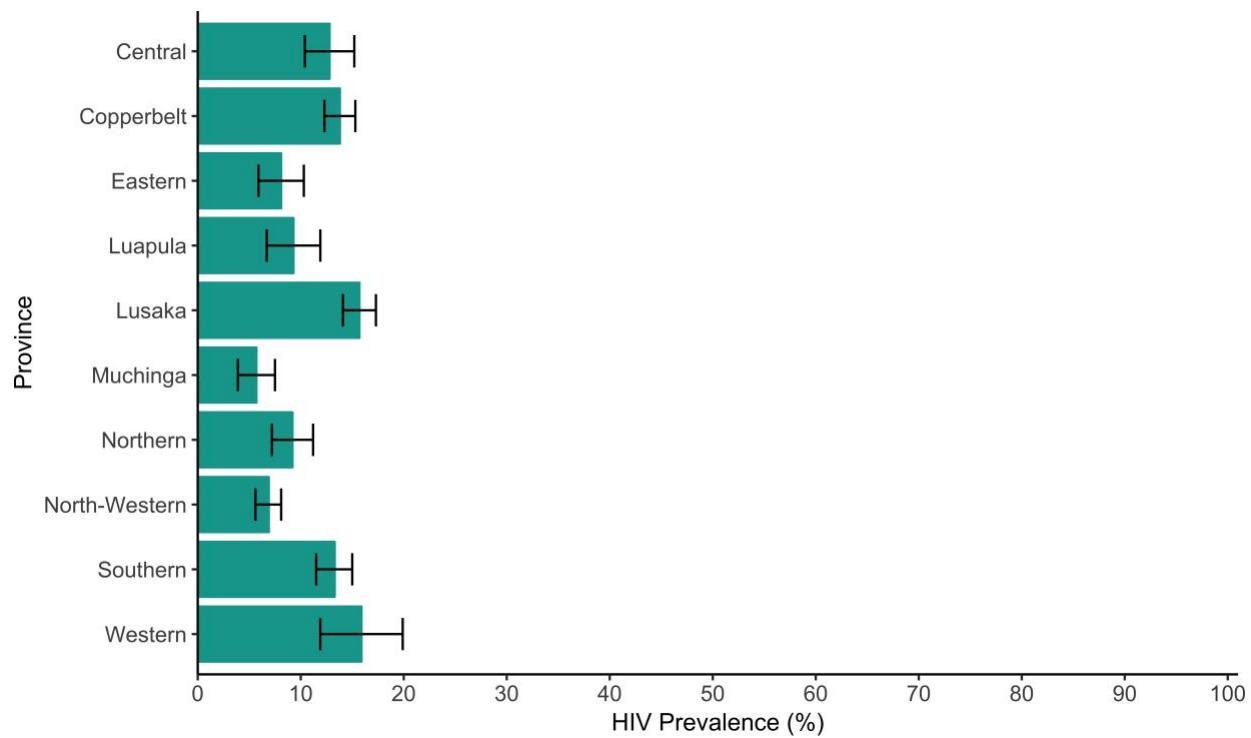
¹ This includes only 0-17-month aged infants with confirmed rapid test results.

Figure 6.4.A HIV prevalence by age and sex, ZAMPHIA 2016

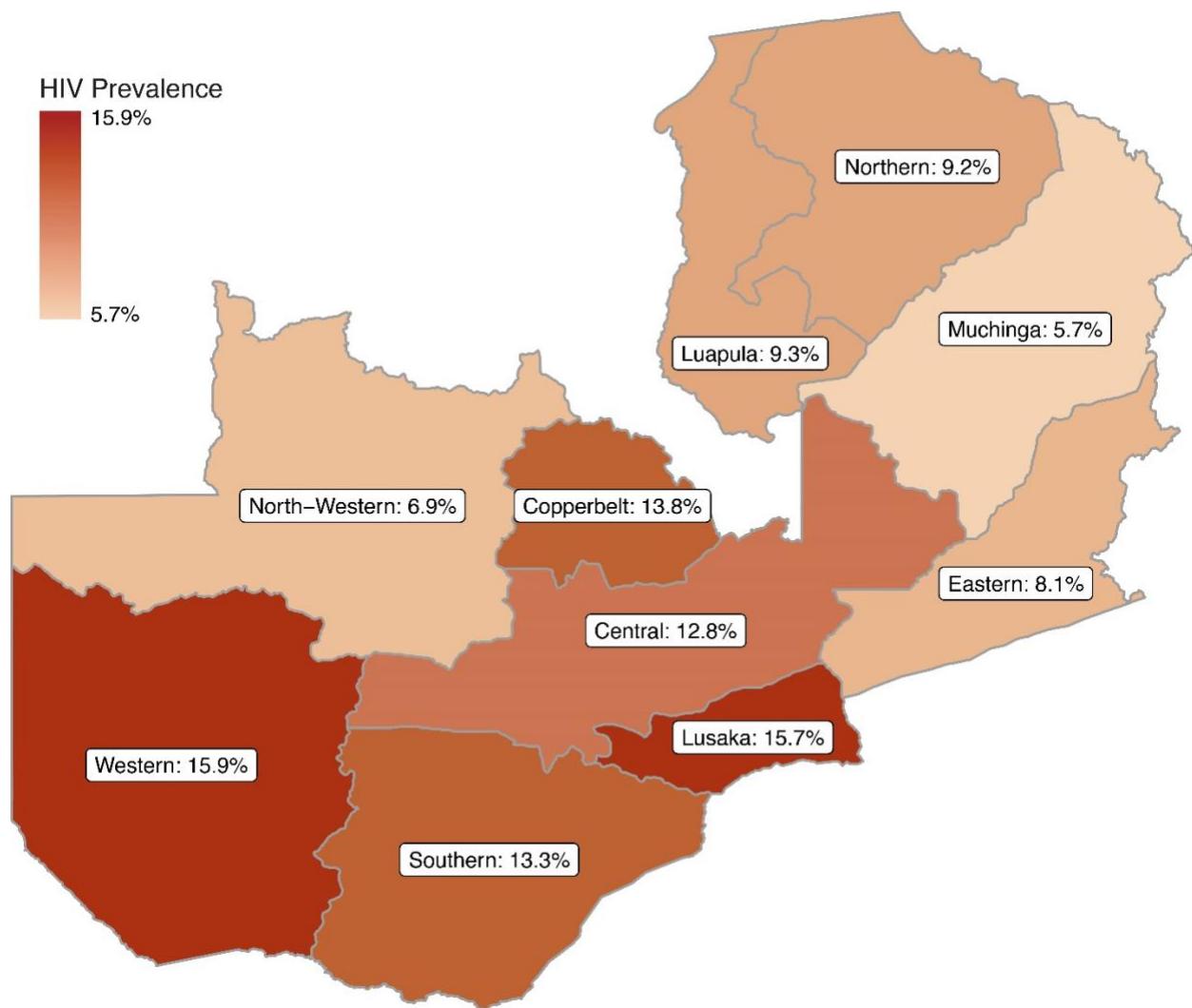
6.5 Adult HIV Prevalence by Province

The distribution of HIV infections in the population aged 15-59 years varied geographically across Zambia, ranging from 5.7% in Muchinga Province to 15.9% in Western Province and 15.7% in Lusaka (Figure 6.5.A, Figure 6.5.B).

Figure 6.5.A HIV prevalence among adults aged 15-59 years, by province, ZAMPHIA 2016



Map 6.5.B HIV prevalence among adults aged 15-59 years, by province, ZAMPHIA 2016



6.6 Gaps and Unmet Needs

- The disparity in HIV prevalence between males and females, particularly in those aged 15-24 years, suggests an increased focus on early testing and ART initiation for adolescent girls and young women as well as the need for preventative services.

7 HIV TESTING

7.1 Key Findings

- Almost two-thirds of males (65.1%) and 79.2% of females aged 15-59 years reported ever having been tested for HIV and having received their results. In this sample, 34.8% of all males and 42.0% of females in the same age bracket reported receiving an HIV test in the 12 months preceding the survey.
- Among males and females aged 15-59 years who tested positive in the survey, 85.9% and 92.9%, respectively, reported they had ever been tested for HIV and received their results.
- Among adults in urban areas, 75.9% reported ever testing for HIV while 40.5% reported testing for HIV in the 12 months prior to survey, compared 69.3% and 36.7% of adults in rural areas, respectively.

7.2 Background

HIV testing is necessary for awareness of HIV status and is a critical component of HIV epidemic control targets. Awareness of HIV-positive status is the first step to engagement with HIV care and treatment services, accessing ART, prevention counseling for HIV-positive and HIV-negative individuals to reduce risk of HIV transmission or acquisition, and access to screening services for other comorbidities. HIV testing is currently one of the key strategies to control the HIV epidemic, since it identifies people living with HIV and enables them to link to care. To increase national coverage of testing, the government of the Republic of Zambia has instituted guidelines for index case testing, routine provider-initiated testing and counselling, peer approach for key populations, self-testing, and implementation of a unique identifier for HIV testing and services, among other strategies.

Data presented in this section pertain to adults aged 15-59 years, males and females, who self-reported ever receiving an HIV test and receiving the test results. To assess coverage of HIV testing, respondents were asked if they had ever been tested for HIV and received their results. Results on HIV testing in the last 12 months and receiving the test results are also presented to understand frequent or recent testing.

7.3 Self-Reported HIV Testing Among Adults (ages 15-59 years)

Overall 72.3% of all participants aged 15-59 years reported ever having tested for HIV and receiving their results. Among HIV-positive respondents, 90.3% reported they had ever tested and received their results (Table 7.3.A). Almost two-thirds of men (65.1%) and more than three quarters (79.2%) of women reported ever having been tested for HIV and having received their results. Self-reported HIV ever testing peaked at ages 30-34 years for males (83.3%) and ages 25-29 years for females (94.5%). Respondents aged 15-19 years had the lowest HIV ever testing coverage estimates for both males (27.2%) and females (45.4%) (Tables 7.3.B, 7.3.C).

In the 12 months preceding the survey, 38.4% of all participants aged 15-59 years reported testing for HIV (Table 7.3.A). More than a third (34.8%) of men and 42.0% of women reported testing and receiving their results in the year preceding the survey (Table 7.3.B, Table 7.3.C, Figure 7.3.C). Among adults who tested positive in ZAMPHIA, 5.2% of females and 39.9% of males had received HIV testing and their

results in the year preceding the survey (Table 7.3.B; Table 7.3.C). The coverage of testing in the year preceding the survey peaked at ages 25-29 years at 49.2%, while among those aged 15-19 years, it was only 21.9%. (Table 7.3.A).

Testing history varied by marital status for both men and women. Over 80% of widowed (81.0%) and married (81.0%) men aged 15-59 years had ever been tested and received their results for HIV, compared to 46.5% of males who had never been married. Among those who were married or living with a partner, 42.4% had been tested and received their results in the year preceding the survey, while one quarter (25.6%) of those who were never married had been tested and received their results in the year preceding the survey. Among females aged 15-59 years who were married or living with a partner, 90.3% had ever been tested and received their results, as compared to 56.2% of females who had never been married. The coverage for recent testing (testing in the 12 months preceding the survey) among female widows was 29.7%, while among the married, it was 47.6%. (Table 7.3.A and Table 7.3.C)

Table 7.3.A HIV testing: Total

Percentage of persons aged 15-59 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA survey HIV test and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Percentage who ever received HIV testing and received their results | Percentage who received HIV testing in the past 12 months and received their results ¹ | Number |
|---------------------------------------|---|---|--------|
| Result of PHIA survey HIV test | | | |
| HIV positive | 90.3 | 30.7 | 2,442 |
| HIV negative | 69.8 | 38.7 | 16,513 |
| Not tested | 72.5 | 44.9 | 2,140 |
| Residence | | | |
| Urban | 75.9 | 40.5 | 9,205 |
| Rural | 69.3 | 36.7 | 11,890 |
| Province | | | |
| Central | 70.0 | 36.4 | 1,775 |
| Copperbelt | 71.4 | 36.4 | 3,589 |
| Eastern | 75.7 | 38.6 | 2,018 |
| Luapula | 64.9 | 32.6 | 1,131 |
| Lusaka | 76.7 | 41.9 | 3,628 |
| Muchinga | 69.1 | 34.0 | 1,907 |
| Northern | 64.1 | 34.7 | 1,707 |
| North-Western | 69.7 | 37.4 | 1,957 |
| Southern | 75.3 | 42.6 | 2,354 |
| Western | 77.6 | 45.1 | 1,029 |
| Marital status | | | |
| Never married | 50.5 | 28.9 | 7,026 |
| Married or living together | 86.0 | 45.2 | 11,779 |
| Divorced or separated | 82.6 | 42.0 | 1,499 |
| Widowed | 84.3 | 30.6 | 644 |
| Education | | | |
| No education | 70.7 | 35.9 | 1,118 |
| Primary | 69.7 | 35.4 | 9,130 |
| Secondary | 71.9 | 40.1 | 9,144 |
| More than secondary | 88.2 | 46.4 | 1,690 |
| Wealth quintile | | | |
| Lowest | 68.1 | 36.6 | 3,335 |
| Second | 68.4 | 35.3 | 3,892 |
| Middle | 71.6 | 37.4 | 4,252 |
| Fourth | 75.8 | 41.8 | 4,495 |
| Highest | 75.2 | 39.8 | 5,028 |
| Age | | | |
| 15-19 | 36.4 | 21.9 | 4,302 |
| 20-24 | 77.2 | 45.0 | 3,726 |
| 25-29 | 87.4 | 49.2 | 2,987 |
| 30-34 | 89.1 | 47.2 | 2,747 |
| 35-39 | 87.2 | 43.8 | 2,231 |
| 40-44 | 83.8 | 38.8 | 1,905 |
| 45-49 | 79.4 | 35.4 | 1,298 |
| 50-54 | 70.4 | 30.3 | 1,111 |
| 55-59 | 69.2 | 28.3 | 788 |
| Total 15-24 | 55.4 | 32.6 | 8,028 |
| Total 15-49 | 72.5 | 39.2 | 19,196 |
| Total 15-59 | 72.3 | 38.4 | 21,095 |

¹Relates to PEPFAR HTC_TST

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

Table 7.3.B Self-reported HIV testing: Males

Percentage of males aged 15-59 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of PHIA survey HIV test and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Percentage who ever received HIV testing and received results | Percentage who received HIV testing in the past 12 months and received results ¹ | Number |
|---------------------------------------|---|---|--------|
| Result of PHIA survey HIV test | | | |
| HIV positive | 85.9 | 39.9 | 768 |
| HIV negative | 62.7 | 33.4 | 7,284 |
| Not tested | 66.7 | 40.3 | 1,019 |
| Residence | | | |
| Urban | 70.0 | 37.1 | 3,742 |
| Rural | 61.0 | 32.8 | 5,329 |
| Province | | | |
| Central | 59.7 | 32.4 | 783 |
| Copperbelt | 64.7 | 33.4 | 1,538 |
| Eastern | 67.8 | 33.0 | 873 |
| Luapula | 57.9 | 27.6 | 472 |
| Lusaka | 69.7 | 37.7 | 1,430 |
| Muchinga | 61.7 | 30.3 | 841 |
| Northern | 58.5 | 33.0 | 765 |
| North-Western | 60.9 | 31.4 | 851 |
| Southern | 68.9 | 40.0 | 1,074 |
| Western | 71.2 | 44.0 | 444 |
| Marital status | | | |
| Never married | 46.5 | 25.6 | 3,746 |
| Married or living together | 81.0 | 42.4 | 4,817 |
| Divorced or separated | 73.4 | 41.3 | 376 |
| Widowed | 81.0 | 37.6 | 63 |
| Education | | | |
| No education | 62.0 | 32.5 | 280 |
| Primary | 57.0 | 29.4 | 3,486 |
| Secondary | 67.2 | 37.2 | 4,416 |
| More than secondary | 84.5 | 43.3 | 881 |
| Wealth quintile | | | |
| Lowest | 59.6 | 33.9 | 1,405 |
| Second | 59.4 | 30.0 | 1,751 |
| Middle | 63.6 | 32.9 | 1,894 |
| Fourth | 68.4 | 38.2 | 1,861 |
| Highest | 70.6 | 37.4 | 2,116 |
| Age | | | |
| 15-19 | 27.2 | 14.9 | 1,987 |
| 20-24 | 65.7 | 36.4 | 1,480 |
| 25-29 | 79.3 | 45.2 | 1,193 |
| 30-34 | 83.3 | 46.1 | 1,145 |
| 35-39 | 82.4 | 42.8 | 943 |
| 40-44 | 79.3 | 39.8 | 843 |
| 45-49 | 77.0 | 39.5 | 625 |
| 50-54 | 72.5 | 32.4 | 487 |
| 55-59 | 68.7 | 30.5 | 368 |
| Total 15-24 | 45.0 | 24.8 | 3,467 |
| Total 15-49 | 64.6 | 35.0 | 8,216 |
| Total 15-59 | 65.1 | 34.8 | 9,071 |

¹Relates to PEPFAR HTC_TST

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

Table 7.3.C Self-reported HIV testing: Females

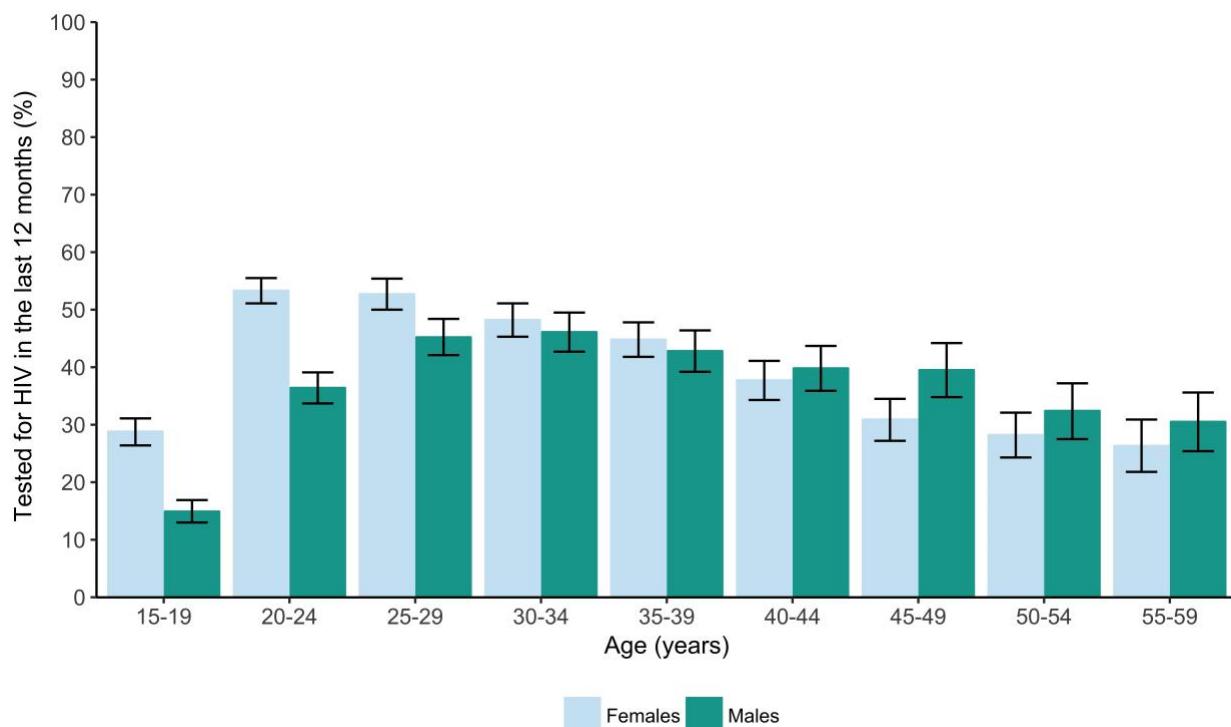
Percentage of females aged 15-59 years who ever received HIV testing and received their test results, and percentage who received HIV testing and received their test results in the past 12 months, by result of survey HIV test and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Percentage who ever received HIV testing and received results | Percentage who received HIV testing in the past 12 months and received results ¹ | Number |
|---------------------------------------|---|---|--------|
| Result of PHIA survey HIV test | | | |
| HIV positive | 92.9 | 25.2 | 1,674 |
| HIV negative | 76.8 | 43.9 | 9,229 |
| Not tested | 79.2 | 50.1 | 1,121 |
| Residence | | | |
| Urban | 81.4 | 43.6 | 5,463 |
| Rural | 77.4 | 40.6 | 6,561 |
| Province | | | |
| Central | 80.0 | 40.2 | 992 |
| Copperbelt | 77.9 | 39.4 | 2,051 |
| Eastern | 82.9 | 43.8 | 1,145 |
| Luapula | 71.0 | 37.1 | 659 |
| Lusaka | 83.4 | 45.9 | 2,198 |
| Muchinga | 76.3 | 37.5 | 1,066 |
| Northern | 69.6 | 36.4 | 942 |
| North-Western | 78.0 | 43.1 | 1,106 |
| Southern | 81.8 | 45.1 | 1,280 |
| Western | 83.2 | 46.1 | 585 |
| Marital status | | | |
| Never married | 56.2 | 33.4 | 3,280 |
| Married or living together | 90.3 | 47.6 | 6,962 |
| Divorced or separated | 86.5 | 42.3 | 1,123 |
| Widowed | 84.7 | 29.7 | 581 |
| Education | | | |
| No education | 74.4 | 37.3 | 838 |
| Primary | 79.4 | 40.0 | 5,644 |
| Secondary | 77.4 | 43.6 | 4,728 |
| More than secondary | 93.4 | 50.8 | 809 |
| Wealth quintile | | | |
| Lowest | 75.5 | 38.9 | 1,930 |
| Second | 77.1 | 40.5 | 2,141 |
| Middle | 79.6 | 42.0 | 2,358 |
| Fourth | 82.8 | 45.1 | 2,634 |
| Highest | 79.8 | 42.2 | 2,912 |
| Age | | | |
| 15-19 | 45.4 | 28.8 | 2,315 |
| 20-24 | 88.3 | 53.3 | 2,246 |
| 25-29 | 94.5 | 52.7 | 1,794 |
| 30-34 | 94.2 | 48.2 | 1,602 |
| 35-39 | 91.9 | 44.8 | 1,288 |
| 40-44 | 88.6 | 37.7 | 1,062 |
| 45-49 | 81.9 | 30.9 | 673 |
| 50-54 | 68.3 | 28.2 | 624 |
| 55-59 | 69.7 | 26.3 | 420 |
| Total 15-24 | 65.5 | 40.2 | 4,561 |
| Total 15-49 | 80.1 | 43.2 | 10,980 |
| Total 15-59 | 79.2 | 42.0 | 12,024 |

¹Relates to PEPFAR HTS_TST

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

Figure 7.3.A Proportion of adults who self-reported having received an HIV test in the last 12 months, by age and sex, ZAMPHIA 2016



7.4 Gaps and Unmet Needs

- There is a need for increased testing outreach to males, as less than two-thirds of men (65.1%) compared to 79.2% of women had ever been tested and received their results. Promoting community-based HIV testing coupled with strengthening linkages to care and treatment can help improve HIV testing among males.
- Targeted and strategic testing is required based on the gaps that have been highlighted in ZAMPHIA; groups with low rates of ever testing, such as males, those who were never married, youths aged 15-19 years, etc.

8 HIV DIAGNOSIS AND TREATMENT

8.1 Key Findings

- Over two-thirds (67.1%) of HIV-positive males aged 25-29 years reported being unaware of their HIV status.
- Based on self-report, lack of awareness varied geographically among HIV-positive men and women aged 15-59 years, from 26.6% of men unaware of their status in Eastern Province to 57.1% of men in Luapula, and from 23.5% of women unaware in Southern Province to 42.8% of women in Luapula.
- Concordance between self-report of ART and detection of ARVs was high among adults aged 15-59 years, with 95.3% of those who reported current ART use having detectable ARVs in blood. However, self-report of HIV status was less accurate: 15.3% of HIV-positive adults who reported that they had not been previously diagnosed with HIV had ARVs detected in their blood.

8.2 Background

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

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

Among HIV-positive adults aged 15-59 years, based on self-report, 33.9% were unaware of their HIV-positive status, including one-third (37.7%) of the males and 31.6% of the females. Overall, 56.2% of HIV-positive adults, including males (53.7%) and females (57.7%), reported awareness of their status and ART use (Tables 8.3.A, 8.3.B, 8.3.C).

Among HIV-positive males, the percentage of those who were unaware of their HIV status ranged from 67.1% among those aged 25-29 years to 20.8% among those aged 50-59 years. Among HIV-positive females, the percentage unaware of their HIV status ranged from 70.1% among those aged 15-19 years to 20.2% among those aged 40-44 years. The percentage of HIV-positive males who reported being on ART ranged from 25.0% among those aged 25-29 years to 76.1% among those aged 50-54 years, while the percentage of HIV-positive females who reported being on ART ranged from 26.5% among ages 15-19 years to 72.5% among ages 55-59 years (Table 8.3.A and Table 8.3.B).

Among married and cohabitating HIV-positive adults aged 15-59 years, 60.4% were aware of their status and on ART, 57.2% of males and 63.1% of females, while among those who had never married, 38.8% were aware and on ART, including 35.9% of males and 40.4% of females. In the lowest wealth quintile, 41.4% were unaware while only 25.5% of adults in the highest wealth quintile were unaware of their status. (Table 8.3.A, Table 8.3.B and Table 8.3.C).

Lack of awareness of HIV status among HIV-positive men aged 15-59 years varied geographically, from 26.6% unaware in Eastern Province to 57.1% unaware in Luapula Province (Table 8.3.B). As among HIV-positive men, lack of awareness of HIV status among HIV-positive females varied geographically, from 23.5% unaware in Southern Province to 42.8% in Luapula Province (Table 8.3.C). ART coverage (according to self-report) also varied geographically and peaked in Eastern Province at 64.1%, as compared to 36.6% in Northern Province (Table 8.3.A).

Table 8.3.A HIV treatment status: Males

Percent distribution of HIV-positive males aged 15-59 years by self-reported antiretroviral therapy (ART) status, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Unaware of HIV status | Aware of HIV status | | Total | Number |
|----------------------------|-----------------------|---------------------|---------------------|---------|--------|
| | | Not on ART | On ART ¹ | | |
| Residence | | | | | |
| Urban | 32.8 | 7.8 | 59.4 | 100.0 | 401 |
| Rural | 44.1 | 9.6 | 46.3 | 100.0 | 365 |
| Province | | | | | |
| Central | 43.9 | 9.4 | 46.8 | 100.0 | 70 |
| Copperbelt | 33.9 | 11.5 | 54.6 | 100.0 | 153 |
| Eastern | (26.6) | (5.4) | (68.0) | (100.0) | 47 |
| Luapula | (57.1) | (4.7) | (38.1) | (100.0) | 34 |
| Lusaka | 31.9 | 3.2 | 64.9 | 100.0 | 167 |
| Muchinga | (33.8) | (8.1) | (58.1) | (100.0) | 28 |
| Northern | 53.2 | 15.2 | 31.6 | 100.0 | 50 |
| North-Western | (51.2) | (4.6) | (44.1) | (100.0) | 39 |
| Southern | 34.8 | 13.8 | 51.4 | 100.0 | 122 |
| Western | 45.6 | 10.5 | 43.9 | 100.0 | 56 |
| Marital status | | | | | |
| Never married | 60.8 | 3.3 | 35.9 | 100.0 | 88 |
| Married or living together | 33.1 | 9.6 | 57.2 | 100.0 | 573 |
| Divorced or separated | 46.2 | 7.3 | 46.5 | 100.0 | 75 |
| Widowed | (25.3) | (10.4) | (64.3) | (100.0) | 28 |
| Education | | | | | |
| No education | * | * | * | * | 20 |
| Primary | 40.1 | 9.4 | 50.5 | 100.0 | 263 |
| Secondary | 39.6 | 8.3 | 52.1 | 100.0 | 392 |
| More than secondary | 23.7 | 6.5 | 69.9 | 100.0 | 90 |
| Wealth quintile | | | | | |
| Lowest | 50.6 | 10.4 | 39.1 | 100.0 | 81 |
| Second | 41.5 | 10.0 | 48.5 | 100.0 | 110 |
| Middle | 39.9 | 12.4 | 47.7 | 100.0 | 163 |
| Fourth | 44.4 | 7.6 | 48.0 | 100.0 | 198 |
| Highest | 24.2 | 5.5 | 70.4 | 100.0 | 207 |
| Age | | | | | |
| 15-19 | * | * | * | * | 24 |
| 20-24 | (57.2) | (5.5) | (37.3) | (100.0) | 29 |
| 25-29 | 67.1 | 7.9 | 25.0 | 100.0 | 57 |
| 30-34 | 54.8 | 13.4 | 31.8 | 100.0 | 108 |
| 35-39 | 39.2 | 12.3 | 48.5 | 100.0 | 117 |
| 40-44 | 28.0 | 8.9 | 63.1 | 100.0 | 162 |
| 45-49 | 23.5 | 7.1 | 69.4 | 100.0 | 122 |
| 50-54 | 20.8 | 3.2 | 76.1 | 100.0 | 96 |
| 55-59 | 20.8 | 4.4 | 74.8 | 100.0 | 51 |
| Total 15-24 | 59.4 | 5.3 | 35.3 | 100.0 | 53 |
| Total 15-49 | 41.1 | 9.6 | 49.3 | 100.0 | 619 |
| Total 15-59 | 37.7 | 8.6 | 53.7 | 100.0 | 766 |

¹Relates to Global AIDS Monitoring indicator 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution. An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

Table 8.3.B HIV treatment status: Females

Percent distribution of HIV-positive females aged 15-59 years by self-reported antiretroviral therapy (ART) status, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Unaware of HIV status | Aware of HIV status | | Total | Number |
|----------------------------|-----------------------|---------------------|---------------------|-------|--------|
| | | Not on ART | On ART ¹ | | |
| Residence | | | | | |
| Urban | 28.9 | 10.7 | 60.4 | 100.0 | 997 |
| Rural | 35.6 | 10.6 | 53.8 | 100.0 | 671 |
| Province | | | | | |
| Central | 31.9 | 7.9 | 60.2 | 100.0 | 159 |
| Copperbelt | 31.2 | 11.1 | 57.7 | 100.0 | 352 |
| Eastern | 24.3 | 13.4 | 62.3 | 100.0 | 129 |
| Luapula | 42.8 | 6.5 | 50.7 | 100.0 | 71 |
| Lusaka | 29.2 | 11.9 | 58.9 | 100.0 | 412 |
| Muchinga | 37.9 | 5.2 | 56.9 | 100.0 | 80 |
| Northern | 40.3 | 19.5 | 40.2 | 100.0 | 80 |
| North-Western | 42.5 | 8.0 | 49.4 | 100.0 | 96 |
| Southern | 23.5 | 7.1 | 69.3 | 100.0 | 185 |
| Western | 40.8 | 11.2 | 48.0 | 100.0 | 104 |
| Marital status | | | | | |
| Never married | 49.3 | 10.3 | 40.4 | 100.0 | 235 |
| Married or living together | 26.5 | 10.4 | 63.1 | 100.0 | 852 |
| Divorced or separated | 37.8 | 10.4 | 51.8 | 100.0 | 315 |
| Widowed | 22.9 | 12.4 | 64.7 | 100.0 | 261 |
| Education | | | | | |
| No education | 21.3 | 16.8 | 61.8 | 100.0 | 88 |
| Primary | 33.0 | 10.0 | 57.0 | 100.0 | 767 |
| Secondary | 32.2 | 10.0 | 57.8 | 100.0 | 692 |
| More than secondary | 27.2 | 13.8 | 58.9 | 100.0 | 121 |
| Wealth quintile | | | | | |
| Lowest | 36.0 | 14.2 | 49.8 | 100.0 | 163 |
| Second | 37.6 | 9.1 | 53.3 | 100.0 | 188 |
| Middle | 33.8 | 7.8 | 58.4 | 100.0 | 358 |
| Fourth | 31.7 | 13.5 | 54.8 | 100.0 | 469 |
| Highest | 26.3 | 9.5 | 64.3 | 100.0 | 482 |
| Age | | | | | |
| 15-19 | 70.1 | 3.4 | 26.5 | 100.0 | 67 |
| 20-24 | 55.2 | 11.4 | 33.3 | 100.0 | 167 |
| 25-29 | 33.4 | 12.1 | 54.5 | 100.0 | 222 |
| 30-34 | 28.4 | 17.2 | 54.4 | 100.0 | 300 |
| 35-39 | 23.2 | 12.2 | 64.7 | 100.0 | 281 |
| 40-44 | 20.2 | 8.1 | 71.6 | 100.0 | 291 |
| 45-49 | 28.1 | 5.5 | 66.3 | 100.0 | 157 |
| 50-54 | 24.9 | 7.9 | 67.2 | 100.0 | 116 |
| 55-59 | 24.7 | 2.8 | 72.5 | 100.0 | 67 |
| Total 15-24 | 59.9 | 8.9 | 31.2 | 100.0 | 234 |
| Total 15-49 | 32.4 | 11.2 | 56.4 | 100.0 | 1,485 |
| Total 15-59 | 31.6 | 10.7 | 57.7 | 100.0 | 1,668 |

¹Relates to Global AIDS Monitoring indicator 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT

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

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

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

Table 8.3.C HIV treatment status: Total

Percent distribution of HIV-positive persons aged 15-59 years by self-reported HIV diagnosis and antiretroviral therapy (ART) status, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Aware of HIV status | | | Total | Number |
|----------------------------|-----------------------|------------|---------------------|-------|--------|
| | Unaware of HIV status | Not on ART | On ART ¹ | | |
| Residence | | | | | |
| Urban | 30.3 | 9.6 | 60.1 | 100.0 | 1,398 |
| Rural | 38.9 | 10.2 | 50.9 | 100.0 | 1,036 |
| Province | | | | | |
| Central | 36.1 | 8.4 | 55.5 | 100.0 | 229 |
| Copperbelt | 32.2 | 11.3 | 56.6 | 100.0 | 505 |
| Eastern | 25.0 | 10.9 | 64.1 | 100.0 | 176 |
| Luapula | 48.1 | 5.8 | 46.1 | 100.0 | 105 |
| Lusaka | 30.2 | 8.6 | 61.2 | 100.0 | 579 |
| Muchinga | 36.7 | 6.1 | 57.2 | 100.0 | 108 |
| Northern | 45.7 | 17.7 | 36.6 | 100.0 | 130 |
| North-Western | 45.5 | 6.9 | 47.6 | 100.0 | 135 |
| Southern | 28.6 | 10.1 | 61.3 | 100.0 | 307 |
| Western | 42.6 | 10.9 | 46.5 | 100.0 | 160 |
| Marital status | | | | | |
| Never married | 53.3 | 7.9 | 38.8 | 100.0 | 323 |
| Married or living together | 29.6 | 10.1 | 60.4 | 100.0 | 1,425 |
| Divorced or separated | 39.8 | 9.7 | 50.5 | 100.0 | 390 |
| Widowed | 23.2 | 12.2 | 64.7 | 100.0 | 289 |
| Education | | | | | |
| No education | 23.4 | 16.3 | 60.3 | 100.0 | 108 |
| Primary | 35.2 | 9.8 | 55.0 | 100.0 | 1,030 |
| Secondary | 35.4 | 9.3 | 55.3 | 100.0 | 1,084 |
| More than secondary | 25.4 | 10.1 | 64.5 | 100.0 | 211 |
| Wealth quintile | | | | | |
| Lowest | 41.4 | 12.8 | 45.8 | 100.0 | 244 |
| Second | 39.2 | 9.5 | 51.3 | 100.0 | 298 |
| Middle | 36.0 | 9.4 | 54.6 | 100.0 | 521 |
| Fourth | 36.4 | 11.3 | 52.3 | 100.0 | 667 |
| Highest | 25.5 | 7.9 | 66.6 | 100.0 | 689 |
| Age | | | | | |
| 15-19 | 67.5 | 3.9 | 28.6 | 100.0 | 91 |
| 20-24 | 55.6 | 10.3 | 34.1 | 100.0 | 196 |
| 25-29 | 42.4 | 11.0 | 46.6 | 100.0 | 279 |
| 30-34 | 36.9 | 16.0 | 47.1 | 100.0 | 408 |
| 35-39 | 29.2 | 12.2 | 58.6 | 100.0 | 398 |
| 40-44 | 23.7 | 8.5 | 67.8 | 100.0 | 453 |
| 45-49 | 25.9 | 6.3 | 67.8 | 100.0 | 279 |
| 50-54 | 22.7 | 5.4 | 71.9 | 100.0 | 212 |
| 55-59 | 22.9 | 3.6 | 73.6 | 100.0 | 118 |
| Total 15-24 | 59.8 | 8.0 | 32.2 | 100.0 | 287 |
| Total 15-49 | 35.5 | 10.6 | 53.9 | 100.0 | 2,104 |
| Total 15-59 | 33.9 | 9.9 | 56.2 | 100.0 | 2,434 |

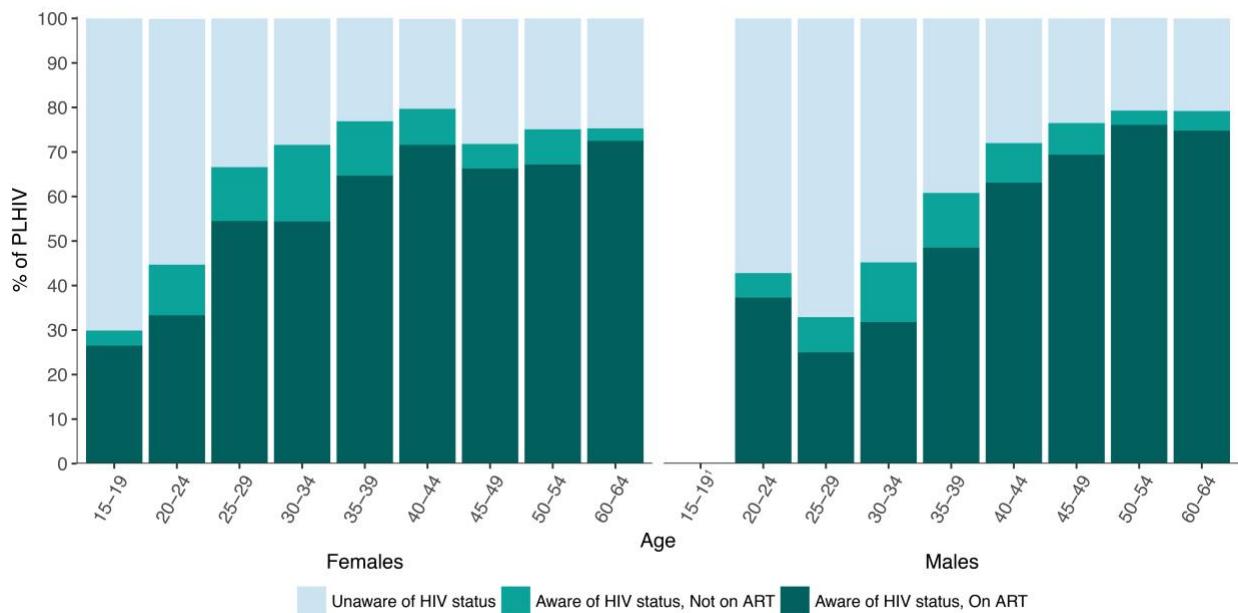
¹Relates to Global AIDS Monitoring indicator 1.2: People living with HIV on antiretroviral therapy and PEPFAR TX_CURR_NAT / SUBNAT

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

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

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

Figure 8.3.A Proportion of HIV-positive adults aged 15-59 years self-reporting awareness of HIV status and antiretroviral therapy status, by age and sex, ZAMPHIA 2016



*For males in the 15-19 age group, the point estimate has been suppressed because of the limited number of observations.

8.4 Reliability of Self-Reported Treatment Status versus Laboratory ARV Data

ZAMPHIA determined the presence of four ARVs in blood (atazanavir, efavirenz, lopinavir and nevirapine) as markers of first- and second-line regimens prescribed in the country at the time of the survey. Overall, 15.3% people living with HIV aged 15-59 years who self-reported they were not aware of their status had detectable ARVs in their blood. Of those who self-reported being aware of their HIV-positive status but not on ART, 6.6% had detectable ARVs in their blood (Table 8.4.C).

Among all HIV-positive persons aged 15-59 years, 95.3% of those who self-reported being aware of their HIV-positive status and also being on ART had detectable ARVs in their blood. It is unclear if the 4.7% of those self-reporting to be on treatment, but without detectable ARVs, were not adhering to their treatment regimen appropriately, or if they were taking a treatment regimen that did not include one of the four compounds tested (Table 8.4.C).

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

Percent distribution of HIV-positive males aged 15-59 years by presence of detectable ARVs versus self-reported antiretroviral therapy (ART) status, ZAMPHIA 2016

| Characteristic | ARVs ¹ | | Total | Number |
|----------------------------------|-------------------|------------|-------|--------|
| | Not detectable | Detectable | | |
| Self-reported ART status | | | | |
| Not previously diagnosed | 81.9 | 18.1 | 100.0 | 282 |
| Previously diagnosed, not on ART | 96.6 | 3.4 | 100.0 | 67 |
| Previously diagnosed, on ART | 3.7 | 96.3 | 100.0 | 407 |
| Total 15-24 | 62.9 | 37.1 | 100.0 | 54 |
| Total 15-49 | 45.4 | 54.6 | 100.0 | 614 |
| Total 15-59 | 41.0 | 59.0 | 100.0 | 759 |

¹Antiretroviral detection assay included only atazanavir, efavirenz, and lopinavir. Participants who reported antiretroviral therapy use and/or had undetectable viral load but had no evidence of the first three ARVs were tested for nevirapine as well.

The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

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

Percent distribution of HIV-positive females aged 15-59 years by presence of detectable ARVs versus self-reported HIV treatment status, ZAMPHIA 2016

| Characteristic | ARVs ¹ | | Total | Number |
|---|-------------------|------------|-------|--------|
| | Not detectable | Detectable | | |
| Self-reported ART status | | | | |
| Not previously diagnosed | 86.6 | 13.4 | 100.0 | 497 |
| Previously diagnosed, not on ART ² | 91.9 | 8.1 | 100.0 | 167 |
| Previously diagnosed, on ART | 5.2 | 94.8 | 100.0 | 988 |
| Total 15-24 | 66.3 | 33.7 | 100.0 | 234 |
| Total 15-49 | 41.4 | 58.6 | 100.0 | 1,474 |
| Total 15-59 | 40.0 | 60.0 | 100.0 | 1,656 |

¹Antiretroviral detection assay included only atazanavir, efavirenz, and lopinavir. Participants who reported antiretroviral therapy use and/or had undetectable viral load were tested for nevirapine as well.

² ART: Antiretroviral therapy

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

Table 8.4.C Concordance of self-reported treatment status versus presence of antiretrovirals (ARVs): Total

Percent distribution of HIV-positive persons aged 15-59 years by presence of detectable ARVs versus self-reported HIV treatment status, ZAMPHIA 2016

| Characteristic | ARVs ¹ | | Total | Number |
|---|-------------------|------------|-------|--------|
| | Not detectable | Detectable | | |
| Self-reported ART status | | | | |
| Not previously diagnosed | 84.7 | 15.3 | 100.0 | 779 |
| Previously diagnosed, not on ART ² | 93.4 | 6.6 | 100.0 | 234 |
| Previously diagnosed, on ART | 4.7 | 95.3 | 100.0 | 1,395 |
| Total 15-24 | 65.5 | 34.5 | 100.0 | 288 |
| Total 15-49 | 42.8 | 57.2 | 100.0 | 2,088 |
| Total 15-59 | 40.4 | 59.6 | 100.0 | 2,415 |

¹Antiretroviral detection assay included only atazanavir, efavirenz, and lopinavir. Participants who reported antiretroviral therapy use and/or had undetectable viral load were tested for nevirapine as well.

² ART: Antiretroviral therapy

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

8.5 Gaps and Unmet Needs

- The major gap is in reaching and diagnosing those infected with HIV, particularly the substantial proportion of men and young people who are unaware of their status.
- Universal routine testing (testing all patients for HIV, regardless of risk when they come in for a doctor's visit) was launched in August 2017. Special targeted HIV testing campaigns are needed among those aged 15-24 years, as well as less educated and never married men. Current small-scale projects aimed at older adolescents (over age 16 years, the age of consent) include school-based testing and church-based testing. Increased access to self-testing, which was included in the National Guidelines in December 2017, could also improve outreach for this age group as well as for men in general.
- Other methods for reaching men, especially those who are less educated and never married, include HIV testing campaigns in labor or roadside encampments, pubs or bars, and workplaces with unskilled laborers (e.g., construction and mining sites).
- In provinces with lower average awareness of HIV status (e.g., Luapula, Northern, North-Western and Western Provinces) and lower self-reported ART (e.g., Northern Province), additional targeted HIV testing and better ART initiation is also necessary.
- There is also a need to initiate treatment in those who have been diagnosed but are not receiving ART. Scaling up Test and Treat and differentiated service delivery (a client-centered approach to service delivery for people living with HIV that simplifies and adapts HIV services across the cascade) should assist this effort.
- The higher-than-expected lack of concordance of self-reported HIV awareness and treatment versus presence of detectable ARVs suggests additional work is needed to provide comprehensive HIV education and counseling for those who test positive. National campaigns against HIV stigma, particularly targeting self-stigma, could also help address this unmet need. Quantifying the amount of detectable ARVs in the ZAMPHIA sample would provide additional context on adherence.

8.6 References

1. World Health Organization. *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection*. Geneva: World Health Organization; 2016.
<https://www.who.int/hiv/pub/arv/arv-2016/en/>. Accessed December 17, 2018.
2. World Health Organization. *Treat all: Policy adoption and implementation status in countries*. Geneva: World Health Organization; 2017.

9 VIRAL LOAD SUPPRESSION

9.1 Key Findings

- Among people living with HIV aged 15-59 years in Zambia, the prevalence of viral load suppression (VLS) was 59.2%.
- Prevalence of VLS ranged from 30.7% among HIV-positive individuals aged 15-19 years to 79.0% among those aged 55-59 years.
- Among HIV-positive adults aged 15-59 years, the prevalence of VLS varied geographically across Zambia, ranging from 47.3% in Western Province to 67.1% in Eastern Province.

9.2 Background

Viral load suppression (VLS) is a key indicator of treatment success in HIV-positive individuals. For the purposes of ZAMPHIA 2016, VLS is defined as VL of less than 1,000 HIV RNA copies per milliliter of plasma. This chapter describes VLS among the population of HIV-positive persons aged 15-59 years by age, sex, province, and other demographic characteristics.

9.3 Adult Viral Load Suppression by Demographic Characteristics

Among people living with HIV aged 15-59 years in Zambia, the prevalence of VLS was 59.2% (Table 9.3.A). Among those who reported being previously diagnosed but not on ART, the prevalence of VLS was low: 5.3% for males, and 14.8% for females.

Table 9.3.A Viral load suppression prevalence by demographic characteristics

Percentage of HIV-positive persons aged 15-59 years with viral load suppression by sex, self-reported HIV diagnosis and antiretroviral therapy (ART) status, and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Males | | Females | | Total | |
|---|-----------------------------|--------|-----------------------------|--------|-----------------------------|--------|
| | Percentage VLS ¹ | Number | Percentage VLS ¹ | Number | Percentage VLS ¹ | Number |
| Self-reported HIV diagnosis and treatment status | | | | | | |
| Not previously diagnosed | 23.2 | 279 | 19.8 | 491 | 21.2 | 770 |
| Previously diagnosed, not on ART | 5.3 | 63 | 14.8 | 164 | 11.8 | 227 |
| Previously diagnosed, on ART | 87.7 | 413 | 90.1 | 996 | 89.2 | 1,409 |
| Missing | * | 3 | * | 4 | * | 7 |
| Residence | | | | | | |
| Urban | 60.5 | 399 | 62.5 | 994 | 61.8 | 1,393 |
| Rural | 52.8 | 359 | 57.2 | 661 | 55.5 | 1,020 |
| Province | | | | | | |
| Central | 56.1 | 70 | 60.8 | 159 | 59.1 | 229 |
| Copperbelt | 49.7 | 152 | 60.6 | 352 | 56.7 | 504 |
| Eastern | (68.6) | 47 | 66.4 | 129 | 67.1 | 176 |
| Luapula | (45.5) | 34 | 57.6 | 71 | 53.1 | 105 |
| Lusaka | 67.5 | 167 | 59.6 | 412 | 62.7 | 579 |
| Muchinga | (65.1) | 28 | 63.2 | 80 | 63.7 | 108 |
| Northern | (50.0) | 42 | 51.0 | 69 | 50.6 | 111 |
| North-Western | (49.8) | 39 | 55.3 | 97 | 53.4 | 136 |
| Southern | 56.0 | 122 | 70.0 | 183 | 63.7 | 305 |
| Western | 45.6 | 57 | 48.4 | 103 | 47.3 | 160 |
| Marital status | | | | | | |
| Never married | 40.5 | 88 | 40.2 | 234 | 40.3 | 322 |
| Married or living together | 60.5 | 565 | 66.4 | 843 | 63.7 | 1,408 |
| Divorced or separated | 54.2 | 75 | 54.2 | 316 | 54.2 | 391 |
| Widowed | (57.6) | 28 | 68.4 | 257 | 67.1 | 285 |
| Education | | | | | | |
| No education | * | 20 | 56.3 | 86 | 55.2 | 106 |
| Primary | 52.5 | 256 | 60.3 | 758 | 57.9 | 1,014 |
| Secondary | 57.1 | 392 | 60.8 | 689 | 59.2 | 1,081 |
| More than secondary | 71.9 | 89 | 61.3 | 122 | 66.7 | 211 |
| Wealth quintile | | | | | | |
| Lowest | 44.8 | 79 | 48.4 | 160 | 47.1 | 239 |
| Second | 52.8 | 108 | 56.9 | 183 | 55.2 | 291 |
| Middle | 54.9 | 162 | 62.2 | 353 | 59.5 | 515 |
| Fourth | 51.9 | 198 | 59.6 | 469 | 56.7 | 667 |
| Highest | 69.9 | 204 | 64.6 | 482 | 66.6 | 686 |
| Total 15-24 | 36.7 | 53 | 33.6 | 233 | 34.3 | 286 |
| Total 15-49 | 52.5 | 611 | 58.9 | 1,473 | 56.6 | 2,084 |
| Total 15-59 | 57.2 | 758 | 60.4 | 1,655 | 59.2 | 2,413 |

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

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

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

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

9.4 Adult Viral Load Suppression by Age and Sex

In general, the prevalence of VLS among people living with HIV ranged from 30.7% among those aged 15-19 years to 79.0% among those aged 55-59 years. Only a third of aged 0-14 years (33.4%) and aged 15-24 years (34.3%) had suppressed viral loads (Table 9.4.A; Table 9.4.B; Figure 9.4.A).

Table 9.4.A Viral load suppression by age (5-year age groups)Percentage of HIV-positive persons from 0-59 years of age with viral load suppression¹, by sex and age, ZAMPHIA 2016

| Age | Males | | Females | | Total | |
|-------------|--------------------------------|--------|--------------------------------|--------|--------------------------------|--------|
| | Percentage VLS ² | Number | Percentage VLS ² | Number | Percentage VLS ² | Number |
| 0-4 | * | 13 | * | 6 | * | 19 |
| 5-9 | (22.4) | 30 | * | 21 | 22.5 | 51 |
| 10-14 | * | 9 | * | 11 | * | 20 |
| 15-19 | (42.5) | 25 | 25.1 | 67 | 30.7 | 92 |
| 20-24 | (31.1) | 28 | 37.5 | 166 | 36.3 | 194 |
| 25-29 | 36.8 | 53 | 57.2 | 220 | 52.0 | 273 |
| 30-34 | 36.6 | 107 | 55.2 | 295 | 49.1 | 402 |
| 35-39 | 51.9 | 115 | 69.7 | 280 | 63.1 | 395 |
| 40-44 | 66.7 | 161 | 70.8 | 290 | 69.0 | 451 |
| 45-49 | 66.0 | 122 | 72.5 | 155 | 69.3 | 277 |
| 50-54 | 78.3 | 95 | 71.6 | 114 | 75.1 | 209 |
| 55-59 | 82.3 | 52 | 76.1 | 68 | 79.0 | 120 |
| Total 15-24 | 36.7 | 53 | 33.6 | 233 | 34.3 | 286 |
| Total 15-49 | 52.5 | 611 | 58.9 | 1,473 | 56.6 | 2,084 |
| Total 15-59 | 57.2 | 758 | 60.4 | 1,655 | 59.2 | 2,413 |

¹Relates to Global AIDS Monitoring indicator 1.4: People living with HIV who have suppressed viral loads²VLS: Viral load suppression

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

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

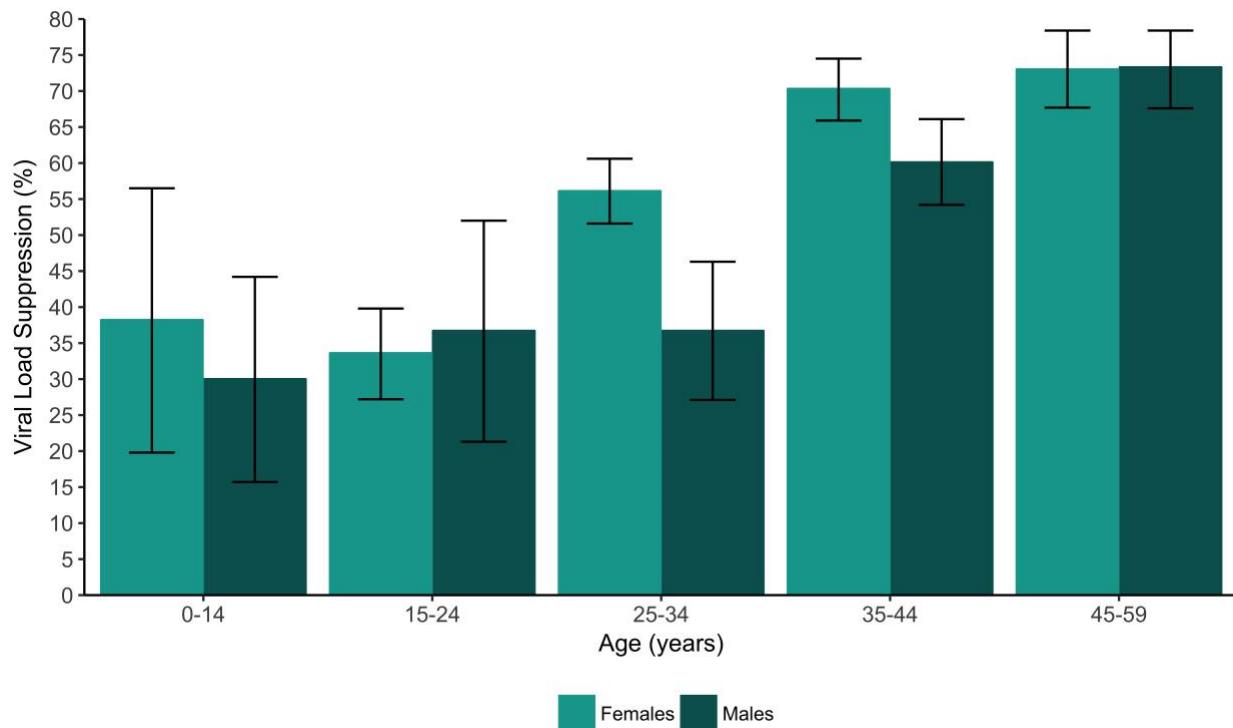
Table 9.4.B Viral load suppression by age (10-to-15-year age groups)Percentage of HIV-positive persons from 0-59 years of age with viral load suppression¹, by sex and age, ZAMPHIA 2016

| Age | Males | | Females | | Total | |
|-------|--------------------------------|--------|--------------------------------|--------|--------------------------------|--------|
| | Percentage VLS ² | Number | Percentage VLS ² | Number | Percentage VLS ² | Number |
| 0-14 | 30.0 | 52 | (38.2) | 38 | 33.4 | 90 |
| 15-24 | 36.7 | 53 | 33.6 | 233 | 34.3 | 286 |
| 25-34 | 36.7 | 160 | 56.1 | 515 | 50.4 | 675 |
| 35-44 | 60.1 | 276 | 70.3 | 570 | 66.1 | 846 |
| 45-59 | 73.3 | 269 | 73.0 | 337 | 73.1 | 606 |

¹Relates to Global AIDS Monitoring indicator 1.4: People living with HIV who have suppressed viral loads²VLS: Viral load suppression

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

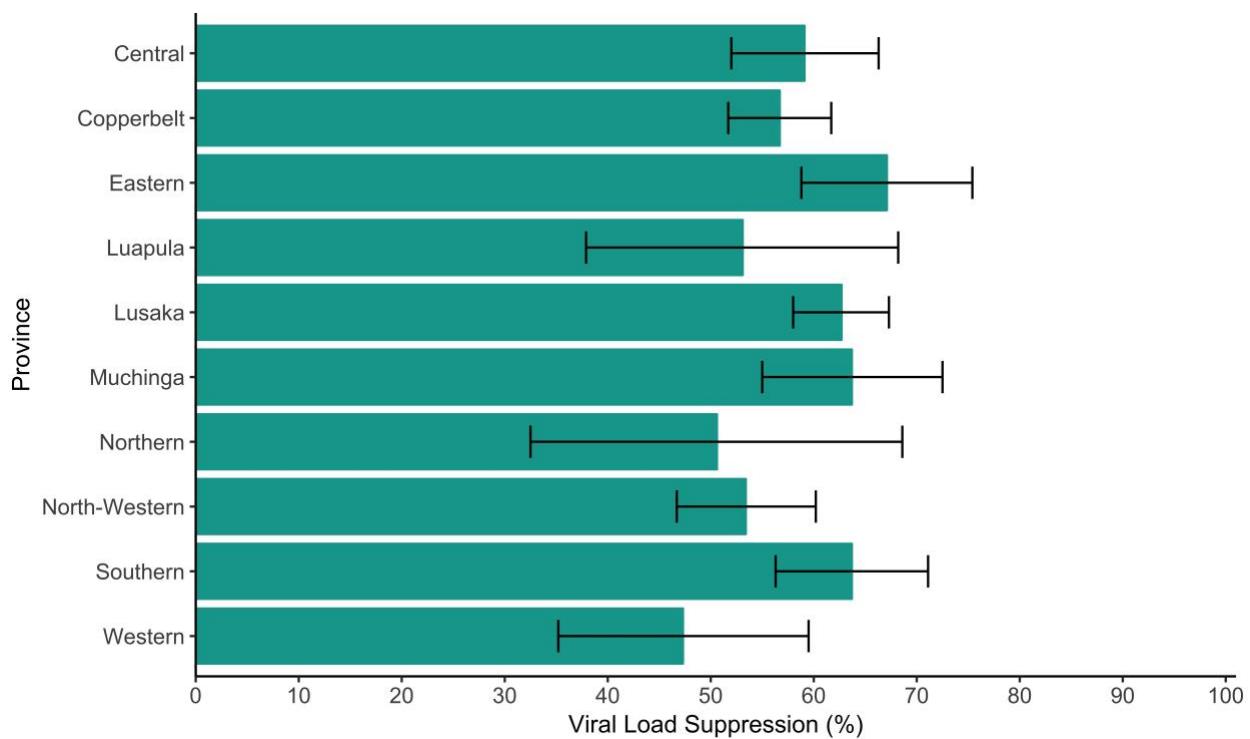
Figure 9.4.A Proportion of viral load suppression (<1,000 copies/mL) among people living with HIV, by age and sex, ZAMPHIA 2016



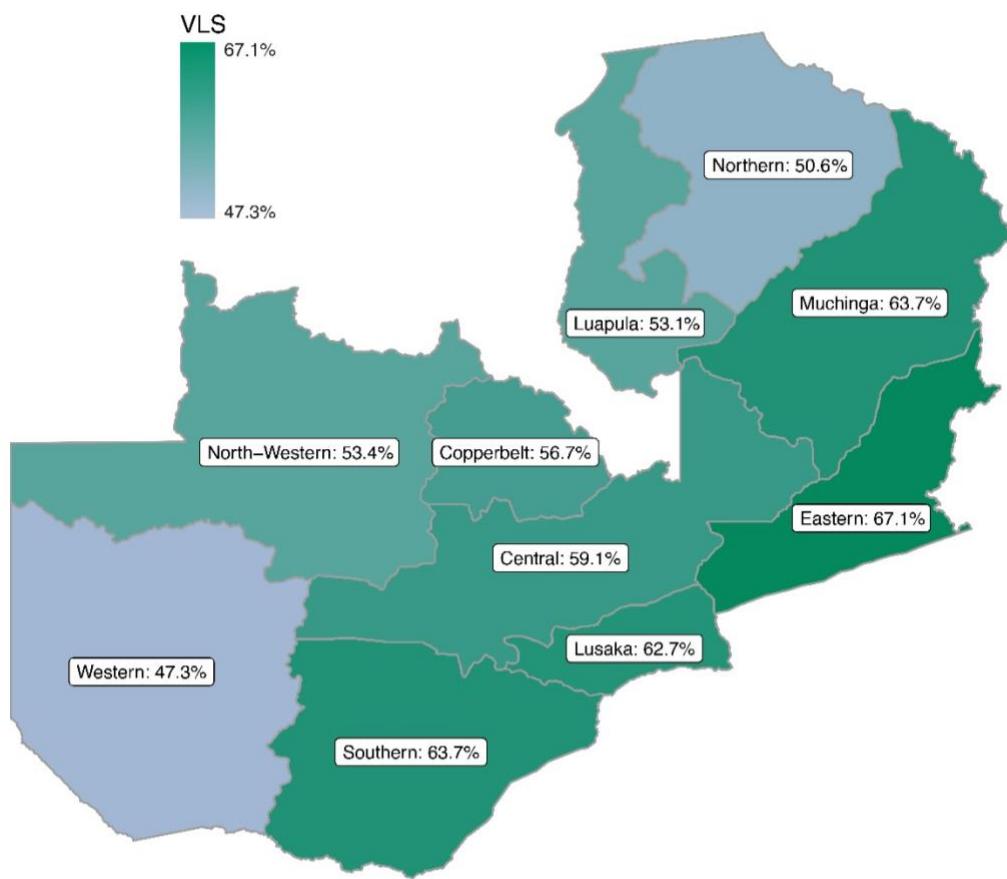
9.5 Adult Viral Load Suppression by Province

Among HIV-positive adults aged 15-59 years, the prevalence of VLS varies geographically across Zambia, ranging from 47.3% in Western Province to 67.1% in Eastern Province. The prevalence of VLS was above 60% in Muchinga, Lusaka, Southern, and Eastern Provinces. Comparatively, in the remaining six provinces, prevalence of VLS was less than 60% (Table 9.3.A; Figure 9.5.A and 9.5.B).

Figure 9.5.A Viral load suppression (<1000 copies/mL) among HIV-positive adults aged 15-59, by province, ZAMPHIA 2016



Map 9.5.B Viral load suppression (<1000 copies/mL) among HIV-positive adults aged 15-59, by province, ZAMPHIA 2016



9.6 Gaps and Unmet Needs

- Western Province has low viral load suppression and high HIV prevalence (15.9%). Test and Treat and increased VL testing may help improve viral load suppression.
- Among those who reported being previously diagnosed but not on ART, the prevalence of viral load suppression was low: 5.3% for males, and 14.8% for females. Additional analysis is needed to explain the suppression of viral load among those who report not being on ART.
- Viral load suppression was particularly low among children, aged 0-14 years (33.4%), and young adults, 15-24 years (34.3%), reflecting a need for diagnosis and effective treatment among these age groups.

10 UNAIDS 90-90-90 TARGETS

10.1 Key Findings

- **Diagnosed:** In Zambia, 71.4% of HIV-positive people aged 15-59 years report knowing their HIV status and/or had detectable ARVs in their blood (72.6% of females and 69.2% of males).
- **On Treatment:** Among people living with HIV aged 15-59 years who know their HIV status, 87.1% self-reported current use of ART and/or had detectable ARVs in their blood (86.5% of HIV-positive females and 88.2% of HIV-positive males).
- **Suppressed Viral Load:** Among people living with HIV aged 15-59 years who report currently using ART and/or had detectable ARVs in their blood, 89.2% had suppressed viral loads (90.2% of HIV-positive females and 87.7% of HIV-positive males).

10.2 Background

In order to bring the HIV epidemic under control, UNAIDS has set the ambitious target referred to as 90-90-90: By 2020, 90% of all persons living with HIV will know their HIV status; 90% of all persons with diagnosed HIV infection will receive sustained ART; and 90% of all persons receiving ART will have viral suppression.¹

The previous chapters on HIV testing and treatment provide results on coverage of HIV testing and treatment services, while VLS among all HIV-positive individuals is a measure of program impact, irrespective of knowledge of status or being on treatment. This chapter presents the status of the 90-90-90 indicators, which provide signals of HIV program performance. Awareness of HIV-positive status and treatment status among those aware of being HIV positive are indicators of access to services. Viral load suppression among those who are aware of their HIV status and on treatment not only provides an indication of access to and retention in care but also when compared to VLS among all HIV-positive individuals, provides a measure of program success. Viral load suppression among all HIV-positive individuals of 73% ($90 \times 90 \times 90$) or greater is an indication of successful testing and treatment services.

The 90-90-90 results in this chapter have been presented in two ways. First, Tables 10.3.A use only self-reported awareness and ARV status. Individuals are defined as ‘aware’ of their HIV-positive status if they self-reported a positive HIV status before being tested as part of the ZAMPHIA survey. Likewise, individuals were defined as ‘on treatment’ if they self-reported that they are taking ART. Second, Table 10.3.B measures the 90-90-90 indicators using both self-reported and ARV biomarker data. In this table, ‘aware’ and ‘on treatment’ have been adjusted such that individuals in whom ARVs were detected are classified as ‘aware’ and ‘on treatment’ even if they did not self-report. Individuals are classified as ‘aware’ of their HIV-positive status if they self-reported being HIV positive and/or had detectable ARVs in their blood. Likewise, individuals are classified as ‘on treatment’ if they self-reported that they are taking ART and/or had detectable ARVs in their blood.

It is important to note that in both cascades, individuals who have suppressed viral loads, but are not aware of their HIV-positive status or are not on ARVs, are excluded from the numerator for the third 90 (viral suppression among those who are aware and on ARVs).

10.3 Status of the UNAIDS 90-90-90 Targets

90-90-90 cascade based on self-reported awareness of HIV Status and ARV use:

Nearly two-thirds (66.1%) of HIV-positive persons aged 15-59 years reported being aware of their HIV status (68.4% of HIV-positive females and 62.3% of HIV-positive males). Among persons who were aware of their HIV status, 85.1% self-reported being on ART (84.4% of HIV-positive females and 86.2% of HIV-positive males). Among those who self-reported ART, 89.2% had suppressed viral loads (90.1% of females and 87.7% of males) (Table 10.3.A).

90-90-90 cascade based on self-reported awareness of HIV Status and ARV use and/or detectable ARVs:

When adjusted to include adults who self-reported as HIV positive and/or had detectable ARVs in their blood, the proportion of HIV-positive adults who were aware (ARV-adjusted awareness) of their HIV status was 71.4% (72.6% among females and 69.2% among males). Among HIV-positive adults who were aware of their status, 87.1% self-reported current ARV usage (ARV-adjusted treatment status) or had detectable ARVs (86.5% of females and 88.2% of males). Among HIV-positive adults with detectable ARVs (ARV-adjusted treatment status), 89.2% had suppressed viral loads (90.2% of females and 87.7% of males) (Table 10.3.B, Figure 10.3.A).

Among HIV-positive males aged 35-49 years, 77.0% reported knowledge of their HIV status or had detectable ARVs, with 88.4% of them reporting being on ART; among those, 87.3% had suppressed viral loads. In contrast, only 47.3% of HIV-positive men aged 25-34 years reported being aware of their status or ARVs were detected in their blood; of those, 75.9% reported being on ART, and among them, 90.7% had suppressed viral loads (Table 10.3.B).

Among HIV-positive women aged 35-49 years, 81.3% reported awareness of their HIV status or had detectable ARVs. In comparison, among those aged 15-24 years, only 45.3% reported knowledge of their HIV status. Of HIV-positive women aged 35-49 years, 90.2% reported being on ART or ARVs were detected in their blood, and 91.7% of those with detectable ARVs had suppressed viral loads (Table 10.3.B).

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

90-90-90 targets among people living with HIV aged 15-59 years, by sex and age, ZAMPHIA 2016

| Age | Diagnosed | | | | | |
|-------|---|--------|---|--------|---|--------|
| | Males | | Females | | Total | |
| | Percentage who self-reported HIV positive | Number | Percentage who self-reported HIV positive | Number | Percentage who self-reported HIV positive | Number |
| 15-24 | 40.6 | 53 | 40.1 | 234 | 40.2 | 287 |
| 25-34 | 40.6 | 165 | 69.4 | 522 | 60.8 | 687 |
| 35-49 | 69.8 | 401 | 76.8 | 729 | 73.8 | 1,130 |
| 15-49 | 58.9 | 619 | 67.6 | 1,485 | 64.5 | 2,104 |
| 15-59 | 62.3 | 766 | 68.4 | 1,668 | 66.1 | 2,434 |

| Age | On Treatment, among those Diagnosed | | | | | |
|-------|-------------------------------------|--------|-------------------------------------|--------|-------------------------------------|--------|
| | Males | | Females | | Total | |
| | Percentage who self-reported on ART | Number | Percentage who self-reported on ART | Number | Percentage who self-reported on ART | Number |
| 15-24 | * | 20 | 77.9 | 98 | 80.0 | 118 |
| 25-34 | 72.1 | 68 | 78.4 | 363 | 77.2 | 431 |
| 35-49 | 86.4 | 279 | 88.1 | 566 | 87.4 | 845 |
| 15-49 | 83.7 | 367 | 83.4 | 1,027 | 83.5 | 1,394 |
| 15-59 | 86.2 | 482 | 84.4 | 1,165 | 85.1 | 1,647 |

| Age | Viral Load Suppression among those On Treatment | | | | | |
|-------|---|--------|---------------------------------------|--------|---------------------------------------|--------|
| | Males | | Females | | Total | |
| | Percentage with suppressed viral load | Number | Percentage with suppressed viral load | Number | Percentage with suppressed viral load | Number |
| 15-24 | * | 17 | 78.1 | 76 | 71.3 | 93 |
| 25-34 | (90.7) | 47 | 88.3 | 289 | 88.7 | 336 |
| 35-49 | 87.7 | 240 | 91.2 | 504 | 89.8 | 744 |
| 15-49 | 85.6 | 304 | 88.9 | 869 | 87.8 | 1,173 |
| 15-59 | 87.7 | 413 | 90.1 | 996 | 89.2 | 1,409 |

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

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

Table 10.3.B Adult 90-90-90 (self-reported antiretroviral therapy (ART) status and/or laboratory antiretroviral (ARV) data; conditional percentages)

90-90-90 targets among people living with HIV age 15-59 years, by sex and age, ZAMPHIA 2016

| Age | Diagnosed ¹ | | | | | |
|-------|--|--------|---|--------|---|--------|
| | Males | | Females | | Total | |
| | Percentage who self-reported HIV positive AND/ OR with detectable ARVs | Number | Percentage who self-reported HIV positive AND/OR with detectable ARVs | Number | Percentage who self-reported HIV positive AND/OR with detectable ARVs | Number |
| 15-24 | 48.3 | 54 | 45.3 | 234 | 46.0 | 288 |
| 25-34 | 47.3 | 164 | 73.1 | 522 | 65.4 | 686 |
| 35-49 | 77.0 | 401 | 81.3 | 732 | 79.4 | 1,133 |
| 15-49 | 66.0 | 619 | 72.0 | 1,488 | 69.8 | 2,107 |
| 15-59 | 69.2 | 767 | 72.6 | 1,672 | 71.4 | 2,439 |

| Age | On Treatment ² , among those Diagnosed | | | | | |
|-------|---|--------|---|--------|---|--------|
| | Males | | Females | | Total | |
| | Percentage with detectable ARVs AND/OR who self-reported being on ART | Number | Percentage with detectable ARVs AND/OR who self-reported being on ART | Number | Percentage with detectable ARVs AND/OR who self-reported being on ART | Number |
| 15-24 | (89.2) | 25 | 81.4 | 110 | 83.3 | 135 |
| 25-34 | 75.9 | 78 | 80.8 | 383 | 79.8 | 461 |
| 35-49 | 88.4 | 306 | 90.2 | 603 | 89.4 | 909 |
| 15-49 | 86.0 | 409 | 85.8 | 1,096 | 85.8 | 1,505 |
| 15-59 | 88.2 | 535 | 86.5 | 1,242 | 87.1 | 1,777 |

| Age | Viral Load Suppression among those On Treatment ³ | | | | | |
|-------|--|--------|---------------------------------------|--------|---------------------------------------|--------|
| | Males | | Females | | Total | |
| | Percentage with suppressed viral load | Number | Percentage with suppressed viral load | Number | Percentage with suppressed viral load | Number |
| 15-24 | * | 22 | 76.9 | 89 | 72.6 | 111 |
| 25-34 | 90.7 | 57 | 88.7 | 314 | 89.1 | 371 |
| 35-49 | 87.3 | 269 | 91.7 | 549 | 89.9 | 818 |
| 15-49 | 85.9 | 348 | 89.1 | 952 | 88.0 | 1,300 |
| 15-59 | 87.7 | 469 | 90.2 | 1,087 | 89.2 | 1,556 |

¹Relates to Global AIDS Monitoring indicator (GAM) 1.1: People living with HIV who know their HIV status, and PEPFAR Indicator DIAGNOSED_NAT.

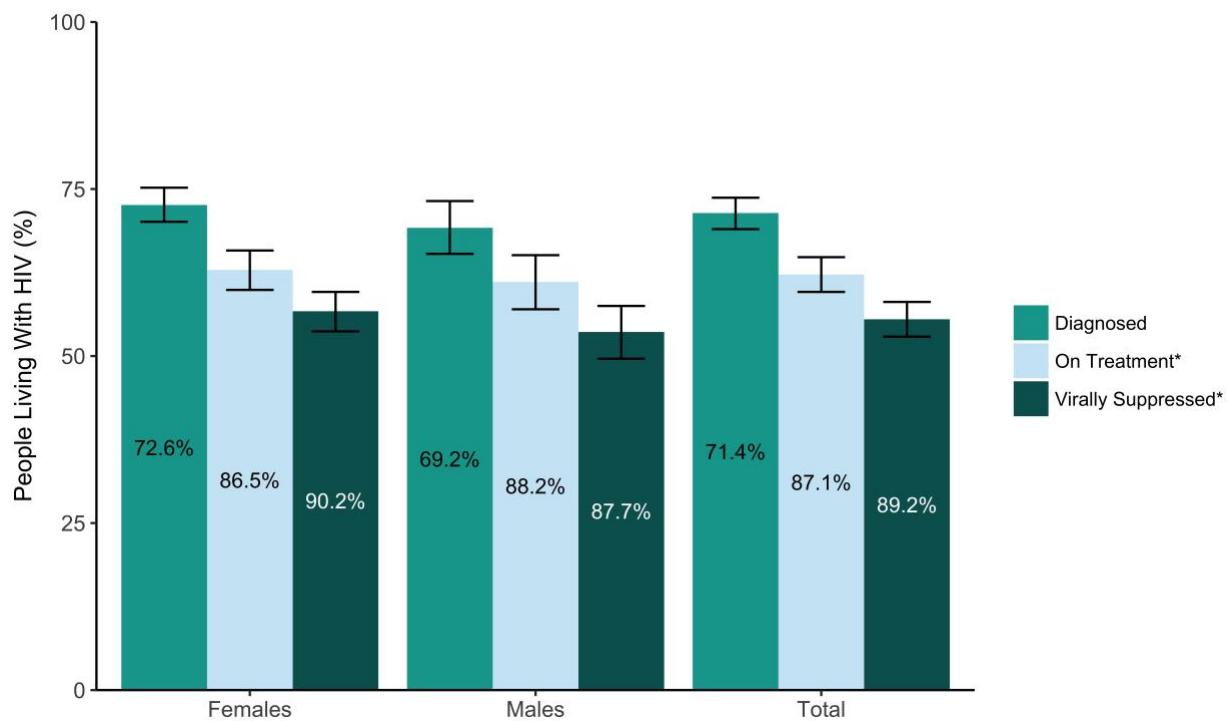
²Relates to GAM 1.2: People living with HIV on antiretroviral therapy, and PEPFAR TX_CURR_NAT / SUBNAT.

³Relates to GAM 1.4: People living with HIV who have suppressed viral loads, and PEPFAR VL_SUPPRESSION_NAT.

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

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

Figure 10.3.A Adult 90-90-90 (adjusted for laboratory antiretroviral data¹ among adults aged 15-59 years), ZAMPHIA 2016



¹In the antiretroviral (ARV)-adjusted 90-90-90 participants are classified as ‘Aware’ or ‘Diagnosed’ if they self-reported as HIV positive before testing HIV positive in ZAMPHIA and/or had detectable ARVs in their blood. Participants are classified as ‘On Treatment’ if they self-reported that they were on treatment and/or if they had detectable ARVs in their blood.

*Inset numbers are conditional proportions.

10.4 Gaps and Unmet Needs

- The major gap is in diagnosis of those individuals, especially among males and young adults, who are unaware of their HIV-positive status.
- A gap persists in the initiation of ART, especially among young adults aged 25-34 years, among whom 20% of those already diagnosed were not receiving ART based on ARV-adjusted measures.
- Although VLS is high among those on ARVs, further attention could be focused upon those who are undiagnosed and those who are not on ARVs so that additional gaps that remain continue to be addressed.

10.5 References

1. Joint United Nations Programme on HIV/AIDS. *90-90-90. An ambitious treatment target to help end the AIDS epidemic*. Geneva: UNAIDS; 2014.

http://www.unaids.org/sites/default/files/media_asset/90-90-90_en_0.pdf. Accessed December 17, 2018.

11 CLINICAL PERSPECTIVES ON PEOPLE LIVING WITH HIV

11.1 Key Findings

- The median CD4 count among all HIV-positive participants aged 15-59 years was 421 cells/ μ L. Nearly two-thirds (64.3%) of those within this age group had CD4 counts < 500 cells/ μ L. The proportion of immunosuppression (defined as CD4 count < 500 cells/ μ L) among HIV-positive persons who reported having been previously diagnosed and on ART was 59.2%, compared to 76.0% among those who reported having been previously diagnosed but not on ART.
- Prevalence of immunosuppression was 58.9% in HIV-positive females compared to 73.2% in males aged 15-59 years.
- Overall, among people newly with HIV aged 15-59 years, 45.5% had a CD4 count less than 350 cells/ μ L and 17.7% had a CD4 count less than 200 cells/ μ L.

11.2 Background

The quality of HIV care is based on key principles of accessibility, efficiency, and safety. As countries implement treatment for all people living with HIV, ensuring a sustainable health system that is people-centered and innovative requires diligent monitoring and responsiveness.¹ 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. Finally, the measurement of primary (transmitted) and secondary drug resistance allows optimization of national ART guidelines including second- and third-line therapies. ZAMPHIA, therefore, provides a unique opportunity to gauge progress in the expansion of HIV clinical services in Zambia, as well as identify gaps and future challenges.

11.3 CD4 Counts and Immunosuppression

The median CD4 count among all HIV-positive adults aged 15-59 years was 421 cells/ μ L. Nearly two-thirds (64.3%) of those within this age group were immunosuppressed (defined as CD4 count < 500 cells/ μ L). Prevalence of immunosuppression was lower in HIV-positive females (58.9%) than in males (73.2%) aged 15-59 years. Among HIV-positive participants who reported not being aware of their status (that is, not being previously diagnosed with HIV), the median CD4 count was 388 cells/ μ L. The median CD4 count was 451 cells/ μ L among those who reported being previously diagnosed and on ART, compared to 330 cells/ μ L among those who reported that they had been previously diagnosed but were not on ART (Table 11.3.A, Figure 11.3.A). Among those on ART, the median CD4 count was 397 cells/ μ L among men and 485 cells/ μ L among women (Table 11.3.A).

The proportion of immunosuppression (CD4 count of less than 500 cells/ μ L) among HIV-positive persons who reported having been previously diagnosed and on ART was 59.2%, compared to 76.0% among those who reported having been previously diagnosed but not on ART, and 69.8% among those reporting not being previously diagnosed. Among those aged 15-59 years who were previously diagnosed and on ART, approximately half (53.2%) of the females were immunosuppressed compared to 70.0% of the males. By age, the proportion of immunosuppression ranged from 53.2% among those aged 15-19 years to 73.2% among those aged 55-59 years. By province, the median CD4 count in HIV-positive persons ranged from 369 cells/ μ L for those residing in North-Western Province to 457 cells/ μ L among those residing in Luapula (Table 11.3.A).

Table 11.3.A Median CD4 count and prevalence of immunosuppression

Among HIV-positive persons aged 15-59 years, median (Q1, Q3) CD4 count and percentage with immunosuppression (< 500 cells/ μ L), by sex, self-reported diagnosis and antiretroviral therapy (ART) status, and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Males | | | Females | | | Total | | |
|---|-----------------|---------------------------------|--------|-----------------|---------------------------------|--------|-----------------|---------------------------------|--------|
| | Median (Q1, Q3) | Percentage < 500 cells/ μ L | Number | Median (Q1, Q3) | Percentage < 500 cells/ μ L | Number | Median (Q1, Q3) | Percentage < 500 cells/ μ L | Number |
| Self-reported diagnosis and treatment status | | | | | | | | | |
| Not previously diagnosed | 360 (223, 501) | 74.8 | 274 | 414 (276, 569) | 66.2 | 499 | 388 (254, 539) | 69.8 | 773 |
| Previously diagnosed, not on ART | 248 (142, 412) | 88.1 | 68 | 365 (257, 525) | 70.2 | 168 | 330 (213, 488) | 76.0 | 236 |
| Previously diagnosed, on ART | 397 (260, 529) | 70.0 | 411 | 485 (345, 666) | 53.2 | 993 | 451 (303, 615) | 59.2 | 1,404 |
| Missing | * | * | 13 | * | * | 20 | 464 (290, 618) | (54.6) | 33 |
| Residence | | | | | | | | | |
| Urban | 368 (227, 509) | 72.7 | 403 | 450 (303, 614) | 59.8 | 1,004 | 423 (277, 574) | 64.5 | 1,407 |
| Rural | 364 (240, 511) | 73.8 | 363 | 449 (302, 645) | 57.8 | 676 | 418 (273, 581) | 64.0 | 1,039 |
| Province | | | | | | | | | |
| Central | 326 (246, 450) | 83.8 | 69 | 432 (274, 616) | 60.7 | 159 | 377 (267, 545) | 68.8 | 228 |
| Copperbelt | 382 (242, 540) | 68.3 | 153 | 444 (315, 616) | 59.4 | 353 | 418 (279, 580) | 62.6 | 506 |
| Eastern | 445 (247, 554) | (63.4) | 45 | 440 (308, 615) | 60.4 | 129 | 441 (286, 593) | 61.3 | 174 |
| Luapula | 318 (207, 559) | (69.0) | 32 | 475 (332, 716) | 56.0 | 69 | 457 (277, 631) | 60.8 | 101 |
| Lusaka | 381 (228, 511) | 71.3 | 167 | 465 (318, 628) | 57.3 | 414 | 435 (279, 578) | 62.7 | 581 |
| Muchinga | 308 (189, 453) | (82.4) | 27 | 470 (327, 596) | 55.4 | 80 | 437 (277, 575) | 63.4 | 107 |
| Northern | 427 (206, 536) | 66.7 | 54 | 376 (280, 611) | 60.5 | 91 | 399 (263, 583) | 63.0 | 145 |
| North-Western | 335 (202, 472) | (82.4) | 38 | 387 (265, 567) | 68.4 | 97 | 369 (238, 523) | 73.1 | 135 |
| Southern | 355 (238, 488) | 76.8 | 123 | 479 (324, 633) | 54.1 | 186 | 413 (274, 560) | 64.3 | 309 |
| Western | 338 (169, 442) | 81.8 | 58 | 416 (274, 671) | 65.2 | 102 | 378 (235, 537) | 71.8 | 160 |
| Marital status | | | | | | | | | |
| Never married | 425 (285, 576) | 65.7 | 85 | 438 (298, 616) | 60.9 | 236 | 431 (293, 612) | 62.5 | 321 |
| Married or living together | 362 (227, 508) | 73.1 | 574 | 471 (324, 642) | 55.3 | 861 | 427 (277, 573) | 63.6 | 1,435 |
| Divorced or separated | 342 (220, 474) | 79.2 | 77 | 420 (282, 562) | 65.6 | 315 | 402 (269, 544) | 69.0 | 392 |
| Widowed | 259 (170, 467) | (82.5) | 28 | 424 (270, 657) | 60.8 | 262 | 413 (253, 635) | 63.4 | 290 |
| Education | | | | | | | | | |
| No education | * | * | 20 | 417 (299, 561) | 67.4 | 88 | 417 (279, 539) | 69.5 | 108 |
| Primary | 364 (230, 526) | 70.8 | 263 | 452 (301, 646) | 57.6 | 768 | 432 (280, 607) | 61.7 | 1,031 |
| Secondary | 370 (240, 508) | 73.5 | 390 | 452 (301, 616) | 59.4 | 699 | 417 (274, 562) | 65.4 | 1,089 |
| More than secondary | 344 (221, 486) | 78.5 | 92 | 471 (343, 619) | 58.0 | 125 | 410 (254, 552) | 68.4 | 217 |
| Wealth quintile | | | | | | | | | |
| Lowest | 294 (175, 491) | 75.2 | 80 | 407 (264, 623) | 58.1 | 161 | 363 (226, 562) | 64.5 | 241 |
| Second | 371 (262, 522) | 72.5 | 111 | 448 (303, 652) | 58.8 | 191 | 429 (280, 604) | 64.4 | 302 |
| Middle | 369 (208, 485) | 77.4 | 160 | 445 (296, 624) | 58.6 | 360 | 416 (273, 569) | 65.3 | 520 |
| Fourth | 362 (247, 500) | 74.9 | 201 | 442 (297, 609) | 59.2 | 474 | 414 (274, 569) | 65.0 | 675 |
| Highest | 396 (234, 532) | 69.4 | 208 | 462 (333, 628) | 59.4 | 486 | 437 (290, 583) | 63.2 | 694 |
| Age | | | | | | | | | |
| 15-19 | * | * | 23 | 475 (345, 629) | 56.4 | 65 | 492 (345, 655) | 53.2 | 88 |
| 20-24 | 381 (270, 459) | (79.6) | 27 | 475 (320, 665) | 54.1 | 169 | 449 (314, 620) | 58.8 | 196 |
| 25-29 | 383 (247, 543) | 64.9 | 57 | 475 (307, 662) | 54.2 | 223 | 456 (289, 630) | 57.1 | 280 |
| 30-34 | 330 (205, 466) | 78.2 | 106 | 444 (296, 612) | 58.2 | 301 | 401 (249, 559) | 64.5 | 407 |
| 35-39 | 357 (217, 488) | 75.8 | 116 | 439 (302, 574) | 62.7 | 286 | 412 (276, 536) | 67.5 | 402 |
| 40-44 | 382 (210, 531) | 67.7 | 162 | 457 (284, 622) | 58.0 | 292 | 425 (249, 574) | 62.3 | 454 |
| 45-49 | 351 (227, 471) | 78.8 | 125 | 428 (291, 624) | 64.4 | 159 | 400 (269, 548) | 71.5 | 284 |
| 50-54 | 326 (259, 489) | 76.2 | 97 | 427 (307, 606) | 59.2 | 117 | 394 (280, 560) | 68.2 | 214 |
| 55-59 | 352 (225, 474) | 77.3 | 53 | 400 (269, 596) | 69.6 | 68 | 384 (250, 555) | 73.2 | 121 |
| Total 15-24 | 437 (311, 604) | 63.7 | 50 | 476 (337, 654) | 54.8 | 234 | 458 (331, 643) | 56.8 | 284 |
| Total 15-49 | 372 (228, 512) | 72.5 | 616 | 453 (303, 629) | 58.4 | 1,495 | 429 (276, 578) | 63.4 | 2,111 |
| Total 15-59 | 365 (231, 510) | 73.2 | 766 | 450 (303, 623) | 58.9 | 1,680 | 421 (275, 576) | 64.3 | 2,446 |

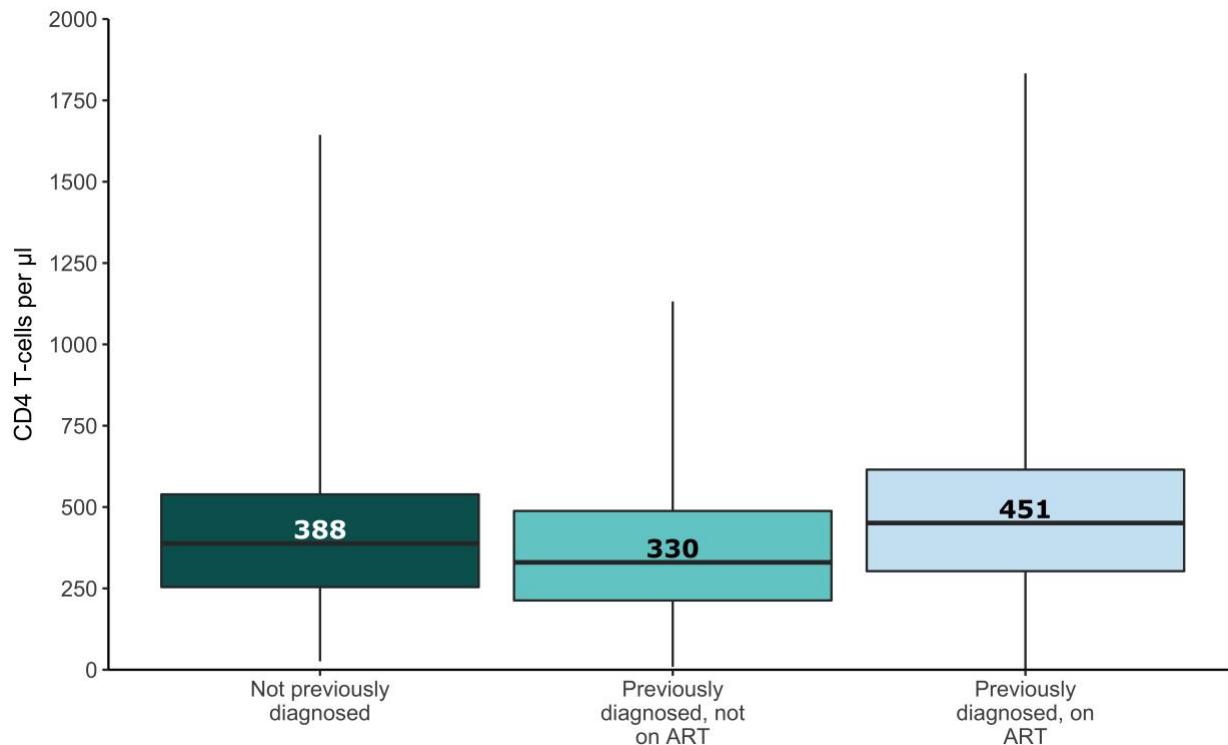
Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

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

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

The interquartile range (IQR) is a measure of variability, based on dividing a data set into quartiles. Quartiles divide a rank-ordered data set into four equal parts. The values that divide each part are called the first, second, and third quartiles; and they are denoted by Q1, Q2, and Q3, respectively.

Figure 11.3.A CD4 count distribution among HIV-positive adults aged 15-59 years, by antiretroviral therapy status, ZAMPHIA 2016



11.4 Late HIV Diagnosis

Late HIV diagnosis can be assessed by considering the CD4 counts among persons discovered to be HIV positive at the time of the survey but who had reported themselves to be HIV negative during the interview portion of the survey (that is, they self-reported as HIV negative and had no detectable antiretrovirals). Overall, among these people newly diagnosed with HIV aged 15-59 years, 45.5% had a CD4 count less than 350 cells/µL and 17.7% had a CD4 count less than 200 cells/µL. There were no notable differences between urban and rural areas or by education level. (Table 11.4.A)

Table 11.4.A Late HIV diagnosis

Among persons aged 15-59 years who tested HIV positive in the PHIA survey but self-reported as HIV negative and with no detectable antiretrovirals, percentage who had a CD4 cell count < 200 cells/ μL^1 and < 350 cells/ μL^1 , by sex and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Males | | | Females | | | Total | | |
|----------------------------|---|---|--------|---|---|--------|---|---|--------|
| | Percentage < 200 cells/ μL^1 | Percentage < 350 cells/ μL^1 | Number | Percentage < 200 cells/ μL^1 | Percentage < 350 cells/ μL^1 | Number | Percentage < 200 cells/ μL^1 | Percentage < 350 cells/ μL^1 | Number |
| Residence | | | | | | | | | |
| Urban | 23.4 | 51.5 | 103 | 14.0 | 41.6 | 228 | 17.5 | 45.3 | 331 |
| Rural | 22.4 | 48.6 | 119 | 14.6 | 43.6 | 198 | 17.9 | 45.7 | 317 |
| Province | | | | | | | | | |
| Central | * | * | 21 | (15.8) | (35.2) | 40 | 13.9 | 38.6 | 61 |
| Copperbelt | (21.7) | (54.7) | 42 | 13.3 | 47.4 | 87 | 16.4 | 50.1 | 129 |
| Eastern | * | * | 11 | * | * | 23 | (12.5) | (42.9) | 34 |
| Luapula | * | * | 15 | * | * | 22 | (14.0) | (47.6) | 37 |
| Lusaka | (29.0) | (53.8) | 39 | 14.4 | 35.5 | 101 | 19.6 | 42.0 | 140 |
| Muchinga | * | * | 7 | (11.2) | (44.0) | 27 | (20.1) | (53.7) | 34 |
| Northern | * | * | 18 | (21.3) | (59.9) | 27 | (20.2) | (53.6) | 45 |
| North-Western | * | * | 15 | (16.6) | (60.7) | 28 | (14.9) | (45.4) | 43 |
| Southern | (24.8) | (46.4) | 32 | (8.5) | (42.8) | 34 | 17.4 | 44.8 | 66 |
| Western | * | * | 22 | (18.5) | (38.8) | 37 | 23.4 | 44.5 | 59 |
| Marital status | | | | | | | | | |
| Never married | (11.7) | (37.5) | 42 | 9.0 | 32.3 | 100 | 9.9 | 34.1 | 142 |
| Married or living together | 25.6 | 51.9 | 151 | 12.9 | 45.3 | 185 | 19.3 | 48.6 | 336 |
| Divorced or separated | * | * | 24 | 16.3 | 41.0 | 96 | 19.0 | 46.8 | 120 |
| Widowed | * | * | 5 | (29.1) | (58.7) | 44 | (28.7) | (56.6) | 49 |
| Education | | | | | | | | | |
| No education | * | * | 4 | * | * | 17 | * | * | 21 |
| Primary | 26.0 | 54.0 | 88 | 15.3 | 44.6 | 203 | 19.0 | 47.8 | 291 |
| Secondary | 21.9 | 46.8 | 114 | 13.3 | 38.3 | 182 | 17.2 | 42.1 | 296 |
| More than secondary | * | * | 15 | * | * | 24 | (16.2) | (51.4) | 39 |
| Wealth quintile | | | | | | | | | |
| Lowest | (24.0) | (64.3) | 32 | (15.6) | (45.4) | 47 | 19.4 | 53.8 | 79 |
| Second | (13.2) | (38.7) | 36 | 13.4 | 40.0 | 57 | 13.3 | 39.4 | 93 |
| Middle | (36.4) | (49.8) | 48 | 12.2 | 40.8 | 102 | 20.9 | 44.1 | 150 |
| Fourth | 18.1 | 51.6 | 63 | 15.7 | 42.7 | 124 | 16.7 | 46.5 | 187 |
| Highest | (25.6) | (49.8) | 41 | 14.4 | 44.2 | 96 | 18.2 | 46.1 | 137 |
| Age | | | | | | | | | |
| 15-19 | * | * | 9 | (4.6) | (29.3) | 44 | 5.9 | 27.3 | 53 |
| 20-24 | * | * | 16 | 2.8 | 25.9 | 79 | 3.8 | 30.3 | 95 |
| 25-29 | (17.3) | (48.5) | 32 | 6.3 | 40.7 | 64 | 10.9 | 44.0 | 96 |
| 30-34 | 30.6 | 55.5 | 52 | 17.0 | 47.9 | 73 | 23.5 | 51.6 | 125 |
| 35-39 | (7.3) | (38.9) | 40 | (41.0) | (63.0) | 48 | 23.3 | 50.4 | 88 |
| 40-44 | (26.4) | (52.5) | 29 | (27.4) | (55.3) | 45 | 27.0 | 54.0 | 74 |
| 45-49 | * | * | 23 | (14.2) | (47.0) | 35 | 27.6 | 55.0 | 58 |
| 50-54 | * | * | 12 | * | * | 24 | (10.2) | (52.7) | 36 |
| 55-59 | * | * | 9 | * | * | 14 | * | * | 23 |
| Total 15-24 | (8.9) | (36.1) | 25 | 3.5 | 27.2 | 123 | 4.6 | 29.1 | 148 |
| Total 15-49 | 21.6 | 49.0 | 201 | 14.1 | 42.0 | 388 | 17.1 | 44.8 | 589 |
| Total 15-59 | 22.9 | 50.0 | 222 | 14.3 | 42.5 | 426 | 17.7 | 45.5 | 648 |

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

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

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

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

11.5 Retention on Antiretroviral Therapy

Tables 11.5.A and 11.5.B provide the percentages of HIV-positive persons who are still on treatment among those who say they had initiated ART less than 12 months (Table 11.5.A) and 12 months or longer (Table 11.5.B) before the survey. Among people living with HIV aged 15-59 years who initiated ART less than 12 months prior to the survey, 98.9% (100% of men and 98.1% of women) reported that they were still taking ART at the time of the survey (Table 11.5.A). Among those aged 15-59 year who initiated ART 12 months or more prior to the survey, 97.9 reported that they were still taking ART at the

time of the survey. This was similar between men and women (98.7% and 97.6% respectively) (Table 11.5.B). There was little variation by socio-demographic characteristics aside from marital status.

Table 11.5.A Retention on antiretroviral therapy (ART): People initiating antiretroviral therapy less than 12 months prior to the survey

Among HIV-positive persons aged 15-59 years who reported initiating ART less than 12 months prior to the survey, percentage who reported still receiving ART, by sex and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Males | | Females | | Total | |
|--|--|--------|--|--------|--|--------|
| | Percentage still receiving ART ¹ | Number | Percentage still receiving ART ¹ | Number | Percentage still receiving ART ¹ | Number |
| Presence of detectable ARVs² | | | | | | |
| Detectable | 100.0 | 79 | 99.1 | 162 | 99.4 | 241 |
| Not detectable | * | 6 | * | 11 | * | 17 |
| Residence | | | | | | |
| Urban | (100.0) | 48 | 98.5 | 106 | 99.1 | 154 |
| Rural | (100.0) | 37 | 97.5 | 68 | 98.5 | 105 |
| Province | | | | | | |
| Central | * | 11 | * | 17 | (100.0) | 28 |
| Copperbelt | (100.0) | 25 | (97.4) | 35 | 98.7 | 60 |
| Eastern | * | 0 | * | 14 | * | 14 |
| Luapula | * | 3 | * | 4 | * | 7 |
| Lusaka | * | 14 | (98.0) | 45 | 98.7 | 59 |
| Muchinga | * | 7 | * | 7 | * | 14 |
| Northern | * | 6 | * | 10 | * | 16 |
| North-Western | * | 4 | * | 9 | * | 13 |
| Southern | * | 9 | * | 24 | (100.0) | 33 |
| Western | * | 6 | * | 9 | * | 15 |
| Marital status | | | | | | |
| Never married | * | 8 | (100.0) | 28 | (100.0) | 36 |
| Married or living together | 100.0 | 63 | 97.4 | 95 | 98.6 | 158 |
| Divorced or separated | * | 11 | (100.0) | 28 | (100.0) | 39 |
| Widowed | * | 2 | * | 21 | * | 23 |
| Education | | | | | | |
| No education | * | 3 | * | 11 | * | 14 |
| Primary | * | 23 | 97.4 | 71 | 98.2 | 94 |
| Secondary | 100.0 | 51 | 98.9 | 78 | 99.4 | 129 |
| More than secondary | * | 8 | * | 14 | * | 22 |
| Wealth quintile | | | | | | |
| Lowest | * | 7 | * | 15 | * | 22 |
| Second | * | 14 | * | 20 | (100.0) | 34 |
| Middle | * | 14 | (97.3) | 35 | (98.3) | 49 |
| Fourth | (100.0) | 29 | 96.9 | 57 | 98.1 | 86 |
| Highest | * | 21 | (98.7) | 46 | 99.2 | 67 |
| Age | | | | | | |
| 15-19 | * | 0 | * | 5 | * | 5 |
| 20-24 | * | 2 | * | 20 | * | 22 |
| 25-29 | * | 9 | (98.5) | 38 | (98.8) | 47 |
| 30-34 | * | 9 | (97.3) | 32 | (98.0) | 41 |
| 35-39 | * | 18 | (97.1) | 31 | (98.4) | 49 |
| 40-44 | * | 24 | * | 22 | (100.0) | 46 |
| 45-49 | * | 15 | * | 17 | (100.0) | 32 |
| 50-54 | * | 6 | * | 5 | * | 11 |
| 55-59 | * | 2 | * | 4 | * | 6 |
| Total 15-24 | * | 2 | (96.5) | 25 | (97.0) | 27 |
| Total 15-49 | 100.0 | 77 | 98.0 | 165 | 98.8 | 242 |
| Total 15-59 | 100.0 | 85 | 98.1 | 174 | 98.9 | 259 |

¹Relates to Global AIDS Monitoring indicator 1.3: Retention on antiretroviral therapy at 12 months; ²Antiretroviral (ARV) detection assay included only atazanavir, efavirenz, and lopinavir. Participants who reported antiretroviral therapy use and/or had undetectable viral load but had no evidence of the first three ARVs were tested for nevirapine as well.

Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution; an asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable

Table 11.5.B Retention on antiretroviral therapy (ART): People initiating antiretroviral therapy more than 12 months prior to the survey

Among HIV-positive persons aged 15-59 years who self-reported initiating ART 12 months or more prior to the survey, percentage who self-reported still receiving ART, by sex and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Males | | Females | | Total | |
|--|--|--------|--|--------|--|--------|
| | Percentage still receiving ART ¹ | Number | Percentage still receiving ART ¹ | Number | Percentage still receiving ART ¹ | Number |
| Presence of detectable ARVs² | | | | | | |
| Detectable | 99.7 | 308 | 100.0 | 771 | 99.9 | 1,079 |
| Not detectable | * | 12 | 67.1 | 59 | 67.8 | 71 |
| Residence | | | | | | |
| Urban | 99.4 | 182 | 97.1 | 523 | 97.9 | 705 |
| Rural | 97.6 | 144 | 98.3 | 314 | 98.1 | 458 |
| Province | | | | | | |
| Central | (87.1) | 25 | 98.6 | 81 | 95.4 | 106 |
| Copperbelt | 100.0 | 58 | 98.3 | 177 | 98.8 | 235 |
| Eastern | (100.0) | 31 | 96.9 | 63 | 98.0 | 94 |
| Luapula | * | 8 | (95.1) | 33 | (96.2) | 41 |
| Lusaka | 99.2 | 90 | 97.6 | 208 | 98.3 | 298 |
| Muchinga | * | 9 | (96.5) | 37 | (97.3) | 46 |
| Northern | * | 17 | (96.3) | 37 | 97.6 | 54 |
| North-Western | * | 13 | (97.8) | 43 | 98.5 | 56 |
| Southern | 100.0 | 55 | 98.3 | 111 | 98.9 | 166 |
| Western | * | 20 | (95.4) | 47 | 97.0 | 67 |
| Marital status | | | | | | |
| Never married | * | 19 | 98.4 | 71 | 98.9 | 90 |
| Married or living together | 99.1 | 263 | 97.3 | 469 | 98.1 | 732 |
| Divorced or separated | (100.0) | 25 | 97.0 | 142 | 97.6 | 167 |
| Widowed | * | 18 | 98.3 | 154 | 97.1 | 172 |
| Education | | | | | | |
| No education | * | 9 | (89.6) | 48 | 89.0 | 57 |
| Primary | 100.0 | 106 | 99.2 | 384 | 99.4 | 490 |
| Secondary | 98.0 | 157 | 96.9 | 342 | 97.3 | 499 |
| More than secondary | 100.0 | 54 | 98.0 | 63 | 99.1 | 117 |
| Wealth quintile | | | | | | |
| Lowest | (100) | 26 | 97.3 | 70 | 98.1 | 96 |
| Second | (95.1) | 46 | 96.8 | 91 | 96.1 | 137 |
| Middle | 97.7 | 63 | 99.2 | 178 | 98.8 | 241 |
| Fourth | 98.8 | 71 | 94.5 | 219 | 95.8 | 290 |
| Highest | 100.0 | 116 | 99.2 | 274 | 99.5 | 390 |
| Age | | | | | | |
| 15-19 | * | 6 | * | 10 | * | 16 |
| 20-24 | * | 6 | (91.5) | 42 | (93.2) | 48 |
| 25-29 | * | 6 | 97.6 | 83 | 96.1 | 89 |
| 30-34 | * | 22 | 94.3 | 143 | 94.5 | 165 |
| 35-39 | (100.0) | 36 | 97.7 | 161 | 98.3 | 197 |
| 40-44 | 100.0 | 75 | 99.4 | 190 | 99.6 | 265 |
| 45-49 | 98.7 | 73 | 100.0 | 90 | 99.3 | 163 |
| 50-54 | 98.5 | 67 | 98.6 | 74 | 98.6 | 141 |
| 55-59 | (100.0) | 35 | (100.0) | 44 | 100.0 | 79 |
| Total 15-24 | * | 12 | 93.3 | 52 | 95.0 | 64 |
| Total 15-49 | 98.5 | 224 | 97.3 | 719 | 97.7 | 943 |
| Total 15-59 | 98.7 | 326 | 97.6 | 837 | 97.9 | 1,163 |

¹Relates to Global AIDS Monitoring indicator 1.3: Retention on antiretroviral therapy at 12 months; ²Antiretroviral detection assay included only atazanavir, efavirenz, and lopinavir. Participants who reported antiretroviral therapy use and/or had undetectable viral load but had no evidence of the first three ARVs were tested for nevirapine as well.

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

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

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

11.6 Transmitted Resistance to Antiretroviral Therapy

As indicated in section 1.3 the objective of ZAMPHIA was to estimate the prevalence of resistance to ARVs, using samples from HIV-positive participants who were identified as recent HIV infections using the Recent Infection Testing Algorithm (Figure 2.5.A).

Among 38 successfully amplified samples from recently infected HIV-positive adults identified in ZAMPHIA, four (10.5%) had evidence of resistance to ARVs. Three had mutations associated with resistance to non-nucleoside reverse transcriptase inhibitors (NNRTI) only, one had mutations associated with resistance to nucleoside reverse transcriptase inhibitors (NRTI) only (Table 11.6.A).

Table 11.6.A Resistance to antiretrovirals

Among persons aged 15-59 years who were recently infected with HIV, percentage with resistance to antiretrovirals, by class of ARV, ZAMPHIA 2016

| | Percent | Number | DR Mutations Detected ¹ |
|-------------------------------------|---------|--------|------------------------------------|
| Successfully amplified ² | (92.7) | 38 | |
| Any | * | 4 | G190A, K103N, K65KR |
| NRTI | * | 1 | K65KR |
| NNRTI | * | 3 | G190A,K103N |
| PI | * | 0 | |
| NRTI & NNRTI | * | 0 | |
| NRTI, NNRTI & PI | * | 0 | |

¹Based on Stanford Database for HIV Drug Resistance Mutation. <https://hivdb.stanford.edu/assets/media/resistance-mutation-handout-Dec2017.b8f72e32.pdf>

²Unweighted figures, from a total of 38 cases.

NRTI: Nucleoside Reverse Transcriptase Inhibitors; NNRTI: Non-Nucleoside Reverse Transcriptase Inhibitors; PI: Protease inhibitor

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

* Commonly used ARVs by class include: NNRTIs nevirapine (NVP) and efavirenz (EFV); NRTIs tenofovir (TDF), lamivudine (3TC), zidovudine (AZT), emtricitabine (FTC) and PIs lopinavir/ritonavir (LPV/r) and atazanavir (ATV).

Table 11.6.B shows the distribution of HIV-subtypes among HIV-positive adults who underwent HIV genotyping. Of the 141 adults living with HIV who underwent HIV genotyping, 135 (95.7% were infected with subtype C; 5 were infected with a recombinant subtype; 1 was infected with subtype A. No one sampled presented with subtypes B, D, or G.

Table 11.6.B HIV Subtype

Percent distribution of HIV-positive persons age 15-59 years that that underwent genotyping, by HIV Subtype, ZAMPHIA 2016

| | Total | |
|--------------------|---------|--------|
| | Percent | Number |
| Subtype A | * | 1 |
| Subtype B | 0 | 0 |
| Subtype C | 95.7 | 135 |
| Subtype D | 0 | 0 |
| Subtype G | 0 | 0 |
| Recombinant | * | 5 |
| Total | 100.0 | 141 |
| Unweighted figures | | |

11.7 Viral Load Suppression and Severe Immunosuppression

Among HIV-positive adults aged 15-59 years, those who reported ART use had high levels of VLS irrespective of the reported duration of therapy, however, with very different percentages of VLS among those who reported ART use versus those who were not on ART; 90.5% VLS for those on ART for 12 months or more, 84.7% among those on ART for less than 12 months and 19.1% VLS for those not on ART. In contrast, the prevalence of severe immunosuppression (CD4 count less than 200 cells/ μ L) was quite similar for those on 12 months or less of ART use (16.9%) and those who self-reported not using ART (17.5%) as compared to adults on 12 months or more of ART use (10.2%) (Table 11.7.A).

Table 11.7.A Viral load suppression and severe immunosuppression

Among HIV-positive persons aged 15–59 years, percentage with viral load suppression (< 1,000 copies/mL) and percentage with severe immunosuppression (CD4 count < 200 cells/ μ L) by self-reported antiretroviral therapy (ART) status, by selected demographic characteristics, ZAMPHIA 2016 15–59 years, percentage with viral load suppression (< 1,000 copies/mL) and percentage with severe immunosuppression (CD4 count < 200 cells/ μ L) by ART status, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | On ART \geq 12 months | | On ART < 12 months | | Not on ART | | | On ART \geq 12 months | | On ART < 12 months | | Not on ART | | |
|--------------------|-----------------------------|--------------|-----------------------------|------------|-----------------------------|------------|--------------------|-------------------------------|--------------|-------------------------------|------------|-------------------------------|--------------|--------------------|
| | With viral load suppression | Number | With viral load suppression | Number | With viral load suppression | Number | Total ¹ | With severe immunosuppression | Number | With severe immunosuppression | Number | With severe immunosuppression | Number | Total ² |
| Sex | | | | | | | | | | | | | | |
| Male | 90.9 | 316 | 78.0 | 82 | 20.1 | 342 | 740 | 14.4 | 320 | 27.3 | 85 | 23.4 | 342 | 747 |
| Female | 90.3 | 806 | 89.0 | 167 | 18.5 | 655 | 1,628 | 7.9 | 817 | 10.1 | 169 | 13.7 | 667 | 1,653 |
| Residence | | | | | | | | | | | | | | |
| Urban | 89.2 | 681 | 86.7 | 150 | 20.4 | 532 | 1,363 | 11.0 | 690 | 13.8 | 152 | 16.4 | 535 | 1,377 |
| Rural | 92.6 | 441 | 81.5 | 99 | 17.7 | 465 | 1,005 | 8.7 | 447 | 21.8 | 102 | 18.7 | 474 | 1,023 |
| Age | | | | | | | | | | | | | | |
| 15–24 | 74.2 | 58 | (61.6) | 26 | 16.2 | 192 | 276 | 16.5 | 60 | (7.7) | 25 | 6.2 | 189 | 274 |
| 25–59 | 91.5 | 1,064 | 87.4 | 223 | 19.9 | 805 | 2,092 | 9.7 | 1,077 | 17.9 | 229 | 20.3 | 820 | 2,126 |
| Total 15–59 | 90.5 | 1,122 | 84.7 | 249 | 19.1 | 997 | 2,368 | 10.2 | 1,137 | 16.9 | 254 | 17.5 | 1,009 | 2,400 |

¹ Number of HIV+ who had viral load values.

² Number of HIV+ who had CD4 values.

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

11.8 Gaps and Unmet Needs

- Late diagnosis, or CD4 counts less than 350 cells/ μL among adults at the time of HIV diagnosis, is common (45.5%) particularly among HIV-positive people aged 30-49 years. In order to achieve epidemic control, there is a need to reach this high-risk population of undiagnosed people living with HIV.
- In light of the findings of high prevalence of late diagnosis, especially among men, several policies and guidelines are in place to address this gap in HIV diagnosis and treatment.
 - The National ART Guidelines (2018) promotes the use of index testing and other modalities to improve early case identification. The guidelines also present guidance on enhanced screening and the use of prophylaxis for opportunistic infections among patients presenting with severe immunosuppression defined as CD4 count <100 cells/ μl . This is a response to late diagnosis.
 - In 2017, the Government of the Republic of Zambia implemented universal routine provider-initiated testing during all patient interactions with the healthcare system. A remaining gap is the measurement of HIV-associated mortality, particularly as it relates to late diagnosis and non-adherence to treatment regimens.
- Upcoming drug resistance studies will shed more light on primary and secondary drug resistance in the country.

11.9 References

1. World Health Organization. *Consolidated guidelines on the use of antiretroviral drugs for treating and preventing HIV infection*. Geneva: World Health Organization; 2016.
[Http://www.who.int/hiv/pub/arv/arv-2016/en/](http://www.who.int/hiv/pub/arv/arv-2016/en/). Accessed December 17, 2018.

12 PREVENTION OF MOTHER-TO-CHILD TRANSMISSION

12.1 Key Findings

- In Zambia, 99.0% of women aged 15-49 years who delivered in the three years preceding the survey, attended at least one ANC visit for their most recent birth.
- Prevention of mother-to-child transmission: Among women aged 15-49 years who delivered in the 12 months preceding the survey, 93.1% knew their HIV status; while 98.9% of HIV-positive women who gave birth in the 12 months preceding the survey received ARVs.
- Among infants born in the previous 17 months to HIV-positive mothers who reported ever breastfeeding, 9.3% were confirmed to be HIV positive.

12.2 Background

Pregnant women living with HIV are at high risk of transmitting HIV to their infants during pregnancy, during labor and delivery, or through breastfeeding. Over 90% of new infections among infants and young children occur through mother-to-child transmission. Without any interventions, between 20% and 45% of infants may become infected, with an estimated risk of 5-10% during pregnancy, 10-20% during labor and delivery, and 5-20% through breastfeeding.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 mother-to-child transmission.²

To prevent MTCT, the United Nations recommends a comprehensive four-pronged approach including: (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.²

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

12.3 Antenatal Care Attendance

Almost all (99.0%) women aged 15-49 years who delivered in the three years preceding the survey, attended at least one ANC visit for their most recent birth. Attending at least one ANC visit is almost universal, regardless of urban/rural residence, province, marital status, education, and age (Table 12.3.A Antenatal care).

Table 12.3.A Antenatal care

Among women aged 15-49 years who delivered in the three years preceding the survey, percentage who attended at least one antenatal care visit for her most recent birth, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Percentage who attended at least one antenatal visit | Number |
|----------------------------|--|--------|
| Residence | | |
| Urban | 99.5 | 1,540 |
| Rural | 98.8 | 2,624 |
| Province | | |
| Central | 98.9 | 350 |
| Copperbelt | 99.1 | 641 |
| Eastern | 99.3 | 401 |
| Luapula | 98.3 | 262 |
| Lusaka | 99.4 | 589 |
| Muchinga | 97.2 | 462 |
| Northern | 99.7 | 368 |
| North-Western | 99.8 | 389 |
| Southern | 99.6 | 458 |
| Western | 98.0 | 244 |
| Marital status | | |
| Never married | 98.9 | 512 |
| Married or living together | 99.1 | 3,260 |
| Divorced or separated | 98.4 | 314 |
| Widowed | 98.5 | 69 |
| Education | | |
| No education | 97.8 | 296 |
| Primary | 98.7 | 2,153 |
| Secondary | 99.6 | 1,505 |
| More than secondary | 100.0 | 209 |
| Wealth quintile | | |
| Lowest | 98.0 | 879 |
| Second | 98.8 | 910 |
| Middle | 99.5 | 857 |
| Fourth | 99.5 | 834 |
| Highest | 99.4 | 668 |
| Age | | |
| 15-19 | 99.2 | 439 |
| 20-24 | 99.3 | 1,152 |
| 25-29 | 99.1 | 976 |
| 30-34 | 98.6 | 808 |
| 35-39 | 98.9 | 508 |
| 40-44 | 98.9 | 234 |
| 45-49 | (100.0) | 47 |
| Total 15-24 | 99.2 | 1,591 |
| Total 15-49 | 99.0 | 4,164 |

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

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

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

12.4 Breastfeeding

More than half (59.0%) of women aged 15-49 years who gave birth during the three years preceding the survey were breastfeeding their last-born child at the time of the survey. Over 90% were currently breastfeeding their last-born children younger than the age of 12 months. Current breastfeeding decreased to 81.6% among last born children aged 12-17 months and to 32.9% among last-born children aged 18-23 months. Among last-born children over 2 years of age (24-36 months), only 6.2% were currently breastfed.

For children last-born to women aged 15-49 years in the three years preceding the survey, less than half (44.9%) of HIV-positive women were breastfeeding at the time of the survey, compared to 60.2% of HIV-negative women. Among HIV-positive women, 5.5% had never breastfed their last-born child, as compared to 0.6% of HIV-negative women (Table 12.4.A).

Table 12.4.A Breastfeeding status by child's age and mother's HIV status

Percent distribution of last-born children born to women aged 15-49 years in the three years preceding the survey by breastfeeding status, by child's age and mother's HIV status, ZAMPHIA 2016

| Characteristic | Never breastfed | Ever breastfed, but not currently breastfeeding | Currently breast-feeding | Total | Number |
|--|-----------------|---|--------------------------|-------|--------|
| Child's age (months) | | | | | |
| 0-1 | 0.5 | 0.0 | 99.5 | 100.0 | 238 |
| 2-3 | 0.9 | 0.4 | 98.7 | 100.0 | 265 |
| 4-5 | 0.4 | 1.3 | 98.3 | 100.0 | 231 |
| 6-8 | 0.0 | 2.9 | 97.1 | 100.0 | 418 |
| 9-11 | 1.6 | 4.0 | 94.3 | 100.0 | 401 |
| 12-17 | 1.2 | 16.0 | 82.8 | 100.0 | 725 |
| 18-23 | 1.4 | 65.2 | 33.3 | 100.0 | 719 |
| 24-36 | 1.5 | 92.2 | 6.3 | 100.0 | 1,091 |
| Result of mother's PHIA survey HIV test | | | | | |
| HIV positive | 5.7 | 47.9 | 47.9 | 100.0 | 405 |
| HIV negative | 0.6 | 38.6 | 38.6 | 100.0 | 3,306 |
| Not tested | 0.5 | 34.0 | 34.0 | 100.0 | 398 |
| Total | 1.1 | 39.1 | 59.8 | 100.0 | 4,109 |

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

12.5 Awareness of Mother's HIV Status

Among women aged 15-49 years who gave birth during the 12 months preceding the survey, 93.1% reported that they knew their HIV status (98.6% in urban areas and 89.9% in rural areas).

In urban areas, 8.5% of women who delivered within the past 12 months already knew that they were HIV positive when they were offered an HIV test in ANC, and 2.5% tested positive during ANC (87.6% tested negative). In contrast, in rural areas, 2.6% already knew that they were HIV positive and 1.8% tested positive during ANC (85.5% tested negative). A higher percentage of women over the age of 30 years already knew that they were HIV positive (11.4% among ages 35-39 years and 8.0% among ages 40-44-years), compared to women in younger age groups (0.4% among ages 15-19 years and 4.9% among ages 25-29 years). There was geographical variation in the proportion of women who knew their HIV status, ranging from 83.5% in Luapula to 97.9% in Central and Lusaka Provinces among women aged 15-49 years who delivered within the 12 months preceding the survey (Table 12.5.A).

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

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

| Characteristic | Tested for HIV and received result ¹ | | Percentage who already knew they were HIV positive | Total percentage with known HIV status | Number of women who delivered within the past 12 months |
|----------------------------|---|------------------------------------|--|--|---|
| | Percentage who tested HIV positive | Percentage who tested HIV negative | | | |
| Residence | | | | | |
| Urban | 2.5 | 87.6 | 8.5 | 98.6 | 560 |
| Rural | 1.8 | 85.5 | 2.6 | 89.9 | 998 |
| Province | | | | | |
| Central | 1.3 | 90.5 | 6.2 | 97.9 | 138 |
| Copperbelt | 2.7 | 86.4 | 8.0 | 97.1 | 232 |
| Eastern | 2.0 | 93.5 | 2.3 | 97.7 | 165 |
| Luapula | 0.8 | 81.1 | 1.5 | 83.5 | 107 |
| Lusaka | 3.0 | 87.3 | 7.6 | 97.9 | 210 |
| Muchinga | 0.8 | 81.5 | 1.7 | 84.0 | 161 |
| Northern | 0.6 | 82.4 | 3.7 | 86.7 | 157 |
| North-Western | 1.2 | 84.3 | 2.1 | 87.6 | 135 |
| Southern | 4.3 | 86.9 | 5.4 | 96.5 | 175 |
| Western | 2.6 | 81.4 | 2.9 | 86.9 | 78 |
| Marital status | | | | | |
| Never married | 1.8 | 86.9 | 2.3 | 91.0 | 210 |
| Married or living together | 2.1 | 87.1 | 4.3 | 93.5 | 1,233 |
| Divorced or separated | 1.5 | 80.0 | 9.9 | 91.4 | 90 |
| Widowed | * | * | * | * | 20 |
| Education | | | | | |
| No education | 2.0 | 80.4 | 4.9 | 87.2 | 98 |
| Primary | 1.5 | 86.0 | 3.2 | 90.7 | 793 |
| Secondary | 3.2 | 87.6 | 5.7 | 96.5 | 580 |
| More than secondary | 0.0 | 88.2 | 11.8 | 100.0 | 86 |
| Wealth quintile | | | | | |
| Lowest | 1.4 | 84.0 | 1.4 | 86.9 | 344 |
| Second | 1.6 | 85.1 | 2.2 | 88.9 | 349 |
| Middle | 1.9 | 85.9 | 6.7 | 94.4 | 321 |
| Fourth | 4.4 | 86.9 | 6.8 | 98.1 | 281 |
| Highest | 1.6 | 90.5 | 7.6 | 99.7 | 258 |
| Age | | | | | |
| 15-19 | 0.5 | 83.9 | 0.4 | 84.8 | 216 |
| 20-24 | 1.6 | 89.0 | 3.3 | 94.0 | 475 |
| 25-29 | 2.9 | 86.3 | 4.9 | 94.2 | 325 |
| 30-34 | 3.7 | 85.9 | 6.2 | 95.7 | 286 |
| 35-39 | 1.0 | 83.3 | 11.4 | 95.7 | 173 |
| 40-44 | 3.9 | 82.8 | 8.0 | 94.8 | 73 |
| 45-49 | * | * | * | * | 10 |
| Total 15-24 | 1.2 | 87.3 | 2.4 | 90.9 | 691 |
| Total 15-49 | 2.1 | 86.3 | 4.7 | 93.1 | 1,558 |

¹Relates to PEPFAR PMTCT_STAT_NAT / SUBNAT.

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

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

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

12.6 Antiretroviral Therapy among HIV-Positive Pregnant Women

Among HIV-positive women aged 15-49 years who delivered in the 12 months preceding the survey, 98.9% reported receiving ARVs (55.8% were already taking ARVs at the time of their first ANC visit, while 43.1% were newly initiated on ARVs during pregnancy or labor and delivery). ARV use varied between rural and urban areas among HIV-positive women aged 15-49 years who delivered in the 12 months preceding the survey; 64.3% of women in urban areas were already taking ARVs at their first ANC visit, as compared to 43.2% of women in rural areas. Further, 35.7% of women in urban areas were newly initiated on ART during pregnancy or labor and delivery as compared to 54.0% of women in rural areas (Table 12.6.A).

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

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

| Characteristic | Percentage who were already on ARVs prior to pregnancy | Percentage who were newly initiated on ARVs during pregnancy or labor and delivery | Total percentage who received ARVs ¹ | Number of HIV-positive women who gave birth within the past 12 months |
|----------------------------|--|--|---|---|
| Residence | | | | |
| Urban | 64.3 | 35.7 | 100.0 | 66 |
| Rural | (43.2) | (54.0) | (97.3) | 41 |
| Province | | | | |
| Central | * | * | * | 10 |
| Copperbelt | (67.6) | (32.4) | (100.0) | 25 |
| Eastern | * | * | * | 7 |
| Luapula | * | * | * | 3 |
| Lusaka | (59.2) | (36.1) | (95.3) | 25 |
| Muchinga | * | * | * | 4 |
| Northern | * | * | * | 7 |
| North-Western | * | * | * | 5 |
| Southern | * | * | * | 17 |
| Western | * | * | * | 4 |
| Marital status | | | | |
| Never married | * | * | * | 9 |
| Married or living together | 52.9 | 45.6 | 98.5 | 78 |
| Divorced or separated | * | * | * | 11 |
| Widowed | * | * | * | 9 |
| Education | | | | |
| No education | * | * | * | 6 |
| Primary | (48.1) | (48.8) | (96.9) | 39 |
| Secondary | 56.7 | 43.3 | 100.0 | 53 |
| More than secondary | * | * | * | 9 |
| Wealth Quintile | | | | |
| Lowest | * | * | * | 9 |
| Second | * | * | * | 12 |
| Middle | (60.5) | (39.5) | (100.0) | 28 |
| Fourth | (51.2) | (45.0) | (96.2) | 32 |
| Highest | (66.9) | (33.1) | (100.0) | 25 |
| Age | | | | |
| 15-19 | * | * | * | 2 |
| 20-24 | * | * | * | 22 |
| 25-29 | (44.8) | (55.2) | (100.0) | 25 |
| 30-34 | (54.8) | (45.2) | (100.0) | 29 |
| 35-39 | * | * | * | 21 |
| 40-44 | * | * | * | 8 |
| 45-49 | * | * | * | 0 |
| Total 15-24 | * | * | * | 24 |
| Total 15-49 | 55.8 | 43.1 | 98.9 | 107 |

¹Relates to Global AIDS Monitoring indicator 2.3: Preventing the mother-to-child transmission of HIV and PMTCT_ARV_NAT / SUBNAT.

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

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

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

12.7 Early Infant Diagnosis

Among infants born in the three years preceding the survey to women 15-49 years who self-reported being HIV positive during the corresponding pregnancy (diagnosed before or at any time during it), by HIV-positive women aged 15-49 years, more than half (58.4%) of them were tested for HIV within two months of birth, while 25.6% were tested between two to 12 months of birth (Table 12.7.A).

Table 12.7.A Prevention of mother-to-child transmission, early infant testing

Among HIV-positive women aged 15-49 years who delivered within the past 36 months, percentage whose last-born infant had an HIV test done within 2 months of birth and within 12 months of birth, by result of HIV test, ZAMPHIA 2016

| Characteristic | Percentage of infants who had an HIV test done within 2 months of birth ¹ | Percentage of infants who had an HIV test done between 2 to 12 months of birth ^{2,3} | Number of last-born infants of HIV-positive women who delivered within the past 36 months |
|------------------------------------|--|---|---|
| Result of infant's HIV test | | | |
| HIV positive | * | * | 9 |
| HIV negative | 66.2 | 32.4 | 183 |
| Don't know/other | (78.7) | (19.4) | 49 |
| Total | 58.4 | 25.6 | 284 |

¹Relates to Global AIDS Monitoring indicator 2.1: Early infant diagnosis and PEPFAR PMTCT_EID; ²Relates to PEPFAR PMTCT_EID; ³Includes only last-born infants.

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

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

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

12.8 Mother-to-Child Transmission

Among all infants born 17 months preceding the survey to HIV-positive mothers aged 15-49, 7.7% were confirmed through the survey to be HIV positive regardless of breastfeeding status. Among infants born in the previous 17 months to HIV-positive mothers who reported ever breastfeeding, 9.3% were confirmed to be HIV positive (Table 12.8.A).

Table 12.8.A Mother-to-child transmission of HIV

Among infants born in the last 17 months to HIV-positive women aged 15-49 years, percentage confirmed positive for HIV infection, by mother's self-reported antiretroviral therapy (ART) and breastfeeding status ZAMPHIA 2016

| Characteristic | Percentage of infants confirmed HIV positive ¹ | Number of infants born to HIV-positive women ² |
|---|---|---|
| Mother's self-reported ART status | | |
| Mother unaware of HIV status during pregnancy | * | 10 |
| Already on ART at first antenatal visit | (3.4) | 25 |
| Newly initiated on ART during pregnancy or labor and delivery | * | 20 |
| Did not receive ARTs during pregnancy | * | 3 |
| Missing self-reported ART status during pregnancy | * | 16 |
| Mother's self-reported breastfeeding status | | |
| Ever breastfed the infant | 9.3 | 63 |
| Never breastfed the infant | * | 2 |
| Missing breastfeeding status | * | 9 |
| Total 0-11 months | (7.5) | 47 |
| Total 0-17 months | 7.7 | 74 |

¹Relates to Global AIDS Monitoring indicator 2.2: Mother-to-child transmission of HIV; ²Includes only infants who were tested for HIV during the PHIA survey.

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

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

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

12.9 Gaps and Unmet Needs

- According to self-report from mothers, nearly half of infants born to HIV-positive women did not receive a virological test for HIV infection in the first two months of life. It is essential to ensure early testing of HIV-exposed children and the return of results to parents. Further studies are necessary to pinpoint the reasons for this gap and guide interventions to improve early infant diagnosis.
- Despite large scale roll-out of PMTCT, about one in 13 children born to HIV-positive mothers (tested by ZAMPHIA) were still found to be HIV positive, indicating that diagnosis, treatment initiation, and treatment monitoring among pregnant women all require further improvement.
- Further progress is needed to put Zambia on the path to elimination of MTCT.

12.10 References

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13 ADOLESCENTS AND YOUNG ADULTS

13.1 Key Findings

- Nearly twice the proportion of males (17.1%) as compared to females (9.5%) aged 15-24 years reported having sexual intercourse before the age of 15 years.
- The percentage of young people, aged 15-24 years, who had sex before the age of 15 years, was nearly twice as high in rural areas (17.3%) compared to urban areas (8.6%).
- Less than half of people aged 15-24 years in both urban (46.7%) and rural (32.4%) areas had comprehensive knowledge on HIV transmission and prevention.

13.2 Background

One-third of the population of sub-Saharan Africa is between the ages of 10-24 years.¹ Adolescents and young adults, ages 15-24 years, are more likely to engage in risky sexual behaviors than older adults and have less frequent contact with the healthcare system.¹ Control of HIV in this demographic is critical for long-term epidemic control, but is also particularly challenging.

This chapter presents the prevalence of early sexual debut before the age of 15 years among men and women, by marital status, province, socio-economic, and demographic characteristics. Knowledge of HIV prevention among men and women aged 15-24 years is described. Incidence, prevalence, and the 90-90-90 cascade are also described for those aged 15-24 years.

13.3 Sex Before the Age of 15 Years

Among persons aged 15-24 years, nearly twice the proportion of males (17.1%) compared to females (9.5%) reported having sexual intercourse before the age of 15 years. Sexual debut before the age of 15 years among those aged 15-24 years was also twice as high in rural areas (17.3%) compared to urban areas (8.6%). Geographically, early sexual debut ranged from 7.4% in Copperbelt Province to 29.4% in North-Western Province. The percentage who reported early sexual debut was 17.9% among those with only primary education compared to 4.1% among those with more than a secondary education (Table 13.3.A).

Table 13.3.A Sex before the age of 15 years

Percentage of males and females age 15–24 years who have had sexual intercourse before the age of 15; by sex and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Males | | Females | | Total | |
|----------------------------|--|--------|--|--------|--|--------|
| | Percentage who had sex before age 15 | Number | Percentage who had sex before age 15 | Number | Percentage who had sex before age 15 | Number |
| Residence | | | | | | |
| Urban | 11.7 | 1,469 | 5.8 | 2,150 | 8.6 | 3,619 |
| Rural | 21.7 | 1,938 | 12.9 | 2,313 | 17.3 | 4,251 |
| Province | | | | | | |
| Central | 16.3 | 297 | 8.0 | 360 | 12.3 | 657 |
| Copperbelt | 10.9 | 578 | 4.1 | 799 | 7.4 | 1,377 |
| Eastern | 22.5 | 306 | 13.2 | 378 | 17.8 | 684 |
| Luapula | 26.2 | 177 | 10.9 | 248 | 18.1 | 425 |
| Lusaka | 11.5 | 575 | 5.2 | 857 | 8.3 | 1,432 |
| Muchinga | 14.2 | 309 | 8.3 | 353 | 11.4 | 662 |
| Northern | 10.9 | 287 | 10.4 | 357 | 10.6 | 644 |
| North-Western | 38.1 | 339 | 20.5 | 416 | 29.4 | 755 |
| Southern | 16.5 | 398 | 12.0 | 501 | 14.2 | 899 |
| Western | 34.1 | 141 | 20.7 | 194 | 26.8 | 335 |
| Marital status | | | | | | |
| Never married | 17.1 | 2,973 | 7.3 | 2,705 | 13.0 | 5,678 |
| Married or living together | 17.6 | 347 | 12.9 | 1,503 | 14.0 | 1,850 |
| Divorced or separated | (11.2) | 40 | 14.9 | 191 | 14.1 | 231 |
| Widowed | * | 0 | * | 9 | * | 9 |
| Education | | | | | | |
| No education | 10.5 | 52 | 11.5 | 149 | 11.2 | 201 |
| Primary | 21.8 | 1,165 | 14.4 | 1,578 | 17.9 | 2,743 |
| Secondary | 15.5 | 2,058 | 6.9 | 2,556 | 11.3 | 4,614 |
| More than secondary | 7.4 | 130 | 0.5 | 179 | 4.1 | 309 |
| Wealth quintile | | | | | | |
| Lowest | 24.5 | 488 | 14.4 | 655 | 19.2 | 1,143 |
| Second | 22.2 | 626 | 14.8 | 753 | 18.5 | 1,379 |
| Middle | 18.7 | 683 | 10.8 | 854 | 14.8 | 1,537 |
| Fourth | 14.8 | 735 | 7.2 | 1,010 | 10.9 | 1,745 |
| Highest | 10.8 | 860 | 4.4 | 1,178 | 7.6 | 2,038 |
| Age | | | | | | |
| 15-19 | 19.7 | 1,962 | 10.6 | 2,285 | 15.2 | 4,247 |
| 20-24 | 14.0 | 1,445 | 8.2 | 2,178 | 11.0 | 3,623 |
| Total 15-24 | 17.1 | 3,407 | 9.5 | 4,463 | 13.3 | 7,870 |

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

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

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

13.4 Knowledge about HIV Prevention

ZAMPHIA collected information on knowledge of HIV prevention, by asking two questions about prevention of sexual transmission of HIV and three questions related to common misconceptions about contracting HIV. Table 13.4.A and 13.4.B shows knowledge about HIV transmission and prevention among males and females, respectively, ages 15–24 years, by selected demographic characteristics. The following questions were asked:

- Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?
- Can a person reduce the risk of getting HIV by using a condom every time they have sex?
- Can a healthy-looking person have HIV?
- Can a person get HIV from mosquito bites?
- Can a person get HIV by sharing food with someone who is infected?

Overall, 41.3% of male and 36.8% female participants responded correctly to all 5 questions. Knowledge scores on individual questions among male participants varied, ranging from 68.5% of participants responding correctly to the question, “Can a person get HIV from mosquito bites?” to 85.9% responding correctly to the question, “Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners?” Knowledge scores varied among female participants as well. Among the female participants, 83.9% responded correctly to the question “Can a person get HIV by sharing food with someone who is infected?” as compared to 68.7% of female participants responding correctly to the question, “Can a person get HIV from mosquito bites?” Among male participants living in urban areas, 50.4% responded correctly to all five questions compared to 33.9% of those living in rural areas (Table 13.4.A and Table 13.4.B).

Knowledge about HIV transmission and prevention also varied by education and wealth quintile. Among males with no formal education, 15.7% correctly responded to all five questions, in contrast to 75.3% among those with more than a secondary education who had correct responses to all five questions. Knowledge scores also ranged from 30.7% of those in the lowest wealth quintile responding correctly to all questions compared to 57.3% among those in the highest quintile. Similar patterns were observed across both genders (Table 13.4.A and Table 13.4.B).

Among males and females aged 15-24 years residing in urban areas, 46.7% correctly responded to all five questions in contrast to 32.4% of young people residing in rural areas (Table 13.4.C).

Table 13.4.A Young people, knowledge about HIV prevention: Males¹

Among males aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Percentage who correctly answered the questions: | | | | | | Number ² |
|----------------------------|---|---|--|---|--|--------------------|---------------------|
| | Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners? | Can a person reduce the risk of getting HIV by using a condom every time they have sex? | Can a healthy-looking person have HIV? | Can a person get HIV from mosquito bites? | Can a person get HIV by sharing food with someone who is infected? | All five questions | |
| Residence | | | | | | | |
| Urban | 89.9 | 86.4 | 86.3 | 75.9 | 87.9 | 50.4 | 757 |
| Rural | 82.6 | 81.6 | 77.5 | 62.5 | 80.9 | 33.9 | 1,021 |
| Province | | | | | | | |
| Central | 85.1 | 80.5 | 88.8 | 64.5 | 88.0 | 42.1 | 149 |
| Copperbelt | 90.2 | 86.0 | 85.7 | 76.9 | 84.9 | 49.5 | 293 |
| Eastern | 84.5 | 78.5 | 79.8 | 55.6 | 77.6 | 30.0 | 159 |
| Luapula | 89.5 | 90.4 | 81.9 | 66.1 | 85.3 | 47.1 | 94 |
| Lusaka | 89.3 | 83.7 | 83.8 | 72.6 | 87.9 | 46.7 | 281 |
| Muchinga | 85.6 | 86.7 | 82.8 | 69.6 | 83.7 | 49.0 | 171 |
| Northern | 83.0 | 89.4 | 79.5 | 73.2 | 89.8 | 41.3 | 164 |
| North-Western | 80.2 | 81.9 | 84.2 | 63.3 | 81.4 | 37.2 | 181 |
| Southern | 81.1 | 77.9 | 71.5 | 62.9 | 76.5 | 30.0 | 208 |
| Western | 81.5 | 86.2 | 69.2 | 70.9 | 81.0 | 29.5 | 78 |
| Marital status | | | | | | | |
| Never married | 85.4 | 83.8 | 81.1 | 69.1 | 83.9 | 41.7 | 1,538 |
| Married or living together | 91.6 | 86.0 | 83.6 | 64.0 | 86.7 | 39.3 | 190 |
| Divorced or separated | * | * | * | * | * | * | 23 |
| Widowed | * | * | * | * | * | * | - |
| Education | | | | | | | |
| No education | (51.8) | (54.9) | (61.2) | (63.6) | (56.7) | (15.7) | 29 |
| Primary | 80.0 | 78.5 | 73.6 | 54.7 | 73.9 | 26.9 | 622 |
| Secondary | 89.3 | 86.9 | 85.8 | 74.7 | 89.7 | 47.8 | 1,057 |
| More than secondary | 98.1 | 93.0 | 91.6 | 92.7 | 98.1 | 75.3 | 70 |
| Wealth quintile | | | | | | | |
| Lowest | 82.8 | 82.4 | 73.0 | 61.2 | 74.5 | 30.7 | 276 |
| Second | 80.3 | 77.0 | 79.8 | 59.2 | 83.1 | 32.2 | 324 |
| Middle | 83.3 | 84.1 | 79.4 | 64.9 | 82.3 | 34.9 | 355 |
| Fourth | 89.5 | 84.9 | 82.1 | 70.3 | 84.0 | 42.2 | 383 |
| Highest | 90.2 | 87.9 | 88.1 | 79.8 | 91.4 | 57.3 | 433 |
| Age | | | | | | | |
| 15-19 | 82.4 | 80.7 | 79.3 | 67.1 | 81.3 | 37.4 | 995 |
| 20-24 | 89.9 | 87.2 | 83.9 | 70.1 | 87.2 | 45.9 | 783 |
| Total 15-24 | 85.9 | 83.7 | 81.4 | 68.5 | 84.1 | 41.3 | 1,778 |

¹Relates to Global AIDS Monitoring indicator 5.1: Young people: Knowledge about HIV prevention. ²Includes only participants who answered all five questions.

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

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

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

Table 13.4.B Young people, knowledge about HIV prevention: Females¹

Among females aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Percentage who correctly answered the questions: | | | | | | All five questions | Number ² |
|----------------------------|---|---|--|---|--|------|--------------------|---------------------|
| | Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners? | Can a person reduce the risk of getting HIV by using a condom every time they have sex? | Can a healthy-looking person have HIV? | Can a person get HIV from mosquito bites? | Can a person get HIV by sharing food with someone who is infected? | | | |
| Residence | | | | | | | | |
| Urban | 84.0 | 77.2 | 85.7 | 72.6 | 89.8 | 43.3 | 1,100 | |
| Rural | 77.7 | 74.6 | 75.0 | 65.1 | 78.6 | 30.9 | 1,218 | |
| Province | | | | | | | | |
| Central | 77.0 | 75.1 | 80.5 | 73.5 | 86.1 | 37.5 | 192 | |
| Copperbelt | 85.5 | 78.5 | 81.2 | 74.2 | 90.6 | 43.8 | 388 | |
| Eastern | 69.0 | 73.0 | 82.5 | 59.6 | 77.5 | 29.8 | 197 | |
| Luapula | 82.0 | 76.8 | 78.5 | 68.3 | 77.7 | 34.2 | 137 | |
| Lusaka | 83.8 | 78.3 | 87.9 | 69.7 | 85.8 | 40.5 | 425 | |
| Muchinga | 78.5 | 70.3 | 74.3 | 68.3 | 84.1 | 29.9 | 189 | |
| Northern | 82.3 | 70.2 | 76.8 | 68.0 | 84.6 | 34.8 | 190 | |
| North-Western | 83.2 | 74.7 | 78.0 | 71.4 | 87.5 | 38.6 | 218 | |
| Southern | 81.2 | 77.1 | 74.6 | 67.8 | 81.5 | 36.9 | 273 | |
| Western | 77.1 | 76.8 | 70.3 | 58.3 | 75.1 | 26.2 | 109 | |
| Marital status | | | | | | | | |
| Never married | 78.6 | 74.7 | 78.2 | 72.0 | 86.2 | 38.4 | 1,401 | |
| Married or living together | 84.3 | 76.6 | 82.5 | 62.4 | 79.7 | 33.0 | 774 | |
| Divorced or separated | 87.5 | 88.3 | 87.3 | 69.5 | 86.1 | 46.5 | 101 | |
| Widowed | * | * | * | * | * | * | 4 | |
| Education | | | | | | | | |
| No education | 77.0 | 64.5 | 69.4 | 57.8 | 66.6 | 18.1 | 100 | |
| Primary | 75.8 | 72.9 | 72.9 | 59.2 | 75.5 | 26.6 | 798 | |
| Secondary | 83.3 | 77.7 | 84.4 | 74.5 | 89.8 | 43.0 | 1,327 | |
| More than secondary | 90.7 | 89.4 | 94.1 | 82.4 | 96.8 | 61.4 | 93 | |
| Wealth quintile | | | | | | | | |
| Lowest | 78.6 | 70.6 | 75.5 | 56.7 | 70.7 | 27.0 | 348 | |
| Second | 76.0 | 73.6 | 72.1 | 62.7 | 76.7 | 29.7 | 404 | |
| Middle | 81.0 | 77.5 | 78.4 | 71.5 | 87.2 | 36.5 | 462 | |
| Fourth | 80.4 | 76.1 | 82.8 | 67.8 | 85.4 | 35.5 | 507 | |
| Highest | 84.9 | 78.9 | 87.5 | 78.3 | 92.8 | 49.1 | 591 | |
| Age | | | | | | | | |
| 15-19 | 76.2 | 72.5 | 75.1 | 69.3 | 83.6 | 33.4 | 1,212 | |
| 20-24 | 85.8 | 79.7 | 85.7 | 68.0 | 84.3 | 40.7 | 1,106 | |
| Total 15-24 | 80.7 | 75.8 | 80.1 | 68.7 | 83.9 | 36.8 | 2,318 | |

¹Relates to Global AIDS Monitoring indicator 5.1: Young people: Knowledge about HIV prevention. ²Includes only participants who answered all five questions. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

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

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

Table 13.4.C Young people, knowledge about HIV prevention: Total¹

Among males and females aged 15-24 years, percentage who correctly identify both ways of preventing the sexual transmission of HIV and reject major misconceptions about HIV transmission, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Percentage who correctly answered the questions: | | | | | | All five questions | Number ² |
|----------------------------|---|---|--|---|--|------|--------------------|---------------------|
| | Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners? | Can a person reduce the risk of getting HIV by using a condom every time they have sex? | Can a healthy-looking person have HIV? | Can a person get HIV from mosquito bites? | Can a person get HIV by sharing food with someone who is infected? | | | |
| Residence | | | | | | | | |
| Urban | 86.8 | 81.6 | 86.0 | 74.2 | 88.9 | 46.7 | 1,857 | |
| Rural | 80.2 | 78.2 | 76.2 | 63.8 | 79.8 | 32.4 | 2,239 | |
| Province | | | | | | | | |
| Central | 81.0 | 77.8 | 84.6 | 69.0 | 87.1 | 39.8 | 341 | |
| Copperbelt | 87.8 | 82.2 | 83.5 | 75.5 | 87.8 | 46.6 | 681 | |
| Eastern | 76.7 | 75.7 | 81.2 | 57.6 | 77.6 | 29.9 | 356 | |
| Luapula | 85.5 | 83.1 | 80.1 | 67.3 | 81.2 | 40.2 | 231 | |
| Lusaka | 86.5 | 80.9 | 85.9 | 71.2 | 86.8 | 43.6 | 706 | |
| Muchinga | 82.4 | 79.2 | 78.9 | 69.0 | 83.9 | 40.3 | 360 | |
| Northern | 82.7 | 80.1 | 78.2 | 70.7 | 87.3 | 38.2 | 354 | |
| North-Western | 81.7 | 78.4 | 81.1 | 67.3 | 84.4 | 37.9 | 399 | |
| Southern | 81.2 | 77.5 | 73.1 | 65.4 | 79.1 | 33.5 | 481 | |
| Western | 79.2 | 81.2 | 69.8 | 64.2 | 77.8 | 27.7 | 187 | |
| Marital status | | | | | | | | |
| Never married | 82.6 | 80.0 | 79.9 | 70.3 | 84.8 | 40.3 | 2,939 | |
| Married or living together | 86.0 | 78.8 | 82.8 | 62.8 | 81.4 | 34.5 | 964 | |
| Divorced or separated | 87.5 | 87.6 | 88.0 | 69.2 | 86.8 | 47.2 | 124 | |
| Widowed | * | * | * | * | * | * | * | 4 |
| Education | | | | | | | | |
| No education | 70.8 | 62.1 | 67.3 | 59.3 | 64.2 | 17.5 | 129 | |
| Primary | 77.9 | 75.6 | 73.2 | 57.0 | 74.7 | 26.8 | 1,420 | |
| Secondary | 86.3 | 82.4 | 85.1 | 74.6 | 89.7 | 45.4 | 2,384 | |
| More than secondary | 94.5 | 91.2 | 92.9 | 87.6 | 97.4 | 68.5 | 163 | |
| Wealth quintile | | | | | | | | |
| Lowest | 80.6 | 76.4 | 74.3 | 58.9 | 72.5 | 28.8 | 624 | |
| Second | 78.1 | 75.2 | 75.9 | 60.9 | 79.9 | 31.0 | 728 | |
| Middle | 82.1 | 80.8 | 78.9 | 68.2 | 84.7 | 35.7 | 817 | |
| Fourth | 84.9 | 80.5 | 82.4 | 69.0 | 84.7 | 38.8 | 890 | |
| Highest | 87.5 | 83.3 | 87.8 | 79.1 | 92.1 | 53.2 | 1,024 | |
| Age | | | | | | | | |
| 15-19 | 79.3 | 76.6 | 77.2 | 68.2 | 82.5 | 35.4 | 2,207 | |
| 20-24 | 87.8 | 83.4 | 84.8 | 69.1 | 85.8 | 43.3 | 1,889 | |
| Total 15-24 | 83.2 | 79.7 | 80.7 | 68.6 | 84.0 | 39.0 | 4,096 | |

¹Relates to Global AIDS Monitoring indicator 5.1: Young people: Knowledge about HIV prevention. ²Includes only participants who answered all five questions. Estimates in parentheses are based on a small number (25 to 49) of unweighted cases and should be interpreted with caution.

An asterisk indicates that an estimate is based on a very small number (less than 25) of unweighted cases and has been suppressed. The sum of the sample sizes for a given classification may be less than the total sample size because of missing responses to the classification variable.

13.5 HIV Incidence and Prevalence

Annual HIV incidence among persons aged 15-24 years in Zambia was 0.57% (0.08% among males and 1.07% among females) (Table 5.3.A). The prevalence of HIV among adults aged 15-24 in Zambia was 3.8% (5.7% females and 1.8% males) (Table 6.4.A).

13.6 HIV Testing, Treatment, and Viral Load Suppression

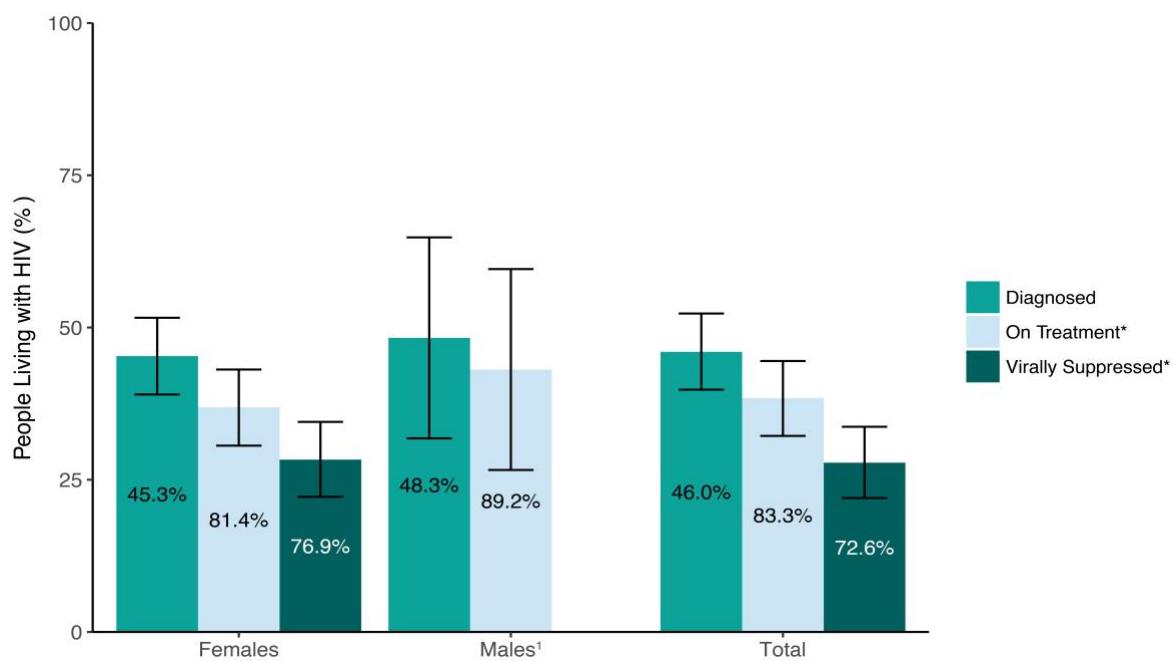
Among those 15-24 years of age, 55.4% had ever been tested and received their result and 32.6% had been tested and received their result in the last 12 months (Table 7.3.A).

Among HIV-positive males, 40.6% were aware of their HIV-positive status while 35.3% reported they were receiving ART (Table 8.3.A). Among HIV-positive females aged 15-24 years, 40.1% were aware of their HIV-positive status, while 31.2% reported they were receiving ART (Table 8.3.B). Among people living with HIV aged 15-24 years in Zambia, the prevalence of VLS was 34.3% (Table 9.4.A).

13.7 Status of the UNAIDS 90-90-90 Targets

Based on self-report and/or detection of ARVs in blood, it is estimated that 46.0% of people living with HIV aged 15-24 years had been diagnosed with HIV (48.3% of males and 45.3% of females), and that among those who had been previously diagnosed, 83.3% were on ART and/or had ARVs in their blood. Among those on treatment, 72.6% had suppressed viral loads (Table 10.3.A, Figure 13.7.A).

Figure 13.7.A Young adults 90-90-90 (laboratory ARV-adjusted data[¥] among young adults aged 15-24 years), ZAMPHIA 2016



[¥]In the antiretroviral (ARV)-adjusted 90-90-90, participants are classified as ‘Aware’ or ‘Diagnosed’ if they self-reported as being HIV positive before testing HIV positive in ZAMPHIA and/or had detectable ARVs in their blood. Participants are classified as ‘On Treatment’ if they self-reported that they were on treatment and/or if they had detectable ARVs in their blood.

*Inset numbers are conditional proportions.

¹ Estimates are suppressed due to less than 25 observations.

13.8 Gaps and Unmet Needs

- Among adolescents and young adults aged 15-24 years, about six in ten lack correct knowledge about HIV transmission and prevention. More complete and accurate knowledge is urgently required among this age group so as to increase awareness.
- Nearly three-fifths of those aged 15-24 years living with HIV have not been diagnosed. Among those on treatment, more than a quarter do not have VLS, indicating that diagnosis, treatment initiation, and treatment monitoring among this group all require further improvement.
- Scale up of interventions to delay sexual debut are planned to reach all schooling levels and those out of school. The ZAMPHIA survey results suggest that special attention should be paid to North-Western and Western Provinces, as well as rural areas. Some planned interventions aim to address cultural values that promote early sexual debut.
- Healthcare providers should be trained to interact with adolescents and young people seeking sexual and reproductive health services.

13.9 References

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

14 CHILDREN

14.1 Key Findings

- The prevalence of HIV among children aged 0-14 years in Zambia was 1.1%.
- Only 50.6% of HIV-positive children aged 0-14 years were previously diagnosed. Of the previously diagnosed, 92.3% were on treatment. However, of those on treatment, only 54.3% had suppressed viral loads.

14.2 Background

Estimates of prevalence of HIV in children, estimates of the number of children living with HIV, and VLS among HIV-positive children are most commonly derived indirectly from clinic-based data or epidemiologic models. ZAMPHIA 2016 provides direct measurements of these estimates among children aged 0-14 years, which are critical for meeting the needs of pediatric HIV treatment, planning for HIV prevention, care, and treatment services for children, evaluating PMTCT programs and addressing specific needs of children aged 10-14 years.

This chapter presents results on the UNAIDS 90-90-90 cascade in children aged 0-14 years, using both parent/guardian-reported data (on awareness of child's HIV status and ARV use) and data on detectable ARVs. Analyses for the 90-90-90 tables for children were similar to that described for adults in chapter 10. Parents or guardians were asked about a child's HIV infection status and ART use. Children with parent/guardian-reported awareness of HIV-positive status should also have ARV and viral suppression data. Data on detectable ARVs were used in combination with self-reported ARV use to define awareness of HIV-positive status and ARV status of a child. Presence of detectable ARVs in children with parent/guardian-reported unawareness of HIV-positive status were reclassified as aware of HIV-positive status. Children who had VLS, but whose parents reported them as not diagnosed with HIV or not on ARVs (parent/guardian-reported data or based on ARV detection) were not included in the numerator for the third 90 (viral suppression among those who are aware of their HIV-positive status and on ARVs).

This chapter also presents results on the nutrition status of HIV-positive and a sub-sample of HIV-negative children using two indices: Height-for-age and weight-for-age. Stunting, or low height-for-age, reflects inadequate nutrition over a long period of time. Children whose height-for-age z score is below minus two standard deviations (-2 SD) from the WHO Child Growth Standards median are considered stunted or chronically undernourished. Children who are below minus three standard deviations (-3 SD) are considered severely stunted.

Underweight, or low weight-for-age captures both inadequate nutrition in the period immediately before the survey as well as and long-term undernutrition. Underweight is therefore an indicator of overall undernutrition. Children whose weight-for-age z score is below minus two standard deviations (-2 SD) from the WHO Child Growth Standards median are classified as underweight. Children whose weight-for-age z score is below minus three standard deviations (-3 SD) from the WHO Child Growth Standards median are considered severely underweight

The means of the z scores are presented as summary statistics representing the nutrition status of all children in the population. The farther away the mean z scores are from 0, the higher the prevalence of undernutrition.

These indicators are presented for all HIV-positive children and 5% of HIV-negative children based on the child's HIV exposure (mother is HIV negative or mother is HIV positive, unknown or dead) and HIV infection status. The HIV status of the mother and child is based on the HIV testing conducted in ZAMPHIA.

14.3 HIV Prevalence

The prevalence of HIV among children aged 0-14 years in Zambia was 1.1%. HIV prevalence among females was 1.0% and 1.3% among males. Ages 5-9 years had the highest HIV prevalence at 1.8% (2.2% for males, 1.3% for females) (Table 6.4.A).

14.4 Viral Load Suppression

Among children aged 0-14 years in Zambia, the prevalence of VLS was 33.4% (38.2% for females and 30.0% for males) (Table 9.4.B).

14.5 Status of the UNAIDS 90-90-90 Targets

Table 14.5.A shows progress towards the 90-90-90 targets among children living with HIV (CLHIV) aged 0-14 years, based on parent-reported ART use. Among all children who tested HIV positive in ZAMPHIA aged 0-14 years, 47.0% were reported by their parents as HIV positive, 89.6% were reported by their parent/guardian as receiving antiretroviral therapy, and 53.1% had suppressed viral loads (Table 14.5.A).

Table 14.5.B shows progress towards the 90-90-90 targets among children living with HIV aged 0-14 years, based on parent-reported ART use and/or detectable ARVs. Overall, the combined parent-reported and ARV-adjusted data shows that 50.6% of HIV-positive Zambian children aged 0-14 years knew their status. Of children aged 0-14 years, who were previously diagnosed, 92.3% were on treatment. Of those on treatment, only 54.3% had suppressed viral loads (Table 14.5.B).

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

90-90-90 targets among people living with HIV aged 0-14 years, by age ZAMPHIA 2016

| Age | Diagnosed | | Number Percentage whose parent reported that the child is HIV positive | |
|--------------|-----------|--|---|--|
| | Total | | | |
| | | | | |
| 0-17 months | * | | 6 | |
| 18-59 months | * | | 16 | |
| 0-4 years | * | | 22 | |
| 5-9 years | (59.1) | | 47 | |
| 10-14 years | * | | 19 | |
| 0-14 years | 47.0 | | 88 | |

| On Treatment | | VLS | |
|--|--------|--|--------|
| Among children whose parent reported that the child is HIV positive | | Among children whose parent reported that the child is on ART | |
| Percentage whose parent reported that the child is on ART | Number | Percentage with VLS | Number |
| * | 0 | * | 0 |
| * | 7 | * | 7 |
| * | 7 | * | 7 |
| (86.8) | 27 | * | 24 |
| * | 7 | * | 6 |
| (89.6) | 41 | (53.1) | 37 |

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

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

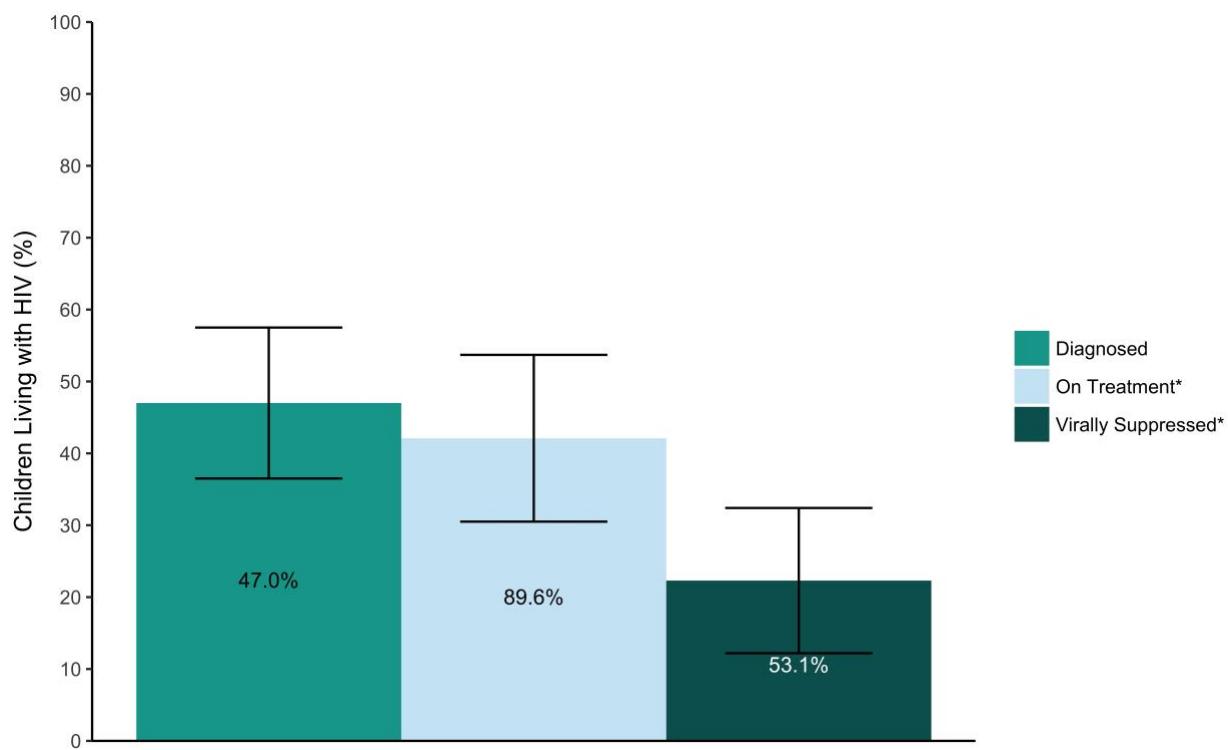
90-90-90 targets among people living with HIV aged 0-14 years, by age ZAMPHIA 2016

| Age | Diagnosed | |
|--------------|---|--------|
| | Total | |
| | Percentage whose parent reported that the child is HIV positive AND/OR with detectable ARVs | Number |
| 0-17 months | * | 6 |
| 18-59 months | * | 16 |
| 0-4 years | * | 22 |
| 5-9 years | (61.8) | 48 |
| 10-14 years | * | 20 |
| 0-14 years | 50.6 | 90 |

| On Treatment | | VLS | |
|--|--------|--|--------|
| Among children whose parent reported that the child is HIV positive AND/OR with detectable ARVs | | Among children whose parent reported the child was on ART AND/OR with detectable ARVs | |
| Percentage whose parent reported the child was on ART AND/OR with detectable ARVs | Number | Percentage with VLS | Number |
| * | 0 | * | 0 |
| * | 7 | * | 7 |
| * | 7 | * | 7 |
| (87.6) | 29 | (40.4) | 26 |
| * | 10 | * | 10 |
| (92.3) | 46 | (54.3) | 43 |

¹Relates to Global AIDS Monitoring indicator 1.1: People living with HIV who know their HIV status, and PEPFAR DIAGNOSED_NAT; ²Relates to Global AIDS Monitoring indicator 1.2: People living with HIV on Antiretroviral Therapy, and PEPFAR TX_CURR_NAT / SUBNAT; ³Relates to Global AIDS Monitoring indicator 1.4: People living with HIV who have suppressed viral loads and PEPFAR VL_SUPPRESSION_NAT
Figures in parentheses are based on 25 to 49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

Figure 14.5.A Pediatric 90-90-90 (laboratory ARV-adjusted data¹), ZAMPHIA 2016



¹ In the antiretroviral (ARV)-adjusted 90-90-90 participants are classified as ‘Aware’ or ‘Diagnosed’ if they self-reported as being HIV positive before testing HIV positive in ZAMPHIA and/or had detectable ARVs in their blood. Participants are classified as ‘On Treatment’ if they self-reported that they were on treatment and/or if they had detectable ARVs in their blood.

*Inset numbers are conditional proportions.

14.6 Nutrition Status

Among HIV-unexposed children (i.e., children born to an HIV-negative mother), 17.0% were stunted and 11.5% were severely stunted. Among HIV-exposed and uninfected children (i.e., HIV-negative children born to HIV-positive mothers), 21.4% were stunted and 26.3% were severely stunted (Table 14.6.A).

Among HIV-unexposed children, 5.6% were underweight while 4.9% of HIV-exposed and uninfected children were underweight (Table 14.6.A).

14.6.A Nutritional status of children aged 0-59 months

Prevalence of malnourishment among HIV-positive¹ and HIV-negative children aged 0-59 months by mother's HIV status, according to two anthropometric indices of nutritional status: Height-for-age and weight-for-age², ZAMPHIA 2016

| Mother's HIV Status | Child's Status | Height-for-age | | | |
|-----------------------------|------------------------|-------------------------------------|-------------------------------------|--------------------|--------------------|
| | | Percentage below -3 SD | Percentage below -2 SD ³ | Mean z score (SD) | Number of children |
| HIV positive, unknown, dead | HIV positive | * | * | * | 17 |
| | HIV negative | (26.3) | (21.4) | (-1.5) | 41 |
| | Total | 26.9 | 20.7 | -1.6 | 58 |
| HIV negative | HIV positive | * | * | * | 0 |
| | HIV negative | 11.5 | 17.0 | -1.1 | 103 |
| | Total | 11.5 | 17.0 | -1.1 | 103 |
| Weight-for-age | | | | | |
| | Percentage below -3 SD | Percentage below -2 SD ³ | Mean z score (SD) | Number of children | |
| | * | * | * | 19 | |
| | (0.1) | (4.9) | (-0.1) | 45 | |
| | 0.6 | 5.6 | -0.2 | 64 | |
| | * | * | * | 0 | |
| | 0.0 | 5.6 | -0.6 | 113 | |
| | 0.0 | 5.6 | -0.6 | 113 | |

¹Child's HIV status as defined by the result of the child's ZAMPHIA HIV test result.

²Each index is expressed in standard deviation units (SD) from the median of the WHO Child Growth Standards.

³Includes children who are below -3 standard deviations (SD) from the WHO Child Growth Standards.

Figures in parentheses are based on 25 to 49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

14.7 Gaps and Unmet Needs

- Approximately half of children living with HIV have not been diagnosed. Though widespread community HIV testing is not recommended for children, it is critical to identify undiagnosed HIV-positive children. Targeted community testing (e.g., OVC, index, etc.) could help increase HIV diagnosis among children.
- Additionally, just over half of the children who were reported to be on treatment had suppressed viral loads, indicating a need for improved adherence, retention, and treatment monitoring. More effective cohort tracking (using tracking tools to track each child's health and development) from PMTCT, ensuring availability and supply of preferred pediatric ARV formulations, interventions to reduce loss-to-follow-up and promote medication adherence, routine VL monitoring, are among the interventions that are needed to promote pediatric adherence, retention and treatment.

15 HIV RISK FACTORS

15.1 Key Findings

- HIV prevalence was twice as high among women who reported paid sexual intercourse in the previous 12 months (32.2%) as among those who did not (14.7%).
- Only two in 10 (21.2%) of males aged 15-59 years report having been medically circumcised.

15.2 Background

This chapter describes the prevalence of sexual behaviors that elevate risk of HIV infection. ZAMPHIA 2016 asked questions about high-risk behaviors, including early sexual debut, recent engagement (during the last 12 months preceding the survey) in multiple sexual partnerships, condom use at last sexual intercourse, recent engagement in paid sexual intercourse, and condom use at last sexual intercourse with a non-marital, non-cohabitating partner. With this information, programs can target those individuals most in need of information and most at risk for HIV infection.

Since 2007, WHO and UNAIDS have recommended voluntary medical male circumcision (VMMC) as a cost-effective strategy to reduce female-to-male sexual transmission of HIV. To inform VMMC programs, males aged 15-59 years were asked if they had undergone medical or traditional circumcision.

15.3 HIV Prevalence by Sexual Behavior

Among participants who reported sexual debut before the age of 15 years, the proportion of those who were HIV positive was 11.9%. Of those participants who used condoms at last sexual intercourse in the 12 months preceding the survey, 15.0% of males and 28.2% of females were HIV positive, as compared to 9.7% of men and 12.4% of women who reported they did not use a condom at last sexual intercourse (Table 15.3.A). This may reflect uptake of positive prevention strategies.

The prevalence of HIV was 31.9% among females aged 15-59 years who reported having had two or more sexual partners in the 12 months preceding the survey, compared to 12.5% among their male counterparts. HIV prevalence among males who did not have a sexual partner during the 12 months preceding the survey was lower (8.9%) than that of females reporting the same sexual behavior (22.6%), while HIV prevalence was estimated at 10.4% among males and 14.2% among females who had one partner. HIV prevalence was twice as high among women who reported paid sexual intercourse in the previous 12 months (32.2%) as among those who did not (14.7%) (Table 15.3.A).

Table 15.3.A HIV prevalence by sexual behavior

Prevalence of HIV among persons aged 15-59 years, by sex and sexual behavior characteristics, ZAMPHIA 2016

| Characteristic | Males | | Females | | Total | |
|--|-------------------------------|--------|-------------------------------|--------|-------------------------------|--------|
| | Percentage HIV positive | Number | Percentage HIV positive | Number | Percentage HIV positive | Number |
| Age at first sexual intercourse | | | | | | |
| <15 | 8.4 | 1,188 | 16.8 | 1,051 | 11.9 | 2,239 |
| 15-19 | 10.3 | 3,554 | 15.7 | 6,209 | 13.3 | 9,763 |
| 20-24 | 11.3 | 1,313 | 17.2 | 1,650 | 14.2 | 2,963 |
| ≥25 | 15.3 | 474 | 26.2 | 286 | 18.8 | 760 |
| Number of sexual partners in the past 12 months | | | | | | |
| 0 | 8.9 | 1,409 | 22.6 | 1,806 | 15.6 | 3,215 |
| 1 | 10.4 | 3,925 | 14.2 | 7,091 | 12.6 | 11,016 |
| ≥2 | 12.5 | 1,121 | 31.9 | 266 | 15.6 | 1,387 |
| Condom use at last sexual intercourse in the past 12 months | | | | | | |
| Used condom | 15.0 | 1,072 | 28.2 | 1,125 | 20.8 | 2,197 |
| Did not use condom | 9.7 | 3,967 | 12.4 | 6,216 | 11.2 | 10,183 |
| No sexual intercourse in the past 12 months | 8.9 | 1,409 | 22.6 | 1,806 | 15.6 | 3,215 |
| Paid sexual intercourse in the past 12 months | | | | | | |
| Yes ¹ | 15.0 | 365 | 32.2 | 74 | 17.4 | 439 |
| Used condom at last paid sexual intercourse | 15.0 | 178 | (51.1) | 32 | 19.7 | 210 |
| Did not use condom at last paid sexual intercourse | 14.5 | 184 | (17.2) | 41 | 14.9 | 225 |
| No ² | 10.3 | 4,544 | 14.7 | 7,200 | 12.7 | 11,744 |
| Total 15-24 | 1.8 | 3,155 | 5.7 | 4,165 | 3.8 | 7,320 |
| Total 15-49 | 8.3 | 7,358 | 14.3 | 10,010 | 11.4 | 17,368 |
| Total 15-59 | 9.3 | 8,142 | 14.6 | 10,973 | 12.0 | 19,115 |

¹Includes persons who paid or received money for sexual intercourse.²No paid sexual intercourse or no sexual intercourse in the past 12 months

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

The prevalence of sexual debut before the age of 15 years among persons aged 15-24 years was higher in rural areas (17.3%) than in urban areas (8.6%). By province, the prevalence was highest in North-Western Province (29.4%) and Western Province (26.8%). The prevalence of sexual debut before age 15 years was 19.2% in the lowest wealth quintile and 7.6% in the highest wealth quintile (Table 13.3.A).

15.4 Condom Use at Last Sex with a Non-marital, Non-Cohabiting Partner

Among all persons aged 15-59 years who reported having sex in the past 12 months, 33.8% reported having sex with a non-marital, non-cohabitating partner. Among participants aged 15-24 years, 60.5% reported having sex with a non-marital, non-cohabitating partner (Table 15.4.C).

Of those who reported having sex in the past 12 months with a non-marital, non-cohabitating partner, condom use at last intercourse was reported by 37.6% for those aged 15-59 (Table 15.4.C).

Among males aged 15-59 years who reported having had sexual intercourse in the 12 months preceding the survey, 42.8% reported having a non-marital, non-cohabitating partner during that time. Of these men, 40.4% used a condom during their last sexual intercourse with a non-marital, non-cohabitating partner. For this risk group, condom use in urban areas was 45.4%, compared to 35.7% in rural areas. Condom use the last time males had sex with a non-marital, non-cohabitating partner during the 12 months preceding the survey varied geographically, from 29.8% in Western Province to 50.2% in Copperbelt Province. More than half (59.7%) of those who had more than secondary education reported condom use the last time they had sex with a non-marital, non-cohabitating partner in the past year, as compared to 32.1% of those with no education (Table 15.4.A).

Among females aged 15-59 who reported having had sexual intercourse in the 12 months preceding the survey, 25.8% reported having a non-marital, non-cohabitating partner during that time. Of these women, 33.5% reported using a condom during their last sexual intercourse with such a partner. Similar to men, the percentage of condom use at last sex with non-marital, non-cohabitating partners among females in this group was higher in urban (39.4%) than in rural areas (27.2%). Condom use among this group of females ranged from 15.0% among those with no education to 54.5% among those with more than secondary education (Table 15.4.B).

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

Among males age 15-59 years who reported having sex in the past 12 months, percentage who reported having a non-marital, non-cohabitating partner in the past 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Among males who reported having sex in the past 12 months | | Among males who reported having sex with a non-marital, non-cohabitating partner in the past 12 months | |
|----------------------------|---|--------|---|--------|
| | Percentage who reported having sex with a non-marital, non-cohabitating partner in the past 12 months | Number | Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner ¹ | Number |
| Residence | | | | |
| Urban | 48.3 | 2,163 | 45.4 | 994 |
| Rural | 38.7 | 3,457 | 35.7 | 1,228 |
| Province | | | | |
| Central | 36.9 | 469 | 35.8 | 162 |
| Copperbelt | 40.3 | 903 | 50.2 | 342 |
| Eastern | 36.0 | 550 | 46.4 | 189 |
| Luapula | 36.8 | 289 | 37.3 | 104 |
| Lusaka | 54.8 | 800 | 43.1 | 415 |
| Muchinga | 29.6 | 502 | 41.8 | 130 |
| Northern | 33.0 | 513 | 35.8 | 157 |
| North-Western | 48.3 | 558 | 31.0 | 251 |
| Southern | 45.2 | 722 | 37.1 | 306 |
| Western | 55.9 | 314 | 29.8 | 166 |
| Marital status | | | | |
| Never married | 98.5 | 1,424 | 41.8 | 1,393 |
| Married or living together | 15.9 | 3,929 | 37.4 | 586 |
| Divorced or separated | 90.6 | 210 | 35.9 | 190 |
| Widowed | (91.9) | 32 | (47.8) | 30 |
| Education | | | | |
| No education | 35.1 | 176 | 32.1 | 57 |
| Primary | 34.0 | 2,202 | 26.7 | 684 |
| Secondary | 49.8 | 2,592 | 43.7 | 1,207 |
| More than secondary | 45.0 | 648 | 59.7 | 273 |
| Wealth quintile | | | | |
| Lowest | 34.4 | 936 | 26.5 | 300 |
| Second | 34.0 | 1,141 | 30.5 | 362 |
| Middle | 40.8 | 1,202 | 41.5 | 453 |
| Fourth | 48.6 | 1,152 | 38.1 | 524 |
| Highest | 52.2 | 1,159 | 52.8 | 574 |
| Age | | | | |
| 15-19 | 96.7 | 510 | 34.2 | 489 |
| 20-24 | 75.0 | 903 | 43.5 | 654 |
| 25-29 | 45.8 | 872 | 44.9 | 389 |
| 30-34 | 29.1 | 860 | 41.4 | 243 |
| 35-39 | 22.2 | 721 | 37.8 | 154 |
| 40-44 | 20.4 | 661 | 35.8 | 131 |
| 45-49 | 20.3 | 476 | 38.2 | 94 |
| 50-54 | 13.7 | 348 | (40.0) | 42 |
| 55-59 | 9.7 | 269 | (28.6) | 26 |
| Total 15-24 | 82.3 | 1,413 | 39.9 | 1,143 |
| Total 15-49 | 45.9 | 5,003 | 40.5 | 2,154 |
| Total 15-59 | 42.8 | 5,620 | 40.4 | 2,222 |

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

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

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

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

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

Among females age 15-59 years who reported having sex in the past 12 months, percentage who reported having a non-marital, non-cohabitating partner in the past 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Among females who reported having sex in the past 12 months | | Among females who reported having sex with a non-marital, non-cohabitating partner in the past 12 months | |
|----------------------------|---|--------|---|--------|
| | Percentage who reported having sex with a non-marital, non-cohabitating partner in the past 12 months | Number | Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner ¹ | Number |
| Residence | | | | |
| Urban | 30.2 | 3,476 | 39.4 | 1,016 |
| Rural | 22.3 | 4,569 | 27.2 | 945 |
| Province | | | | |
| Central | 22.6 | 691 | 33.3 | 148 |
| Copperbelt | 27.2 | 1,313 | 38.4 | 333 |
| Eastern | 21.4 | 800 | 30.6 | 162 |
| Luapula | 22.1 | 434 | 19.5 | 91 |
| Lusaka | 29.8 | 1,357 | 41.3 | 402 |
| Muchinga | 14.8 | 747 | 30.9 | 100 |
| Northern | 18.2 | 621 | 24.9 | 109 |
| North-Western | 32.1 | 751 | 25.0 | 227 |
| Southern | 25.8 | 923 | 36.9 | 224 |
| Western | 43.7 | 408 | 27.0 | 165 |
| Marital status | | | | |
| Never married | 95.9 | 1,160 | 39.4 | 1,106 |
| Married or living together | 3.1 | 6,141 | 19.0 | 184 |
| Divorced or separated | 90.9 | 545 | 25.4 | 493 |
| Widowed | 88.9 | 174 | 30.9 | 153 |
| Education | | | | |
| No education | 16.9 | 533 | 15.0 | 82 |
| Primary | 19.0 | 4,038 | 21.9 | 711 |
| Secondary | 34.8 | 2,895 | 39.4 | 964 |
| More than secondary | 35.7 | 575 | 54.5 | 202 |
| Wealth quintile | | | | |
| Lowest | 23.7 | 1,303 | 22.5 | 278 |
| Second | 20.9 | 1,518 | 23.2 | 297 |
| Middle | 24.1 | 1,637 | 27.7 | 374 |
| Fourth | 26.7 | 1,777 | 36.2 | 461 |
| Highest | 32.1 | 1,775 | 46.7 | 547 |
| Age | | | | |
| 15-19 | 63.2 | 791 | 37.1 | 495 |
| 20-24 | 33.4 | 1,661 | 36.5 | 538 |
| 25-29 | 21.5 | 1,446 | 38.8 | 303 |
| 30-34 | 16.1 | 1,322 | 23.5 | 209 |
| 35-39 | 15.7 | 1,020 | 28.5 | 156 |
| 40-44 | 18.9 | 772 | 26.1 | 139 |
| 45-49 | 14.8 | 433 | 23.3 | 61 |
| 50-54 | 11.4 | 375 | (13.3) | 41 |
| 55-59 | 9.3 | 225 | * | 19 |
| Total 15-24 | 43.7 | 2,452 | 36.8 | 1,033 |
| Total 15-49 | 26.9 | 7,445 | 34.0 | 1,901 |
| Total 15-59 | 25.8 | 8,045 | 33.5 | 1,961 |

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

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

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

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

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

Among persons age 15-59 years who reported having sex in the past 12 months, percentage who reported having a non-marital, non-cohabitating partner in the past 12 months; among those who reported having sex with a non-marital, non-cohabitating partner in the past 12 months, percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Among persons who reported having sex in the past 12 months | | Among persons who reported having sex with a non-marital, non-cohabitating partner in the past 12 months | |
|----------------------------|---|--------|---|--------|
| | Percentage who reported having sex with a non-marital, non-cohabitating partner in the past 12 months | Number | Percentage who reported using a condom the last time they had sex with a non-marital, non-cohabitating partner ¹ | Number |
| Residence | | | | |
| Urban | 38.6 | 5,639 | 42.9 | 2,010 |
| Rural | 30.1 | 8,026 | 32.4 | 2,173 |
| Province | | | | |
| Central | 29.1 | 1,160 | 34.8 | 310 |
| Copperbelt | 33.5 | 2,216 | 45.1 | 675 |
| Eastern | 28.0 | 1,350 | 39.8 | 351 |
| Luapula | 28.8 | 723 | 29.9 | 195 |
| Lusaka | 41.6 | 2,157 | 42.4 | 817 |
| Muchinga | 21.4 | 1,249 | 37.6 | 230 |
| Northern | 25.5 | 1,134 | 31.8 | 266 |
| North-Western | 39.8 | 1,309 | 28.5 | 478 |
| Southern | 35.3 | 1,645 | 37.0 | 530 |
| Western | 49.5 | 722 | 28.5 | 331 |
| Marital status | | | | |
| Never married | 97.5 | 2,584 | 40.9 | 2,499 |
| Married or living together | 8.8 | 10,070 | 33.8 | 770 |
| Divorced or separated | 90.8 | 755 | 28.8 | 683 |
| Widowed | 89.5 | 206 | 34.3 | 183 |
| Education | | | | |
| No education | 22.3 | 709 | 23.0 | 139 |
| Primary | 25.0 | 6,240 | 24.6 | 1,395 |
| Secondary | 42.8 | 5,487 | 42.1 | 2,171 |
| More than secondary | 41.2 | 1,223 | 57.8 | 475 |
| Wealth quintile | | | | |
| Lowest | 28.6 | 2,239 | 24.7 | 578 |
| Second | 27.1 | 2,659 | 27.5 | 659 |
| Middle | 32.0 | 2,839 | 36.0 | 827 |
| Fourth | 37.0 | 2,929 | 37.4 | 985 |
| Highest | 41.6 | 2,934 | 50.3 | 1,121 |
| Age | | | | |
| 15-19 | 77.6 | 1,301 | 35.6 | 984 |
| 20-24 | 51.7 | 2,564 | 40.9 | 1,192 |
| 25-29 | 32.2 | 2,318 | 42.6 | 692 |
| 30-34 | 21.8 | 2,182 | 34.0 | 452 |
| 35-39 | 18.9 | 1,741 | 33.8 | 310 |
| 40-44 | 19.7 | 1,433 | 31.5 | 270 |
| 45-49 | 17.9 | 909 | 32.9 | 155 |
| 50-54 | 12.7 | 723 | 29.0 | 83 |
| 55-59 | 9.5 | 494 | (23.6) | 45 |
| Total 15-24 | 60.5 | 3,865 | 38.6 | 2,176 |
| Total 15-49 | 35.7 | 12,448 | 37.9 | 4,055 |
| Total 15-59 | 33.8 | 13,665 | 37.6 | 4,183 |

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

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

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

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

15.5 Male Circumcision

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

Overall, 21.2% of males age 15-59 report having been medically circumcised and an additional 5.9% report non-medical circumcision. Medical circumcision varied by age from 28.2% among men 20-24 to 9.1% among men 55-59. Coverage of circumcision varied by education with 9.9% of those with no education reporting medical circumcision compared to 37.8% of those with more than secondary education. By wealth quintile, coverage of circumcision also varied with 12.1% of those in the lowest wealth quintile reporting medical circumcision compared to 35.3% of those in the highest wealth quintile. In urban areas, coverage of male circumcision was higher in urban areas (29.2%) than in rural areas (14.6%). By province coverage of male circumcision ranged from 39.0% in the North-Western Province to 8.3% in the Eastern Province. By age, coverage of male circumcision is higher in young ages.

| Characteristic | Circumcised ¹ | | | | | | Number |
|---------------------------------------|--------------------------|--------------------------|---------------|---------|-------|-------|--------|
| | Medical circumcision | Non-medical circumcision | Uncircumcised | Unknown | Total | | |
| Result of PHIA survey HIV test | | | | | | | |
| HIV positive | 12.7 | 4.6 | 80.9 | 1.8 | 100.0 | 779 | |
| HIV negative | 21.9 | 6.1 | 70.4 | 1.6 | 100.0 | 7,363 | |
| Not tested | 22.7 | 6.0 | 69.6 | 1.6 | 100.0 | 1,029 | |
| Residence | | | | | | | |
| Urban | 29.2 | 4.5 | 64.3 | 2.0 | 100.0 | 3,785 | |
| Rural | 14.6 | 7.2 | 77.0 | 1.3 | 100.0 | 5,386 | |
| Province | | | | | | | |
| Central | 15.0 | 2.6 | 80.8 | 1.6 | 100.0 | 789 | |
| Copperbelt | 29.4 | 5.7 | 62.7 | 2.2 | 100.0 | 1,565 | |
| Eastern | 8.3 | 0.8 | 90.0 | 0.9 | 100.0 | 881 | |
| Luapula | 16.4 | 6.2 | 75.0 | 2.4 | 100.0 | 476 | |
| Lusaka | 27.8 | 3.0 | 67.0 | 2.3 | 100.0 | 1,440 | |
| Muchinga | 12.6 | 1.2 | 85.3 | 0.9 | 100.0 | 846 | |
| Northern | 10.3 | 2.1 | 86.1 | 1.5 | 100.0 | 771 | |
| North-Western | 39.0 | 40.9 | 19.1 | 1.0 | 100.0 | 867 | |
| Southern | 16.2 | 1.9 | 80.7 | 1.1 | 100.0 | 1,085 | |
| Western | 33.8 | 20.7 | 44.6 | 1.0 | 100.0 | 451 | |
| Marital status | | | | | | | |
| Never married | 28.3 | 4.9 | 65.6 | 1.2 | 100.0 | 3,779 | |
| Married or living together | 15.2 | 6.6 | 76.6 | 1.7 | 100.0 | 4,874 | |
| Divorced or separated | 17.4 | 8.2 | 71.0 | 3.3 | 100.0 | 378 | |
| Widowed | 16.2 | 15.3 | 64.3 | 4.2 | 100.0 | 64 | |
| Education | | | | | | | |
| No education | 9.9 | 6.4 | 81.7 | 2.0 | 100.0 | 287 | |
| Primary | 12.6 | 6.6 | 79.2 | 1.5 | 100.0 | 3,525 | |
| Secondary | 24.9 | 5.7 | 68.0 | 1.4 | 100.0 | 4,462 | |
| More than secondary | 37.8 | 4.4 | 55.1 | 2.7 | 100.0 | 887 | |
| Wealth quintile | | | | | | | |
| Lowest | 12.1 | 7.5 | 79.2 | 1.2 | 100.0 | 1,421 | |
| Second | 12.3 | 8.4 | 77.9 | 1.5 | 100.0 | 1,776 | |
| Middle | 14.8 | 6.0 | 78.2 | 1.0 | 100.0 | 1,912 | |
| Fourth | 24.2 | 5.1 | 68.6 | 2.1 | 100.0 | 1,882 | |
| Highest | 35.3 | 4.0 | 58.6 | 2.1 | 100.0 | 2,136 | |

Table 15.5.A Male circumcision (continued)

Percent distribution of males aged 15-59 years by self-reported circumcision status, by result of PHIA survey HIV test and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Circumcised ¹ | | Uncircumcised | Unknown | Total | Number |
|----------------|--------------------------|--------------------------|---------------|---------|-------|--------|
| | Medical circumcision | Non-medical circumcision | | | | |
| Age | | | | | | |
| 15-19 | 26.3 | 4.4 | 68.0 | 1.3 | 100.0 | 2,006 |
| 20-24 | 28.2 | 4.9 | 65.7 | 1.2 | 100.0 | 1,496 |
| 25-29 | 24.3 | 6.0 | 68.2 | 1.5 | 100.0 | 1,209 |
| 30-34 | 18.7 | 4.7 | 74.7 | 1.9 | 100.0 | 1,157 |
| 35-39 | 16.4 | 6.2 | 75.5 | 1.8 | 100.0 | 956 |
| 40-44 | 13.4 | 7.6 | 75.7 | 3.2 | 100.0 | 851 |
| 45-49 | 11.8 | 9.5 | 77.4 | 1.3 | 100.0 | 630 |
| 50-54 | 10.4 | 11.4 | 76.7 | 1.6 | 100.0 | 491 |
| 55-59 | 9.1 | 7.6 | 81.1 | 2.2 | 100.0 | 375 |
| Total 15-24 | 27.2 | 4.6 | 66.9 | 1.3 | 100.0 | 3,502 |
| Total 15-49 | 22.2 | 5.6 | 70.6 | 1.6 | 100.0 | 8,305 |
| Total 15-59 | 21.2 | 5.9 | 71.2 | 1.6 | 100.0 | 9,171 |

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

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

15.6 Gaps and Unmet Needs

- Among sexually active adults aged 15-59, who reported sexual intercourse with a non-marital, non-cohabitating partner in the 12 months preceding the survey, nearly two-thirds reported not using a condom at last sexual intercourse with such partner. Widespread condom distribution with targeted messaging should be scaled up.
- More than seven out of ten men in Zambia reported being uncircumcised. Significant further scale up is required to meet programmatic targets of 80% coverage of male circumcision laid out in the Country Operational Plan for the Scale-up of VMMC in Zambia.

16 INTIMATE PARTNER VIOLENCE

16.1 Background

Intimate partner violence (IPV) is defined as physical violence, sexual violence, stalking and psychological aggression (including coercive tactics) by a current or former intimate partner (i.e., spouse, boyfriend/girlfriend, dating partner, or ongoing sexual partner).¹ Exposure to IPV has been implicated in increased risk of a woman contracting HIV, through mechanisms such as forced sex with an HIV-positive partner, an increase in risky sexual behaviors, and reduced ability to negotiate forms of safe sex (e.g., condom use).² Data from ZAMPHIA 2016 will fill gaps in information on subnational prevalence estimates and demographic characteristics of women who experienced different forms of IPV. This chapter provides data on the nature of violence in this population, which can assist in the development of violence prevention programs.

This chapter reports the prevalence of experiencing sexual or physical violence perpetrated by a live-in partner in the last 12 months among ever married or partnered women. Here, sexual violence is defined as being physically forced or pressured to have sex. Physical violence is defined as being punched, kicked, whipped, beaten, slapped, pushed, shoved, choked, smothered, drowned or burned. Having an object thrown at you or being hurt or threatened with a knife, gun or other weapon is also physical violence. Prevalence numbers are broken down by HIV status and socio-economic and demographic characteristics. Violence markers are measured against a woman's HIV status, as well as demographic characteristics.

Violence questionnaires were administered to women aged 15-59 years who have ever been in an intimate relationship. Questions were adapted from the Demographic and Health Survey as well as Violence Against Children Survey, which measures physical, emotional, and sexual violence in childhood, adolescence, and young adulthood (up to the age of 24 years). Women were asked if they had experienced physical or sexual violence from a live-in intimate partner in the past 12 months. Women reporting violence were offered referral to social services.

16.2 Prevalence of Recent Intimate Partner Violence

Prevalence of IPV in the last 12 months was reported in similar proportions among HIV-positive (4.4%) and HIV-negative women (4.3%). There was also little geographic differentiation in physical or sexual violence, with reported levels being similar in urban and rural areas. By age, the prevalence of self-reported physical or sexual violence in the last 12 months ranged from 7.9% among women aged 15-19 years to 1.4% among women aged 50-54 years. Experience of physical and sexual violence did not differ by education level or wealth quintile (Table 16.2.A).

IPV is likely under-reported in the survey; the finding that 7.0% of respondents aged 15-24 years experienced sexual or physical violence in the last 12 months was low compared to previous data on IPV in Zambia.

Table 16.2.A Prevalence of recent intimate partner violence

Among ever-married or partnered women aged 15-59 years, percentage who experienced physical or sexual violence from a live-in partner in the past 12 months¹, by woman's HIV status and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Physical violence | Sexual violence | Physical and sexual violence | Physical or sexual violence ² | Number of ever-married or partnered women |
|---------------------------------------|-------------------|-----------------|------------------------------|--|---|
| Result of PHIA survey HIV test | | | | | |
| HIV positive | 3.9 | 0.9 | 0.4 | 4.4 | 1,060 |
| HIV negative | 3.6 | 0.9 | 0.2 | 4.3 | 4,884 |
| Not tested | 1.5 | 0.6 | 0.0 | 2.0 | 645 |
| Residence | | | | | |
| Urban | 3.5 | 1.0 | 0.3 | 4.2 | 2,568 |
| Rural | 3.4 | 0.8 | 0.2 | 4.0 | 4,021 |
| Province | | | | | |
| Central | 3.7 | 1.2 | 0.3 | 4.7 | 553 |
| Copperbelt | 2.1 | 0.7 | 0.2 | 2.7 | 991 |
| Eastern | 3.4 | 1.0 | 0.3 | 4.1 | 764 |
| Luapula | 1.0 | 0.5 | 0.0 | 1.5 | 381 |
| Lusaka | 3.6 | 0.5 | 0.1 | 4.0 | 1,015 |
| Muchinga | 3.4 | 1.4 | 0.6 | 4.2 | 700 |
| Northern | 4.4 | 1.1 | 0.0 | 5.5 | 585 |
| North-Western | 3.2 | 2.3 | 0.5 | 5.1 | 549 |
| Southern | 5.1 | 0.4 | 0.1 | 5.3 | 728 |
| Western | 4.4 | 0.8 | 0.8 | 4.2 | 323 |
| Marital status | | | | | |
| Never married | * | * | * | * | - |
| Married or living together | 3.6 | 0.8 | 0.2 | 4.2 | 5,473 |
| Divorced or separated | 3.7 | 0.9 | 0.3 | 4.3 | 735 |
| Widowed | 1.0 | 1.6 | 0.6 | 2.0 | 372 |
| Education | | | | | |
| No education | 3.1 | 1.1 | 0.6 | 3.6 | 567 |
| Primary | 3.2 | 0.7 | 0.1 | 3.8 | 3,693 |
| Secondary | 4.2 | 1.0 | 0.3 | 4.9 | 1,986 |
| More than secondary | 2.1 | 1.8 | 0.7 | 3.2 | 342 |
| Wealth quintile | | | | | |
| Lowest | 3.5 | 0.6 | 0.1 | 3.9 | 1,321 |
| Second | 3.7 | 1.0 | 0.4 | 4.4 | 1,406 |
| Middle | 4.0 | 0.7 | 0.2 | 4.5 | 1,366 |
| Fourth | 3.5 | 0.3 | 0.1 | 3.7 | 1,380 |
| Highest | 2.4 | 1.9 | 0.5 | 3.9 | 1,092 |
| Age | | | | | |
| 15-19 | 5.6 | 2.4 | 0.4 | 7.9 | 280 |
| 20-24 | 5.9 | 1.0 | 0.2 | 6.7 | 1,164 |
| 25-29 | 4.4 | 0.9 | 0.6 | 4.6 | 1,260 |
| 30-34 | 3.3 | 0.7 | 0.2 | 3.9 | 1,177 |
| 35-39 | 2.5 | 0.6 | 0.0 | 3.1 | 909 |
| 40-44 | 2.1 | 0.5 | 0.1 | 2.5 | 709 |
| 45-49 | 1.3 | 1.4 | 0.4 | 2.3 | 434 |
| 50-54 | 1.3 | 0.1 | 0.0 | 1.4 | 388 |
| 55-59 | 0.4 | 1.2 | 0.0 | 1.6 | 268 |
| Total 15-24 | 5.9 | 1.3 | 0.3 | 7.0 | 1,444 |
| Total 15-49 | 3.7 | 0.9 | 0.3 | 4.4 | 5,933 |
| Total 15-59 | 3.4 | 0.9 | 0.2 | 4.1 | 6,589 |

Table 16.2.A Prevalence of recent intimate partner violence (continued)

¹Based on the following variables and questionnaire wording:

frcsx12mopt: "In the past 12 months, did a partner physically force you to have sex?"

prssx12mopt: "In the past 12 months, did a partner pressure you to have sex and did succeed?"

vlnc12moptnr: "In the past 12 months, did a partner do any of these things to you?

-Punched, kicked, whipped, or beat you with an object

-Slapped you, threw something at you that could hurt you, pushed you or shoved you

-Choked smothered, tried to drown you, or burned you intentionally

-Used or threatened you with a knife, gun or other weapon?"

All questions include the definition "By partner, I mean a live-in partner, whether or not you were married at the time."

Women who did not answer vlnc12moptnr because they were never a victim of physical violence (vlnc = 0) nor a victim of violence in the past 12 months (vlnc12motimes = 0) are included as not having experienced physical violence from a partner in the past 12 months.

Women who did not answer frcsx12mopt and/or prssx12mopt because they were never forced or pressured to have sex (frcsxtimes = 0, prssxtimes = 0) and/or were never forced or pressured to have sex in the past 12 months (prssx12mo = 2, frcsx12mo=2) are included as not having experienced sexual violence from a partner in the past 12 months.

²Relates to Global AIDS Monitoring indicator 4.3: Prevalence of recent intimate partner violence.

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

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

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

16.3 Gaps and Unmet Needs

- While IPV is likely under-reported in face-to-face interviews, 7.0% of women aged 15-24 years reported sexual or physical violence by a live-in partner in the last 12 months. Violence prevention interventions should target partners of young women while social support services should target the affected women themselves.
- Future studies should also address IPV experienced by men.

16.4 References

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

17 DISCRIMINATORY ATTITUDES TOWARD PEOPLE LIVING WITH HIV

17.1 Key Findings

- In rural areas, 25.3% of people held discriminatory attitudes toward people living with HIV compared to 14.5% in urban areas.
- Discriminatory attitudes toward people living with HIV are more common in those with less education, ranging from 34.3% among those with no education to 5.7% among those with more than secondary education.

17.2 Background

Attitudes toward and perceptions of people living with HIV play an important role in the HIV epidemic. Misconceptions about HIV have resulted in people developing numerous false beliefs, such as HIV/AIDS always entails death, is associated with depraved and immoral behaviors, results from irresponsibility, and is only spread through sex.¹ Fears arising from these beliefs can lead to marginalization of particular populations, rendering them more vulnerable to HIV. Furthermore, discrimination against HIV/AIDS continues to act as a barrier to prevention and treatment, undermining programmatic attempts to help people living with HIV, and may even result in the denial of health services.¹

This chapter focuses on HIV-related stigma and discrimination. The prevalence of discriminatory attitudes among adults aged 15-59 years is reported by province, age, and other socio-economic and demographic characteristics. Prevalence was assessed by asking participants whether they agree or disagree with common discriminatory statements: “Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV?” and “Do you think that children living with HIV should be able to attend school with children who are HIV negative?” Table 17.3.A summarizes the response to each question individually and together by reporting the percentage of respondents who replied “No” to either question. This data can help to explain how HIV-related stigma may negatively impact efforts aimed at HIV prevention, HIV testing, and access to HIV treatment and care.

17.3 Discriminatory Attitudes Toward People Living with HIV

Overall, 15.9% of respondents aged 15-59 years who have heard of HIV said they would not buy vegetables from an HIV-positive vendor and 11.4% said that HIV-positive children should not attend school with HIV-negative children, while 20.3% expressed agreement with at least one of the discriminatory attitudes. One in four people (25.3%) in rural areas held at least one discriminatory attitude compared to 14.5% of people in urban areas. Among young people aged 15-19 years, 28.7% held a discriminatory attitude compared to 14.9% of those aged 40-44 years. Among those who had no education, 34.3% held at least one discriminatory attitude, in comparison to 5.7% of those who have had some education past secondary (Table 17.3.A).

Table 17.3.A Discriminatory attitudes toward people living with HIV

Among persons aged 15-59 years who have heard of HIV, percentage who report discriminatory attitudes towards people living with HIV, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Would you buy fresh vegetables from a shopkeeper or vendor if you knew that this person had HIV? | Do you think that children living with HIV should be able to attend school with children who are HIV negative? | Both questions | Number ² |
|----------------------------|--|--|---|---------------------|
| | Percentage who responded "No" | Percentage who responded "No" | Percentage who responded "No" to either of the two questions ¹ | |
| Residence | | | | |
| Urban | 11.1 | 7.9 | 14.5 | 4,516 |
| Rural | 20.1 | 14.5 | 25.3 | 5,722 |
| Province | | | | |
| Central | 14.5 | 11.1 | 19.6 | 855 |
| Copperbelt | 11.0 | 8.4 | 15.1 | 1,765 |
| Eastern | 21.7 | 13.0 | 24.9 | 970 |
| Luapula | 21.9 | 18.9 | 28.5 | 538 |
| Lusaka | 11.3 | 7.7 | 14.2 | 1,753 |
| Muchinga | 20.1 | 15.3 | 25.2 | 916 |
| Northern | 19.1 | 15.6 | 25.8 | 857 |
| North-Western | 16.7 | 12.2 | 22.2 | 959 |
| Southern | 16.5 | 12.0 | 21.6 | 1,141 |
| Western | 20.9 | 10.5 | 23.9 | 484 |
| Marital status | | | | |
| Never married | 18.7 | 12.8 | 23.0 | 3,461 |
| Married or living together | 14.4 | 10.7 | 19.0 | 5,689 |
| Divorced or separated | 12.5 | 8.8 | 16.6 | 708 |
| Widowed | 11.7 | 9.3 | 15.0 | 298 |
| Education | | | | |
| No education | 27.9 | 18.6 | 34.3 | 526 |
| Primary | 22.1 | 17.0 | 27.7 | 4,321 |
| Secondary | 11.3 | 7.4 | 15.0 | 4,559 |
| More than secondary | 3.8 | 2.4 | 5.7 | 827 |
| Wealth quintile | | | | |
| Lowest | 25.8 | 19.6 | 32.0 | 1,587 |
| Second | 22.4 | 16.9 | 28.3 | 1,893 |
| Middle | 16.3 | 10.2 | 20.1 | 2,071 |
| Fourth | 11.9 | 9.8 | 16.4 | 2,177 |
| Highest | 8.9 | 5.2 | 11.6 | 2,465 |
| Age | | | | |
| 15-19 | 23.3 | 17.0 | 28.7 | 2,108 |
| 20-24 | 17.4 | 11.4 | 21.6 | 1,835 |
| 25-29 | 13.7 | 9.7 | 17.5 | 1,442 |
| 30-34 | 12.5 | 9.7 | 17.2 | 1,315 |
| 35-39 | 11.6 | 9.3 | 16.6 | 1,067 |
| 40-44 | 10.9 | 9.0 | 14.9 | 963 |
| 45-49 | 12.2 | 8.0 | 16.0 | 640 |
| 50-54 | 15.5 | 10.1 | 18.6 | 503 |
| 55-59 | 14.2 | 9.7 | 17.7 | 365 |
| Total 15-24 | 20.5 | 14.3 | 25.4 | 3,943 |
| Total 15-49 | 16.0 | 11.6 | 20.5 | 9,370 |
| Total 15-59 | 15.9 | 11.4 | 20.3 | 10,238 |

¹Relates to Global AIDS Monitoring indicator 4.1: Discriminatory attitudes towards people living with HIV.

²Includes only participants who answered both questions.

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

17.4 Gaps and Unmet Needs

- Discriminatory attitudes were more common among adolescents aged 15-19 years (28.7%) followed by those aged 20-24 years (21.6%). Interventions to reduce discrimination should target venues where these young people congregate, including schools and youth groups. Age-appropriate, sexual and reproductive health education at all levels of schooling would help combat false beliefs and HIV stigma. Open access to sexual and reproductive health services, including HIV prevention in schools, could also help reduce stigma.
- Discriminatory attitudes towards people living with HIV were more common in rural areas (25.3%) as compared to urban areas (14.5%). Education and community interventions to decrease stigma could improve the lives of people living with HIV in these areas. Involvement of local stakeholders and traditional leaders is crucial for effective change.
- Further investigation of institutional and community discrimination is necessary to fully address discriminatory attitudes and stigma against HIV and people living with HIV.

17.5 References

1. Joint United Nations Programme on HIV/AIDS (UNAIDS). *Global AIDS Monitoring 2017. Indicators for monitoring the 2016 United Nations Political Declaration on HIV and AIDS*. Geneva, Switzerland: UNAIDS; 2016. http://www.unaids.org/sites/default/files/media_asset/2017-Global-AIDS-Monitoring_en.pdf. Accessed December 17, 2018.

18 TUBERCULOSIS, SYPHILIS, HBV, STI SYMPTOMS, AND CERVICAL CANCER SCREENING

18.1 Key Findings

- Based on self-report, 60.9% of adults aged 15-59 years who visited a TB clinic were tested for HIV during a TB clinic visit; however, 30.7% did not test for HIV during the visit and did not know their HIV status.
- Among adult PLHIV who had ever visited a TB clinic, 54.3% were diagnosed with TB and of these, 98.4% were treated for TB.
- Overall, 39.4% of HIV-positive persons were screened for TB at their last HIV clinic visit.
- The prevalence of having ever been infected with syphilis among those aged 15-59 years was 6.8% (7.2% among females and 6.3% among males).
- The overall prevalence of active syphilis infection was 3.0% (3.4% among females and 2.7% among males).
- The prevalence of ever having been infected with syphilis was lower among HIV-negative (5.5%) than among HIV-positive (16.6%) participants. Active syphilis infections were less common among HIV-negative participants (2.1%) than HIV-positive (9.6%) participants.
- The overall prevalence of hepatitis B in the population aged 0-59 years was 3.5%. The prevalence of hepatitis B was four times higher among those aged 15-59 years (5.6%) compared to those aged 0-14 years (1.3%).
- Among adult PLHIV, 7.0% of men and 3.5% of women reported having a sexually transmitted infection (STI) diagnosed by a medical professional in the past 12 months. Among HIV-negative adults, 3.4% of men and 1.3% of women reported having an STI diagnosed by a medical professional in the last 12 months.
- Among women with HIV aged 30-49 years, the probability of having been screened for cervical cancer was 34.5% in urban areas compared to 17.0% in rural areas.

18.2 Background

People living with HIV are at risk for acquiring other diseases, including TB, hepatitis B, syphilis, and other STIs. TB is the leading causes of death for people living with HIV. HIV infection predisposes a person to TB infection and progression to active disease. Information regarding health seeking behavior, particularly for TB health services, is therefore very important. A UNAIDS model estimates there were 38,000 (95% CI 24,000-55,000) incident TB cases among HIV-positive persons in Zambia in 2015.¹ This chapter describes the TB clinical care cascade for HIV-positive individuals: Receipt of care at a TB clinic, TB diagnoses among those receiving care, and treatment among those diagnosed with TB.

Women living with HIV are at greater risk of developing cervical cancer because their weakened immune systems are not able to clear human papilloma virus (HPV) infections. WHO recommends HPV screening and treatment for all sexually active HIV-positive women.² ZAMPHIA 2016 provides population-based rates of screening not available from routine clinic data, which does not capture women not in care. This chapter presents cervical cancer screening rates by age and socio-demographic characteristics.

HIV and HBV have similar transmission routes and concurrent infection with both viruses often results in more rapid progression of HBV to cirrhosis and higher liver-disease mortality. ZAMPHIA 2016 provides population-based HBV prevalence among HIV-positive individuals, which can support actionable policy recommendations for screening and treatment. It may also potentially provide an estimate of the impact of national HBV vaccination programs. This chapter describes the prevalence of HBV in individuals aged 0 to 59 years, by province, sex, age, and socio-economic and demographic characteristics.

Syphilis is a relatively common STI, and untreated syphilis can result in severe morbidity in adults as well as in infants. Providing a syphilis diagnosis in a timely manner also allows patients to get treated, thereby reducing morbidity and transmission to sexual partners or vertically to newborn infants. As syphilis has been implicated in increasing transmission and acquisition of HIV, describing syphilis in HIV-positive individuals adds to the understanding of the epidemiology of HIV. This chapter describes syphilis prevalence in adults aged 15 to 59 years, by HIV status, age, sex, and socio-economic and demographic characteristics. This chapter also describes prior screening for STIs in both adult men and women.

18.3 Tuberculosis

Table 18.3.A shows the prevalence of self-reported HIV testing during a TB clinic visit among adults by knowledge of HIV status and sex. Overall, 60.9% of adults aged 15-59 years tested for HIV during a TB clinic visit, and 8.4% did not test because already knew their HIV status. More than 3 in 10 (30.7%) adults 15-59 who visited a TB clinic were not tested for HIV and did not know their HIV status.

Table 18.3.A HIV testing in tuberculosis clinics

Percent distribution of persons aged 15-59 years who had ever visited a tuberculosis (TB) clinic by whether they were tested for HIV during a TB clinic visit, by sex, ZAMPHIA 2016

| Characteristic | Tested for HIV during a TB clinic visit | Not Tested for HIV during a TB clinic visit | | Total | Number |
|----------------|---|---|---------------------------|-------|--------|
| | | Already knew they were HIV positive | Did not know their status | | |
| Sex | | | | | |
| Male | 62.4 | 5.3 | 32.3 | 100.0 | 653 |
| Female | 59.2 | 11.9 | 28.9 | 100.0 | 761 |
| Total 15-59 | 60.9 | 8.4 | 30.7 | 100.0 | 1,414 |

Table 18.3.B presents information on the percentage of HIV-positive persons who visited a TB clinic, were diagnosed for TB, and received treatment. Among self-reported HIV-positive persons, 29.9% had ever visited a TB clinic, with 36.6% of males having ever visited a TB clinic compared to 26.2% of females (Table 18.3.B). Among adult people living with HIV who had ever visited a TB clinic, 54.3% were diagnosed with TB. Among those HIV-positive adults diagnosed with TB at a TB clinic, 98.4% were treated for TB (Table 18.3.B).

Table 18.3.B Tuberculosis clinic attendance and services among HIV-positive adults

Among self-reported HIV-positive persons aged 15-59 years, percentage who ever visited a tuberculosis (TB) clinic; among those who had ever visited a TB clinic, percentage who were diagnosed for TB; and among those diagnosed with TB, percentage who were treated for TB, by sex, ZAMPHIA 2016

| Characteristic | Among HIV-positive persons | | Among HIV-positive persons who ever visited a TB clinic | | Among HIV-positive persons who were diagnosed with TB | |
|----------------|---|--------|---|--------|---|--------|
| | Percentage who ever visited a TB clinic | Number | Percentage who were diagnosed with TB | Number | Percentage who were treated for TB | Number |
| Sex | | | | | | |
| Male | 36.6 | 521 | 56.7 | 190 | 98.8 | 110 |
| Female | 26.2 | 1,220 | 52.4 | 332 | 98.1 | 174 |
| Total 15-59 | 29.9 | 1,741 | 54.3 | 522 | 98.4 | 284 |

Table 18.3.C shows that among self-reported HIV-positive persons, 39.4% were screened for TB at their last HIV clinic visit (41.9% among males and 38.0% among females).

Table 18.3.C Tuberculosis symptom screening in HIV clinics

Among self-reported HIV-positive persons in HIV care aged 15-59 years, percentage who were screened for tuberculosis symptoms during their last HIV clinic visit, by sex, ZAMPHIA 2016

| Characteristic | Percentage who were screened for TB symptoms | Number |
|----------------|--|--------|
| Sex | | |
| Male | 41.9 | 477 |
| Female | 38.0 | 1,125 |
| Total 15-59 | 39.4 | 1,602 |

18.4 Syphilis

Syphilis Prevalence

Overall, the prevalence of having ever been infected with syphilis among those aged 15-59 years was 6.8% (7.2% among females and 6.3% among males). The prevalence of ever having been infected with syphilis was lower among HIV-negative (5.5%) than among HIV-positive (16.6%) participants. The overall prevalence of active syphilis infection was 3.0% (3.4% among females and 2.7% among males). The prevalence of active infection was lower among HIV-negative (2.1%) than HIV-positive (9.6%) participants.

The prevalence of having ever been infected with syphilis ranged 2.9% in Eastern Province to 10.9% in Western Province. The prevalence of active infection ranged from 1.2% in Eastern to 5.2% in Western Province. Prevalence of active syphilis in the never married was 1.6%, compared to 6.8% among those widowed. Prevalence of having ever been infected with syphilis ranged from 2.7% among those aged 15-19 years to more than 11% among those aged 40-59 years (Table 18.4.A).

Table 18.4.A Syphilis prevalence

Prevalence of syphilis (ever infected and active infection) among persons age 15-59 years, by sex, result of PHIA survey HIV test, and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Males | | | Females | | | Total | | |
|---------------------------------------|--------------------------|-----------------------------|--------|--------------------------|-----------------------------|--------|--------------------------|-----------------------------|--------|
| | Percentage ever infected | Percentage active infection | Number | Percentage ever infected | Percentage active infection | Number | Percentage ever infected | Percentage active infection | Number |
| Result of PHIA survey HIV test | | | | | | | | | |
| HIV positive | 18.2 | 11.3 | 779 | 15.6 | 8.5 | 1,688 | 16.6 | 9.6 | 2,467 |
| HIV negative | 5.1 | 1.8 | 7,363 | 5.8 | 2.5 | 9,284 | 5.5 | 2.1 | 16,647 |
| Residence | | | | | | | | | |
| Urban | 6.8 | 2.9 | 3,315 | 7.7 | 3.6 | 5,025 | 7.2 | 3.2 | 8,340 |
| Rural | 6.0 | 2.5 | 4,827 | 6.9 | 3.2 | 5,947 | 6.4 | 2.8 | 10,774 |
| Province | | | | | | | | | |
| Central | 8.6 | 3.8 | 702 | 8.1 | 3.8 | 889 | 8.3 | 3.8 | 1,591 |
| Copperbelt | 8.2 | 2.7 | 1,386 | 9.6 | 3.6 | 1,898 | 8.9 | 3.2 | 3,284 |
| Eastern | 1.9 | 0.7 | 819 | 3.9 | 1.7 | 1,070 | 2.9 | 1.2 | 1,889 |
| Luapula | 7.3 | 3.4 | 426 | 8.6 | 5.1 | 590 | 8.0 | 4.3 | 1,016 |
| Lusaka | 5.2 | 2.5 | 1,242 | 7.0 | 3.9 | 2,003 | 6.1 | 3.2 | 3,245 |
| Muchinga | 5.8 | 2.3 | 758 | 4.7 | 2.7 | 971 | 5.2 | 2.5 | 1,729 |
| Northern | 7.5 | 3.0 | 659 | 7.0 | 2.9 | 819 | 7.3 | 3.0 | 1,478 |
| North-Western | 4.2 | 1.3 | 765 | 6.6 | 2.0 | 1,012 | 5.4 | 1.7 | 1,777 |
| Southern | 5.1 | 2.3 | 990 | 6.6 | 3.2 | 1,186 | 5.9 | 2.8 | 2,176 |
| Western | 12.6 | 6.3 | 395 | 9.4 | 4.1 | 534 | 10.9 | 5.2 | 929 |
| Marital status | | | | | | | | | |
| Never married | 3.5 | 1.4 | 3,368 | 3.8 | 2.0 | 2,987 | 3.6 | 1.6 | 6,355 |
| Married or living together | 8.1 | 3.3 | 4,319 | 7.7 | 3.5 | 6,332 | 7.9 | 3.4 | 10,651 |
| Divorced or separated | 14.6 | 7.2 | 332 | 12.6 | 6.1 | 1,038 | 13.2 | 6.4 | 1,370 |
| Widowed | 20.2 | 12.1 | 60 | 14.3 | 6.0 | 536 | 15.0 | 6.8 | 596 |
| Education | | | | | | | | | |
| No education | 5.4 | 0.7 | 246 | 8.0 | 4.1 | 715 | 7.2 | 3.1 | 961 |
| Primary | 7.0 | 3.1 | 3,142 | 8.9 | 4.1 | 5,183 | 8.1 | 3.7 | 8,325 |
| Secondary | 6.4 | 2.6 | 4,012 | 5.8 | 2.8 | 4,354 | 6.1 | 2.7 | 8,366 |
| More than secondary | 4.2 | 1.7 | 733 | 3.7 | 0.8 | 716 | 4.0 | 1.3 | 1,449 |
| Wealth quintile | | | | | | | | | |
| Lowest | 6.2 | 2.4 | 1,250 | 7.1 | 2.8 | 1,712 | 6.7 | 2.6 | 2,962 |
| Second | 6.5 | 2.6 | 1,596 | 7.2 | 3.3 | 1,940 | 6.9 | 3.0 | 3,536 |
| Middle | 6.8 | 2.9 | 1,743 | 8.2 | 4.2 | 2,173 | 7.5 | 3.6 | 3,916 |
| Fourth | 8.0 | 3.8 | 1,663 | 8.0 | 3.9 | 2,431 | 8.0 | 3.8 | 4,094 |
| Highest | 4.5 | 1.8 | 1,849 | 6.0 | 2.7 | 2,668 | 5.3 | 2.2 | 4,517 |
| Pregnancy status | | | | | | | | | |
| Currently pregnant ¹ | NA | NA | NA | 6.3 | 3.0 | 789 | NA | NA | NA |
| Not currently pregnant | NA | NA | NA | 7.4 | 3.4 | 10,021 | NA | NA | NA |
| Age | | | | | | | | | |
| 15-19 | 2.1 | 0.6 | 1,811 | 3.3 | 1.6 | 2,120 | 2.7 | 1.1 | 3,931 |
| 20-24 | 3.9 | 1.8 | 1,344 | 5.5 | 2.9 | 2,045 | 4.7 | 2.4 | 3,389 |
| 25-29 | 5.8 | 3.0 | 1,053 | 7.7 | 4.0 | 1,619 | 6.8 | 3.5 | 2,672 |
| 30-34 | 8.2 | 3.9 | 1,003 | 7.2 | 3.3 | 1,458 | 7.7 | 3.5 | 2,461 |
| 35-39 | 7.1 | 3.4 | 836 | 9.5 | 4.0 | 1,160 | 8.3 | 3.7 | 1,996 |
| 40-44 | 11.9 | 5.3 | 751 | 11.9 | 5.8 | 988 | 11.9 | 5.5 | 1,739 |
| 45-49 | 11.9 | 5.3 | 560 | 11.7 | 5.0 | 619 | 11.8 | 5.2 | 1,179 |
| 50-54 | 9.8 | 2.4 | 444 | 12.1 | 3.6 | 584 | 11.0 | 3.0 | 1,028 |
| 55-59 | 12.4 | 2.6 | 340 | 10.2 | 4.2 | 379 | 11.3 | 3.4 | 719 |
| Total 15-24 | 3.0 | 1.1 | 3,155 | 4.3 | 2.2 | 4,165 | 3.6 | 1.7 | 7,320 |
| Total 15-49 | 6.0 | 2.7 | 7,358 | 6.9 | 3.3 | 10,009 | 6.4 | 3.0 | 17,367 |
| Total 15-59 | 6.3 | 2.7 | 8,142 | 7.2 | 3.4 | 10,972 | 6.8 | 3.0 | 19,114 |

¹Relates to Global AIDS Monitoring indicator 2.4: Syphilis among pregnant women

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

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

18.5 Hepatitis B

The prevalence of hepatitis B was four times higher among those aged 15-59 years (5.6%) as compared to those aged 0-14 years (1.3%). In the population aged 0-59 years, the overall prevalence was 3.5% (Table 18.5).

The prevalence of hepatitis B among HIV-negative participants aged 15-59 years was 5.4% (6.9% among males, 3.9% among females). Prevalence among HIV-positive participants in the same age group was 7.1% (nearly double among males, at 10.2%, when compared with females, at 5.2%). Among those aged 0-14 years, the prevalence of hepatitis B was nearly five times higher in those who were HIV positive (5.9%) than in those who were HIV negative (1.2%).

Table 18.5 Hepatitis B prevalence by HIV status

Prevalence of hepatitis B among persons age 0-59 years, by sex, HIV status, and age, ZAMPHIA 2016

| Characteristic | Males | | Females | | Total | |
|---------------------|--|--------|---------------------------------|--------|---------------------------------|--------|
| | Percentage HBsAg ¹ positive | Number | Percentage HBsAg positive | Number | Percentage HBsAg positive | Number |
| HIV Positive | | | | | | |
| 0-14 | 3.4 | 53 | (9.2) | 42 | 5.9 | 95 |
| 15-59 | 10.2 | 779 | 5.2 | 1,688 | 7.1 | 2,467 |
| 0-59 | 9.4 | 832 | 5.4 | 1,730 | 7.0 | 2,562 |
| HIV Negative | | | | | | |
| 0-14 | 1.3 | 3,948 | 1.1 | 3,972 | 1.2 | 7,920 |
| 15-59 | 6.9 | 7,363 | 3.9 | 9,285 | 5.4 | 16,648 |
| 0-59 | 4.1 | 11,311 | 2.5 | 13,257 | 3.3 | 24,568 |
| Total | | | | | | |
| 0-14 | 1.4 | 4,001 | 1.2 | 4,014 | 1.3 | 8,015 |
| 15-59 | 7.2 | 8,142 | 4.1 | 10,973 | 5.6 | 19,115 |
| 0-59 | 4.4 | 12,143 | 2.7 | 14,987 | 3.5 | 27,130 |

¹HBsAg is the hepatitis B surface antigen (positivity indicates acute or chronic hepatitis B infection)

18.6 Self-Reported Symptoms and Diagnosis of Sexually Transmitted Infection

Among all men aged 15-59 years, 4.9% reported abnormal penile discharge, 6.4% reported a penile sore and 3.5% reported being diagnosed with an STI by a medical professional in the past 12 months. Among HIV-positive men aged 15-59 years, 9.8% reported abnormal discharge, and 14.3% reported a sore or ulcer while 7.0% reported they had been diagnosed with a STI in the past 12 months by a medical professional (Table 18.6.A).

For females aged 15-59 years, 4.6% self-reported abnormal vaginal discharge in the past 12 months and 3.7% self-reported an ulcer or sore on or near the vagina. Overall 1.5% were diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse. Among HIV-positive females, 6.8% reported abnormal discharge, while 7.9% reported a sore or ulcer and 3.5% reported being medically diagnosed with an STI in the 12 months preceding the survey (Table 18.6.B).

Table 18.6.A Other sexually transmitted infections: Males

Among males aged 15-59 years, percentage who self-reported symptoms of a sexually transmitted infection and percentage who reported clinical diagnosis of a sexually transmitted infection in the 12 months preceding the survey; by HIV status and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Self-reported symptoms in the past 12 months | | | Percentage who were diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse | |
|---------------------------------------|---|--|--------|---|-------|
| | Percentage who had abnormal discharge from the penis ¹ | Percentage who had an ulcer or sore on or near the penis | Number | Number | |
| Result of PHIA survey HIV test | | | | | |
| HIV positive | 9.8 | 14.3 | 708 | 7.0 | 712 |
| HIV negative | 4.7 | 5.9 | 5,891 | 3.4 | 5,923 |
| Not tested | 1.9 | 3.1 | 786 | 1.4 | 790 |
| Residence | | | | | |
| Urban | 5.2 | 5.8 | 2,941 | 3.6 | 2,968 |
| Rural | 4.6 | 6.9 | 4,444 | 3.4 | 4,457 |
| Province | | | | | |
| Central | 5.1 | 8.1 | 616 | 3.4 | 615 |
| Copperbelt | 2.8 | 5.1 | 1,197 | 2.8 | 1,208 |
| Eastern | 5.5 | 6.9 | 714 | 4.4 | 715 |
| Luapula | 3.8 | 4.9 | 370 | 1.8 | 373 |
| Lusaka | 7.0 | 6.9 | 1,140 | 4.4 | 1,152 |
| Muchinga | 2.0 | 4.3 | 681 | 2.5 | 684 |
| Northern | 4.8 | 6.3 | 645 | 1.9 | 646 |
| North-Western | 5.1 | 4.4 | 731 | 4.2 | 733 |
| Southern | 4.2 | 6.0 | 904 | 3.4 | 911 |
| Western | 7.1 | 11.2 | 387 | 5.2 | 388 |
| Marital status | | | | | |
| Never married | 5.3 | 5.2 | 2,451 | 3.5 | 2,463 |
| Married or living together | 4.2 | 6.7 | 4,484 | 3.1 | 4,506 |
| Divorced or separated | 9.4 | 14.0 | 349 | 8.7 | 353 |
| Widowed | 4.4 | 5.3 | 55 | 3.0 | 57 |
| Education | | | | | |
| No education | 7.7 | 10.5 | 227 | 5.1 | 229 |
| Primary | 4.9 | 6.9 | 2,819 | 3.6 | 2,842 |
| Secondary | 5.0 | 6.4 | 3,538 | 3.6 | 3,548 |
| More than secondary | 3.5 | 4.0 | 796 | 2.3 | 801 |
| Wealth quintile | | | | | |
| Lowest | 4.1 | 7.1 | 1,182 | 3.5 | 1,187 |
| Second | 5.1 | 5.8 | 1,442 | 2.8 | 1,450 |
| Middle | 4.9 | 7.7 | 1,583 | 4.6 | 1,589 |
| Fourth | 5.4 | 6.8 | 1,505 | 2.9 | 1,512 |
| Highest | 4.6 | 4.8 | 1,638 | 3.5 | 1,652 |
| Age | | | | | |
| 15-19 | 3.9 | 3.6 | 974 | 1.6 | 977 |
| 20-24 | 5.5 | 6.6 | 1,257 | 3.7 | 1,265 |
| 25-29 | 6.6 | 7.9 | 1,104 | 5.2 | 1,110 |
| 30-34 | 5.4 | 6.9 | 1,051 | 4.2 | 1,055 |
| 35-39 | 5.5 | 8.1 | 882 | 3.7 | 887 |
| 40-44 | 3.8 | 7.2 | 764 | 3.8 | 775 |
| 45-49 | 2.9 | 6.0 | 575 | 3.0 | 576 |
| 50-54 | 2.3 | 2.9 | 439 | 0.7 | 440 |
| 55-59 | 3.7 | 5.2 | 339 | 1.6 | 340 |
| Total 15-24 | 4.9 | 5.4 | 2,231 | 2.9 | 2,242 |
| Total 15-49 | 5.1 | 6.7 | 6,607 | 3.7 | 6,645 |
| Total 15-59 | 4.9 | 6.4 | 7,385 | 3.5 | 7,425 |

¹Relates to Global AIDS Monitoring indicator 10.4: Men with urethral discharge

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

Table 18.6.B Other sexually transmitted infections: Females

Among females aged 15-59 years, percentage who self-reported symptoms of a sexually transmitted infection and percentage who reported clinical diagnosis of a sexually transmitted infection in the 12 months preceding the survey; by HIV status and selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Self-reported symptoms in the past 12 months | | | Percentage who were diagnosed with an STI in the past 12 months by a doctor, clinical officer, or nurse | Number |
|---------------------------------------|---|---|--------|---|--------|
| | Percentage who had abnormal discharge from the vagina | Percentage who had an ulcer or sore on or near the vagina | Number | | |
| Result of PHIA survey HIV test | | | | | |
| HIV positive | 6.8 | 7.9 | 1,570 | 3.5 | 1,573 |
| HIV negative | 4.4 | 3.1 | 7,885 | 1.3 | 7,911 |
| Not tested | 2.9 | 1.2 | 926 | 0.5 | 928 |
| Residence | | | | | |
| Urban | 5.5 | 4.2 | 4,638 | 1.8 | 4,657 |
| Rural | 3.9 | 3.2 | 5,743 | 1.2 | 5,755 |
| Province | | | | | |
| Central | 3.5 | 3.4 | 866 | 1.3 | 869 |
| Copperbelt | 4.3 | 3.7 | 1,729 | 1.5 | 1,735 |
| Eastern | 3.0 | 2.3 | 1,018 | 2.0 | 1,023 |
| Luapula | 2.5 | 2.8 | 568 | 0.5 | 567 |
| Lusaka | 6.1 | 4.5 | 1,871 | 1.8 | 1,879 |
| Muchinga | 4.3 | 3.9 | 928 | 1.8 | 929 |
| Northern | 4.9 | 3.5 | 816 | 1.3 | 819 |
| North-Western | 3.6 | 2.2 | 972 | 1.2 | 971 |
| Southern | 6.6 | 3.5 | 1,099 | 1.4 | 1,103 |
| Western | 5.0 | 6.5 | 514 | 2.0 | 517 |
| Marital status | | | | | |
| Never married | 5.0 | 4.5 | 2,082 | 1.5 | 2,095 |
| Married or living together | 4.3 | 2.9 | 6,635 | 1.2 | 6,652 |
| Divorced or separated | 6.3 | 5.6 | 1,062 | 2.8 | 1,063 |
| Widowed | 3.4 | 5.2 | 551 | 2.8 | 551 |
| Education | | | | | |
| No education | 4.3 | 2.9 | 705 | 1.4 | 706 |
| Primary | 4.2 | 3.6 | 5,040 | 1.5 | 5,046 |
| Secondary | 4.5 | 3.8 | 3,884 | 1.6 | 3,904 |
| More than secondary | 8.1 | 4.1 | 747 | 1.6 | 751 |
| Wealth quintile | | | | | |
| Lowest | 3.4 | 3.0 | 1,691 | 1.0 | 1,693 |
| Second | 3.2 | 2.5 | 1,876 | 0.9 | 1,884 |
| Middle | 4.4 | 4.0 | 2,075 | 2.0 | 2,077 |
| Fourth | 5.5 | 4.8 | 2,322 | 1.9 | 2,328 |
| Highest | 5.7 | 3.5 | 2,378 | 1.6 | 2,391 |
| Age | | | | | |
| 15-19 | 3.6 | 2.8 | 1,315 | 1.1 | 1,323 |
| 20-24 | 5.6 | 4.1 | 2,021 | 1.8 | 2,029 |
| 25-29 | 4.2 | 3.8 | 1,706 | 1.7 | 1,710 |
| 30-34 | 5.6 | 3.9 | 1,517 | 1.7 | 1,518 |
| 35-39 | 4.7 | 2.7 | 1,214 | 1.6 | 1,220 |
| 40-44 | 4.8 | 4.8 | 1,001 | 1.6 | 1,003 |
| 45-49 | 4.2 | 3.1 | 632 | 0.6 | 632 |
| 50-54 | 4.0 | 4.7 | 581 | 1.8 | 584 |
| 55-59 | 2.3 | 2.9 | 394 | 0.3 | 393 |
| Total 15-24 | 4.7 | 3.5 | 3,336 | 1.5 | 3,352 |
| Total 15-49 | 4.7 | 3.6 | 9,406 | 1.6 | 9,435 |
| Total 15-59 | 4.6 | 3.7 | 10,381 | 1.5 | 10,412 |

Figures in parentheses are based on 25 to 49 unweighted cases. An asterisk indicates that a figure is based on fewer than 25 unweighted cases and has been suppressed.

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

18.7 Cervical Cancer Screening Among HIV-Positive Women

Among HIV-positive women aged 30-49 years, 27.3% report being screened for cervical cancer. The proportion of women screened in urban areas (34.5%) was roughly twice the proportion screened in rural areas (17.0%). By province, self-reported screening ranged from 43.6% in Lusaka to 7.1% in Luapula. Among HIV-positive women who have secondary education, 32.1% have been screened for cervical cancer compared to 11.2% of women with no education. Similarly, 40.7% of women in the highest wealth quintile have been screened, while only 10.6% of women in the lowest wealth quintile have been screened (Table 18.7.A).

Table 18.7.A Cervical cancer screening among women living with HIV¹

Among HIV-positive women aged 30-49 years, percentage who report being screened for cervical cancer, by selected demographic characteristics, ZAMPHIA 2016

| Characteristic | Percentage who report ever having had a screening test for cervical cancer | Number |
|----------------------------|--|--------|
| Residence | | |
| Urban | 34.5 | 613 |
| Rural | 17.0 | 426 |
| Province | | |
| Central | 31.6 | 98 |
| Copperbelt | 20.0 | 212 |
| Eastern | 19.0 | 83 |
| Luapula | (7.1) | 42 |
| Lusaka | 43.6 | 257 |
| Muchinga | 14.6 | 50 |
| Northern | 17.1 | 60 |
| North-Western | 16.7 | 62 |
| Southern | 24.6 | 112 |
| Western | 29.0 | 63 |
| Marital status | | |
| Never married | 24.8 | 78 |
| Married or living together | 28.3 | 581 |
| Divorced or separated | 24.8 | 202 |
| Widowed | 27.1 | 174 |
| Education | | |
| No education | 11.2 | 58 |
| Primary | 23.2 | 490 |
| Secondary | 32.1 | 410 |
| More than secondary | 39.5 | 81 |
| Wealth quintile | | |
| Lowest | 10.6 | 105 |
| Second | 11.4 | 126 |
| Middle | 24.7 | 221 |
| Fourth | 28.1 | 282 |
| Highest | 40.7 | 303 |
| Age | | |
| 30-34 | 25.3 | 302 |
| 35-39 | 28.9 | 284 |
| 40-44 | 31.3 | 294 |
| 45-49 | 21.5 | 159 |
| Total 30-49 | 27.3 | 1,039 |

¹Relates to Global AIDS Monitoring indicator 10.10: Cervical cancer screening among women living with HIV.

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

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

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

18.8 Gaps and Unmet Needs

- Linkages between TB and HIV care should be improved. Roughly 60% of HIV-positive adults aged 15-59 years were not screened for TB symptoms during their last HIV clinic visit. This finding is not consistent with programmatic data which shows lower estimates of unscreened people living with HIV. Among adults aged 15-59 years who ever visited a TB clinic, nearly a third were not tested for HIV although they did not know their HIV status.
- Hepatitis B prevalence was higher among HIV-positive children compared to HIV-negative children. Coverage and efficacy of immunization programs, among HIV-positive children in particular, should be further investigated.
- A targeted HBV immunization program for at-risk adults, like health-care workers and PLHIV, should also be considered.
- Nearly three quarters of HIV-positive women aged 30-49 years reported that they had never been screened for cervical cancer. Coverage of screening for this common co-morbidity should be expanded, particularly in rural areas.
- More information about the prevalence, transmission, and treatment of human papillomavirus is needed for the general population and among people living with HIV.

18.9 References

1. Joint United Nations Programme on HIV/AIDS. UNAIDS data tables, 2017. Accessed on December 17, 2018 at <http://aidsinfo.unaids.org/>.

DISCUSSION AND CONCLUSIONS

- ZAMPHIA estimated that approximately 43,000 new HIV infections are occurring annually among adults aged 15-59 years (HIV incidence: 0.61% [95% CI: 0.40-0.81%]). Relative to males, HIV incidence among women remains unacceptably high (HIV incidence: 0.29% males, 0.93% females).
- There has been remarkable progress toward the achievement of the UNAIDS 90-90-90 targets in adults, with 71.4% of people living with HIV aged 15-59 years diagnosed, 87.1% of those diagnosed receiving ART, and 89.2% of those on treatment with suppressed viral loads. However, diagnosis of younger adolescents and children living with HIV continues to be a concern, with only 50.6% of those aged 0-14 years actually diagnosed. Viral load suppression also continues to be an area of concern in the younger populations living with HIV, with only half (54.3%) of those aged 0-14 who were on treatment achieving a suppressed viral load, and 72.6% of those aged 15-24 years who were on treatment having a suppressed viral load. Further, the percentage with viral load suppression among all HIV-positive individuals aged 15-24 years was only 34.3%. With the goal set by UNAIDS to end the AIDS epidemic by 2030, continued expansion of HIV testing and treatment, especially for men and young women, will play a central role.
- Health care during pregnancy, delivery, and soon after delivery is important for the survival and well-being of mothers and children. Zambia has achieved high coverage of the key intervention to reduce vertical transmission of HIV, with 98.9% of HIV-positive women aged 15-49 years who gave birth during the 12 months preceding the survey reporting that they received ARVs during pregnancy, labor or delivery.
- However, there is an important gap in early diagnosis of HIV infection in infants, which is essential to ensure their survival. The current programmatic target for virological testing of HIV in infants in Zambia is to test at least 71% of children born to HIV-positive women within two months of birth. However, ZAMPHIA indicates that only 58.4% of last-born children of HIV-positive mothers who delivered in the past 36 months had HIV testing performed within 2 months of birth, and an additional 25.6% had it performed between two and 12 months of age. It is essential to increase the coverage of virological testing for HIV. Several system-level interventions can be useful, for example, in the laboratory, facilitating access to testing with the potential use of point-of-care technologies, and, in the facilities, through service quality improvement initiatives, training of health care personnel, and additional points of entry to testing.
- Among reproductive-aged women (ages 15-49 years), the findings that 6.9% had past syphilis infection and 3.3% had active syphilis infections suggests that routine ANC syphilis, as well as HIV, testing, with prompt treatment of women testing positive, could further limit preventable perinatal mortality.

APPENDIX A SAMPLE DESIGN AND IMPLEMENTATION

Appendix A provides a high-level overview of sampling and weighting procedures for ZAMPHIA (Zambia Population-based HIV Impact Assessment) 2016. In-depth details are provided in the Zambia PHIA (ZAMPHIA) Technical Report, which may be found on the PHIA project website.

A.1 Sample Design

Overview

The sample design for ZAMPHIA is a stratified multistage probability sample design, with strata defined by the 10 provinces of the country, first-stage sampling units defined by enumeration areas (EAs) within strata, second-stage sampling units defined by households within EAs, and finally eligible persons within households. Within each province, the first-stage sampling units (also referred to as primary sampling units or PSUs) were selected with probabilities proportionate to the number of households in the PSU based on the 2010 census. The allocation of the sample PSUs to the 10 provinces was made in a manner designed to achieve specified precision levels for (1) a national estimate of the HIV incidence rate and (2) provincial estimates of viral load suppression (VLS).

The second-stage sampling units were selected from lists of dwelling units/households compiled by trained staff for each of the sampled PSUs. Upon completion of the listing process, a random systematic sample of dwelling units/households was selected from each PSU at rates designed to yield self-weighting (i.e., equal probability) samples within each province to the extent feasible.

Within the sampled households, all eligible adolescents and adults aged 15 to 59 years were included in the study sample for data collection. All eligible children aged 0 to 14 years in every other household of the sampled households were included in the study for data collection.

Population of Inference

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

Precision Specifications and Assumptions

The following specifications were used to develop the sample design for ZAMPHIA.

- The relative standard error of the national estimate of HIV incidence among persons aged 15-49 should be 30% or less.
- 95% confidence bounds around the estimated VLS rate among HIV-positive persons aged 15-49 for each of the 10 strata (provinces) should be \pm 10% or less.

The following assumptions were used to develop the sample design for ZAMPHIA.

- An overall HIV prevalence rate of 0.103 (10.3%) that varies by province. Source: 2013-14 Zambia Demographic and Household Survey (Preliminary Report).
- An annual HIV incidence rate for adults aged 15-49 of $P_a = 0.0060$ (0.60%). Source: UNAIDS estimate for 2012 and 2013-14 Zambia Demographic and Household Survey (Preliminary Report).
- A mean duration of recent infection (MDRI) of 130 days, yielding an annualization rate of $365/130=2.8077$. Hence, the estimated incidence rate for MDRI = 130 days is $P_m = 0.0060/2.8077=0.0021$ (0.21%).
- A VLS rate among HIV-positive adults aged 15-49 in each province h of $P_{vh} = 50\%$. This is a conservative assumption because it will overstate the actual variance of the VLS rate.
- An intra-cluster correlation (ICC) of = 0.05 for both prevalence and incidence. The ICC provides an average measure of the homogeneity of responses within the first-stage sampling units.
- An occupancy rate of 91.9% for sampled dwelling units. Note that this is not included in the calculation of the overall survey response rate, but does determine the initial numbers of dwelling units to be sampled. A sample of 16,806 dwelling units will yield a sample of about 15,000 occupied dwelling units (households). Source: Central Statistical Office (CSO) [Zambia], Ministry of Health (MOH) [Zambia], and ICF International. 2014. Zambia Demographic and Health Survey 2013-14. Rockville, Maryland, USA: Central Statistical Office, Ministry of Health, and ICF International
- An overall household response rate of 97.9% among the occupied dwelling units. Source: 2013-14 Zambia Demographic and Household Survey (DHS).
- The average number of persons aged 15 to 49 in a household is 1.89. Source: 2013-14 Zambia Demographic and Household Survey (DHS).
- The percentage of persons in households who are 0-14 is 49.6%. Source: 2013-14 Zambia Demographic and Household Survey (DHS).
- The percentage of persons in households who are 50-59 is 4.0%. Source: 2013-14 Zambia Demographic and Household Survey (DHS).
- Among the individuals 15-59 years of age in eligible responding households, a biomarker response rate of 68.9%. This corresponds to an overall biomarker response rate of 67.5%. This is a conservative estimate derived from response rates in the 2013-14 Zambia Demographic and Household Survey (DHS).
- Among the children 0-14 years of age in eligible responding households, a biomarker response rate of 62.1%.
- The assumed values of response rates and number of participating persons per household is based on data from the 2013-14 Zambia DHS as well as recent AIDS indicator surveys conducted in other sub-Saharan African countries.

Selection of the Primary Sampling Units

The PSUs for ZAMPHIA are defined to be the EAs created for the census 2010. The sampling frame consisted of 25,631 EAs containing 2.8 million households and 13.1 million persons as of the 2010 census. The EAs vary widely in size, with 97 EAs containing less than 30 households, and 149 containing more than 300 households. An attempt was made to combine the small EAs with an adjacent large EA

for sampling purposes, but this was found to be impracticable, and a decision was made to exclude these EAs from the sampling frame. Thus, the final sampling frame contained 25,534 EAs. The total deletions accounted for approximately 0.08 percent of the 2010 population.

A stratified sample of 511 EAs was selected from the sampling frame. The 10 strata specified for sampling were the 10 provinces of Zambia. The EA samples were selected systematically and with probabilities proportionate to a measure of size (MOS) equal to the number of households in the EA based on the 2010 census. Prior to selection, the EAs were sorted by type of EA, including urban/rural. The sorting of the EAs prior to sample selection induces an implicit geographic stratification. To select the sample from a particular stratum, the cumulative MOS was determined for each EA in the ordered list of EAs, and the sample selections were designated using a sampling interval equal to the total MOS of the EAs in the stratum divided by the number of EAs to be selected and a random starting point. The resulting sample has the property that the probability of selecting an EA within a particular stratum is proportional to the MOS of the EA in the stratum.

Details regarding EA substitution and segmentation may be found in the ZAMPHIA Technical Report.

Selection of Households

For both sampling and analysis purposes, a household is defined to be 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 is referred to as the dwelling unit, which may contain more than one household meeting the above definition. Households are eligible for participation in the study if they are located within the sampled EA.

The selection of households for ZAMPHIA 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) selecting the samples of dwelling units/households; and (4) designating a subsample of households for data collection for children.

A description of the household listing process as well as a summary of household eligibility may be found in the ZAMPHIA Technical Report.

Selection of households utilized an equal probability design. In order to achieve equal probability samples of households within each of the 10 provinces of Zambia, the sampling rates required to select dwelling units/households within an EA will depend on the difference between the MOS used in sampling and the actual number of dwelling units/households found at the time of listing. Thus, application of these within-EA sampling rates can yield more or less than the desired 12,100 households in EAs where the sampling MOS differs from the actual listing count. The ZAMPHIA 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.

Table A.1 Number of sampled dwelling units/households and expected unequal weighting design effects by stratum

| Stratum (Province) | No. sample PSUs (clusters) | Number of sampled dwelling units/house- holds | Number of dwelling units/households flagged for child data collection | Minimum PSU sample size | Maximum PSU sample size | UEW DEFF for PHIA sample after capping |
|-----------------------|-------------------------------------|---|---|----------------------------------|----------------------------------|---|
| Central | 42 | 1,371 | 686 | 19 | 60 | 1.01 |
| Copperbelt | 74 | 2,415 | 1,207 | 15 | 60 | 1.02 |
| Eastern | 49 | 1,599 | 800 | 15 | 60 | 1.03 |
| Luapula | 32 | 1,044 | 522 | 15 | 60 | 1.01 |
| Lusaka | 85 | 2,800 | 1400 | 15 | 60 | 1.04 |
| Muchinga | 50 | 1,632 | 816 | 15 | 61 | 1.04 |
| Northern | 43 | 1,468 | 734 | 16 | 60 | 1.01 |
| North-Western | 49 | 1,632 | 816 | 15 | 60 | 1.01 |
| Southern | 55 | 1,795 | 897 | 15 | 60 | 1.00 |
| Western | 32 | 1,044 | 522 | 17 | 60 | 1.00 |
| Total | 511 | 16,800 | 8,400 | 15 | 61 | 1.07* |

*Reflects variation in weights within and across strata.

PSU: Primary sampling unit

UEW: Unequal weighting

DEFF: Design effect

Selection of Individuals

The selection of individuals for ZAMPHIA involved the following steps: (1) compiling a list of all individuals known to reside in the household or who slept in the household during the night prior to data collection; (2) identifying those rostered individuals who are eligible for data collection; and (3) selecting for the study those individuals meeting the age and residency requirements of the study. However, only those individuals who slept in the household the night before the household interview (i.e., the *de facto* population) were retained for subsequent weighting and analysis.

The ZAMPHIA Technical Report provides a brief description of the process for listing and selecting individuals for participation in ZAMPHIA and presents detailed summaries of the distributions of eligible individuals and participants in individual interviews and HIV testing by strata and age.

A.2 Weighting

Overview

In general, the purpose of weighting survey data from a complex sample design is to (1) compensate for variable probabilities of selection, (2) account for differential nonresponse rates within relevant subsets of the sample, and (3) adjust for possible undercoverage of certain population groups. Weighting is accomplished by assigning an appropriate sampling weight to each responding sampled unit (e.g., a household or person), and using that weight to calculate weighted estimates from the sample. The critical component of the sampling weight is the base weight that is defined to be 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 ZAMPHIA, nonresponse can occur 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, the post-stratification procedures are used to calibrate the weighted sample counts to available population projections.

Methods

The overall weighting approach for ZAMPHIA includes several steps. Methods and results for each of the steps below are detailed in the ZAMPHIA Technical Report.

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

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

Calculation of PSU base weights: The weighting process begins with the calculation and checking of the sample PSU (EA) base weights as the reciprocals of the overall PSU probabilities of selection.

Calculation of household weights: The next step is to calculate household weights. The household base weights are calculated as the PSU weights times the reciprocal of the within-PSU household selection probabilities. The household base weights are 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 have their weights adjusted to account for non-responding eligible households. This adjustment is made based on the EA the households are in, and the resulting weight is the final household weight.

Calculation of person-level interview weights: Once the household weights are determined, they are used to calculate the individual base weights. The individual base weights are then adjusted for nonresponse among the eligible individuals, with a final adjustment for the individual weights to compensate for undercoverage in the sampling process by post-stratifying (i.e., weighting up) to 2016 population projections.

Calculation of person-level HIV testing weights: The individual weights adjusted for nonresponse are in turn the initial weights for the HIV testing data sample, with a further adjustment for nonresponse to HIV testing, and a final post-stratification adjustment to compensate for undercoverage.

Application of weighting adjustments to jackknife replicates: All of the adjustment processes are applied to the full sample and the replicate samples so that the final set of full sample and replicate

weights can be used for variance estimation that takes into account the complex sample design and every step of the weighting process.

APPENDIX B HIV TESTING METHODOLOGY

B.1 Specimen Collection and Handling

Blood was collected by qualified survey staff from consenting participants. Fourteen milliliters (mL) of venous blood was collected from persons aged 15 years and older, while six mL was collected from persons aged 2-14 years. One mL of capillary blood was collected from children aged 0-2 years using finger-stick for children aged 6-24 months and heel-stick for children less than age six months.

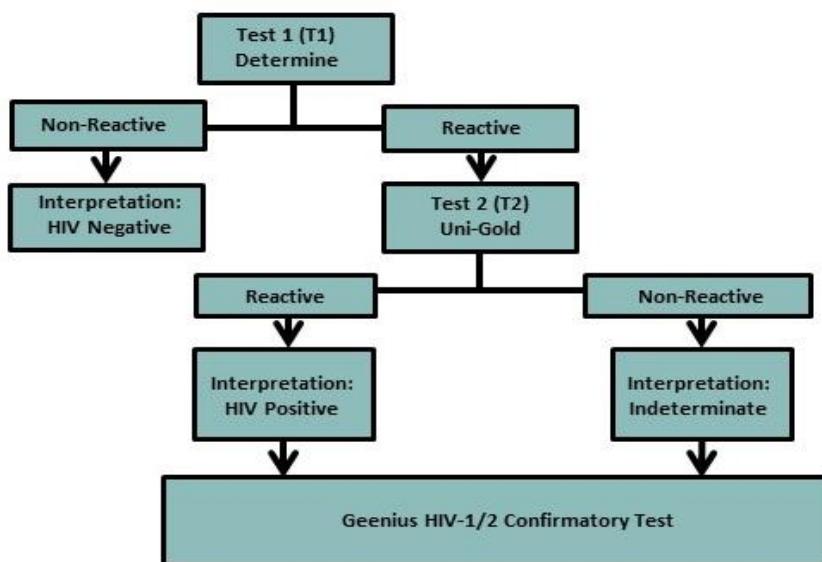
Blood samples were labeled with a unique bar-coded participant identification number and stored in temperature-controlled cooler boxes. At the end of each day, samples were transported to a satellite laboratory for registration in a laboratory information management system, processing into plasma and dried blood spots (DBS), and storage at -20°C within 24 hours of blood collection. Approximately weekly, samples were transported to Tropical Diseases Research Centre (TDRC) 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 Zambia's national guidelines (Figure B.2.A). HIV-positive and HIV-indeterminate samples underwent additional testing at a satellite laboratory, as described in Section B.3. For participants who self-reported an HIV-positive status but tested HIV negative during the survey, additional testing was conducted at TDRC, as described in Section B.3. For children less than the age of 18 months, only the initial rapid test was performed. If the test was reactive, the sample underwent additional testing at TDRC, as described in Section B.3.

Figure B.2.A Household-based HIV testing algorithm¹, ZAMPHIA 2016



¹This figure applies to individuals aged 18 months or older.

CD4 Testing

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

Counseling, Referral to Care, and Active Linkage to Care

Pre- and post-test counseling were conducted in each household in accordance with Zambia's national guidelines. For participants age 15 years or older, results were communicated directly to the participant, while for participants aged 15-17 years, results were communicated to the participant's parent or guardian. All participants who consented to HIV testing were asked to share contact information and to select a referral health facility prior to testing. Participants with an HIV-positive test result were referred to HIV care and treatment at the health facility of their choice, while participants with an HIV-indeterminate test result were advised to seek repeated testing at the health facility of their choice in four weeks. Further, HIV-positive participants were asked to consent to be contacted by qualified health care personnel, in order to facilitate active linkage to HIV care and treatment in Zambia's healthcare system.

In rare cases where participants were provided an incorrect HIV test result, self-reported being HIV positive but tested HIV negative during the survey, or required additional collection of blood to complete testing, households were revisited by qualified personnel to provide participants with correct information and guidance on appropriate actions.

Quality Assurance and Control

To control the quality of the performance of HIV rapid tests, field staff conducted testing of a panel of HIV-positive and HIV-negative dried tube specimens on a weekly basis. To assure the quality of the performance of field staff conducting HIV testing, proficiency testing using a panel of blinded HIV-positive and HIV-negative dried tube specimens was evaluated twice during the course of fieldwork. Additionally, sample re-testing was conducted at a satellite lab for (1) the first 50 samples tested by each field staff member, (2) a random sample of five percent of HIV-negative specimens, and (3) all HIV-indeterminate specimens.

A limitation of this survey is the limitation of rapid tests to detect HIV antibodies among people in the serological window of infection, in HIV-positive people on antiretroviral therapy (ART), and maternal antibodies in infants four months and older. Participants in the first two categories are not expected to be a significant source of bias. Further analysis will identify how many infants born to HIV-positive women were not identified by a rapid test.

B.3 Laboratory-Based Procedures

Twenty-five survey satellite laboratories were established in existing health facility laboratories across the country. An additional three mobile satellite labs were also utilized. One central laboratory was established at TDRC in Ndola, Zambia.

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.3.A). Testing was conducted at TDRC in accordance with the manufacturer's protocol.

HIV TNA Polymerase Chain Reaction

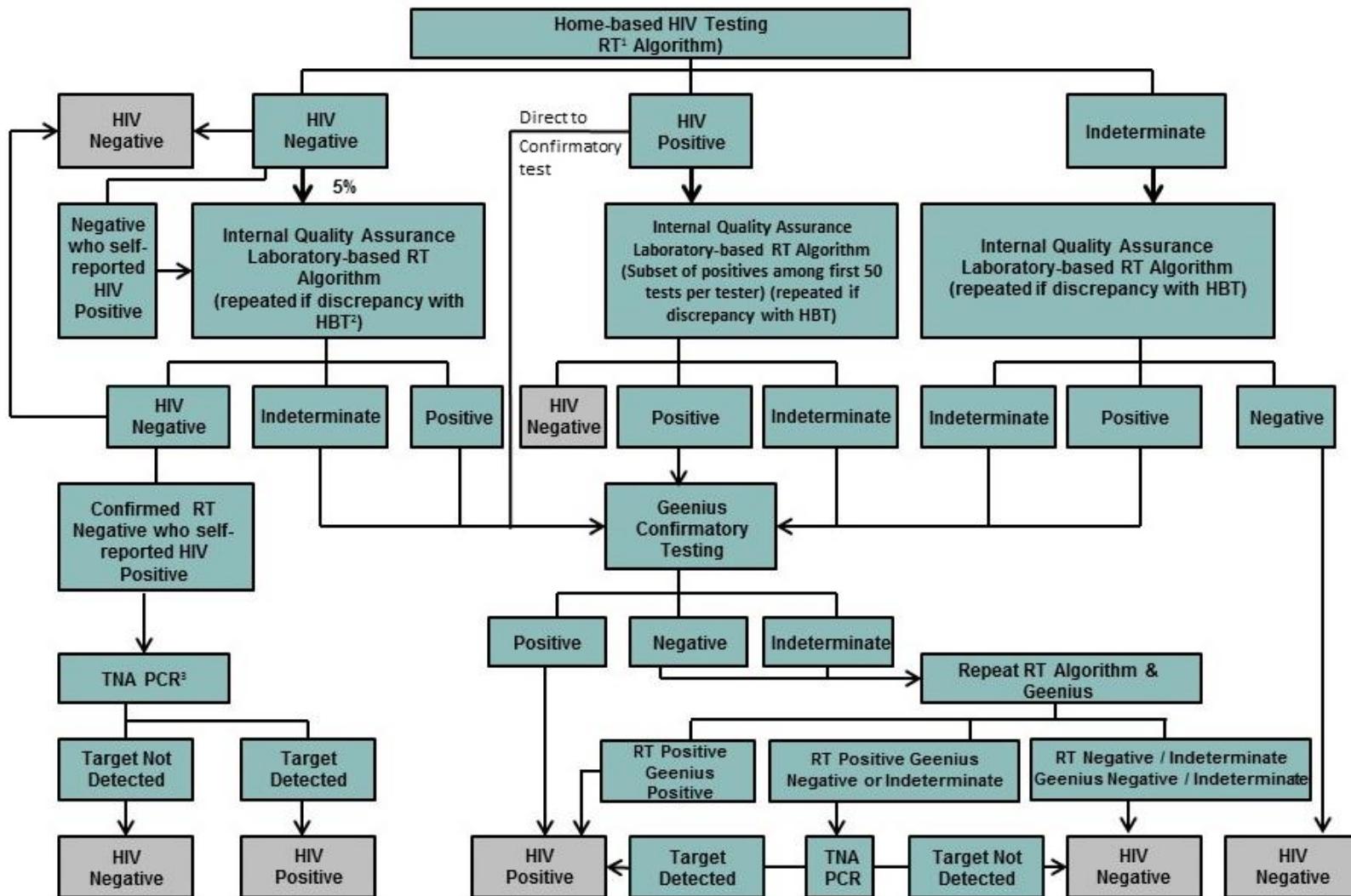
HIV total nucleic acid (TNA) polymerase chain reaction (PCR) was conducted for children aged less than 18 months who had a reactive HIV test result during household-based testing (Figure B.3.A).

Additionally, HIV TNA PCR was evaluated for participants who self-reported an HIV-positive status, but tested HIV negative during the survey, as well as for samples that were HIV positive by the rapid testing algorithm but were HIV negative or indeterminate by Geenius testing (Figure B.3.B). HIV TNA PCR was conducted on the Roche COBAS AmpliPrep Instrument and COBAS TagMan 48 Analyzer using the COBAS AmpliPrep/COBAS TaqMan HIV-1 qualitative test (Roche Molecular Diagnostics, Branchburg, New Jersey, United States).

Classification of Final HIV Status

For participants aged 18 months or older, the algorithm for classification of final HIV status included results from HIV rapid testing, Geenius testing, and HIV TNA PCR (Figure B.3.A). For participants of ages less than 18 months, the algorithm for classification of final HIV status included results from HIV rapid testing and HIV TNA PCR (Figure B.3.B). Classification of final HIV status was used to determine estimates for HIV prevalence and to inform estimates for HIV incidence.

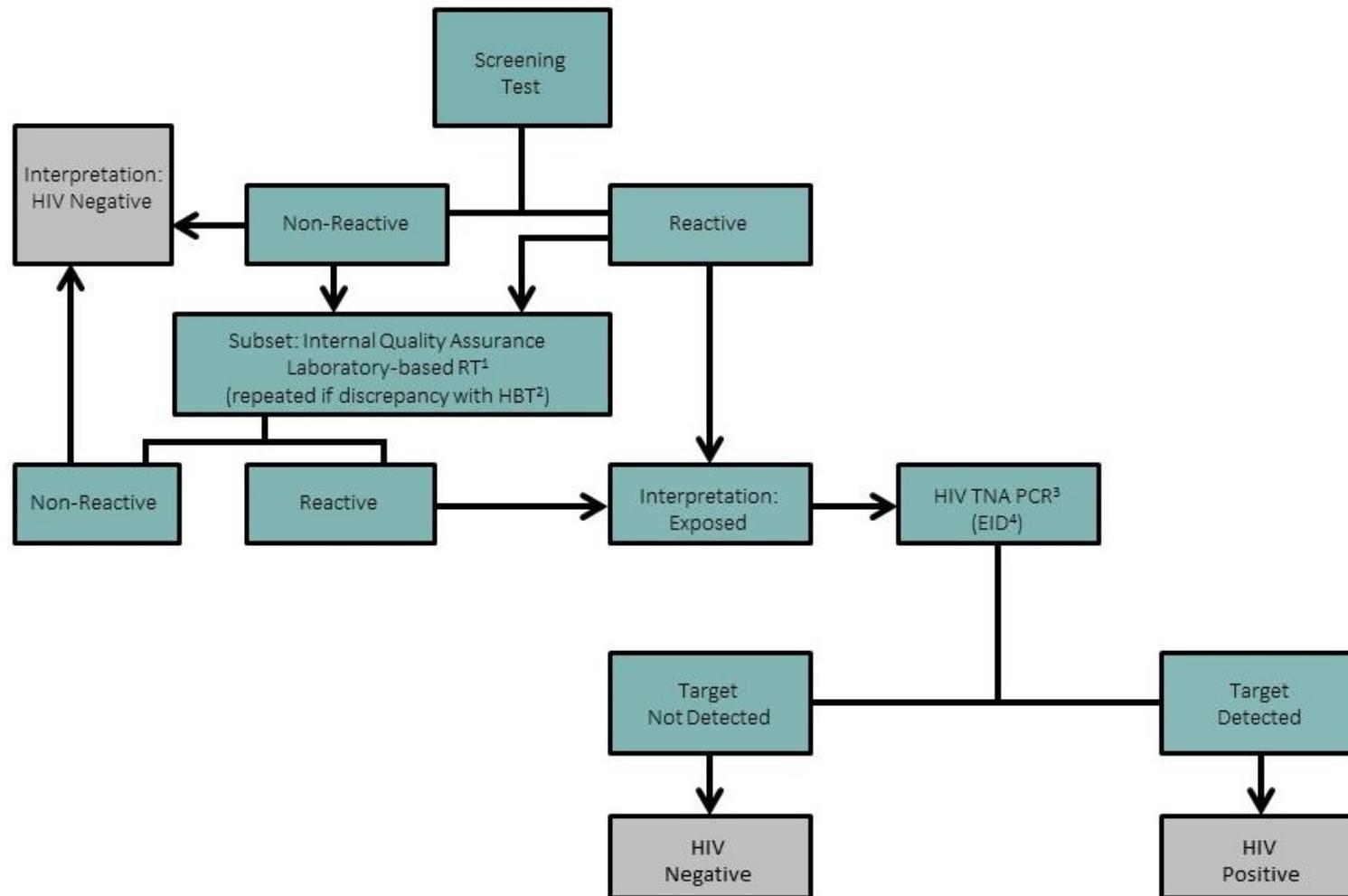
Figure B.3.A Final HIV Status Classification Algorithm (≥ 18 months), ZAMPHIA 2016



¹RT: rapid test; ²HBT: home-based testing; ³TNA PCR: total nucleic acid polymerase chain reaction

Note: Grey boxes indicate a final HIV-status determination

Figure B.3.B Final HIV Status Classification Algorithm (<18 months), ZAMPHIA 2016



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

Note: Grey boxes indicate a final HIV-status determination

Viral Load Testing

HIV-1 VL (HIV ribonucleic acid (RNA) copies per ml) from confirmed HIV-positive participants was measured using the COBAS® AmpliPrep/COBAS® TaqMan® HIV-1 Test, version 2.0 (v2.0) instrument (Roche Molecular Systems, Branchburg, New Jersey, United States). The COBAS® AmpliPrep instrument (Roche Molecular Systems) was used to prepare plasma samples for amplification and detection using the COBAS® TaqMan® Analyser (Roche Molecular Systems, Branchburg, New Jersey, United States). The Abbott RT-PCR m2000rt system (Abbott Molecular Inc., Chicago, Illinois, United States) was used to measure VL from DBS samples from children and from adults with insufficient volume of plasma.

VL results were returned to the health facility chosen by each HIV-positive participant. Participants were provided with a referral form during home-based testing and counseling for subsequent retrieval of their results. Survey staff also contacted participants who provided contact information, informing them that their VL results were available at the chosen facility and further advising them to seek care and treatment.

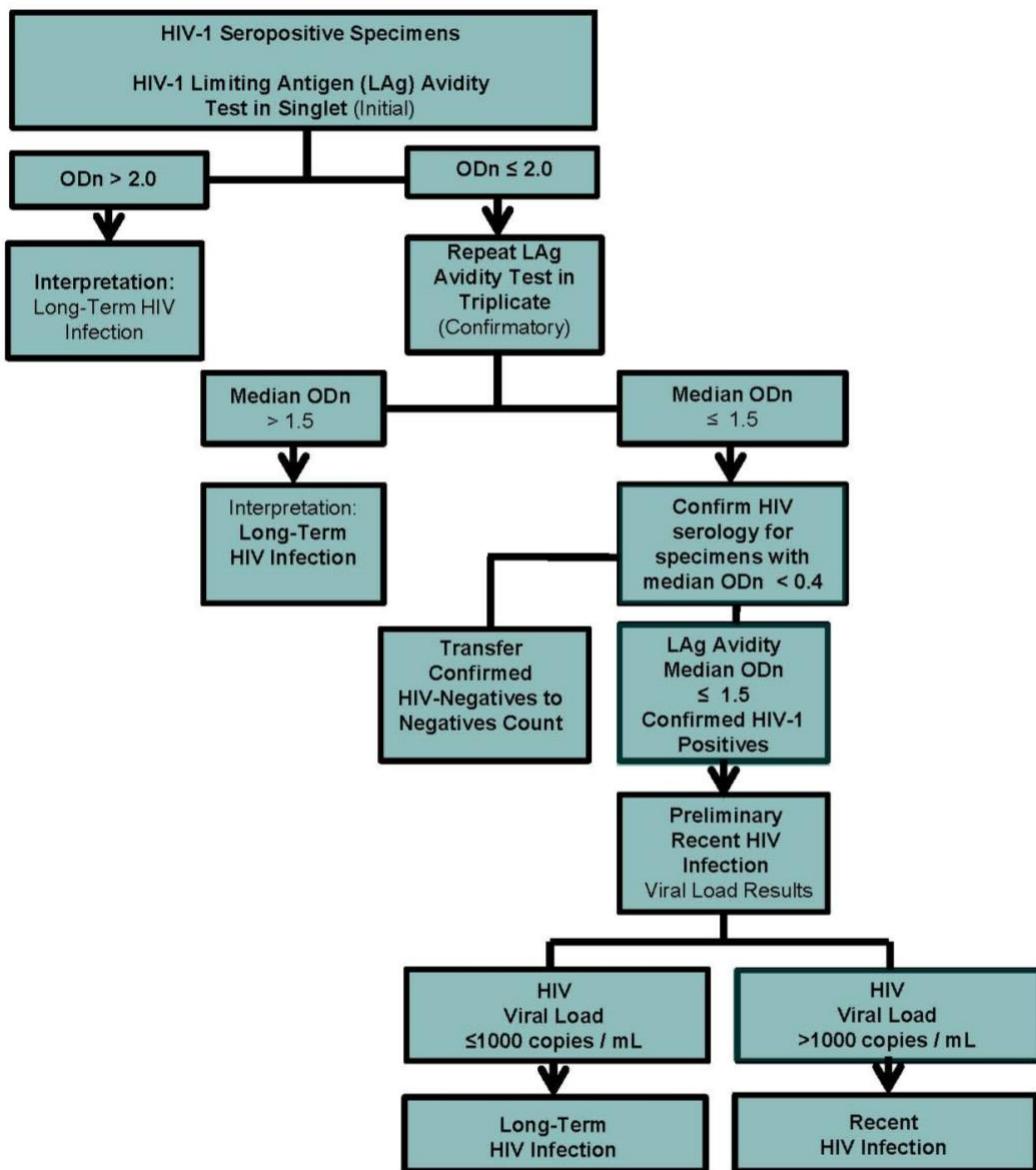
HIV Recency Testing

Estimation of HIV incidence was based on the classification of confirmed HIV-positive cases as recent or long-term HIV infections. The survey used two laboratory-based testing algorithms to estimate incidence. The first estimate used an algorithm that employed a combination of the HIV-1 Limiting Antigen (LAG) Avidity enzyme immunoassay (Sedia Biosciences Corporation, Portland, Oregon, United States) and VL results (Figure B.3.C). Antiretroviral (ARV) detection results were added to that algorithm for the second estimate (Figure B.3.D). The HIV recent infection testing algorithms were applied to repository specimens from all confirmed HIV-positive participants ages 18 months and older.

LAG testing was performed twice, with an initial screening test followed by a confirmatory process: specimens with a normalized optical density (OD_n) > 2.0 during initial testing were classified as long-term infections, while those with $OD_n \leq 2.0$ underwent further testing of the specimen in triplicate. Specimens with median $OD_n > 1.5$ in confirmatory testing were classified as long-term infections. Specimens with median $OD_n < 0.4$ were retested using the HIV diagnostic testing algorithm to confirm HIV-1 seropositivity, and samples identified as HIV-1 seronegative were excluded from the total number of HIV positives and incorporated into the total number of negative specimens for incidence estimation.

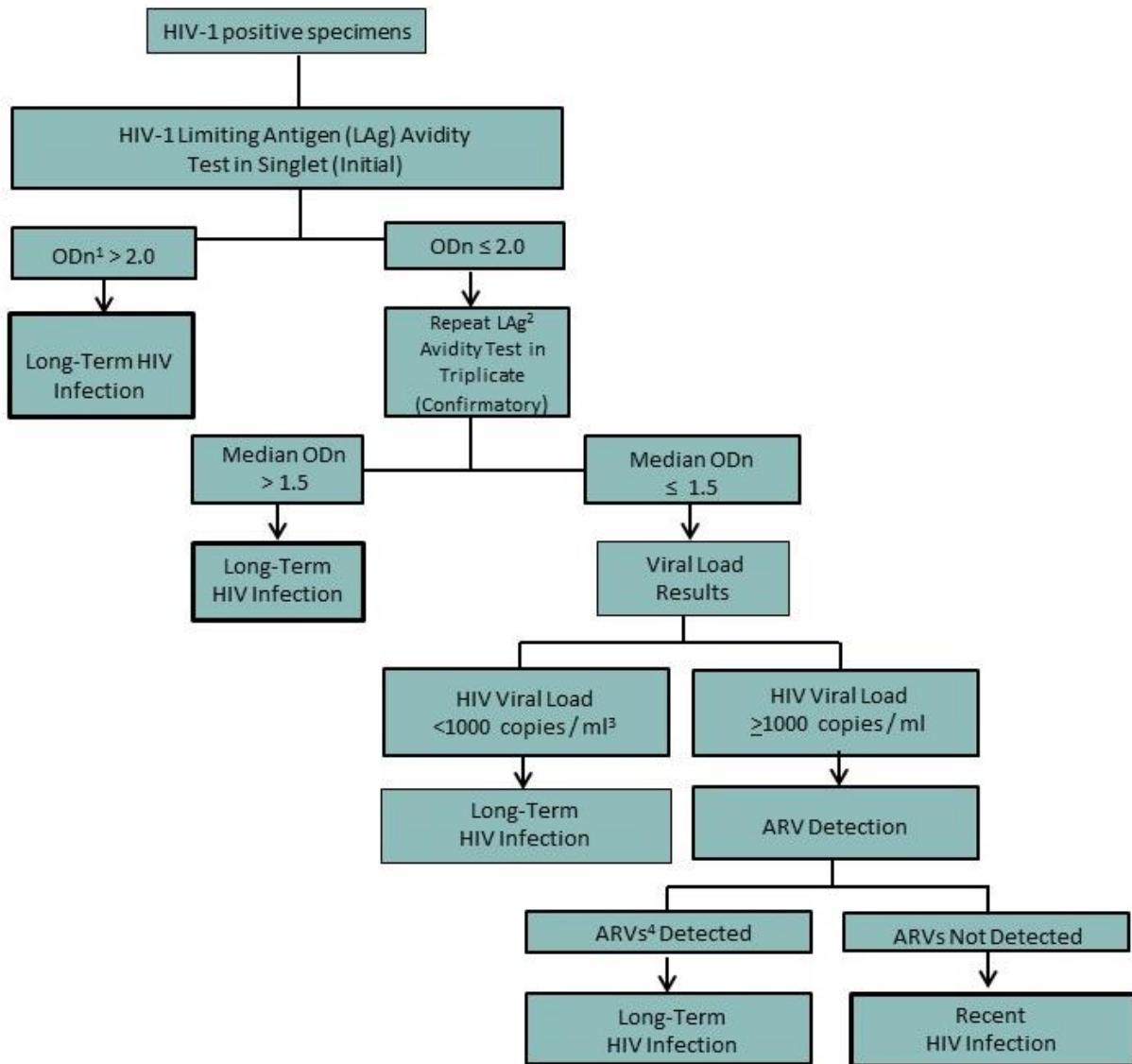
Specimens with median $OD_n \leq 1.5$ were classified as potential HIV-recent infections, and their VL results were assessed. For the first incidence testing algorithm, specimens with $VL < 1,000$ copies/ml were classified as long-term infections, while those with $VL \geq 1,000$ copies/ml were classified as recent infections. For the updated incidence algorithm, those classified as recent infections by the first algorithm were reclassified using ARV detection data. Those specimens in which efavirenz (EFV), atazanavir (ATV), lopinavir (LPV), and nevirapine (NVP) were detected were classified as long-term infections and those in which no ARVs were detected remained classified as recent infections.

Figure B.3.C HIV-1 Recent Infection Testing Algorithm (Algorithm (LAg/VL algorithm), ZAMPHIA 2016



¹ODn: normalized optical density; ²LAG: Limiting Antigen; ³ml: milliliter

Figure B.3.D HIV-1 recent infection testing algorithm (LA_g/VL/ARV algorithm), ZAMPHIA 2016



¹ODn: normalized optical density; ²LA_g: Limiting Antigen; ³ml: milliliter; ⁴ARV: antiretroviral

HIV Incidence Estimation

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. Weighted counts for HIV-negative persons (N); HIV-positive persons (P); numbers tested on the LA_g assay (Q); and numbers HIV recent (R) are provided for use in incidence calculations or the United Nations Joint Programme on HIV/AIDS Spectrum models (Tables B.3.A, B.3.B). Incidence estimates were calculated using the following parameters: mean duration recent infection (MDRI) = 130 days (95% CI: 118-142 days); proportion false recent (PFR) = 0.00; time cutoff (T) = 1 year. In-depth details are provided in the ZAMPHIA Technical Report.

Table B.3.A: Annual HIV incidence auxiliary data: N, P, Q, R (LAG/VL algorithm)

Table B.3.A: Annual HIV incidence auxiliary data: N, P, Q, R, (LAG/VL¹ algorithm)

Annual incidence of HIV among persons ages 15-49 and 15-64 years, by sex and age, ZAMPHIA 2016

| Age | Males | | | | Females | | | | Total | | | |
|-------|---|---|--|---|---|---|--|---|---|---|--|---|
| | Number HIV negative ² (N) | Number HIV positive ² (P) | Number tested on LAG assay ² (Q) | Number HIV recent ² (R) | Number HIV negative ² (N) | Number HIV positive ² (P) | Number tested on LAG assay ² (Q) | Number HIV recent ² (R) | Number HIV negative ² (N) | Number HIV positive ² (P) | Number tested on LAG assay ² (Q) | Number HIV recent ² (R) |
| 15-24 | 3097.75 | 57.25 | 57.25 | 0.86 | 3928.62 | 236.38 | 236.38 | 15.09 | 7044.15 | 275.85 | 275.85 | 14.41 |
| 25-34 | 1890.75 | 165.25 | 165.25 | 1.68 | 2566.03 | 510.97 | 508.96 | 10.64 | 4485.51 | 647.49 | 645.70 | 11.43 |
| 35-49 | 1728.73 | 418.27 | 416.19 | 5.34 | 2032.25 | 735.75 | 731.97 | 7.68 | 3786.16 | 1128.84 | 1123.11 | 12.92 |
| 15-49 | 6745.80 | 612.20 | 610.28 | 7.52 | 8582.37 | 1427.63 | 1422.20 | 33.65 | 15396.15 | 1971.85 | 1964.82 | 38.49 |
| 15-59 | 7388.65 | 753.35 | 750.38 | 8.43 | 9367.07 | 1605.93 | 1600.44 | 34.02 | 16821.20 | 2293.80 | 2285.51 | 39.94 |

¹ LAg/VL: limiting antigen/viral load

² Weighted number

Note: mean duration recent infection (MDRI) = 130 days (95% CI: 118-142 days); proportion false recent (PFR) = 0.00; time cutoff (T) = 1 year

Table B.3.B: Annual HIV incidence auxiliary data: N, P, Q, R (LAG/VL/ARV algorithm)

Table B.3.B: Annual HIV incidence auxiliary data: N, P, Q, R (LAG/VL/ARV¹ algorithm)

Annual incidence of HIV among persons ages 15-49 and 15-64 years, by sex and age, using LAg/VL/ARVs algorithm, by sex and age, ZAMPHIA 2016

| Age | Males | | | | Females | | | | Total | | | |
|-------|---|---|--|---|---|---|--|---|---|---|--|---|
| | Number HIV negative ² (N) | Number HIV positive ² (P) | Number tested on LAG assay ² (Q) | Number HIV recent ² (R) | Number HIV negative ² (N) | Number HIV positive ² (P) | Number tested on LAG assay ² (Q) | Number HIV recent ² (R) | Number HIV negative ² (N) | Number HIV positive ² (P) | Number tested on LAG assay ² (Q) | Number HIV recent ² (R) |
| 15-24 | 3097.75 | 57.25 | 57.25 | 0.86 | 3928.62 | 236.38 | 236.38 | 13.20 | 7044.15 | 275.85 | 275.85 | 12.73 |
| 25-34 | 1890.75 | 165.25 | 165.25 | 1.68 | 2566.03 | 510.97 | 508.96 | 9.76 | 4485.51 | 647.49 | 645.70 | 10.65 |
| 35-49 | 1728.73 | 418.27 | 416.19 | 4.49 | 2032.25 | 735.75 | 731.97 | 7.68 | 3786.16 | 1128.84 | 1123.11 | 11.93 |
| 15-49 | 6745.80 | 612.20 | 610.28 | 6.74 | 8582.37 | 1427.63 | 1422.20 | 30.75 | 15396.15 | 1971.85 | 1964.82 | 35.02 |
| 15-59 | 7388.65 | 753.35 | 750.38 | 7.63 | 9367.07 | 1605.93 | 1600.44 | 31.10 | 16821.20 | 2293.80 | 2285.51 | 36.42 |

¹ LAg/VL/ARV: Limiting antigen/viral load/antiretroviral

² Weighted number

Note: mean duration recent infection (MDRI) = 130 days (95% CI: 118-142 days); proportion false recent (PFR) = 0.00; time cutoff (T) = 1 year

Detection of Antiretrovirals

To understand recent exposure to ARVs and hence level of ART coverage, samples from all confirmed HIV-positive participants were evaluated for the presence of selected ARVs, using high-resolution liquid chromatography coupled with tandem mass spectrometry to detect ARVs from DBS specimens.¹ Three ARVs, one non-nucleoside reverse transcriptase inhibitors (NNRTIs), EFV, and two protease inhibitors (PIs), ATV and LPV, were used as markers for both first- and second-line regimens, based on Zambia's national treatment guidelines. Samples from participants who were virally suppressed and/or self-reported on ART but had no evidence of the first three compounds were tested for an additional NNRTI, NVP. The ARVs were selected based on their long half-lives, allowing for longer window period from drug exposure to detection.

To qualitatively detect ARVs, a single DBS was eluted, and chromatographic separation carried out on a Luna 5 μ m PFP column (110 Å, 50 x 2 mm) (Phenomenex, Torrance, CA). Each ARV was detected using an API 4000 LC/MS/MS instrument (Applied Biosystems, Foster City, CA). Internal standards and in-house quality control cut-off samples including negative controls were utilized in each run. This qualitative method used a limit of detection (LOD) of 0.02 μ g/ml for each ARV, with a signal-to-noise ratio of at least 5:1 for all ARVs. Samples with concentrations above 0.02 μ g/ml were considered positive for each ARV. Testing was conducted at University of Cape Town in South Africa.

Genotyping for Detection of Antiretroviral Drug Resistance and HIV Subtyping

To determine the extent of transmitted HIV-1 drug resistance mutations among participants in the ZAMPHIA, samples from confirmed HIV-positive participants aged less than 18 months and HIV-positive participants aged 18 months or older who were classified as recent infections as well as an equal or greater number of who were classified as long-term infections were evaluated using a TaqMan® SNP Genotyping Assay (Applied Biosystems) to identify mutations within the HIV-1 *pol* gene region, which encodes amino acid substitutions known to be responsible for resistance to specific ARVs.

Viral RNA or TNA from plasma or DBS was extracted using the NucliSENS® easyMAG® (bioMérieux, France) platform. The HIV *pol* gene was amplified by one-step RT-PCR, which was followed by nested PCR. Sequencing of the approximately one-kilobase amplicons was performed on the ABI 3730 DNA Analyzer (Applied Biosystems)^{7,8,9}.

The customized ReCALL software program was used to edit raw sequences and generate consensus sequences.⁵ Mutations in the protease and reverse transcriptase genes were classified as potentially associated with drug resistance, according to the Stanford University HIV Drug Resistance Database.⁶ Sequences with >98% homology were flagged for potential cross-contamination or possible epidemiological links. Internal quality assurance measures and in-house quality control standards were included in each run, to validate results. The assay's sensitivity has been established at 1000 copies/ml for plasma and DBS.⁷ Sequences were also analyzed for potential cross-contamination by phylogenetic analysis from code 6 of the protease gene to code 251 of the reverse transcriptase gene.

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

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APPENDIX C ESTIMATES OF SAMPLING ERRORS

Estimates from sample surveys are affected by two types of errors: non-sampling errors and sampling errors. Non-sampling errors result from mistakes made during data collection (e.g., misinterpretation of an HIV test result) and data management (e.g., transcription errors in data entry). While ZAMPHIA implemented numerous quality assurance and control measures minimize non-sampling errors, these errors are impossible to avoid and difficult to evaluate statistically.

In contrast, sampling errors can be evaluated statistically. The sample of respondents selected for ZAMPHIA 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 (e.g., 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 percent of all possible samples of identical size and design.

ZAMPHIA utilized a multi-stage stratified sample design, which requires complex calculations to obtain sampling errors. Specifically, a variant of the jackknife replication method was implemented in SAS (SAS Institute, North Carolina) to estimate variance for proportions (e.g., HIV prevalence), rates (e.g., annual HIV incidence), and counts (e.g., numbers of people living with HIV). Each replication considers all but one cluster in the calculation of the estimates. Pseudo-independent replications are thus created. In ZAMPHIA a jackknife replicate is created by randomly deleting one cluster from each variance-estimation stratum and retaining all of the clusters in the remaining strata. A total of 253 variance-estimation strata were created by pairing (or occasionally tripling) the sample clusters in the systematic order in which they had been selected. Hence, 253 replications were created. The variance of a sample-based statistic, y , is 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 ($k = 1, 2, \dots, K$).

In addition to the standard error, the design effect for each estimate is also calculated. The design effect is defined as the ratio of the standard error using the given sample design to the standard error that would result if a simple random sample had been used. A design effect of 1.0 indicates that the sample design is as efficient as a simple random sample, while a value greater than 1.0 indicates the increase in

the sampling error due to the use of a more complex and less statistically efficient design. Confidence limits for the estimates, 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, are also computed.

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

Table C.1: Sampling errors: Annual HIV incidence using LAg/VL/ARV testing algorithm, by age, ZAMPHIA 2016

| Age (years) | Weighted estimate (%) | Design effect | Lower confidence limit (%) | Upper confidence limit (%) |
|-------------|-----------------------|---------------|----------------------------|----------------------------|
| TOTAL | | | | |
| 15-24 | 0.51 | 0.86 | 0.23 | 0.78 |
| 25-34 | 0.67 | 0.91 | 0.26 | 1.07 |
| 35-49 | 0.89 | 0.99 | 0.38 | 1.39 |
| 15-49 | 0.64 | 0.88 | 0.42 | 0.86 |
| 15-59 | 0.61 | 0.90 | 0.40 | 0.81 |
| MALES | | | | |
| 15-24 | 0.08 | 1.07 | 0 | 0.24 |
| 25-34 | 0.25 | 0.88 | 0 | 0.62 |
| 35-49 | 0.73 | 0.97 | 0.05 | 1.40 |
| 15-49 | 0.28 | 0.93 | 0.07 | 0.49 |
| 15-59 | 0.29 | 0.93 | 0.08 | 0.50 |
| FEMALES | | | | |
| 15-24 | 0.94 | 0.94 | 0.44 | 1.44 |
| 25-34 | 1.07 | 1.00 | 0.40 | 1.73 |
| 35-49 | 1.06 | 1.01 | 0.31 | 1.81 |
| 15-49 | 1.00 | 0.90 | 0.64 | 1.37 |
| 15-59 | 0.93 | 0.91 | 0.60 | 1.26 |

Table C.2: Sampling errors: HIV prevalence by age, ZAMPHIA 2016

| Age | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) |
|--------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|
| TOTAL | | | | | |
| 0-17 months | 0.838 | 682 | 0.256 | 0.309 | 1.366 |
| 18-59 months | 0.797 | 1,911 | 0.208 | 0.369 | 1.225 |
| 5-9 | 1.768 | 2,876 | 0.260 | 1.233 | 2.303 |
| 10-14 | 0.880 | 2,546 | 0.207 | 0.453 | 1.308 |
| Total 0-4 | 0.808 | 2,593 | 0.173 | 0.451 | 1.165 |
| Total 0-14 | 1.147 | 8,015 | 0.125 | 0.889 | 1.404 |
| 15-19 | 2.489 | 3,931 | 0.264 | 1.944 | 3.033 |
| 20-24 | 5.244 | 3,389 | 0.394 | 4.434 | 6.055 |
| 25-29 | 9.843 | 2,672 | 0.627 | 8.552 | 11.134 |
| 30-34 | 15.868 | 2,461 | 0.821 | 14.177 | 17.559 |
| 35-39 | 19.896 | 1,996 | 1.003 | 17.831 | 21.962 |
| 40-44 | 25.769 | 1,740 | 1.306 | 23.08 | 28.459 |
| 45-49 | 24.382 | 1,179 | 1.410 | 21.479 | 27.286 |
| 50-54 | 21.496 | 1,028 | 1.450 | 18.509 | 24.483 |
| 55-59 | 17.322 | 719 | 1.624 | 13.977 | 20.666 |
| Total 15-24 | 3.768 | 7,320 | 0.239 | 3.276 | 4.261 |
| Total 15-49 | 11.353 | 17,368 | 0.316 | 10.702 | 12.004 |
| Total 15-59 | 12.000 | 19,115 | 0.320 | 11.342 | 12.658 |
| MALES | | | | | |
| 0-17 months | 0.994 | 310 | 0.292 | 0.392 | 1.595 |
| 18-59 months | 0.920 | 966 | 0.317 | 0.267 | 1.573 |
| 5-9 | 2.199 | 1,462 | 0.427 | 1.321 | 3.078 |
| 10-14 | 0.716 | 1,263 | 0.251 | 0.199 | 1.234 |
| Total 0-4 | 0.938 | 1,276 | 0.248 | 0.427 | 1.449 |
| Total 0-14 | 1.296 | 4,001 | 0.176 | 0.934 | 1.658 |
| 15-19 | 1.618 | 1,811 | 0.304 | 0.992 | 2.244 |
| 20-24 | 2.044 | 1,344 | 0.395 | 1.231 | 2.857 |
| 25-29 | 5.586 | 1,053 | 0.769 | 4.003 | 7.169 |
| 30-34 | 10.927 | 1,003 | 1.095 | 8.672 | 13.182 |
| 35-39 | 15.064 | 836 | 1.325 | 12.336 | 17.792 |
| 40-44 | 22.194 | 751 | 1.675 | 18.744 | 25.644 |
| 45-49 | 23.043 | 560 | 1.975 | 18.976 | 27.11 |
| 50-54 | 22.859 | 444 | 2.121 | 18.49 | 27.227 |
| 55-59 | 16.857 | 340 | 2.069 | 12.596 | 21.118 |
| Total 15-24 | 1.815 | 3,155 | 0.238 | 1.325 | 2.305 |
| Total 15-49 | 8.320 | 7,358 | 0.337 | 7.626 | 9.015 |
| Total 15-59 | 9.253 | 8,142 | 0.346 | 8.541 | 9.965 |
| FEMALES | | | | | |
| 0-17 months | 0.707 | 372 | 0.408 | 0.000 | 1.547 |
| 18-59 months | 0.663 | 945 | 0.274 | 0.099 | 1.227 |
| 5-9 | 1.333 | 1,414 | 0.307 | 0.700 | 1.966 |
| 10-14 | 1.046 | 1,283 | 0.309 | 0.410 | 1.683 |
| Total 0-4 | 0.676 | 1,317 | 0.226 | 0.210 | 1.141 |
| Total 0-14 | 0.996 | 4,014 | 0.153 | 0.682 | 1.311 |
| 15-19 | 3.347 | 2,120 | 0.411 | 2.500 | 4.194 |
| 20-24 | 8.335 | 2,045 | 0.64 | 7.016 | 9.654 |
| 25-29 | 13.568 | 1,619 | 0.974 | 11.563 | 15.574 |
| 30-34 | 20.162 | 1,458 | 1.155 | 17.783 | 22.54 |
| 35-39 | 24.650 | 1,160 | 1.415 | 21.736 | 27.564 |
| 40-44 | 29.577 | 989 | 1.67 | 26.137 | 33.017 |
| 45-49 | 25.848 | 619 | 1.809 | 22.123 | 29.574 |
| 50-54 | 20.138 | 584 | 1.736 | 16.564 | 23.713 |
| 55-59 | 17.748 | 379 | 2.276 | 13.061 | 22.436 |
| Total 15-24 | 5.675 | 4,165 | 0.398 | 4.856 | 6.495 |
| Total 15-49 | 14.262 | 10,010 | 0.421 | 13.396 | 15.128 |
| Total 15-59 | 14.635 | 10,973 | 0.414 | 13.782 | 15.489 |

Table C.3: Sampling errors: HIV prevalence by residence and province, ages 15-59 years, ZAMPHIA 2016

| Characteristic | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) |
|------------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|
| TOTAL | | | | | |
| Residence | | | | | |
| Urban | 15.3 | 8,340 | 0.5 | 14.2 | 16.3 |
| Rural | 9.2 | 10,775 | 0.4 | 8.4 | 10.1 |
| Province | | | | | |
| Central | 12.8 | 1,591 | 1.2 | 10.4 | 15.2 |
| Copperbelt | 13.8 | 3,284 | 0.7 | 12.3 | 15.3 |
| Eastern | 8.1 | 1,889 | 1.1 | 5.9 | 10.3 |
| Luapula | 9.3 | 1,016 | 1.3 | 6.7 | 11.9 |
| Lusaka | 15.7 | 3,245 | 0.8 | 14.1 | 17.3 |
| Muchinga | 5.7 | 1,729 | 0.9 | 3.9 | 7.5 |
| Northern | 9.2 | 1,479 | 1.0 | 7.2 | 11.2 |
| North-Western | 6.9 | 1,777 | 0.6 | 5.6 | 8.1 |
| Southern | 13.3 | 2,176 | 0.9 | 11.5 | 15.0 |
| Western | 15.9 | 929 | 1.9 | 11.9 | 19.9 |
| MALES | | | | | |
| Residence | | | | | |
| Urban | 11.6 | 3,315 | 0.6 | 10.3 | 12.8 |
| Rural | 7.4 | 4,827 | 0.4 | 6.5 | 8.2 |
| Province | | | | | |
| Central | 9.1 | 702 | 1.0 | 6.9 | 11.3 |
| Copperbelt | 10.0 | 1,386 | 0.8 | 8.3 | 11.7 |
| Eastern | 5.2 | 819 | 0.9 | 3.3 | 7.1 |
| Luapula | 7.3 | 426 | 1.6 | 4.0 | 10.5 |
| Lusaka | 12.4 | 1,242 | 1.1 | 10.2 | 14.7 |
| Muchinga | 3.4 | 758 | 0.6 | 2.3 | 4.6 |
| Northern | 7.9 | 659 | 1.1 | 5.7 | 10.1 |
| North-Western | 4.8 | 765 | 0.7 | 3.3 | 6.3 |
| Southern | 11.6 | 990 | 0.9 | 9.8 | 13.4 |
| Western | 13.7 | 395 | 1.9 | 9.8 | 17.5 |
| FEMALES | | | | | |
| Residence | | | | | |
| Urban | 18.7 | 5,025 | 0.7 | 17.4 | 20.1 |
| Rural | 11.1 | 5,948 | 0.5 | 10.0 | 12.2 |
| Province | | | | | |
| Central | 16.5 | 889 | 1.6 | 13.3 | 19.7 |
| Copperbelt | 17.5 | 1,898 | 0.9 | 15.5 | 19.4 |
| Eastern | 10.7 | 1,070 | 1.4 | 7.9 | 13.5 |
| Luapula | 11.1 | 590 | 1.7 | 7.7 | 14.6 |
| Lusaka | 18.8 | 2,003 | 0.9 | 16.9 | 20.7 |
| Muchinga | 7.9 | 971 | 1.4 | 5.1 | 10.7 |
| Northern | 10.5 | 820 | 1.2 | 8.0 | 12.9 |
| North-Western | 8.8 | 1,012 | 0.8 | 7.1 | 10.6 |
| Southern | 15.0 | 1,186 | 1.2 | 12.6 | 17.5 |
| Western | 17.8 | 534 | 2.5 | 12.6 | 23.1 |

Table C.4: Sampling errors: Viral load suppression by age, ZAMPHIA 2016

| Age (years) | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) |
|-------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|
| TOTAL | | | | | |
| 0-14 | 33.4 | 90 | 5.4 | 22.3 | 44.4 |
| 15-24 | 34.3 | 286 | 3.1 | 28.0 | 40.6 |
| 25-34 | 50.4 | 675 | 2.0 | 46.2 | 54.5 |
| 35-44 | 66.1 | 846 | 1.9 | 62.2 | 70.1 |
| 45-59 | 73.1 | 606 | 1.9 | 69.3 | 77.0 |
| Total 15-24 | 34.3 | 286 | 3.1 | 28.0 | 40.6 |
| Total 15-49 | 56.6 | 2,084 | 1.3 | 53.9 | 59.4 |
| Total 15-59 | 59.2 | 2,413 | 1.2 | 56.6 | 61.7 |
| MALES | | | | | |
| 0-14 | 30.0 | 52 | 6.9 | 15.7 | 44.2 |
| 15-24 | 36.7 | 53 | 7.5 | 21.3 | 52.0 |
| 25-34 | 36.7 | 160 | 4.7 | 27.1 | 46.2 |
| 35-44 | 60.1 | 276 | 2.9 | 54.2 | 66.1 |
| 45-59 | 73.3 | 269 | 2.8 | 67.6 | 78.9 |
| Total 15-24 | 36.7 | 53 | 7.5 | 21.3 | 52.0 |
| Total 15-49 | 52.5 | 611 | 2.2 | 47.9 | 57.1 |
| Total 15-59 | 57.2 | 758 | 2.0 | 53.1 | 61.3 |
| FEMALES | | | | | |
| 0-14 | 38.2 | 38 | 8.9 | 19.8 | 56.5 |
| 15-24 | 33.6 | 233 | 3.1 | 27.2 | 39.9 |
| 25-34 | 56.1 | 515 | 2.2 | 51.6 | 60.6 |
| 35-44 | 70.3 | 570 | 2.1 | 65.9 | 74.6 |
| 45-59 | 73.0 | 337 | 2.6 | 67.7 | 78.4 |
| Total 15-24 | 33.6 | 233 | 3.1 | 27.2 | 39.9 |
| Total 15-49 | 58.9 | 1,473 | 1.4 | 55.9 | 61.9 |
| Total 15-59 | 60.4 | 1,655 | 1.3 | 57.6 | 63.2 |

Table C.5: Sampling errors: Viral load suppression by residence and province, ages 15-59 years, ZAMPHIA 2016

| Characteristic | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) |
|------------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|
| TOTAL | | | | | |
| Residence | | | | | |
| Urban | 61.8 | 1,393 | 1.5 | 58.7 | 64.9 |
| Rural | 55.5 | 1,020 | 2.1 | 51.1 | 59.8 |
| Province | | | | | |
| Central | 59.1 | 229 | 3.5 | 52.0 | 66.3 |
| Copperbelt | 56.7 | 504 | 2.4 | 51.7 | 61.7 |
| Eastern | 67.1 | 176 | 4.0 | 58.8 | 75.4 |
| Luapula | 53.1 | 105 | 7.4 | 37.9 | 68.2 |
| Lusaka | 62.7 | 579 | 2.3 | 58.0 | 67.3 |
| Muchinga | 63.7 | 108 | 4.2 | 55.0 | 72.5 |
| Northern | 50.6 | 111 | 8.8 | 32.5 | 68.6 |
| North-Western | 53.4 | 136 | 3.3 | 46.7 | 60.2 |
| Southern | 63.7 | 305 | 3.6 | 56.3 | 71.1 |
| Western | 47.3 | 160 | 5.9 | 35.2 | 59.5 |
| MALES | | | | | |
| Residence | | | | | |
| Urban | 60.5 | 399 | 2.6 | 55.2 | 65.8 |
| Rural | 52.8 | 359 | 3.1 | 46.4 | 59.1 |
| Province | | | | | |
| Central | 56.1 | 70 | 4.8 | 46.1 | 66.0 |
| Copperbelt | 49.7 | 152 | 4.5 | 40.5 | 58.9 |
| Eastern | 68.6 | 47 | 5.8 | 56.6 | 80.5 |
| Luapula | 45.5 | 34 | 14.0 | 16.7 | 74.3 |
| Lusaka | 67.5 | 167 | 3.9 | 59.5 | 75.5 |
| Muchinga | 65.1 | 28 | 9.8 | 44.9 | 85.2 |
| Northern | 50.0 | 42 | 8.2 | 33.1 | 66.9 |
| North-Western | 49.8 | 39 | 5.6 | 38.2 | 61.4 |
| Southern | 56.0 | 122 | 5.3 | 45.1 | 67.0 |
| Western | 45.6 | 57 | 7.4 | 30.4 | 60.9 |
| FEMALES | | | | | |
| Residence | | | | | |
| Urban | 62.5 | 994 | 1.7 | 59.1 | 66.0 |
| Rural | 57.2 | 661 | 2.3 | 52.5 | 62.0 |
| Province | | | | | |
| Central | 60.8 | 159 | 4.1 | 52.4 | 69.2 |
| Copperbelt | 60.6 | 352 | 2.6 | 55.1 | 66.0 |
| Eastern | 66.4 | 129 | 4.4 | 57.3 | 75.5 |
| Luapula | 57.6 | 71 | 5.6 | 46.0 | 69.1 |
| Lusaka | 59.6 | 412 | 2.5 | 54.4 | 64.9 |
| Muchinga | 63.2 | 80 | 5.4 | 52.0 | 74.3 |
| Northern | 51.0 | 69 | 10.5 | 29.4 | 72.5 |
| North-Western | 55.3 | 97 | 4.5 | 46.1 | 64.5 |
| Southern | 70.0 | 183 | 4.3 | 61.1 | 78.9 |

Western

48.4

103

6.0

36.1

60.7

Table C.6: Sampling errors: Self-reported ARV data 90-90-90 by age (conditional percentages), ZAMPHIA 2016

| Age (years) | Diagnosed | | | | | On Treatment | | | | | Suppressed Viral Load | | | | |
|-------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|
| | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) |
| TOTAL | | | | | | | | | | | | | | | |
| 15-24 | 40.2 | 287 | 2.9 | 34.1 | 46.2 | 80.0 | 118 | 3.6 | 72.7 | 87.4 | 71.3 | 93 | 5.1 | 60.7 | 81.8 |
| 25-34 | 60.8 | 687 | 2.1 | 56.4 | 65.1 | 77.2 | 431 | 2.4 | 72.2 | 82.1 | 88.7 | 336 | 1.8 | 85.1 | 92.4 |
| 35-49 | 73.8 | 1,130 | 1.6 | 70.4 | 77.1 | 87.4 | 845 | 1.3 | 84.7 | 90.0 | 89.8 | 744 | 1.2 | 87.4 | 92.2 |
| 15-49 | 64.5 | 2,104 | 1.3 | 61.8 | 67.2 | 83.5 | 1,394 | 1.1 | 81.3 | 85.8 | 87.8 | 1,173 | 1.1 | 85.6 | 90.1 |
| 15-59 | 66.1 | 2,434 | 1.2 | 63.6 | 68.6 | 85.1 | 1,647 | 1.0 | 83.0 | 87.1 | 89.2 | 1,409 | 0.9 | 87.3 | 91.2 |
| MALES | | | | | | | | | | | | | | | |
| 15-24 | 40.6 | 53 | 7.5 | 25.2 | 56.1 | * | 20 | 7.1 | 72.3 | 100.0 | * | 17 | 12.5 | 25.9 | 77.5 |
| 25-34 | 40.6 | 165 | 4.2 | 31.9 | 49.2 | 72.1 | 68 | 6.0 | 59.7 | 84.4 | 90.7 | 47 | 4.2 | 82.0 | 99.4 |
| 35-49 | 69.8 | 401 | 2.4 | 64.8 | 74.7 | 86.4 | 279 | 2.0 | 82.4 | 90.4 | 87.7 | 240 | 2.2 | 83.2 | 92.2 |
| 15-49 | 58.9 | 619 | 2.3 | 54.1 | 63.6 | 83.7 | 367 | 1.8 | 80.0 | 87.4 | 85.6 | 304 | 2.1 | 81.3 | 90.0 |
| 15-59 | 62.3 | 766 | 2.1 | 58.0 | 66.6 | 86.2 | 482 | 1.5 | 83.1 | 89.3 | 87.7 | 413 | 1.7 | 84.3 | 91.1 |
| FEMALES | | | | | | | | | | | | | | | |
| 15-24 | 40.1 | 234 | 3.1 | 33.6 | 46.5 | 77.9 | 98 | 4.2 | 69.3 | 86.4 | 78.1 | 76 | 5.1 | 67.5 | 88.7 |
| 25-34 | 69.4 | 522 | 2.2 | 64.9 | 73.9 | 78.4 | 363 | 2.5 | 73.3 | 83.6 | 88.3 | 289 | 1.9 | 84.3 | 92.2 |
| 35-49 | 76.8 | 729 | 1.8 | 73.1 | 80.5 | 88.1 | 566 | 1.6 | 84.8 | 91.4 | 91.2 | 504 | 1.2 | 88.8 | 93.6 |
| 15-49 | 67.6 | 1,485 | 1.4 | 64.8 | 70.5 | 83.4 | 1,027 | 1.4 | 80.6 | 86.3 | 88.9 | 869 | 1.1 | 86.6 | 91.3 |
| 15-59 | 68.4 | 1,668 | 1.3 | 65.7 | 71.1 | 84.4 | 1,165 | 1.2 | 81.9 | 87.0 | 90.1 | 996 | 1.0 | 87.9 | 92.2 |

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

| Age (years) | Diagnosed | | | | | On Treatment | | | | | Suppressed Viral Load | | | | |
|-------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|-----------------------|-------------------|--------------------|----------------------------|----------------------------|
| | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) | Weighted estimate (%) | Unweighted number | Standard error (%) | Lower confidence limit (%) | Upper confidence limit (%) |
| TOTAL | | | | | | | | | | | | | | | |
| 15-24 | 46.0 | 288 | 3.0 | 39.8 | 52.3 | 38.4 | 288 | 3.0 | 32.2 | 44.5 | 27.8 | 288 | 2.9 | 22.0 | 33.7 |
| 25-34 | 65.4 | 686 | 2.0 | 61.2 | 69.6 | 52.1 | 686 | 2.2 | 47.7 | 56.6 | 46.5 | 686 | 2.1 | 42.1 | 50.8 |
| 35-49 | 79.4 | 1,133 | 1.5 | 76.4 | 82.5 | 71.0 | 1,133 | 1.7 | 67.5 | 74.5 | 63.8 | 1,133 | 1.7 | 60.3 | 67.4 |
| 15-49 | 69.8 | 2,107 | 1.3 | 67.2 | 72.4 | 59.9 | 2,107 | 1.4 | 57.1 | 62.8 | 52.8 | 2,107 | 1.3 | 50.0 | 55.5 |
| 15-59 | 71.4 | 2,439 | 1.2 | 69.0 | 73.7 | 62.2 | 2,439 | 1.3 | 59.6 | 64.8 | 55.5 | 2,439 | 1.2 | 52.9 | 58.1 |
| MALES | | | | | | | | | | | | | | | |
| 15-24 | 48.3 | 54 | 8.0 | 31.8 | 64.8 | 43.1 | 54 | 8.0 | 26.6 | 59.6 | 26.3 | 54 | 6.9 | 12.0 | 40.6 |
| 25-34 | 47.3 | 164 | 4.4 | 38.3 | 56.2 | 35.8 | 164 | 4.5 | 26.6 | 45.1 | 32.5 | 164 | 4.4 | 23.4 | 41.6 |
| 35-49 | 77.0 | 401 | 2.2 | 72.4 | 81.6 | 68.0 | 401 | 2.4 | 63.2 | 72.9 | 59.4 | 401 | 2.4 | 54.5 | 64.3 |
| 15-49 | 66.0 | 619 | 2.2 | 61.5 | 70.4 | 56.7 | 619 | 2.2 | 52.1 | 61.3 | 48.7 | 619 | 2.2 | 44.3 | 53.2 |
| 15-59 | 69.2 | 767 | 1.9 | 65.3 | 73.2 | 61.1 | 767 | 2.0 | 57.0 | 65.1 | 53.6 | 767 | 1.9 | 49.6 | 57.5 |
| FEMALES | | | | | | | | | | | | | | | |
| 15-24 | 45.3 | 234 | 3.1 | 39.0 | 51.6 | 36.9 | 234 | 3.0 | 30.6 | 43.1 | 28.3 | 234 | 3.0 | 22.2 | 34.5 |
| 25-34 | 73.1 | 522 | 2.1 | 68.6 | 77.5 | 59.0 | 522 | 2.3 | 54.3 | 63.8 | 52.4 | 522 | 2.3 | 47.7 | 57.1 |
| 35-49 | 81.3 | 732 | 1.6 | 77.9 | 84.6 | 73.3 | 732 | 1.9 | 69.2 | 77.3 | 67.2 | 732 | 2.1 | 63.0 | 71.4 |
| 15-49 | 72.0 | 1,488 | 1.4 | 69.1 | 74.8 | 61.7 | 1,488 | 1.6 | 58.5 | 64.9 | 55.0 | 1,488 | 1.6 | 51.8 | 58.2 |
| 15-59 | 72.6 | 1,672 | 1.3 | 70.1 | 75.2 | 62.9 | 1,672 | 1.4 | 59.9 | 65.8 | 56.7 | 1,672 | 1.4 | 53.7 | 59.6 |

Table C.8: Sampling errors: Number of new infections annually and number of PLHIV, ages 15-59 years, ZAMPHIA 2016

| | Weighted estimate | Standard error | Lower confidence limit | Upper confidence limit |
|-----------------------------------|----------------------|-------------------|---------------------------|---------------------------|
| Number of new infections annually | 42855 | 7050 | 28307 | 57402 |
| Number of PLHIV | 960665 | 25579 | 907983 | 1013346 |

APPENDIX D SURVEY PERSONNEL

| | |
|---|---|
| Ministry of Health | James Shamamba Darius Simbeye Brian Sichula |
| Lloyd B. Mulenga Chipalo Kaliki Crispin Moyo Caroline Phiri Bushimbwa Tambatamba | |
| ICAP at Columbia University- New York | ICAP at Columbia University- South Africa |
| Andrea Low Allison George Bereket Alemayehu Curran Kennedy David Hoos Elizabeth Radin Jessica Justman Joanne Mantell Joseph Elias Hannah Chung Kiwon Lee Karampreet Sachathep Larkin Callaghan Mansoor Farahani Melissa Metz Natasha McLeod Natazia M. Fistrovic Neena Philip Noelle Esquire Oren Mayer Sally Findley Stephen Delgado Steven Wynn Suzue Saito Yen Pottinger | Blanche Pitt Bright Phiri Charles Wentzl Herbert Longwe Oliver Murangandi Pule Mphole Takura Kupamupindu |
| ICAP at Columbia University- Zambia | CDC Atlanta |
| Prisca Kasonde Tepa Nkumbula Kumbutso Dzekedzeke Mulenga Katongo Casco Mubanga | Amy E. Peterson Danielle Barradas Clement B. Ndongmo Haotian Cai Stanley Kamocha Krystal Rampali Dailes Nsofa Jim McAuley Melissa Marx Sundeep Gupta |

| | |
|---|------------------------------------|
| Margaret Riggs | Central Statistical Office, Zambia |
| Kathy Hageman | John Kalumbi |
| Martin Steinau | Iven Sikanyiti |
| Tropical Diseases Research Centre, Zambia | Richard Banda |
| Webster Kasongo | Nchimunya Nkombo |
| Modest Mulenga | Chola N. Daka |
| Evans Betha | Palver Sikanyiti |
| Innocent Chilumba | Chibesa Musamba |
| Samson Mwale | Etambuyu Lukonga |
| Davies Champo | Harriet N. Zimbizi |
| Irene Mutale | Emma Phiri Shamalimba |
| Daniel Mutale | Michelo Choongo |
| Chansa Silwizya | Sikufele Mubita |
| Kenny Situtu | Nasilele Amatende |
| Maambo Chaambwa | Bruce Sianyeuka |
| Sitali Simasiku | Moonga Choongo |
| Ndola Central Hospital Staff | Juliet Malambo |
| Lumbani Phiri | Barbara Muyabi |
| Cunningham Kafweta | Victor Bwalya |
| Mwansa Manchina | Makoselo Bowa |
| Allen Chipipa | Chonde Namutowe |
| Esther Ngoma | Annie Kanina |
| University Teaching Hospital | Jacqueline Simwanza |
| Gina Mulundu | Matildah Tembo |
| University of Zambia | Marylene Kaunda |
| Emmanuel Tembo | Melleh Gondwe |
| Jacob Malungo | Mwaka Hachisaala |
| Nkuye Moyo | Nshimba Mwansa |
| Andrew Banda | Chrispin Solopi |
| Million Phiri | |
| Audrey Kalindi | |
| Elizabeth Nyirenda | |
| Chabila Mapoma | |

ZAMPHIA Field Team Members

| | |
|----------------------|--------------------|
| Timothy Chali | Team Lead |
| Frank Mtonga | Lab Technician |
| Mirriam Mwanza | Nurse Counselor |
| Temwa Chirwa | Nurse Counselor |
| Elina Chongo | Midwife |
| Natasha Sakala | Female Interviewer |
| Modrey Chisenga | Male Interviewer |
| Mangani Banda | Team Lead |
| Ayenela Nkhoma | Lab Technician |
| Racheal Mwanamwenge | Nurse Counselor |
| Faustina Kasongo | Nurse Counselor |
| Sarah Musolo | Midwife |
| Christine Mupeta | Female Interviewer |
| Alan Given Nakalonga | Male Interviewer |
| Catherine Mulenga | Team Lead |
| Wisdom Silwamba | Lab Technician |
| Pamela Kunda | Nurse Counselor |
| Irene Siame | Nurse Counselor |
| Matilda Musopelo | Midwife |
| Chinengo M. Malama | Female Interviewer |
| Omega Mumba | Male Interviewer |
| Valentine Moto | Team Lead |
| Arnold Chipunka | Lab Technician |
| Getrude Nanyangwe | Nurse Counselor |
| Comfort Chileshe | Nurse Counselor |
| Dumase Ngoma | Midwife |
| Hetty M. Munsaka | Female Interviewer |
| Lovemore Chikungu | Male Interviewer |
| Abraham Mukuka | Team Lead |
| Daniel Kalenga | Lab Technician |
| Besta Chooka | Nurse Counselor |
| Grace M. Chanda | Nurse Counselor |
| Edah Bwalya | Midwife |
| Ireen K. Chilambo | Female Interviewer |
| Moses Chilumba | Male Interviewer |
| Mercy Kabika | Team Lead |

| | |
|--------------------|--------------------|
| Kelma Kamuntu | Lab Technician |
| Bridget Kawimbe | Nurse Counselor |
| Ruth Nkhoma | Nurse Counselor |
| Nedah Musopelo | Midwife |
| Vutiwe Manda | Female Interviewer |
| Amon Gondwe | Male Interviewer |
| Leonard Kasonde | Team Lead |
| Maxwell Chishala | Lab Technician |
| Majorie Singogo | Nurse Counselor |
| Janet Mbawo | Nurse Counselor |
| Barbara Ng'andu | Midwife |
| Edith Lengwe | Female Interviewer |
| Obious Kabwe | Male Interviewer |
| Prosper Milambo | Team Lead |
| Patrick Chama | Lab Technician |
| Bridget Mbewe | Nurse Counselor |
| Caroline Kalichi | Nurse Counselor |
| Gladys Kabwe | Midwife |
| Felistus Moonga | Female Interviewer |
| Mutombu Kanganja | Male Interviewer |
| David Siwo | Team Lead |
| Gilead Chabala | Lab Technician |
| Eunnah Chitankwa | Nurse Counselor |
| Lilian Lisulo | Nurse Counselor |
| Iness Ndimbwa | Midwife |
| Maggie Mwila | Female Interviewer |
| Shadreck Sinyangwe | Male Interviewer |
| Aaron Mwandama | Team Lead |
| Wezi Nyirongo | Lab Technician |
| Ruth Namfukwe | Nurse Counselor |
| Charity Banda | Nurse Counselor |
| Grace N. Phiri | Midwife |
| Esneah Tembo | Female Interviewer |
| Jimmy Kapaya | Male Interviewer |
| Stephen Daka | Team Lead |
| Lesa Chipili | Lab Technician |
| Evelyn Banda | Nurse Counselor |

| | |
|----------------------|--------------------|
| Justina N Tanganyika | Nurse Counselor |
| Rebecca K Phiri | Midwife |
| Mutinta R. Hamweemba | Female Interviewer |
| Joel M. Siabbwete | Male Interviewer |
| Moses Mwila | Team Lead |
| Joseph Mutale | Lab Technician |
| Vivian Sampa | Nurse Counselor |
| Charity Nkumbwa | Nurse Counselor |
| Phoebe Lukwesa | Midwife |
| Joyce Mbawo | Female Interviewer |
| Hassan Mwandunga | Male Interviewer |
| Stephen Ngosa Kayoka | Team Lead |
| Chisoko Milimo | Lab Technician |
| Matomolo Mashako | Nurse Counselor |
| Theresa Ntanganyika | Nurse Counselor |
| Ruth Shakeemba | Midwife |
| Monica Tembo | Female Interviewer |
| Sonigiso Songiso | Male Interviewer |
| Jackson Phiri | Team Lead |
| Mutale Kasama | Lab Technician |
| Dinah Kabwe | Nurse Counselor |
| Mambwe Musonda | Nurse Counselor |
| Cecelia M. Chisanga | Midwife |
| Taona Mwafulilwa | Female Interviewer |
| Situmbeko Nyambe | Male Interviewer |
| Votary Hamukali | Team Lead |
| Sylvester Phiri | Lab Technician |
| Chongo K. Nyanga | Nurse Counselor |
| Charity C. Bule | Nurse Counselor |
| Ruth Balengu | Midwife |
| Chiyembekezo Banda | Female Interviewer |
| Gershom Musenge | Male Interviewer |
| Francis Kasonde | Team Lead |
| Yivwananji Simukonda | Lab Technician |
| Irene Kasewente | Nurse Counselor |
| Gloria Musukwa | Nurse Counselor |
| Cecilia Makalu | Nurse Counselor |

| | |
|------------------------|--------------------|
| Choolwe M. Munshya | Midwife |
| Brenda Mudenda | Female Interviewer |
| Julius Kawasha | Male Interviewer |
| Daniel Muyabi | Team Lead |
| Wilson Banda | Lab Technician |
| Maggie Macuacua | Nurse Counselor |
| Catherine Mukuka | Nurse Counselor |
| Sarah Mwila | Midwife |
| Naomi Mwanza | Female Interviewer |
| Siloya Malumo | Male Interviewer |
| Masoka Zimba | Team Lead |
| Liteta Mushokela | Lab Technician |
| Esnart L. Chanda | Nurse Counselor |
| Mary Kaonga | Nurse Counselor |
| Clesenciana Kondowe | Midwife |
| Tasila Mushanga | Female Interviewer |
| Godfrey Manda | Male Interviewer |
| Patrick Sampa | Team Lead |
| Simwanda Kaluba | Lab Technician |
| Julia Ngoma | Nurse Counselor |
| Annie Chilonge | Nurse Counselor |
| Annie Chibuye | Midwife |
| Lillian S. Nachilyango | Female Interviewer |
| Davison Shumba | Male Interviewer |
| Christopher Kalaba | Team Lead |
| Goliath Banda | Lab Technician |
| Patricia Kaonga | Nurse Counselor |
| Athience Matongo | Nurse Counselor |
| Serah Muteka | Midwife |
| Mirriam M. Mbanga | Female Interviewer |
| Micheal Kambwela | Male Interviewer |
| Charles Mubanga | Team Lead |
| Conrad Mwamba | Lab Technician |
| Elina Bwalya | Nurse Counselor |
| Harriet Shanobe | Nurse Counselor |
| Jacqueline Lengamali | Midwife |
| Lillian Kunda | Female Interviewer |

| | |
|----------------------|--------------------|
| Andrew Loloji | Male Interviewer |
| Alick Mumba | Team Lead |
| Mathews Kaunda | Lab Technician |
| Merry Muyembe | Nurse Counselor |
| Kasanda Mwansa | Nurse Counselor |
| Kutemba Lyangenda | Midwife |
| Yetambuyu Liboma | Female Interviewer |
| Aubrey Mupeta | Male Interviewer |
| Beggar Beenzu | Team Lead |
| Mwenda Chimbwali | Lab Technician |
| Namukolo Nganga | Nurse Counselor |
| Doreen N. Mwiya | Nurse Counselor |
| Brenda Sindowe | Midwife |
| Njahi Mate | Female Interviewer |
| Jonathan Luthangu | Male Interviewer |
| Chris Lunzi Lubinda | Team Lead |
| Paul Mwenda | Lab Technician |
| Patricia Hachintu | Nurse Counselor |
| Christine Dindi | Nurse Counselor |
| Beatrice Mubita | Midwife |
| Gloria Lishomwa | Female Interviewer |
| Davie K. Chiyaze | Male Interviewer |
| Pelebo Hambula | Team Lead |
| Frank Habeenzu | Lab Technician |
| Amukusana Mutandi | Nurse Counselor |
| Joyce Mweene | Nurse Counselor |
| Charity Mumba | Midwife |
| Mbololwa Mufaya | Female Interviewer |
| Chabota Muyoba | Male Interviewer |
| Jinx Kanyanga | Team Lead |
| Safe Choongo | Lab Technician |
| Eunice Mutempa | Nurse Counselor |
| Florence S. Simwinji | Nurse Counselor |
| Joyce Simataa | Midwife |
| Namoya Matambo | Male Interviewer |
| Sikundu Mwanalushi | Team Lead |
| Manza Siainga | Lab Technician |

| | |
|-----------------------|--------------------|
| Namukolo Mwangala | Nurse Counselor |
| Loveness Mweemba | Nurse Counselor |
| Doris Sinazongwe | Midwife |
| Deborah M. Kangumu | Female Interviewer |
| George Palicha | Male Interviewer |
| Songiso | Team Lead |
| Joseph Mubiana | Lab Technician |
| Margaret Chitengi | Nurse Counselor |
| Doris Z Chikwamphu | Nurse Counselor |
| Glenda Kazabu | Midwife |
| Veronica M. Mutale | Female Interviewer |
| Watson Siatubotu | Male Interviewer |
| Akakulubelwa Nalumino | Team Lead |
| Charles Muyumba | Lab Technician |
| Diana Chimbungule | Nurse Counselor |
| Catherine Chirwa | Nurse Counselor |
| Moldrine Mwailenge | Midwife |
| Phillis Wina | Female Interviewer |
| Kabali Wamunyima | Male Interviewer |
| Joseph Mashilipa | Team Lead |
| Kelvis Mweene | Lab Technician |
| Viola Hamainza | Nurse Counselor |
| Inonge Mulamfu | Nurse Counselor |
| Pauline Chiyabi | Midwife |
| Rachael Siamoonga | Female Interviewer |
| Obert Siazilemu | Male Interviewer |
| Clymore Kalyangile | Team Lead |
| Daniel Siakavuba | Lab Technician |
| Rosemary Chuza | Nurse Counselor |
| Nancy Mulamfwu | Midwife |
| Catherine Maliko | Nurse Counselor |
| Sandra Mushukulumbwe | Female Interviewer |
| Fielder Shampile | Male Interviewer |
| John Sambambi | Team Lead |
| Chabota Miyoba | Lab Technician |
| Nowanga Mabuku | Nurse Counselor |
| Annie Mutale | Nurse Counselor |

| | |
|---------------------------|--------------------|
| Laura b. Winga | Midwife |
| Cleopatra Mwanalushi | Female Interviewer |
| Sebby Nyanga | Male Interviewer |
| Liywali Simuyunyi | Team Lead |
| Sainedi Phiri | Lab Technician |
| Esnelly C. Ngoma | Nurse Counselor |
| Mervis Bwalya | Nurse Counselor |
| Vinace Chingobe | Midwife |
| Pamela Hampwili | Female Interviewer |
| Webster Muyabi | Male Interviewer |
| Peter Kamangu | Team Lead |
| Chawela Nyondo | Lab Technician |
| Linda Chilongo | Nurse Counselor |
| Sharon Phiri | Nurse Counselor |
| Bibian Banda | Midwife |
| Patra Hamwanza | Female Interviewer |
| Alfred Mbewe | Male Interviewer |
| Webster Sikalumbi | Team Lead |
| Choolwe Hangoma | Lab Technician |
| Precious M. Kasewenta | Nurse Counselor |
| Tumelo Mshanga | Nurse Counselor |
| Elizabeth Kamanya | Midwife |
| Susan Siavwapa | Female Interviewer |
| Jeremiah Tembo | Male Interviewer |
| Somili Kalombo | Team Lead |
| Collins Litwayi | Lab Technician |
| Lusa Kitengwe | Nurse Counselor |
| Mbashila Muzhinga | Nurse Counselor |
| Eness Katanya | Midwife |
| Pungwa M. Mateo | Female Interviewer |
| Samuel Kapandula | Male Interviewer |
| Cyrus Nkumba | Team Lead |
| Patience Luneta | Lab Technician |
| Kambenjah Stellia Malenji | Female Interviewer |
| Susana Helasi | Nurse Counselor |
| Annie Kasongo Mumba | Nurse Counselor |
| Rachael Kamalamba | Midwife |

| | |
|------------------------|--------------------|
| Innocent Musonda | Male Interviewer |
| Morgan Salimbunda | Male Interviewer |
| John Sambambi | Team Lead |
| Michael Muyutu | Lab Technician |
| Constance Mayondi | Nurse Counselor |
| Sombo Mundanya | Nurse Counselor |
| Prisca Phiri | Midwife |
| Mercy Kalungu | Female Interviewer |
| Prince Chilongu | Male Interviewer |
| Mutombu Kanganja | Team Lead |
| Gerald Musonda | Lab Technician |
| Stella Yamba | Nurse Counselor |
| Maureen Fubisha | Female Interviewer |
| Lovely Soneka | Midwife |
| Boombwe Mwale | Female Interviewer |
| Cletus Kaluwa | Male Interviewer |
| Begger Beenzu | Team Lead |
| Samuel Kimbambi | Lab. Tech |
| Ruth Katambi | Nurse Counselor |
| Beauty Mushala Nyikosa | Female Interviewer |
| Bupe Kiyekyaya | Midwife/Counselor |
| Sombo Chinyama | Female Interviewer |
| Makubanda Kabondo | Male Interviewer |
| Chris Lunzi Lubinda | Team Lead |
| Kapalu Dilema | Lab Technician |
| Grace Kapitango | Nurse Counselor |
| Loveness Womba Manengu | Female Interviewer |
| Sheila Makungu | Midwife |
| Martha Kazoko Muluka | Female Interviewer |
| Nasilele Kozi | Male Interviewer |
| Pelebo Hambulo | Team Lead |
| Florence Mushitala | Lab Technician |
| Jessica Sweta | Nurse Counselor |
| Catherine Kambita | Female Interviewer |
| Joan Mtonga | Midwife/ Counselor |
| Milton Chilongu | Male Interviewer |
| Isiyombo Sooka | Male Interviewer |

| | |
|------------------------|------------------------|
| Jinx Kanyanga | Team Lead |
| Chiyesu Kang'ombi | Lab Technician |
| Fridah Kusaloka | Nurse Counselor |
| Sandra Kuchaya | Female Interviewer |
| Nama Felistus Lingwavo | Female Interviewer |
| Gladys K Machona | Midwife/Counselor |
| Shadreck Chileya | Male Interviewer |
| Sikundu Mwanalushi | Team Lead |
| Sandra Kamalamba | Lab. Tech |
| Susan Kayuka | Nurse Counselor |
| Mary Kozi Chama | Midwife |
| Florence Kaluwaji | Female Interviewer |
| Innocent Wema | Male Nurse counsellor |
| Victor Litia Liswaniso | Male Interviewer |
| Joseph Mashilipa | Team Lead |
| George Kamau | Lab Technician |
| Ella Simawu | Nurse Counselor |
| Kakuhu Mwezeh | Nurse Counselor |
| Ngambo Masumba | Female Interviewer |
| Given Kutela | Female Interviewer |
| Geoffrey Motoka | Male Interviewer |
| Clymore Kalyangile | Team Lead |
| Ferdinand Kanyanda | Lab Technician |
| Ngambo Kawilila | Nurse Counselor |
| Joseph Samukuwe | Male Counselor |
| Charity Mkanza | Female Interviewer |
| Patricia Funjika | Female Interviewer |
| Emmanuel Kanyoka | Male Interviewer |
| Jonathan Lutangu | Team Leader |
| Evans Mulyata | Male Nurse/Interviewer |
| Joyce Kamwana | Nurse Counselor |
| Edmond Kutela | Male Counselor |
| Catherine Kasabula | Female Interviewer |
| Carol Kachongo | Female Interviewer |
| Jedo Ndumba | Male Interviewer |

APPENDIX E HOUSEHOLD QUESTIONNAIRE

ENGLISH

ZAMBIA MINISTRY OF HEALTH HIV IMPACT ASSESSMENT HOUSEHOLD QUESTIONNAIRE

CONFIDENTIAL

TICK IF HOUSEHOLD
SELECTED FOR
CHILDREN'S SURVEY

HOUSEHOLD IDENTIFICATION

| | | | | | |
|---|---|---|---|---|--|
| PROVINCE NAME: | | | PROVINCE CODE | <input type="checkbox"/> <input type="checkbox"/> | |
| REGION NAME: DISTRICT NAME: | | | REGION CODE | <input type="checkbox"/> <input type="checkbox"/> | |
| CLUSTER NAME: | | | DISTRICT CODE | <input type="checkbox"/> <input type="checkbox"/> | |
| NAME OF HOUSEHOLD HEAD: | | | CLUSTER NUMBER | <input type="checkbox"/> <input type="checkbox"/> | |
| TOTAL PERSONS IN HOUSEHOLD: | TOTAL ELIGIBLE WOMEN: | TOTAL ELIGIBLE MEN: | TOTAL ELIGIBLE ADOLESCENTS: | TOTAL ELIGIBLE CHILDREN: | LINE NO. OF RESPONDENT TO HOUSEHOLD QUESTIONNAIRE |
| <input type="checkbox"/> <input type="checkbox"/> |

| | | | | |
|------------------------|---|-----------------|-------------|------------|
| LANGUAGE OF INTERVIEW: | <input type="checkbox"/> <input type="checkbox"/> | LANGUAGE CODES: | (04) LOZI | (08) TONGA |
| | | (01) ENGLISH | (05) LUNDA | |
| | | (02) BEMBA | (06) LUVALE | |
| | | (03) KAONDE | (07) NYANJA | |

| | | | | |
|-------------|--|------------------|---|---|
| SUPERVISOR: | SUPERVISOR CODE: | FIELD EDITOR: | OFFICE EDITOR: | KEYED BY: |
| DATE: | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | | <input type="checkbox"/> <input type="checkbox"/> | <input type="checkbox"/> <input type="checkbox"/> |

* **RESULTS CODES:**

- | | |
|--|---|
| (1) COMPLETED | (5) REFUSED |
| (2) NO HOUSEHOLD MEMBER AT HOME OR NO COMPETENT RESPONDENT AT HOME AT TIME OF VISIT | (6) DWELLING VACANT OR ADDRESS NOT A DWELLING |
| (3) ENTIRE HOUSEHOLD ABSENT FOR EXTENDED PERIOD OF TIME | (7) DWELLING DESTROYED |
| (4) POSTPONED | (8) DWELLING NOT FOUND |
| | (9) PARTLY COMPLETED |
| | (10) OTHER (SPECIFY) |

START TIME

| | | | | |
|-------|---|---|--|--|
| START | Record the start time. USE 24 HOUR TIME. IF START TIME IS 3:12 PM, RECORD 15 HOURS, 12 MINUTES, NOT 03 HOURS, 12 MINUTES. | HOUR: <input type="checkbox"/> <input type="checkbox"/> | MINUTES: <input type="checkbox"/> <input type="checkbox"/> | |
|-------|---|---|--|--|

| LINE NO. | USUAL RESIDENTS AND VISITORS | RELATIONSHIP TO HEAD OF HOUSEHOLD | SEX | RESIDENCE | | AGE | | | | | |
|----------|---|---|---------------------------|--------------------------------|-----------------------------------|--|--|---|--|--|---|
| | | | | | | IF LESS THAN 2 YEARS, RECORD IN MONTHS. | | | | | |
| | <p>Please give me the names of the persons who usually live in your household and guests of the household who stayed here last night, starting with the head of the household.</p> <p>AFTER LISTING THE NAME AND RECORDING THE RELATIONSHIP AND SEX FOR EACH PERSON ASK QUESTIONS 2-3 BELOW TO BE SURE THAT THE SCHEDULE IS COMPLETE.</p> <p>THEN ASK APPROPRIATE QUESTIONS IN COLUMNS 5-28c FOR EACH PERSON.</p> | 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 | | <table border="1"><tr><td></td><td></td></tr></table> | | | M F | Y N | Y N | <table border="1"><tr><td></td><td></td></tr></table> | | | MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/> |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 2 | | <table border="1"><tr><td></td><td></td></tr></table> | | | M F | Y N | Y N | <table border="1"><tr><td></td><td></td></tr></table> | | | MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/> |
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| 3 | | <table border="1"><tr><td></td><td></td></tr></table> | | | M F | Y N | Y N | <table border="1"><tr><td></td><td></td></tr></table> | | | MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/> |
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| 4 | | <table border="1"><tr><td></td><td></td></tr></table> | | | M F | Y N | Y N | <table border="1"><tr><td></td><td></td></tr></table> | | | MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/> |
| | | | | | | | | | | | |
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| 5 | | <table border="1"><tr><td></td><td></td></tr></table> | | | M F | Y N | Y N | <table border="1"><tr><td></td><td></td></tr></table> | | | MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/> |
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| 6 | | <table border="1"><tr><td></td><td></td></tr></table> | | | M F | Y N | Y N | <table border="1"><tr><td></td><td></td></tr></table> | | | MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/> |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 7 | | <table border="1"><tr><td></td><td></td></tr></table> | | | M F | Y N | Y N | <table border="1"><tr><td></td><td></td></tr></table> | | | MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/> |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 8 | | <table border="1"><tr><td></td><td></td></tr></table> | | | M F | Y N | Y N | <table border="1"><tr><td></td><td></td></tr></table> | | | MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/> |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 9 | | <table border="1"><tr><td></td><td></td></tr></table> | | | M F | Y N | Y N | <table border="1"><tr><td></td><td></td></tr></table> | | | MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/> |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| 10 | | <table border="1"><tr><td></td><td></td></tr></table> | | | M F | Y N | Y N | <table border="1"><tr><td></td><td></td></tr></table> | | | MONTHS <input type="checkbox"/> YEARS <input type="checkbox"/> |
| | | | | | | | | | | | |
| | | | | | | | | | | | |

YES NO
 YES NO
 YES NO
 ADD TO SCHEDULE

CODES FOR COLUMN 3: RELATIONSHIP TO HOUSEHOLD HEAD

- 01 = HEAD
- 02 = WIFE/HUSBAND/PARTNER
- 03 = SON OR DAUGHTER
- 04 = SON-IN-LAW/DAUGHTER-IN-LAW
- 05 = GRANDCHILD
- 06 = PARENT
- 07 = PARENT-IN-LAW
- 08 = BROTHER/SISTER
- 09 = CO-WIFE
- 10 = OTHER RELATIVE
- 11 = ADOPTED/FOSTER/STEPCHILD
- 12 = NOT RELATED
- 98 = DON'T KNOW

| | HOUSEHOLD SCHEDULE | | | | | |
|----------|---|---|--|---|--|---|
| LINE NO. | IF (NAME) is 18-64 years | IF (NAME) IS 15 OR OLDER | IF (NAME) IS 0-17 YEARS | | | |
| | SICK PERSON | MARITAL STATUS | SURVIVORSHIP AND RESIDENCE OF BIOLOGICAL PARENTS | | | |
| | CHECK COLUMNS 7 AND 8, IF UNDER 18 → 10 IF 18 YEARS OR MORE: Has (NAME) been very sick for at least 3 months during the past 12 months, that is (NAME) was too sick to work or do normal activities? | What is (NAME)'s current marital status? 1=MARRIED/COHABITATING/LIVING TOGETHER 2=DIVORCED 3=SEPARATED 4=WIDOWED 5=NEVER-MARRIED | Is (NAME)'s natural mother alive? | Does (NAME)'s natural mother usually live in this household or was she a guest last night? IF YES: What is her name? RECORD MOTHER'S LINE NUMBER. IF NO: RECORD FEMALE GUARDIAN'S LINE NUMBER OR '00' IF FEMALE PARENT OR GUARDIAN NOT PRESENT IN HH. | Does (NAME)'s natural father alive? IF YES: What is his name? RECORD FATHER'S LINE NUMBER. IF NO: RECORD MALE GUARDIAN'S LINE NUMBER OR '00' IF MALE PARENT OR GUARDIAN NOT PRESENT IN HH. | |
| (1) | (9) | (10) | (11) | (12) | (13) | (14) |
| 1 | Y N | <input type="checkbox"/> | Y N DK ↓ 13 | <input type="checkbox"/> <input type="checkbox"/> | Y N DK ↓ 15 | <input type="checkbox"/> <input type="checkbox"/> |
| 2 | Y N | <input type="checkbox"/> | Y N DK ↓ 13 | <input type="checkbox"/> <input type="checkbox"/> | Y N DK ↓ 15 | <input type="checkbox"/> <input type="checkbox"/> |
| 3 | Y N | <input type="checkbox"/> | Y N DK ↓ 13 | <input type="checkbox"/> <input type="checkbox"/> | Y N DK ↓ 15 | <input type="checkbox"/> <input type="checkbox"/> |
| 4 | Y N | <input type="checkbox"/> | Y N DK ↓ 13 | <input type="checkbox"/> <input type="checkbox"/> | Y N DK ↓ 15 | <input type="checkbox"/> <input type="checkbox"/> |
| 5 | Y N | <input type="checkbox"/> | Y N DK ↓ 13 | <input type="checkbox"/> <input type="checkbox"/> | Y N DK ↓ 15 | <input type="checkbox"/> <input type="checkbox"/> |
| 6 | Y N | <input type="checkbox"/> | Y N DK ↓ 13 | <input type="checkbox"/> <input type="checkbox"/> | Y N DK ↓ 14 | <input type="checkbox"/> <input type="checkbox"/> |
| 7 | Y N | <input type="checkbox"/> | Y N DK ↓ 13 | <input type="checkbox"/> <input type="checkbox"/> | Y N DK ↓ 15 | <input type="checkbox"/> <input type="checkbox"/> |
| 8 | Y N | <input type="checkbox"/> | Y N DK ↓ 13 | <input type="checkbox"/> <input type="checkbox"/> | Y N DK ↓ 15 | <input type="checkbox"/> <input type="checkbox"/> |
| 9 | Y N | <input type="checkbox"/> | Y N DK ↓ 13 | <input type="checkbox"/> <input type="checkbox"/> | Y N DK ↓ 15 | <input type="checkbox"/> <input type="checkbox"/> |
| 10 | Y N | <input type="checkbox"/> | Y N DK ↓ 13 | <input type="checkbox"/> <input type="checkbox"/> | Y N DK ↓ 15 | <input type="checkbox"/> <input type="checkbox"/> |

HOUSEHOLD SCHEDULE

IF (**NAME**) is 0-17 years

| LINE NO. | | SICKNESS AND RESIDENCE OF BIOLOGICAL PARENTS | | | | MOTHER DEAD OR SICK | FATHER DEAD OR SICK |
|-------------|---|---|--|--|--|------------------------------------|--------------------------------|
| | | | | SICK | DEAD | | |
| | RECORD LINE NUMBER OF PARENT/GUARDIAN WHO WILL FILL OUT CHILDREN'S MODULE FOR (NAME) | CHECK COLUMN 11, IF COLUMN 11 'N' → 18 IF COLUMN 11 '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? | CHECK COLUMN 12, IF COLUMN 12 'N' → 19 IF COLUMN 13 '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 CHILD'S NATURAL MOTHER HAS DIED (COLUMN 11 'N') OR BEEN SICK (COLUMN 16 'Y'), SELECT Y. | IF CHILD'S NATURAL FATHER HAS DIED (COLUMN 13 'N') OR BEEN SICK (COLUMN 17 'Y'), SELECT Y. | | |
| (1) | (15) | (16) | (17) | (18) | (19) | | |
| 1 | <table border="1" style="width: 100%;"><tr><td></td><td></td></tr></table> | | | Y N | Y N | Y N | Y N |
| | | | | | | | |
| 2 | <table border="1" style="width: 100%;"><tr><td></td><td></td></tr></table> | | | Y N | Y N | Y N | Y N |
| | | | | | | | |
| 3 | <table border="1" style="width: 100%;"><tr><td></td><td></td></tr></table> | | | Y N | Y N | Y N | Y N |
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| 9 | <table border="1" style="width: 100%;"><tr><td></td><td></td></tr></table> | | | Y N | Y N | Y N | Y N |
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| | | HOUSEHOLD SCHEDULE | | | | | |
|----------|--|---|-------|---|---|-------|--|
| LINE NO. | IF (NAME) IS 5 YEARS OR OLDER | | | IF (NAME) IS 5-24 YEARS | | | IF (NAME) IS 0-4 YEARS |
| | EVER ATTENDED SCHOOL | | | CURRENT/RECENT SCHOOL ATTENDANCE | | | BIRTH REGISTRATION |
| | Has (NAME) ever attended school? | What is the highest level of school (NAME) has attended? SEE CODES BELOW. What is the highest grade (NAME) completed at that level? SEE CODES BELOW. | | Did (NAME) attend school at any time during the 2015 school year? | During this/that school year, what level and grade [is/was] (NAME) attending? SEE CODES BELOW. | | Does (NAME) have a birth certificate? IF NO, PROBE: Has (NAME)'s birth ever been registered with the civil authority? 1=HAS CERTIFICATE 2=REGISTERED 3=NEITHER 4=DON'T KNOW |
| (1) | (20) | (21) | | (22) | (23) | | (24) |
| 1 | Y N | LEVEL | GRADE | Y N | LEVEL | GRADE | <input type="checkbox"/> |
| 2 | Y N | LEVEL | GRADE | Y N | LEVEL | GRADE | <input type="checkbox"/> |
| 3 | Y N | LEVEL | GRADE | Y N | LEVEL | GRADE | <input type="checkbox"/> |
| 4 | Y N | LEVEL | GRADE | Y N | LEVEL | GRADE | <input type="checkbox"/> |
| 5 | Y N | LEVEL | GRADE | Y N | LEVEL | GRADE | <input type="checkbox"/> |
| 6 | Y N | LEVEL | GRADE | Y N | LEVEL | GRADE | <input type="checkbox"/> |
| 7 | Y N | LEVEL | GRADE | Y N | LEVEL | GRADE | <input type="checkbox"/> |
| 8 | Y N | LEVEL | GRADE | Y N | LEVEL | GRADE | <input type="checkbox"/> |
| 9 | Y N | LEVEL | GRADE | Y N | LEVEL | GRADE | <input type="checkbox"/> |
| 10 | Y N | LEVEL | GRADE | Y N | LEVEL | GRADE | <input type="checkbox"/> |
| | <u>CODES FOR Q21 AND Q23 (EDUCATION):</u> | | | | | | |
| | LEVEL 0=NURSERY/KINDERGARTEN 1=PRIMARY 2=SECONDARY 3=HIGHER 8=DON'T KNOW | | | | | | GRADE 00=LESS THAN 1 YEAR COMPLETED 98=DON'T KNOW |

| | | HOUSEHOLD SCHEDULE | | | |
|----------|--|--|---|--|--|
| LINE NO. | | ELIGIBILITY | | | |
| | | DO NOT READ: IS (NAME) ELIGIBLE FOR SURVEY? | | | |
| (1) | | (25) | | | |
| 1 | | Y | N | | |
| 2 | | Y | N | | |
| 3 | | Y | N | | |
| 4 | | Y | N | | |
| 5 | | Y | N | | |
| 6 | | Y | N | | |
| 7 | | Y | N | | |
| 8 | | Y | N | | |
| 9 | | Y | N | | |
| 10 | | Y | N | | |
| | | TOTAL ELIGIBLE MEN (ADULTS 15-59 YEARS) TOTAL ELIGIBLE WOMEN (ADULTS 15 -59 YEARS) TOTAL ELIGIBLE ADOLESCENT (10 TO 14 YEARS) TOTAL ELIGIBLE CHILDREN (0 MONTHS TO 9 YEARS) | | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> | |

| | HOUSEHOLD SCHEDULE | | | | | |
|----------|---|---|---|---|---|---|
| LINE NO. | SPOUSES AND CO-HABITATING PARTNERS | | | | | |
| | Record the LINE NUMBER (NAME)'s of spouse or partner. If no spouse or partner leave blank. | Record the LINE NUMBER (NAME)'s of spouse or partner. If no spouse or partner leave blank. | Record the LINE NUMBER (NAME)'s of spouse or partner. If no spouse or partner leave blank. | Record the LINE NUMBER (NAME)'s of spouse or partner. If no spouse or partner leave blank. | Record the LINE NUMBER (NAME)'s of spouse or partner. If no spouse or partner leave blank. | Record the LINE NUMBER (NAME)'s of spouse or partner. If no spouse or partner leave blank. |
| (1) | (26a) | (26b) | (26c) | (26d) | (26e) | (26f) |
| 1 | <input type="text"/> <input type="text"/> |
| 2 | <input type="text"/> <input type="text"/> |
| 3 | <input type="text"/> <input type="text"/> |
| 4 | <input type="text"/> <input type="text"/> |
| 5 | <input type="text"/> <input type="text"/> |
| 6 | <input type="text"/> <input type="text"/> |
| 7 | <input type="text"/> <input type="text"/> |
| 8 | <input type="text"/> <input type="text"/> |
| 9 | <input type="text"/> <input type="text"/> |
| 10 | <input type="text"/> <input type="text"/> |

SUPPORT FOR ORPHANS AND VULNERABLE CHILDREN

| | | | | | |
|-----|---|--|-----------|--|--------------|
| 101 | <p>DO NOT READ: CHECK COLUMN 7 IN THE HOUSEHOLD SCHEDULE.</p> <p>ANY CHILD AGE 0-17 YEARS?</p> | <p>NUMBER OF CHILDREN 0-17 YRS:</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> <td style="border: 1px solid black; width: 20px; height: 20px;"></td> </tr> </table> | | | NONE →114 |
| | | | | | |
| 102 | <p>DO NOT READ: CHECK COLUMN 9 IN THE HOUSEHOLD SCHEDULE.</p> <p>ANY SICK ADULT AGE 18-64 YEARS?</p> | <p>YES.....1</p> <p>NO.....2</p> | YES → 105 | | |
| 103 | <p>DO NOT READ: CHECK COLUMN 18 IN THE HOUSEHOLD SCHEDULE.</p> <p>ANY CHILD WHOSE MOTHER HAS DIED OR IS VERY SICK?</p> | <p>YES.....1</p> <p>NO.....2</p> | YES→ 105 | | |
| 104 | <p>DO NOT READ: CHECK COLUMN 19 IN THE HOUSEHOLD SCHEDULE.</p> <p>ANY CHILD WHOSE FATHER HAS DIED OR IS VERY SICK?</p> | <p>YES.....1</p> <p>NO.....2</p> | NO→114 | | |

| 105 | <p>Record names, line numbers, and ages of all children 0-17 who are identified in columns 11, 13, 16 and 17 as having a sick adult in their household or having a mother and/or father who has died or has been very sick.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center; padding: 5px;">NAME (FROM COLUMN 2)</th><th style="text-align: center; padding: 5px;">CHILD (1)</th><th style="text-align: center; padding: 5px;">CHILD (2)</th><th style="text-align: center; padding: 5px;">CHILD (3)</th></tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;">LINE NUMER (FROM COLUMN 1)</td><td style="text-align: center; padding: 5px; width: 40px;"><input type="text"/> <input type="text"/></td><td style="text-align: center; padding: 5px; width: 40px;"><input type="text"/> <input type="text"/></td><td style="text-align: center; padding: 5px; width: 40px;"><input type="text"/> <input type="text"/></td></tr> <tr> <td style="text-align: center; padding: 5px;">AGE (FROM COLUMN 7)</td><td style="text-align: center; padding: 5px; width: 40px;"><input type="text"/> <input type="text"/></td><td style="text-align: center; padding: 5px; width: 40px;"><input type="text"/> <input type="text"/></td><td style="text-align: center; padding: 5px; width: 40px;"><input type="text"/> <input type="text"/></td></tr> </tbody> </table> | | | | | NAME (FROM COLUMN 2) | CHILD (1) | CHILD (2) | CHILD (3) | LINE NUMER (FROM COLUMN 1) | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> | AGE (FROM COLUMN 7) | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> |
|--|---|--|--|--|---|----------------------|-----------|-----------|-----------|----------------------------|---|---|---|---------------------|---|---|---|
| NAME (FROM COLUMN 2) | CHILD (1) | CHILD (2) | CHILD (3) | | | | | | | | | | | | | | |
| LINE NUMER (FROM COLUMN 1) | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> | | | | | | | | | | | | | | |
| AGE (FROM COLUMN 7) | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> | <input type="text"/> <input type="text"/> | | | | | | | | | | | | | | |
| <p>➤ INTERVIEWER SAY: “I would like to ask you about any formal, organized help or support for children that your household may have received for which you did not have to pay. By formal, organized support, I mean help provided by someone working for a program. This program could be government, private, religious, charity, or community-based.”</p> | | | | | | | | | | | | | | | | | |
| 106 | <p>Now I would like to ask you about the support your household received for (NAME).</p> <p>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?</p> | YES.....1 NO.....2 DON'T KNOW.....8 | YES.....1 NO.....2 DON'T KNOW.....8 | YES.....1 NO.....2 DON'T KNOW.....8 | YES.....1 NO.....2 DON'T KNOW.....8 | | | | | | | | | | | | |
| 107 | <p>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?</p> | YES.....1 NO.....2 DON'T KNOW.....8 NO, DK→ 109 | YES.....1 NO.....2 DON'T KNOW.....8 NO, DK→ 109 | YES.....1 NO.....2 DON'T KNOW.....8 NO, DK→ 109 | | | | | | | | | | | | | |

| | | | | |
|-----|---|---|---|---|
| 108 | Did your household receive any of this emotional or psychological support for (NAME) in the past 3 months? | YES.....1 NO.....2 DON'T KNOW.....8 | YES.....1 NO.....2 DON'T KNOW.....8 | YES.....1 NO.....2 DON'T KNOW.....8 |
| 109 | In the last 12 months, has your household received any material support for (NAME), such as clothing, food, or financial support, for which you did not have to pay? | YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 111 | YES.....1 NO.....2 DON'T KNOW.....8 NO, DK→ 111 | YES.....1 NO.....2 DON'T KNOW.....8 NO, DK→ 111 |
| 110 | Did your household receive any of this material support for (NAME) in the past 3 months? | YES.....1 NO.....2 DON'T KNOW.....8 | YES.....1 NO.....2 DON'T KNOW.....8 | YES.....1 NO.....2 DON'T KNOW.....8 |
| 111 | In the last 12 months, has your household received any social support for (NAME) such as help in household work, training for a caregiver, or legal services, for which you did not have to pay? | YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 113 | YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 113 | YES.....1 NO.....2 DON'T KNOW.....8 NO, DK → 113 |
| 112 | Did your household receive any of this social support for (NAME) in the past 3 months? | YES.....1 NO.....2 DON'T KNOW.....8 | YES.....1 NO.....2 DON'T KNOW.....8 | YES.....1 NO.....2 DON'T KNOW.....8 |
| 113 | In the last 12 months, has your household received any support for (NAME)'s schooling, such as allowance, free admission, books, or supplies, for which you did not have to pay? | YES.....1 NO, DID NOT RECEIVE SUPPORT.....2 NO, CHILD DOES NOT ATTEND SCHOOL.....3 DON'T KNOW.....8 SKIP IF CHILD<5 YEARS | YES.....1 NO, DID NOT RECEIVE SUPPORT.....2 NO, CHILD DOES NOT ATTEND SCHOOL.....3 DON'T KNOW.....8 SKIP IF CHILD<5 YEARS | YES.....1 NO, DID NOT RECEIVE SUPPORT.....2 NO, CHILD DOES NOT ATTEND SCHOOL.....3 DON'T KNOW.....8 SKIP IF CHILD<5 YEARS |

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 105 AS HAVING A MOTHER/FATHER WHO HAS DIED OR IS VERY SICK BESIDES (NAME) → CONTINUE TO 106 AND ASK ABOUT THE NEXT CHILD.

INTERVIEWER SAYS: "Next, I would like to ask you about (NAME)".

TICK IF CONTINUATION SHEET REQUIRED.

IF NO OTHER CHILDREN, CONTINUE HOUSEHOLD INTERVIEW.

| HOUSEHOLD DEATHS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|------------------|--|--|--|-------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| 114 | Now I would like to ask you more questions about your household. Has any usual resident of your household died since 2013? | YES.....1 NO.....2 | | NO → 201 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 115 | How many usual household residents died since 2013? | NUMBER OF DEATHS..... | <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr></table> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| | ASK 116-119 AS APPROPRIATE FOR EACH PERSON WHO DIED. IF THERE WERE MORE THAN 3 DEATHS USE ADDITIONAL QUESTIONNAIRES. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 116 | What was the name of the person who died (most recently/before him/her)? _____ | NAME 1 ST DEATH _____ | NAME 2 ND DEATH _____ | NAME 3 RD DEATH _____ | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 117 | When did (NAME) die? Please give your best guess. | DAY <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> MONTH <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> YEAR <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> | | | | | | | | | | | | | | | | | | | DAY <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> MONTH <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> YEAR <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> | | | | | | | | | | | | | | | | | | | DAY <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> MONTH <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> YEAR <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td></td><td></td></tr><tr><td></td><td></td></tr><tr><td></td><td></td></tr></table> | | | | | | | | | | | | | | | | | | |
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| 118 | Was (NAME) male or female? | MALE1 FEMALE.....2 | MALE1 FEMALE.....2 | MALE1 FEMALE.....2 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

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|-----|--|----------------------------------|----------------------------------|----------------------------------|
| 119 | <p>How old was (NAME) when (he/she) died?</p> <p>RECORD DAYS IF LESS THAN 1 MONTH, MONTHS IF LESS THAN 1 YEAR, AND COMPLETED YEARS IF 1 YEAR OR MORE.</p> | <p>DAYS MONTHS YEARS</p> | <p>DAYS MONTHS YEARS</p> | <p>DAYS MONTHS YEARS</p> |
| | <p>CONTINUE TO NEXT DEATH ACCORDING UP TO THE NUMBER REPORTED FROM 115.</p> <p><input type="checkbox"/> TICK IF CONTINUATION SHEET REQUIRED.</p> | | | |

HOUSEHOLD CHARACTERISTICS

| | | | |
|------|--|--|---------------------|
| 201 | <p>What is the main source of drinking water for members of your household?</p> | PIPED WATER PIPED INTO DWELLING.....11 PIPED TO YARD/PLOT.....12 PUBLIC TAP/STANDPIPE.....13 TUBE WELL OR BOREHOLE.....21 DUG WELL PROTECTED WELL.....31 UNPROTECTED WELL.....32 WATER FROM SPRING PROTECTED SPRING.....41 UNPROTECTED SPRING.....42 RAINWATER.....51 TANKER TRUCK.....61 CART WITH SMALL TANK.....71 SURFACE WATER (RIVER/DAM/LAKE/POND/STREAM/CANAL/IRRIGATION CHANNEL).....81 BOTTLED WATER.....91 OTHER.....96 <hr/> (SPECIFY) | 11, 12, 51 → 204 |
| 201a | <p>Where is that water source located?</p> | IN OWN DWELLING.....1 IN OWN YARD/PLOT.....2 ELSEWHERE.....3 | 1,2 → 203 |
| 201b | <p>How long does it take to go there, get water, and come back?</p> | MINUTES <input type="text"/> <input type="text"/> <input type="text"/> ON PREMISES.....996 DON'T KNOW.....998 | |

| | | | |
|-----|--|---|---|
| 202 | What do you usually do to make your water safer to drink? Anything else? RECORD ALL MENTIONED. | BOIL.....A ADD BLEACH/CHLORINE/CLORIN.....B STRAIN THROUGH A CLOTH.....C USE WATER FILTER (CERAMIC/SAND/COMPOSITE/ETC.).....D SOLAR DISINFECTION.....E LET IT STAND AND SETTLE.....F OTHER.....X (SPECIFY) DON'T KNOWZ | |
| 203 | What kind of toilet facility do members of your household usually use? | <p>FLUSH OR POUR FLUSH TOILET</p> <p>FLUSH TO PIPED SEWER SYSTEM.....11 FLUSH TO SEPTIC TANK.....12 FLUSH TO PIT LATRINE.....13 FLUSH TO SOMEWHERE ELSE.....14 FLUSH, DON'T KNOW WHERE.....15</p> <p>PIT LATRINE</p> <p>VENTILATED IMPROVED PIT LATRINE21 PIT LATRINE WITH SLAB.....22 PIT LATRINE WITHOUT SLAB/ OPEN PIT.....23 COMPOSTING TOILET.....31</p> <p>BUCKET TOILET.....41 HANGING TOILET/HANGING LATRINE...51 NO FACILITY/BUSH/FIELD.....61</p> <p>OTHER.....96</p> | NO FACILITY/ BUSH/FIEL D → 206 |
| 204 | Do you share this toilet facility with other households? | YES.....1 NO.....2 | NO → 206 |
| 205 | How many households use this toilet facility? | NO. OF HOUSEHOLDS IF LESS THAN 10 _____(1 DIGIT) 10 OR MORE HOUSEHOLDS95 DON'T KNOW98 | |

PREFACE BEFORE QUESTIONS 206-212r:

Does your household have:

| | | | |
|------|-------------------------|-----------------------|--|
| 206 | Electricity? | YES.....1 NO.....2 | |
| 207 | A radio? | YES.....1 NO.....2 | |
| 208 | A television? | YES.....1 NO.....2 | |
| 209 | A mobile telephone? | YES.....1 NO.....2 | |
| 210 | A non-mobile telephone? | YES.....1 NO.....2 | |
| 211 | A refrigerator? | YES.....1 NO.....2 | |
| 212a | A bed? | YES.....1 NO.....2 | |
| 212b | A chair? | YES.....1 NO.....2 | |
| 212c | A table? | YES.....1 NO.....2 | |
| 212d | A cupboard? | YES.....1 NO.....2 | |
| 212e | A sofa? | YES.....1 NO.....2 | |
| 212f | A clock? | YES.....1 NO.....2 | |
| 212g | A fan? | YES.....1 NO.....2 | |
| 212h | A sewing machine? | YES.....1 NO.....2 | |
| 212i | A cassette player? | YES.....1 NO.....2 | |

| | | | |
|------|---|---|--|
| 212j | A plough? | YES.....1 NO.....2 | |
| 212k | A grain grinder? | YES.....1 NO.....2 | |
| 212l | A VCR/DVD? | YES.....1 NO.....2 | |
| 212m | A tractor? | YES.....1 NO.....2 | |
| 212n | A hammer mill? | YES.....1 NO.....2 | |
| 212o | A computer? | YES.....1 NO.....2 | |
| 212p | Internet? | YES.....1 NO.....2 | |
| 212q | A microwave? | YES.....1 NO.....2 | |
| 212r | Does your household have any mosquito nets that can be used while sleeping? | YES.....1 NO.....2 | |
| 213 | What type of fuel does your household mainly use for cooking? | ELECTRICITY.....1 LIQUID PRONAME GAS (LPG)2 NATURAL GAS3 BIOGAS.....4 KEROSENE5 COAL, LIGNITE.....7 CHARCOAL8 WOOD.....9 STRAW/SHRUBS/GRASS.....10 AGRICULTURAL CROP ...11 ANIMAL DUNG.....12 SOLAR POWER.....13 NO FOOD COOKED IN HOUSEHOLD... 95 OTHER.....96 (SPECIFY) | |

| | | | |
|-----|--|---|--|
| 214 | <p>MAIN MATERIAL OF FLOOR RECORD OBSERVATION.</p> | <p>NATURAL FLOOR</p> <p>EARTH / SAND.....11 DUNG.....12</p> <p>RUDIMENTARY FLOOR</p> <p>WOOD PLANKS.....21 PALM/BAMBOO/LEEDS.....22</p> <p>FINISHED FLOOR</p> <p>PARQUET OR POLISHED WOOD.....31 VINYL (PVC) OR ASPHALT STRIPS.....32 CERAMIC/TERRAZZO TILES.....33 CONCRETE CEMENT34 CARPET.....35 OTHER.....96</p> <hr/> <p>(SPECIFY)</p> | |
| 215 | <p>MAIN MATERIAL OF THE ROOF RECORD OBSERVATION.</p> | <p>NATURAL ROOFING</p> <p>NO ROOF.....11 THATCH/PALM LEAF12</p> <p>RUDIMENTARY ROOFING</p> <p>RUSTIC MAT.....21 PALM/BAMBOO.....22 WOOD PLANKS.....23 CARDBOARD.....24</p> <p>FINISHED ROOFING</p> <p>METAL/IRON SHEETS.....31 WOOD.....32 CALAMINE/CEMENT/FIBRE (ASBESTOS)....33 CERAMIC TILES/HARVEY TILES.....34 CEMENT.....35 ROOFING SHINGLES.....36 MUD TILES.....37 OTHER.....96</p> <hr/> <p>(SPECIFY)</p> | |

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|-----------------------------|--|---|---------------|----|-----------------------|----|----------|----|---------------------------|----|---------------------|----|---------------|----|----------------|----|------------------|----|-------------|----|-----------------------------|----|-------------|----|--------------------|----|-------------------|----|------------|----|--|
| 216 | <p>MAIN MATERIAL OF THE EXTERIOR WALLS RECORD OBSERVATION.</p> | <p>NATURAL WALLS</p> <table> <tr><td>NO WALLS.....</td><td>11</td></tr> <tr><td>CANE/PALM/TRUNKS.....</td><td>12</td></tr> <tr><td>MUD.....</td><td>13</td></tr> </table> <p>RUDIMENTARY WALLS</p> <table> <tr><td>BAMBOO/POLE WITH MUD.....</td><td>21</td></tr> <tr><td>STONE WITH MUD.....</td><td>22</td></tr> <tr><td>PLYWOOD</td><td>24</td></tr> <tr><td>CARDBOARD.....</td><td>25</td></tr> <tr><td>REUSED WOOD.....</td><td>26</td></tr> </table> <p>FINISHED WALLS</p> <table> <tr><td>CEMENT.....</td><td>31</td></tr> <tr><td>STONE WITH LIME/CEMENT.....</td><td>32</td></tr> <tr><td>BRICKS.....</td><td>33</td></tr> <tr><td>CEMENT BLOCKS.....</td><td>34</td></tr> <tr><td>WOOD PLANKS</td><td>35</td></tr> <tr><td>OTHER.....</td><td>96</td></tr> </table> <hr/> <p>(SPECIFY)</p> | NO WALLS..... | 11 | CANE/PALM/TRUNKS..... | 12 | MUD..... | 13 | BAMBOO/POLE WITH MUD..... | 21 | STONE WITH MUD..... | 22 | PLYWOOD | 24 | CARDBOARD..... | 25 | REUSED WOOD..... | 26 | CEMENT..... | 31 | STONE WITH LIME/CEMENT..... | 32 | BRICKS..... | 33 | CEMENT BLOCKS..... | 34 | WOOD PLANKS | 35 | OTHER..... | 96 | |
| NO WALLS..... | 11 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CANE/PALM/TRUNKS..... | 12 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MUD..... | 13 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BAMBOO/POLE WITH MUD..... | 21 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STONE WITH MUD..... | 22 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| PLYWOOD | 24 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CARDBOARD..... | 25 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| REUSED WOOD..... | 26 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CEMENT..... | 31 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| STONE WITH LIME/CEMENT..... | 32 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BRICKS..... | 33 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CEMENT BLOCKS..... | 34 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| WOOD PLANKS | 35 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| OTHER..... | 96 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 217 | <p>How many rooms in this household are used for sleeping?</p> | <p>NUMBER OF ROOMS:</p> <table style="margin-left: auto; margin-right: auto;"> <tr><td style="border: 1px solid black; padding: 2px;"></td><td style="border: 1px solid black; padding: 2px;"></td></tr> </table> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

PREFACE BEFORE QUESTIONS 218-224a:

Does any member of your household own:

| | | | |
|-----|---------------------------------------|-------------------------------|--|
| 218 | <p>A bicycle?</p> | <p>YES.....1 NO.....2</p> | |
| 219 | <p>A motorcycle or motor scooter?</p> | <p>YES.....1 NO.....2</p> | |
| 220 | <p>A car or truck?</p> | <p>YES.....1 NO.....2</p> | |
| 221 | <p>A boat with a motor?</p> | <p>YES.....1 NO.....2</p> | |
| 222 | <p>A watch?</p> | <p>YES.....1 NO.....2</p> | |
| 223 | <p>An animal-drawn cart?</p> | <p>YES.....1 NO.....2</p> | |

| | | | |
|------|--|--|--|
| 224a | A banana boat? | YES.....1 NO.....2 | |
| 224b | Does any member of this household own any agricultural land? | YES.....1 NO.....2 | NO → 224d |
| 224c | How many lima, acres, or hectares of agricultural land do members of this household own? | LIMA ACRES HECTARES 95 OR MORE HECTARES.....995 DON'T KNOW.....998 | <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> |
| 224d | Does this household own any livestock, herds, other farm animals, or poultry? | YES.....1 NO.....2 | NO→227 |

PREFACE BEFORE QUESTIONS 225-226i:

How many of [INSERT ANIMAL] does this household own?

IF NONE, ENTER '00'.

IF MORE THAN 95, ENTER '95'.

IF UNKNOWN, ENTER '98'.

| | | | |
|------|---------------------|---|--|
| 225 | Traditional cattle? | <input type="checkbox"/> <input type="checkbox"/> | |
| 226a | Dairy cattle? | <input type="checkbox"/> <input type="checkbox"/> | |
| 226b | Beef cattle? | <input type="checkbox"/> <input type="checkbox"/> | |
| 226c | Goats? | <input type="checkbox"/> <input type="checkbox"/> | |
| 226d | Sheep? | <input type="checkbox"/> <input type="checkbox"/> | |

| | | | |
|------|--|--|----------------------|
| 226e | Chicken or other poultry? | <input type="checkbox"/> <input type="checkbox"/> | |
| 226f | Horses/donkeys/mules? | <input type="checkbox"/> <input type="checkbox"/> | |
| 226g | Rabbits? | <input type="checkbox"/> <input type="checkbox"/> | |
| 226h | Pigs? | <input type="checkbox"/> <input type="checkbox"/> | |
| 226i | Other livestock? | <input type="checkbox"/> <input type="checkbox"/> | |
| 227 | Does any member of this household have a bank account? | YES.....1 NO.....2 | |
| 228 | In the past 4 weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food? | YES.....1 NO.....2 DON'T KNOW.....8 | NO, DON'T KNOW → 230 |
| 229 | How often did this happen in the past 4 weeks? | RARELY (1-2 TIMES).....1 SOMETIMES (3-10 TIMES).....2 OFTEN (MORE THAN 10 TIMES).....3 | |
| 230 | In the past 4 weeks, did you or any household member go to sleep at night hungry because there was not enough food? | YES.....1 NO.....2 DON'T KNOW.....8 | NO, DON'T KNOW → 232 |
| 231 | How often did this happen in the past 4 weeks? | RARELY (1-2 TIMES).....1 SOMETIMES (3-10 TIMES).....2 OFTEN (MORE THAN 10 TIMES).....3 | |
| 232 | In the past 4 weeks, did you or any household member go a whole day and night without eating anything because there was not enough food? | YES.....1 NO.....2 DON'T KNOW.....8 | |
| 233 | How often did this happen in the past 4 weeks? | RARELY (1-2 TIMES).....1 SOMETIMES (3-10 TIMES).....2 OFTEN (MORE THAN 10 TIMES).....3 | |

| ECONOMIC SUPPORT | | | |
|-------------------------|---|---|------------------------------------|
| 301 | <p>Has your household received any of the following forms of external economic support in the last 12 months?</p> <p>SELECT ALL THAT APPLY.</p> | <p>NOTHINGA</p> <p>CASH TRANSFER (E.G., PENSIONS, DISABILITY GRANTS, CHILD GRANT).....B</p> <p>ASSISTANCE FOR SCHOOL FEES.....C</p> <p>MATERIAL SUPPORT FOR EDUCATION (E.G., UNIFORMS, SCHOOL BOOKS, EDUCATION, TUITION SUPPORT, BURSARIES).....D</p> <p>INCOME GENERATION SUPPORT IN CASH OR KIND (E.G., AGRICULTURAL INPUTS).....E</p> <p>FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD OR EXTERNAL INSTITUTION.....F</p> <p>MATERIAL OR FINANCIAL SUPPORT FOR SHELTER.....G</p> <p>SOCIAL PENSION.....H</p> <p>OTHER.....X</p> <hr/> <p>(SPECIFY)</p> <p>DON'T KNOWZ</p> | <p>NOTHING →END OF SECTION</p> |
| 302 | <p>Has your household received any of the following forms of external economic support in the last 3 months?</p> <p>SELECT ALL THAT APPLY.</p> | <p>NOTHINGA</p> <p>CASH TRANSFER (E.G., PENSIONS, DISABILITY GRANTS, CHILD GRANT).....B</p> <p>ASSISTANCE FOR SCHOOL FEES.....C</p> <p>MATERIAL SUPPORT FOR EDUCATION (E.G., UNIFORMS, SCHOOL BOOKS, EDUCATION, TUITION SUPPORT, BURSARIES).....D</p> <p>INCOME GENERATION SUPPORT IN CASH OR KIND (E.G., AGRICULTURAL INPUTS).....E</p> <p>FOOD ASSISTANCE PROVIDED AT THE HOUSEHOLD OR EXTERNAL INSTITUTION.....F</p> <p>MATERIAL OR FINANCIAL SUPPORT FOR SHELTER.....G</p> <p>SOCIAL PENSION.....H</p> <p>OTHER.....X</p> <hr/> <p>(SPECIFY)</p> <p>DON'T KNOWZ</p> | |

END OF HOUSEHOLD INTERVIEW

- **INTERVIEWER SAY:** "This is the end of the household survey. Thank you very much for your time and for your responses."

END TIME

| | | | | | | | | |
|-----|---|---|--|--|--|--|--|--|
| END | Record the end time. USE 24 HOUR TIME. IF START TIME IS 3:12 PM, RECORD 15 HOURS, 12 MINUTES, NOT 03 HOURS, 12 MINUTES. | HOUR: <table border="1"><tr><td> </td><td> </td></tr></table> | | | MINUTES: <table border="1"><tr><td> </td><td> </td></tr></table> | | | |
| | | | | | | | | |
| | | | | | | | | |

INTERVIEWER OBSERVATIONS:

TO BE COMPLETED AFTER THE INTERVIEW:

COMMENTS ABOUT RESPONDENT:

COMMENTS ABOUT SPECIFIC QUESTIONS:

GENERAL QUESTIONS:

APPENDIX F ADULT QUESTIONNAIRE

| MODULE 1: RESPONDENT BACKGROUND | | | |
|---------------------------------|--------------------------------|--|--|
| L1 | LANGUAGE OF QUESTIONNAIRE | ENGLISH =1 BEMBA =2 KAONDE =3 LOZI =4 LUNDA =5 LUVALE =6 NYANJA =7 TONGA =8 | |
| L2 | LANGUAGE OF INTERVIEW | ENGLISH =1 BEMBA =2 KAONDE =3 LOZI =4 LUNDA =5 LUVALE =6 NYANJA =7 TONGA =8 OTHER =9 | |
| L3 | NATIVE LANGUAGE OF PARTICIPANT | ENGLISH =1 BEMBA =2 KAONDE =3 LOZI =4 LUNDA =5 LUVALE =6 NYANJA =7 | |

| | | | |
|---|--|--|---------------------------------|
| | | TONGA =8 OTHER =9 | |
| L4 | TRANSLATOR USED | YES =1 NO =2 | |
| 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 | IS THE RESPONDENT MALE OR FEMALE? | MALE =1 FEMALE =2 | |
| 103 | Have you ever attended school? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 103 = 2,-8,-9 SKIP TO 106 |
| 104 | Are you enrolled in school? | YES =-1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 104 = -8, -9 SKIP TO 106 |
| 105 | What is the highest level of school you attended: primary, secondary, or higher? | PRIMARY =1 SECONDARY =2 HIGHER =3 DON'T KNOW =-8 REFUSED =-9 | |
| 106 | What is the highest [class/form/year] you completed at that level? | CLASS/FORM/YEAR =integer DON'T KNOW =-8 REFUSED =-9 | |
| 106a | How long have you been living continuously in [NAME OF CURRENT PLACE OF RESIDENCE- HOUSEHOLD]? | NUMBER OF YEARS =integer ALWAYS =95 VISITOR =96 DON'T KNOW =-8 | |

| | | | |
|------|--|---|---------------------------------|
| | IF LESS THAN ONE YEAR, RECORD '00' YEARS. | REFUSED =-9 | |
| 107 | In the last 12 months, on how many separate occasions have you been away from home for one or more nights? CODE '00' IF NONE. | NUMBER OF TRIPS =integer DON'T KNOW =-8 REFUSED =-9 | IF 107 = 0,-8,-9 SKIP TO 109 |
| 108 | In the last 12 months, have you been away from your home for more than one month at a time? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 109 | Have you done any work in the last 12 months for which you received a salary, cash or in kind as payment? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 109= 2,-8,-9 SKIP TO 109b |
| 109a | Have you done any work in the last 7 days for which you received a salary, cash or in kind as payment? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 109b | What is your ethnic group/tribe? | BEMBA =1 TONGA =2 KAONDE =3 LOZI =4 LUNDA =5 LUVALE =6 MAMBWE =7 NGONI =8 NYANJA =9 TUMBUKA=10 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | |

| | | | |
|-----|------------------------|--|--|
| 110 | What is your religion? | CATHOLIC =1 PROTESTANT =2 MUSLIM =3 NONE =4 OTHER =96 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 201 = 2,-8,-9 SKIP TO 301 |
| 202 | How old were you the first time you married or started living with a [man/woman] as if married? | AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9 | |
| 203 | Have you ever been widowed? That is, did a spouse ever die while you were still married or living with them? | YES =1 NO =2 DON'T KNOW =-8 REFUSE TO ANSWER =-9 | |
| 204 | What is your marital status now: are you married, living together with someone as if married, widowed, divorced, or separated? | MARRIED =1 LIVING TOGETHER =2 WIDOWED =3 DIVORCED =4 SEPARATED =5 DON'T KNOW =-8 REFUSED =-9 | IF 204 = 3,4,5,-8,-9 SKIP TO 301 |

| | | | |
|--|--|---|--|
| | | | |
| Interviewer says: "The next several questions are about your current spouse or partner(s)." | | | |
| 208 | Altogether, how many wives or partners do you have? | NUMBER OF WIVES OR PARTNERS =integer DON'T KNOW =-8 REFUSED =-9 | IF 208 = -8,-9 SKIP Q IF 101=2 SKIP TO 301 |
| M2B | The Household schedule listed [count] household members as your wives/partners. Please review the list below. Are all of the listed household members your wives/partners who live in the household? [List of partners] | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF M2B= 1 SKIP TO Q3 IF M2B= -8,-9 SKIP TO 301 SKIP Q IF 101=2 SKP TO 301 |
| 209.2 | Is [NAME] your wife/partner? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 101=2 |
| 209.3 | Does [NAME] live in the household? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | After loop SKIP Q IF 101=2 SKIP TO Q3 |
| Q3 | Do you have additional spouse(s)/partner(s) that live with you? | YES =1 NO=2 DON'T KNOW =-8 REFUSED =-9 | IF Q3= 2,-8,-9 SKIP Q IF 101=2 SKIP TO 301 |
| Q4 | How many additional spouses(s)/partner(s) live with you? | NUMBER OF ADDITIONAL SPOUSE(S)/PARTNER(S) =integer DON'T KNOW =-8 REFUSED =-9 | IF Q4= -8,-9 SKIP TO 301 IF integer SKIP Q IF 101=2 SKIP TO A1-2 |
| A1-1 | Please select the spouse/partner that lives with you. | | SKIP Q IF 101=2 |

| | | | |
|------|--|--|--|
| A1-2 | Please enter name of your spouse/partner that lives with you. | NAME OF SPOUSE/PARTNER =text DON'T KNOW =-8 REFUSED =-9 | AKIP Q IF 101=2 |
| 206 | How many wives/partners do you have who live elsewhere? | NUMBER OF WIVES/PARTNERS LIVING ELSEWHERE =1 DON'T KNOW =-8 REFUSE TO ANSWER =-9 | ALL RESPONSES SKIP TO 301 SKIP Q IF 101=2 |
| 210 | Is your husband or partner living with you now or is he staying elsewhere? | LIVING TOGETHER =1 STAYING ELSEWHERE =2 DON'T KNOW =-8 REFUSE TO ANSWER =-9 | IF 210 = 2, -8, -9 SKIP TO 212 SKIP Q IF 101=1 |
| 211 | The Household schedule listed [NAME OF HUSBAND/PARTNER] as your husband/partner who is living here. Is that correct? | YES =1 NO =2 DON'T KNOW=-8 REFUSED =-9 | SKIP Q IF 101=1 |

| | | | |
|------|---|---|-----------------------------------|
| F1-1 | Please select the spouse/partner that lives with you. | | SKIP Q IF 101=1 |
| F1-2 | Please enter the name of your spouse/partner that lives with you. | NAME OF SPOUSE/PARTNER =text DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 101=1 |
| 212 | Does your husband or partner have other wives or does he live with other women as if married? | YES =1 | IF 212 = 2, -8, -9 SKIP TO 301 |
| | | NO =2 | |
| | | DON'T KNOW =-8 | |
| | | REFUSED =-9 | SKIP Q IF 101=1 |
| 213 | Including yourself, in total, how many wives or live-in partners does your husband or partner have? | NUMBER OF WIVES OR LIVE-IN PARTNERS =integer DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 101=1 |

| MODULE 3: REPRODUCTION | | | |
|--|---|---|-----------------------------------|
| Interviewer says: "Now I would like to ask you questions about your pregnancies and your children." | | | |
| 301 | How many times have you been pregnant including a current pregnancy? CODE '00' IF NONE. | NUMBER OF TIME(S) =integer DON'T KNOW =-8 REFUSED =-9 | IF 301 = 0, -8, -9 SKIP TO 351 |
| 302 | Have you ever had a pregnancy that resulted in a live birth? A live birth is when the baby shows signs of life, such as breathing, beating of the heart or movement. | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 302 = 2, -8, -9 SKIP TO 349 |

| | | | |
|--|--|--|---------------------------------------|
| 302a | In total, how many children have you given birth to who were born alive? These include children who were born alive but later died and children who live with you and do not live with you. | NUMBER OF CHILDREN =integer DON'T KNOW =-8 REFUSED =-9 | |
| 303 | How many children have you given birth to since 2012 ? CODE '00' IF NONE. These include children who were born alive but later died. They could have been children who have lived with you or have not lived with you. | NUMBER OF CHILDREN =integer DON'T KNOW =-8 REFUSED =-9 | IF 303 = 0, -8, -9 SKIP TO 349 |
| Interview says: "Now I would like to ask you some questions about the last pregnancy that resulted in a live birth since 2012." | | | |
| 304 | Did your last pregnancy result in birth to twins or more? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 305 | What is the name of the child from your last pregnancy that resulted in a live birth? A live birth is when the baby shows signs of life, such as breathing, beating of the heart or movement. IF MULTIPLE BIRTH, LIST ALL NAMES. IF THE CHILD WAS NOT NAMED BEFORE DEATH, INPUT BIRTH 1. | NAME =text | |
| 305a | When you were pregnant with [NAME], did you plan to get pregnant at that time? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 305a = 1,-8,-9 SKIP TO 306 |
| 305b | Did you plan to have a baby later or did you not plan to have any (more) children? | LATER =1 NO MORE =2 DON'T KNOW =-8 REFUSED =9 | |

| | | | |
|--|--|--|--|
| 306 | When you were pregnant with [NAME], did you visit a health facility for antenatal care? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 306 = 1 SKIP TO 307a IF 306 = -8, -9 SKIP TO 323 |
| 307 | What is the <u>main</u> reason you did not visit a clinic for antenatal care when you were pregnant with [NAME]? | CLINIC WAS TOO FAR AWAY =1 COULD NOT TAKE TIME OFF WORK/TOO BUSY =2 COULD NOT AFFORD TO PAY FOR THE VISIT =3 DID NOT TRUST THE CLINIC STAFF =4 RECEIVED CARE AT HOME =5 DID NOT WANT AN HIV TEST DONE =6 HUSBAND/FAMILY WOULD NOT LET ME GO =7 USED TRADITIONAL BIRTH ATTENDANT/HEALER =8 COST OF TRANSPORT =9 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 323 |
| 307a | At what months in your pregnancy did you attend the antenatal clinic? SELECT ALL THAT APPLY. | 0-3 MONTHS/1st TRIMESTER=A 4-6 MONTHS/2nd TRIMESTER =B 7-9 MONTHS/3rd TRIMESTER=C DON'T KNOW=Y REFUSED =Z | |
| 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." | | | |

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| 308 | Have you ever tested for HIV before your pregnancy with [NAME]? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 308 = 2, -8, -9 SKIP TO 311 |
| 309 | Did you test positive for HIV before your pregnancy with [NAME]? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 309 = 2,-8,-9 SKIP TO 311 |
| 310 | At the time of your first antenatal care visit when you were pregnant with [NAME], were you taking ARVs, that is, antiretroviral medications, to treat HIV? ARVs are antiretroviral medications or medications to treat HIV. | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 310 = 1 SKIP TO 319 IF 310 = 2,-8,-9 SKIP TO 316 |
| 311 | During any of your visits to the antenatal care clinic when you were pregnant with [NAME], were you offered an HIV test? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 312 | Were you tested for HIV during any of your antenatal care clinic visits when you were pregnant with [NAME]? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 312 = 1 SKIP TO 314 IF 312 = -8,-9 SKIP TO 319 |
| 313 | What is the main reason you were not tested for HIV during antenatal care with [NAME]? | DID NOT WANT AN HIV TEST DONE / DID NOT WANT TO KNOW MY STATUS =1 DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY =2 AFRAID OTHERS WOULD KNOW ABOUT TEST RESULTS =3 DID NOT NEED TEST/LOW RISK =4 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 319 |

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| 314 | How many times did you test for HIV during your pregnancy with [NAME]? | NUMBER OF TIMES = integer DON'T KNOW =-8 REFUSED =-9 | |
| 315 | What was the result of your last HIV test during your pregnancy with [NAME]? | POSITIVE =1 NEGATIVE =2 UNKNOWN/INDETERMINATE =3 DID NOT RECEIVE RESULTS =4 DON'T KNOW =-8 REFUSED =-9 | IF 315 = 2,3,4,-8,-9 SKIP TO 319 |
| 316 | Did you take ARVs during your pregnancy with [NAME] to stop [NAME] from getting HIV? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 316 = 1 SKIP TO 318 IF 316 = -8,-9 SKIP TO 319 |
| 317 | What was the main reason you did not take ARVs while you were pregnant with [NAME]? | HEALTH CARE PROVIDER DID NOT PRESCRIBE =1 I FELT HEALTHY/NOT SICK =2 COST OF MEDICATIONS =3 COST OF TRANSPORT =4=5 RELIGIOUS REASONS WAS TAKING TRADITIONAL MEDICATIONS =6 MEDICATIONS OUT OF STOCK =7 DID NOT WANT PEOPLE TO KNOW HIV STATUS =8 DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY =9 NOT ELIGIBLE FOR TREATMENT=10 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES |
| 318 | How many months pregnant were you when you started taking ARVs? | MONTHS 1-3/1ST TRIMESTER =1 MONTHS 4-6/2ND TRIMESTER =2 MONTHS 7-9/3RD TRIMESTER =3 DON'T KNOW =-8 REFUSED =-9 | |

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| 319 | When you were pregnant with [NAME], were you offered a test for syphilis? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 320 | When you were pregnant with [NAME], were you tested for syphilis? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 320 = 2,-8,-9 SKIP TO 323 |
| 321 | Did you test positive for syphilis during your pregnancy with [NAME]? | YES =1 NO =2 DID NOT GET RESULT =3 DON'T KNOW =-8 REFUSED =-9 | IF 321 = 2,3,-8,-9 SKIP TO 323 |
| 322 | Did you get treatment for syphilis during your pregnancy with [NAME]? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 323 | Where did you give birth to [NAME]? | AT HOME =1 AT A HEALTH FACILITY =2 IN TRANSIT =3 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | IF 323 = 1,3,96,-8,-9 SKIP TO 329 |
| 324 | Were you offered an HIV test during labor? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 325 | Did you test for HIV during labor? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 325 = 2,-8,-9 SKIP TO 329 SKIP Q IF 309 = 1 OR 315 = 1 |

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| 326 | What was the result of that test? | POSITIVE =1 NEGATIVE =2 UNKNOWN/INDETERMINATE =3 DID NOT RECEIVE RESULTS =4 DON'T KNOW =-8 REFUSED =-9 | IF 326 = 2,3,4,-8,-9 SKIP TO 329 SKIP Q IF 309 = 1 OR 315 = 1 |
| 327 | During labor, did you take ARVs to protect [NAME] against HIV? | YES =1 NO, OFFERED BUT DID NOT TAKE =2 NO, NOT OFFERED =3 DON'T KNOW =-8 REFUSED =-9 | IF 327 = 2,3,-8,-9 SKIP TO 329 |
| 328 | Did you continue to take the ARVs after delivery? | YES =1 NO=2 DON'T KNOW =-8 REFUSED =-9 | |
| 329 | When did you give birth to [NAME]? Please give your best guess. | DAY =date DON'T KNOW DAY =-8 REFUSED DAY =-9 MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH=-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | |
| 330 | Is [NAME] still alive? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 330 = 1,-8,-9 SKIP TO 332 |

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| 331 | When did [NAME] die? | DAY =date DON'T KNOW DAY =-8 REFUSED DAY =-9 MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | ALL RESPONSES SKIP TO 334 |
| 332 | Is [NAME] living with you? | YES =1 NO =2 | IF 332 = 2 SKIP TO 334 |
| 333 | RECORD HOUSEHOLD LINE NUMBER OF CHILD RECORD '00' IF CHILD NOT LISTED IN HOUSEHOLD | HOUSEHOLD LINE NUMBER =integer | |
| 334 | Did [NAME] take any ARVs to stop him/her from getting HIV infection? This would be before [NAME]'s first HIV test. | YES =1 NO, DID NOT TAKE ARVS =2 NO, CHILD NOT ALIVE =3 DON'T KNOW =-8 REFUSED =-9 | IF 334 = 2,3,-8,-9 SKIP TO 336 SKIP Q IF 309!=1 & 315!=1 & 326!=1 |
| 335 | For how long did [NAME] take the ARVs to stop him/her from getting HIV? CODE '00' IF LESS THAN ONE WEEK. ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN WEEKS OR IN MONTHS. | WEEKS =integer MONTHS =integer ARVS TAKEN ONCE =96 STILL TAKING ARVS =97 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 309!=1 & 315!=1 & 326!=1 |

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| 336 | Did [NAME] take Septrin or cotrimoxazole? This would be before [NAME]'s first HIV test. Septrin or cotrimoxazole is a medicine recommended for people with HIV, even if they have not started treatment for HIV. It helps prevent certain infections but it is not treatment for HIV. | YES =1 NO, DID NOT TAKE COTRIM =2 NO, CHILD NOT ALIVE =3 DON'T KNOW =-8 REFUSED =-9 | IF 336 = 2,3,-8,-9 SKIP TO 338 SKIP Q IF 309!=1 & 315!=1 & 326!=1 |
| 337 | For how long did [NAME] take Septrin or cotrimoxazole? ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN WEEKS OR IN MONTHS. CODE '00' IF LESS THAN ONE WEEK. | WEEKS =integer MONTHS =integer STILL TAKING COTRIMOXOZOLE =97 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 309!=1 & 315!=1 & 326!=1 |
| 338 | Did you ever breastfeed [NAME]? | YES =1 NO, NEVER BREASTFED =2 NO, CHILD NOT ALIVE =3 DON'T KNOW =-8 REFUSED =-9 | IF 338 = 2,3,-8,-9 SKIP TO 342 |
| 339 | Are you still breastfeeding [NAME]? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 339=1 SKIP TO 341 IF 339 = -8,-9 SKIP TO 342 |
| 340 | For how long did you breastfeed [NAME]? ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN WEEKS OR IN MONTHS. CODE '00" WEEKS IF LESS THAN 1 WEEK. | WEEKS =integer MONTHS =integer DON'T KNOW =-8 REFUSED =-9 | |

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| 341 | How old was [NAME] when you started giving [NAME] cow's/goat's milk, powdered milk, water, or any other foods or liquid? ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN MONTHS OR IN YEARS. CODE '00' IF LESS THAN 1 MONTH. | MONTHS =integer YEARS =integer NEVER =96 DON'T KNOW =-8 REFUSED =-9 | |
| 341a | Did you continue taking ARVs while you were breastfeeding [NAME]? | YES =1 NO =2 DON T KNOW =-8 REFUSED =-9 | - |
| 342 | After [NAME] was born, was he/she tested for HIV? | YES =1 NO, NOT TESTED FOR HIV =2 NO, CHILD NOT ALIVE =3 DON'T KNOW =-8 REFUSED =-9 | IF 342 = 1 SKIP TO 344 IF 342 = 2,3,-8,-9 SKIP TO 348 SKIP Q IF 309!=1 & 315!=1 & 326!=1 SKIP Q IF 339=1 OR 2 |
| 343 | While you were breastfeeding, was [NAME] tested for HIV? | YES =1 NO, NOT TESTED FOR HIV =2 NO, CHILD NOT ALIVE =3 DON'T KNOW =-8 REFUSED =-9 | IF 343 = 2,3,-8,-9 SKIP TO 346 SKIP Q IF 309!=1 & 315!=1 & 326!=1 |
| 344 | How old was [NAME] when he/she first tested for HIV? ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN WEEKS, MONTHS OR IN YEARS. CODE '00' IF LESS THAN 1 WEEK. | WEEKS =integer MONTHS =integer YEARS =integer DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 309!=1 & 315!=1 & 326!=1 |

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| 345 | What was the result of [NAME]'s first HIV test? | POSITIVE, CHILD HAS HIV =1 NEGATIVE, CHILD DOES NOT HAVE HIV =2 UNKNOWN/INDETERMINATE =3 DID NOT RECEIVE RESULTS =4 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 309!=1 & 315!=1 & 326!=1 |
| 346 | After you stopped breastfeeding, was [NAME] tested for HIV? | YES =1 NO, NOT TESTED FOR HIV =2 NO, CHILD NOT ALIVE =3 DON'T KNOW =-8 REFUSED =-9 | IF 346 = 2,3,-8,-9 SKIP TO 348 SKIP Q IF 309!=1 & 315!=1 & 326!=1 SKIP Q IF 345 = 1 SKIP Q IF 338 = 2,3,-8,-9 OR 339=1 |
| 347 | What was the result of [NAME]'s HIV test? | POSITIVE, CHILD HAS HIV =1 NEGATIVE, CHILD DOES NOT HAVE HIV =2 UNKNOWN/INDETERMINATE =3 DID NOT RECEIVE RESULTS =4 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 309!=1 & 315!=1 & 326!=1 SKIP Q IF 345 = 1 SKIP Q IF 338 = 2,3,-8,-9 OR 339=1 |
| 348 | Thank you for the information regarding [NAME]. DID THE RESPONDENT HAVE MORE THAN ONE CHILD (I.E. TWINS, TRIPLETS)? | YES =1 NO =2 | IF 348 = 1 SKIPTO 330 |
| Interviewer says: "I will now ask about current pregnancies." | | | IF 101 = 1 SKIP TO 351 |
| 349 | Are you pregnant now? | YES =1 NO =2 DON'T KNOW/UNSURE =-8 REFUSED =-9 | IF 349 = 2,-8,-9 SKIP TO 351 |
| 350 | How many months pregnant are you? | MONTHS = integer DON'T KNOW / UNSURE =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 3001 |

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| <p>Interviewer says: "I will now ask you about family planning."</p> | | | |
| 351 | 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 351 = 2 SKIP TO 353 IF 351= -8,-9 SKIP TO 3001 |
| 352 | Which method are you or your partner using? SELECT ALL THAT APPLY. | FEMALE STERILIZATION =A MALE STERILIZATION =B PILL =C IUD/"COIL" =D INJECTIONS =E IMPLANT =F CONDOM =G FEMALE CONDOM =H RHYTHM/NATURAL METHODS =I WITHDRAWAL =J NOT HAVING SEX =K OTHER =X DON'T KNOW =Y REFUSED =Z | IF 352_Y=1 OR 352_Z=1 SKIP TO 3001 |
| 353 | Would you like to have a/another child? | YES =1 NO =2 UNDECIDED/DON'T KNOW=-8 REFUSED =-9 | IF 353= 2 SKIP TP 355 IF 353= -8,-9 SKIP TO 3001 |
| 354 | How long would you like to wait before the birth of a/another child? ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN MONTHS OR IN YEARS. CODE '96' IF LESS THAN 1 MONTH. | MONTHS =integer YEARS =integer NOW/SOON =96 DON'T KNOW =-8 REFUSED =-9 | IF 354= 96,-8,-9 SKIP TO 3001 |

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| 355 | <p>Can you tell me why you are not using a method to prevent pregnancy? SELECT ALL THAT APPLY.</p> | NOT MARRIED/NO PARTNER =A NOT HAVING SEX =B INFREQUENT SEX=C MENOPAUSAL/HYSTERECTOMY=D (PARTNER) CANNOT GET PREGNANT =E NOT MENSTRUATED SINCE LAST BIRTH =F BREASTFEEDING =G KNOWS NO METHOD =H KNOWS NO SOURCE =I SIDE EFFECTS/HEALTH CONCERNS =J LACK OF ACCESS/TOO FAR =K COSTS TOO MUCH =L OTHER =X DON'T KNOW =Y REFUSED =Z | |
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MODULE 3A CHILDREN

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| 3001 | <p>The HOUSEHOLD SCHEDULE noted that [Name of Respondent] will fill out the children's module for [Number of children]. Please read this statement: I am going to ask you a number of questions about your child/children regarding their health and where they get their health services. We will ask you about these children: [list of children] [LINE NUMBER] [CHILD'S NAME]</p> | NUMBER OF CHILDREN | Integer 3001=0 |
| 3003 | Now I am going to ask you questions for [NAME]. | NAME =text | |
| 3004 | <p>How old was [NAME] at his/her last birthday? ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN YEARS OR IN MONTHS. CODE '00' IF LESS THAN ONE MONTH.</p> | MONTHS =integer YEARS =integer DON'T KNOW =-8 REFUSED=-9 | |
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| 3005 | Is [NAME] a boy or girl? | BOY =1 GIRL =2 DON'T KNOW =-8 REFUSED =-9 | |
| 3006 | Is [NAME] currently enrolled in school? | YES =1 NO, CURRENTLY NOT IN SCHOOL =2 NO, TOO YOUNG TO BE IN SCHOOL =3 DON'T KNOW =-8 REFUSED =-9 | IF 3006=2 SKIP TO 3010 IF 3006 =3,-8,-9 SKIP TO 3013 |
| 3007 | During the last school week, did [NAME] miss any school days for any reason? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 3007= 2,-8,-9 SKIP TO 3009 |
| 3008 | Why did [NAME] miss school? SELECT ALL THAT APPLY. | NO MONEY FOR SCHOOL, MATERIALS, TRANSPORT=A CHILD WAS TOO SICK TO ATTEND SCHOOL =B SCHOOL IS TOO FAR AWAY/NO SCHOOL =C CHILD HAS TO WORK =D CHILD HAS TO CARE FOR HOUSEHOLD MEMBERS =E CHILD DOES NOT LIKE/WANT TO GO TO SCHOOL =F SCHOOL WAS NOT IN SESSION =G OTHER =X DON'T KNOW =Y REFUSED =Z | |
| 3009 | What class/form/year is [NAME] in now? | CLASS/FORM/YEAR integer DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 3013 |
| 3010 | Was [NAME] enrolled in school during the previous school year? | YES =1 NO =2 | IF 3010 = 2,-8,-9 SKIP TO 3013 |

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| | | DON'T KNOW =-8 REFUSED =-9 | |
| 3011 | What class/form/year was [NAME] during the previous school year? | CLASS/FORM/YEAR =integer DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 3013 |
| Interviewer says: "I will now ask you about your child's circumcision history." | | | |
| 3013 | Is [NAME] circumcised? Circumcision is the complete removal of the foreskin from the penis. I have a picture to show you what a completely circumcised penis looks like. | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 3013 = 2 SKIP TO 3016 IF 3013 = -8,-9 SKIP TO 3017 SKIP Q IF 3005=2 |
| 3014 | How old was [NAME] when he was circumcised? Please give your best guess ONLY ONE OPTION MAY BE SELECTED. FOR EXAMPLE, ANSWER ONLY IN YEARS OR IN MONTHS. CODE '00' IF LESS THAN ONE MONTH. | MONTHS=integer YEARS =integer DON'T KNOW =-8 REFUSED=-9 | SKIP Q IF 3005=2 |

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| 3015 | Who circumcised [NAME]? | DOCTOR, CLINICAL OFFICER, OR NURSE =1 TRADITIONAL PRACTITIONER / CIRCUMCISER =2 MIDWIFE =3 OTHER =96 DON'T KNOW =-8 REFUSE TO ANSWER =-9 | ALL RESPONSES SKIP TO 3017 SKIP Q IF 3005=2 |
| 3016 | Are you planning to have [NAME] circumcised in the future? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 3005=2 |
| 3017 | Has [NAME] ever been tested for HIV? | YES NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 3017 = 1 SKIP TO 3019 IF 3017 = -8,-9 SKIP TO 3040a |
| 3018 | Why has [NAME] never been tested for HIV? SELECT ALL THAT APPLY. | DON'T KNOW WHERE TO TEST =A TEST COSTS TOO MUCH =B TRANSPORT COSTS TOO MUCH =C TOO FAR AWAY =D AFRAID OTHERS WILL KNOW ABOUT TEST RESULTS =E DON'T NEED TEST/LOW RISK =F DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY =G AFRAID SPOUSE/PARTNER/FAMILY WILL KNOW RESULTS =H DON'T WANT TO KNOW CHILD HAS HIV =I CANNOT GET TREATMENT FOR HIV =J TEST KITS NOT AVAILABLE =K RELIGIOUS REASONS =L OTHER =X DON'T KNOW =Y REFUSED =Z | ALL RESPONSE SKIP TO 3040a |

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| 3019 | You said earlier that [NAME] had been tested for HIV. Was that the last time (NAME) was tested for HIV? | YES =1 NO=2 DON'T KNOW=-8 REFUSED=-9 | IF 3019 = 2,-8,-9 SKIP TO 3022 SKIP Q IF 342!=1 OR 343!=1 OR 346!=1 |
| 3020 | What month and year was [NAME]'s most recent HIV test done? | MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH=-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | SKIP Q IF 342!=1 OR 343!=1 OR 346!=1 |
| 3021 | You mentioned earlier that (NAME) received an HIV-positive result. What was the month and year of [NAME]'s first HIV-positive test result? Please give your best guess. This will be the very first HIV-positive test result that [NAME] had received. PROBE TO VERIFY DATE. | MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | ALL RESPONSES SKIP TO 3024 SKIP Q IF 342!=1 OR 343!=1 OR 346!=1 SKIP Q IF 345!=1 OR 347!=1 |
| 3022 | What month and year was [NAME]'s most recent HIV test done? | MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | |
| 3023 | What was [NAME]'s last HIV test result? | POSITIVE =1 NEGATIVE =2 UNKNOWN/INDETERMINATE =3 DID NOT RECEIVE RESULTS =4 DON'T KNOW =-8 REFUSED =-9 | IF 3023 = 2,3,4,-8,-9 SKIP TO 3040a SKIP Q IF (333=3002) & (345 = 1 OR 347 = 1) |

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| 3024 | Has [NAME] ever received HIV medical care from a doctor, clinical officer or nurse? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 3024= 1 SKIP TO 3026 IF 3024 = -8,-9 SKIP TO 3029 |
| 3025 | What is the main reason why [NAME] has never seen a doctor, clinical officer or nurse for HIV medical care? | FACILITY IS TOO FAR AWAY =1 I DON'T KNOW WHERE TO GET HIV MEDICAL CARE FOR CHILD =2 COST OF CARE =3 COST OF TRANSPORT =4 I DON'T THINK CHILD NEEDS IT, HE/SHE IS NOT SICK=5 I FEAR PEOPLE WILL KNOW THAT CHILD HAS HIV IF I TAKE HIM/HER TO A CLINIC=6 RELIGIOUS REASONS =7 CHILD IS TAKING TRADITIONAL MEDICINE =8 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 3029 |
| 3026 | What month and year did [NAME] <u>first</u> see a doctor, clinical officer or nurse for HIV medical care? PROBE TO VERIFY DATE. | MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH=-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED =-9 | |
| 3027 | What month and year did [NAME] <u>last</u> see a doctor or nurse for HIV medical care? | MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH ==9 YEAR =date DON'T KNOW YEAR =-8 REFUSED =-9 FACILITY IS TOO FAR AWAY =1 | IF currentdate-3027<7 MONTHS,-8,-9 SKIP TO 3029 |

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| 3028 | What is the main reason for [NAME] not seeing a doctor, clinical officer or nurse for HIV medical care for more than 6 months? | I DON'T KNOW WHERE TO GET HIV MEDICAL CARE FOR CHILD =2 COST OF CARE =3 COST OF TRANSPORT =4 I DON'T THINK CHILD NEEDS IT, HE/SHE IS NOT SICK =5 I FEAR PEOPLE WILL KNOW THAT CHILD HAS HIV IF I TAKE HIM/HER TO A CLINIC =6 RELIGIOUS REASONS =7 CHILD IS TAKING TRADITIONAL MEDICINE =8 NO APPOINTMENT SCHEDULED/DID NOT MISS MOST RECENT APPOINTMENT =9 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | |
| 3029 | Has [NAME] ever had a CD4 count test? The CD4 count tells you how sick you are with HIV and if you need to take ARVs or other HIV medications. | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 3029 = 2,-8,-9 SKIP TO 3031 IF 3029= (2,-8, OR -9) & (3024 = 2,-8 OR -9) SKIP TO 3040a |
| 3030 | What month and year was [NAME] last tested for his/her CD4 count? | MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | IF 3024 = 2,-8,-9 SKIP TO 3040a |
| 3031 | Has [NAME] ever taken ARVs, that is, antiretroviral medications, to treat his/her HIV infection? | YES -1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 3031 = 1 SKIP TO 3033 IF 3031 = -8,-9 SKIP TO 3038 |

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| 3032 | What is the main reason [NAME] has never taken ARVs? | CHILD IS NOT ELIGIBLE FOR TREATMENT =1 HEALTH CARE PROVIDER DID NOT PRESCRIBE =2 HIV MEDICINES NOT AVAILABLE =3 DO NOT THINK CHILD NEEDS IT, HE/SHE IS NOT SICK =4 COST OF MEDICATIONS =5 COST OF TRANSPORT =6 RELIGIOUS REASONS =7 CHILD IS TAKING TRADITIONAL MEDICATIONS =8 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 3038 |
| 3033 | What month and year did [NAME] first start taking ARVs? PROBE TO VERIFY DATE. | MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | |
| 3034 | What month and year did [NAME] last receive ARVs? | MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | |
| 3035 | Is [NAME] currently taking ARVs, that is, antiretroviral medications? By currently, I mean that [NAME] may have missed some doses but [NAME] is still taking ARVs. | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 3035 = 1 SKIP TO 3037 IF 3035 =-8,-9 SKIP TO 3038 |

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| 3036 | Can you tell me the main reason why [NAME] is not currently taking ARVs? | I HAVE TROUBLE GIVING CHILD A TABLET EVERYDAY=1 CHILD HAD SIDE EFFECTS/RASH =2 FACILITY/PHARMACY TOO FAR AWAY TO GET MEDICATION REGULARLY =3 COST OF MEDICATIONS =4 COST OF TRANSPORT =5 CHILD IS HEALTHY, HE/SHE IS NOT SICK =6 FACILITY WAS OUT OF STOCK=7 RELIGIOUS REASONS=8 CHILD IS TAKING TRADITIONAL MEDICATIONS =9 OTHER =96 DON'T KNOW =8 REFUSED =-9 | ALL RESPONSES SKIP TO 3038 |
| 3037 | People sometimes forget to take all of their ARVs every day. In the past 30 days, how many days has [NAME] missed taking any ARV pills? CODE '00' FOR NONE. | DAYS =integer DON'T KNOW =-8 REFUSED =-9 | |
| 3038 | Is [NAME] currently taking Septrin or cotrimoxazole? Septrin or cotrimoxazole is a medicine recommended for people with HIV, even if they have not started treatment for HIV. It helps prevent certain infections but it is not treatment for HIV. By currently, I mean that [NAME] may have missed some doses but is still taking Septrin. | YES =1 NO =2 I DON'T KNOW WHAT IT IS =3 REFUSED =-9 | IF 3038 = 1,3,-9 SKIP TO 3040a |

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| 3039 | <p>Can you tell me the main reason why [NAME] is not currently taking Septrin or Cotrimoxazole daily?</p> | <p>WAS NOT PRESCRIBED =1 I HAVE TROUBLE GIVING CHILD A TABLET EVERYDAY =2 CHILD HAD SIDE EFFECTS/RASH =3 FACILITY/PHARMACY TOO FAR AWAY TO GET Septrin/COTRIMOXOZOLE REGULARLY =4 CHILD DOES NOT NEED IT, HE/SHE IS NOT SICK =5 PHARMACY/ FACILITY WAS OUT OF STOCK =6 COST OF MEDICATIONS =7 COST OF TRANSPORT =8 DOCTOR SAID NO LONGER NEEDED =9 RELIGIOUS REASONS =10 OTHER =96 I DON'T KNOW =-8 REFUSED =-9</p> | |
| 3040a | <p>In the last 12 months, were you told by a doctor, clinical officer or nurse that [NAME] was underweight or had a low weight?</p> | <p>YES=1 NO =2 DON'T KNOW =-8 REFUSED =-9</p> | <p>IF 3040a = 2,-8,-9 SKIP TO 3041</p> |
| 3040b | <p>Was [NAME] given a nutritional supplement or referred for a nutritional consult or both?</p> | <p>NO, NEVER GIVEN SUPPLEMENT/REFERRED =1 YES, GIVEN SUPPLEMENT =2 YES, REFERRED =3 BOTH GIVEN SUPPLEMENT AND REFERRED =4 DON'T KNOW =-8 REFUSED =-9</p> | |

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| 3041 | <p>At the last HIV medical care visit, did a doctor, clinical officer or nurse ask if:</p> <ul style="list-style-type: none"> - [NAME] had any of the following tuberculosis or TB symptoms: cough, fever, night sweats, and weight loss OR - [NAME] had contact with someone who had tuberculosis or TB? | <p>YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9</p> | SKIP Q IF 3024 = 2,-8,-9 |
| 3042 | In the last 12 months, has [NAME] experienced these TB symptoms or had contact with someone with TB? | <p>YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9</p> | IF 3042 = 2,-8,-9 SKIP TO 3044 SKIP Q IF 3024 = 2,-8,-9 |
| 3043 | <p>In the last 12 months, did [NAME] receive a chest x-ray or sputum test to look for TB?</p> <p>A sputum test is when the patient has to cough and collect the sample in a cup.</p> <p>SELECT ALL THAT APPLY.</p> | <p>CHEST X-RAY =A SPUTUM TEST =B NONE OF THESE =C DON'T KNOW =Y REFUSED =Z</p> | SKIP Q IF 3024 = 2,-8,-9 |
| 3044 | Has [NAME] ever visited a tuberculosis or TB clinic for TB diagnosis or treatment? | <p>YES =1 NO =2 DON'T KNOW =-8 REFUSED =9</p> | IF 3044 = 2,-8,-9 SKIP TO 3049a |
| 3045 | Was [NAME] tested for HIV at the TB clinic? | <p>YES =1 NO, WAS NOT TESTED FOR HIV =2 NO, WAS ALREADY HIV POSITIVE =3 DON'T KNOW =-8 REFUSED =-9</p> | |
| 3046 | Have you ever been told by a doctor, clinical officer or nurse that [NAME] had TB? | <p>YES =1 NO=2 DON'T KNOW =-8 REFUSED =-9</p> | IF 3046 = 2,-8,-9 SKIP TO 3049a |

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| 3047 | What month and year did a doctor, clinical officer or nurse diagnose [NAME] with TB? RECORD THE MOST RECENT TIME IF DIAGNOSED WITH TB MORE THAN ONCE. | MONTH =DATE DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | |
| 3048 | Was [NAME] ever treated for TB? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 3048 = 2,-8,-9 SKIP TO 3049a |
| 3049 | Has [NAME] completed at least 6 months of treatment for TB? | YES =1 NO, THE MEDICINE WAS STOPPED IN LESS THAN 6 MONTHS =2 NO, CHILD IS STILL ON TREATMENT =3 DON'T KNOW =-8 REFUSED =-9 | |
| 3049a | And now my last question about [NAME] is on Hepatitis B: Has your child ever been vaccinated for Hepatitis B? Please show us his/her under 5 vaccination card. | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 3050 | Thank you for the information about [NAME]. DOES THE RESPONDENT HAVE ANOTHER CHILD AGED 0-14 YEARS? | YES =1 NO =2 | IF 3050= 1 SKIP TO 3003 |

MODULE 4: MALE CIRCUMCISION

Interviewer says: "I will be asking a few questions about your own experience with circumcision. Circumcision is the complete removal of the foreskin from the penis. I have a picture to show you what a completely circumcised penis looks like."

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| 404 | Many men do not want to talk about circumcision, but it is important for us to have this information. Some men are circumcised. Are you circumcised? | YES =1 NO =2 DON'T KNOW =-8 REFUSED=-9 | IF 404=1 SKIP TO 406 IF 404 = -8,-9 SKIP TO 1001 |
| 405 | Are you planning to get circumcised? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 1001 |
| 406 | How old were you when you were circumcised? Please give your best guess. IF LESS THAN ONE YEAR, CODE '00'. | AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9 | |
| 407 | Who did the circumcision? | DOCTOR, CLINICAL OFFICER, OR NURSE =1 TRADITIONAL PRACTITIONER / CIRCUMCISER =2 MIDWIFE =3 OTHER =96 DON'T KNOW =-8 REFUSED=-9 | |

| MODULE 10: ALCOHOL USE | | | |
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| Interviewer says: "The next few questions will be on your use of alcohol. Remember, all the answers you provide will be kept confidential." | | | |
| 1001 | 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 1001 = 0,-8,-9 SKIP TO 501 |

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| 1002 | 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 | |
| 1003 | 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 5: SEXUAL ACTIVITY

Interviewer says: "In this part of the interview, I will be asking questions about your sexual relationships and practices. These questions will help us have a better understanding of how they may affect your life and risk for HIV."

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| 502 | How old were you when you had vaginal sex for the very <u>first</u> time? Vaginal sex is when a penis enters a vagina. | AGE IN YEARS =integer NEVER HAD VAGINAL SEX =96 DON'T KNOW =-8 REFUSED =-9 | |
| 502a | People have sex in different ways. Some have vaginal sex. Some have anal sex. Anal sex is when a penis enters a person's anus. Have you ever had anal sex? | YES =1 NO =1 DON'T KNOW =-8 REFUSED =-9 | IF 502a= 2,-8,-9 SKIP TO 503 IF 502a=2,-8,-9 & 502=96,-8,-9 SKIP TO 601 |

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| 502b | How old were you when you had anal sex for the very <u>first</u> time? | AGE IN YEARS=integer DON'T KNOW =-8 REFUSED =-9 | - |
| 503 | The <u>first</u> time you had vaginal or anal sex, was a condom used? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 503a | How old was the person you first had vaginal or anal sex with? Please give your best guess. | AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9 | |
| 504 | The first time you had vaginal or anal sex, was it because you wanted to or because you were forced to? | WANTED TO =1 FORCED TO =2 DON'T KNOW =-8 REFUSED =-9 | IF 504 = 1,-8,-9 SKIP TO 505a |
| 505 | The first time you had vaginal or anal sex, were you physically forced or were you pressured into having sex through harassment, threats or tricks? | PHYSICALLY FORCED =1 PRESSURED =2 DON'T KNOW =-8 REFUSED =-9 | |
| 505a | People often have sex with different partners over their lifetime. In total, with how many different people have you had sex in your lifetime? Please give your best guess. IF NUMBER OF SEXUAL PARTNERS IS GREATER THAN 100, CODE '100' | NUMBER OF PARTNERS IN LIFETIME __ __ DON'T KNOW =-8 REFUSED =-9 | |
| 506 | In total, with how many different people have you had sex in the last 12 months? IF NONE CODE '00'. IF NUMBER OF SEXUAL PARTNERS IS GREATER THAN 100, CODE '100' | NUMBER OF SEXUAL PARTNERS IN LAST 12 MONTHS __ __ DON'T KNOW =-8 REFUSED =-9 | IF 506= 0,-8,-9 SKIP TO 601 |

Interviewer says: "Now I would like to ask you some questions about the partners you have had sex with in the last 12 months. Let me assure you again that your answers are completely confidential and will not be told to anyone. I will first ask you about your most recent partner."

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| 507 | I would like to ask you for the initials of your partner so I can keep track. They do not have to be the actual initials of your partner. | INITIALS =text | |
| 508 | Does [INITIALS] live in this household? | YES =1 NO =2 | IF 508 = 2 SKIP TO 510 |
| 509 | HOUSEHOLD LINE NO. for [INITIALS] CODE '00' IF NOT LISTED IN HOUSEHOLD ROSTER. | LINE NO=integer | |
| 510 | What is your relationship with [INITIALS]? | HUSBAND/WIFE =1 LIVE-IN PARTNER =2 PARTNER, NOT LIVING WITH RESPONDENT =3 EX-SPOUSE/PARTNER =4 FRIEND/ACQUAINTANCE =5 SEX WORKER =6 SEX WORKER CLIENT =7 STRANGER =8 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | |
| 511 | How long has it been since you last had sex with [INITIALS]? IF LESS THAN ONE WEEK RECORD IN DAYS, IF LESS THAN ONE MONTH, RECORD IN WEEKS, OTHERWISE RECORD IN MONTHS. | DAYS =integer WEEKS=integer MONTHS=integer DON'T KNOW =-8 REFUSED =-9 | |
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| 512 | How long has it been since you first had sex with [INITIALS]? IF LESS THAN ONE WEEK RECORD IN DAYS, IF LESS THAN ONE MONTH, RECORD IN WEEKS. IF LESS THAN ONE YEAR, RECORD IN MONTHS. OTHERWISE, RECORD IN YEARS. | DAYs =integer WEEKs =integer MONTHs =integer YEARs =integer DON'T KNOW =-8 REFUSED =-9 | |
| 513 | Is [INITIALS] male or female? | MALE =1 FEMALE =2 DON'T KNOW =-8 REFUSED =-9 | |
| 514 | How old is [INITIALS]? Please give your best guess. | AGE IN YEARS=integer DON'T KNOW =-8 REFUSED =-9 | |
| 514a | The last time you had sex with [INITIALS], did you have vaginal sex, anal sex or both? | VAGINAL=1 ANAL=2 BOTH =3 DON'T KNOW=-8 REFUSED =-9 | |
| 515 | The last time you had sex with [INITIALS] was a condom used? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 516 | The last time you had sex with [INITIALS] were either of you drinking alcohol? | ONLY I WAS DRINKING =1 ONLY PARTNER WAS DRINKING=2 BOTH WERE DRINKING=3 NEITHER =4 DON'T KNOW =-8 REFUSED =-9 | |

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| 517 | <p>Did you enter into a sexual relationship with [INITIALS] because [INITIALS] provided you or expected that [INITIALS] would provide you with material support in other ways?</p> <p>Material support means helping you to pay for things, or giving you gifts or other items you needed or requested.</p> | <p>YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9</p> | <p>IF 517 = 2,-8,-9 SKIP TO 519 SKIP Q IF 510 = 6,7</p> |
| 518 | <p>In the <u>last 12 months</u>, what all did you receive?</p> <p>SELECT ALL THAT APPLY.</p> | <p>DID NOT RECEIVE ANYTHING =A MONEY =B FOOD =C SCHOOL FEES =D EMPLOYMENT =E GIFTS/FAVORS =F TRANSPORT =G SHELTER/RENT =H PROTECTION =I OTHER =X DON'T KNOW =Y REFUSED =Z</p> | <p>SKIP Q IF 510 = 1,2,6,7</p> |
| 519 | Was [INITIALS] circumcised? | <p>YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9</p> | <p>SKIP Q IF 513 = 2,-8,-9</p> |
| 520 | Do you expect to have sex with [INITIALS] again? | <p>YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9</p> | |
| 521 | Have you ever taken an HIV test with [INITIALS]? | <p>YES=1 NO =2 DON'T KNOW =-8 REFUSED =-9</p> | <p>IF 521 = 1,-8,-9 SKIP TO 523</p> |

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| 522 | What is the main reason you haven't tested for HIV with (INITIALS) as a couple? READ RESPONSES ALOUD. | NOT A PARTNER/COUPLE=1 NEVER DISCUSSED =2 WE ARE NOT AT RISK FOR HIV =3 PARTNER REFUSED =4 I REFUSED =5 WE KNOW OUR STATUS =6 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | |
| 523 | Does [INITIALS] know your HIV status? HIV status could mean you are HIV negative or HIV positive. | YES =1 NO =1 DON'T KNOW =-8 REFUSED =-9 | |
| 524 | What is the HIV status of [INITIALS]? READ RESPONSES ALOUD. | THINK (INITIALS) IS POSITIVE =4 (INITIALS) TOLD ME HE/SHE IS POSITIVE =3 POSITIVE, TESTED TOGETHER =1 THINK (INITIALS) IS NEGATIVE =4 (INITIALS) TOLD ME HE/SHE IS NEGATIVE =5 NEGATIVE, TESTED TOGETHER=2 DON'T KNOW STATUS =3 REFUSED =-9 | |
| 525 | DID THE RESPONDENT HAVE ANOTHER PARTNER IN THE LAST 12 MONTHS? | YES =1 NO =2 | IF 525 = 1 SKIP TO 507 |
| Interviewer says: "Now I am going to ask you some additional questions about your sexual activities. Again, I am asking that you answer these questions honestly. Let me assure you again that your answers are completely confidential and will not be shared with anyone. | | | |
| 525a | Have you ever sold sex for money? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 525a = 2,-8,-9 SKIP TO 527a |

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| 526 | In the last 12 months, have you <u>sold</u> sex for money? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 526 = 2,-8,-9 SKIP TO 527a |
| 527 | The last time you sold sex for money, was a condom used? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 527a | Have you ever paid money for sex? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 527a = 2,-8,-9 SKIP TO 601 |
| 528 | In the last 12 months, have you paid money for sex? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 528 = 2,-8,-9 SKIP TO 601 |
| 529 | The last time you paid money for sex, was a condom used? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |

| MODULE 6: HIV/AIDS KNOWLEDGE AND ATTITUDES | | | |
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| Interviewer says: "Now I will ask you questions on your knowledge of HIV." | | | |
| 601 | Can the risk of HIV transmission be reduced by having sex with only one uninfected partner who has no other partners? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 602 | Can a person get HIV from mosquito bites? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |

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| 603 | Can a person reduce their risk of getting HIV by using a condom every time they have sex? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 604 | Can a person get HIV by sharing food with someone who has HIV? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 605 | Can a healthy-looking person have HIV? Now I would like to ask you some questions about people's attitudes towards people living with HIV. | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 606 | Would you buy fresh vegetables from a shop keeper or vendor if you knew the person had HIV? | YES =1 NO =2 DON'T KNOW/NOT SURE/DEPENDS =-8 REFUSED =-9 | |
| 607 | Do you think children living with HIV should be allowed to attend school with children who do not have HIV? | YES =1 NO =2 DON'T KNOW/NOT SURE/DEPENDS =-8 REFUSED =-9 | |
| 608 | Do you think people hesitate to take an HIV test because they are afraid of how other people will react if the test result is positive for HIV? | YES =1 NO =2 DON'T KNOW/NOT SURE/DEPENDS =-8 REFUSED =-9 | |
| 609 | Do people talk badly about people who are living with HIV or who are thought to be living with HIV? | YES =1 NO =2 DON'T KNOW/NOT SURE/DEPENDS =-8 REFUSED =-9 | |

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| 610 | Do people living with HIV, or thought to be living with HIV, lose the respect of other people? | YES =1 NO =2 DON'T KNOW/NOT SURE/DEPENDS =-8 REFUSED =-9 | |
| 611 | Do you fear that you could get HIV if you come into contact with the saliva of a person living with HIV? | YES =1 NO =2 DON'T KNOW/NOT SURE/DEPENDS =-8 REFUSED =-9 | |
| 612 | Do you agree or disagree with the following statement: I would be ashamed if someone in my family had HIV. | AGREE =1 DISAGREE =2 DON'T KNOW/NOT SURE/DEPENDS =-8 REFUSED =-9 | |

MODULE 7: HIV TESTING

Interviewer says: "I would now like to ask you some questions about HIV testing."

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| 701 | Have you seen a doctor, clinical officer or nurse in a health facility in last 12 months? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 701 = 2,-8,-9 Skip to 703 |
| 702 | '= During any of your visits to the health facility in the last 12 months, did a doctor, clinical officer or nurse offer you an HIV test? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 703 | Have you <u>ever tested</u> for HIV? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 703 = 1 Skip to 704a IF 703=-8,-9 SKIP TO 704b |

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| 704 | <p>Why have you never been tested for HIV? SELECT ALL THAT APPLY.</p> | <p>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 =D DON'T NEED TEST/LOW RISK =F DID NOT RECEIVE PERMISSION FROM SPOUSE/FAMILY =G AFRAID SPOUSE/PARTNER/FAMILY WILL KNOW RESULTS =H DON'T WANT TO KNOW I HAVE HIV =I CANNOT GET TREATMENT FOR HIV =J TEST KITS NOT AVAILABLE =K RELIGIOUS REASONS =L OTHER =X DON'T KNOW =Y REFUSED =Z</p> | |
| 704a | <p>To what extent do you agree with the following statement: All HIV-negative people should test for HIV every year. Do you strongly agree, agree, disagree, or strongly disagree?</p> | <p>STRONGLY AGREE=1 AGREE =2 DISAGREE =3 STRONGLY DISAGREE=4 DON'T KNOW=-8 REFUSED =-9</p> | |
| 704b | <p>If an HIV self-test kit were available in this country, would you use it?</p> | <p>YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9</p> | <p>IF 703= 2,-8,-9 SKIP TO 801</p> |

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| 705 | Have you had an HIV test since giving birth to [NAME]? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 705 = 1 SKIP TO 708 IF 705= -8,-9 SKIP TO 712 SKIP Q IF (308=2,-8,-9) & (312=2,-8 OR -9) & (325=2,-8,-9) SKIP Q IF 303 = 0,-8,-9 SKIP Q IF 101=1 |
| 706 | What month and year did you last test for HIV while you were pregnant with [NAME]? | MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR=date DON'T KNOW YEAR=-8 REFUSED =-9 | SKIP Q IF (308=2,-8,-9) & (312=2,-8 OR -9) & (325=2,-8,-9) SKIP Q IF 303 = 0,-8,-9 SKIP Q IF 101=1 IF (309=2,-8,-9) & (315=2,3,4,-8,-9) & (326=2,3,4,-8,-9) SKIP TO 801 |
| 707 | You mentioned earlier you received an HIV-positive result while you were pregnant with [NAME]. What was the month and year of your first HIV-positive test result? Please give your best guess. This will be the very first HIV-positive test result that you have received PROBE TO VERIFY DATE. | MONTH=date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR=-8 REFUSED =-9 | ALL RESPONSES SKIP TO 712 SKIP Q IF (308=2,-8,-9) & (312=2,-8 OR -9) & (325=2,-8,-9) SKIP Q IF 303 = 0,-8,-9 SKIP Q IF 101=1 |
| 708 | What month and year was your last HIV test? | MONTH=date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date | |

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| | | DON'T KNOW YEAR=-8 REFUSED =-9 | |
| 709 | Where was the <u>last</u> 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 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | |
| 710 | What was the result of that HIV test? | POSITIVE =1 NEGATIVE =2 UNCERTAIN/INDETERMINATE =3 DID NOT RECEIVE THE RESULT =4 DON'T KNOW =-8 REFUSED =-9 | IF 710 = 2,3,4,-8,-9 SKIP TO 801 |
| 711 | What was the month and year of your first HIV-positive test result? Please give your best guess. This will be the very first HIV-positive test result that you have received PROBE TO VERIFY DATE. | MONTH=date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR=date=date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | |

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| 712 | Of the following people, who have you told that you are HIV positive? CHECK ALL THAT APPLY. | NO ONE =A SPOUSE/SEX PARTNER =B DOCTOR =C FRIEND =D FAMILY MEMBER =E OTHER =X DON'T KNOW =Y REFUSED =Z | IF 712_A=1 SKIP TO 713 SKIP Q IF 309!=1 AND 315!=1 AND 326!=1 AND 710!=1 |
| Interviewer says: "Now I would like to ask you questions about your experiences with health care providers." | | | IF 309!=1 & 315!=1 & 326!=1 & 710!=1 SKIP TO 801 |
| 713 | In the last 12 months, have health care providers talked badly about you because of your HIV status? | YES =1 NO =2 NO ONE KNOWS MY STATUS =3 DON'T KNOW =-8 REFUSED =-9 | |
| 714 | In the last 12 months, when you sought health care in a facility where your HIV status is not known, did you feel you needed to hide your HIV status? | YES =1 NO, NO NEED TO HIDE =2 NO, DID NOT ATTEND HEALTH FACILITY IN LAST 12 MONTHS =3 DON'T KNOW =-8 REFUSED =-9 | |
| 715 | In the last 12 months, have you been denied health services including dental care, because of your HIV status? | YES =1 NO =2 NO ONE KNOWS MY STATUS =3 DON'T KNOW =-8 REFUSED =-9 | |

MODULE 8: HIV STATUS, CARE AND TREATMENT

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| Interviewer says: "Now I'm going to ask you more about your experience with HIV support, care and treatment." | IF 309!=1 & 315!=1 & 326!=1 & 710!=1 SKIP TO 901 |
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| 801 | After learning you had HIV, have you <u>ever</u> received HIV medical care from a doctor, clinical officer or nurse? | YES =1 NO =2 DON'T KNOW=-8 REFUSED=-9 | IF 801 = 1 SKIP TO 803 IF 801 = -8,-9 |
| 802 | What is the <u>main</u> reason why you have never received HIV medical care from a doctor, clinical officer or nurse? | FACILITY IS TOO FAR AWAY =1 I DON'T KNOW WHERE TO GET HIV MEDICAL CARE =2 COST OF CARE =3 COST OF TRANSPORT =4 I DO NOT NEED IT/I FEEL HEALTHY/NOT SICK =5 I FEAR PEOPLE WILL KNOW THAT I HAVE HIV IF I GO TO A CLINIC =6 RELIGIOUS REASONS =7 I'M TAKING TRADITIONAL MEDICINE =8 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 805a |
| 803 | After learning your HIV diagnosis, what month and year did you <u>first</u> see a doctor, clinical officer or nurse for HIV medical care? PROBE TO VERIFY DATE. | MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | |
| 804 | What month and year did you <u>last</u> see a doctor, clinical officer or nurse for HIV medical care? | MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH=-9 YEAR=date DON'T KNOW YEAR =-8 REFUSED =-9 | IF currentdate-804 <7 MONTHS,-8,-9 SKIP TO 805a |

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| 805 | What is the <u>main</u> reason for not seeing a doctor, clinical officer or nurse for HIV medical care in the past 6 months? | FACILITY IS TOO FAR AWAY =1 I DON'T KNOW WHERE TO GET HIV MEDICAL CARE =2 COST OF CARE =3 COST OF TRANSPORT=4 I DO NOT NEED IT/I FEEL HEALTHY/NOT SICK =5 I FEAR PEOPLE WILL KNOW THAT I HAVE HIV IF I GO TO A CLINIC =6 RELIGIOUS REASONS =7 I'M TAKING TRADITIONAL MEDICINE=8 NO APPOINTMENT SCHEDULED/DID NOT MISS MOST RECENT APPOINTMENT =9 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | |
| 805a | At your last HIV care visit, approximately how long did it take you to travel from your home (or workplace) one-way? | LESS THAN ONE HOUR=1 ONE TO TWO HOURS=2 MORE THAN TWO HOURS=3 DON'T KNOW=-8 REFUSED =-9 | |
| 806 | Have you ever had a CD4 count test? The CD4 count tells you how sick you are with HIV and if you need to take ARVs or other HIV medications. | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 806 = 2,-8,-9 SKIP TO 808 IF (806 = 2,-8,-9) & (801 = 2,-8,-9) SKIP TO 901 |
| 807 | What month and year were you last tested for your CD4 count? | MONTH=date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR=date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | IF 801 = 2,-8,-9 SKIP TO 901 |

| | | | |
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| 808 | Have you <u>ever</u> taken ARVs, that is, antiretroviral medications to treat HIV infection? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 808 = 1 SKIP TO 810 IF 808 = -8,-9 SKIP TO 815 |
| 809 | What is the main reason you have never taken ARVs? | NOT ELIGIBLE FOR TREATMENT=1 HEALTH CARE PROVIDER DID NOT PRESCRIBE =2 HIV MEDICINES NOT AVAILABLE =3 I FEEL HEALTHY/NOT SICK =4 COST OF MEDICATIONS =5 COST OF TRANSPORT =6 RELIGIOUS REASONS =7 TAKING TRADITIONAL MEDICATIONS =8 NOT ATTENDING HIV CLINIC =9 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 815 |
| 810 | What month and year did you <u>first</u> start taking ARVs? PROBE TO VERIFY DATE. | MONTH=date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR=date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | |
| 811 | What month and year did you <u>last</u> receive ARVs? | MONTH=date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR=date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | |
| 812 | Are you <u>currently</u> 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 812=1 SKIP TO 814 IF 812 = -8,-9 SKIP TO 815 |

| | | | |
|-----|---|--|-------------------------------------|
| 813 | Can you tell me the <u>main</u> reason why you are <u>not</u> currently taking ARVs? | I HAVE TROUBLE TAKING A TABLET EVERYDAY =1 I HAD SIDE EFFECTS =2 FACILITY TOO FAR AWAY FOR ME TO GET MEDICINE REGULARLY =3 COST OF MEDICATIONS =4 COST OF TRANSPORT=5 I FEEL HEALTHY/NOT SICK =6 FACILITY WAS OUT OF STOCK =7 RELIGIOUS REASONS =8 TAKING TRADITIONAL MEDICATIONS =9 OTHER=96 DON' T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 815 |
| 814 | People sometimes forget to take all of their ARVs every day. In the past 30 days, how many days have you missed taking any of your ARV pills? CODE '00' IF NONE. | NUMBER OF DAYS =integer DON'T KNOW =-8 REFUSED =-9 | |
| 815 | Are you currently taking Septrin or Cotrimoxazole? Septrin or cotrimoxazole is a medicine recommended for people with HIV, even if they have not started treatment for HIV. It helps prevent certain infections but it is not treatment for HIV. By currently, I mean that you may have missed some doses but you are still taking Septrin/Cotrimoxazole. | YES =1 NO=2 DON'T KNOW =-8 REFUSED =-9 | IF 815 = 1,-8,-9 SKIP TO 817 |

| | | | |
|--|--|---|---------------------------------|
| 816 | Can you tell me the main reason why you are not currently taking Septrin or Cotrimoxazole? | WAS NOT PRESCRIBED=1 I HAVE TROUBLE TAKING A TABLET EVERYDAY =2 I HAD SIDE EFFECTS/RASH FACILITY TOO FAR AWAY FOR ME TO GET SEPTRIN OR COTRIMOXAZOLE REGULARLY DO NOT NEED IT/NOT SICK =5 PHARMACY/FACILITY WAS OUT OF STOCK =6 COST OF MEDICATIONS =7 COST OF TRANSPORT =8 DOCTOR SAID NO LONGER NEEDED =9 OTHER=96 DON' T KNOW =-8 REFUSED =-9 | |
| 817 | While receiving HIV care, has a health care provider or outreach worker spoken to you about family planning methods or contraceptives? | YES =1 NO=2 DON'T KNOW =-8 REFUSED =-9 | |
| 818 | Have you ever attended a support group for people living with HIV? Was this in a facility or in the community? | YES, IN A FACILITY/CLINIC=1 YES, IN THE COMMUNITY=2 NO, NOT INTERESTED=3 NO, SUPPORT GROUP NOT AVAILABLE=4 DON'T KNOW =-8 REFUSED =-9 | - |
| Interviewer says: "Now I will ask you about HIV care and tuberculosis or TB." | | | IF 801 = 2,-8,-9 SKIP TO 901 |
| 821 | At your last HIV medical care visit, were you asked if you had any of the following TB symptoms: cough, fever, night sweats and weight loss? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |

| | | | |
|-----|--|--|---------------------------------|
| 822 | In the last 12 months, have you experienced any of the following TB symptoms: cough, fever, night sweats and weight loss? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 822 = 2,-8,-9 SKIP TO 901 |
| 823 | In the last 12 months, did you receive a chest x-ray or sputum test to look for TB? A sputum test is when the patient has to cough and collect the sample in a cup. SELECT ALL THAT APPLY. | CHEST X-RAY =A SPUTUM TEST =B NONE OF THESE =C DON'T KNOW =Y REFUSED=Z | |

| MODULE 9: TUBERCULOSIS AND OTHER HEALTH ISSUES | | | |
|--|---|---|---------------------------------|
| Interviewer says: "Now I will ask you about tuberculosis or TB" | | | |
| 901 | Can TB be cured in people living with HIV? | YES =1 NO=2 DON'T KNOW =-8 REFUSED =-9 | |
| 902 | Have you ever visited a TB clinic for TB diagnosis or treatment? | YES =1 NO=2 DON'T KNOW =-8 REFUSED =-9 | IF 902 = 2,-8,-9 SKIP TO 913 |
| 903 | Were you tested for HIV at the TB clinic? | YES =1 NO, WAS NOT TESTED FOR HIV =2 NO, ALREADY HIV POSITIVE =3 DON'T KNOW =-8 REFUSED =-9 | |
| 904 | Have you ever been told by a doctor, clinical officer or nurse that you had TB? | YES =1 NO=2 DON'T KNOW =-8 REFUSED =-9 | IF 904 = 2,-8,-9 SKIP TO 913 |

| | | | |
|-----|---|---|---------------------------------|
| 905 | What month and year did a doctor, clinical officer or nurse tell you that you have (had) TB? RECORD THE MOST RECENT TIME IF DIAGNOSED WITH TB MORE THAN ONCE. | MONTH=date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | |
| 906 | Were you <u>ever</u> treated for TB? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 906 = 2,-8,-9 SKIP TO 913 |
| 907 | The last time you were treated for TB, did you complete at least 6 months of treatment? | YES =1 NO, MEDICINE WAS STOPPED IN LESS THAN 6 MONTHS =2 NO, BUT I AM STILL ON TREATMENT=3 DON'T KNOW =-8 REFUSED =-9 | |
| | Interviewer says: "Now I'm 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 health care provider can do to check for cervical cancer are called a pap smear, HPV 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." | | IF 101 = 1 SKIP TO 918 |
| 913 | Have you ever been tested for cervical cancer? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 913 = 2,-8,-9 SKIP TO 918 |
| 914 | What month and year was your last test for cervical cancer? | MONTH =date DON'T KNOW MONTH =-8 REFUSED MONTH =-9 YEAR =date DON'T KNOW YEAR =-8 REFUSED YEAR =-9 | |

| | | | |
|---|--|---|--|
| 915 | 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 915 = 1,4,5,-8,-9 SKIP TO 918 |
| 916 | 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 | |
| 917 | Did you have any follow up visits because of your test results? | YES =1 NO =2 DON'T KNOW=-8 REFUSED=-9 | |
| Interviewer says: "Now I would like to ask you questions about sexual health." | | | IF (502 = 96,-8,-9) & (502a= 2,-8,-9) SKIP TO 1101 |
| 917a | During the last 12 months, have you had an abnormal discharge from your vagina or experienced pelvic pain? This may include an unusual smell, color, or texture. | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 101 = 1 |
| 918 | During the last 12 months, have you had an ulcer or sore on or near your vagina? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 101 = 1 |
| 919 | During the last 12 months, have you had an abnormal discharge from your penis? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 101 = 2 |

| | | | |
|-----|--|---|--|
| 920 | During the last 12 months, have you had an ulcer or sore on or near your penis? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 101 = 2 |
| 921 | During the last 12 months, have you had pain on urination? | YES =1 NO =2 DON'T KNOW =8 REFUSED =-9 | SKIP Q IF 101 = 2 |
| 922 | Did you see a doctor, clinical officer or nurse because of these problems? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 101 = 2 & (917a= 2,-8,-OR 9) & 918=2,-8, OR 9) SKIP Q IF 101 = 1 & ((919=2,-8 OR -9) & (920=2,-8, OR 9) & (921=2,-8, OR -9)) |
| 923 | In the last 12 months, did a doctor, clinical officer, or nurse tell you that you had a sexually transmitted disease other than HIV? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 924 | Did you get treatment for these problems? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 919 = 2,-8,-9 SKIP Q IF 917a-922!=1 & 923!=1 SKIP TO 1101 |
| 925 | Where did you go to get treatment? Did you go to a public facility, a private facility or a pharmacy? SELECT ALL THAT APPLY. | PUBLIC CLINIC/HOSPITAL =A PRIVATE CLINIC/HOSPITAL =B PHARMACY =C OTHER =X DON'T KNOW =Y REFUSED =Z | SKIP Q IF 917a-922!=1 & 923!=1 |

MODULE 11: GENDER NORMS

Interviewer says: "Now I would like to ask you questions on decision-making in your home."

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|------|--|---|---------------------|
| 1101 | Who usually makes decisions about health care for yourself: you, your (spouse/partner), you and your (spouse/partner) together, or someone else? | I DO =1 SPOUSE/PARTNER =2 WE BOTH DO =3 SOMEONE ELSE =4 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 204 !=1,2 |
| 1102 | Who generally decides about how the money you receive is spent: you, your (spouse/partner), you and your (spouse/partner) together, or someone else? | I DO =1 SPOUSE/PARTNER =2 WE BOTH DO =3 SOMEONE ELSE =4 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 204 !=1,2 |
| 1105 | Who should decide when to have sex - men, women or together? | MEN ONLY=1 WOMEN ONLY=2 TOGETHER=3 DON'T KNOW =-8 REFUSED =-9 | |
| 1106 | Do you believe married men need to have sex with women they are not married to, even if they have good relationships with their wives? | YES =1 NO=2 DON'T KNOW =-8 REFUSED =-9 | |
| 1107 | Do you believe women who carry condoms have sex with a lot of men? | YES =1 NO=2 DON'T KNOW =-8 REFUSED =-9 | |

MODULE 12: VIOLENCE

Interviewer says: "You have been selected to be asked questions on other important aspects of a person's life. I know that some of these questions are very personal. However, your answers are important for helping to understand the condition of men and women in Zambia. Let me assure you that your answers are completely confidential and will not be told to anyone and no one in your household will know that you were asked these questions."

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| 1207 | <p>How many times has anyone ever touched you in a sexual way without your permission, but did not try and force you to have sex?</p> <p>Touching in a sexual way without permission includes fondling, pinching, grabbing, or touching you on or around your sexual body parts.</p> <p>CODE '00' IF NONE.</p> | NUMBER OF TIMES =integer DON'T KNOW =-8 REFUSED =-9 | IF 1207 = 0,-8,-9 SKIP TO 1210 |
| 1208 | How old were you the <u>first</u> time this happened? | AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9 | |
| 1210 | <p>How many times in your life has anyone <u>tried</u> to make you have sex against your will but did not succeed? This includes someone using harassment, threats, tricks, or physical force.</p> <p>CODE '00' IF NONE.</p> | NUMBER OF TIMES =integer DON'T KNOW =-8 REFUSED =-9 | IF 1210 = 0,-8,-9 SKIP TO 1212 |
| 1211 | How old were you the <u>first</u> time someone <u>tried</u> to make you have sex against your will but did not succeed? | AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9 | |
| 1212 | <p>How many times in your life have you been <u>physically forced</u> to have sex?</p> <p>CODE '00' IF NONE.</p> | NUMBER OF TIMES =integer DON'T KNOW =-8 REFUSED =-9 | IF 1212 =0,-8,-9 SKIP TO 1217 |

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|------|--|---|-----------------------------------|
| 1213 | How old were you the first time someone physically forced you to have sex? | AGE IN YEARS=integer DON'T KNOW =-8 REFUSED =-9 | |
| 1215 | In the past 12 months, did someone physically force you to have sex? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 1215 = 2,-8,-9 SKIP TO 1217 |
| 1216 | In the past 12 months, did a partner physically force you to have sex? By partner, I mean a live-in partner whether or not you were married at the time. | YES =1 NO, DID NOT FORCE =2 NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS=3 DON'T KNOW =-8 REFUSED =-9 | |
| 1217 | How many times in your life has someone <u>pressured</u> you to have sex through harassment, threats and tricks and did succeed? CODE '00' IF NONE. Being pressured can include being worn down by someone who repeatedly asks for sex, feeling pressured by being lied to, being told promises that were untrue, having someone threaten to end a relationship or spread rumors or sexual pressure due to someone using their influence or authority. | NUMBER OF TIMES =integer DON'T KNOW =-8 REFUSED =-9 | IF 1217 = 0,-8,-9 SKIP TO 1222 |
| 1218 | How old were you the <u>first time</u> someone pressured you to have sex and did succeed? | AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9 | |

| | | | |
|------|--|---|---|
| 1220 | In the past 12 months, did someone pressure you to have sex and did succeed? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 1220 = 2,-8,-9 SKIP TO 1222 |
| 1221 | In the past 12 months, did a partner pressure you to have sex and did succeed? By partner, I mean a live-in partner, whether or not you were married at the time. | YES =1 NO, DID NOT PRESSURE AND SUCCEED =2 NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS=3 DON'T KNOW =-8 REFUSED =-9 | |
| 1222 | After any of these unwanted sexual experiences, did you try to seek professional help or services from any of the following? SELECT ALL THAT APPLY. | I DID NOT TRY TO SEEK HELP =A HEALTHCARE PROFESSIONAL =B POLICE OR OTHER SECURITY PERSONNEL =C SOCIAL WORKER, COUNSELOR OR NON-GOVERNMENTAL ORGANIZATION =D RELIGIOUS LEADER =E OTHER =X DON'T KNOW =Y REFUSED =Z | IF 1222_B-1222_Z=1 SKIP TO 1201 SKIP Q IF (1207=0,-8,-9) & (1210=0,-8,-9) & (1212=0,-8,-9) & (1217=0,-8,-9) |
| 1223 | What was the main reason that you did not try to seek professional help or services? | DID NOT KNOW SERVICES WERE AVAILABLE =1 SERVICES NOT AVAILABLE =2 AFRAID OF GETTING IN TROUBLE =3 ASHAMED FOR SELF/FAMILY =4 COULD NOT AFFORD SERVICES =5 DID NOT THINK IT WAS A PROBLEM =6 FELT IT WAS MY FAULT =7 AFRAID OF BEING ABANDONED =8 | SKIP Q IF (1207=0,-8,-9) & (1210=0,-8,-9) & (1212=0,-8,-9) & (1217=0,-8,-9) |

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| | | DID NOT NEED/WANT SERVICES =9 AFRAID OF MAKING SITUATION WORSE =10 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | |
| 1201 | Has anyone ever done any of these things to you: - Punched, kicked, whipped, or beat you with an object - Slapped you, threw something at you that could hurt you, pushed you or shoved you - Choked smothered, tried to drown you, or burned you intentionally - Used or threatened you with a knife, gun or other weapon? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 1201 = 2,-8,-9 SKIP TO 1224 |
| 1202 | How old were you the first time one of these things happened to you? | AGE IN YEARS =integer DON'T KNOW =-8 REFUSED =-9 | |
| 1203 | In the past 12 months, how many times did someone: - Punched, kicked, whipped, or beat you with an object - Slapped you, threw something at you that could hurt you, pushed you or shoved you - Choked smothered, tried to drown you, or burned you intentionally - Used or threatened you with a knife, gun or other weapon? | NOT IN LAST 12 MONTHS =1 ONCE =2 FEW =3 MANY =4 DON'T KNOW =-8 REFUSED =-9 | IF 1203 = 1,-8,-9 SKIP TO 1205 |

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| 1204 | <p>In the past 12 months, did a partner do any of these things to you?</p> <p>By partner, I mean a live-in partner, whether or not you were married at the time.</p> | <p>YES =1 NO, PARTNER DID NOT=2 NO, DID NOT HAVE A LIVE-IN PARTNER IN THE LAST 12 MONTHS=3 DON'T KNOW =-8 REFUSED =-9</p> | |
| 1205 | <p>Thinking about all these experiences that we just discussed, whether someone has done the following:</p> <ul style="list-style-type: none"> - Punched, kicked, whipped, or beat you with an object - Slapped you, threw something at you that could hurt you, pushed you or shoved you - Choked smothered, tried to drown you, or burned you intentionally - Used or threatened you with a knife, gun or other weapon <p>Did you try to seek professional help or services for any of these incidents from any of the following?</p> <p>SELECT ALL THAT APPLY.</p> | <p>I DID NOT TRY TO SEEK HELP =A HEALTHCARE PROFESSIONAL =B POLICE OR OTHER SECURITY PERSONNEL =C SOCIAL WORKER, COUNSELOR OR NON-GOVERNMENTAL ORGANIZATION =D RELIGIOUS LEADER =E OTHER =X DON'T KNOW =Y REFUSED =Z</p> | <p>IF 1205_A=1 SKIP TO 1206 IF 1205_B-1205_Z=1 SKIP TO 1224</p> |
| 1206 | <p>What was the main reason that you did not try to seek professional help or services?</p> | <p>DID NOT KNOW SERVICES WERE AVAILABLE =1 SERVICES NOT AVAILABLE =2 AFRAID OF GETTING IN TROUBLE =3 ASHAMED FOR SELF/FAMILY =4 COULD NOT AFFORD SERVICES =5 DID NOT THINK IT WAS A PROBLEM =6 FELT IT WAS MY FAULT =7 AFRAID OF BEING ABANDONED =8 DID NOT NEED/WANT SERVICES =9 AFRAID OF MAKING SITUATION WORSE =10 OTHER =96 DON'T KNOW =-8 REFUSED =-9</p> | |

Interviewer says: "Thank you for sharing your personal experiences with me. I know it may have been difficult for you to talk about your experiences with me. If you would like to talk further about these experiences, I can refer you to a place that can provide you with help."

SKIP Q IF (1201=0,-8,-9) & (1207=0,-8,-9) & (1210=0,-8,-9) & (1212=0,-8,-9) & (1217=0,-8,-9)

PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS.

Interviewer says: "You mentioned earlier that you have sold sex for money. Thank you for sharing your personal experiences with me. If you want to talk further about these experiences, I can refer you to a place that can provide you with help."

SKIP IF (102>18) & ((510!=7) OR (526!=1))

FILL OUT REFERRAL FORM FOR CHILDREN IDENTIFIED AS TRAFFICKED MINORS. FILL OUT SUMMARY OF REFERRED TRAFFICKED MINORS. PROVIDE PARTICIPANT WITH LIST OF ORGANIZATIONS, IF NOT ALREADY GIVEN.

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.

APPENDIX G ADOLESCENT QUESTIONNAIRE

THIS QUESTIONNAIRE IS ADMINISTERED TO ELIGIBLE CHILDREN AGED BETWEEN 10-14 YEARS AFTER INFORMED PARENTAL/GUARDIAN CONSENT AND MINOR ASSENT.

| | | | |
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| L1 | LANGUAGE OF QUESTIONNAIRE | ENGLISH =1 BEMBA =2 KAONDE =3 LOZI =4 LUNDA =5 LUVALE =6 NYANJA =7 TONGA =8 | |
| L2 | LANGUAGE OF INTERVIEW | ENGLISH =1 BEMBA=2 KAONDE =3 LOZI =4 LUNDA =5 LUVALE =6 NYANJA =7 TONGA =8 OTHER =9 | |

| | | | |
|-----|--|--|--|
| L3 | NATIVE LANGUAGE OF PARTICIPANT | ENGLISH =1 BEMBA =2 KAONDE =3 LOZI =4 LUNDA =5 LUVALE =6 NYANJA =7 TONGA =8 OTHER =9 | |
| L4 | TRANSLATOR USED | YES =1 NO =2 | |
| 000 | ENTER NAME OF CHILD: | NAME OF CHILD =text | |
| 000 | ENTER LINE NUMBER OF THE CHILD FROM THE HOUSEHOLD LISTING =integer | | |

| MODULE 1: SOCIO-DEMOGRAPHIC CHARACTERISTICS | | | |
|---|---|--|----------------------------------|
| 101 | IS THE RESPONDENT MALE OR FEMALE? | MALE =1 FEMALE =2 | |
| 102 | How old were you at your last birthday? | AGE IN COMPLETED YEARS=integer DON'T KNOW AGE =-8 REFUSED -9 | |
| 109 | Have you <u>ever</u> attended school? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 109 = 2,-8,-9 SKIP TO 102c |

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| 111 | What is the highest level and grade that you have completed? | LEVEL =integer GRADE=integer DON'T KNOW =-8 REFUSED =-9 | |
| 102c | What is the <u>main</u> reason you have never attended school? | I HAVE BEEN SICK =1 I DON'T FEEL SAFE TRAVELING TO SCHOOL =2 I DON'T FEEL SAFE WHILE IN SCHOOL =3 I DON'T LIKE SCHOOL =4 I HAVE TO LOOK AFTER MY FAMILY =5 THERE'S NOT ENOUGH MONEY TO SEND ME TO SCHOOL =6 SCHOOL IS TOO FAR AWAY =7 I HAVE TO WORK =8 I HAVE A CHILD OR I AM PREGNANT =9 I MISSED TOO MUCH SCHOOL BECAUSE OF MY PERIOD (MENSTRUATION) =10 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 201 |
| 103 | Are you currently attending school? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 103 = 2,-8,-9 SKIP TO 108 |
| 106 | What level and grade are you in now? | LEVEL =integer GRADE -integer DON'T KNOW =-8 REFUSED =-9 | - |

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| 104 | During the last school week, did you miss any school days for any reason? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 104 = 2,-8,-9 SKIP TO 104 |
| 105 | Why did you miss school? | I AM TOO SICK TO ATTEND SCHOOL =1 I DON'T LIKE SCHOOL =4 I HAVE TO CARE FOR HOUSEHOLD MEMBERS =5 SCHOOL IS TOO FAR AWAY / NO SCHOOL =7 I HAVE TO WORK =8 NO MONEY FOR SCHOOL MATERIALS / TRANSPORT =11 PARENTS / GUARDIAN DOES NOT WANT ME TO GO TO SCHOOL =12 SCHOOL WAS NOT IN SESSION =13 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 201 |
| 107 | What level and grade were you in last year? | LEVEL =integer GRADE =integer DON'T KNOW =-8 REFUSED =-9 | ALL RESPONSES SKIP TO 201 |

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| 108 | What is the <u>main</u> reason you are not currently attending school? | I AM TOO SICK TO ATTEND SCHOOL =1 I DON'T LIKE SCHOOL =4 I HAVE TO CARE FOR HOUSEHOLD MEMBERS =5 SCHOOL IS TOO FAR AWAY / NO SCHOOL =7 I HAVE TO WORK =8 NO MONEY FOR SCHOOL MATERIALS / TRANSPORT =11 PARENTS / GUARDIAN DOES NOT WANT ME TO GO TO SCHOOL =12 SCHOOL WAS NOT IN SESSION =13 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | |
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MODULE 2: HIV KNOWLEDGE

Interviewer says: "Now I would like to ask you some questions about what you know about some things related to health."

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| 201 | Have you <u>ever</u> heard of HIV? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 201 = 2,-8,-9 SKIP TO 302 |
|-----|------------------------------------|--|-------------------------------------|

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| 202 | <p>From where have you heard about HIV?</p> <p>PROBE: Anywhere else?</p> <p>RECORD ALL MENTIONED</p> | SCHOOLS / TEACHERS =A PARENTS / GUARDIAN / FAMILY =B FRIENDS =C RELIGIOUS LEADERS =D INTERNET =E MOBILE PHONE =F HEALTH PROVIDERS / DOCTORS / NURSES / CLINICAL OFFICERS =G TELEVISION / FILM =H RADIO =I COMMUNITY HEALTH WORKERS =J OTHER =X DON'T KNOW =Y REFUSED =Z | |
| 203 | <p>Have you <u>ever</u> discussed HIV with your parents or guardian?</p> | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 204 | <p>Can a person reduce their chance of getting HIV by not having sex?</p> | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 205 | <p>Can a person reduce their chance of getting HIV by using condoms when having sex?</p> | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 206 | <p>Can a healthy-looking person have HIV or AIDS?</p> | YES =1 NO =2 DON'T KNOW =-8 | |

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| | | REFUSED =-9 | |
| 207 | Can a mother with HIV pass HIV to her unborn baby? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 208 | Are there medicines that people with HIV or AIDS can take to help them live longer? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 209 | Can male circumcision help prevent HIV infection? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |

| MODULE 3: HIV PREVENTION INTERVENTIONS | | | |
|--|---|---|--------------------------------------|
| 301 | Have you taken part in any of the following HIV prevention programs? SHOW CHILD LOGO FOR EACH PROGRAM SELECT ALL THAT APPLY | FAMILIES MATTER PROGRAM =A HEALTHY CHOICES =B LIFE SKILLS PROGRAM =C OTHER =X DON'T KNOW =Y REFUSED =Z | OTHER SPECIFY |
| 302 | Do you know where to get a condom? | YES =1 NO =2 DON'T KNOW WHAT A CONDOM IS =3 REFUSED =-9 | IF 302 = 2, 3, -9 SKIP TO 402 |

| | | | |
|-----|--|---|--|
| 303 | <p>Where can a person go to get a condom?</p> <p>SELECT ALL THAT APPLY</p> | CLINIC / HOSPITAL =A KIOSK / SHOP =B PHARMACY =C LOCAL FREE DISPENSER =D FRIENDS / PEERS =E BOYFRIEND / GIRLFRIEND =F OTHER =X DON'T KNOW =Y REFUSED =Z | |
|-----|--|---|--|

MODULE 4: SEXUAL BEHAVIOR

Interviewer says: "The next questions ask about sexual behavior. There is no right or wrong answer. Your responses will not be linked to you in any way or shared with anyone, including your parents. "

| | | | |
|-----|--|--|---|
| 401 | Do you know what sex is? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 102<=12 & 401= 2, -8, -9 SKIP TO 501 |
| 402 | Have you <u>ever</u> had sex? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 402 = 2, -8, -9 SKIP TO 1105 |
| 403 | How old were you when you had sex for the <u>first</u> time? | AGE IN YEARS =integer DON'T KNOW AGE =-8 REFUSED =-9 | |

| | | | |
|-----|---|--|-----------------------------------|
| 406 | What was the <u>main</u> reason that you had sex for the first time? | IT JUST HAPPENED =1 MY FRIENDS PRESSURED ME TO HAVE SEX =2 TO SHOW MY LOVE / TO FEEL LOVED =3 I WANTED TO HAVE SEX / CURIOUS =4 MY BOYFRIEND / GIRLFRIEND WANTED TO HAVE SEX =5 I WAS TRICKED, THREATENED, OR FORCED FOR MONEY / GIFTS =6 I WANTED TO HAVE A BABY =7 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | |
| 407 | How old was the person you <u>first</u> had sex with? Please give your best guess. | 10 OR MORE YEARS OLDER =1 5-9 YEARS OLDER =2 1-4 YEARS OLDER =3 SAME AGE AS MYSELF =4 YOUNGER THAN ME =5 DON'T KNOW AGE =-8 REFUSED =-9 | |
| 404 | The <u>first</u> time you had sex, was it because you wanted to or because you were forced? | WANTED TO =1 FORCED =2 DON'T KNOW =-8 REFUSED =-9 | IF 404 = 2, -8, -9 SKIP TO 408 |

| | | | |
|---|--|---|-----------------|
| 405 | The <u>first</u> time you had sex, were you physically forced or were you pressured into having sex through harassment, threats or tricks? | PHYSICALLY FORCED =1 PRESSURED =2 DON'T KNOW =-8 REFUSED =-9 | - |
| Interviewer says: "Now we will ask you some general questions about sex." | | | |
| 408 | The <u>first</u> time you had sex, was a condom used? | YES =1 NO =2 DON'T KNOW WHAT A CONDOM IS =3 DON'T KNOW =-8 REFUSED =-9 | |
| 409 | In total, how many different people have you had sex with? Please give your best guess. | NUMBER OF PARTNERS =integer DON'T KNOW =-8 REFUSED =-9 | |
| 410 | The <u>last</u> time you had sex was a condom used? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 408=3 |
| 411 | How often do you use a condom during sex? | ALWAYS =1 SOMETIMES =2 NEVER =3 DON'T REMEMBER =4 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 408=3 |

| | | | |
|-----|--|--|-----------------|
| 412 | <p>Sometimes people have sex to get material support. Material support means helping you to pay for things or giving you gifts or things.</p> <p>Have you <u>ever</u> had sex with someone because you expected material support?</p> | <p>YES =1 NO =2 DON'T KNOW=-8 REFUSED =-9</p> | |
| 413 | <p>Have you <u>ever</u> been pregnant?</p> | <p>YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9</p> | SKIP Q IF 101=1 |

MODULE 11: VIOLENCE

Interviewer says: "Now I would like to ask you questions about some other important aspects of a person's life. I know that some of these questions are very personal. However, your answers are important for helping to understand the condition of children in Zambia. Let me assure you that your answers are completely confidential and will not be told to anyone."

| | | | |
|------|--|---|--|
| 1105 | <p>Has anyone <u>ever</u> tried to make you have sex against your will but did not succeed?</p> | <p>YES =1 NO =2 DON'T KNOW=-8 REFUSED =-9</p> | |
| 1106 | <p>Has anyone <u>ever</u> pressured you to have sex, through harassment, threats or tricks and did succeed?</p> | <p>YES =1 NO =2 DON'T KNOW=-8 REFUSED =-9</p> | |

| | | | |
|------|---|--|--|
| 1107 | Has anyone <u>ever</u> physically forced you to have sex and did succeed? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | |
| 1108 | The <u>last</u> time you were pressured or forced to have sex, what was your relationship to the person who did this? | BOYFRIEND / GIRLFRIEND / SPOUSE =1 RELATIVE / FAMILY MEMBER =2 CLASSMATE / SCHOOLMATE =3 TEACHER =4 POLICE / SECURITY OFFICER / SOLDIER =5 EMPLOYER =6 NEIGHBOR =7 COMMUNITY RELIGIOUS LEADER =8 FRIEND =9 STRANGER =10 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF (1106 = 2, -8, -9) AND (1107 = 2,-8,-9) |

| | | | |
|------|--|--|---|
| 1109 | <p>After any of these unwanted sexual experiences, did you try to seek professional help or services from any of the following?</p> <p>SELECT ALL THAT APPLY</p> | <p>I DID NOT TRY TO SEEK HELP =A HEALTHCARE PROFESSIONAL =B POLICE OR OTHER SECURITY PERSONNEL =C SOCIAL WORKER, COUNSELOR OR NGO =D RELIGIOUS LEADER =E OTHER =X DON'T KNOW =Y REFUSED =Z</p> | <p>IF 1109 = B, C, D, E, X, Y, Z SKIP Q IF 1105 = 2, -8, -9, & 1106 = 2, -8, -9, & 1107 = 2, -8, -9 SKIP TO 501</p> |
| 1110 | <p>What was the main reason that you did not try to seek professional help or services?</p> | <p>DID NOT KNOW SERVICES WERE AVAILABLE=1 SERVICES NOT AVAILABLE =2 AFRAID OF GETTING IN TROUBLE =3 ASHAMED FOR SELF/FAMILY =4 COULD NOT AFFORD SERVICES =5 DID NOT THINK IT WAS A PROBLEM =6 FELT IT WAS MY FAULT =7 AFRAID OF BEING ABANDONED =8 DID NOT NEED/WANT SERVICES =9 OTHER =96 DON'T KNOW =-8 REFUSED =-9</p> | |

MODULE 5: HIV RISK PERCEPTIONS

| | | | |
|-----|---|---|--|
| 501 | How likely do you think it is for you to get HIV? | VERY LIKELY =1 SOMEWHAT LIKELY =2 NOT LIKELY =3 I ALREADY HAVE HIV =4 DON'T KNOW =-8 REFUSED =-9 | IF 501 = 3, 4, -8, -9 SKIP Q IF 201= 2,-8,-9 SKIP TO 503 |
| 502 | What is the <u>main</u> reason you think you are likely to get HIV? | I HAVE HAD SEX WITHOUT A CONDOM =1 I HAVE OR HAD MANY BOY/GIRLFRIENDS =2 I HAVE HAD BLOOD TRANSFUSIONS =3 MY MOTHER / FATHER / HAS HIV =4 I DON'T TRUST MY BOY/GIRLFRIEND =5 I AM SICK =6 MY BOY/GIRLFRIEND IS SICK OR HAS DIED =7 I DESERVE IT / I AM A BAD PERSON =8 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | ALL SKIP Q IF 201= 2,-8,-9 SKIP TO 601 |

| | | | |
|-----|---|--|------------------------|
| 503 | What is the <u>main</u> reason you think you are not likely to get HIV? | I AM ABSTINENT =1 I WILL WAIT UNTIL MARRIAGE TO HAVE SEX =2 I ALWAYS USE CONDOMS =3 I TRUST MY PARTNER =4 I HAVE ONLY ONE PARTNER =5 I GO TO CHURCH =6 I AM A GOOD PERSON =7 OTHER =96 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 201= 2,-8,-9 |
|-----|---|--|------------------------|

MODULE 6: SOCIAL NORMS, INTENTION TO ABSTAIN, SELF-EFFICACY AND ASSERTIVENESS

Interviewer says: "Now I would like to ask you some questions about the future."

| | | | |
|-----|---|---|------------------------|
| 601 | Do you think all, many, some, a few or none of your friends are having sex? | ALL =1 MOST =2 SOME =3 A FEW =4 NONE =5 DON'T KNOW / DON'T KNOW WHAT SEX IS =-8 REFUSED =-9 | |
| 602 | Are you pressured by your friends or boy/girl friend to have sex? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 401= 2,-8,-9 |

| | | | |
|-----|---|--|------------------------|
| 603 | If you did not want to have sex with someone, could you tell them that you do not want to have sex with them? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 401= 2,-8,-9 |
|-----|---|--|------------------------|

| MODULE 7: HIV TESTING | | | |
|---|---|--|---|
| <p>Interviewer says: "I would now like to ask you some questions about HIV testing."</p> | | | |
| 701 | Have you <u>ever</u> been tested for HIV? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 701 = 2, -8, -9 SKIP Q IF 201= 2,-8,-9 SKIP TO 801 |
| 702 | Did you receive the results of any of your HIV tests? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 702 = 2, -8, -9 SKIP Q IF 201= 2,-8,-9 SKIP TO 801 |
| 703 | What was the result of that HIV test? | HIV POSITIVE =1 HIV NEGATIVE =2 UNKNOWN =-8 REFUSED =-9 | IF 703 = 2, 3, -9 SKIP Q IF 201= 2,-8,-9 SKIP TO 801 |

MODULE 8: ALCOHOL AND DRUGS

Interview says: "I would like to ask you some questions about alcohol and drugs or substances that you may have taken that were not given to you by doctor. Your answers will not be told to anyone, even your parents."

| | | | |
|-----|---|--|---------------------------------------|
| 801 | Have you <u>ever</u> had alcohol, for example beer, wine or chibuku? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 801 = 2, -8, -9 SKIP TO 803 |
| 802 | During the past 1 month, on how many days did you have at least one drink containing alcohol? | NUMBER OF DAYS =integer DON'T KNOW=-8 REFUSED =-9 | |
| 803 | Have you <u>ever</u> tried drugs such as jenjem, cocaine, marijuana or others? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | IF 803 = 2, -8, -9 SKIP TO 901 |
| 804 | What drugs have you <u>ever</u> tried? DO NOT READ RESPONSES. PROBE FOR MULTIPLE RESPONSES. | MARIJUANA =A COCAINE =B HEROIN =C MIRAA =D JENKEM =E BOSTIC GLUE =F ECSTACY =G DIAZEPAM =J OTHER =X DON'T KNOW =Y REFUSED =Z | |

MODULE 9: HIV STIGMA

| | | | |
|---|--|--|-------------------------|
| 901 | Would you be willing to share food with someone who has HIV? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 201=2, -8, -9 |
| 902 | Would you play with someone who has HIV? | YES =1 NO =2 DON'T KNOW =-8 REFUSED =-9 | SKIP Q IF 201=2, -8, -9 |
| <p>Interview says: "This is the end of the survey. Thank you very much for your time and for your responses."</p> | | | |

APPENDIX H SURVEY CONSENT FORM

Zambia Population-based HIV Impact Assessment: Consent for Household Interview

Interviewer reads:

What language do you prefer for our discussion today?

- English
- Bemba
- Nyanja
- Lozi
- Tonga
- Lunda
- Luvale
- Kaonde
- Other Language: Specify _____

Hello. My name is _____. I would like to invite you to take part in this research study/survey about HIV in Zambia. The Ministry of Health and Central Statistical Office (CSO) are leading this survey in collaboration with the United States Centers for Disease Control and Prevention and ICAP at Columbia University.

What is the purpose of this survey?

HIV is the virus that causes AIDS. AIDS is a very serious illness. This survey will help us know how many people in Zambia have HIV and need health services. It will also tell us about people's risk for getting HIV. About 16,000 households will join this survey. We would like your household to join the survey too. What you tell us will help the Ministry of Health make HIV services better 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.

What do you have to do if you agree to take part?

There are three parts to this survey. The first part is the household interview. The second part is the individual interviews. The third part is blood testing. If you agree to take part in the household interview, I would ask you some questions about the people staying in your household, such as how many people live here, their relationship to you, their gender and age. I will also ask you about some of the things you have in your household. The household interview will take up to 30 minutes.

After you complete the household interview, we will invite you and others living in your household to participate in individual interviews and then offer testing for HIV, hepatitis B and syphilis. Like HIV, hepatitis B and syphilis are infections that can cause very serious illnesses if left untreated.

What are the potential risks?

You may feel uncomfortable about some of the questions I will ask. If I ask you any questions you don't want to answer, just let me know and I will go to the next question or you can stop the interview at any time.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

There may be no direct benefit to you but the information you provide to us will be used to improve the health of Zambians. Your responses will help the Ministry of Health to develop more effective programs to fight HIV.

What are the alternatives to taking part?

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

What about confidentiality?

All information you give us will be kept strictly confidential. Your name and signed consent form will be kept separate from the answers you give in this interview. Your name will not appear when we share survey results. Your answers to the questions will be identified only by a number.

Only people working on the survey will be allowed to view the information we collect from you.

The following individuals and agencies will be able to look at your interview records to help oversee the conduct of this survey:

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your rights as a participant. These include the Tropical Diseases Research Centre in Zambia (TDRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)

- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a participant in this survey
- Survey staff and monitors

The information we collect from you will not be released outside of the groups listed above unless there is an issue of safety. If we learn of anything that could harm you, we will contact you on where you can receive support. Your permission to allow us to use and share your information with the groups above will expire three years after the end of the survey.

Who should you contact if you have questions?

If you want to leave the survey, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Principal Investigator, Mr. Chipalo Kaliki at the Ministry of Health, or Ms. Nchimunya Nkombo at the Central Statistical Office (CSO), who can be reached at the number and address below.

Mr. Chipalo Kaliki
 Address: Ministry of Health Headquarters, Ndeke house
 P.O. Box 30205, Lusaka, Zambia
 Office Phone: +260 211 253053
 Email: ckaliki@gmail.com

Ms. Nchimunya Nkombo
 Address: Central Statistical Office
 P.O. Box 31908, Lusaka, Zambia
 Cell phone: +260 0977 783527
 Office Phone: +260 211 251377
 Email: nkombo@hotmail.com

If you decide to leave the study, no more information will be collected from you. We will make every effort to delete the information we have collected from you. However, after today, we cannot guarantee we will be able to delete information that has already been shared.

If you have any questions about your rights as a participant in this survey, you can contact:

Mr. Shepard Khondowe
 Address: Tropical Diseases Research Centre, P.O Box 71769, Ndola, Zambia
 Office phone: +260 212 620737
 Cell phone: +260 966 787234
 Email: khondowes@tdrc.org.zm

This survey has received approval from the Tropical Diseases Research Centre in Zambia and the Institutional Review Boards at the Centers for Disease Control and Prevention, Columbia University Medical Center and Westat.

Are there any costs?

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

Do you want to ask me anything about the survey?

Consent Statement

I have read this form and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions that I had have been answered satisfactorily. I agree to participate in the household interview. I know that after choosing to be in the interview, I may withdraw at any time. My participation is voluntary. I have been offered a copy of this consent form. Do you agree to do the household interview? 'YES' means that you agree to do the interview. 'NO' means that you will NOT do the interview.

Yes No

Head of household signature or mark _____ Date: ___/___/___

Printed name of head of household _____

[For illiterate participants]

Signature of witness _____ Date: ___/___/___

Printed name of witness _____

Signature of person obtaining consent _____ Date: ___/___/___

Printed name of person obtaining consent _____

Survey staff ID number _____

Zambia Population-based HIV Impact Assessment: Consent for Adult Interview

Interviewer reads:

What language do you prefer for our discussion today?

English

Bemba

Nyanja

Lozi

Tonga

Lunda

Luvale

Kaonde

Other Language: Specify _____

Hello. My name is _____. We are doing a research study/survey throughout Zambia to learn more about HIV in the country. The Ministry of Health and Central Statistical Office (CSO) are leading this survey in collaboration with the United States Centers for Disease Control and Prevention (CDC) and ICAP at Columbia University.

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

Why are we doing this survey?

HIV is the virus that causes AIDS. AIDS is a very serious illness. This survey will help us know how many people in Zambia have HIV and need health services. It will also tell us about people's risk for getting HIV. We expect about 35,000 men, women, and children from 16,000 households throughout Zambia to join this survey. We would like to invite you to join this survey too. What you tell us will help the Ministry of Health make HIV services better in the country.

What do you have to do if you agree to take part?

If you agree to join this survey, we will ask you questions about your age, what kind of work you do, if you had any experience with HIV services, and your sexual behaviors. This interview will take about 50 minutes.

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

Lastly, it is possible that you may be eligible to participate in future studies related to the health of Zambians. At the end of this form, I will ask for permission to contact you in the next two years if such an opportunity occurs.

What are the potential risks?

The risks to taking part in the interview are small. You may feel uncomfortable about some of the questions I will ask. If I ask you any questions you don't want to answer, just let me know and I will go to the next question or you can stop the interview at any time.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

There may be no direct benefit to you but your taking part in this survey could help us learn more about HIV in Zambia. It can also help us learn about how well HIV prevention and treatment programs are working. Your participation is important.

What are alternatives to taking part?

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

What about confidentiality?

All the information you give us will be kept strictly confidential. Your name and signed consent forms will be kept separate from the answers you give in this interview. Your name will not appear when we share survey results. Your answers to the questions will be identified only by a number.

Only people working on the survey will be allowed to view the information we collect from you. The following individuals and agencies will be able to look at your interview record to help oversee the conduct of this survey:

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your rights as a participant. These include the Tropical Diseases Research Centre in Zambia (TDRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a participant in this survey
- Survey staff and monitors

The information we collect from you will not be released outside of the groups listed above unless there is an issue of safety. If we learn of anything that could harm you, we will contact you on where you can receive support. Your permission to allow us to use and share your information with the groups above will expire three years after the end of the survey.

Who should you contact if you have questions?

If you want to leave the survey, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Principal Investigator, Mr. Chipalo Kaliki at the Ministry of Health, or Ms. Nchimunya Nkombo at the Central Statistical Office (CSO), who can be reached at the number and address below.

Mr. Chipalo Kaliki
 Address: Ministry of Health Headquarters, Ndeke house
 P.O. Box 30205, Lusaka, Zambia
 Office Phone: +260 211 253053
 Email: ckaliki@gmail.com

Ms. Nchimunya Nkombo
 Address: Central Statistical Office
 P.O. Box 31908, Lusaka, Zambia
 Cell phone: +260 0977 783527
 Office Phone: +260 211 251377
 Email: nnkombo@hotmail.com

If you decide to leave the study, no more information will be collected from you. We will make every effort to delete the information we have collected from you. However, after today, we cannot guarantee we will be able to delete information that has already been shared.

If you have any questions about your rights as a participant in this survey, you can contact:

Mr. Shepard Khondowe
 Address: Tropical Diseases Research Centre
 P.O. Box 71769, Ndola, Zambia
 Phone: +260 966 787234
 Email: khondowes@tdrc.org.zm

Are there any costs?

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

Do you want to ask me anything about the survey?

Consent Statement

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions that I had were answered satisfactorily. I agree to participate in the individual interview. I know that after choosing to be in the individual interview, I may withdraw at any time. My participation is voluntary. I have been offered a copy of this consent form.

1. Do you agree to do the interview? 'YES' means that you agree to do the interview. 'NO' means that you will NOT do the interview.

Yes No

2. **FUTURE RESEARCH:** It is possible that you may be eligible to participate in future studies related to health in Zambia. We are asking for your permission to contact you in the next two years if such an opportunity occurs. If we contact you, we will give you details about the new study and ask you to sign a separate consent form at that time. You may decide at that time that you do not want to take part in that study.

If you do not wish to be contacted about future studies, it does not affect your involvement in this study. Do you agree to be contacted in the future? 'YES' means that you agree to be contacted in the future if a study opportunity arises. 'NO' means that you will NOT be contacted about future studies.

YES NO

Participant signature or mark _____ Date: ___/___/___

Printed name of participant _____

Participant ID number _____

[For illiterate participants]

Signature of witness _____ Date: ___/___/___

Printed name of witness _____

Signature of person obtaining consent _____ Date: ___/___/___

Printed name of person obtaining consent _____

Survey staff ID number _____

Zambia Population-based HIV Impact Assessment: Consent for Blood Draw, ages 0-5

Interviewer reads:

What language do you prefer for our discussion today?

English

Bemba

Nyanja

Lozi

Tonga

Lunda

Luvale

Kaonde

Other Language: Specify _____

Now I would like to ask you to let your child take part in the research study/survey.

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

What is the purpose of the survey?

HIV is the virus that causes AIDS. AIDS is a very serious illness. This survey will help us learn more about the health of children in Zambia. We plan to ask thousands of children like yours to join this survey. We would like to invite your child to join the survey too. Your child's participation will help the Ministry of Health make HIV services better.

What will happen to your child if you agree to allow your child to take part?

If you agree to allow your child to take part in the survey, and he/she is less than 2 years, a trained nurse will take a few drops of blood (about 1 mL) from your child's finger or heel to perform HIV and hepatitis B tests here in your home. Like HIV, hepatitis B is a serious infection that can cause very serious illnesses if left untreated. If your child is 2 to 5 years of age, we will take about one teaspoon or about 5 mL of blood from your child's arm. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.

We will give you the results of these blood tests today. We will not share the results with your child unless you ask us to do so. We will also provide counseling about the results and discuss with you how to share the test results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.

If your child tests positive for HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of the immune system that fight HIV infection and other diseases. We will also test the amount of CD4 cells in children without HIV. In addition, if your child tests positive for HIV, we will send his/her blood to a laboratory to measure his/her viral load. Viral load is the amount of HIV in the blood. This information may help a doctor or nurse treat your child. We may also do other additional tests related to HIV. If we have test results that might guide your child's care or treatment and you provide us with contact information, we will contact you to tell you how you and your child's doctor or nurse may get these results.

After the blood test, we will show you a list of the nearest Ministry of Health-approved and recommended health facilities for HIV, where you will be able to talk to trained doctors and nurses about your child's HIV test results. We will give you a referral form to the health facility you select and information on today's test results so that you and your child can consult with a doctor or nurse to learn more about his/her HIV test, CD4 count and overall health. Your child's viral load test results will be ready in six to eight weeks. When the results are ready, we will send the results to your health facility of choice. If you provide us with your contact information, we will contact you to let you know the results are ready and encourage you to go to your health facility to discuss your child's viral load results with a doctor or nurse.

If your child tests positive for HIV, we will also measure his/her weight and height to track your child's growth. We will also measure weight and height for some children without HIV. These results will be returned to you today and you will be able to talk to a doctor or nurse at your health facility of choice about the results.

As I stated before, we will also test your child's blood for hepatitis B. If your child test positive for hepatitis B, we will refer you to the nearest appropriate health facility for further testing for your child.

[For children aged 0-<18 months only]

The body makes antibodies to fight HIV. Antibodies from a mother with HIV can enter the baby's blood during pregnancy. The test we perform on your child today will let us know if your child has been exposed to HIV. If it is positive, it does not mean your child has the virus in his/her blood. It just confirms that he/she has been exposed to HIV. We will need to send your child's blood to a lab for a special test to confirm if he/she has HIV. We will send the result to the health facility of your choice in about six weeks from now. If you provide us with your contact information, we will contact you to inform you that the results have been sent to the facility and encourage you to go to the health facility to discuss your child's HIV test results with a doctor or nurse.

What will happen to your child's leftover blood?

We would like to ask your permission to store your child's leftover blood for other additional HIV related tests such as tests for toxoplasmosis, cryptococcal meningitis, hepatitis C or cytomegalovirus. We would store your child's leftover blood for the length of the study, but your child's name will only be on the sample for three years. During this three year period, we will attempt to tell you about any tests results

that are important for your child's health. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to have your child's blood samples stored for other additional HIV related tests, we will destroy your child's blood samples after survey-related testing has been completed.

What are the potential risks?

The finger prick or needle may be uncomfortable for your child. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You may learn that your child is infected with HIV and/or hepatitis B. Learning that your child has HIV and/or hepatitis B may cause some emotional discomfort. You will decide when your child should be told of the test results. We will support whatever decision you make. We will provide counseling on how to cope with learning that your child has HIV and/or hepatitis B. We will also tell you where he/she may go for care and treatment.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. Some children who participate will test positive for HIV and/or hepatitis B. If this happens to your child, the benefit is that you will learn his/her HIV and hepatitis B status and will learn where to take your child for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that your child is HIV positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child taking part in this survey could help us learn more about children, HIV and hepatitis B in Zambia. It can help us learn about how well HIV prevention and treatment programs are working. It can also help improve these programs and services for Zambians.

What are alternatives to taking part?

You can decide to allow or not allow your child to take part in this survey. Or you can decide to allow your child to get his or her blood tested for HIV and hepatitis B, but not agree to have his or her blood stored for other additional HIV related tests... Your decision to allow your child to take part or not take part in this survey will not affect your child's health care in any way. However, we hope you will agree to allow your child to take part in this survey as getting HIV and hepatitis B tests can help your child. If your child tests positive for HIV and/or hepatitis B, he/she can start medication to keep him/her healthy.

What about confidentiality?

Your child's test results will be kept strictly confidential. We will only include your child's name on the referral forms we may give you to help the doctors and nurses at your health facility of choice identify your child. In all other cases, your child's name and the consent forms will be kept separate from his/her health information.

Your name and your child's name will not appear when we share survey results. When we share results, the information we collect from your child will be identified by a number and not by your name or your child's name. Only people working on the survey will have access to the data during the survey.

The following individuals and agencies will be able to look at your child's survey records to help oversee the conduct of this survey:

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your child's rights as a participant. These include the Tropical Diseases Research Centre in Zambia (TDRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your child's rights as a participant in this survey
- Survey staff and monitors

The information we collect from your child will not be released outside of the survey groups listed above unless there is an issue of safety. If we learn of anything that could harm you or your child, we will provide information on where you can receive support. Your permission to allow us to use and share your child's name and contact information with the groups above will end three years after the end of the survey.

Who should you contact if you have questions?

If you want your child to leave the survey, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the Principal Investigator, Mr. Chipalo Kaliki at the Ministry of Health, or Ms. Nchimunya Nkombo at the Central Statistical Office (CSO), who can be reached at the number and address below.

Mr. Chipalo Kaliki

Address: Ministry of Health Headquarters, Ndeke house
P.O. Box 30205, Lusaka, Zambia
Office Phone: +260 211 253053
Email: ckaliki@gmail.com

Ms. Nchimunya Nkombo

Address: Central Statistical Office
P.O. Box 31908, Lusaka, Zambia
Cell phone: +260 0977 783527
Office Phone: +260 211 251377
Email: nnkombo@hotmail.com

If you decide that your child should leave the study, no more information will be collected from your child. We will make every effort to delete the information we have collected from your child. However, after today, we cannot guarantee we will be able to delete information that has already been shared.

If you have any questions about your child's rights as a participant in this survey, you can contact:

Mr. Shepard Khondowe
Address: Tropical Diseases Research Centre
P.O. Box 71769, Ndola, Zambia
Phone: +260 966 787234
Email: khondowes@tdrc.org.zm

Are there any costs?

There is no cost to you for your child being in the survey. You should also know that neither you nor your child would be paid for your child to be in the survey.

Do you want to ask me anything about your child's participation in the survey?

Consent Statement

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions I had have been answered satisfactorily. I agree for my child to take part in this survey. I know that after allowing my child to participate, I may change my mind and withdraw him/her from taking part in this survey at any time. I have been offered a copy of this consent form.

1. Do you agree that your child will give blood for HIV and hepatitis B testing and related testing? 'YES' means that you give your permission to have the nurse collect a sample of your child's blood for HIV and hepatitis B testing and related testing. 'NO' means that your child will NOT give blood for HIV and hepatitis B testing and related testing.

Yes No
(If "Yes" proceed to the next question)

2. Do you agree to have your child's leftover blood stored for other additional HIV related testing? 'YES' means that you give permission for your child's blood samples to be stored for other additional HIV related testing. 'NO' means that your child's blood samples will NOT be stored for other additional HIV related testing.

Yes No

Parent/guardian signature or mark _____ Date: ___/___/___
Printed name of parent/guardian _____
Parent/guardian ID number _____ (If applicable. If not applicable check here)

[For illiterate participants]

Signature of witness _____ Date: ___/___/___

Printed name of witness _____

Signature of person obtaining consent _____ Date: ___/___/___

Printed name of person obtaining consent _____

Survey staff ID number _____

Child's name (print) _____

Child's participant ID number _____

Zambia Population-based HIV Impact Assessment: Consent for Blood Draw, ages 6-9

Interviewer reads:

What language do you prefer for our discussion today?

English

Bemba

Nyanja

Lozi

Tonga

Lunda

Luvale

Kaonde

Other Language: Specify _____

Now I would like to ask you to let your child take part in the research study/survey.

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

What is the purpose of the survey?

HIV is the virus that causes AIDS. AIDS is a very serious illness. This survey will help us learn more about the health of children in Zambia. We plan to ask thousands of children like yours to join this survey. We would like to invite your child to join the survey too. Your child's participation will help the Ministry of Health make HIV services better.

What will happen to your child if you agree to allow your child to take part?

If you agree to allow your child to take part in the survey, a trained nurse will take about one teaspoon of blood (about 5 mL) from your child's arm to perform HIV and hepatitis B tests here in your home. Like HIV, hepatitis B is a serious infection that can cause very serious illnesses if left untreated. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.

We will give you the results of these blood tests today. We will not share the results with your child unless you ask us to do so. We will also provide counseling about the results and discuss with you how to share the test results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.

If your child tests positive for HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of the immune system that fight HIV infection and other diseases. We will also test the amount of CD4 cells in children without HIV. In addition, if your child tests positive for HIV, we will send his/her blood to a laboratory to measure his/her viral load. Viral load is the amount of HIV in the blood. This information may help a doctor or nurse treat your child. We may also do other additional tests related to HIV. If we have test results that might guide your child's care or treatment and you provide us with contact information, we will contact you to tell you how you and your child's doctor or nurse may get these results.

After the blood test, we will show you a list of the nearest Ministry of Health-approved and recommended health facilities for HIV, where you will be able to talk to trained doctors and nurses about your child's HIV test results. We will give you a referral form to the health facility you select and information on today's test results so that you and your child can consult with a doctor or nurse to learn more about his/her HIV test, CD4 count and overall health. Your child's viral load test results will be ready in six to eight weeks. When the results are ready, we will send the results to your health facility of choice. If you provide us with your contact information we will contact you to let you know the results are ready and encourage you to go to your health facility to discuss your child's viral load results with a doctor or nurse.

As I stated before, we will also test your child's blood for hepatitis B. If your child test positive for hepatitis B, we will refer you to the nearest appropriate health facility for further testing for your child.

What will happen to your child's leftover blood?

We would like to ask your permission to store your child's leftover blood for other additional HIV related tests such as tests for toxoplasmosis , cryptococcal meningitis, hepatitis C or cytomegalovirus. We would store your child's leftover blood for the length of the study, but your child's name will only be on the sample for three years. During this three year period, we will attempt to tell you about any tests results that are important for your child's health. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to have your child's blood samples stored for other additional HIV related tests, we will destroy your child's blood samples after survey-related testing has been completed.

What are the potential risks?

The needle may be uncomfortable for your child when it is put into and taken out of his/her arm. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You may learn that your child is infected with HIV and/or hepatitis B. Learning that your child has HIV and/or hepatitis B may cause some emotional discomfort. You will decide when your child should be told of the test results. We will support whatever decision you make. We will provide counseling on how to cope with learning that your child has HIV and/or hepatitis B. We will also tell you where he/she may go for care and treatment.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. Some children who participate will test positive for HIV and/or hepatitis B. If this happens to your child, the benefit is that you will learn his/her HIV and hepatitis B status and will learn where to take your child for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that your child is HIV positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child taking part in this survey could help us learn more about children, HIV and hepatitis B in Zambia. It can help us learn about how well HIV prevention and treatment programs are working. It can also help improve these programs and services for Zambians.

What are alternatives to taking part?

You can decide to allow or not allow your child to take part in this survey. Or you can decide to allow your child to get his or her blood tested for HIV and hepatitis B, but not agree to have his or her blood stored for other additional HIV related tests. Your decision to allow your child to take part or not take part in this survey will not affect your child's health care in any way. However, we hope you will agree to allow your child to take part in this survey as getting HIV and hepatitis B tests can help your child. If your child tests positive for HIV and/or hepatitis B, he/she can start medication to keep him/her healthy.

What about confidentiality?

Your child's test results will be kept strictly confidential. We will only include your child's name on the referral forms we may give you to help the doctors and nurses at your health facility of choice identify your child. In all other cases, your child's name and the consent forms will be kept separate from his/her health information. Your name and your child's name will not appear when we share survey results. When we share results, the information we collect from your child will be identified by a number and not by your name or your child's name. Only people working on the survey will have access to the data during the survey.

The following individuals and agencies will be able to look at your child's survey records to help oversee the conduct of this survey:

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your child's rights as a participant. These

- include the Tropical Diseases Research Centre in Zambia (TDRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your child's rights as a participant in this survey
 - Survey staff and monitors

The information we collect from your child will not be released outside of the survey groups listed above unless there is an issue of safety. If we learn of anything that could harm you or your child, we will provide information on where you can receive support. Your permission to allow us to use and share your child's name and contact information with the groups above will end three years after the end of the survey.

Who should you contact if you have questions?

If you want your child to leave the survey, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the Principal Investigator, Mr. Chipalo Kaliki at the Ministry of Health, or Ms. Nchimunya Nkombo at the Central Statistical Office (CSO), who can be reached at the number and address below.

Mr. Chipalo Kaliki

Address: Ministry of Health Headquarters, Ndeke house
P.O. Box 30205, Lusaka, Zambia
Office Phone: +260 211 253053
Email: ckaliki@gmail.com

Ms. Nchimunya Nkombo

Address: Central Statistical Office
P.O. Box 31908, Lusaka, Zambia
Cell phone: +260 0977 783527
Office Phone: +260 211 251377
Email: nnkombo@hotmail.com

If you decide that your child should leave the study, no more information will be collected from your child. We will make every effort to delete the information we have collected from your child. However, after today, we cannot guarantee we will be able to delete information that has already been shared.

If you have any questions about your child's rights as a participant in this survey, you can contact:

Mr. Shepard Khondowe

Address: Tropical Diseases Research Centre
P.O. Box 71769, Ndola, Zambia
Phone: +260 966 787234
Email: khondowes@tdrc.org.zm

Are there any costs?

There is no cost to you for your child being in the survey. You should also know that neither you nor your child would be paid for your child to be in the survey.

Do you want to ask me anything about your child's participation in the survey?

Consent Statement

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions I had have been answered satisfactorily. I agree for my child to take part in this survey. I know that after allowing my child to participate, I may change my mind and withdraw him/her from taking part in this survey at any time. I have been offered a copy of this consent form.

3. Do you agree that your child will give blood for HIV and hepatitis B testing and related testing?
'YES' means that you give your permission to have the nurse collect a sample of your child's blood for HIV and hepatitis B testing and related testing. 'NO' means that your child will NOT give blood for HIV and hepatitis B testing and related testing.

Yes No

(If "Yes" proceed to the next question)

4. Do you agree to have your child's leftover blood stored for other additional HIV related testing?
'YES' means that you give permission for your child's blood samples to be stored for additional HIV related testing. 'NO' means that your child's blood samples will NOT be stored for additional HIV related testing.

Yes No

Parent/guardian signature or mark _____

Date:

____/____/____

Printed name of parent/guardian _____

Parent/guardian ID number _____ (If applicable. If not applicable check here)

[For illiterate participants]

Signature of witness_____

Date: ___/___/___

Printed name of witness_____

Signature of person obtaining consent_____

Date: ___/___/___

Printed name of person obtaining consent_____

Survey staff ID number _____

Child's name (print) _____

Child's participant ID number _____

Zambia Population-based HIV Impact Assessment: Permission for Interview and Blood Draw, ages 10-14

Interviewer reads:

What language do you prefer for our discussion today?

- English
- Bemba
- Nyanja
- Lozi
- Tonga
- Lunda
- Luvale
- Kaonde
- Other Language: Specify _____

Now I would like to ask you to give us permission to invite your child to take part in the research study/survey.

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

What is the purpose of the survey?

HIV is the virus that causes AIDS. AIDS is a very serious illness. This survey will help us learn more about the health of children in Zambia. We plan to ask thousands of children like yours to join this survey. We would like to invite your child to join the survey too. Your child's participation will help the Ministry of Health make HIV services better.

What would happen to your child if you agree to allow your child to take part?

If you agree to allow us to invite your child to take part in the survey, we will invite your child to do an interview with us and then offer him/her a blood test for HIV and hepatitis B. Like HIV, hepatitis B is an infection that can cause very serious illnesses if left untreated.

In the interview, we will ask what your child knows about HIV. We will also ask about your child's behaviors that may put him or her at risk for HIV. The interview will take about 30 minutes. Out of

respect for your child's privacy, we will not share your child's answers to the interview questions with you. The interview will take place in private here at your house or an area around your house.

If you agree, after the interview, we will offer your child a blood test for HIV and hepatitis B. A trained nurse will take about one teaspoon of blood (about 5 mL) from your child's arm to perform the tests here in your home. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.

We will give you the results of these blood tests today. We will not share the results with your child unless you ask us to do so. We will also provide counseling about the results and discuss with you how to share the test results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.

If your child tests positive for HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of the immune system that fight HIV infection and other diseases. We will also test the amount of CD4 cells in children without HIV. In addition, if your child tests positive for HIV, we will send his/her blood to a laboratory to measure his/her viral load. Viral load is the amount of HIV in the blood. This information may help a doctor or nurse treat your child. We may also do other additional tests related to HIV. If we have test results that might guide your child's care or treatment and you provide us with contact information, we will contact you to tell you how you and your child's doctor or nurse may get these results.

After the blood test, we will show you a list of the nearest Ministry of Health-approved and recommended health facilities for HIV, where you will be able to talk to trained doctors and nurses about your child's HIV test results. We will give you a referral form to the health facility you select and information on today's test results so that you and your child can consult with a doctor or nurse to learn more about his/her HIV test, CD4 count and overall health. Your child's viral load test results will be ready in six to eight weeks. When the results are ready, we will send the results to your health facility of choice. If you provide us with your contact information, we will contact you to let you know the results are ready and encourage you to go to your health facility to discuss your child's viral load results with a doctor or nurse.

As I stated before, we will also test your child's blood for hepatitis B. If your child tests positive for hepatitis B, we will refer you to the nearest appropriate health facility for further testing for your child.

What will happen to your child's leftover blood?

We would like to ask your permission to store your child's leftover blood for other additional HIV related tests such as test for toxoplasmosis , cryptococcal meningitis, hepatitis C or cytomegalovirus. We would store your child's leftover blood for the length of the study, but your child's name will only be on the sample for three years. During this three year period, we will attempt to tell you about any tests results

that are important for your child's health. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to have your child's blood samples stored for other additional HIV related tests, we will destroy your child's blood samples after survey-related testing has been completed.

What are the potential risks?

Your child may feel uncomfortable about some of the questions I will ask. I do not wish this to happen. Your child does not need to answer any question(s) if they feel the question(s) are too personal or if it makes them uncomfortable.

The needle may be uncomfortable for your child when it is put into and taken out of his/her arm. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You may learn that your child is infected with HIV and/or hepatitis B. Learning that your child has HIV and/or hepatitis B may cause some emotional discomfort. You will decide when your child should be told of the test results. We will support whatever decision you make. We will provide counseling on how to cope with learning that your child has HIV and/or hepatitis B. We will also tell you where he/she may go for care and treatment.

Lastly, as with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. Some children who participate will test positive for HIV and/or hepatitis B. If this happens to your child, the benefit is that you will learn his/her HIV and hepatitis B status and will learn where to take your child for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that your child is HIV positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child taking part in this survey could help us learn more about children, HIV and hepatitis B in Zambia. It can help us learn about how well HIV prevention and treatment programs are working. It can also help improve these programs and services for Zambians.

What are alternatives to taking part?

You can decide to not allow your child to take part in the survey. Or you can allow your child to take part in the interview, but not the blood testing. Or you can allow your child to take part in the interview and blood testing, but not agree to allow your child's leftover blood to be stored for other additional HIV related tests.

Your decision to allow your child to take part or not take part in this survey will not affect your child's health care in any way. However, we hope you will agree to allow your child to take part in this survey as getting HIV and hepatitis B tests can help your child. If your child tests positive for HIV and/or hepatitis B, he/she can start medication to keep him/her healthy.

What about confidentiality?

Your child's test results will be kept strictly confidential. We will only include your child's name on the referral forms we may give you to help the doctors and nurses at your health facility of choice identify your child. In all other cases, your child's name and the consent forms will be kept separate from his/her health information. Your name and your child's name will not appear when we share survey results. When we share results, the information we collect from your child will be identified by a number and not by your name or your child's name. Only people working on the survey will have access to the data during the survey.

The following individuals and agencies will be able to look at your child's survey records to help oversee the conduct of this survey:

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your child's rights as a participant. These include the Tropical Diseases Research Centre in Zambia (TDRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your child's rights as a participant in this survey
- Survey staff and monitors

The information we collect from your child will not be released outside of the survey groups listed above unless there is an issue of safety. If we learn of anything that could harm you or your child, we will provide information on where you can receive support. Your permission to allow us to use and share your child's name and contact information with the groups above will end three years after the end of the survey.

Who should you contact if you have questions?

If you want your child to leave the survey, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the Principal Investigator, Mr. Chipalo Kaliki at the Ministry of Health, or Ms. Nchimunya Nkombo at the Central Statistical Office (CSO), who can be reached at the number and address below.

Mr. Chipalo Kaliki

Address: Ministry of Health Headquarters, Ndeke house
P.O. Box 30205, Lusaka, Zambia
Office Phone: +260 211 253053
Email: ckaliki@gmail.com

Ms. Nchimunya Nkombo

Address: Central Statistical Office
P.O. Box 31908, Lusaka, Zambia
Cell phone: +260 0977 783527
Office Phone: +260 211 251377
Email: nnkombo@hotmail.com

If you decide that your child should leave the study, no more information will be collected from your child. We will make every effort to delete the information we have collected from your child. However, after today, we cannot guarantee we will be able to delete information that has already been shared.

If you have any questions about your child's rights as a participant in this survey, you can contact:

Mr. Shepard Khondowe

Address: Tropical Diseases Research Centre
P.O. Box 71769, Ndola, Zambia
Phone: +260 966 787234
Email: khondowes@tdrc.org.zm

Are there any costs?

There is no cost to you for your child being in the survey. You should also know that neither you nor your child would be paid for your child to be in the survey.

Do you want to ask me anything about your child's participation in the survey?**Permission Statement**

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions I had have been answered satisfactorily. I agree for my child to take part in this survey. I know that after allowing my child to participate, I may change my mind and withdraw him/her from taking part in this survey at any time.

I agree to allow you to ask my child to be in this survey. I know that after allowing my child to decide whether he/she wants to be in this survey, he/she may withdraw at any time. His/her participation is voluntary. I have been offered a copy of this permission form.

5. Do you agree for us to ask your child to do the interview? 'YES' means that you give your permission to have the survey staff ask your child to do the interview. 'NO' means that you will NOT give permission for us to ask your child to be interviewed.

Yes No

(If "Yes" proceed to the next question)

6. Do you agree for us to ask your child to give blood for HIV and hepatitis B testing and related testing? 'YES' means that you give your permission for us to ask your child to have the nurse collect a sample of your child's blood for HIV and hepatitis B testing and related testing. 'NO' means that we will NOT ask your child to give blood for HIV and hepatitis B testing and related testing.

Yes No

(If "Yes" proceed to the next question)

7. Do you agree to have your child's leftover blood stored for other additional HIV related testing? 'YES' means that you give permission for your child's blood samples to be stored for other additional HIV related testing. 'NO' means that your child's blood samples will NOT be stored for other additional HIV related testing.

Yes No

Parent/guardian signature or mark _____ Date: ___/___/___

Printed name of parent/guardian _____

Parent/guardian ID number _____ (If applicable. If not applicable check here)

[For illiterate participants]

Signature of witness _____ Date: ___/___/___

Printed name of witness _____

Signature of person obtaining permission _____ Date: ___/___/___

Printed name of person obtaining permission _____

Survey staff ID number _____

Child's name (print) _____

Child's participant ID number _____

Zambia Population-based HIV Impact Assessment: Permission for Interview and Blood Draw, ages 15-17

Interviewer reads:

What language do you prefer for our discussion today?

English

Bemba

Nyanja

Lozi

Tonga

Lunda

Luvale

Kaonde

Other Language: Specify _____

Now I would like to ask you to give us permission to invite your child to take part in the research study/survey.

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

What is the purpose of the survey?

HIV is the virus that causes AIDS. AIDS is a very serious illness. This survey will help us learn more about the health of children in Zambia. We plan to ask thousands of children like yours to join this survey. We would like to invite your child to join the survey too. Your child's participation will help the Ministry of Health make HIV services better.

What would happen to your child if you agree to allow your child to take part?

If you agree to allow us to invite your child to take part in the survey, we will invite your child to do an interview with us and then offer him/her a blood test for HIV, hepatitis B and syphilis. Like HIV, hepatitis B and syphilis are infections that can cause very serious illnesses if left untreated.

In the interview, we will ask what your child knows about HIV. We will also ask about your child's behaviors that may put him or her at risk for HIV. The questions are the same as the ones we will ask adults who agree to participate in the survey. The interview will take about 50 minutes. Out of respect for your child's privacy, we will not share your child's answers to the interview questions with you. The interview will take place in private here in your house or an area around your house. It is also possible that your child may be eligible to take part in future studies related to health in Zambia. We will also ask your child for permission to contact them in the next two years if such an opportunity occurs.

If you agree, after the interview, we will offer your child a blood test for HIV, hepatitis B and syphilis. A trained nurse will take about three teaspoons or 14 mL of blood from your child's arm to perform the tests here in your home. If it is not possible to take blood from your child's arm, then we will try to take a few drops of blood from your child's finger.

We will give you the results of these blood tests today. We will not share the results with your child unless you ask us to do so. We will also provide counseling about the results and discuss with you how to share the test results with your child if you decide to share them with him/her. If you would like, we can discuss the test results together with your child. The entire testing and counseling session will take about 40 minutes.

If your child tests positive for HIV, we will also test the amount of CD4 cells in his/her blood and give you the result today. CD4 cells are the part of the immune system that fight HIV infection and other diseases. We will also test the amount of CD4 cells in children without HIV. In addition, if your child tests positive for HIV, we will send his/her blood to a laboratory to measure his/her viral load. Viral load is the amount of HIV in the blood. This information may help a doctor or nurse treat your child. We may also do other additional tests related to HIV. If we have test results that might guide your child's care or treatment and you provide us with contact information, we will contact you to tell you how you and your child's doctor or nurse may get these results.

After the blood test, we will show you a list of the nearest Ministry of Health-approved and recommended health facilities for HIV, where you will be able to talk to trained doctors and nurses about your child's HIV test results. We will give you a referral form to the health facility you select and information on today's test results so that you and your child can consult with a doctor or nurse to learn more about his/her HIV test, CD4 count and overall health. Your child's viral load test results will be ready in six to eight weeks. When the results are ready, we will send the results to your health facility of choice. If you provide us with your contact information, we will contact you to let you know the results are ready and encourage you to go to your health facility to discuss your child's viral load results with a doctor or nurse.

As I stated before, we will also test your child's blood for hepatitis B and syphilis. If your child tests positive for hepatitis B and/or syphilis, we will refer you to the nearest appropriate health facility for further testing for your child.

What will happen to your child's leftover blood?

We would like to ask your permission to store your child's leftover blood for other additional HIV related tests such as tests for toxoplasmosis, cryptococcal meningitis, hepatitis C or cytomegalovirus. We would store your child's leftover blood for the length of the study, but your child's name will only be on the sample for three years. During this three year period, we will attempt to tell you about any tests results that are important for your child's health. Your child's leftover blood will not be sold or used for commercial reasons. If you do not agree to have your child's blood samples stored for other additional HIV related tests, we will destroy your child's blood samples after survey-related testing has been completed.

What are the potential risks?

Your child may feel uncomfortable about some of the questions I will ask. I do not wish this to happen. Your child does not need to answer any question(s) if they feel the question(s) are too personal or if it makes them uncomfortable.

The needle may be uncomfortable for your child when it is put into and taken out of your child's arm. Experienced staff will do the tests under safe and clean conditions in order to protect your child against any risk.

You may learn that your child is infected with HIV, hepatitis B and/or syphilis. Learning that your child has HIV, hepatitis B and/or syphilis may cause some emotional discomfort. You will decide when your child should be told of the test results. We will support whatever decision you make. We will provide counseling on how to cope with learning that your child has HIV, hepatitis B and/or syphilis. We will also tell you where he/she may go for care and treatment.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

The main benefit for your child to be in the survey is the chance to learn more about his/her health today. Some children who participate will test positive for HIV, hepatitis B and/or syphilis. If this happens to your child, the benefit is that you will learn his/her HIV, hepatitis B and syphilis status. You will also learn where to take your child for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that your child is HIV positive and he/she is on treatment, the CD4 and viral load tests can help your child's doctor or nurse judge how well the treatment is working. Your child's taking part in this survey could help us learn more about children, HIV, hepatitis B and syphilis in Zambia. It can also help us learn about how well HIV prevention and treatment programs are working and how to improve these programs and services.

What are alternatives to taking part?

You can decide to not allow your child to take part in any parts of the survey. Or you can allow your child to take part in the interview, but not the blood testing. Or you can allow your child to take part in the interview and blood testing, but not agree to allow your child's leftover blood to be stored for other additional HIV related tests.

Your decision to allow your child to take part or not take part in this survey will not affect your child's health care in any way. However, we hope you will agree to allow your child to take part in this survey as getting HIV, hepatitis B and syphilis tests can help your child. If your child tests positive for HIV, hepatitis B and/or syphilis, he/she can start medication to keep him/her healthy.

What about confidentiality?

Your child's test results will be kept strictly confidential. We will only include your child's name on the referral forms we may give you to help the doctors and nurses at your health facility of choice identify your child. In all other cases, your child's name and the consent forms will be kept separate from his/her health information. Your name and your child's name will not appear when we share survey results. When we share results, the information we collect from your child will be identified by a number and not by your name or your child's name. Only people working on the survey will have access to the data during the survey.

The following individuals and agencies will be able to look at your child's survey records to help oversee the conduct of this survey:

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your child's rights as a participant. These include the Tropical Diseases Research Centre in Zambia (TDRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your child's rights as a participant in this survey
- Survey staff and monitors

The information we collect from your child will not be released outside of the survey groups listed above unless there is an issue of safety. If we learn of anything that could harm you or your child, we will provide information on where you can receive support. Your permission to allow us to use and share your child's name and contact information with the groups above will end three years after the end of the survey.

Who should you contact if you have questions?

If you want your child to leave the survey, have any questions about the survey, or feel that your child has been harmed by taking part, you should contact the Principal Investigator, Mr. Chipalo Kaliki at the Ministry of Health, or Ms. Nchimunya Nkombo at the Central Statistical Office (CSO), who can be reached at the number and address below.

Mr. Chipalo Kaliki

Address: Ministry of Health Headquarters, Ndeke house
P.O. Box 30205, Lusaka, Zambia
Office Phone: +260 211 253053
Email: ckaliki@gmail.com

Ms. Nchimunya Nkombo

Address: Central Statistical Office
P.O. Box 31908, Lusaka, Zambia
Cell phone: +260 0977 783527
Office Phone: +260 211 251377
Email: nnkombo@hotmail.com

If you decide that your child should leave the study, no more information will be collected from your child. We will make every effort to delete the information we have collected from your child. However, after today, we cannot guarantee we will be able to delete information that has already been shared.

If you have any questions about your child's rights as a participant in this survey, you can contact:

Mr. Shepard Khondowe

Address: Tropical Diseases Research Centre
P.O. Box 71769, Ndola, Zambia
Phone: +260 966 787234
Email: khondowes@tdrc.org.zm

Are there any costs?

There is no cost to you for your child being in the survey. You should also know that neither you nor your child would be paid for your child to be in the survey.

Do you want to ask me anything about your child's participation in the survey?**Permission Statement**

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and given time to ask questions. Any questions that I had have been answered satisfactorily. I agree for my child to take part in this survey. I know that after allowing my child to participate, I may change my mind and withdraw him/her from taking part in this survey at any time.

I agree to allow you to ask my child to be in this survey. I know that after allowing my child to decide whether he/she wants to be in this survey, he/she may withdraw at any time. His/her participation is voluntary. I have been offered a copy of this permission form.

8. Do you agree for us to ask your child to do the interview? 'YES' means that you give your permission to have the survey staff ask your child to do the interview. 'NO' means that you will NOT give permission for us to ask your child to be interviewed.

Yes No

(If "Yes" proceed to the next question)

9. Do you agree for us to ask your child to give blood for HIV, hepatitis B and syphilis testing and related testing? 'YES' means that you give your permission for us to ask your child to have the nurse collect a sample of your child's blood for HIV, hepatitis B and syphilis testing and related testing. 'NO' means that we will NOT ask your child to give blood for HIV, hepatitis B and syphilis testing and related testing.

Yes No

(If "Yes" proceed to the next question)

10. Do you agree to have your child's leftover blood stored for other additional HIV related testing? 'YES' means that you give permission for your child's blood samples to be stored for other additional HIV related testing. 'NO' means that your child's blood samples will NOT be stored for other additional HIV related testing.

Yes No

Parent/guardian signature or mark _____

Date: ___/___/___

Printed name of parent/guardian _____

Parent/guardian ID number _____ (If applicable. If not applicable check here)

[For illiterate participants]

Signature of witness _____

Date: ___/___/___

Printed name of witness _____

Signature of person obtaining permission _____

Date: ___/___/___

Printed name of person obtaining permission _____

Survey staff ID number _____

Child's name (print) _____

Child's participant ID number _____

Zambia Population-based HIV Impact Assessment: Assent for Interview, ages 10-14

Interviewer reads:

What language do you prefer to use for this discussion?

English

Bemba

Nyanja

Lozi

Tonga

Lunda

Luvale

Kaonde

Other Language: Specify _____

Hello. My name is _____. I would like to invite you to take part in a research study/survey. Surveys help us learn new things.

This form talks about our survey and the choice that you have to take part in it. I want you to ask me any questions that you have. You can ask questions any time.

Why are we doing this survey?

We are doing this survey to help us learn more about the health of children in Zambia. We plan to ask thousands of children like you to join this survey. We would like to invite you to join this survey too. 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 joined this survey?

If you decide to join the survey, here is what would happen:

- We will ask you questions about your age and some of your activities. We will also ask you what you know about a germ called HIV that makes people very sick. The interview will take place in private here in your home or an area around your home.
- The interview will take about 30 minutes.
- After we ask you the questions, we will also ask you if it is okay to take some of your blood to test for HIV and hepatitis B. Like HIV, hepatitis B is a germ that can make people very sick. We will also ask you if we can store your blood for future surveys.

Could bad things happen to you if you joined this survey?

You may feel uncomfortable answering some of the questions I will ask. If I ask you any questions you don't want to answer, just let me know and I will go to the next question. You can stop the interview at any time.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this chance.

Could the survey help you?

Being in this survey may not help you. But you may help us figure out ways to help other children and learn more about HIV in Zambia. Taking part in this survey is important.

What else should you know about this survey?

If you don't want to be in the survey, you don't have to be. Nobody will get upset with you if you do not want to join the survey.

It is also OK to say 'yes' and change your mind later. You can stop being in the survey at any time. If you want to stop, please tell us.

We will not tell other people that you are in this survey. You can choose to tell your parent/guardian about the interview. However, we will not share your answers to the questions with your parent or guardian. We will not share information about you to anyone who does not work on the survey. Any information we share about you will have a number on it instead of your name.

The following individuals and agencies will be able to look at your survey records:

- Survey staff and monitors
- Staff members from groups that protect your rights as a survey participant to make sure that we are protecting your rights as a participant

If you have any questions about the survey, feel that you have been harmed by taking part, or no longer want to take part in the survey, you can contact Mr. Chipalo Kaliki or Ms. Nchimunya Nkombo:

Mr. Chipalo Kaliki
Address: Ministry of Health Headquarters, Ndeke house
P.O. Box 30205, Lusaka, Zambia
Office Phone: +260 211 253053
Email: ckaliki@gmail.com

Ms. Nchimunya Nkombo
Address: Central Statistical Office
P.O. Box 31908, Lusaka, Zambia
Cell phone: +260 0977 783527
Office Phone: +260 211 251377
Email: nnkombo@hotmail.com

If you have any questions about your rights as a participant in this survey, you can contact:

Mr. Shepard Khondowe
Address: Tropical Diseases Research Centre
P.O Box 71769, Ndola, Zambia
Phone: +260 966 787234
Email: khondowes@tdrc.org.zm

You should also know that you would not be paid to be in the study.

You can ask questions any time. Take the time you need to make your choice.

Do you want to ask me anything?

If you want to be asked questions after we talk, please write your name below. We will write our name too. This shows we talked about the survey and that you want to take part.

11. Do you agree to do the interview? 'YES' means that you agree to do the interview. 'NO' means that you will NOT do the interview.

Yes No

Child signature or mark _____ Date: ___/___/___

Printed name of child _____

Child's participant ID number _____

Printed name of parent/guardian _____

[For illiterate child]

Signature of witness _____ Date: ___/___/___

Printed name of witness _____

Signature of person obtaining assent _____ Date: ___/___/___

Printed name of person obtaining assent _____

Survey staff ID number _____

Zambia Population-based HIV Impact Assessment: Assent for Interview, ages 15-17

Interviewer reads:

What language do you prefer to use for this discussion?

English

Bemba

Nyanja

Lozi

Tonga

Lunda

Luvale

Kaonde

Other Language: Specify _____

Hello. My name is _____. I would like to invite you to take part in a research study/survey about HIV in Zambia. A survey is a way to learn about something by interviewing and testing many people.

This form talks about our survey and the choice that you have to take part in it. I want you to ask me any questions that you have. You can ask questions any time.

Why are we doing this survey?

HIV is the virus that causes AIDS. AIDS is a very serious illness. We are doing this survey to help us learn more about HIV, AIDS and the health of children in Zambia. We plan to ask thousands of children like you to join this survey. We would like to invite you to join this survey too. Your parent/guardian said it was okay for us to ask you to join.

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

What would happen if you joined this survey?

If you agree to join, here is what would happen:

- We will ask you questions about your age and your knowledge about HIV. We will also ask you if you experienced any behaviors that may increase your chance of getting HIV.
- The interview will take about 50 minutes.
- After the interview, we will ask you if it is okay to take some of your blood to test for HIV, hepatitis B and syphilis. Like HIV, hepatitis B and syphilis are infections that can make someone very sick if left untreated. The testing and counseling will take about 40 minutes. You do not have to agree to the blood testing now. We will give you a separate opportunity to agree to the blood testing. You can agree to the interview, but not agree to the blood testing.
- Lastly, it is possible that you may be eligible to take part in future surveys related to health in Zambia. At the end of this form, we will ask you if it is okay to contact you in the next two years if such an opportunity occurs.

Could bad things happen to you if you joined the survey?

You may feel uncomfortable about some of the questions I will ask. If I ask you any questions you don't want to answer, just let me know and I will go to the next question. You can stop the interview at any time.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

Could this survey help you?

Being in this survey may not help you. But you may help us figure out ways to help other children and learn more about HIV in Zambia. Taking part in this survey is important.

What else should you know about this survey?

If you don't want to be in the survey, you don't have to be. Nobody will get upset with you if you do not want to join the survey. Your decision to take part or not take part will not affect your health care, but we hope you will agree to answer these questions since your views are important.

Will you share my answers in the interview with other people?

All the information you share with us during the interview will be kept confidential. You can choose to tell your parent/guardian about the interview. However, we will not share your answers to the questions with your parent or guardian. We will not tell other people that you are in this survey. We will not share information about you to anyone who does not work on the survey. Any information we share about you will have a number on it instead of your name. Only people working on the survey will be allowed to view the information we collect from you.

The following individuals and agencies will be able to look at your interview records to help oversee the conduct of this survey:

- Survey staff and monitors
- Staff members from groups that protect your rights as a survey participant to make sure that we are protecting your rights as a participant

Who should you contact if you have questions?

If you want to leave the survey, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Principal Investigator, Mr. Chipalo Kaliki at the Ministry of Health, or Ms. Nchimunya Nkombo at the Central Statistical Office (CSO), who can be reached at the number and address below.

Mr. Chipalo Kaliki
 Address: Ministry of Health Headquarters, Ndeke house
 P.O. Box 30205, Lusaka, Zambia
 Office Phone: +260 211 253053
 Email: ckaliki@gmail.com

Ms. Nchimunya Nkombo
 Address: Central Statistical Office
 P.O. Box 31908, Lusaka, Zambia
 Cell phone: +260 0977 783527
 Office Phone: +260 211 251377
 Email: nnkombo@hotmail.com

If you have any questions about your rights as a participant in this survey, you can contact:

Mr. Shepard Khondowe
 Address: Tropical Diseases Research Centre
 P.O Box 71769, Ndola, Zambia
 Office phone: +260 212 620737
 Cell phone: +260 966 787234
 Email: khondowes@tdrc.org.zm

Are there any costs to taking part in the interview?

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

You can ask questions any time. Take the time you need to make your choice.

Do you want to ask me anything?

Assent Statement

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and was given time to ask questions. Any questions that I had were answered satisfactorily. I agree to take part in the individual interview. I know that after choosing to be in this individual interview, I may withdraw at any time. My participation is voluntary. I have been offered a copy of this assent form.

12. Do you agree to do the interview? 'YES' means that you agree to do the interview. 'NO' means that you will NOT do the interview.

Yes No

13. **FUTURE RESEARCH:** It is possible that you may be eligible to participate in future studies related to health in Zambia. We are asking for your permission to contact you in the next two years if such an opportunity occurs. If we contact you, we will give you details about the new study and ask you to sign a separate assent form at that time. You may decide at that time that you do not want to take part in that study.

If you do not wish to be contacted about future studies, it does not affect your involvement in this study. Do you agree to be contacted in the future? 'YES' means that you agree to be contacted in the future if a study opportunity arises. 'NO' means that you will NOT be contacted about future studies.

YES NO

Participant signature or mark _____ Date: ___/___/___

Printed name of participant _____

Participant ID number _____

Printed name of parent/guardian _____

[For illiterate participants]

Signature of witness _____ Date: ___/___/___

Printed name of witness _____

Signature of person obtaining assent _____ Date: ___/___/___

Printed name of person obtaining assent _____

Survey staff ID number _____

Zambia Population-based HIV Impact Assessment: Consent for Blood Draw (18-59 years) and Special Case Minors (15-17 years)

Interviewer reads:

What language do you prefer to use for this discussion?

- English
- Bemba
- Nyanja
- Lozi
- Tonga
- Lunda
- Luvale
- Kaonde
- Other Language: Specify _____

Hello. My name is_____ . I will give you information about blood testing options in this research study/survey.

As a part of this survey, we are giving people who take part a chance to learn if they have HIV, hepatitis B and/or syphilis. HIV, hepatitis B and syphilis are infections that can cause very serious illness if left untreated. We are also asking people if we can keep some of their blood for other additional HIV related tests.

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

What would happen to you if you agree to take part in the blood testing?

If you agree to the HIV, hepatitis B and syphilis blood testing, a trained nurse will take about three teaspoons or about 14 mL of blood from your arm. If it is not possible to take blood from your arm, then we will try to take a few drops of blood from your finger. We will give you the results of these blood tests today. We will provide counseling about the results. The testing and counseling session will take about 40 minutes.

If you test positive for HIV, we will also test the amount of CD4 cells in your blood and give you the result today. CD4 cells are the part of the immune system that fight HIV infection and other diseases. We will also test the amount of CD4 cells in people without HIV. If you test positive for HIV, we will send

your blood to a laboratory to measure your viral load. Viral load is the amount of HIV in the blood. This information will help a doctor or nurse treat you. We will also do other additional tests related to HIV. If we have test results that might guide your care or treatment and you provide us with contact information, we will contact you to tell you how you and your doctor or nurse may get these results.

After this blood test, we will show you a list of the nearest Ministry of Health-approved and recommended health facilities for HIV, where you will be able to talk to trained doctors and nurses about your HIV test results. We will give you a referral form to the health facility you select and information on today's test results so that you can consult with a doctor or nurse to learn more about your HIV test, CD4 count and overall health. Your viral load test results will be ready in six to eight weeks. When the results are ready, we will send the results to your health facility of choice. If you provide us with your contact information, we will contact you to let you know the results are ready and encourage you to go to your health facility to discuss your viral load results with a doctor or nurse.

As I stated before, we will also test your blood for hepatitis B and syphilis. If you test positive for hepatitis B and/or syphilis, we will refer you to the nearest appropriate health facility for further testing.

What will happen to your leftover blood?

We would like to ask your permission to store your leftover blood for other additional HIV related tests such as tests for toxoplasmosis, cryptococcal meningitis, hepatitis C or cytomegalovirus. We would store your leftover blood for the length of the study, but your name will only be on the sample for three years. During this three year period, we will attempt to tell you about any tests results that are important for your health. Your leftover blood will not be sold or used for commercial reasons. If you do not agree to have your blood samples stored for other additional HIV related tests, we will destroy your blood samples after survey-related testing has been completed.

What are the potential risks?

The needle may hurt when it is put into and taken out of your arm. Experienced staff will do the test under safe and clean conditions in order to protect you against any risk.

In addition, you may learn that you are infected with HIV, hepatitis B and/or syphilis. Learning that you have HIV, hepatitis B and/or syphilis may cause some emotional discomfort. We will provide counseling on how to cope with learning that you have HIV, hepatitis B and/or syphilis. We will also tell you where you may go for care and treatment.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

What are the potential benefits?

The main benefit is the chance to learn more about your health today. Some people who participate will test positive for HIV, hepatitis B and/or syphilis. If this happens to you, the benefit is that you will learn your HIV, hepatitis B and syphilis status. You will also learn where to go for life-saving treatment. Care and treatment provided by the Ministry of Health is free. If you already know that you are HIV positive and are on treatment, the CD4 and viral load tests can help your doctor or nurse judge how well the treatment is working. Your taking part in this blood testing could help us learn more about HIV, hepatitis B and syphilis in Zambia. It can help us learn about how well HIV prevention and treatment programs are working. It can also help improve these programs and services for Zambians.

What are alternatives to taking part?

You can decide to not take part in the blood testing. Or you can decide to take part in the blood testing, but not agree to allow your leftover blood to be stored for other additional HIV related tests.

Your decision to take part or not take part in the blood testing will not affect your health care in any way. However, we hope you will agree to take part as getting an HIV, hepatitis B and syphilis tests can help you. If you test positive for HIV, hepatitis B and/or syphilis, you can start medication to keep healthy.

What about confidentiality?

Your blood test results will be kept strictly confidential. We will only include your name on the referral forms we may give you to help the doctors and nurses at your health facility of choice identify you. In all other cases, your name and signed forms will be kept separate from your health information. Your name will not appear when we share survey results. When we share survey results, the information we collect from you will be identified by a number and not by your name. Only people working on the survey will have access to the data during the survey.

The following individuals and agencies will be able to look at your records to help oversee the conduct of this survey:

- Staff members from the Institutional Review Boards or Ethics Committees overseeing the conduct of this survey to ensure that we are protecting your rights as a participant. These include the Tropical Diseases Research Centre in Zambia (TDRC) and the Institutional Review Boards at the Centers for Disease Control and Prevention (CDC; Atlanta, USA), Columbia University Medical Center and Westat (a statistical survey research organization)
- The U.S. Office of Human Research Protections and other government agencies that oversee the safety of human subjects to ensure we are protecting your rights as a participant in this survey
- Survey staff and monitors

The information we collect from you will not be released outside of the survey groups listed above unless there is an issue of safety. If we learn of anything that could harm you, we will provide information on where you can receive support. Your permission to allow us to use and share your name and contact information with the groups above will end three years after the end of the survey.

Who should you contact if you have questions?

If you want to leave the survey, have any questions about the survey, or feel that you have been harmed by taking part, you should contact the Principal Investigator, Mr. Chipalo Kaliki at the Ministry of Health, or Ms. Nchimunya Nkombo at the Central Statistical Office (CSO), who can be reached at the number and address below.

Mr. Chipalo Kaliki

Address: Ministry of Health Headquarters, Ndeke house
P.O. Box 30205, Lusaka, Zambia
Office Phone: +260 211 253053
Email: ckaliki@gmail.com

Ms. Nchimunya Nkombo

Address: Central Statistical Office
P.O. Box 31908, Lusaka, Zambia
Cell phone: +260 0977 783527
Office Phone: +260 211 251377
Email: nnkombo@hotmail.com

If you decide to leave the study, no more information will be collected from you. We will make every effort to delete the information we have collected from you. However, after today, we cannot guarantee we will be able to delete information that has already been shared.

If you have any questions about your rights as a participant in this survey, you can contact:

Mr. Shepard Khondowe

Address: Tropical Diseases Research Centre

P.O Box 71769, Ndola, Zambia

Office phone: +260 212 620737

Cell phone: +260 966 787234

Email: khondowe@tdrc.org.zm

Are there any costs?

There is no cost to you for receiving the blood tests today. You should also know that you would not be paid to receive the blood tests.

Do you want to ask me anything about:

- Taking your blood for HIV and hepatitis B testing?
- Testing in the laboratory?
- Storage of blood for other additional HIV related tests?

Consent Statement

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and was given time to ask questions. Any questions that I had were answered satisfactorily. I agree to be in this survey. I know that after choosing to be in this survey, I may withdraw at any time. My participation is voluntary. I have been offered a copy of this consent form.

1. Do you agree to give blood for HIV, hepatitis B and syphilis testing and related testing? 'YES' means that you agree to give blood for HIV, hepatitis B, and syphilis testing and related testing. 'NO' means that you will NOT give blood for HIV, hepatitis B, and syphilis testing and related testing.

Yes No
(If "Yes" proceed to the next question)

2. Do you agree to have your leftover blood stored for other additional HIV related testing? 'YES' means that you give permission for your blood samples to be stored for other additional HIV related testing. 'NO' means that your blood samples will NOT be stored for other additional HIV related testing.

Yes No

Participant signature or mark _____ Date: ___/___/___
Printed name of participant _____
Participant ID number _____

[For illiterate participants]

Signature of witness _____ Date: ___/___/___
Printed name of witness _____

Signature of person obtaining consent _____ Date: ___/___/___
Printed name of person obtaining consent _____

Survey staff ID number _____

Zambia Population-based HIV Impact Assessment: Assent for Blood Draw, ages 10-14

Nurse counselor/Interviewer reads:

What language do you prefer for our discussion today?

English

Bemba

Nyanja

Lozi

Tonga

Lunda

Luvale

Kaonde

Other Language: Specify _____

Hello. My name is_____ . I will give you information about the blood testing part of this research study/survey.

As a part of this survey, we are giving people who take part a chance to learn if they have HIV or hepatitis B. HIV and hepatitis B are germs that can make people very sick. We are also asking people if we can keep some of their blood for other additional HIV related testing.

This form might have some words in it that you may not understand. Please ask me to explain anything that you do not understand. You can ask me questions any time.

What would happen if you joined the blood testing part of this survey?

- If you decide to join the blood testing part of the survey, here is what would happen:
- We will use a needle to take some of your blood from your arm and then we would test your blood for HIV and hepatitis B today in your home.
- It will take about 40 minutes to do the test and to talk to your parents about the results.
- If you test positive for HIV, we will do another test on the blood we have already collected to measure the cells in your blood that fight HIV and other infections. We will also measure these cells from some children without HIV. We will do this test here at your home.
- If you test positive for HIV, we will send your blood to a laboratory to measure the amount of HIV in your blood.

We would like to ask you to store your leftover blood for other additional HIV related tests. We would store your leftover blood for the length of the study, but your name will only be on the sample for three years. During this three year period, we will attempt to tell your parents/guardians about any tests results that are important for your health. Your leftover blood will not be sold or used for commercial reasons. If you do not agree to have your blood samples stored for other additional HIV related tests, we will destroy your blood samples after survey-related testing has been completed.

Could bad things happen if you take the blood tests?

The needle may hurt when it is put into and taken out of your arm. This will go away after a while. We will do our best to make it hurt as little as possible. Experienced nurses will do the test under safe and clean conditions to protect you from any risks. You can say 'no' to what we ask you to do for the survey at any time and we will stop.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

Could the blood testing help you?

Taking the blood test may help you learn if you have HIV and/or hepatitis B. After the blood test, we would give your test results to your parent/guardian and they would decide on the best time to tell you the results. If your parent/guardian wants us to tell you about your test results, we would talk with you about any questions or worries you might have about the results. If you have HIV and/or hepatitis B, we will tell your parent/guardian where they can take you for medical care and treatment. Treatment for HIV and hepatitis B is free. We hope to learn about HIV healthcare needs in this survey. And we hope it will help other children in Zambia in the future.

What else should you know about the blood testing part of this survey?

If you don't want to take the blood tests, you don't have to. Nobody will get upset if you do not want to get your blood tested. You can say 'yes' to the blood testing and storage for other additional HIV related tests. Or you can say 'yes' to the blood testing, but 'no' to storage for other additional HIV related tests. You can also say 'yes' and change your mind later. You can stop the blood testing at any time. If you want to stop, please tell us.

We will not tell other people that you took a blood test today. We will not share information about you to anyone who does not work on the survey. Any information we share about you will have a number on it instead of your name.

The following individuals and agencies will be able to look at your blood testing records:

- Survey staff and monitors
- Staff members from groups that protect your rights as a survey participant to ensure that we are protecting your rights as a participant

Who should you contact if you have questions?

If you have any questions about the survey or blood test, feel that you have been harmed by taking part, or no longer want to participate in the survey, you can contact Mr. Chipalo Kaliki or Ms. Nchimunya Nkombo who can be reached at the number and address below:

Mr. Chipalo Kaliki
Address: Ministry of Health Headquarters, Ndeke house
P.O. Box 30205, Lusaka, Zambia
Office Phone: +260 211 253053
Email: ckaliki@gmail.com

Ms. Nchimunya Nkombo
Address: Central Statistical Office
P.O. Box 31908, Lusaka, Zambia
Cell phone: +260 0977 783527
Office Phone: +260 211 251377
Email: nnkombo@hotmail.com

If you have any questions about your rights as a participant in this survey, you can contact:

Mr. Shepard Khondowe
Address: Tropical Diseases Research Centre
P.O Box 71769, Ndola, Zambia
Phone: +260 966 787234
Email: khondowe@tdrc.org.zm

Will you or your parent/guardian have to pay to receive blood testing?

There is no cost to you or your parent/guardian for receiving blood testing today. You should also know that you and your parent/guardian will not be paid for receiving blood testing.

Take the time you need to make your choice.

Do you want to ask me anything about:

- Taking your blood for HIV and hepatitis B testing?
- Testing in the laboratory?
- Storage of blood for other additional HIV related tests?

Assent statement

If you want to get a blood test and give your blood for research after we talk, please write your name below. We will write our name too. This shows we talked about the blood testing and that you want to take part.

1. Do you agree to give blood for HIV and hepatitis B testing and related testing? 'YES' means you want to receive HIV and hepatitis B testing and related testing. 'NO' means you do not want to receive HIV and hepatitis B testing and related testing.

_____ Yes _____ No
(If "Yes" proceed to the next question)

2. Do you agree to have your leftover blood stored for other additional HIV related testing? 'YES' means that you give permission for your blood samples to be stored for other additional HIV related testing. 'NO' means that your blood samples will NOT be stored for other additional HIV related testing.

Yes No

Child's signature or mark _____ Date: ___/___/___

Printed name of child _____

Child's participant ID number _____

Printed name of parent/guardian _____

[For illiterate participant]

Signature of witness _____ Date: ___/___/___

Printed name of witness _____

Signature of person obtaining assent _____ Date: ___/___/___

Printed name of person obtaining assent _____

Survey staff ID number _____

Zambia Population-based HIV Impact Assessment: Assent for Blood Draw, ages 15-17

Nurse counselor/Interviewer reads:

What language do you prefer to use for this discussion?

English

Bemba

Nyanja

Lozi

Tonga

Lunda

Luvale

Kaonde

Other Language: Specify _____

Hello. My name is _____. I will give you information about the blood testing part of this research study/survey.

As a part of this survey, we are giving people who take part a chance to learn if they have HIV, hepatitis B and/or syphilis. HIV, hepatitis B and syphilis are infections that can make someone very sick if left untreated. We are also asking people if we can keep some of their blood for other additional HIV related testing.

This form might have some words in it that you may not understand. Please ask me to explain anything that you do not understand. You can ask me questions any time.

What would happen if you joined the blood testing part of this survey?

If you decide to join the blood testing part of the survey, here is what would happen:

- We will use a needle to take some of your blood from your arm and then we would test your blood for HIV, hepatitis B and syphilis today in your home.
- It will take about 40 minutes to do the test and to talk to your parents about the results.

- If you test positive for HIV, we will do another test on the blood we have already collected to measure the cells in your blood that fight HIV and other infections. We will also measure these cells from some children without HIV. We will do this test here at your home.
- If you test positive for HIV, we will send your blood to a laboratory to measure the amount of HIV in your blood.
- Lastly, we will ask you if we can use your leftover blood for other additional HIV related tests. We would store your leftover blood for the length of the study, but your name will only be on the sample for three years. During this three year period, we will attempt to tell your parents/guardians about any tests results that are important for your health. Your leftover blood will not be sold or used for commercial reasons. If you do not agree to have your blood samples stored for other additional HIV related tests, we will destroy your blood samples after survey-related testing has been completed.

Could bad things happen if you take the blood tests?

The needle may hurt when it is put into and taken out of your arm. This will go away after a while. We will do our best to make it hurt as little as possible. Experienced nurses will do the test under safe and clean conditions to protect you from any risks. You can say ‘no’ to what we ask you to do for the survey at any time and we will stop.

In addition, you may learn that you are infected with HIV, hepatitis B and/or syphilis. Learning that you have HIV, hepatitis B and/or syphilis may cause some emotional discomfort. If your parent/guardian agrees, we will provide counseling on how to cope with learning that you have HIV, hepatitis B and/or syphilis, and tell your parent/guardian where you may go for care and treatment.

As with all surveys, there is a chance that confidentiality could be compromised. We are doing everything we can to minimize this risk.

Could the blood testing help you?

Taking the blood test may help you learn if you have HIV, hepatitis B and or syphilis. After the blood test, we would give your tests results to your parent/guardian and they would decide on the best time to tell you the results. If your parent/guardian wants us to tell you about your test results, we would talk with you about any questions or worries you might have about the results. If you have HIV, hepatitis B and/or syphilis, we will tell your parent/guardian where they can take you for medical care and treatment.

Treatment for HIV, hepatitis B and syphilis is free. We hope to learn about HIV healthcare needs in this survey. And we hope it will help other children in Zambia in the future.

What else should you know about the blood testing part of this survey?

If you don’t want to take the blood tests, you don’t have to. Nobody will get upset if you do not want to get your blood tested. You can say ‘yes’ to the blood testing and storage for other additional HIV related

tests. Or you can say 'yes' to the blood testing, but 'no' to storage for other additional HIV related tests. You can also say 'yes' and change your mind later. You can stop the blood testing at any time. If you want to stop, please tell us.

Your decision to take part or not take part in the blood testing will not affect your health care in any way. However, we hope you will agree to take part as getting an HIV, hepatitis B and syphilis tests can help you. If you test positive for HIV, hepatitis B and/or syphilis, you can start medication to keep healthy.

We will not tell other people that you took a blood test today. We will not share information about you to anyone who does not work on the survey. Any information we share about you will have a number on it instead of your name.

The following individuals and agencies will be able to look at your blood testing records:

- Survey staff and monitors
- Staff members from groups that protect your rights as a survey participant to ensure that we are protecting your rights as a participant

Who should you contact if you have questions?

If you have any questions about the survey or blood test, feel that you have been harmed by taking part, or no longer want to participate in the survey, you can contact Mr. Chipalo Kaliki or Ms. Nchimunya Nkombo, who can be reached at the number and address below:

Mr. Chipalo Kaliki
Address: Ministry of Health Headquarters, Ndeke house
P.O. Box 30205, Lusaka, Zambia
Office Phone: +260 211 253053
Email: ckaliki@gmail.com

Ms. Nchimunya Nkombo
Address: Central Statistical Office
P.O. Box 31908, Lusaka, Zambia
Cell phone: +260 0977 783527
Office Phone: +260 211 251377
Email: nnkombo@hotmail.com

If you have any questions about your rights as a participant in this survey, you can contact:

Mr. Shepard Khondowe
Address: Tropical Diseases Research Centre
P.O Box 71769, Ndola, Zambia
Phone: +260 966 787234
Email: khondowe@tdrc.org.zm

Will you or your parent/guardian have to pay to receive blood testing?

There is no cost to you or your parent/guardian for receiving blood testing today. You should also know that you and your parent/guardian will not be paid for receiving blood testing.

Take the time you need to make your choice.

Do you want to ask me anything about:

- Taking your blood for HIV, hepatitis B, and/or syphilis testing?
- Testing in the laboratory?
- Storage of blood for other additional HIV related tests?

If you want to get a blood test and give your blood for research after we talk, please write your name below. We will write our name too. This shows we talked about the blood testing and that you want to take part.

Assent statement

I have read this form, and/or someone has read it to me. I was encouraged to ask questions and was given time to ask questions. Any questions that I had have been answered satisfactorily. I agree to be in this survey. I know that after choosing to be in this survey, I may withdraw at any time. My participation is voluntary. I have been offered a copy of this assent form.

14. Do you agree to give blood for HIV, hepatitis B and syphilis testing and related testing? 'YES' means that you agree to give blood for HIV, hepatitis B, and syphilis testing and related testing. 'NO' means that you will NOT give blood for HIV, hepatitis B, syphilis testing and related testing.
 Yes No
(If "Yes" proceed to the next question)

15. Do you agree to have your leftover blood stored for other additional HIV related testing? 'YES' means that you give permission for your blood samples to be stored for other additional HIV related testing. 'NO' means that your blood samples will NOT be stored for other additional HIV related testing.

Yes No

Participant signature or mark _____ Date: ___/___/___

Printed name of participant _____

Participant ID number _____

Printed name of parent/guardian _____

[For illiterate participants]

Signature of witness_____

Date: ___/___/___

Printed name of witness_____

Signature of person obtaining assent_____

Date: ___/___/___

Printed name of person obtaining assent_____

Survey staff ID number _____

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